ES-401 Oyster Creek Written Examination 4/04 Form ES-401-9

Review Worksheet

NOTE 1: RESOLUTION OF COMMENTS IN BOLD AND ITALICS

NOTE 2: Resolution of all licensee comments acceptable per meeting 4/1/04

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
1	F	3										Y	N	E	reorder answers such that "C" is last ***Made recommended change***
2	F	3	X									Y	N	U	Double jeopardy with #4 ***Rejected K/A due to oversampling of SGTS and developed new question***
3	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
4	F	2										Y	N	E	Use "unplanned" rather than overexposure; move question from stem ***Made recommended change***
5	H	3										Y	N	E	Use "actual" for pressure; add "and is stable to 4th bullet. Use numerical values for pressure in "B" and "D" ***Made recommended change***
6	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Locate second stem condition to bullets ***Made recommended change***
7	F	2										Y	N	E	Delete "and completion" from answer "A"; add "per Procedure 205"; BOLD REQUIRED and ONLY ***Made recommended change***
8	F	3										Y	N	E	Reformat to two-column format to make more understandable; delete repetitive words from answers and move to stem ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
9	H	2										Y	N	E	Make answers present tense' add ".." to alarm title ***Made recommended change***
10	F	2										Y	N	E	Reformat to two-column format to make more understandable; add comma after response ***Made recommended change***
11	H	3		X										U	"C" may also be correct ***Changed stem to 73" and answer "B" so only one answer is correct***
12	F	3										Y	N	E	Change ABN numbering per revised number; include "immenent loss" in stem and delete from answers ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
13	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Reformat to two-column format; add panel # to alarm ***Made recommended change***
14	F	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Add "determine what action..." to stem ***Made recommended change***
15	H	4										Y	N	S	
16	H	3										Y	N	E	add comma after setpoint ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
17	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Move "Drywell Coolin Fans" to stem and delete from answers; add question mark after EOPs ***Made recommended change***
18	H	3										Y	N	E	Add "In addition to ARI" to stem and delete from answers; change "D" to (min speed) ***Made recommended change***
19	F	3										Y	N	E	Delete "High Drywell Pressure from "A" and "C"; rearrange wording to make positive statements ***Made recommended change***
20	H	3	X									Y	N	U	Tach Generator does not lock up scoop tube ***Deleted reference to Tach Generator in stem***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
21	F	3										Y	N	E	Change answer "C" to "Monitor ductwork temperature..."; make exceed past tense in answer "D" ***Made recommended change***
22	F	2										Y	N	E	Move "prevent" from answers to stem; add "exhaust" before fan ***Made recommended change***
23	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
24	F	3										Y	N	E	Move "This will" from answers and adjust stem to "The basis is..."; change "tru answers" to "factual statements" in explaination ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
25	H	4										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Separate question from stem ***Made recommended change***
26	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
27	F	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change CPS to CPM; change verifying to VERIFY ***Made recommended change***
28	F	2										Y	N	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
29	H	3										Y	N	S	
30	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
31	H	4										Y	N	E	Change ABN number to latest; add comma after minute Change COG Level to "H" ***Made recommended change***
32	H	3										Y	N	E	Add bullets for recombiner alarms; change an to and in explaination ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
33	H	4	X									Y	N	U	Too many variables to get correct answer ***Changed stem to focus on makeup function during backwash operations which are frequently observed by operators as recommended by licensee*** Delete "indicated" from answers and use in stem ***Made recommended change***
34	F	3										Y	N	E	make" indication" plural; provide RAP T-2-b to applicants Change COG level to F ***Made recommended change***
35	F	3										Y	N	E	add "Reactor Building to Torus" to specify the vacuum breaker; separate question from stem ***Made recommended change***
36	F	3	X									Y	N	U	Must change answer "D" to <33 Hz to be correct ***Made recommended change*** Question goes beyond K/A delete "and what actions..." and revies answers "A" and "B" to match revised question ***Made recommended change*** Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
37	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change "AT LEAST to "MORE THAN" in "A" to ensure it cannot be construed a correct statement ***Made recommended change***
38	F	2			X							Y	N	U	Series of T/F answers. Reformat to two-column and eliminate T/F ***Made recommended change***
39	H	3										Y	N	E	comma after incident; change "mode of operation" to "condition" ***Made recommended change***
40	H	4										Y	N	E	Add "TAF" to level reading; add question marks ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
41	H	4										Y	N	E	Add "the" before 1-2 pump ***Made recommended change***
42	H	3										Y	N	E	Use new ABN number; change last sentence of stem to "...now stable at 79 psig" ***Made recommended change***
43	F	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Add "local closure" to stem ***Made recommended change***
44	H	3										Y	N	E	Change ABN number to latest; add "specified" to sequence ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
45	F	2										Y	N	E	Use "associated loss of DC procedures rather than specifying; change question to "Why is there a sequence..." ***Made recommended change***
46	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Add "if any and is/are to question b ***Made recommended change***
47	H	3	X									Y	N	U	Recorders powered from CIP-3. Change answers to reflect ***Changed stem conditions and answers to reflect correct power supply*** Delete last two bullets of stem and re-word answers to be consistent with revised stem Change question to "Which of the following describes the affect..." ***Made recommended change***
48	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change question to "Assuming NO operator action..." Delete "will be exceeded" from answers and put in question ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
49	F	2										Y	N	S	
50	F	2										Y	N	S	Change ABN number to latest; change OPS-3024 to CRD SDRP ***Made recommended change***
51	H	3										Y	N	E	Add procedure title to 201; separate question from stem ***Made recommended change***
52	F	2										Y	N	E	Separate question from stem ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
53	H	2										Y	N	E	Change ABN number to latest; add "MSIVs have closed" to 5th bullet ***Made recommended change***
54	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
55	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
56	H	4										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change 6th bullet to delete specific reference to 12 psig ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
57	H	3										Y	N	E	Bold and CAPs for NONE in answer "B" ***Made recommended change*** Change level to 84" and pressure to 2.8 ; separate question from stem ***Made recommended change***
58	F	2										Y	N	E	Separate quesrtion from stem; delete "avoid" frm answers and put in question ***Made recommended change***
59	H	4										Y	N	S	
60	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Use "select ALL" in question ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
61	H	2										Y	N	E	BOLD NO and NOT ***Made recommended change***
62	H	3										Y	N	S	Too convoluted to get right answer ***The attached post-maintenence test form and circuit sketch provided will ensure a competant SRO can derive the correct answer. Upon further review the licensee agrees.***
63	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
64	F	2										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
65	F	3										Y	N	E	BOLD NOT; make specifies singular ***Made recommended change***
66	H	4										Y	N	E	BOLD ISOLATES ***Made recommended change***
67	H	3	X									Y	N	U	No direct reference on voltage requirement for closing coil ***Added note regarding coil voltage requirement*** BOLD NO, NOT; put "preliminary information..." under table ***Made recommended change***
68	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** ***Separate question from stem; make pump plural*** ***Made recommended change*** Add "pump" to RBCCW ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
69	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change answers to include "ONLY"; add "in addition" to stem ***Made recommended change***
70	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Add "WG" to building pressure; make negative ***Made recommended change***
71	H	3										Y	N	E	Delete excess spacing ***Made recommended change***
72	H	4	X									Y	N	U	Make stem and answers agree with 142" setpoint ***Made recommended change to specified levels in stem***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
73	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
74	H	3	X									Y	N	U	ESW Pump 52B powered by same bus as SDC ***Changed answers to cooincide with correct power supply***
75	H	3										Y	N	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** ***Delete extra space*** ***Made recommended change***
S-1	F	2										Y	Y	E	Delete "per ABN 3200-01" nott needed; change "to" to "at" ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
S-2	F	3	X									Y	Y	U	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** add "control rods inserted to or beyond 02 " in "D" to differentiate from "C" change02 to 04 in explaination ***Made recommended change***
S-3	F	3										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
S-4	F	2										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
S-5	F	3										Y	Y	E	Reword question to "in accordance with..."; change HG tto Hg ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
S-6	H	3										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** add "also" to each answer since both are expected ***Made recommended change***
S-7	H	3	X									Y	Y	U	Reword to ensure only one answer is correct ***Changed all answers to ensure only one correct answer***
S-8	H	4										Y	Y	E	add "fire panel indicates" to 7th bullet ***Made recommended change***
S-9	H	3										Y	Y	E	Add title "Plant Startup"; use phrase "restore RX level..."

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
S-10	H	3										Y	Y	S	
S-11	H	3										Y	Y	E	change 10/40 and 40/125 to "mid range" ***Made recommended change***
S-12	H	4										Y	Y	E	Bulletize alarms ***Made recommended change***
S-13	H	4										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
S-14	H	3										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
S-15	H	4										Y	Y	S	BOLD INOPERABLE ***Made recommended change***
S-16	H	3										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Change 7th bullet to "wide range is off scale" ***Made recommended change***
S-17	F	2										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
S-18	H	4										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
S-19	H	3										Y	Y	S	"B" may also be true regardless of air problem ***Discussed with licensee and they agreed question was SAT***
S-20	F	4										Y	Y	E	Change ABN to latest title; use "..." for Hot Short ***Made recommended change***
S-21	F	3										Y	Y	E	Change IMP to latest title ***Made recommended change***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
S-22	H	3	X									Y	Y	U	Would meet 2 of 3 barriers as worded; should be GE; add NOT to 7th bullet ***Made "A" correct answer*** Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***
S-23	H	3										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words*** Chenge question to "How long is fuel supply adequate considering TS Basis consumption rate" ***Made recommended change***
S-24	F	2										Y	Y	E	change ABN to latest title; add "support" to answers "A" and "C" ***Made recommended change***
S-25	F	2										Y	Y	E	Cap and bold negative words like NOT, CANNOT and INOPERABLE ***Used BOLD CAPS for all negative connoting words***

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		

Instructions

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

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.

2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).

3. Check the appropriate box if a psychometric flaw is identified:
   - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
   - The answer choices are a collection of unrelated true/false statements.
   - One or more ~~than one~~ distractors is not credible.
   - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).

4. Check the appropriate box if a job content error is identified:
   - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - The question requires reverse logic or application compared to the job requirements.

5. Check questions that are sampled for conformance with the approved K/A and those that are designated SRO-only (K/A and license level mismatches are unacceptable).

6. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?

7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

U.S. Nuclear Regulatory Commission
Site-Specific
RO Written Examination

Applicant Information

Name:	
Date: 4/16/2004	Facility/Unit: OYSTER CREEK
~~License Level: RO / SRO~~ Region: I / II / III / IV	Reactor Type: W / CE / BW / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. ~~The passing grade requires~~ To pass the examination you must achieve a final grade of at least 80.00 percent. Examination papers will be collected six hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results

Examination Value	_____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

U.S. Nuclear Regulatory Commission
Site-Specific
SRO Written Examination

Applicant Information	
Name:	
Date: 4/16/2004	Facility/Unit: OYSTER CREEK
Region: (I) / II / III / IV	Reactor Type: W / CE / BW / (GE)
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require an 80.00 percent to pass. You have eight hours to complete the combined examination, and three hours if you are only taking the SRO portion.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results		
RO / SRO-Only / Total Examination Values	____ / ____ / ____	Points
Applicant's Scores	____ / ____ / ____	Points

APPENDIX E
POLICIES AND GUIDELINES FOR TAKING NRC EXAMINATIONS

Each examinee shall be briefed on the policies and guidelines applicable to the examination category (written and/or operating test) being administered. The applicants may be briefed individually or as a group. Facility licensees are encouraged to distribute a copy of this appendix to every examinee before the examinations begin. All items apply to both initial and requalification examinations, except as noted.

PART A - GENERAL GUIDELINES

1. ***[Read Verbatim]*** Cheating on any part of the examination will result in a denial of your application and/or action against your license.

2. If you have any questions concerning the administration of any part of the examination, do not hesitate asking them before starting that part of the test.

3. SRO applicants will be tested at the level of responsibility of the senior licensed shift position (i.e., shift supervisor, senior shift supervisor, or whatever the title of the position may be).

4. You must pass every part of the examination to receive a license or to continue performing license duties. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.

5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facility licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

PART B - WRITTEN EXAMINATION GUIDELINES

1. ***[Read Verbatim]*** After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

2. To pass the examination, you must achieve an overall grade of 80.00 percent or greater, with a 70.00 percent or better on the SRO-only items, if applicable. If you only take the SRO portion of the exam (as a retake or with an upgrade waiver of the RO exam), you must achieve an 80.00 percent or better to pass. SRO-upgrade applicants who do take the RO portion of the exam and score below 80.00 percent on that part of the exam can still pass overall but may require remediation. Grades will not be rounded up to achieve a passing score. Every question is worth one point.

3. For an initial examination, the nominal time limit for completing theRO examination is six hours, the 25-question, SRO-only exam is three hours, the combined RO/SRO exam

is eight hours, and SRO exam limited to fuel handling is four hours; extensions will be considered under extenuating circumstances.

For a requalification examination, the time limit for completing both sections of the examination is three hours. If both sections are administered in the simulator during a single three-hour period, you may return to a section of the examination that was already completed or retain both sections of the examination until the allotted time has expired.

4. You may bring pens, pencils, and calculators into the examination room; programable memories must be erased. Use black ink to ensure legible copies; dark pencil should be used only if necessary to facilitate machine grading.

5. Print your name in the blank provided on the examination cover sheet and the answer sheet. You may be asked to provide the examiner with some form of positive identification.

6. Mark your answers on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you are using ink and decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate asking them before answering the question. Ask questions of the NRC examiner or the designated facility instructor *only*. When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.

8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

9. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.

10. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

11. Do you have any questions?

PART C - GENERIC OPERATING TEST GUIDELINES ~~(CATEGORIES A, B, AND C)~~

1. If you are asked a question or directed to perform a task that is unclear, you should not hesitate to ask for clarification.

2. The examiner will take notes throughout the test to document your performance, and sometimes the examiner may take a short break for this reason. The amount of note-taking does not reflect your level of performance. The examiner is required to document satisfactory as well as less than satisfactory performance.

3. The operating test is considered "open reference." The reference material that is normally available to operators in the facility and control room (including calibration curves, previous log entries, piping and instrumentation diagrams, calculation sheets, and procedures) is also available to you during the operating test. However, you should know from memory certain automatic actions, set points, interlocks, operating characteristics, and the immediate actions of emergency and other procedures, as appropriate to the facility. If you desire to use a reference, you should ask the examiner if it is acceptable to do so for the task or question under consideration.

   You may *not solicit technical information* from other operators, engineers, or technical advisors.

4. In order to maintain test integrity and fairness, you must not discuss any aspect of your operating test with any other examinee (who was not on your simulator operating crew) until after all the examinations are complete (i.e., after the NRC exit meeting).

PART D - WALK-THROUGH TEST GUIDELINES ~~(CATEGORIES A AND B)~~

1. The walk-through test covers control room systems, local system operations, and administrative requirements. The examiner will evaluate these areas using ~~a combination of~~ job performance measures (JPMs) and specific follow-up questions, as necessary.

   The initial walk-through consists of ~~ten~~ 15 JPMs for RO and SRO(I) applicants and ~~five~~ ten for SRO(U) applicants. ~~Seven~~ Most the JPMs ~~(two or three for upgrade applicants)~~ will be conducted in the control room or simulator and the remainder will be conducted in the plant.

   The requalification walk-through consists of five JPMs total, with at least two in the

KEY

new

EXAMINATION ANSWER SHEET
Oyster Creek NRC ILT 2004 EXAM

1 B	21 B	41 A	61 B	S6 B
2 B	22 D	42 C	62 D	S7 B (may) Delete
3 A	23 C	43 C	63 C	S8 D
4 C	24 D	44 B	64 C	S9 B
5 B	25 B+C (may)	45 D	65 A	S10 B
6 A	26 B	46 A	66 B	S11 D
7 B	27 B	47 B+D (may)	67 C	S12 B (may) Delete
8 C	28 A	48 B	68 B	S13 D
9 B	29 B	49 C	69 C	S14 B
10 B	30 A	50 D	70 D	S15 C
11 D	31 B	51 C	71 A (may)	S16 D
12 A	32 A	52 A	72 A	S17 C
13 D	33 C	53 A	73 B	S18 C
14 D	34 D	54 B	74 B	S19 C
15 A	35 B	55 D	75 D	S20 A
16 A	36 D	56 C	S1 B	S21 D
17 C	37 C	57 C	S2 D	S22 A (may)
18 A	38 D	58 A	S3 C (may) (may)	S23 B Delete
19 C	39 C	59 C	S4 A	S24 A
20 A	40 A	60 C	S5 B	S25 C (may) Delete

- changes made by resolving post exam questions
G. Johnson 6/4/04

#74 was corrected prior to exam administration
MJ 11/04

QUESTION #1

The plant is operating in a normal full power lineup when annunciator S-3-d "SBO SYSTEM DC LOST" activates concurrently with a number of other annunciators which confirm a loss of DC power.

As the BOP operator , you identify that you have lost the ability to remotely operate 4160 V busses 1A and 1C.

The loss of which of the following 125 VDC busses would account for this indication?

A. DC Distribution Center A

B. DC Distribution Center B

C. DC Distribution Center C

D. DC Distribution Centers A and B

ANSWER: C

EXPLANATION:
This is specified in attachment ABN-3200.13C-1. A licensed operator would be expected to diagnose the extent of the 125 VDC problem by observing 4160V remote operation capability.

TECHNICAL REFERENCE(S): Loss of DC Distribution Center C Procedure (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295004/AA2.02	
Importance Rating	3.5	___

K/A Topic Description:
Ability to determine and/or interpret the extent of partial or complete loss of DC power

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: Modified from a DAEC exam

QUESTION #2

The Reactor is at 10% power when an unisolable leak occurs in the Reactor Water Cleanup System. Radiation levels at the Cleanup Pumps and the S/D HX area are > 1 R/HR.

Answer the following as required by EMG- 3200.11 "Secondary Containment Control"

a) Which of the following action(s) is/are required for this, specific condition?
b) How does this action mitigate the effects of the unisolable leak?.

	a)	b)
A.	Shutdown the Reactor	Shutting down reduces the source of the radiation.
B.	Emergency Depressurization	Depressurization reduces the driving head for flow from the leak.
C.	Emergency Depressurization	Depressurization will result in cooler RCS fluid, thus keeping radioactive gases in solution.
D.	Shutdown the Reactor	Shutting down reduces the driving head for flow from the leak.

ANSWER: B

EXPLANATION:
Emergency Depressurization is required since two areas in Table 12 have exceeded their max safe radiation levels. Shutting down does nothing to reduce the flow from the leak. The main effect from ED is to reduce the driving head for the leak.

TECHNICAL REFERENCE(S): EOP Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs (without entry)
Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	2	___
K/A #	295033/EK3.01	
Importance Rating	3.3	___

K/A Topic Description:
Knowledge of the reasons for Emergency Depressurization as it applies to High Secondary Containment Radiation Levels

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: Changed K/A based on oversampling of SGTS. Modified 1996 Quad Cities.

QUESTION #3

The reactor has scrammed but the scram **CANNOT** be reset. WHICH ONE of the following explains why the CRD Charging Water Supply Valve V-15-52 is required to be closed?

A. To minimize the cold water injection into the bottom head of the vessel.

B. To prevent damaging the CRD accumulators

C. To prevent the CRD pumps from reaching run out conditions.

D. To stop input to Scram Discharge Volume and allow resetting SCRAM.

ANSWER: A

EXPLANATION:
This was added to Step 3.12 of 2000-ABN-3200.01 based on SER-5-93

TECHNICAL REFERENCE(S): Step 3.12 of 2000-ABN-3200.01 "Reactor Scram"
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None
Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295006/AK2.03	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of the interrelations between SCRAM and the CRD hydraulic system

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #4

In procedure 205.0, "Reactor Refueling", the operator is directed to IMMEDIATELY EVACUATE the area if refuel floor radiation levels begin to increase following a drop of a fuel assembly from the refueling equipment.

What is the basis for evacuating?

A. The direct radiation from the dropped fuel bundle could cause unplanned radiation exposure.

B. The dropped fuel bundle may breach the cavity seal and drain the cavity.

C. The dropped bundle may release radioactive gasses that could will cause unplanned radiation exposure.

D. The dropped bundle may create a criticality event in the reactor.

ANSWER: C

EXPLANATION:
This is the "classic" fuel handling accident in which the fission product gasses contained within the fuel cladding are released and "bubble up" through the water. Personnel remaining over the cavity can be exposed to doses approximating 10CFR100 limits. The approximately 25 feet of water provide adequate shielding from direct radiation and allow time for action to restore level. Criticality is avoided by refueling interlocks and refueling patterns, though answer D could be considered a plausible distractor for someone unfamiliar with refueling interlocks and core design.

TECHNICAL REFERENCE(S): RG 1.25; Procedure 205.0 pg 5.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	2	___
K/A #	295034/EK1.01	
Importance Rating	3.8	___

K/A Topic Description:
Knowledge of the operational implications of Personnel Protection as it applies to Secondary Containment High Radiation

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #5

Given the following plant conditions:

- Reactor scrammed from high drywell pressure 10 minutes ago.
- Drywell leakage = zero
- **NO** drywell venting in progress
- Drywell temperature has increased from 120F to 240F since the scram and is stable.
- The spread between the GEMAC Narrow Range and Yarway level instruments has increased approximately 10" in the last 10 minutes.
- The 4F Containment Pressure indicator is stable at 3.0 psig
- Suppression pool level constant

What can be determined with regard to drywell pressure/temperature indication?

A. Drywell pressure is as indicated 3.0 psig and decreasing

B. Drywell pressure indication has failed and actual pressure is > 3.0 psig.

C. Drywell pressure is as indicated; 3.0 psig and stable.

D. Drywell temperature instruments have failed and actual pressure is 3.0 psig.

ANSWER: B

EXPLANATION:
Since the temperature has increased 100 degrees since the scram (which occurred at 2.9 psig) the pressure should have increased significantly. Since no drywell cooling is available the temperature and pressure will continue to increase. The fact that the spread between the wide range and narrow range has increased should be an indication that the 100 F rise is actual since the WR are affected more than the NR for a given drywell temperature change.

TECHNICAL REFERENCE(S): EOP Bases 2-21 and 2-22 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	2	___
K/A #	295012/AA2.02	
Importance Rating	3.9	___

K/A Topic Description:
Ability to determine and/or interpret drywell pressure as it applies to high drywell temperature.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #6

The plant is in normal full power operation with **NO** LCOs when the annunciator activates for EMRV OPEN (B-3-g).

The following conditions exist at this time:

- Operators confirm that a EMRV is partially open using temperature readings at Panel 1F/2F
- All attempts to shut the EMRV have failed.
- Torus average water temperature is increasing slowly.

Identify the correct action(s) to address the above conditions.

A. SCRAM the reactor in accordance with Procedure ABN-1, Reactor Scram.

B. Perform a controlled power reduction per 202.1 and shutdown per 203, Plant Shutdown.

C. Continue operation for up to 7 days and then perform a controlled power reduction per 202.1 and shutdown per 203.

D. Continue operation for up to 14 days and then perform a controlled power reduction per 202.1 and shutdown per 203.

ANSWER: A

EXPLANATION:
RO would be expected to know that a scram is directed if EMRV cannot be closed.
Plausible since temp has stablized, but ABN directs immediate scram.
Plausible since temp has stablized, but ABN directs immediate scram.
Plausible since temp has stablized, but ABN directs immediate scram

TECHNICAL REFERENCE(S): 2000-ABN-3200.40 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	2	___
K/A #	295013/AK3.02	
Importance Rating	3.6	___

K/A Topic Description:
Knowledge of the reasons for limiting heat additions as it applies to High Suppression Pool Temperature

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION # 7

While core loading is in progress when is the Control Room Licensed Operator (CRO) **REQUIRED** to complete a communication with the Refueling SRO per Procedure 205.0 "Reactor Refueling"?

A. Commencement of each shift **ONLY**.

B. Commencement and completion of each move.

C. Whenever a bundle enters the fuel pool.

D. Whenever a bundle leaves the fuel pool.

ANSWER: B

EXPLANATION:

TECHNICAL REFERENCE(S): Procedure 205.0, Section 7.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____
Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	2	___
K/A #	2.2.26	
Importance Rating	2.5	___

K/A Topic Description:
Knowledge of refueling administrative requirements.

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 X

Comment: This is specified as a RO duty in Procedure 205.0.

QUESTION #8

Following a control room evacuation, condensate transfer makeup to the shell side of the "A" Isolation Condenser is established by starting the 1-2 Condensate Transfer Pump at the----(1) and then controlling the makeup valve (V-11-36) ___(2).

	(1)	(2)
A.	Remote Shutdown Panel (RSP)	locally at Shutdown Panel (LSP-1B32)
B.	Local Shutdown Panel (LSP-1B32)	at Remote Shutdown Panel (RSP)
C.	Local Shutdown Panel (LSP-1B32)	locally in the Rx Building, el 95.'
D.	Remote Shutdown Panel (RSP)	locally in the Rx Building, el 95.

ANSWER: C

EXPLANATION:
Per page E3-1 of ABN-3200.30 the "A" IC makeup valve is controlled locally. Only the "B" has makeup valve control at RSP.. There are no controls for the 1-2 Condensate Transfer Pump on the RSP

TECHNICAL REFERENCE(S): 2000-ABN-3200.30 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 02029 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295016/K2.02	
Importance Rating	4.0	___

K/A Topic Description:
Knowledge of the interrelations between the local control stations and Control Room Abandonment

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

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehensive or Analysis ___

10 CFR Part 55 Content: 55.41 X
55.43 ___

Comments: Changed from MSIV positions to IC control

QUESTION #9

The Standby Liquid Control (SLC) injection line before the ring sparger inside the reactor vessel has broken off. The reactor is at 100% power.

What indication do you have that this occurred?

A. "SLC FLOW ON" alarm (G-1-b) illuminates.

B. Core Differential Pressure indication shows a significant decrease.

C. Core Differential Pressure indication shows a significant increase.

D. Fuel Zone level "B" instrumentation shows a significant decrease.

ANSWER: B

EXPLANATION:
With the injection pipe broken there will be no indication of core differential pressure and the reading should approach 0. The injection line is not used for "B" Fuel Zone Level indication.

TECHNICAL REFERENCE(S): GE Systems Technology Manual, pg 7.4-3
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	211000/K3.03	
Importance Rating	2.6	___

K/A Topic Description:
Knowledge of the effect that a loss or malfunction of the Standby Liquid Control system will have on core plate differential pressure indication.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #10

The reactor has just scrammed from 100% power, all rods are at 00 and you are following ABN-1, "Reactor Scram" procedure. Step 3.4.2 has you "Insert SRM and IRM detectors."

In response, the SRM readings will ___(1) because ___(2).

	(1)	(2)
A.	Decrease	The detectors are moving to a lower flux area.
B.	Increase	The detectors are moving to a higher flux area
C.	Remain the same	The flux remains constant with the reactor shutdown.
D.	Decrease	The flux is decreasing exponentially with the reactor shutdown.

ANSWER: B

EXPLANATION:
Fundamental knowledge
TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	215004/K5.03	
Importance Rating	2.8	___

K/A Topic Description:
Knowledge of the operational implications of changing detector position as it applies to the Source Range Monitor (SRM) System.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #11

The following conditions exist:

- RBCCW to the drywell recirc fans isolated on low-low-low RPV water level.
- The low-low-low level condition developed from a feedwater malfunction
- The RPV water level has, subsequently, been restored to >73 inches.
- The Unit Supervisor has directed you to reestablish RBCCW flow to the drywell recirc fans.
- All RBCCW isolation valve switches are in their normal lineup.

Which of the following describes how to re-open the RBCCW isolation valves to the drywell recirc fans?

A. Place the isolation valve switches to CLOSE, then return the switches to OPEN.

B. Place the isolation valve switches to CLOSE, press the ISOLATION LOGIC RESET pushbuttons.

C. Place the isolation valve switches to OPEN.

D. Press the ISOLATION LOGIC RESET pushbuttons and then place the valve switches to OPEN.

ANSWER: D

EXPLANATION:
With the valve position switches in their normal lineup, it is necessary to "press the ISOLATION LOGIC RESET pushbuttons (2) on panel 1F/2F and then place the valve switches to OPEN." Valves will not open simply by pressing ISOLATION LOGIC RESET.

TECHNICAL REFERENCE(S): OPS-3024.21 pg 9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	223002/A4.03	
Importance Rating	3.6	___

K/A Topic Description:
Ability to manually operate and/or monitor reset system isolations in the control room.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #12

While operating at 100% power the following occur:

- A loss of RBCCW
- CCW FLOW LO A and CCW FLOW LOW B alarms have occurred on panel E
- The US reviews ABN-19, "RBCCW Failure Response"
- The US directs you to "Scram the Reactor in accordance with Procedure ABN-3200.01,Reactor Scram".

The basis for a Reactor Scram under these conditions is the imminent loss of...

A. All Reactor Recirculation Pumps

B. All Drywell recirc fans

C. Reactor Water Cleanup System.

D. The Steam Tunnel Recirc Fan Cooling.

ANSWER: A

EXPLANATION:
Although all of the statements could occur it is the imminent loss of the recirc pumps (within 60 seconds) that prompts the operator to Scram.

TECHNICAL REFERENCE(S): RBCCW Lesson Plan pg 9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)00061 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295018/AK2.02	
Importance Rating	3.4	

K/A Topic Description:
Knowledge of the interrelations between partial or complete loss of component cooling water and plant operations.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #13

Given the following plant conditions:

- The air compressors are in operation per Procedure 334 "Instrument and Service Air System"
- #3 Compressor is "Lead" compressor
- #2 Compressor is "Lag" compressor
- A rupture of a 2" Instrument Air line occurs
- Annunciator "CONTROL AIR PRESS LO" (H-1-a) illuminates and remains illuminated
- All compressors are functioning per design basis

In response, #3 compressor will run loaded continuously, #2 compressor will start at 90 psig and ___(1), #1 compressor will___(2)

	(1)	(2)
A.	Run for 10 minutes	Start but run unloaded.
B.	Run for 10 minutes	**NOT** automatically start.
C.	Run unloaded	Start but run unloaded.
D.	Run continuously	**NOT** automatically start.

ANSWER: D

EXPLANATION:
The 2" line rupture is large enough to equal the output of both the "Lead" and "Lag" compressors running loaded continuously and pressure is not increasing above 75 psig Therefore, the "Lag" compressor will not shutdown after 10 minutes. The #1 Compressor will not start since it would be lined up in STANDBY. #1 Compressor will need to be manually started.

TECHNICAL REFERENCE(S): Procedure 334 pages 6, 7, and 16
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295019/K3.02	
Importance Rating	3.5	___

K/A Topic Description:
Knowledge of the reasons for the response of Standby Air Compressor Operation during partial or complete loss of Instrument Air

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

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

10 CFR Part 55 Content: 55.41 __X__
55.43 _____

Comments:

QUESTION #14

Given the following parameters:

- Reactor has been shutdown for five hours
- C Shutdown Cooling Pump just tripped
- Shutdown Cooling loops A and B are inservice at full flow
- A and B RBCCW pumps are operating with 1500 GPM flow through A, B &C Shutdown Cooling Heat Exchangers
- Reactor Pressure is at 100 psig and slowly rising
- A reactor recirculation pump is operating
- Reactor water level is normal (GEMAC)

Determine what action, if any, is required to ensure the shutdown cooling mode of operation is maintained.

A. No action is required since the design basis for Shutdown Cooling is satisfied by two loops.

B. Increase RBCCW flow before reactor pressure exceeds 125 psig

C. Increase reactor water level to >170" TAF.

D. Re-Start C Shutdown Cooling loop as soon as possible.

ANSWER: D

EXPLANATION:

Rising pressure requires additional heat sink. Need an additional S/D Cooling loop. RBCCW flow is already "maxed out" and can't be increased further. Water level increase will not significantly increase heat sink.

TECHNICAL REFERENCE(S): Procedure 305 pgs 18, 20, 31, 32 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 000042 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295021/2.1.22	
Importance Rating	2.8	

K/A Topic Description:
Ability to determine Mode of Operation during Loss of Shutdown Cooling

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

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

10 CFR Part 55 Content: 55.41 _____

55.43 __X___

Comments: This K&A does have a RO learning objective

QUESTION #15

After a transient initiates, the following parameter values are noted on the control room panels:

- Drywell pressure 4.5 psig rising.
- Drywell air temperature 140F rising.
- Torus pressure 4.9 psig rising
- Torus water temperature 82F stable

Which of the following is indicated?

A. A high pressure discharge into the torus airspace.

B. A safety valve has opened and closed.

C. The containment is functioning normally following a water break LOCA.

D. A high pressure discharge into the drywell and at least one torus to drywell vacuum breaker is open.

ANSWER: A

EXPLANATION:
Since the torus pressure is higher than the drywell pressure the discharge is into the torus. Since torus temperature is stable it can be concluded that the discharge is to the airspace and not the torus water. The discharge is passing through a vacuum breaker to the drywell.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295024/EA2.04	
Importance Rating	3.9	___

K/A Topic Description:
Ability to determine and/or interpret Suppression Chamber Pressure as it applies to High Drywell Pressure.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #16

Following a valid scram signal at 100% power the following plant conditions exist:

- Mode switch in SHUTDOWN
- All RODS are at their 100% POWER POSITIONS
- MSIVs are closed
- EMRVs are cycling at their setpoint
- Reactor Power 40%

What malfunction or malfunctions have occurred?

A. SCRAM and ARI have failed

B. SCRAM and ATWS have failed

C. ARI and ATWS have failed

D. SCRAM, ARI and ATWS have failed

ANSWER: A

EXPLANATION:
With all rods at 48 and reactor pressure above EMRV setpoint, ARI should have initiated, but did not. ATWS has (obviously) worked (and tripped the recirc pumps) since power would be above 40% if it had failed.

TECHNICAL REFERENCE(S): Procedure ABN-3200.01, "Reactor Scram"
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295025/EK3.06	
Importance Rating	4.2	___

K/A Topic Description:
Knowledge of the reasons for the response of Alternate Rod Insertion as it applies to High Reactor Pressure

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #17

Given the following plant conditions:

- Inadvertent MSIV closure occurred 10 minutes ago
- All control rods are at 00
- One IC is in service, the other is **INOPERABLE** and unavailable
- For the first five minutes EMRVs were manually opened as necessary for pressure control
- Feedwater is providing reactor water makeup
- Reactor Pressure is between 950 psig and 1000 psig
- Reactor water level is at +100" and steady
- Torus temperature is 94F and slowly rising
- Drywell pressure 1.5 psig and steady
- Drywell bulk temperature is 151 degrees F

In addition to the Drywell Recirc Fans, what system must be initiated to control plant parameters per EOPs?

A. Drywell Sprays.

B. ADS.

C. Torus Cooling.

D. Bypass valves.

ANSWER: C
With heat added by EMRVs during the first five minutes, torus cooling may exceed 95 degrees F. Primary Containment Control requires that torus temperature be maintained below 95 degrees. Drywell sprays are not required until 12 psig. Other choices have no affect on torus temperature.
EXPLANATION:

TECHNICAL REFERENCE(S): EMG-3200.02 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295026/EK3.02	
Importance Rating	3.9	___

K/A Topic Description:
Knowledge of the reasons for the response of suppression pool (torus) cooling as it applies to Suppression Pool (Torus) High Water Temperature

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

Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41 X	
	55.43 ____	

Comments:

QUESTION #18

Given the following plant conditions:

- Mode switch is SHUTDOWN
- Reactor power is at 40%
- MSIVs are closed
- Both ICs are operating
- All EMRVs are cycling
- Torus temperature is 125F

In addition to ARI, what systems must be in operation to mitigate suppression pool temperature rise?

A. Containment Spray in torus cooling and SLC

B. Containment Spray in drywell spray and SLC

C. Reactor Recirculation (trip pumps) and CRD

D. Reactor Recirculation (min speed) and CRD

ANSWER: A

EXPLANATION:
A combination of heat removal from the torus as well as reducing reactor power to <2% is required to return torus temperature to <95 degrees F. Drywell spray cannot be used below 1.0 psig

TECHNICAL REFERENCE(S): EMG-3200-02 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295026/2.4.21	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of the parameters and logic used to assess the status of safety functions (as they relate to Suppression Pool High Water Temperature)

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 X

Comments: At OC Torus Spray **IS** Torus Cooling (not a separate function)

QUESTION #19

Given the following conditions:

- A Loss of Offsite Power has occurred
- Reactor is at rated temperature and pressure
- The drywell pressure entry condition for EMG-3200-02, "Primary Containment Control" has been satisfied.
- Reactor water level is 0" TAFand decreasing.
- You are operating "all available DW cooling" .
- The CRS asks: "Can bulk drywell temperature be maintained below 150 degrees F?"
- Your response is "NO".

What is the basis for this response?

A. A LOCA signal has caused Chilled Water to isolate.

B. A High Drywell Pressure signal has caused Drywell Recirc fans to trip.

C. A LOCA signal has caused RBCCW isolation valves to isolate.

D. The rated capacity of 5 Drywell Recirc fans is inadequate.

ANSWER: C

EXPLANATION:
RBCCW isolation occurs with Lo-Lo water level and High Drywell Pressure. Without RBCCW there is no heat sink for drywell cooling and temperature cannot be reduced. The RBCCW isolation must be cleared or bypassed (Support Procedure 27) this is done if/when the answer is "NO".

TECHNICAL REFERENCE(S): Primary Containment Lesson Plan pg 13; EOP-2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: (04) 07346 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295028/EA1.02	
Importance Rating	3.9	

K/A Topic Description:
Ability to operate and/or monitor the drywell ventilation system as it applies to high drywell temperature

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

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehensive or Analysis ____

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

QUESTION #20

The reactor is operating at 100% power with "A", "B", "C" and "D" recirc loops in operation. The "A" MG set has a loss of control signal.

Which of the following statements concerning Reactor Power is accurate for the conditions provided?

A. Remain constant since the scoop tube will lock up.

B. Drop slightly as the TOCL shifts to DCC Y.

C. Initially start a ramp decrease, then will have a step decrease as the "A" MG set trips on undervoltage.

D. Initially start a ramp increase, then will stabilize when the scoop tube limit on the "A" MG set is reached.

ANSWER: A

EXPLANATION:
Scoop tube will lock up on loss of signal. Once locked up there will be no change in flow. Power will NOT increase at any time.

TECHNICAL REFERENCE(S): Recirc Flow Control Lesson Plan pg 5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (04) 00214 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	202002/K3.02	
Importance Rating	4.0	

K/A Topic Description:
Knowledge of the effect that a loss or malfunction of the Recirculation Flow Control System will have on Reactor Power

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #21

Given the following plant conditions:

- Reactor at 100% power
- RBHVAC operating normally
- Hi area temperature alarm occurs at the 75' Precoat Tank from a fire
- Hi area temperature at 75' Demin Vault from a fire

Describe what actions should be taken for these conditions and note any design limits of RBHVAC during these conditions.

A. Monitor for Maximum Safe Radiation and shutdown the RBHVAC system before it exceeds Max Safe (1000 MR/hr).

B. Monitor the 75' area temperatures and shutdown the RBHVAC system before either reaches max safe (225 degrees F).

C. Monitor ductwork temperature and confirm RBHVAC shuts down when 300 degrees F is reached.

D. Initiate Emergency Depressurization because two areas in the reactor building have exceeded maximum safe operating temperature.

ANSWER: C

EXPLANATION:

The question assumes a source of heat sufficient to exceed 300 degreeF. Step 3.2.3 in Procedure 329. Operator should take action before auto isolation. For answer A the operator may assume the temperature is from a RWCU leak

TECHNICAL REFERENCE(S): Procedure 329 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: (01/04)10447 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	2	
K/A #	295032/EA1.03	
Importance Rating	3.7	

K/A Topic Description:
Ability to operate and/or monitor secondary containment ventilation as it applies to high secondary containment area temperature

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

Question Cognitive Level: Memory or Fundamental Knowledge X

	Comprehensive or Analysis	_____
10 CFR Part 55 Content:	55.41 __X__	
	55.43 _____	

Comments:

QUESTION #22

System Operating Procedure for the Reactor Building HVAC (Procedure 329) has the operator start the exhaust fan first (on system startup) and shut down last (during system shutdown).

Which of the following conditions is prevented by operating the exhaust fans in the prescribed sequence?

A. Collapse of Reactor Building HVAC exhaust ductwork

B. Collapse of the Reactor Building HVAC supply ductwork

C. Standby Gas Treatment System from automatically starting

D. Positive pressure in the Reactor Building and possible siding failure

ANSWER: D

EXPLANATION:
This is extrapolated from two sources: the lesson plan pages 15 and 16 says the reason for the fan sequence is to prevent creation of positive pressure; page 6 specifies that Rx building relief (from internal pressure greater than .2 psig) is provided by buckling of girts.

TECHNICAL REFERENCE(S): Secondary Containment/SGTS Lesson Plan _____
____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01/04)10447 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	2	___
K/A #	295035/EK3.01	
Importance Rating	2.8	___

K/A Topic Description:
Knowledge of the reasons for blow out panel operation as it applies to Secondary Containment High Differential Pressure

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: The OC Reactor Building design provides structural "girts" that will, preferrentially, yield during an overpressure condition. When these girts yield, the sheet metal siding seams will open and allow for release of the overpressure condition. This is comparable in function to the more standard "blowout panel" design which uses grooved rivets on selected panels to preferrentially "blow out".

QUESTION #23

Given the following plant conditions:

- Reactor is at 100% power
- AOG is in service
- Main Steam Line Radiation Monitors all at approximately 550 mr/hr
- Stack Effluent HI alarm
- Reactor Bldg Vent Radiation at 8 mr/hr
- RCS activity at 90% of TS limit
- B" IC isolated for maintenance
- Significant/visible packing leak from "A" IC outboard steam isolation valve
- **NO** leaks in the "A" IC tube bundle

What action(s) would result in having the greatest reduction in the thyroid damage for the public?

A. Close "A" IC outboard steam isolation valve

B. Reduce reactor power until stack effluent HI alarm clears

C. Start SGTS and shutdown Reactor Building HVAC

D. Close "A" IC vent valve

ANSWER: C

EXPLANATION:
Starting SGTS is the only action that will remove radioactive iodine being released from the steam leak. The AOG will remove all iodine from the off gas regardless of reactor power so reducing power will not result in a reduction in iodine.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295038/EK1.01	
Importance Rating	2.5	

K/A Topic Description:
Knowledge of the operational implications of the biological effects of radioactive ingestion as it applies to Off Gas Release rate.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

QUESTION #24

During startup preparations for the Shutdown Cooling System per procedure 305, Shutdown Cooling System Operation, the operator is directed to ensure the RBCCW surge tank level is low in the allowable band (Prerequisite 4.1.8)

The basis for this prerequisite is to...

A. Ensure rapid automatic makeup should a leak develop in the RBCCW Heat Exchanger.

B. Ensure rapid response (manual isolation) should failure of the makeup valve occur.

C. Ensure a leak of RCS into the RBCCW System is readily detected

D. Prevent overflowing the RBCCW Surge Tank from the heatup of RBCCW fluid

ANSWER: D

EXPLANATION:
D is specified as the basis in the lesson plan. B and C may be factual statements but are not the basis for the step.

TECHNICAL REFERENCE(S): Shutdown Cooling Lesson Plan
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: (01) 07232 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	205000/K1.05	
Importance Rating	3.1	___

K/A Topic Description: Knowledge of the physical connections and/or cause-effect relationships between the Shutdown Cooling System and the Component Cooling System

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION #25

Following a loss of offsite power, the crew has initiated EMG-3200.01A "RPV Control-No ATWS" and is at the step that specifies "Confirm the following sub-systems lined up for injection with pumps running".

Which of the following configurations of Core Spray annunciators **LIT** would confirm either Core Spray System 1 or Core Spray System 2 is lined up with pumps running?

A. SPARGER 1 DP HI, SYSTEM 1 FLOW PERMISSIVE, BSTR PUMP A/C OL

B. SPARGER 1 DP HI, SYSTEM 2 FLOW PERMISSIVE, BSTR PUMP A/C OL

C. SPARGER 2 DP HI, SYSTEM 2 FLOW PERMISSIVE, BSTR PUMP A/C OL

D. SPARGER 2 DP HI, SYSTEM 2 FLOW PERMISSIVE, BSTR PUMP B/D OL

ANSWER: B

EXPLANATION:
For A, C and D the sparger dp alarm indicates the sub-system that has the flow permissive (pumps actually running) is faulted and the flow may NOT be "lined up for injection" that is it may not be going into the RPV.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	209001/A2.05	
Importance Rating	3.3	___

K/A Topic Description:
Ability to predict the impacts of Core Spray Line Break on the Low Pressure Core Spray System and based on those predictions use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #26

Given the following conditions have existed for 3 minutes:

- Loss of offsite power has occurred
- Drywell pressure at or above 5 psig
- Reactor Vessel level at or below 60" TAF
- Reactor Pressure > 950 psig
- All EMRVs are closed
- Both ICs have initiated
- ADS BYPASSED and ADS TIMER START annunciators are **NOT** lit
- SYSTEM 1& SYSTEM 2 AUTOSTART DISABLED annunciators on Panel B are **LIT**
- All emergency buses are energized by the diesel generators
- All DC buses are energized

What is the configuration of the Core Spray Booster Pumps?

A. All Core Spray Booster Pumps are running

B. **NO** Core Spray Booster Pumps are running

C. Only "A" and "B" Core Spray Booster Pumps are running

D. Only "C" and "D" Core Spray Booster Pumps are running

ANSWER: B

EXPLANATION:
With LO LO RPV Level and HI Drywell Pressure signals in for 3 minutes ADS should have actuated and depressurized the RPV. The AUTOSTART DISABLED annunciators lit in conjunction with ADS TIMER START annunciators NOT lit should provide enough "signs" that the problem is with the Core Spray pumps NOT running. The Core Spray Booster Pumps ("A" and "B" priority pumps) will not start until the Core Spray Pumps start.

TECHNICAL REFERENCE(S): Core Spray Lesson Plan (Attach if not previously provided)

Proposed references to be provided to applicants during examination: AUTOSTART 2 DISABLED alarm procedure

Learning Objective: (01) 00302 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	209001/K1.05	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of the physical connections and/or cause-effect relationships between Core Spray System and ADS.

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attached parent)

	New	X
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41	X
	55.43	

Comments:

QUESTION #27

A plant startup is in progress with the following conditions:
- Mode switch is in STARTUP.
- The SRMs are fully inserted and reading approximately 20 CPS.

At step 6.18 of Procedure 201, "Plant Startup" you are required to perform the following:

- "VERIFY operability of the ROD WORTH MINIMIZER" by confirming the RWM is **NOT** bypassed,
- Select Control Rod 30-51 and VERIFY a SELECT ERROR is received.

The status of Control Rod 30-51 is:

A. In the first group of rods to be withdrawn.

B. Outside the current latched step by more than one step.

C. Already withdrawn beyond position "02"

D. **INOPERABLE** with low pressure in the Scram Accumulator.

ANSWER: B

EXPLANATION:
None of the other choices will result in a "SELECT ERROR".
TECHNICAL REFERENCE(S): RWM Lesson Plan pg 14 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	2	___
K/A #	2.2.1	
Importance Rating	3.7	___

K/A Topic Description:
Ability to perform pre-startup procedures for the facility/including operating those controls associated with plant equipment that could affect reactivity.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #28

Given the following:

- Reactor has just scrammed following 6 months at 100% power
- MSIVs have closed
- Both ICs are operable
- *Coincident* with the SCRAM there was a loss of DC-D

What is the status of ICs one minute after the SCRAM?

A. "A" is Isolated, "B" is In Service

B. "A" is In Service , "B" is Standby

C. "A" is In Service, "B" is In Service

D. "A" is Isolated, "B" is Standby

ANSWER: A

EXPLANATION: Loss of DC-D causes isolation of the "A" IC. "B" will be on in response to rising reactor pressure considering the MSIVs have closed

TECHNICAL REFERENCE(S): Isolation Condenser Lesson Plan
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	2	___
	Group #	1	___
	K/A #	207000/K2.02	
	Importance Rating	3.5	___

K/A Topic Description:
Knowledge of electrical power supplies for initiation logic of Isolation Condensers

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #29

The plant is at 100% power when a partial loss of TBCCW occurs. Which of the following actions will have the **GREATEST** impact on maximizing the utilization of the available TBCCW flow?

A. Shutdown/Secure System A Control Room air conditioners.

B. Reduce the Turbine-Generator load.

C. Shutdown/Secure one operating Feed Pump and one Condensate Pump

D. Isolate Feed and Main Steam samples.

ANSWER: B

EXPLANATION:
The largest heat load on TBCCW is Hydrogen Cooling. Other large heat loads include Generator Phase Bus Duct cooler, Stator Winding and Turbine Lube Oil. These are all directly related to Turbine-Generator Load. By reducing turbine load all of these heat loads are diminished. If the load limit is used the reactor can be maintained at or near 100% power, thus minimizing its impact. Reducing recirc pump speeds will actually increase heat load on TBCCW since there is more "slippage" in the fluid couplings. Tripping Feed/Condensate pumps will result in reducing reactor power.

TECHNICAL REFERENCE(S): TBCCW Lesson Plan, pg 8 and 9
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)08209 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295018/AK1.01	
Importance Rating	3.5	

K/A Topic Description:
Knowledge of the operational implications of the effects on component/system operations as it applies to Partial or Complete Loss of Component Cooling Water

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

QUESTION #30
Following a SCRAM from 10% power (Mode switch in STARTUP), one of the IRMs is left in Range 8 during performance of "Reactor Scram" procedure. All other Neutron Monitors are operating normally.
During the subsequent plant startup, when the RO places the Mode Switch in STARTUP and attempts to withdraw rods a Withdraw Block is observed.

What is causing the Withdraw Block?

A. IRM downscale and **NOT** in Range 1

B. IRM downscale and **NOT** in Range 2 or below

C. APRM Downscale with corresponding IRM downscale

D. IRM HI

ANSWER: A

EXPLANATION:
With the Mode switch initially placed in STARTUP the IRMs would not be withdrawn so answer D is incorrect. With range left in 8 and reactor scrammed there would be no IRM HI. The APRM downscale rod block is in RUN.
TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	215003/K4.01	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of IRM design features and/or interlocks which provide rod withdrawal blocks

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION #31

A reactor startup is in progress with the following conditions:

- The previous shift had increased power from 60% to 80%.
- Your shift just increased power from 80% to 90% power when all operable Main Steam Line Rad Monitors are verified to read greater than 550 mr/hr but less than 800 mr/hr.
- Within one minute, area radiation monitors in the vicinity of the Moisture Separators experience at least a doubling of their readings.
- The Off Gas monitors are observed to be unaffected.

What actions are required to mitigate the consequences of these abnormal conditions?

A. SCRAM the reactor in accordance with ABN-1, Reactor Scram and CLOSE MSIVs and IC Vents.

B. Reduce Hydrogen Injection flow to between 5 and 6 scfm and monitor the effect on Main Steam Line Activity for the next 10 minutes.

C. Direct Chemistry to sample Off Gas (Technical Specification 4.6.E) and request guidance from Reactor Engineering.

D. Start plant shutdown in accordance with Procedure 203, Plant Shutdown

ANSWER: B

EXPLANATION:
Since the radiation increase is not observed in the off Gas System it can be concluded that the radiation is from an isotope with a very short half life. Hydrogen Injection produces, almost exclusively, N16 with a half life of approximately 7 seconds. Per "Plant Startup" procedure Hydrogen Injection is increased in 10% power increments and , given that there has been no increase in Off Gas activity it is reasonable to assume the increase is attributed to hydrogen Injection. The reference procedure has the operator first reduce Hydrogen Injection before taking other action. If the MSL radiation decreases in response to reducing Hydrogen Injection then only monitoring of Off Gas is required. The other actions are specified if the HI MSL condition is attributed to fuel failure.

TECHNICAL REFERENCE(S): ABN-26 Rev 0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: ABN-26

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	272000/A2.07	
Importance Rating	2.6	___

K/A Topic Description:
Ability to predict the impacts of Hydrogen Injection on the Radiation Monitoring System and based on those predictions use procedures to correct, control or mitigate the consequences of these abnormal conditions

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: A potential discrepancy between the ABN and the normal procedure was noted. If the ABN is revised, this question may need revision before administering.

QUESTION #32

The following conditions exist:

- The plant is at 100% power
- The AOG is in service.
- A swap of the recombiners has just been completed with A placed in service.
- The following alarms come in in rapid succession:
  - RECMBNR A H2 HI
  - OFF GAS TEMP HI
  - AOG FLOW LOW.
- This is followed by an automatic Off Gas Isolation as indicated by annunciator OFF GAS ISOL ACT II.

What condition caused the noted alarms and indications?

A. Explosion and fire in the Off Gas System

B. Inadequate warmup of the on-coming recombiner

C. Loss of steam flow to the Steam Jet Air Ejectors

D. Excessive flow in the Hydrogen Injection System

ANSWER: A

EXPLANATION:
As noted in the alarm response 10F-1-b the Off Gas isolation is intended to protect against an off gas explosion. The alarms and indications are "classic" signs of an off gas explosion and fire as denoted in the reference procedures.

TECHNICAL REFERENCE(S): Annunciator 10F-1-b; 2000-ABN-3200-23 and 25
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	271000/A3.03	
Importance Rating	2.8	

K/A Topic Description:
Ability to monitor automatic operations of the Off Gas System including system temperatures.

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

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

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

QUESTION #33

The plant is at power, when the South condenser is placed in backwash. How will indicated hotwell level respond to the level control system?

A. Level goes up, large sucker opens initially to restore level.

B. Level goes down, large dumper opens initially to restore level.

C. Level goes down, large sucker opens initially to restore level.

D. Level goes up, large dumper opens initially to restore level.

ANSWER: C

EXPLANATION:
"B" South contains instrumentation for hotwell level system. During backwash the condenser vacuum degrades. This results in indicated level decreasing (plant specific phenomona) which results in a makeup demand (sucker valve opens). Other answers are partially correct for other condensers affected during backwash operations. *(From OC Training)*
TECHNICAL REFERENCE(S): Condensate/Feedwater Lesson Plan
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	256000/A3.06	
Importance Rating	3.0	___

K/A Topic Description:
Ability to monitor automatic operations of the Reactor condensate System including hotwell level

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #34

The plant is at 100% power with the following conditions:

- Both Emergency Diesel Generators (EDGs) are in Standby.
- Following a CNTRL DC LO/LOST annunciator actuation on EDG 1, you are dispatched to the EDGs to determine the status.
- You find that the battery charger for EDG 1 output voltage is 110 volts.
- All breaker position indications at Panel 9XF are normal.

What impact does this have on EDG operation?

A. The EDG is operable since the EDG can start with only one crank of the engine.

B. The EDG is inoperable due to the impact on the DC Turbocharger lube oil pump.

C. The EDG is operable since there is adequate breaker control power.

D. The EDG is inoperable since there is inadequate starting power.

ANSWER: D

EXPLANATION:
Nominal voltage is 117.6 V DC. With voltage at 110 V it is likely to impact the ability of the battery to crank the engine. It does not satisfy surveillance requirements 4.7.B.1.c (112 V). DC Turbocharger is a backup to the AC pump. Breaker control will be adequate down to approximately 105 V (coils rated at 90 V).

TECHNICAL REFERENCE(S): EDG Lesson Plan; TS 4.7.B.1.c; annunciator T-2-b
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: RAP T-2-b

Learning Objective: (01)00800 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	264000/K6.01	
Importance Rating	3.8	

K/A Topic Description:
Knowledge of the effect that a loss or malfunction of the starting air (Starting Motors/Batteries) would have on the Emergency Diesel Generators

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

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehensive or Analysis ____

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments: Starting Motors (DC) vs Starting Air. The OC EDGs do not have starting air.

QUESTION #35
There is an auto trip of the containment spray pumps if drywell pressure is < 0.6 psig in the DW spray mode.

What is the purpose of this trip?

A. To preclude exceeding NPSH limits of the Containment Spray Pump(s).

B. To prevent opening the Reactor Building to Torus Vacuum Breaker(s).

C. To prevent opening the Torus to Drywell vacuum breaker(s).

D. To provide a differential pressure in the containment spray heat exchanger(s).

ANSWER: B

EXPLANATION:
Opening the Torus to Reactor Building Vacuum Breaker(s) will introduce oxygen to the containment, which is required to be inerted.

TECHNICAL REFERENCE(S): Containment Spray Lesson Plan pg 7 of 19
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	226001/K5.06	
Importance Rating	2.6	___

K/A Topic Description:
Knowledge of the operational implications of vacuum breaker operation on the Containment Spray System

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: Used RHR K&A even though OC has a Containment Spray System, not a mode of RHR as in later BWRs. This was discussed with Fred Guenther and he agreed this is the right thing to do

QUESTION #36
The Reactor is at 100% power with 4 recirculation pumps in service. The shutdown pump is in the IDLE configuration. A single additional recirculation pump trips.

What is the direct impact on reactor power/reactor operation from the recirculation pump trip?

A. Reactor will automatically scram on Power/Flow. Flow will be reduced to <33 Hz.

B. Reactor power will be unstable. Flow will be increased to exit the instability region.

C. Reactor power will decrease to approximately 75% initially. Reactor power can be raised up to 95% by a combination of rod pulls and recirc flow increases up to 33 Hz.

D. Reactor power will decrease to approximately 75% initially. Reactor power will be further reduced until recirc flow is <33 Hz.

ANSWER:D

EXPLANATION:
Per TS 3.3.3.F power operation up to 90% is allowed with 3 recirc pumps running. The pumps will be above 33 Hz initially. Power will, initially decrease to 75% however, recirc flow (and power) will have to be decreased to maintain < 33 Hz.
TECHNICAL REFERENCE(S): Reactor Recirculation lesson plan ; TS 3.3.F
____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 10441 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	202001/K3.03	
Importance Rating	3.9	___

K/A Topic Description:
Knowledge of the effect that a loss or malfunction of the Reactor Recirculation system will have on reactor power.

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION #37
Following a rod drifting in, the RWM will "relatch".

RMCS will locate the highest completed step that meets which one of the following criteria?

A. LESS THAN three insert errors and MORE THAN two rods are withdrawn past the insert limit.

B. **NO** insert errors and AT LEAST one rod is withdrawn past the insert limit

C. LESS THAN three insert errors and AT LEAST one rod withdrawn past the insert limit.

D. **NO** insert errors and **NO** withdraw errors

ANSWER: C

EXPLANATION:
Obtained from OC Training as a bank question used previously.
TECHNICAL REFERENCE(S): RWM Lesson Plan (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 10446 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	201006/K4.06	
Importance Rating	3.2	

K/A Topic Description:
Knowledge of Rod Worth Minimizer design feature(s) that permit correction of out of sequence rod positions

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #38

During a reactor startup the Unit Supervisor directs you to use "continuous rod withdrawal".

Describe the design feature of the Control Rod Hydraulic System/RMCS that provides for "continuous rod withdrawal".

The ___(1) switch____(2) in RMCS and allows for continuation application of drive flow.

	1	2
A.	ROD OUT	bypasses the rod out permissive relay
B.	NOTCH OVERRIDE	bypasses the rod out permissive relay
C.	ROD OUT	stops the automatic sequence timer
D.	NOTCH OVERRIDE	stops the automatic sequence timer.

ANSWER: D

EXPLANATION:
When the "notch override" position is selected in conjunction with selecting "withdraw" on the RMCS the timer is prevented from continuing into the settle cycle. This causes the"drive out signal" to remain and drive water pressure is maintained on the top of the drive piston. The ROD OUT-NOTCH switch does not affect the SETTLE cycle.

TECHNICAL REFERENCE(S): RMCS lesson plan (pg 9 of 20)
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 00726 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	201002/K4.05	
Importance Rating	3.3	___

K/A Topic Description:
Knowledge that the "notch override has on rod withdrawal.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #39

Following a loss of offsite power, the CRD system continues to provide a high pressure makeup water source for the Reactor.

During this condition, what concerns do you have regarding the CRD system operation?

A. CRD pump suction pressure will increase which may cause the discharge relief to lift.

B. CRD pump suction pressure will decrease which may cause pump trip.

C. Oxygenated water supplied directly from the CST may induce stress corrosion.

D. The minimum flow back to the CST will be warmer and affect CRD pump NPSH.

ANSWER: C

EXPLANATION:
The CRD pump is normally provided de-oxygenated water from the water quality line in the Condensate System (downstream of Condensate Demineralizers). With a loss of offsite power Condensate Pumps are lost and the CRD suction flow comes directly from the CST which has oxygen-rich water. The suction pressure should not significantly change. There will be no change to the CRD pump NPSH even though the suction is changed to the CST.

TECHNICAL REFERENCE(S): CRD Hydraulic lesson plan(Pg 14 of 47)
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (04)00004 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	201001/K6.02	
Importance Rating	3.0	

K/A Topic Description:
Knowledge of the affect that a loss or malfunction of the Condensate Storage Tank will have on the CRD Hydraulic system.

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

Question Cognitive Level:
Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content:
55.41 X
55.43 ____

Comments:

QUESTION #40

Given the following plant conditions:

- Reactor is in COLD SHUTDOWN following a forced outage 10 hours ago
- Reactor head is still installed
- Head vent is open
- All Reactor Recirculation Pumps are shutdown for maintenance
- One Recirc Loop is fully open
- The other four Recirc loops are in the idle condition
- Two loops of Shutdown Cooling are in service at 3000 GPM each
- Shutdown Cooling inlet temperatures are being monitored at <185 degrees F
- Reactor level is being maintained at 190" TAF
- Control Rod Drive System is operating normally

I&C needs to have Operations lower level to 180" TAF to perform testing on the GEMAC instruments and has obtained the necessary Procedure Changes to allow that. Night orders specify that the reactor level be maintained at 180" TAF until I&C has completed their testing.

Subsequently, within 30 minutes from reducing level to 180"TAF, the following plant conditions exist:

- Shutdown Cooling inlet temperature is stable at 190 degrees F
- Shutdown Cooling flow is 2900 GPM in each loop
- RWCU reject flow was increased slightly to maintain 180"TAF level
- Reactor head temperature has increased 10 degrees F
- DW SUMP HI/PWR FAIL alarm annunciates at Panel C

Answer the following:
a) What is the cause of the subsequent plant conditions?
b) What action is required to mitigate the abnormal condition?

A. a) Reactor coolant temperature is> 212 degrees F. b) Raise Reactor level >185"TAF

B. a) There is a leak in Shutdown Cooling. b) Isolate Shutdown Cooling

C. a)There is a leak in the RWCU system. b) Isolate RWCU

D. a) There is a leak in RBCCW system. b) Shutdown RBCCW system

ANSWER: A

EXPLANATION:
These conditions replicate the conditions noted in LER 93-002. This is the basis for Precaution 5.2.1 in Procedure 305. The other answers may have some credibility but would not result in all the observed conditions; specifically they would not raise head temperature.

TECHNICAL REFERENCE(S): Shutdown Cooling System Lesson Plan page 20and 21
Procedure 305, pgs 30 and 31 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	205000/A2.09	
Importance Rating	3.6	___

K/A Topic Description:
Ability to (a) predict the impact of Reactor Low Level on Shutdown Cooling System operation and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations.

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments: The decrease in SDC flow can be attributed to the increase in SDC inlet temperature.

QUESTION #41

The reactor is starting up following a forced outage to repair a RBCCW piping leak in the drywell. Both RBCCW pumps are operating with both pumps indicating approximately 2000 GPM. Restoration of RBCCW flow to the drywell is in progress and the following sequence occurs:

- An EO has been dispatched to the reactor building to "maintain local Drywell RBCCW D/P between 18.4 and 19.6 during the flow restoration"
- Restoration of RBCCW to the drywell is completed and the startup proceeds
- During the next shift, when Shutdown Cooling is secured, the 1-1 RBCCW pump is shutdown.
- Within approximately two minutes of the 1-1 pump shutdown all five low flow alarms associated with RBCCW flow to the recirc pump seals come in.
- RBCCW pump 1-1 is restarted and all five low flow alarms clear.
- When asked for a local dp reading the EO reports "it is approximately 19 psid".

What was the cause of the low flow alarms when only the 1-2 pump is operating?

A. Drywell Outlet Valve (V-5-709) is throttled too far closed for single pump operation.

B. Debris from the piping repair has clogged the recirc pump seal coolers

C. The 1-2 RBCCW pump is failing or has failed.

D. The local dp indicator is faulty and is reading too low.

ANSWER: A

EXPLANATION:

Per procedure, the operator would throttle V-5-709 to maintain dp at approximately 19 psig when both pumps were running. When one pump is shutdown the flow to the drywell (and the dp) decreased. 2000 GPM is the expected flow from a "healthy" pump during two pump operation. Clogging of the coolers would cause the dp to increase.

TECHNICAL REFERENCE(S): CAP 02000-0855, Procedure 309.2 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)00065 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	400000/K3.01	
Importance Rating	2.9	___

K/A Topic Description:
Knowledge of the affect that the loss or malfunction of CCWS would have on loads cooled by CCWS.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: There is no step in 309.2 to "reset" V-5-709 when going from two pump to one pump operation.

QUESTION #42

With the unit at 100% power during a particularly cold, snowy night a "RCVR2/INSTR AIR PRESS LO" alarm actuates and you are dispatched to implement ABN-35 "Instrument Air System Failure". You have completed all Operator Actions through manually isolating the cross tie with Service Air (V-6S-2). Pressure decreased through the event until it reached 77 psig and is now stable at 79 psig.

Which one of the following describes the most significant affects of your actions?

A. Main Steam Isolation valves have closed; two or more control rods have drifted in.

B. Feedwater Control Valves have locked up; CST Makeup Valves have failed open

C. Instrument air will be contaminated with water vapor; subsequent control problems may develop.

D. Drywell supply and exhaust dampers have closed; Reactor Building to Torus vacuum breakers have opened

ANSWER: C

EXPLANATION:
As long as the air pressure is maintained >75 psig there should be no direct equipment problems associated with instrument air. However, continued bypass of air dryers will cause the instrument air to saturate with moisture. Moisture laden air will result in equipment failures; particularly outside equipment.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	300000/K4.02	
Importance Rating	3.0	___

K/A Topic Description: Knowledge of design features or interlocks in the Instrument Air System which provide for cross over to other air systems.

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION #43

A Station Blackout occurred and there is inadequate DC voltage to close associated 4160 V breakers from the control room. Offsite power has been restored and you are dispatched to close 4160 V breakers locally in accordance with the associated loss of DC procedure(s).

How is local closure of 4160 V breakers accomplished and what safety/equipment concerns exist with this mode of operation?

A. Pull control fuses and use test block to CLOSE. Concern is for **NOT** being able to synchronize locally

B. Ensure control fuses are installed and use test block to CLOSE. Concern is the potential loss of auto trip capability

C. Ensure closing spring is charged and depress local mechanical CLOSE pushbutton. Concern is the potential loss of auto trip capability.

D. Ensure closing spring is charged and depress local mechanical CLOSE pushbutton. Concern is for **NOT** being able to synchronize locally.

ANSWER: C

EXPLANATION:
With a loss of the DC bus the trip coil would not energize to trip the breaker even if a faulted condition existed on the bus. A severe fault on the bus could cause the breaker to catastrophically fail and severely injure anyone standing in front of the breaker.
There is no concern for synchronizing since the 4160 buses are "dead". The test switch will not close the breaker if it is "racked in".

TECHNICAL REFERENCE(S): "Loss of Distribution Center C" procedure_____
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	RO	SRO
Level		
Tier #	2	___
Group #	1	___
K/A #	262001/A4.03	
Importance Rating	3.2	___

K/A Topic Description: AC Electrical Distribution; Local operation of breakers.

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

Question Cognitive Level:
Memory or Fundamental Knowledge X
Comprehensive or Analysis ____

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION #44

The reactor is at 2% power following a refueling outage. The drywell temperature is 125 degrees F. EMRVs are being cycled to satisfy Technical Specification 4.4.B.1 "Valve Operability" (attached).
Describe the indications, on any given EMRV, that demonstrate the valve is OPERABLE

A. Pre-stroke tailpipe temperature 125 degrees F, with EMRV switch in OPEN tailpipe temperature is 500 degrees F, with EMRV switch in AUTO tailpipe temperature slowly returns to 125 degrees F.

B. Pre-stroke tailpipe temperature 125 degrees F, with EMRV switch in OPEN tailpipe temperature is 330 degrees F, with EMRV switch in AUTO tailpipe temperature slowly returns to 125 degrees F.

C. Pre-stroke tailpipe temperature 200 degrees F, with EMRV switch in OPEN tailpipe temperature is 330 degrees F, with EMRV switch in AUTO tailpipe temperature immediately returns to 200 degrees F.

D. Pre-stroke tailpipe temperature 200 degrees F, with EMRV switch in OPEN tailpipe temperature is 500 degrees F, with EMRV switch in AUTO tailpipe temperature slowly returns to 200 degrees F.

ANSWER: B

EXPLANATION:
The back pressure on the tailpipe will result in a temperature approximately half way between RCS saturation (540 F) and 212 F. A temperature of 330 F was confirmed by OC Training. If the valve is not leaking, the tailpipe temperature should equilibrate with the drywell. The return (following opening) will be slow (several hours).

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: TS 4.4.B.1

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	2	___
	Group #	1	___
	K/A #	239002/K5.04	
	Importance Rating	3.3	___

K/A Topic Description:
Knowledge of the operational implications of tailpipe temperatures as they apply to Relief/Safety valves.

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

Question Cognitive Level: Memory or Fundamental Knowledge _____

	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41	X
	55.43	

Comments:

QUESTION #45

In Attachment ABN-1-2 of the Reactor Scram procedure the operator is directed to "Open EMRVs in sequence: A, D, B, C, E". This same sequence is specified in EOP Support Procedure 12 "Alternate Pressure Control System-EMRVs".

Why is there a specified sequence to open EMRVs?

A. To minimize the possibility of having a stuck open EMRV.

B. To minimize the total energy transmitted to the torus.

C. To equalize the thermal loading on the EMRVs

D. To equalize the thermal loading in the torus and tailpipes.

ANSWER: D

EXPLANATION:
The EMRV tailpipes are arranged around the torus. By alternating the EMRVs the discharge of steam is equalized throughout the torus. This prevents one area of the torus from becoming overheated. Answers B and C are each thermodynamically accurate, but are not the basis for alternating the EMRVs. Answer A is wrong since alternating the EMRVs may actually increase the probability of having one stick open.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	239002/ 2.4.6	
Importance Rating	3.1	___

K/A Topic Description:
Knowledge symptom based EOP mitigation strategies

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #46

Following a Loss of Offsite Power and Reactor SCRAM from 100% power the following conditions exist:

- All control rods are still at 100% power positions
- Reactor water level at 0 inches.
- Reactor power is currently less than 50%.
- All other systems function as designed
- All **REQUIRED** operator actions have been completed.

Answer the following:
a) How will ADS system operation affect plant conditions over the next 10 minutes?
b) What action, if any, is/are taken to mitigate these affects?

A. ADS will **NOT** initiate since EOPs require it to be bypassed. Reactor power will remain stable. Injection from CRD flow will continue. An additional CRD pump may be started to maintain level at 0 inches.

B. ADS will **NOT** initiate since the drywell recirc fans will preclude automatic ADS from Hi Hi Drywell pressure. Reactor power will slowly decrease with level decrease. Emergency RPV Depressurization is required.

C. ADS will automatically initiate and this will allow ECCS to rapidly refill the reactor. Reactor power will increase above 100%. The ADS timers CANNOT be bypassed before ADS occurs.

D. ADS will automatically initiate but ECCS will be unable to refill the reactor due to cavitation of the Core Spray pumps. Alternate injection systems must be initiated to restore reactor water level.

ANSWER: A

EXPLANATION:
The operators should have transitioned to RPV Control- with ATWS. The second step in the Level/Power "leg" directs the operator to "Prevent initiations and isolations..." ADS is bypassed to prevent uncontrolled introduction of water which would result in a severe power excursion.
TECHNICAL REFERENCE(S): EOPs (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	218000/A2.06	
Importance Rating	4.2	___

K/A Topic Description:
Ability to predict the impact of ADS initiation signals present on the ADS system and based on those predictions to correct or mitigate the consequences of those abnormal conditions.

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attached parent)
New ___X___

Question Cognitive Level: Memory or Fundamental Knowledge _____
Comprehensive or Analysis ___X___

10 CFR Part 55 Content: 55.41 ___X___
55.43 _____

Comments:

QUESTION #47

Given the following conditions:

- Immediately following a loss of all offsite power you are the reactor operator and observe one control rod at position 48 with the remaining control rods at 00.
- Ten seconds later both emergency buses are energized from Diesel Generators (EDGs).

Which of the following describes the affect on IRM/APRM indications?

A. Lose IRM/APRM indications due to loss of PSP-1&2.

B. Maintain IRM/APRM indications due to DC power supply available.

C. Lose IRM/APRM indication due to loss of vital buses and RPS MG set voltage.

D. Maintain IRM/APRM indications due to re-powered busses and RPS MG set flywheels.

Answer: B
EXPLANATION: *DC will maintain power via an inverter. All remining power sources will (at least momentarily) lose power or do not power up the IRM/APRM indicators.*

TECHNICAL REFERENCE(S): Neutron Monitoring Lesson Plan
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	RO	SRO
Level		
Tier #	2	___
Group #	1	___
K/A #	215005/K6.01	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of the effect that a loss or malfunction of the RPS will have on the APRM/LPRM

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments: Information on recorder power obtained from OC training.

QUESTION #48

The reactor has just scrammed from MSIV closure following > 100 days at full power operation The following conditions exist:

- Both ICs have auto initiated and are operating.
- All EMRVs are operable.
- A, B and E reactor recirc pumps have tripped.

Assuming **NO** operator actions, which of the following RPV design limits will be exceeded during the first hour following the scram?

A. Maximum pressure

B. Maximum Cooldown rate

C. Minimum Pressurization Temperature

D. Differential temperature

ANSWER: B

EXPLANATION:
The full capacity of both ICs is adequate to exceed 100 degrees F per hour (estimate> 200F/hr) during the first hour. However maximum design pressure and Minimum Pressurization Temperature are not exceeded. Since the reactor was at 100% power there is at least one reactor recirc pump running and this will preclude exceeding any differential temperature limits. Minimum temperature attainable with ICs is 212 degrees F. At this temperature a pressure of 200 psig is allowed by minimum pressurization curves.

TECHNICAL REFERENCE(S): IC Lesson Plan (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	207000/K1.01	
Importance Rating	3.8	___

K/A Topic Description:
Cause/effect relationship between IC's and Reactor Vessel.

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

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

QUESTION #49

Startup of the rotary inverter has been accomplished per Procedure 339, "Vital Power System". The following conditions exist:

- The start selector is in the AUTO-RUN position
- The amber AC DRIVE ON indicating light is energized
- The AC generator's field has been flashed

Which of the following is an indication that the rotary inverter is malfunctioning?

A. Generator frequency is 60 Hz

B. AC generator output voltage is 208 V

C. DC DRIVE ON indicating light is energized

D. AC DRIVE ON indicating light is energized

ANSWER: C

EXPLANATION:
The DC drive is not energized during a normal start (AUTO-RUN).
TECHNICAL REFERENCE(S): Procedure 339, Section 11.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	262002/2.1.30	
Importance Rating	3.9	___

K/A Topic Description:
Ability to locate and operate [UPS] components including local control

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #50

The reactor is at 100% power with the "B" CRD pump out of service for maintenance and can't be restarted for at least one hour. The following alarms come in at Annunciator Panel "H" over a period of approximately 5 minutes:

- PUMP A OL
- CHARG WTR PRESS LO
- ACCUMULATOR PRESS LO/LEVEL HI

What are your actions in response to these alarms?

A. Immediately SCRAM the reactor in accordance with ABN-1

B. Insert rods having an accumulator alarm as specified in CRD SDRP

C. Immediately restart the "A" CRD Pump as specified in CRD SDRP

D. SCRAM per ABN-1 when two or more rods have accumulator alarms.

ANSWER: D

EXPLANATION:
This is specified in the CHARG WTR PRESS LO annunciator procedure. It is not necessary to immediately SCRAM the reactor. It is not appropriate to restart a CRD pump with an OL alarm until the pump is checked

TECHNICAL REFERENCE(S): Annunciator procedures for Panel "H"
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	4	___
K/A #	2.4.50	
Importance Rating	3.3	___

K/A Topic Description: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #51

The plant is at 20% power with reactor pressure in its normal band. Per Procedure 201, "Plant Startup" the EPR is set at 1010 psig. The turbine trips and all RPS functions actuate correctly.

What is the reactor pressure and power trend **AFTER** steady state is achieved following the turbine trip?

A. Pressure and power are increasing

B. Pressure and power are decreasing

C. Pressure and power are stable

D. Pressure and power are erratic

ANSWER: C

EXPLANATION:
The reactor will not scram with power <40%. Although pressure and power may, initially, increase following the turbine trip once steady state is achieved the bypass valves will take control and maintain a stable pressure and power level.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295005/AK1.01	
Importance Rating	4.0	

K/A Topic Description:
Knowledge of the operational implications of the pressure effects on reactor power

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: Pressure and power will initially increase as the EPR opens the Bypass Valves, but should stabilize within a minute or so.

QUESTION #52

Following a SCRAM the Reactor Power is > 2% and at least one EMRV is cycling.

Which of the following is the reason for terminating and preventing all injection into the RPV except Boron Systems and CRD during this condition?

A. Promotes a lower reactor water level which, in turn, will reduce reactor power through increased voiding

B. Prevents thermal stressing the fuel cladding, thereby preventing fuel damage.

C. Prevents diluting SLC, allowing it to more effectively insert negative reactivity into the core.

D. Promotes a more uniform reactor moderator temperature which will prevent power oscillations from occurring

ANSWER: A

EXPLANATION:
The increased void fraction adds negative reactivity to the reactor. Other distractors are factual statements but are not applied to the terminating and preventing injection step of EMRG-3200.01B.

TECHNICAL REFERENCE(S): EOP Bases page 1B-19 and 1B-20.
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295037/EK1.02	
Importance Rating	4.4	

K/A Topic Description:
Knowledge of the operational implications of reactor water level on reactor power as they apply to Scram Condition Present and Reactor Power Above APRM Downscale or Unknown.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #53

The following conditions exist:

- A half scram exists on RPS "A" due to APRM testing
- A fire caused a loss of RPS Bus "B" and a full scram
- The testing was stopped and APRMs were returned to normal
- You are following ABN-1, "Reactor Scram" Procedure and have been directed to reset the scram
- MSIV's have closed, Mode switch is in SHUTDOWN and Rx pressure is 800 psig
- Per Step 3.11.1 the SDV HI-HI LVL SCRAM switch was placed in BYPASS

When may the full scram be reset?

A. After RPS Bus "B" is energized

B. Immediately

C. After the dump test switch is placed in Isolate.

D. After the SDV vent and drain valves are opened

ANSWER: A

EXPLANATION:
The only scram signal remaining after the APRMs are normal is to reset the "B" RPS bus

TECHNICAL REFERENCE(S): ABN-32100.01 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	RO	SRO
Level		
Tier #	2	___
Group #	1	___
K/A #	212000/K3.05	
Importance Rating	3.7	___

K/A Topic Description:
Knowledge of the affect that a loss or malfunction of the Reactor Protection System will have on the RPS logic channels

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: This is a Pilgrim Bank question from 1998

QUESTION #54

The crew has entered EMG-3200.01A "RPV Control-No ATWS" following a SCRAM and Loss of Offsite Power. The following conditions exist:

- One IC failed to initiate.
- Reactor pressure is >1045 psig.
- Entry conditions for "Primary Containment Control" have **NOT** been satisfied.
- The Unit Supervisor is in the Pressure Control "leg" of EMG-3200.01A and has indicated he intends to use EMRVs to augment pressure control until the second IC can be manually initiated .
- Unit Supervisor requests that you confirm Torus Level is above 90".

What is the bases for the 90" torus level?

A. This is the Torus Load Limit at 1045 psig reactor pressure

B. This is the Heat Capacity Temperature Limit at 1045 psig reactor pressure

C. This level is required to provide submergence of the EMRV "tailpipes"

D. This level is required to ensure adequate NPSH for the Core Spray Pumps.

ANSWER: C

EXPLANATION:
90 inches is the lowest torus level that will ensure submergence of the EMRV discharge and will ensure the steam being released is condensed in the torus. With entry conditions of "Primary Containment Control" not satisfied the remaining answers are incorrect.

TECHNICAL REFERENCE(S): EPG basis page 1A-53 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295030/EK2.08	
Importance Rating	3.5	

K/A Topic Description:
Knowledge of the interrelations between Low Suppression Pool (Torus) Water Level and SRV discharge submergence.

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

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

10 CFR Part 55 Content: 55.41 X

55.43 _____

Comments:

QUESTION # 55

Given the following conditions:

- The reactor is at 100% power when a Large Break Loss of Coolant Accident coincident with a Loss of Offsite Power has occurred.
- EDG 1 started but EDG 2 failed to start.
- All ECCS equipment functioned as designed.
- **NO** operator action has been taken other than verifying automatic actions.

What pumps are running 30 seconds after the LOCA?

A. "A" Core Spray Pump, "A" Core Spray Booster Pump, "A" CRD Pump

B. "B" Core Spray Pump, "B" Core Spray Booster Pump, "B" CRD Pump

C. "B" Core Spray Pump, "C" Core Spray Pump, "B" Core Spray Booster Pump

D. "A" Core Spray Pump, "D" Core Spray Pump, "A" Core Spray Booster Pump

ANSWER: D

EXPLANATION:
Only "A" equipment is powered from #1 EDG. The CRD pump will not start for 60 seconds.

TECHNICAL REFERENCE(S): Procedure 341, page 12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)00814 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	264000/K1.07	
Importance Rating	2.9	

K/A Topic Description:
Knowledge of the physical connections and/or cause effect relationships between the Emergency Diesel Generators and the ECCS

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

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

10 CFR Part 55 Content:
55.41 X
55.43 _____

Comments:

QUESTION # 56

Given the following conditions:

- A LOCA has occurred in the drywell.
- The reactor is shutdown.
- All isolations were successful
- ESW Pumps 52 A&B have failed to start
- The Unit Supervisor has directed you to use both Containment Spray Systems in the Drywell Spray mode because of the current primary containment conditions.
- You hear the STA advise the Unit Supervisor that the Heat Capacity Temperature Limit (HCTL) is predicted to be reached in 30 minutes.

If you continue to use Containment Spray in the current mode what operational implications, if any, will there be for the Containment Spray Pumps?

A. **NO** operational implications since the Containment Spray Pumps are designed to operate in a Post-LOCA environment

B. **NO** operational implications since the action taken upon reaching the HCTL are intended to maintain the Containment Spray Pumps functional.

C. If containment pressure is reduced concurrent with elevated torus temperatures, the Containment Spray Pumps may cavitate.

D. Containment Spray must be throttled as containment pressure is lowered to prevent pump runout.

ANSWER: C

EXPLANATION:
This is the intention of the Caution in the Torus Water Temperature "leg" of EMG-3200.02

TECHNICAL REFERENCE(S): EMG-3200.02 Cautions (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs without entry conditions

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	219000/K5.02	
Importance Rating	2.7	___

K/A Topic Description:
Knowledge of the operational implications of Pump Cavitation as it applies to RHR/LPCI (Containment Spray): Torus Cooling Mode

Question Source: Bank # _____
Modified Bank # _____ (Note changes or attached parent)

New	X	
Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41 X	
	55.43	

Comments: The operator should know that he needs to transfer from the drywell spray mode to the torus cooling mode with the "System II" loop of Containment Spray to resolve the NPSH issue.

QUESTION #57

Given the following plant conditions:

- Reactor Water Level at 84" TAF and decreasing
- Reactor Pressure 950 psig and stable for at least 100 seconds
- Drywell Pressure 2.8 psig and stable
- All Core Spray/Core Spray Booster Pumps function per design in response to ECCS Signals

How many Core Spray/Core Spray Booster pumps are expected to be running for the stated conditions?

A. All Core Spray and Core Spray Booster Pumps even though Reactor Pressure is 950 psig.

B. **NONE** of the Core Spray or Core Spray Booster Pumps with Reactor Pressure at 950 psig.

C. "A" and "B" Core Spray as well as "A" and "B" Core Spray Booster Pumps even though <3.0 psig in the drywell.

D. "C" and "D" Core Spray as well as "C" and "D" Core Spray Booster Pumps since <3.0 psig in the drywell.

ANSWER: C

EXPLANATION:
A&B pumps are priority and will start on Lo Lo water level even though drywell pressure remains<3.0 psig. C&D pumps will remain OFF as long as the priority pumps start.

TECHNICAL REFERENCE(S): Core Spray Lesson Plan pgs 9-12
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (04) 07283 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	
Group #	1	
K/A #	295031/EA1.03	
Importance Rating	4.4	

K/A Topic Description:
Ability to operate and/or monitor the Low Pressure Core Spray System as it applies to Reactor Low Water Level.

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments:

QUESTION #58

In Procedure 120.4 "General Response to Fires" there is a precaution that reads: "Care must be exercised in the use of water for fire fighting on Elevation 119' when the new fuel storage contains new fuel".

What will compliance with this precaution avoid?

A. Criticality of the fuel in the new storage vault.

B. Foreign material intrusion on the new fuel.

C. Stress corrosion cracking of the fuel cladding.

D. Stress corrosion cracking of the new fuel vault.

ANSWER: A

EXPLANATION:
The new fuel vault has not been analyzed to remain subcritical with a water spray environment on new fuel. The other choices may be concerns but are not the basis for the precaution.

TECHNICAL REFERENCE(S): UFSAR 9.1.1.3 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	6000000/AK3.04	
Importance Rating	2.8	___

K/A Topic Description:
Knowledge of the reasons for the actions contained in the abnormal procedure for Plant Fire on Site

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #59

The reactor is at 100% power with Augmented Off Gas (AOG) in service. The following abnormal conditions/alarms occur over the next 30 minutes:

- WTR REM MOIST HI alarm (10XF) illuminates
- STACK EFFLUENT HI alarm (10F) illuminates
- The Radwaste Operator reports local readings of moisture and temperature into the first charcoal bed are increasing
- Stack Activity is increasing

What is causing these abnormal conditions/alarms

A. Excessive flow from Steam Jet Air Ejectors (SJAE).

B. Blown loop seal on SJAE Condenser.

C. Malfunction in the AOG water removal system.

D. AOG Bypass (V-7-31) has opened.

ANSWER: C

EXPLANATION:
The AOG charcoal relies on very dry air (below 0 degrees F dew point) to function properly. If the water removal system malfunctions then moist air will contaminate the charcoal and reduce it ability to adsorb the krypton and xenon exhausted by the SJAE. As the charcoal becomes more contaminated with moisture the outlet activity (and Stack Activity) will increase.

TECHNICAL REFERENCE(S): AOG Lesson Plan pg 27 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: 30401 (01) 003 (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	1	
	Group #	2	
	K/A #	295017/AK2.03	
	Importance Rating	3.3	

K/A Topic Description:
Knowledge of the interrelations between High Off-Site Release Rate and the Off Gas system.

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments: Moisture "contamination" of AOG Charcoal will cause an increase in stack gas activity. Therefore, the question relates High Off-Site release rate and the Off Gas System. Applicant must combine two facts: dew point affect on charcoal and relationship to increased stack gas release rate.l

QUESTION #60

A General Emergency has been declared at Oyster Creek. You have been designated by the Unit Supervisor to make off site notifications.

Select **ALL** agencies that must be notified within 15 minutes?

A. New Jersey State Police and NRC

B. New Jersey State Police and Ocean County

C. New Jersey State Police, Ocean County, Lacey Township, and Ocean Township

D. New Jersey State Police, Ocean County, Lacey Township, Ocean Township and NRC

ANSWER: C

EXPLANATION:
Per Step 5.2 of EPIP-OC-03, "Emergency Notification" procedure

TECHNICAL REFERENCE(S): EPIP-OC-03 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	
Group #	4	
K/A #	2.4.29	
Importance Rating	3.3	

K/A Topic Description: Knowledge of the emergency plan

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

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

10 CFR Part 55 Content:
55.41 X
55.43 X

Comments: RO is used as communicator until TSC is activated.

QUESTION #61

A plant startup is in progress using Procedure 201 "Plant Startup". The following conditions exist:

- The reactor pressure at 800 psig using the bypass valves for pressure control
- Mode switch in STARTUP
- IRM "A" is near the "top" of Range 9
- All other IRMs are near the "bottom" of Range 9

What action, if any, is required, according to Procedure 201, to continue with a power increase?

A. **NO** action is required since a single IRM will **NOT** cause any trips.

B. Raise the pressure above 850 psig before going to Range 10 on any IRM.

C. Place the Mode switch in RUN before going to Range 10 on any IRM.

D. Bypass "A" IRM and continue power increase until all IRMs are at "top" of Range 9.

ANSWER: B

EXPLANATION:
Any IRM in Range 10 with mode switch in STARTUP and pressure below 850 psig will cause MSIVs to go closed. Although bypassing the "A" IRM will avoid the MSIV closure there is no direction in Procedure 201 to do so. Going to RUN with pressure below 850 will also cause MSIV closure.

TECHNICAL REFERENCE(S): Procedure 201, Precaution 4.9
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	1	___
K/A #	2.1.23	
Importance Rating	3.9	___

K/A Topic Description:
Ability to perform specific system and integrated plant procedures during different modes of plant operation.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: See 55.41 (10). .

QUESTION #62

You recall noting that each of the Squib valves in the Standby Liquid Control System has two firing coils as you attempt to Initiate System "1" by placing the keylock switch to FIRE SYS 1 position. When the SQUIBS light for System 1 does **NOT** come on you attempt to initiate System "2" but the PUMP ON light for System 2 is **NOT** lit. You then return the keylock switch to FIRE SYS 1 position.

When you look again to see the condition of the System 1 Squib valve, you would expect to see the following:

A. Continuity for System 1 is at "100".

B. Squib light for System 1 is now on.

C. Continuity for System 1 is at "60".

D. Squib light for System1 is still **NOT** on.

ANSWER: D

EXPLANATION:
Although each "Squib" valve has two "explosive" circuits they are not "fired" from different circuits. Placing the keylock switch back in FIRE SYS 1 will not develop a second signal to fire the second circuit.

TECHNICAL REFERENCE(S): Procedure 304 pgs 8-12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	211000/K2.02	
Importance Rating	3.1	___

K/A Topic Description:
Knowledge of electrical power supplies to the explosive valves

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: The stem involves two failures, SYS 1 Squib valve does not fire and SYS 2 pump does not start. This will give a total loss of function. Examiners looked at this question in light of JPM on SLC and concluded the JPM failure involves a pump while

this question involves the Squibb valve. The thrust of this written exam question is the knowledge of the firing mechanism/order/circuitry of the Squibb valve. These are significantly different in nature and, thus, no repetition is apparent.

QUESTION # 63

The plant is at 100% power with the following conditions:

- It is a particularly hot Sunday in July and the switchgear room temperature is approaching 104 degrees F.
- The Unit Supervisor directs you to place a portable fan in the switchgear room until engineering can evaluate the situation (on Monday).

What administrative requirements, if any, must be completed prior to operating the portable fan in the switchgear room.

A. Control and issue as a Special Condition Tag (SCT) per Procedure OP-MA-109-101, "Clearance and Tagging"
B. Control and issue as a Temporary Procedure Change (TPC) per AD-AA-101 "Processing of Procedures".
C. Control and issue as a Temporary Configuration Change Package (TCCP) per CC-AA-112, "Temporary Configuration Changes"
D. **NO** administrative control necessary since plugging into 120 V circuits is an exclusion to TCCP requirements in Procedure CC-AA-112.

ANSWER: C

EXPLANATION:
Must use a TCCP if the fan is used to replace or augment permanent plant HVAC equipment
TECHNICAL REFERENCE(S): CA-AA-112, Attachment 2, pg 2 of 3
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	3	___
	Group #	2	___
	K/A #	2.2.11	
	Importance Rating	2.5	___

K/A Topic Description:
Knowledge of the process for controlling temporary changes.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 X

Comments: Applicant must combine two facts: fan represents a chance to HVAC and that this change requires a TCCP

QUESTION # 64

You are about to sign on to an RWP to operate a valve in the Radwaste Building and notice there is no requirement to wear a respirator. You recall from your tour this morning that the area you will enter is posted as a High Airborne Activity Area. You ask the HP tech about this and are told it is consistent with ALARA to **NOT** wear a respirator.

Why would **NOT** wearing a respirator in a High Airborne Activity Area be consistent with ALARA?

A. The respirator is only effective on particulates so there will be **NO** difference in TEDE.

B. The respirator will limit your vision and may be a safety hazard in "tight" spaces.

C. Wearing a respirator may increase your stay time and actually increase TEDE.

D. The Airborne Activity is short lived and the respirator will have **NO** impact on ALARA.

ANSWER: C

EXPLANATION:
TEDE includes internal and external dose. If the HP calculates TEDE to be lower without a respirator then that is consistent with ALARA.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	3	___
K/A #	2.3.2	
Importance Rating	2.5	___

K/A Topic Description:
Knowledge of the facility ALARA program.

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

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

10 CFR Part 55 Content:
55.41 X
55.43 X

Comments: This goes beyond what is taught in GET.

QUESTION # 65

The reactor is at 100% power and a drywell entry is planned for tomorrow. Night orders specify that your shift purge the primary containment with air using Procedure 312.9, "Primary Containment Control.
During the Unit Supervisor brief you are reminded to **NOT** open the Drywell and Torus valves together.

What is the basis for the restriction on opening both the torus and drywell valves simultaneously?

Having both sets of valves open simultaneously:

A. Creates a pathway to bypass the Torus to Drywell Vacuum Breakers

B. Does **NOT** satisfy the definition for Primary Containment Integrity.

C. Is prohibited by Technical Specifications when in the RUN mode.

D. Will leave pockets of nitrogen in the lower elevations of the drywell.

ANSWER: A

EXPLANATION:
This is specified in Precaution 7.2.6 of Procedure 312.9, "Primary Containment Control".

TECHNICAL REFERENCE(S): _Precaution 7.2.6 of Procedure 312.9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	3	___
K/A #	2.3.9	
Importance Rating	2.5	___

K/A Topic Description:
Knowledge of the process for performing a containment purge

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 _____

Comments:

QUESTION #66

Given the following plant conditions:

- A plant startup is in progress per Procedure 201, "Plant Startup"
- Reactor pressure is 500 psig
- Reactor pressure control/heatup is utilizing MPR
- Heatup rate is 10 degrees F each 10 minutes
- Reactor Water Cleanup (RWCU) system **ISOLATES** from faulty HELB relays.

What additional action would be necessary to continue the startup/heatup to the point of bringing the Turbine on line?

A. Bypass the faulty HELB relays and re-start RWCU.

B. Obtain required reactor samples from "A" Recirc loop.

C. Adjust the heat balance to account for the lack of RWCU input.

D. Increase the frequency of recording vessel temperatures on Attachment 201-11.

ANSWER: B

EXPLANATION:
RWCU is not required to be in operation to support the continued startup, however periodic reactor samples must be taken. Chemistry will not change very quickly at this low power level. Chemistry can be monitored via sample from "A" Reactor Recirc Loop. Heat balance is not an issue with power level up to 25%. Vessel temperature monitoring is not affected by RWCU.

TECHNICAL REFERENCE(S): RWCU Lesson Plan (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 00243 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	2	
K/A #	204000/K1.01	
Importance Rating	3.1	

K/A Topic Description:
Knowledge of the physical connections and/or cause-effect between the Reactor Water Cleanup System and the Reactor Vessel

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ____

Comments: Applicant must combine how isolation affects sample and where alternate

sample is obtained.

QUESTION #67

Due to a common problem, all circuitry for DC chargers has failed and Station Batteries are discharging. The following is a table of voltage readings on the available DC buses:

DC Bus #	At time of DC Charger failure	T + 15 minutes	T+ 30 minutes	T + 60 minutes
A	125V	122V	120V	115V
B	125V	120V	115V	105V
C	125V	122V	120V	115V

Preliminary information indicates it will be approximately **TWO** hours before DC charging can be restored.

Notes:

1. Assume DC buses degrade at the same rate for the next 60 minutes
2. 4160 V breaker closing coils require 90 V DC to function

What effect will this have on remote operation of 4160 V breakers, considering the above conditions, **TWO** hours after the DC chargers stopped working?

A. **NO** 4160 V breakers can be operated since adequate DC voltage will **NOT** be available.

B. A and C 4160 V breakers can be operated since remote operation of these breakers does not require DC power.

C. A and C 4160 V breakers can be operated since the associated DC Bus voltage will provide adequate control power.

D. B and D 4160 V breakers can be operated since the associated DC Bus voltage will provide adequate control power.

ANSWER: C.

EXPLANATION:

4160 Buses A and C are supplied DC from Bus C which will be above 105 V. DC Bus B will be below 90V. DC Bus A does not supply 4160 V breaker control power. With available coil voltage on 4160 V Bus B < 90 V the associated breakers will not be able to be closed remotely (from the control room).

TECHNICAL REFERENCE(S): Loss of DC Distribution Center Procedures
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	263000/A4.03	

Importance Rating 2.7

K/A Topic Description: Ability to manually operate and/or monitor the battery discharge rate in the control room.

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 X

Comments:

QUESTION #68

The plant is in a startup at 30% power with the following conditions in the RBCCW system:

- Reactor Building Cooling Water (RBCCW) pump 1-1 is operating
- RBCCW Pump 1-2 is in standby

A Loss of Offsite Power (LOOP) occurs and the following plant conditions exist:

- Reactor water level remains between 155" and 165"
- **NO** entry conditions for EMG-3200.02, "Primary Containment Control" have been satisfied
- Both diesel generators start and load as designed for the existing conditions
- **NO** manual operator actions are taken for the first five minutes
- RBCCW pump breaker control switch in NORMAL
- RBCCW system temperature is stable (Panel 13R)

Five minutes after the LOOP you are directed to complete appropriate sections of "RBCCW Failure Response" Procedure.

What manual actions, on the RBCCW system, are required to maintain proper system operation?

A. Confirm RBCCW pressure (panel 13R) is greater than 75 psig (1 pump operating)

B. Confirm RBCCW pressure (panel 13R) is greater than 90 psig (2 pumps operating)

C. Place RBCCW breaker control in BYPASS and manually start RBCCW pump 1-1

D. Place RBCCW breaker control in BYPASS and manually start RBCCW pumps 1-1 and 1-2

ANSWER: B

EXPLANATION:
With no LOCA signal both RBCCW pumps will auto start in 166 seconds. This is verified by observing >90 psig at panel 13R. As long as pressure is >90 psig no action in the control room is required. With both pumps running, transition to Shutdown Cooling can be made with no further changes to RBCCW, however the Shift Manager may elect to shutdown one RBCCW pump.

TECHNICAL REFERENCE(S): ABN-19, RBCCW Lesson Plan pg 7
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)00068 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	400000/A4.01	
Importance Rating	3.1	___

K/A Topic Description:

Ability to manually operate and/or monitor RBCCW indications and control in the control room.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: ABN-19 recently revised. OPS-3024.21 has been deleted. Ensure action to verify 90 psig is contained in a procedure (alarm response?) and note in "Technical References"

QUESTION # 69

The reactor is at 100% power with the following plant conditions:

- Both Diesel Generators are OPERABLE
- Absorption chamber water volume is 81,000 cu ft
- SGTS is OPERABLE
- Reactor Building Differential Pressure is -0.20" water
- APLHGR is 91% of limits given in Specification 3.10.A
-

In addition to Primary Containment, which of the following systems are also **INOPERABLE**?

A. **ONLY** Secondary Containment.

B. **ONLY** Secondary Containment and Core Spray.

C. **ONLY** Core Spray and Containment Spray.

D. **ONLY** Core Spray.

ANSWER: C

EXPLANATION:
The <82,000 Cu Ft of water affects OPERABILITY of Primary Containment, Core Spray and Containment Spray. The APLHGR only affects the time the plant may remain running in this condition. Secondary Containment parameters satisfy TS requirements (-0.25" is not in definition for Secondary Containments).

TECHNICAL REFERENCE(S): TS 3.4 and 3.5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	3	___
Group #	1	___
K/A #	2.1.12	
Importance Rating	2.9	___

K/A Topic Description:
Ability to apply Technical Specifications for a system

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

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

10 CFR Part 55 Content: 55.41 X
55.43 X

Comments: RO's should know entry conditions for LCOs

QUESTION #70

The "B" Standby Gas Treatment (SGTS) train is near the end of a 10 hour run with the following conditions:

- Reactor Building HVAC is shutdown.
- You notice on the log sheets that the second absolute filter differential pressure (d/p) has increased from 1.3"WG to 2.6"WG over the last 8 hours.
- Total train d/p has increased from 4.3"WG to 5.6"WG.
- The Reactor Building differential pressure decreased from -.30"WG to -.25"WG.

What other change(s) , if any, in SGTS configuration and/or parameters would be observed locally?

A. **NONE**; a change of 1.3"WG filter d/p alone would affect building differential pressure.

B. The condensate drain line is plugged and the prefilter is saturated with moisture.

C. The electric heating coils have failed and the charcoal is saturated with moisture.

D. The flowrate of the "B" SGTS system (as read on the "A" panel) has decreased.

ANSWER: D

EXPLANATION:
A doubling of filter differential pressure would have an effect on system flow. It is the decrease in flow that has caused the decrease in building D/P. Since only the d/p across the second absolute filter was effected, then moisture/condensate is not a problem.

TECHNICAL REFERENCE(S): Secondary Containment/SGTS Lesson Plan
___ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01)10445 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	1	___
K/A #	261000/A1.04	
Importance Rating	3.0	___

K/A Topic Description:
Ability to predict and/or monitor changes in parameters associated with operating the Standby Gas Treatment System controls including Secondary Containment differential pressure.

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

Question Cognitive Level: Memory or Fundamental Knowledge ___
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 ___

Comments: Per discussion with Greg Young the limit for filter D/P is 2.6". This is a fairly clogged state.

QUESTION #71

The following plant conditions exist:

- The reactor power has just been increased to 40% power
- Turbine-Generator is on the line at approximately 200 MWE
- A malfunction causes a bypass valve to fully open
- FLOW MISMATCH alarm (J-7-a) annunciates shortly after the bypass valve (BPV) opens

Answer the following:
a) Is FLOW MISMATCH an expected alarm for the stated conditions?
b) What is the operational significance of this alarm at 40% power?

A. **NO** this is **NOT** expected. The significance is that a steam line break has occurred in the Turbine Building.

B. **NO** this is **NOT** expected. The significance is that extraction steam has isolated from feedwater heaters.

C. Yes this is expected. The significance is that extraction steam has isolated from feedwater heaters.

D. Yes this is expected. The significance is that Turbine Anticipatory Scrams have been bypassed.

ANSWER: D

EXPLANATION:
This is an expected alarm since BPVs will "pass" approximately 10% steam flow. The alarm is set at 7%. The steam going through the BPVs bypass first stage turbine and will not be "counted" as power for the 40% trip setpoint. With no other alarms in it should not be assumed that there may be a steam line break. Although the BPVs will have some impact on extraction steam flow it is not the reason the alarm is actuated.

TECHNICAL REFERENCE(S): Alarm Response J-7-a "FLOW MISMATCH" (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	___
Group #	2	___
K/A #	239001/A1.09	
Importance Rating	3.5	___

K/A Topic Description:
Ability to predict and/or monitor changes in parameters associated with the Main and Reheat Steam System controls including the Main Steam Flow.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: Applicant must be able to relate at least two facts to obtain correct response: What causes FLOW MISMATCH alarm and the fact that BPVs will bypass the turbine anticipatory trip. The FLOW MISMATCH alarm is usually attributed to a steam line break.

QUESTION #72

The reactor is at 100% power with the following conditions:

- Three feed pumps are operating
- Reactor water level control is in automatic set to maintain 160"
- Two condensate pumps trip
- Reactor Scrams on low water level
- Lowest reactor water level observed is 128"
- Highest post-scram level observed is 145"

You follow the Operator Action in ABN-1, "Reactor Scram" and observe reactor water level has stabilized at 140" three minutes after the Scram.

Specify if this is an expected or unexpected water level and the basis for your answer.

A. Expected since the feedwater level setpoint setback has automatically reduced the setpoint to 142"

B. Unexpected since the water level should recover to the level of the feedwater level setpoint.

C. Expected since the MFRV block valve is closed, per 3200.01, after reactor level restores above 140".

D. Unexpected since one feedwater pump would be running and the LFRV auto setpoint is set back to 150".

ANSWER: A

EXPLANATION: The setpoint setdown is at 130" and would affect only MFRVs . All feed pumps should NOT trip on loss of 2 condensate pumps. Even if all feedpumps tripped, one would be restarted to restore level per ABN-1. By procedure, the LFRV will be in manual control.

TECHNICAL REFERENCE(S): Feedwater Level Control Lesson Plan, page 12
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: 10453 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	2	
Group #	1	
K/A #	259002/A3.06	
Importance Rating	3.0	

K/A Topic Description: Ability to monitor automatic operations of the Reactor water Level Control System including reactor water level setpoint setdown following a reactor scram

Question Source: Bank #

Modified Bank # _____ (Note changes or attached parent)
New X

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments:

QUESTION #73

The plant is at 100% power with the following conditions:

- "A" Core Spray Loop is **INOPERABLE**
- The Reactor Building Operator calls you and indicates that a **REQUIRED** locked open valve on the "B" Core Spray Loop is missing the lock and he is unsure if the valve is open
- The Shift Manager is in the switchyard with the Security Supervisor investigating a possible tampering issue.

Your response to the information received from the Reactor Building Operator is as follows:

A. Have him confirm the valve is full open, to avoid a plant shutdown, then notify the Shift Manager and Security of possible tampering. Continue Power Operation for up to 7 days.

B. Instruct the Reactor Building Operator to leave the valve as found, then notify the Shift Manager and Security of possible tampering. Place reactor in Cold Shutdown Condition.

C. Have him re-install the lock, then immediately notify the Shift Manager and Security. Place reactor in Cold Shutdown Condition.

D. Instruct the Reactor Building Operator to leave the valve as found, then notify the Shift Manager and Security of possible tampering. Continue Power Operation for up to 7 days.

ANSWER: B

EXPLANATION:
The position of the valve should not be changed to allow security investigation of the possible tampering. The RO has the responsibility to shutdown the plant if a situation exists which jeopardizes the health and safety of the public. With the locked open valve position indeterminate the "B" Core Spray loop is inoperable. With both core spray loops inoperable the plant must be placed in the COLD CONDITION.

TECHNICAL REFERENCE(S): Conduct of Operations, pgs 14, 15 and 16; TS 3.4.A.6
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	3	___
	Group #	1	___
	K/A #	2.1.2	
	Importance Rating	3.0	___

K/A Topic Description: Knowledge of operator responsibilities during all modes of operation

Question Source:

Bank #	___	
Modified Bank #	___	(Note changes or attached parent)
New	X	

Question Cognitive Level:	Memory or Fundamental Knowledge	_____
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41	X
	55.43	_____

Comments: Licensee should confirm the stated conditions would prompt an RO to initiate a shutdown without specific direction from the Shift Manager.

QUESTION #74

The plant is at 100% Power with Service Water pump 1-1 out of service. The following alarms/indications occur almost simultaneously:

- MN BRKR 1D TRIP (T-1-e)
- BUS 1D VOLTS LO (T-3-e)
- BUS 1D VOLTS LO LO (T-4-e)
- MN BKR 1D 86 LKOUT TRIP(T-2-e).

Should a Loss of Offsite Power occur, which equipment is available to ensure Safe Shutdown?

A. "A" Isolation Condenser, RBCCW Pump 1-1, CRD Pump NC08A, Shutdown Cooling Pump NU02B and Service Water Pump 1-2.

B. "B" Isolation Condenser, RBCCW Pump 1-1, CRD Pump NC08A, Shutdown Cooling Pump NU02B and ESW Pump 52C.

C. "A" Isolation Condenser, RBCCW Pump 1-1, CRD Pump NC08A, Shutdown Cooling Pump NU02A and Service Water Pump 1-2.

D. "B" Isolation Condenser, RBCCW Pump 1-1, CRD Pump NC08A, Shutdown Cooling Pump NU02A and ESW Pump 52B.

ANSWER: D

EXPLANATION:
All equipment on the 4160V "D" bus will be lost. Since Service Water Pump 1-1 is OOC, RBCCW will rely on ESW Pump 52B for a "heat sink". Either "A" or "B" Isolation Condenser is available to allow cooldown to the initiation of Shutdown Cooling. ESW Pump 52C is powered from the "D" 4160V bus.

TECHNICAL REFERENCE(S): OPS-3024.10A, pgs 37, 38 and 44; RBCCW Lesson Plan pg 9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295003/A1.03	
Importance Rating	4.4	___

K/A Topic Description:
Ability to operate and/or monitor systems necessary to assure safe plant shutdown as they apply to partial or complete loss of AC power.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 _____

Comments: From INPO bank (Dresden exam)

QUESTION #75

Given the following configuration of the Reactor Recirculating system and reactor power at 75%:

- Recirc pump A is shutdown and its suction valve and discharge bypass are closed
- Recirc pump B is shutdown and its suction and discharge valves are open
- **NO** further valve movement on loop A or B is possible
- Loops C, D, and E are operating normally

What action, if any, must be taken to satisfy Technical Specifications (TS) for the conditions specified?

A. **NO** action is required since the plant can operate up to 90% power during three loop operation.

B. APLHGR TS (3.1.A) must be verified to be at or below 98% of the APLHGR limits.

C. The circuit breaker for recirc pump B must be opened and defeated from operation.

D. Immediately initiate an orderly shutdown with mode switch in REFUEL or SHUTDOWN in 12 hours

ANSWER: D

EXPLANATION:
Per lesson plan page 9, an IDLE loop has the discharge valve closed and the discharge bypass and suction valves open. An ISOLATED loop has all three valves closed. The current configuration does not satisfy either and therefore TS 3.3.F.1 and 3.3.F.2 are not satisfied. Per TS 3.3.F.3, an orderly shutdown must be initiated immediately.

TECHNICAL REFERENCE(S): TS 3.3.F; Reactor Recirculation Lesson Plan
___ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: TS 3.3.F
_____

Learning Objective: (01) 10451 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	1	___
Group #	1	___
K/A #	295001/2.1.33	
Importance Rating	3.4	___

K/A Topic Description:
Ability to recognize indications for (Reactor Recirculation) system operating parameters which are entry-level conditions for Technical Specifications

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 __X__

Comments: There is a specific RO Learning Objective for the Reactor Recirculation system to be able to utilize TS and be able to explain actions. This question was given a preliminary review by Greg Young with no objections raised.

QUESTION # SRO-1

The plant is operating at rated power on the 100% Rod Line with the following conditions:

- A malfunction results in all Reactor Recirculation pumps running at minimum speed.
- Core Flow is determined to be to the left of the buffer zone.
- APRMs are stable.

Which one of the following identifies the required action?

A. Manually scram the reactor.

B. Raise recirculation flow or insert control rods.

C. Commence a normal reactor shutdown.

D. Confirm core flow using core plate differential pressure.

ANSWER: B

EXPLANATION:
A reactor scram is only required if power oscillations are occurring. The procedure calls for exiting Exclusion Region by "using rods or flow".

TECHNICAL REFERENCE(S): ABN-3200.03, Step 3.1.7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295001/AA2.01	
Importance Rating	___	3.8

K/A Topic Description:
Ability to determine and/or interpret the Power to Flow Map as it applies to Partial or Complete Loss of Forced Core Recirculation.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 55.43 (b)(5)

Comments: INPO Bank; NMP-1 01/18/98 simply changed to OC terminology Applicant must chose the correct procedure to follow for given conditions (ABN-3200.03). Considered memory since applicant only has to recall Step 3.1.7 to answer question

QUESTION # SRO-2

The reactor was operating at 94% at the end of cycle just prior to a refueling outage when a reactor scram occurred from a turbine trip. The following conditions exist:

- Mode switch is in SHUTDOWN
- You initially enter RPV Control- No ATWS
- The scram has **NOT** been reset.
- All but one of the control rods are at position 04 and the remaining rod has **NO** numerical position indication
- Red SCRAM lights are illuminated on the full core display
- SCRAM solenoid lights are extinguished on panels 4F, 6R and 7R
- All LPRM downscale lights are lit
- SLC has **NOT** been initiated

From the above indications what EOP is required to be implemented at this time. Also, provide a basis for this action.

A. RPV Control-With ATWS. With only one rod, potentially, **NOT** inserted beyond 04 the reactor will remain subcritical under all conditions.

B. RPV Control-No ATWS. Power level is below decay heat levels with **NO** boron required to maintain the reactor subcritical.

C. RPV Control- No ATWS. At this point it **CANNOT** be determined that all control rods are inserted to or beyond position 04 and that the reactor will remain subcritical under all conditions

D. RPV Control- With ATWS. At this point it **CANNOT** be determined that all control rods are inserted to or beyond position 04 and that the reactor will remain subcritical under all conditions.

ANSWER: D

EXPLANATION:
Without green backlight on the last rod its position cannot be determined to be "inserted at or beyond position 04". Additionally, the "single rod out criteria" is not satisfied for immediately determining the reactor will remain subcritical under all conditions. Shutdown Margin defination is all but one rod full in (00). Procedure RPV Control-No ATWS requires you to exit and enter RPV Control- With ATWS.

TECHNICAL REFERENCE(S): Step 2.3.1 of ABN-3200.01, Reactor Manual Control Lesson Plan, page 3, RPV Control- With ATWS Procedure
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 00078 (As available)

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	___	1
	Group #	___	1
	K/A #	295006/AA2.02	
	Importance Rating	___	4.4

K/A Topic Description:
Ability to determine control rod position as it applies to SCRAM.

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

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehensive or Analysis ____

10 CFR Part 55 Content: 55.41 X
55.43 55.43 (b)(5)

Comments: INPO Bank; Grand Gulf 03/27/98 changed stem and answer selection. Considered memory level since entry conditions are memorized.

QUESTION # SRO-3

A loss of all drywell cooling has occurred and you have entered Primary Containment Control, EMG-3200.02 when the drywell temperature entry conditions are exceeded.

The following conditions exist:

- All attempts to restore drywell cooling have failed.
- Drywell pressure is at 2.75 psig and steady.
- When you direct the RO to "vent the containment per support procedure 31" the STA notifies you that the drywell temperature is approaching 200 degrees F.
- **NO** other entry conditions for Primary Containment Control or RPV control exist at this point.

Answer the following:
Are you allowed to vent the containment? Also, provide a basis for this action.

A. Yes, reduction of drywell pressure is the most important strategy at this point.

B. Yes, venting the drywell will also result in reduction in drywell temperature.

C. No, venting the drywell will result in exceeding the Containment Spray Initiation Limit.

D. No, venting the drywell may cause a inadequate NPSH for the Containment Spray Pumps.

ANSWER: C

EXPLANATION:
With drywell temperature above 200 degrees F any reduction in drywell pressure (below 2.75 psig) will result in exceeding CSIL. Once CSIL is exceeded the plant will, ultimately require EMERGENCY DEPRESSURIZATION since sprays cannot be initiated. The order should be changed to "spray the containment" before CSIL is exceeded. With no other entry conditions present, NPSH should not be a problem for Containment Spray Pumps.
TECHNICAL REFERENCE(S): EOPs (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295024/EA2.02	
Importance Rating	___	4.0

K/A Topic Description:
Ability to determine and/or interpret drywell temperature as it applies to High Drywell Pressure.
Question Source: Bank # _____
Modified Bank # _____ (Note changes or attached parent)
New X
Question Cognitive Level: Memory or Fundamental Knowledge X

	Comprehensive or Analysis	_____
10 CFR Part 55 Content:	55.41 X	
	55.43 55.43(b)(5)	

Comments: Applicant must select the appropriate "flow path" in Containment Control. With a LOCA, drywell pressure will increase with temperature, however in the loss of drywell cooling with no LOCA temperature increase will be greater than pressure increase, hense venting the containment is NOT the right thing to do.

QUESTION # SRO-4

Following an Anticipated Transient Without Scram (ATWS) from 100% power, you transition to EMG-3200.01B "RPV CONTROL-WITH ATWS". IF power level **CANNOT** be determined to be below 2%, this procedure directs you to lower RPV water level until reactor water level is below 30 in.

Answer the following:
a) How do you quickly determine power is <2%?
b) What is the EOP basis for the 30 inches of water level?

A. < 2% power will be indicated by LPRM Downscale lights lit. 30 inches reactor water level will minimize subcooling and power oscillations.
B. < 2% power will be indicated by LPRM Downscale lights lit. 30 inches reactor water level will minimize Keff of the core via neutron leakage.
C. < 2% power will be indicated by all EMRVs closed. 30 inches reactor water level will minimize "chugging" in EMRV tailpipes.
D. < 2% power will be indicated by IRMs below range 6. 30 inches reactor water level will ensure HCTL will **NOT** be exceeded if ED is needed.

ANSWER: A

EXPLANATION:
The fastest way to determine <2% is using APRM downscale lights since other indicators may be slower responding or may be oscillating. IRMs will not be inserted at 100% power and their usefullness will be delayed by several minutes (until they are inserted). Each of the other answers are partially correct, but do not reflect the true bases for choosing 30". Although the remaining choices are identified in the EOP, only "A" provides the basis for lowering reactor water level to 30 inches. It is expected that neutron leakage would be the dominant factor at TAF (0"), not at 30".

TECHNICAL REFERENCE(S): EOP Bases 1B-21 and 1B-22 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295031/EA2.02	
Importance Rating	___	4.2

K/A Topic Description: Ability to determine and/or interpret reactor power as it applies to Reactor Low Water Level

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

Question Cognitive Level: Memory or Fundamental Knowledge X
Comprehensive or Analysis ___

10 CFR Part 55 Content: 55.41 X
55.43 55.43(b)(5)

Comments: Two independent facts do not require analysis to derive correct answer.

QUESTION # SRO-5

The Reactor is at 100% power when a partial loss of Circulating Water occurs. COND VAC LO 25 INCHES alarm illuminates. Vacuum continues to decrease at approximately 1" Hg/minute.

In accordance with ABN-14, "Loss of Condenser Vacuum" what actions are required.

A. Immediately SCRAM and control pressure by manually opening EMRVs in sequence.

B. Reduce Power to stabilize vacuum > 22"Hg. SCRAM before vacuum reaches 22".

C. Immediately SCRAM and control pressure using Isolation Condensers (IC).

D. Reduce power to maintain vacuum >10"Hg. Initiate IC before vacuum reaches 10".

ANSWER: B

EXPLANATION:
As long as vacuum is maintained>22" all reactor power will be transmitted to the circulating water. If the turbine trips, an EMRV may, momentarily, open. Therefore, manual SCRAM should precede 22". There are 3 minutes available so that power reduction can be made before a SCRAM is necessary. Actions A, C and D although effective are not specified in the ABN.

TECHNICAL REFERENCE(S): ABN-3200.14, Section 3.0 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	2
K/A #	295002/2.4.31	
Importance Rating	___	3.4

K/A Topic Description:
Knowledge of annunciators alarms and indications/and use of the response instructions related to Loss of Main Condenser Vacuum

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

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

10 CFR Part 55 Content: 55.41 X
55.43 55.43(b)(5)

Comments: The alarm directs entry into ABN. Knowledge of ABN actions beyond "immediate Actions" are an SRO-level function.

QUESTION # SRO-6

The reactor is at 100% power when the following conditions are reported by the control room operators:

- Reactor has scrammed on APRM Hi-Hi
- SCRAM CONTACTOR OPEN (G-1-c) is illuminated
- **NO** other SCRAM annunciators are illuminated
- All rods are at 00
- Reactor recirc pumps A, B and E have tripped
- LOGIC TRAIN I (C-1-a) and LOGIC TRAIN II (C-2-a) alarms are illuminated

What condition initiated the high flux condition? Also, what is the expected plant response to the stated conditions?

A. High Reactor Pressure caused the high flux condition. C and D recirc pumps should have also tripped but did **NOT**.

B. High Reactor Pressure caused the high flux condition. Reactor should have also scrammed on Hi RPV pressure but it is **NOT** indicated.

C. Malfunction in the Recirc Flow Control caused the high flux condition. C and D recirc pumps should also have tripped but did **NOT**.

D. Malfunction in the Recirc Flow Control caused the high flux condition. Reactor should also have scrammed on Loss of Flow signal but it is **NOT** indicated.

ANSWER: B

EXPLANATION:
With LOGIC TRAIN I (C-1-a) and LOGIC TRAIN II (C-2-a) alarms illuminated and Reactor recirc pumps A, B and E tripped this would indicate the reactor pressure had exceeded 1045 psig and should have scrammed on Hi reactor pressure, but it did not. Although initiation of the Isolation Condensers (LOGIC TRAIN I and LOGIC TRAIN II alarms are illuminated) is known to have caused a high flux scram in the past the specified conditions indicate a high pressure condition preceded the Isolation Condenser actuation. The increase in flux from the high pressure condition is 1.5 seconds faster than the initiation of ICs. There is no indication from the given conditions that the recirc flow control failed.

TECHNICAL REFERENCE(S): Reactor Scram Procedure; Alarm Responses
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	2
K/A #	295014/AA2.03	
Importance Rating	___	4.3

K/A Topic Description:
Ability to determine and/or interpret the cause of reactivity addition as it applies to Inadvertant Reactivity Addition

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

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

10 CFR Part 55 Content: 55.41 X
55.43 55.43 (b)(6)

Comments: Considered COMP since this is equivalent to a partial post-trip analysis

QUESTION # SRO-7

It is a particularly cold January night. The Turbine Building Operator calls you up to let you know that the 4160 V switchgear room temperature is abnormally cool with a local room thermometer reading only about 40 degrees F.

What immediate action(s) are required?

A. Initiate a Temporary Configuration Change Package (TCCP) and install a portable heater in the room.

B. Initiate an Action Request to have install a portable heater in the room.

C. Conservatively, declare the 4160 Switchgear Room Fire Suppression System inoperable and assign a continuous Fire Watch in the room.

D. Determine the reactor must be placed in the COLD SHUTDOWN CONDITION while attempting to resolve any HVAC problems.

ANSWER: D

EXPLANATION:
With a 4160 V room temperature below 50 degrees F the "C" battery must be declared inoperable. With the "C" battery inoperable, TS 3.7.B requires "The reactor shall be placed in the COLD SHUTDOWN CONDITION...". Although the US may take other actions, the TS requirements must be initiated immediately and take precedence over other actions.

TECHNICAL REFERENCE(S): DC Distribution Lesson Plan page 4; TS pages 3.7-1 and 4.7-1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 10445 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295004/2.1.33	
Importance Rating	___	4.0

K/A Topic Description: Ability to recognize indications of DC system operating parameters which are entry level conditions for Technical Specifications.

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 55.43(b)(2) and (3)

Comments: The applicant must combine at least three facts to obtain the right answer. Other equipment may be affected but that is not germane to the question.

QUESTION # SRO-8

Given the following conditions:

- Plant is shutdown for a refueling outage.
- Power to 4160V buses is being supplied from the Startup Transformers
- EDG #2 is out of service for PMs
- The "1" Diesel Fire Pump is out of service for PMs
- Pond Pump 1 is in manual supplying the fire water system
- Pond Pump 2 is in Automatic
- A fire develops in the "S1B" Startup transformer and fire panel indicates the deluge system has actuated
- The "2" Diesel Fire Pump fails to start.
- A security guard reports that flames are engulfing the "B" Startup Transformer but that **NO** water spray is visible

In accordance with Procedure 333, "Plant Fire Protection System" what action must be taken to extinguish the fire at the "B" Startup Transformer within 10 minutes?

A. Call the Forked River Fire Department and request backup fire protection (i.e. fire pumper)

B. Manually start Pond Pump No. 2 per Section 4.0 of Procedure 333.

C. Power up 4160V Bus 1B from the SBO transformer and energize both Pond Pumps.

D. Place the Redundant Fire Protection Water System in service.

ANSWER: D

EXPLANATION: Loss of the "B" Startup Transformer (in combination with EDG #2 out of service) will result in both Pond Pumps losing power. Although A & C could be done, the time-frame will be too long to be effective in extinguishing the fire within 10 minutes. The response of an off site volunteer fire department is likely to take 15 minutes just to get on site with the pumper. Energizing the SBO transformer requires coordination with Jersey Central and is expected to take up to one hour. Placing the Redundant Fire Protection System in service (answer D) is the first action listed in Procedure 333 if both diesel fire pumps become inoperable

TECHNICAL REFERENCE(S): Procedure 333 pg 48 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	2
Group #	___	2
K/A #	286000/A2.03	
Importance Rating	___	3.0

K/A Topic Description: Ability to (a) predict the impacts of AC distribution failure and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(5)

Comments:

QUESTION # SRO-9

A Plant Startup is in progress per procedure 201, Plant Startup. The following condition exist:

- Power is in the IRM range with reactor coolant temperature approaching 212 degrees F.
- The Reactor Operator is in control of rod pulls
- The Reactor Operator is controlling Reactor Water Level
- The BOP Operator is preparing the secondary plant for introduction of steam.
- "A" CRD Pump is running.
- You observe RX LVL HI/LO alarm initiated.
- Water level on Panel 5F/6F is 145".

For this plant configuration, what actions are needed to restore Rx water level to the normal band?

A. Start a second CRD pump and maximize flow

B. Throttle down on Reactor Water Cleanup letdown

C. Reduce CRD pump flow to minimum.

D. Increase Reactor Water Cleanup letdown

ANSWER: B

EXPLANATION:
In this configuration the Reactor Water is "swelling" from the heat addition and RWCU is being used to blowdown to the hotwell. CRD flow should already be at "minimum". The most appropriate action is to reduce the blowdown flow. The addition of any outside water source would complicate level control until "steaming" to the secondary plant commences.

TECHNICAL REFERENCE(S): Reactor Water Cleanup Lesson Plan
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: 20401(01)007 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	2
K/A #	295009/AA2.03	
Importance Rating	___	2.9

K/A Topic Description:
Ability to determine and/or interpret Reactor Water Cleanup blowdown rate as it applies to Low Reactor Water Level

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 X
55.43 55.43(b)(5)

QUESTION # SRO-10

The plant is at 100% power when a failure of RBCCW occurs. You direct the operators to complete the required actions in ABN-19, "RBCCW Failure Response". The following sequence of events occurs:

- One of the operators advises you he is venting the drywell through V-23-21 and V-23-22.
- The second operator scrams the reactor and trips all Reactor Recirculation Pumps
- FLOW HI/MN STM LINE AREA TEMP HI-HI alarm illuminates
- NU-47 REACTOR BLDG EQUIP DRAIN TK HIGH TEMP alarm illuminates
- DW TEMP HI alarm illuminates
- DW PRESS HI/LO alarm illuminates
- TORUS BULK TEMP HI-HI alarm annunciates
- The second operator advises you all rods are inserted at or beyond position 02.
- Steam and Feedwater systems function as designed and as specified in "Reactor Scram" Procedure
- RX LVL LOW alarm illuminates
- No other containment-related or reactor-related alarms are illuminated

Assuming parameters remain at the alarms setpoints, what EOP(s) entry conditions, if any, are currently satisfied by the above sequence of events?

A. RPV CONTROL-NO ATWS, SECONDARY CONTAINMENT CONTROL, PRIMARY CONTAINMENT CONTROL

B. RPV CONTROL-NO ATWS, PRIMARY CONTAINMENT CONTROL

C. SECONDARY CONTAINMENT CONTROL

D. No EOP Entry conditions are currently satisfied by the above sequence

ANSWER: B

EXPLANATION:
With the RX LVL LOW alarm illuminated, this indicates entry into RPV CONTROL on a low level condition. Drywell TEMP and Press alarms are below the entry conditions for Containment Control. The FLOW HI/MN STM LINE AREA TEMP HI-HI alarm and NU-47 REACTOR BLDG EQUIP DRAIN TK HIGH TEMP alarm are not entry conditions for Secondary Containment Control. The setpoint for TORUS BULK TEMP HI-HI is 109 degrees F which is above the entry condition for Primary Containment Control, therefore "B" is the correct answer.

TECHNICAL REFERENCE(S): EOP's Alarm Responses (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOPs

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	—	1
Group #	—	2
K/A #	295012/2.4.4	

K/A # 295012/2.4.4

Importance Rating ___ 4.3

K/A Topic Description:
Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for Emergency and Abnormal Operating Procedures [Related to High Drywell Temperature]

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

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

10 CFR Part 55 Content: 55.41 X
55.43 55.43(b)(5)

Comments: Considered COMP since the applicant will have to consider all the stated conditions individually and in concert to determine that he does not have any EOP entry condition satisfied. Requires the knowledge of setpoints for the stated alarms. Although "none of the above" is usually avoided in this case it makes the question more challenging.

QUESTION # SRO-11
A reactor startup is in progress using Procedure 201, "Plant Startup". The following plant conditions exist:

- Power has risen on IRM 18 from mid range on Range 3 to mid range on Range 4 in 40 seconds
- **NO** rod motion is in progress
- ROD BLOCKS come in on all remaining IRMs (which are still on Range 3)

Based on the above conditions you (as US) should direct the RO to:

A. Uprange the remaining IRMs to clear ROD BLOCKs so rod withdrawal can resume

B. Insert rods to reduce power below the ROD BLOCK setpoint for the remaining IRMs

C. Uprange remaining IRMs to Range 4; allow power rise to continue at the current rate.

D. Uprange remaining IRMs to Range 4, then Insert rods to slow down the power rise

ANSWER: D

EXPLANATION: The reactor period should be calculated at approximately 29 seconds which is shorter that specified in Precaution/Limitation 4.1 of Procedure 201 and must be slowed down by rod insertion, however the IRMs should first be upranged or a SCRAM will occur shortlly. The period is already too short so rod pulls are not in order (A). Since a startup is in progress it is not intended to reduce power (B).

TECHNICAL REFERENCE(S): Procedure 201, Precaution 4.1 and pages 19 and 20
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None
Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	2
Group #	___	1
K/A #	215003/A2.04	
Importance Rating	___	3.8

K/A Topic Description:
Ability to (a) predict the impacts of Upscale or downscale trips on the IRM and (b) based on those predictions use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations.

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

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

10 CFR Part 55 Content: 55.41 X
55.43 55.43(b)(5)

Comments: From INPO bank Dresden 2 02/15/2001. Modified due to different K/A (2.1.7)

QUESTION # SRO-12

At noon on April 1, 2004 the plant is at 80% power with three reactor recirc pumps operating (NG01-A, C and E). **NO** LCOs are in effect at this time. At 12:05 PM the following conditions occur on the AC distribution system:

- The following alarms annunciate:
  - MN BRKR 1B TRIP
  - MN BRKR 1B 86 LKOUT TRIP
  - BUS 1B UV
  - S1B BRKR TRIP
  - S1B BRKR OL TRIP/BRKR PERM OPN
- 4160V BUS 1B voltmeter is reading downscale
- 4160V BUS 1A voltmeter is reading 4160 volts
- EDG No. 2 has started and has energized 4160V Bus 1D
- Security reports that Startup Transformer SB deluge system is discharging on the transformer.
- All other switchyard equipment is available for use.

The operators quickly respond to the 1B Bus alarms and indications (using OPS-3024.10a) and stabilize the plant within the design capability of the remaining energized systems and components. All applicable Technical Specification ACTION statements are satisfied.

Answer the following:
1. What is the maximum power level sustainable with the AC distribution configuration as it exists at 12:05 PM?
2. How long can the conditions existing at 12:05 PM be allowed to continue?

A. The plant would have scrammed from the transient. The existing conditions can be maintained indefinitely.

B. The plant could be run at approximately 33% power. The existing conditions can be maintained for 7 days.

C. The plant could be run at approximately 50% power. The existing conditions can be maintained for 7 days.

D. The plant could be run at approximately 33% power. The reactor must be placed in the COLD SHUTDOWN CONDITION.

ANSWER: B

EXPLANATION: The limiting configuration with Bus 1B deenergized is the condensate/feedwater system which will have only one condensate and one feedwater pump running. The remaining 4160V equipment (fed from Bus 1A) will sustain over 50% power. A half SCRAM will occur, but it can be reset after the #2 EDG loaded onto Bus 1D. It is expected that Bus 1B would be energized from the Station Blackout Transformer within about one hour. TS allows operation in this configuration for 7 days.

TECHNICAL REFERENCE(S): OPS-3024.10a; TS 3.7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	2
Group #	___	1
K/A #	262001/2.1.7	
Importance Rating	___	4.4

K/A Topic Description:
Ability to evaluate plant performance and make operational judgements related to AC Electrical Distribution based on operating characteristics/reactor behavior/ and instrument interpretation.

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(5)and (2)

Comments: Sustainable power level must be validated by licensee.

QUESTION # SRO-13

The following plant conditions exist:

- Plant is at 87% power
- #1 Emergency Diesel Generator (EDG) is out of service for PMs
- #2 EDG is being run to satisfy surveillance requirements
- #2 EDG Crankcase Pressure readings for the last 8 hours have increased steadily
- The System Engineer indicates the engine will have to be shutdown prematurely and the engine declared inoperable if the crankcase pressure reaches the trip setpoint.
- The Maintenance Engineer indicates he can maintain the EDG Operable by adjusting the crankcase pressure setpoint. He indicates it must **NOT** be important since it is bypassed during a "Fast Start".
- Shortly before the end of your shift a 5% setpoint change (increase) and 50.59 "screen" is approved and the night orders indicate the EDG should continue to run until the surveillance requirement is satisfied.

Based on your understanding of EDG operation, is continued operation of the #2 EDG permissible? What is the basis for this action?

A. Yes. The Maintenance Engineer is correct regarding the trip being bypassed during a "fast start". Continued operation will have no deleterious effects on the EDG.

B. Yes. A 5% increase in crankcase pressure is well within the design pressure of the crankcase (designed for 110% above atmospheric pressure).

C. **NO**. A 5% increase in crankcase pressure is at the design pressure of the crankcase (designed for 105% above atmospheric pressure).

D. **NO**. Increasing crankcase pressure is indicative of a serious mechanical failure in the engine. The engine must be shutdown before reaching a positive pressure condition.

ANSWER: D

EXPLANATION: Increasing crankcase pressure is indicative of excessive piston or piston ring wear. If the crankcase pressure reaches above atmospheric it is indicative of impending catatrophic failure of one or more pistons/rings.

TECHNICAL REFERENCE(S): EDG Lesson Plan page 12 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: (01) 00811, (01) 00791 (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	2
Group #	___	1
K/A #	264000/2.4.48	
Importance Rating	___	3.8

K/A Topic Description:
Ability to interpret control room indications to verify the status and operation of system/and understand how operator actions and directives affect plant and system conditions [EDGs]

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(5)

Comments: This replicates an actual event at a plant I worked at. When the piston failed they could hear the "bang" over a mile away.

QUESTION # SRO-14

Core loading has started in the North East Quadrant with the following conditions:

- SRM 24 is reading < 1CPS
- All other SRMs are operable and reading >2 CPS
- Repair of the drywell equipment drain sump pump is in progress
- One of the Drywell Radiation (criticality) monitors fails downscale and is declared **INOPERABLE**

What action must be taken in order to continue fuel movement?

A. Calibrate SRM 24 in accordance with Procedure 620.3.006

B. Evacuate all personnel from the drywell

C. Complete Procedure 205.62 "Refueling Bridge Check-Off"

D. Calibrate SRMs 21, 22 and 23 in accordance with Procedure 620.3.006

ANSWER: B

EXPLANATION:
The only requirement for the stated conditions is to evacuate personnel from the drywell. The 21 and 22 SRMs are all that is required to be operable to move fuel in the North East Quadrant

TECHNICAL REFERENCE(S): Procedure 205, Reactor Refueling, pages 7, 8 & E5-1
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	__	G
Group #	__	2
K/A #	2.2.26	
Importance Rating	__	3.7

K/A Topic Description:
Knowledge of refueling administrative requirements.

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(6)

Comments: The applicant must relate two facts: 24 SRM is not required in NE quadrant and that the "criticality monitor" relates to personnel radiation protection, not reactor reactivity.

QUESTION # SRO-15

The following conditions exist:

- The reactor is shutdown; mode switch is in REFUEL.
- A plant startup is planned for later today.
- The "A" SLC has been **INOPERABLE** for 24 hours to replace a defective SQUIB trigger assembly
- The Liquid Poison System Functional test described in Procedure 612.4.002, "Liquid Poison System Functional Test" has been performed within the last 12 hours.
- The trigger assembly for V-19-0044 has been replaced.
- Post maintenance testing of the SLC system consisted of completing Attachment 2400-SMM-3209.02-7, "Liquid Poison System Explosive Valve Maintenance".
- A copy of the completed attachment is attached
- Except for "A" SLC all LCOs and surveillance requirements are satisfied

Based on the maintenance performed what additional maintenance and/or post-maintenance testing, if any, is necessary to ensure Operability of "A" SLC?

A. Re-perform The Liquid Poison System Functional test described in Procedure 612.4.002, "Liquid Poison System Functional Test".

B. Perform the Standby Liquid Control Pump and Valve Operability and In-Service Test, Procedure 612.4.001.

C. Replace the V-19-0044 with a new valve and re-perform Attachment 2400-SMM-3209.02-7 with the new assembly.

D. No additional maintenance or testing is required prior to declaring the "A" SLC Operable.

ANSWER: C

EXPLANATION: With the circuit readings documented on Attachment2400-SMM-3209.02-7 and given the Bridgewire circuit configuration denoted on page E6-1 the SRO should conclude the trigger assembly is in an "incorrect configuration" and needs to be replaced before the "A" SLC can be considered Operable. The remaining distractors would not be required if the circuit test was OK. The remaining distractors would not reveal the fact that an incorrect valve configuration existed.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: SMM-3219.02 pg 3.0 and pg E6-1

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	3
Group #	___	2
K/A #	2.2.21	

Importance Rating ___ 3.5

K/A Topic Description:
Knowledge of pre and post maintenance operability requirements

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(5)&(3)

Comments: This actually happened at another BWR in the 1980's and the plant ran for an entire cycle with two non-functioning squib valves installed.

QUESTION #SRO-16

The following plant conditions exist:

- Reactor has scrammed from 100% power due to Lo Lo Reactor Water Level
- You have entered "Primary Containment Control" based on Drywell Pressure
- You re-enter Primary Containment Control" based on Drywell Temperature
- Reactor pressure is being controlled with EMRVs
- The only available high pressure water source is "A" CRD pump
- Drywell temperature has increased to 350 degrees F
- GEMAC Wide Range Level indication is off scale
- A and B Fuel Zone instruments have failed due to power supply problems
- C and D Fuel Zone instruments are full scale high
- GEMAC and Yarway level instruments are full upscale

The STA recommends exiting RPV Control and entering "RPV Flooding".

Answer the following:
a) Do you agree with the STA's recommendation?
b) What is the basis for your position?

A. **NO**. Indicated level is 65 inches and as long as level is being maintained above 61 inches we stay in "RPV Control".
B. **NO**. We must enter "Emergency Depressurization" because level cannot be maintained above 61 inches.
C. Yes. Flooding is the only way we can decrease drywell temperature since we have exceeded the CSIL
D. Yes. With the current drywell temperature and level instrument readings we have **NO** reliable indication of reactor water level.

ANSWER: D

EXPLANATION:

TECHNICAL REFERENCE(S): EOP Users Guide pages 2-21 and 2-22
(Attach if not previously provided)

Proposed references to be provided to applicants during examination: EOP Flow Charts

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295028/2.4.20	
Importance Rating	___	4.0

K/A Topic Description: Knowledge of operational implications of EOP warnings/cautions and notes related to High Drywell Temperature

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

Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41 X	
	55.43 55.43(b)(5)	

Comments: Not a direct look up. Must understand temperature/level interactions to be able to answer.

QUESTION # SRO-17

At the end of a refueling outage following core re-load you are making a Shift Manager tour of the refuel floor and observe one central core cell is not symmetric with adjacent core cells. It is **NOT** clear what is different, but it doesn't look like the cells surrounding it. You recall that Reactor Engineering has verified the final fuel cell configuration in the core.

In accordance with Procedure 205, "Reactor Refueling" you immediately notify Reactor Engineering of the apparent discrepancy.

What is the operational significance, if any, of the symmetry issue you observed.

A. **NO** operational significance since cell symmetry is only important during movement of fuel in the outage.
B. Operationally significant since a mis-oriented bundle could prevent proper seating of the steam separator.
C. Operationally significant since a mis-oriented fuel bundle can affect CRD scram times and Core Operational Limits.
D. Operationally significant since a mis-oriented bundle can affect total core flow and core differential pressure.

ANSWER: C

EXPLANATION:
Regardless of core verification responsibility, SROs must be aware of bundle orientation requirements and ensure core loading has been done correctly. Because of the different pin loadings (% U235/burnable poison, etc.) Orientation can have significant impact on power operation. With the fuel assembly "buttons" misoriented there may be some interaction with the CRD. However, mis-orientation will have no effect on core flow or dp.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None
Learning Objective: _____ (As available)

Examination Outline Cross-reference:

	Level	RO	SRO
	Tier #	___	2
	Group #	___	2
	K/A #	290002/2.2.32	
	Importance Rating	___	3.3

K/A Topic Description:
Knowledge of the effects of alterations on core configuration as it relates to Reactor Vessel Internals

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(7)

Comments:

QUESTION # SRO-18

As stated, in part, in TS 3.7 Bases "The general objective is to assure an adequate supply of power with at least one active and one standby source of power available for operation of equipment required for safe shutdown, to maintain the plant in a safe shutdown condition and to operate the required engineered safety feature following an accident".

The plant is at 100% power with the following conditions:

- Two 230 KV lines are fully operational
- The 69 KV Sands Point Line is out of service
- One 34.5 KV line is fully operational
- Two Diesel Generators are OPERABLE
- All in-plant AC buses and panels are energized
- **ALL** other incoming lines are **INOPERABLE**
- A lightning hit takes out the fully operational 34.5 KV line but has **NO** effect on either 230 KV line
- All in-plant AC buses and panels remain energized

Can reactor operation continue with this AC configuration? Provide a basis for your answer.

A. Yes, operation may continue since the two 230 KV lines provide an active and standby source of power that satisfies the general objective

B. Yes, operation may continue since the two 230 KV lines plus the two diesel generators provide at least one active and one standby source of power.

C. **NO**, operation may not continue since the two 230 KV lines are on the same set of towers and "count" as only one source of power.

D. **NO**, operation may not continue since one of the two 230 KV lines does not have adequate capacity for all equipment required for safe shutdown

ANSWER: C

EXPLANATION: This is explicitly stated in the second paragraph of the TS Bases. The EDGs are a separate TS and not "counted" as an active or standby AC Source.

TECHNICAL REFERENCE(S): TS 3.7 Bases (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	2
Group #	___	1
K/A #	262001/2.2.25	
Importance Rating	___	3.7

K/A Topic Description: Knowledge of bases in Technical Specifications for limiting conditions of operations and Safety Limits related to AC Electrical Distribution

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(2)

Comments:

QUESTION #SRO-19

The following conditions exist on the refueling floor:

- Refueling is in progress in the reactor
- A fuel bundle has been grappled in the core and grapple engagement has been visibly verified.
- ENGAGED light is on.
- The bundle is being lifted out of the core
- "SLACK CABLE" light on the refuel bridge is extinguished
- Just as the fuel bundle clears the upper grid a failure in the air system directs full system air pressure to the grapple and bubbles can be seen rising from the grapple head.

What design feature(s) prevent a refueling accident under these conditions?

A. The grapple uses air pressure to grapple the bundle. Full air pressure just engages the grapple tighter and precludes release.

B. Refueling interlocks prevent the air failure from disengaging the bundle until a slack cable is sensed by a load cell on the refueling bridge.

C. The grapple has a mechanical "hook" that prevents the grapple from disengaging the bundle as long as weight is on the grapple.

D. The Boundary Zone Computer "Fuel Hoist Interlock" prevent disengaging the bundle if the hoist position is not seated in a storage location.

ANSWER: C

EXPLANATION:
There are no electrical interlocks to prevent a refueling accident if a failure occurs in the air system, however the mechanical "hook" on the grapple prevents disengagement once weight is on the grapple.

TECHNICAL REFERENCE(S): _____ (Attach if not previously provided)

Proposed references to be provided to applicants during examination: _____

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	295019/2.2.27	
Importance Rating	___	3.5

K/A Topic Description: Knowledge of the refueling process [as it relates to Partial or Total loss of Inst. Air]

Question Source:

Bank #	_____
Modified Bank #	_____ (Note changes or attached parent)
New	X

Question Cognitive Level:	Memory or Fundamental Knowledge	____
	Comprehensive or Analysis	X
10 CFR Part 55 Content:	55.41 ____	
	55.43 55.43(b)(7)	

Comments: SRO needs to know that grapple depressurizes to engage as well as the fact that no refueling interlocks are applicable to the stated conditions.

QUESTION # SRO-20

One of the license conditions for Oyster Creek is that the fire protection program be maintained. One of the issues that must be addressed by the fire protection program is "hot shorts".

Answer the following regarding the fire protection program at OC:

1. What is a "hot short"?
2. As described in Procedure ABN-29 "Response to Fire", which of the following describes action(s) that must be taken in the control room to protect safe shutdown during a fire on R.B. 51' Elevation (RB-FZ-1D)?

A. A "hot short" condition is where insulation on cabling is destroyed and an external source of 125 V DC causes electrical equipment to spuriously operate. For a fire on the 51' elevation the disable switch for one or more EMRV must be placed in "DISABLE".

B. A "hot short" is a condition where molten debris causes the + and - cables of a particular circuit to fuse. For a fire on El 51' the "A" Isolation Condenser valves must be overridden by placing the individual control switches to the desired position.

C. A "hot short" condition is where insulation on cabling is destroyed and an external source of 125 V DC causes electrical equipment to spuriously operate. For a fire on El 51' the "A" Isolation Condenser valves must be overridden by placing the individual control switches to the desired position.

D. A "hot short" is a condition where molten debris causes the + and - cables of a particular circuit to fuse. For a fire on the 51' elevation the disable switch for one or more EMRV must be placed in "DISABLE".

ANSWER: A

EXPLANATION:
This is described in Special Instruction No. 1. The "A" IC is not affected by a fire on el 51'.

TECHNICAL REFERENCE(S): ABN-3200.29, pg E1-5 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: Attachment ABN-29-1

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	1
Group #	___	1
K/A #	600000/2.4.27	
Importance Rating	___	3.5

K/A Topic Description: Knowledge of fire in the plant procedure related to Plant Fire on Site

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

Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehensive or Analysis	
10 CFR Part 55 Content:	55.41	
	55.43	55.43(b)(5)

Comments:

QUESTION #SRO-21

The plant is at 100% power and you are notified that the Sewage Lift Pump High Radiation Alarm has been received at the SAS.

Answer the following with regard to the Sewage Lift Pump High Radiation Alarm:

1. What action is required by chemistry personnel?
2. When would you implement EPIP-OC-.01 "Classification of Emergency Conditions"?

A. Chemistry will obtain a sample of the sewage at the sewage collection pit pumps and confirm the sewage collection pit pumps trip at 850 CPM indicated. Implement EPIP-OC-.01 if sample readings are 10% above background.

B. Chemistry will verify the validity of the high radiation signal using equipment in RAGEMS building before obtaining grab sample. Implement EPIP-OC-01 if grab sample is >10% above 10CFR20 limits.

C. Chemistry will obtain a sample of the sewage at the sewage collection pit pumps and confirm the sewage collection pit pumps trip at 850 CPM indicated. Implement EPIP-OC-.01 if sample readings are 20% above background

D. Chemistry will verify the validity of the high radiation signal using equipment in RAGEMS building before obtaining grab sample. Implement EPIP-OC-01 if grab sample is ≥20% above 10CFR20 limits.

ANSWER: D

EXPLANATION:
This is specified in ABN-28.

TECHNICAL REFERENCE(S): ABN-3200.28,pgs 4 and 7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	__	3
Group #	__	4
K/A #	2.4.36	
Importance Rating	__	2.8

K/A Topic Description: Knowledge of chemistry/health physics tasks during emergency operations

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

Question Cognitive Level: Memory or Fundamental Knowledge X

10 CFR Part 55 Content: 55.41 _____
55.43_55.43(b)(5)_____

Comments: Two independent facts relating to the high radiation do not require analysis to arrive at the correct answer

QUESTION # SRO-22

One hour has elapsed since a steam line break occurred in the Turbine Building. The transient has caused fuel damage, a reactor scram, but manual closure of the MSIVs was NOT successful. Following the transient the following conditions exist:

- All rods reached 00 on the SCRAM
- Torus temperature is 96 degrees F
- There is indication of 50,000 lbs/hr flow on the "A" main steam line flow instrument
- RPV level is 60" TAF and slowly increasing from a low point of 30" TAF
- RPV pressure is 760 psig and dropping slowly
- Security calls and informs you that steam can be seen issuing from, the Turbine Building
- Chemistry sampling results of reactor coolant are NOT in yet but the accompanying HP reported that the sample bottle was 5 R/HR when the chemist left the sample station
- Iodine release is 50 uCI/sec
- An HP calls from Route 9 bridge and reports 700 mREM/hr TEDE at his location

Classify the event.

A. General Emergency

B. Site Area Emergency

C. Alert

D. Unusual Event

ANSWER: A

EXPLANATION: The key factors are the MSIVs not closed and the last data from the HP which satisfies GE. The remaining indications all satisfy UE or ALERT.

TECHNICAL REFERENCE(S): Procedure EPIP-OC-01, Classification of Emergency Conditions, Appendix 1 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: EPIP-OC-01 Appendix 1

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	3
Group #	___	4
K/A #	2.4.41	
Importance Rating	___	4.1

K/A Topic Description: Knowledge of the emergency action level thresholds and classifications

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

Question Cognitive Level: Memory or Fundamental Knowledge ____
Comprehensive or Analysis X

10 CFR Part 55 Content: 55.41 ____
55.43 55.43(b)(5) and (4)

Comments: INPO bank Susquehanna 9/30/99. Changed units and terminology to OC specific.

QUESTION #SRO-23

The plant is in normal full power operation with no LCOs on April 1, 2004 when massive grid instabilities result in the loss of offsite power for the foreseeable future. The plant responds as designed including both Standby Diesel Generators which have started and loaded to their respective buses. The following conditions exist as of noon on April 1, 2004:

- Diesel fuel oil delivery is uncertain due to infrastructure problems
- The Standby Diesel Generator Fuel Tank is at 14,500 gallons
- The heating boiler tank has 16,500 gallons of available fuel
- **NO** other sources of diesel fuel are available on site
- The heating boilers are shutdown for maintenance

How long is the fuel supply adequate considering the TS Basis consumption rate?

For your answer assume two diesels continue to run at the consumption rate specified in Amendment 18. Round off you answer to the nearest day.

A. Three days

B. Four days

C. Five days

D. Seven days

ANSWER: B

EXPLANATION: Per TS Bases the rate is 12,410 gallons for three days. The 16, 500 gallons in the heating boiler tank will last three days and 23+ hours (16,546 gallons for four days) with the Standby Diesel Generator Fuel Tank maintained above its TS minimum level of 14,000 gallons.

TECHNICAL REFERENCE(S): TS 3.7.C and TS Bases for TS 3.7 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	3
Group #	___	1
K/A #	2.1.33	
Importance Rating	___	4.0

K/A Topic Description:
Ability to recognize indications for system operating parameters which are entry conditions for Technical Specifications

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(2)

Comments: Used INPO bank question from Duane Arnold 5/25/99. Made values and terminology consistent with OC Tech Specs

QUESTION #SRO-24

The plant is operating at 100% power with five reactor recirc pumps operating when one reactor recirc pump trips. The following conditions exist:

- Reactor power is at 82%
- All Operator actions of ABN-2 "Recirculation Pump Trip" have been completed and continued operation is permissible with the four remaining pumps
- The Shift Manager directs you to make the necessary notifications

Considering the above conditions, what personnel, at a minimum, are required to be notified by procedure?

A. System Owner/Dispatcher, Reactor Engineer, on-shift chemist

B. Operations Support Manager, Plant Manager and on-shift chemist

C. Operations Support Manager, System Owner/Dispatcher, Reactor Engineer

D. System Owner/Dispatcher, Plant Manager and on-shift Security Commander.

ANSWER: A

EXPLANATION: The power decrease has exceeded 289.5 MWT and the chemist must be notified to take a sample. Other personnel are specified in ABN-3200.02

TECHNICAL REFERENCE(S): ABN-3200.02 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: None

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	3
Group #	___	1
K/A #	2.1.14	
Importance Rating	___	3.3

K/A Topic Description: Knowledge of system status criteria which requires notification of plant personnel

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

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

10 CFR Part 55 Content:
55.41 _____
55.43 55.43(b)(5)and (2)

Comments:

QUESTION #SRO-25

A drywell entry must be made in order to inspect for increased unidentified leakage. A plant shutdown is in progress. The following conditions exist:

- Reactor Power is 90% and decreasing
- Purging of the drywell with air is in progress in accordance with Procedure 312.9, "Primary Containment Control".
- The Chemistry Department indicated that the Stack Gas Activity should **NOT** exceed 900 CPS, based on their sample
- DRYWELL VENT-PURGE INTERLOCK BYPASS switch is in the BYPASS position (Panel 12XR)
- Venting is via the Reactor Building Ventilation System
- Stack gas activity is at 1100 CPS and slowly increasing

Your direction to the operator(s) controlling the purge in accordance with Procedure 312.9 is that they are required to:

A. Decrease the purge flow until stack gas activity decreases below 900 CPM

B. Confirm stack release rate with RAGEMS and then decrease purge flow rate.

C. Secure the primary containment purge by closing V-28-17 and V-28-18.

D. Shift the purge to go through the Standby Gas Treatment System

ANSWER: C

EXPLANATION: This is specified in Step 7.3.2.6 of Procedure 312.9. The other distractors, though possible mitigation strategies, are not specified actions.

TECHNICAL REFERENCE(S): Section 7.0 of Procedure 312.9 (Attach if not previously provided)

Proposed references to be provided to applicants during examination: Section 7.1 and 7.2 of Procedure 312.9

Learning Objective: _____ (As available)

Examination Outline Cross-reference:

Level	RO	SRO
Tier #	___	3
Group #	___	3
K/A #	2.3.9	
Importance Rating	___	3.4

K/A Topic Description: Knowledge of the process for performing a Containment Purge

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

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

10 CFR Part 55 Content: 55.41 _____
55.43 55.43(b)(4)

Comments: