

BYRON

JUNE 2000

**FACILITY COMMENTS
ON NRC DRAFT**

**RO/SRO
WRITTEN EXAMINATION**

5/19, 6/2, and 6/12/2000 review

NRC RESOLUTION TO FACILITY COMMENTS OF NRC WRITTEN EXAM

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The facility reviewed this examination on three occasions: 5/19, 6/02, and 6/12. In order to reduce the amount of documents retained unnecessarily, the following table was created. Only questions in which the facility had significant comments on where retained; otherwise, the changes are documented in the following tables. This eliminated over 150 pages of unnecessary documents.

- General:
1. Changed "WHICH" to "Which" in appropriate questions
 2. Changed "Which ONE of" to "Which of" in appropriate questions.
 3. Added "(References are provided)" when references were available.
 4. Draft RO refers to the 5/19/00 version of the exam. Draft SRO refers to the 6/2/00 version of the exam.

Specific changes: [Note Type Codes: E = Enhancement, U = Unsatisfactory, R = Hard copy of Facility comment retained, and * = pertinent information regarding NRC review of the question prior to facility review.]

Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
1		1		E	5/19: Place question mark outside of quotation mark.	5/19: Change made
2		2		E R *	5/19: As written, lacks operational validity. Requires detailed knowledge of radiation instruments. Suggested replacement	5/19: Facility's replacement question did not meet tier/group. Question was modified from bank so undid changes and made question a bank question. * NRC review was appropriate. Lesson plans implied detailed knowledge expected. Agreed with licensee and changed back to bank.
3		3			No change	No change
4		4		E R	5/19: Capitalize "high" and change distractor D to read "proper operation of" instead of "minimum back pressure is maintained on."	5/19: Capitalize HIGH. Kept distractor D as-is to maintain viable distractor. Facility recommended change made distractor easy to rule out.
5		5			No change	No change

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
6		6		E R	5/19: Grammar-type changes in stem. Suggested table format for distractors.	5/19: Made grammar changes. Changed format to table.
7		7		E R	5/19: Wanted title of P-11 to be added in the stem. 6/12: Wanted "downstream" bolded.	5/19: Student should know what P-11 is. Placing title in stem would aid in answering question. 6/12: Bolded "downstream"
8	36	36	11	E R	5/19: Change turbine driven AFW to 1B AFW 6/12: Remove information about AFW in stem since it is not needed.	5/19: Changed to 1B AFW 6/12: Removed "At the time of the safety injection, the turbine driven AFW pump was out of service and the 1A AFW pump would not start. "
9		9		E	5/19: Replace "an NIS Power Range Heat Balance" with "Calorimetric" as this is the terminology at Byron.	5/19: Made suggested change.
10		10		E	5/19: Change 2% to 3% as 2% is a Braidwood value.	5/19: Made suggested change
11		11		U R	6/12: Change to Mode 3 since AFW is tagged out in Mode 5. Also change Distractor A because it could be correct.	6/12: Changed to Mode 3. Modified Distractor A to read "dispatch operator to identify leaks on discharge header piping"
12	38	38	13	E R	5/19: Add Unit 1 in stem and change "connection" to "and". Also, give P&ID as a reference.	5/19: Made suggested changes to stem. Decided not to give candidates a copy of the P&IDs but did add the valve numbers to the distractors. No comments during subsequent reviews.
13		13			No change	No change
14		14		E	5/19: Capitalize "both" and "and" in stem and distractors.	5/19: Made suggested changes.
15	47	47	22	E	5/19: Add "target" in front of temperature in stem.	5/19: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
16		16		E R	5/19: Answer implies that another General Warning alarms comes in. Suggests modifying distractor b.	5/19: Added "remaining lit" at end of distractor b to eliminate facility concern.
17		17		E	5/19: Capitalize "open" "closed" "correctly" and "incorrectly" in stem. Spell out "grp" (group)	5/19: Made suggested changes.
18		18		E	5/19: Correct "buss" and add "of" in distractor C "loss power"	5/19: Made suggested changes.
19	60	60	35	E	5/19: Add Unit 2 to stem and change Si to SI. 6/12: Change to 50% power instead of 100% power since shrink at 100% power is much lower than 38% given in stem.	5/19 & 6/12: Made suggested changes.
20		20		U R *	5/19: Recommend changing 575 to 470 psig and 10 to 100 psid in stem. Change distractor B to read both PZR PORVs. Allow reference.	5/19: Returned stem and distractors back to original bank question. Allowed reference to be used during examination. * Detailed information about plant was required to verify that modified stem was acceptable. Based on experience of author, original values were correct.
21	71	71	46	E	5/19: Capitalize "component" in stem	5/19: Made suggested changes.
22		22		E	5/19: Change "internal pressure" to "containment pressure" as this is the proper TS title.	5/19: Made suggested changes.
23	92	92	67	E	5/19: Change "fold-out page" to "Operator Action Summary page"	5/19: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
24		24		E	5/19: Change 9.8e03 to 9500 in distractor b as this reflects actual reading.	5/19: Made suggested changes. Also, added valve names.
25	98	98	73		5/19: Make stem into question instead of complete the sentence.	5/19: Made suggested changes.
26	26	26	1	R	5/19: Facility stated question was not required knowledge, that values were different for each unit and requested that the procedure referenced in stem be provided. Recommended replacement question also. 6/02 and 6/12: No changes	5/19: We verified that values were taught in class. Decided not to provide procedure as a reference since doing so would result in a direct look up question. Did not like replacement question. 6/02: Discussed with licensee and decided to keep question as-is but added "Unit 1" in stem. Changed Step 5 to Step 4 and donwcapped "from" in stem.
27	27	27	2	E R *	5/19: Requested that we eliminate No.2 seal from distractor A. Stated that not enough information in stem was provided to eliminate a failure of seal No. 2. 6/02: Again argued that not enough information was given - One facility rep agreed with us that question was acceptable as is. 6/02: Added "an" to distractor C.	5/19: Original question was from the bank and on a previous NRC exam. However, the original mark-up had "makeup to the RCS has increased to 40 gpm to maintain pressurizer level" in the stem. Reinserted this statement into the stem. 6/02: Added "an" to distractor C. * NRC review should have identified that question was not copied exactly as bank question.
28	28	28	3	E	5/19: Add "during this phase" to the stem.	5/19: Made suggested changes.
29	29	29	4	U R *	5/19: Need to add RH letdown is in service to the stem or distractor C is also correct.	5/19: Made suggested changes. *NRC review was acceptable.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
30	30	30	5	E R	5/19: PZR level is steady under these circumstances so remove slightly increasing from stem.	5/19: Disagreed. Level will increase slightly dur to sprays. No comments during 6/02 and 6/12 reviews.
31	31	31	6	U R *	5/19: Stem invalid as written. Suggested re-wording. [see retained copy for details] 6/02: Modify distractors A and B to Byron terms.	5/19: Stem was not invalid but agreed that it could have been worded better. Made suggested changes. 6/02: Made suggested changes. *NRC review was acceptable.
32	32	32	7	E R	5/19: Add "approximately" to distractors. Add "pages 5 and 10 of BOA available for reference" to stem 6/02: Add "manual" in front of turbine trip in distractor A	5/19: Made suggested changes except added "References are provided" instead of pointing out specific reference to use. 6/02: Made suggested changes.
33				U R *	5/19: Facility could not provide reference for battery life as requested.	5/19: Deleted question. Developed new one for 6/02 review. * NRC review identified this as a potential problem.
33	33	33	8	E R	6/02: Requested adding "10 minutes" to distractor D. Argued that question tested trivial knowledge. 6/12: Requested adding "10 minutes" to distractor D. POST EXAM: Requested NRC accept two answers; availability = reliability	6/02: Replaced "reliability of 0.90" with "high availability" in distractor A to eliminate concern with trivial knowledge. Did not include 10 minute reference as time is tested in distractor B. Minor word smithing in distractor D. 6/12: No changes made. POST EXAM: Not accepted. Only one answer.
34	34	34	9		No changes	No changes

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
35	35	35	10	U R *	5/19: Change distractor B since chilled water will trip on ESW isolation.	5/19: Made suggested changes. Didn't know fact about plant. *NRC review was acceptable. This was not expected to be identified during NRC review.
36	36	8			No changes	No changes
37	37	37	12	E	5/19: Change "degrees" to °F. Also requested full set of steam tables.	5/19: Made suggested changes.
38		12		E R *	5/19: Facility first stated that the question was not required knowledge but agreed later that day that question was acceptable. Suggested changes to stem since pressure values are different between units. 6/12: Bold Unit 2	5/19: Made suggested changes. Added "Unit 2" to stem. 6/12: Made suggested changes. *NRC review was acceptable. Difference in units not clearly documented in lesson plans.
39	39	39	14		No changes	No changes
40	40	40	15	E R	5/19: Change control rod shuffle to surveillance test. Also, change individual titles to "students" since those in training no longer belong to previous departments.	5/19: Changed Shuffle to surveillance. Kept individual titles - not a technical problem with question.
41	41	41	16		No changes	No changes
42	42	42	17		No changes	No changes
43	43	43	18	U R *	5/19: Question took too long to answer because values were all different - switching from one graph to another. Recommended making step position and bank the same for all.	5/19: Made suggested changes. * NRC review should have identified this problem.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
44	44	44	19	E R	5/19: Facility commented that question lacked operational validity since the valve is not used. Proposed different question. Change psig in distractor A to gpm.	5/19: Question is acceptable - valve could be used and tests knowledge of seal package. Changed psig to gpm. No comments during 6/02 and 6/12 reviews.
45	45	45	20	E	5/19: Supplied name of valve was I requested. Commented that they didn't have a learning objective.	5/19: Added name of valve.
46	46	46	21	E R	5/19: Suggested rewording of stem to differentiate between SI signal clearing and SI signal being reset. Wanted "Train A and B SI reset pushbuttons were depressed". Minor editorial changes elsewhere.	5/19: Added statement the spurious SI signal cleared and was reset - facility's recommended change would lead to correct answer without thought. Made other changes as suggested by facility.
47	1		76		5/19: Not required knowledge for RO. Make SRO question. Suggested replacement question for RO.	5/19: Used facility's replacement question (see Final RO #23). Didn't agree that original question was SRO-only but after further review and consultation with other chiefs, agreed to change to SRO-only. (Met 10 CFR 55.43.b.5) No changes to SRO question.
48	48	48	23	E R	5/19: Facility believed wording led to wrong answer. Suggested changing verb tense from future to present.	5/19: Made suggested changes.
49	49	49	24	E	5/19: Correct proper name of Dry Bulb (remove "and the" and "arithmetical")	5/19: Made suggested changes.
50	50	50	25	E	5/19: Correct typos (CB/CD instead of CD/CB in stem) "open" instead of "opens" in distractor B and "close" instead of "closes" in distractor C.	5/19: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
51	51	51	26	U R *	5/19: Change reactor power from 25% to 8%; remove turbine trip; and replace was started with is running in stem. Remove "the aux and" from distractor d as this information makes d correct.	5/19: Made suggested changes as these changes made question closer to reality. * NRC review should have identified problem with distractor D
52	52	52	27		No changes	No changes
53	53	53	28	E	5/19: Provided name of radiation monitor	5/19: Made suggested changes.
54	54	54	29		No changes	No changes
55	55	55	30	U R *	5/19: Provided name of radiation monitor. Also distractor D is correct. Change "1" to "4" hours.	5/19: Changed "start the makeup system" to "shutdown the makeup system" instead of changing hours. Candidates not required to know 4 hour LCOs therefore adding the 4 hours would easily eliminate this distractor. * NRC review should have identified problem with distractor D.
56	56	56	31		No changes	No changes
57	57	57	32	E	5/19: Add "routine" in front of 24 hours in stem.	5/19: Made suggested changes.
58	58	58	33	E	5/19: Change AFD to Delta-I	5/19: Made suggested changes.
59	59	59	34	E	5/19: Procedure reference incorrect in distractor D.	5/19: Made suggested changes.
60		70	45	E	5/19: Add "s" after breaker and eliminate "thermal" in stem.	5/19: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
61	61	61	36	U R ★	5/19: Distractors A and B are correct. Eliminate "A" and change to "SI accumulator injection". Capitalize RAPID in stem. 6/02: change "leak" to "break"	5/19: Agreed that two answers exist. Kept "A" as is but eliminated B and replaced with facility's suggestion. 6/02: Made suggested changes. ★ NRC review identified the concern; however, but resolution was inadequate.
62	62	62	37		No change	No change
63	63	63	38		No change	No change
64	64	64	39	E R	5/19: Capitalize "manually open" in the stem. Eliminate loop B valves from the stem as there is no value added.	5/19: Made suggested changes. Agreed that no value added by Loop B valves.
65	65	65	40	E	5/19: Procedure reference wrong.	5/19: Made suggested changes.
66	66	66	41	E	5/19: Change "fill" to "gravity feed" in distractor A to match procedure wording.	5/19: Made suggested changes.
67	67	67	42	E	5/19: Capitalize "not"	5/19: Made suggested changes.
68	68	68	43	E R	5/19: Remove "all PZR heaters are energized" and replace with "increased output on variable heaters" to match real situation.	5/19: Made suggested changes.
69	69	69	44	E	5/19: Remove comment about humidity in stem - unnecessary information.	5/19: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
70	70	15		E R	<p>5/19: Need to emphasize implementation of procedure steps. As written, the candidate should read the note in 1BFR-H.1 and transition out of it. Concerned that although an actual step is not performed, one might say that the procedure was entered to read note.</p> <p>6/12: Still concerned with wording. Suggested "the complete performance of" instead of "transition to and implementation of"</p>	<p>5/19: Agreed with concern and made suggested changes.</p> <p>6/12: Agreed with concern and made suggested changes.</p> <p>{note: removed from SRO exam since it aids in answering an SRO-only question.}</p>
71		19		E	<p>5/19: Reference changed</p> <p>6/12: Change "and" to "or"</p>	<p>5/19: Made suggested changes.</p> <p>6/12: Made suggested changes.</p>
72	72	72	47	R	5/19: Facility stated that background radiation levels would be higher than given in stem	5/19: Verified with NRC HP inspector that stem was acceptable as-is
73	73	73	48	R	5/19: Facility wanted LDE, SDE and CDE information removed from stem since this information is not used in determining TEDE	5/19: Kept as-is. Information may not be needed but question tests whether candidate knows what information is needed.
74	74	74	49	*	<p>5/19: Facility requested "unaffected loop" be changed to "Loop B" since rod motion could affect temperature in the unaffected loops.</p> <p>POST EXAM: Tave increases, not decreases on RCP trip</p>	<p>5/19: Added "Assume NO operator action AND NO rod motion" to eliminate this concern and did not change the distractors.</p> <p>POST EXAM: Accepted facility comment and changed answer.</p> <p>* NRC review and three licensee reviews should have identified this problem.</p>
75	75	75	50		No change	No change

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
76	76	76	51		No change	No change
77	77	77	52	E R	5/19: Change "sufficient" to "adequate" in distractors. Better spacing. 6/12: Add "Without program level" to each distractor for easier reading.	5/19: Made suggested changes. 6/12: Made suggested changes.
78	78	78	53	E	5/19: Remove information on Coil A since this information is not available in the control room. Change "B DATA" to "DATA B"	5/19: Made suggested changes.
79	79	79	54	R	5/19: Facility thought question was invalid because it tested trivial knowledge and provided a replacement. 6/12: Still wanted to change question and provided better replacement.	5/19: No changes were made to question as it tested operational characteristics of system. No comments were received on 6/02 review. 6/12: Compromised and accepted replacement.
80	80	80	55		No change	No change
81	81	81	56		5/19 and 6/02: Facility commented that this question was trivial and system was not used. Replacement question provided 6/12: Facility did not like suggested change. Agreed to provide another replacement within two days. 6/14: Provided replacement. Reviewed NRC suggested question and accepted.	5/19 and 6/02: : No change as question met requirements. Replacement question not acceptable as it tested mini-purge, not normal purge. 6/12: Modified question to a fill in the blank where candidate needed to know TS. 6/14: Replacement question unacceptable. Developed a new question which the facility accepted.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
82	82	82	57	E R	6/02: Reference new fuel racks in question and change distractors accordingly. 6/12: Add "new" in front of Holtec	6/02 and 6/12: Made suggested changes.
83	83	83	58	U R *	5/19: Facility thought question tested trivial knowledge. Suggested replacement. 6/12: Suggest changing load reduced from 80% to reactor trip from 100% for greater difference.	5/19: Question is acceptable. K/A did not match but was able to find better suited one (035A1.01 to 035K5.03) 6/12: Made suggested changes. * NRC review should have identified K/A concern.
84	84	84	59	E R	5/19: Suggested changes to stem. Wanted name of C-9 to be included in distractors.	5/19: Needed stem wording to support K/A. Changed "is in progress" to "has occurred". Added name of C-9 to distractors.
85	85	85	60	E	5/19: Capitalize "manually"	5/19: Made suggested changes.
86	86	86	61	E	5/19: Capitalize "all" in stem	5/19: Made suggested changes.
87	87	87	62	E	5/19: Replace "The" with "Both" and remove "on both units" in distractor D 6/12: Eliminate "2A Letdown Heat Exchanger has rupture a tube" as this aids in answering another question.	5/19: Made suggested changes. 6/12: Made suggested changes.
88	88	88	63	E	5/19: Change "by" to "near" in stem. Capitalize "all" in stem	5/19: Made suggested changes.
89	89	89	64	U R *	5/19: Change 1190 °F to 1090 °F since 1190 °F too close to 1200 °F (which could cause some to answer D - correctly) Change "Stay in" to "Transition to" in Distractor D.	5/19: Made suggested changes. *NRC review was acceptable.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
90	90	90	65		No change	No change
91	91	91	66		No change	No change
92		21		U R *	<p>5/19: Facility wanted stem to state that instrument air was isolated to containment. Add Unit 1 is at 400°F to rule out distractor C and change 60% to 0% in distractor D.</p> <p>6/02: Still wanted reference to containment in stem. Change "inadvertent" to "unintended" in stem.</p> <p>6/12: Agreed with change</p>	<p>5/19: Changed wording in stem but did not put reference to containment as this would make three distractors unviable.</p> <p>6/02: Made suggested changes except containment reference.</p> <p>Prior to 6/12: Modified stem to avoid further disagreement on this question. (But still did not include reference to containment.)</p> <p>*NRC review was acceptable. Difference in opinion.</p>
93	93	93	68	E	5/19: Capitalize "all" in stem	5/19: Made suggested changes.
94	94	94	69		No change	No change
95	95	95	70		No change	No change
96	96	96	71		No change	No change
97	97	97	72	R	5/19: Facility stated question lacked validity. Suggested replacement.	5/19: Kept as-is. Question is acceptable. Replacement was unacceptable.
98	2		77		5/19: Facility thought question should be SRO-only since it dealt with fuel handling specific equipment.	5/19: Didn't believe so but checked with other chiefs and agreed to make SRO-only.
99	99	99	74	E	5/19: Put degree signs in front of "F"	5/19: Made suggested changes.
100	100	100	75		6/12: Add "primary" in front of "basis" in stem	6/12: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
		23		E R	6/12: Add "channels has the" in stem.	6/12: Made suggested changes.
		25		E	6/02: Facility reviewed this question separately. No changes needed. 6/12: Add "Per TS" since admin limit is different.	6/12: Added Per TS to stem.
	3		78	E	6/02: Add "and that 1BFRC.2 should be completed before transition to 1BFR-P1.	6/02: Made suggested changes.
	4		79	U R *	6/02: Question not applicable anymore. BCA changed since last time question was used. Suggested replacement.	6/02: Verified that question is no longer valid (information not available to us during development) Accepted replacement question. * NRC review identified this as a potential problem - decided to request assistance from the facility in resolving concern.
	5		80	E	6/02: Remove "(SDM addressed)" from stem and add "and 2 stuck out RCCA's" to distractor D for continuity.	6/02: Made suggested changes.
	6		81	U *	6/02: Question no longer valid as TS changed. Suggested replacement.	6/02: Agreed that question was no longer valid and accepted replacement. *NRC review identified this as a potential concern and decided to ask for assistance during facility review.
	7		82	E R	6/02: Remove extraneous information in stem. Change "my" to "may" in D.	6/02: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
	8		83	U R *	6/02: Facility believed that question was LOD of 5. Worked together with NRC to develop a replacement question.	6/02: Agreed that LOD could be 5 - accepted new replacement. * NRC review was acceptable. Changes were made to this question based on a lack of agreement with facility and potential for appeal.
	9		84	E	6/02: Change "on" to "to" in stem	6/02: Made suggested changes.
	10		85		No change	No change
	11		86	E	6/12: Add "SER printout shows level low" to give more credibility to distractor C.	6/12: Made suggested changes.
	12		87		No change	No change
	13		88	U R *	6/02: Answer not correct. Should be Sunday start, not Monday start. Supplied names of circuits as requested. Add "per TS" since admin limit is different. Concern that unit should be starting down prior to answer (practice)	6/02: Miscalculated number of days - changed to Sunday. Added "per TS". Also added statement that system was red to avoid confusion about shutdown. * NRC review should have identified the number of days was miscalculated.
	14		89	E	6/02: Change IRM to Channel N31 6/29 - during exam: Candidate pointed out that N31 should be N35.	6/02: Made suggested changes. 6/29: Verified candidate was correct. Made announcement in class and changed on master.
	15		90	E	6/02: Remove "Operators are taking actions in accordance with 1BEP0" as this information is not needed.	6/02: Made suggested changes.
	16		91	E	6/02: Reworded stem for easier reading. Put "Steam dumps are armed" in stem instead of in each distractor.	6/02: Made suggested changes.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
	17		92	E	6/02: Add "Plenum" in front of RVLIS in distractor A	6/02: Made suggested changes.
	18		93	U R *	6/02: Question was similar to another. Suggested replacement.	6/02: Agreed. Accepted replacement. * NRC review should have identified similarity with previous question.
	19		94		No change	No change
	20		95	E	6/02: Add names of 10 CFR references.	6/02: Made suggested changes.
	21		96	E R	6/02: Supplied name of radiation monitor as requested. Suggested word changes to stem for easier understanding.	6/02: Made suggested changes.
	22		97	U R	6/02: Wording is confusing - similar concept as Final RO#15. Suggested significant changes	6/02: Made suggested changes.
	23		98		6/02: Requested replacing "heat sink problem" with "feedwater"	6/02: Kept question as-is. No reason provided for suggested wording change.
	24		99		6/02: Facility requested removing statement about MSIVs in stem and replacing distractor D with "transition to EP-1, "Loss of Reactor or Secondary Coolant" - reason was that validators missed this question.	6/02: Kept question as is. Question was from the bank and used on a previous exam. Reasoning not accepted.

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Draft RO	Draft SRO	Final RO	Final SRO	Type	Facility Comment	NRC Resolution
	25		100	R	<p>6/02: Facility believed question was beyond memory knowledge. Later agreed with NRC changes.</p> <p>6/12: Change valve stroke timing references to flow rates since engineering handles stroke times.</p>	<p>6/02: Did not agree that question was beyond knowledge as question asked what actions were appropriate for a temporary procedure change. Question was acceptable as-is but in the interest to NRC and facility, worked on distractors to make operational oriented instead of procedural oriented. Facility accepted changes.</p> <p>6/12: Made suggested changes.</p>

Question #2

The failed fuel monitor 1RT-PR006 uses which ONE of the following types of detectors?

- A. ~~Fixed~~ Geiger-Mueller (G-M) tube ~~detector~~.
- B. NaI crystal scintillation ~~detector~~.
- C. Anthracene crystal scintillation detector.
- D. ~~Neutron detector~~. *BF₃ proportional counter Neutron Detector*

*ANSWER

B

*REFERENCE

1. System Description Chapter 49: RADIATION MONITORS pgs 49-13
thru 49-20.

RO-only

Tier # 1 Group # 1 KA # 000076K201

Importance Rating Level of Difficulty 2

Bank X Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

*Consider this to lack operational validity and
weak link to KA*

*or
If this different distractor for C/O*

*eliminate
this question
replace with
C/S question
provided by facility
Replacement question
didn't fit Tier/Group.
made changes as noted by facility*

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:		DATE: 1/15/92	QUESTION#:	
FORMAT REVIEW:		DATE:	ORIGINAL#:	SAR0024 01
TECH REVIEW:		DATE:	SEQUENTIAL#	
QES.TYPE MC	POINTS: .5	Cog Level	Disc Value	KO#: S.AR1-02
KA#/IMP:	/			S.AR1-02-C
Rev2 KA#	/			
		LESSON PLAN		
		AR/PR		

QUESTION:

The failed fuel monitor IRT-PR006 uses which one (1) of the following types of detectors?

- a. Geiger-Mueller (G-M) tube
- b. NaI crystal scintillation
- c. Compensated Ion chamber
- d. Boron triflouride neutron detector

REVISE THIS - NOT KO APPLICABLE; TJF 11/3/95

ANSWER KEY/BASES/DISTRACTOR BASES:

- b. NaI crystal scintillation

COMMENTS:

REV.1 1/28/92 MRW; adjusted point value from 1 to .5.

REVIEW:

EXAMINATION QUESTION SHEET

AUTHOR:	K. NASH	DATE:	3/11/99	QUESTION#:	Ch15aLP
FORMAT REVIEW:	T. FOSS	DATE:	4/6/99	ORIGINAL#:	
TECH REVIEW:	T. FOSS	DATE:	4/6/99	SEQUENTIAL#	183
QUES.TYPE	MC	POINTS:	1.0	Cog Level	C Disc Value
KA#/IMP:					KO#: S.CV1-04-E
Rev2 KA#	004K6.37		2.9 3.4	LESSON PLAN	
				CVCS	

QUESTION:

Given:

- Plant has been operating at 100% power for the past ~~two~~ ^{four} months.
- Chemistry recommends placing the CVCS cation bed in service for one hour.
- The cation bed had been removed from service three ~~weeks~~ ^{months} ago.

Which ONE of the following plant responses indicates the cation bed was directly placed in service without proper flushing?

- Radiation levels on 1RE-PR006 (Gross Failed Fuel Radiation Monitor) ~~would~~ increase.
- Control rods start stepping out.
- Letdown flow and VCT level increase.
- Low Pressure Letdown valve, PCV-131, will open further.

ANSWER KEY/BASES/DISTRACTOR BASES:

ANSWER b.

EXPLANATION The cation demin will have a higher concentration of boron than the current RCS boron concentration. This will result in boration of the letdown and subsequent return to RCS. The increase in RCS boron will initiate a drop in Tav_g and when the difference between Tav_g and Tref becomes < -1.5°F, the control rods will begin to move out to restore Tav_g. Letdown and charging flows are NOT expected to change when the demin is placed in service., so the VCT level is unaffected. Pressure sensing for PCV-131 is upstream of the valve and is NOT expected to significantly change (and any change expected would result in lower pressure causing the valve to throttle close). Unless the ion bed is depleted, no significant change in CVCS radiation levels is expected when the demin is placed in service.

COMMENTS:

Question #4

Which ONE of the following is the reason for promptly closing the seal leakoff isolation valve for a RCP with a ~~high~~ number 1 seal leakoff once the RCP has stopped rotating?

HIGH (upper case)

- A. Protect number 2 seal from possible debris from the number 1 seal.
- B. Prevention of damage to the thermal barrier due to high flow.
- C. Minimize the amount of RCS water that is routed to containment sump.
- D. Assure ~~a minimum back pressure is maintained on~~ the number 3 seal.
proper operation of

ANSWER

A

REFERENCE

RCP Lesson Plan

RO only

Tier # 2 Group # 1 KA # 003A2.01

Importance Rating 3.5 Level of Difficulty 2

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam x

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

made change to stem

Kept 'D' as is. Maintain as viable distractor

Question #6

The unit is at 100% equilibrium power (constant Tavg) with all systems in automatic. A plant transient with the CVCS has caused Pressurizer level to increase to 68% and pressure has increased to 2280 psig.

Which one of the following describes the Pressurizer heaters and spray status for these conditions?

- Backup heaters on, Variable heaters on, Spray valves closed.
- Backup heaters off, Variable heaters off, Spray valves closed.
- Backup heaters off, Variable heaters on, Spray valves throttled open.
- Backup heaters on, Variable heaters off, Spray valves throttled open.

ANSWER

D

REFERENCE

PZR Lesson Plan

RO only

Tier # 2 Group # 1 KA # 004K3.07

Importance Rating 3.8 Level of Difficulty 3

Bank_____ Modified Bank_____ (Note changes or attach parent) New___x_____

Previous NRC Exam _____

Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__

Proposed references to be provided to applicants during examination:_____

Suggest either of following table format such as

	Backup heaters	Variable heaters	Spray valves
A	ON	ON	Closed
B	OFF	OFF	closed
C	.	.	.
D	.	.	.

or just upper case ON OFF CLOS

Question #7

SI Block

PZR LOW PRESS SI BLOCK PERMISSIVE

1

RCS pressure has decreased to 1850 psig during a plant cooldown. P-11 ~~bypass permissive~~ is LIT and appropriate actions have been taken as required by 1BGP100-4, "Plant Shutdown." Subsequently a steamline break occurs downstream of the MSIV's.

What is the ESF response to this leak?

- A. Dependent upon break size, both a steamline isolation and an SI will occur.
- B. A steamline isolation will always occur but an SI will only occur on a large break.
- C. Dependent upon break size, a steam line isolation will occur; however an SI will not occur.
- D. An SI will always occur, but a steamline isolation will only occur on a large break.

Answer:

C

References:

SSPS Lesson Plan

RO only

Tier # 2 Group # 1 KA # 013A1.05

Importance Rating 3.4 Level of Difficulty 3

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

~~Deleted~~ "bypass per

Candidate should know what P-11 is.
Therefore, not providing title - cue to
correct answer.

1B

ne
no

On

- , C

1

of

e_

to

Agien
#34

Question #11

Unit 1 in MODE ³ "Diesel Driven AFW Pump Monthly Surveillance", is in progress.

The following conditions are noted with respect to the 1B AFW pump:

Suction pressure.....17 psig
 Discharge pressure.....1900 psig
 Engine Speed.....1910 rpm
 Recirc Flowrate.....90 gpm
 ALL SG levels slowly INCREASING.

Which of the following describes the operator actions required by these conditions ?

- A. ~~Shut 1AF005 E/F/G/H to prevent water addition to the SGs.~~ Dispatch an operator to identify leaks on discharge header piping.
- B. Verify the SX suction valves 1AF006B and 1AF017B are OPEN.
- C. Dispatch an operator to check the position of recirc valves and locally verify recirc flow.
- D. Trip the 1B Diesel Driven AFW pump.

Question #12

For Unit 2, the worst case accident for peak containment pressure would be a double ended guillotine break of the ____ (1) _____. The resultant peak containment pressure would be at ____ (2) ____ psig.

Which of the following accidents and pressure are correct?

- | | (1) | (2) |
|----|--------------------------------|------------|
| A. | Pressurizer relief line | 41.6 psig. |
| B. | RCS at the RCP suction | 44.4 psig. |
| C. | Main steam line in containment | 45.6 psig. |
| D. | Feedwater line in containment | 47.8 psig. |

Which ONE of the following describes the relationship between the Auxiliary Feedwater System (AFW) piping connection to the Main Feedwater System piping?

- A. MFW bypass valves 6-inch piping and upstream of the FWIV.
- B. MFW regulating valves 14-inch piping and upstream of the FWIV.
- C. FWIV and upstream of the containment penetration.
- D. Containment penetration and upstream of the last feedwater check valve prior to the SG.

C

AFW Lesson Plan

Tier # 2 Group # 1 KA # 061K1.02

Importance Rating 3.4 Level of Difficulty 3

Bank_____ Modified Bank_____ (Note changes or attach parent) New__x_____

Previous NRC Exam _____

Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____

Proposed references to be provided to applicants during examination: _____

Facility requested Valve #'s or provide P+ID.

To maintain L.O.D, we provide value #'s.

Question #16

Given the following plant conditions:

Reactor Power is 100%

Reactor trip breaker testing is being performed with Reactor Trip Bypass breaker A (BYA) racked in and closed

Both Reactor Trip Breakers (RTA and RTB) are closed

What would be the result if a failure of a single 15 VDC power supply in the "A" Train SSPS Logic cabinet occurred?

- A. The redundant power supply maintains normal conditions and a Rod Dev Power Rng Tilt alarm is generated.
- B. ~~The redundant power supply maintains normal conditions~~
~~Plant conditions remain stable with a General Warning alarm~~ *remaining lit*
- C. The reactor trips when both the UV and Shunt trip coils are actuated for RTA.
- D. The reactor trips when the UV trip coils are actuated for both RTA and RTB.

Answer:

B

References:

SSPS Lesson Plan

RO only

Tier # 2 Group # 2 KA # 012A2.04

Importance Rating 3.1 Level of Difficulty 3

Bank X Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

Question #20

Given the following conditions on Unit 1:

Unit is in MODE 5 during cooldown per BGP 100-5
RCS has just been filled to solid plant condition
RH pump 1B is operating in Shutdown Cooling mode
RCS temperature is 180°F and stable
RCS pressure is 340 psig and stable

A failure of the letdown pressure control valve controller, PK-131, causes RCS pressure to rise to 575 psig, with RH pump 1B delta-p measured at 10 psid.
470 *100*

Which of the following describes ALL the component actions that occur to mitigate the consequences of this pressure rise, assuming no operator action?

- A. Both PZR PORV's open.
- B. ~~PZR PORV 1RY455A~~ ^{Both PZR PORV's open} and the RH loop suction relief valve open.
- C. RH loop suction relief valve and RH discharge relief valve open.
- D. PZR PORV 1RY456, the RH loop suction relief valve and the RH loop discharge relief valve open.

Answer:
B

Reference:
PZR Lesson Plan

~~BCB-1~~ Auct. Low RCS Temp vs. Max PORV setpoint

RO only

Tier # 2 Group # 3 KA # 005A2.02

Importance Rating 3.5 Level of Difficulty 3

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam x

Memory or Fundamental Knowledge Comprehension or Analysis X

Proposed references to be provided to applicants during examination:

*Decided to
change to
question from
1998 exam.*

Must provide ^{Unit 1} Pressure & Temp Limits Report

Figure 2.3 (Page 7)

Located in Byron TRM.

or
BCP-1 Figure 29 Rev. 3

*will be
provided*

The following conditions exist on Unit 1:

- Unit is in MODE 5 during cooldown per 1BGP 100-5
- RCS has just been filled to solid plant condition
- RHR pump 1A operating in Shutdown Cooling mode
- RCS temperature - 150°F equilibrium
- RCS pressure - 335 psig

A failure of the letdown pressure control valve PCV-131 causes RCS pressure to rise to 454 psig, with RHR pump 1A deltaP measured at 120 psig.

Which of the following occurs to provide warning of or mitigate the consequences of this pressure rise?

- a. The RHR loop suction relief valve will open, and the RHR suction valves from the RCS, 1RH8701A and B, will close.
- b. Both Pzr PORVs will open, and the RHR loop suction relief valve and the RHR loop 1A discharge relief will open.
- c. Pzr PORV 1RY456 will open, and the RHR suction valves from the RCS, 1RH8701 and 1RH8702, will close.
- d. Pzr PORV 1RY455A will open, and the RHR loop suction relief valve will open.

Answer d Exam Level S Cognitive Level Comprehension Facility: Byron ExamDate: 9/14/98
Tier: Plant Systems RO Group: 3 SRO Group: 3

J5 Residual Heat Removal System

A2. Ability to (a) predict the impacts of the following on the Residual Heat Removal System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:

A2.02 Pressure transient protection during cold shutdown 3.5 3.7

Explanation of PORV 1RY455A setpoint for opening in LTOPS is 446 psig for given temperature. RHR suction relief valves are set to open at 450 psig. PORV 1RY456 setpoint is 462 psig. The RHR discharge reliefs are set to open at 600 psig.

Reference Title	Facility Reference Number	Section	Page	Revision	L. O.
Unit 1 (LTOPS) Low Temperature Overpressure Protection System		1BCB-1		Figure 29	3
Chp 14, Pressurizer (RY)	Chp 14	II.C.2	58	3	24
Chp 18, Residual Heat Removal System	Chp 18	II.A.5 & 9	24 & 32	2	4.e & f, 10

Material Required for Examination Curve Book BCB-1 Figure 29

Question Source: New

Question Modification Method:

Question Source Comments:

Comment Type Comment

Question #26

The transition is made from EP-0 to ES-0.1. Step 5 in ES-0.1 requires boration for all rods NOT fully inserted. There are 3 rods not fully inserted into the core at this point. What is the MINIMUM gallons that will have to be borated FROM the RWST for the three rods?

lower
case

- A. 1320 gallons
- B. 5500 gallons
- C. 3960 gallons
- D. 16500 gallons

Answer :

D

Reference:

ES-0.1 step 5

Both

Tier # 1 Group # 1 KA # 000005K3.01

Importance Rating 4.0 Level of Difficulty 3

Bank_____ Modified Bank_____ (Note changes or attach parent) New___x___

Previous NRC Exam _____

Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__

Proposed references to be provided to applicants during examination: _____

Facility requested a copy of step 4 be provided. We decided not to since providing step will give away answer.

LESSON PLAN: BOA PRI-2

ANSWER KEY

A reactor trip has occurred and the following pertinent plant conditions exist:

- Reactor trip breakers..... open
- Reactor trip bypass breakers..... open
- neutron flux..... decreasing
- rods D-4 and J-2 DRPI Indication... 228 steps

Which of the following BEST describes the operator action required with respect to core reactivity.

- a. Enter BFR S.1, Response to Nuclear Power Generation/ATWS and perform all steps.
- b. Compensate for the stuck control rods by using the emergency boration method to borate.
- c. Immediately perform a Shutdown Margin calculation and verify the Reactor is subcritical.
- d. Reposition the Accuracy switch on the back of the DRPI panel as necessary to determine extent of DRPI failure.

ANSWER:

- b. Compensate for the stuck control rods by using the emergency boration method to borate.

Question #27

Given the following conditions:

Unit 1 is operating at 100% power
RCP No. 1 SEAL LEAKOFF FLOW HIGH alarm is received
No. 2 seal leakoff high flow alarm has been printed
RCP No. 1 seal leakoff recorder indication is high offscale on the high range

Which one of the following has occurred and what action is required?

- A. The No. 1 ~~and No. 2~~ seals ² have failed and a controlled reactor shutdown is required.
- B. ^{uc} Only the No. 2 seal has failed and continued monitoring of RCP conditions is required.
- C. The No. 1 seal has failed and immediate reactor trip is required.
- D. The No. 2 and No. 3 seals have failed and continued monitoring of RCP conditions is required.

Answer:

C

References:

1BOA RCP-1

Common

Tier # 1 Group # 1 KA # 000015A1.22

Importance Rating 4.0 Level of Difficulty 4

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam x

Memory or Fundamental Knowledge _____ Comprehension or Analysis X

Proposed references to be provided to applicants during examination: _____

*Put a statement
about makeup -
question now
identical to
previous NRC question*

*Not enough information in
stem to definitively establish that
No. 2 seal has not failed*

~~option~~

SRO Q# 70

HIST N
DIFF C

Used
Answer c.

Given the following:

- Unit 1 is operating at 100% power.
- RCP No. 1 SEAL LEAKOFF FLOW HIGH alarm is received.
- No. 2 seal leakoff high flow alarm has been PRINTED.
- RCP No. 1 seal leakoff recorder indication is pegged HIGH.
- Make-up to the RCS has increased 40 gpm to maintain pressurizer level.

Which ONE of the following has occurred?

- a. The No. 1 and No. 2 seals have failed and the RCS pressure drop is across the No. 3 seal.
- b. The No. 2 seal has failed and is allowing water from the standpipe to flow out the No. 1 seal leakoff line.
- c. The No. 1 seal has failed and the RCS pressure drop is across the No. 2 seal.
- d. The No. 2 and No. 3 seals have failed and the RCS pressure drop is across the No. 1 seal.

K-A # 000015EA1.22 4.0 \ 4.2 Sample Plan EPE GRP 1 000015

Reference ILT Simulator Lesson Plan BOA RCP-1, "Reactor Coolant Pump Seal Failure", p. 9

COMMENTS deleted 6 gpm from stem per Max Bailey

Question #29

The following plant conditions exist:

The reactor is shutdown

RCS temperature is 290°F and stable

RCS pressure is 320 psig and stable

RH is in shutdown cooling *RH letdown is in service*

CC surge tank level is slowly decreasing with the makeup valves to CC surge tank fully open

A leak has occurred in the ?

- A. RH Heat Exchanger
- B. Seal Water Heat Exchanger
- C. Letdown Heat Exchanger
- D. Thermal Barrier Heat Exchanger

Answer:

B

References:

BOA PRI-6 Attachment A

CC Lesson plan

Both

Tier # 1 Group # 1 KA # 000026A2.01

Importance Rating 2.9 Level of Difficulty 4

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam x

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

If RH L/D not in service "C" becomes potentially correct answer too.

Question #30

Given the following conditions on Unit 1:

Reactor power is steady at 100%
Tave is steady at 582°F
PZR level is 60% and ~~slightly increasing~~ steady
PZR pressure is 2230 psig and slowly decreasing
ALL systems are aligned normally

Which of the following conditions has occurred?

- A. LK-459 PZR level controller has failed high
- B. PZR PORV 456 is full open
- C. PZR pressure transmitter PT-458 has failed high
- D. PZR spray valve RY455B, has failed to 50% open

Answer:
D

References:
BAR 1-12-A1

Both

Tier # 1 Group # 1 KA # 000027A1.01

Importance Rating 4.0 Level of Difficulty 3

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis x

Proposed references to be provided to applicants during examination:

→ Basis:
Small decrease in pressure
would not cause pZR level increase
Statement is true however
spray adding water
∴ slight ~~increase~~ increase
in level. Keeps as.

Original initial conditions
are invalid

Question #31

Unit 1 has tripped due to a steamline break inside containment. Shortly after the trip, the following parameters were recorded:

PZR pressure 1750 psig and stable

PZR level 22% and stable

CNMT pressure 7.8 psig (on all instruments)

S/G level(NR)	31% A,	30% B	25% C	34% D
S/G pressures	760 psig 1A	775 psig 1B	680 psig 1C	800 psig 1D

A steamline isolation occurred due to?

- A. the rate sensitive S/G pressure circuit.
- B. the steamline high pressure rate signal.
- C. the containment pressure circuit for steamline.
- D. the PZR low pressure SI.

Handwritten notes:
S/L
a. ~~3000~~ Low pressure Steamline Isol
b. S/G press rate stable Isol

Answer:

A

changed

References:

SSPS lesson plan

Common

Tier # 1 Group # 1 KA # 000040K3.02

Importance Rating 4.4 Level of Difficulty 3

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

Question #32

The plant has the following conditions:

Reactor Power 52% steady state
Generator load is steady at 600MW ~~with 100 MVAR lagging~~
Condenser vacuum 2.2 in. HgA and steady

A leak developed in one of the water boxes causing pressure to rise at the rate of 0.2 inches HgA/minute. After 2 minutes, the operator began a load decrease at the rate of 10MW/minute in an attempt to offset the pressure rise and reduced ~~load~~ ^{space} below the P-8 setpoint.

Assuming the load decrease remained constant and the rate of pressure rise remained constant throughout the event, what action is required? (Pages 5 and 10 of 1BOA SEC-3 available for reference.)

- A. The operator would initiate a ^{Manual} turbine trip after the load is reduced to less than 30%.
- B. No operator action, the turbine will automatically trip at 35% power causing a reactor trip.
- C. The operator will initiate a manual reactor trip at ^{approximately} 39% power.
- D. The operator will initiate a manual reactor trip at ^{approximately} 47% power.

Answer:
C

References:
1BOA SEC-3

Common
Tier # 1 Group # 1 KA # 000051A2.02
Importance Rating 3.9 Level of Difficulty 3
Bank Modified Bank (Note changes or attach parent) New x
Previous NRC Exam
Memory or Fundamental Knowledge Comprehension or Analysis x
Proposed references to be provided to applicants during examination: Chart in SEC-3 n 1BOA

Made editorial changes

We are not providing comment
that references are available
since this ~~will~~ will direct

candidate toward answer (i.e. how to answer question)

Reference will be provided.

Basis
next reference

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

- ~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

~~See~~ eliminated
See SRO# 33 (draft)
SRO# 31

EXAMINATION QUESTION SHEET

AUTHOR: B. HOCHSTETTER DATE: 11/6/92 QUESTION#: _____
FORMAT REVIEW: _____ DATE: 11/17/97 ORIGINAL#: SDC0030 01
TECH REVIEW: _____ DATE: 11/17/97 SEQUENTIAL# _____
QUES.TYPE MC POINTS: 0.5 Cog Level _____ Disc Value _____ KO#: S.DC1-04-B
KA#/IMP: _____ / _____ LESSON PLAN S.DC1-06-C
Rev2 KA# _____ / _____ 125 VDC

QUESTION:

The purpose of the 125 VDC battery is to supply 125 VDC to: (select ONE of the following)

- ESF and non-ESF DC buses during normal operation
- Only ESF DC buses during normal operation
- Only ESF DC buses during loss of off-site power
- ESF and non-ESF DC buses during loss of all AC power

ANSWER KEY/BASES/DISTRACTOR BASES:

- d. ESF and non-ESF DC buses during loss of all AC power

COMMENTS:

Rev 1 - Added "select ONE..." per standard; TJF 11/17/97

Question #33

Byron is considered an Alternate AC (AAC) Station for design analysis during a Station Blackout. Which one of the following is a reason that Byron chose to qualify as an AAC station instead of a four hour coping station?

- A. EDG's have a reliability of .90 and are 100% redundant
- B. AAC source is available within 30 minutes.
- C. EDG's have sufficient excess capacity within their 4000 hour ratings to serve as ACC for the opposite UNIT.
- D. Unit Crosstie of ^{4KV ESF Buses} ~~AP~~ capable from the Main Control Room. *within 10 minutes.*

ANSWER:
D

References:
ECA 0.0 Lesson Plane
Byron FSAR

Common

Tier # 1 Group # 1 KA # 000055K2.1.10

Importance Rating 3.3 Level of Difficulty 2

Bank # Modified Bank # (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

NOTE TO FACILITY REVIEWER: We need reference for battery discharge rates. If these values are not presented in class or if a suitable reference cannot be found, then we may consider changing the focus of the question.

*changed distractor w.
" " d but
did not include 10 minutes.*

*Testing trivial differences
A correct except for ref of .9 vs .95
C " " 2000 4.5 ?*

Question #32

The plant has the following conditions:

Reactor Power 52% steady state
Generator load is steady at 600MW
Condenser vacuum 2.2 in.HgA and steady

A leak developed in one of the water boxes causing pressure to rise at the rate of 0.2 inches HgA/minute. After 2 minutes, the operator began a load decrease at the rate of 10MW/minute in an attempt to offset the pressure rise and reduce load below the P-8 setpoint.

Assuming the load decrease remained constant and the rate of pressure rise remained constant throughout the event, what action is required? (References are provided)

- A. The operator would initiate a manual turbine trip after the load is reduced to less than 30%.
- B. No operator action, the turbine will automatically trip at 35% power causing a reactor trip.
- C. The operator will initiate a manual reactor trip at approximately 39% power.
- D. The operator will initiate a manual reactor trip at approximately 47% power.

Question #33

Byron is considered an Alternate AC (AAC) Station for design analysis during a Station Blackout. Which of the following is a reason that Byron chose to qualify as an AAC station instead of a 4-hour coping station?

- A. EDG's have a high availability rate and are 100% redundant
- B. AAC source is available within 30 minutes.
- C. AAC source is capable of carrying the immediate needs of both units for 8 hours
- D. Capable of unit cross-tying of auxiliary power from the Main Control Room.

*Wanted
10 minutes*

Ab.

Question #35

Which ONE of the following describes the effect on containment if the ^{Essential} Service Water ^(SX) supply to ~~ALL~~ the Reactor Containment Fan Coolers (RCFC) is secured? (Assume normal 100% power operation.)

Containment temperature would...

- A. remain the same since the other containment HVAC equipment would maintain cooling.
Containment Chiller will also trip upon Essential Service Water (SX) isolation
- B. increase slightly since Chilled Water also supplies RCFC's during normal operation.
Essential (SX)
- C. increase because only Service Water supplies RCFC's.
- D. increase since Component Cooling can only supply RCFC's with a manual lineup.

ANSWER:
B

REFERENCE:
Containment Ventilation and Purge Lesson Plan
Essential Service Water Lesson Plan
1BOA PRI-7

Common
Tier # 1 Group # 1 KA # 000062A1.01
Importance Rating 3.1 Level of Difficulty 2
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New x _____
Previous NRC Exam _____
Memory or Fundamental Knowledge _____ Comprehension or Analysis x _____
Proposed references to be provided to applicants during examination: _____

Question #38

For UNIT 2,

1 The worst case accident for peak containment pressure would be a double ended guillotine break of the ____ (1) _____. The resultant peak containment pressure would be at ____ (2) ____ psig.

Which of the following accidents and pressure are correct?

- | | (1) | (2) |
|----|--|------------|
| A. | Pressurizer relief line | 41.6 psig. |
| B. | RCS at the RCP suction Cold Leg | 44.4 psig. |
| C. | Main steam line in containment | 45.6 psig. |
| D. | RCS in the hot leg prior to S/G
Feedwater Line in containment | 47.8 psig. |

as given #12

Answer:

B

Reference:

EF-4-ESF TS, Bases B, 3.6.4 pg B 3.6.4-2
Containment Lesson Plan

Common

Tier # __1__ Group # __1__ KA # __000069A1.2__

Importance Rating __3.3__ Level of Difficulty __2__

Bank _____ Modified Bank _____ (Note changes or attach parent) New __x__

Previous NRC Exam _____

Memory or Fundamental Knowledge __x__ Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

Should reference
unit and
not required knowledge
~~KA invalid~~ from mean
Answers incorrect
different answers
u-1 + u-2

Question #40

A non-licensed individual may move control rods using the IN/HOLD/OUT switch located in the control room under which of the following conditions?

The non-licensed individual is ...

- A. a plant operator performing a surveillance test and is directly supervised by the on shift NSO.
- B. a qualified nuclear engineer performing a ^{surveillance test} ~~control rod shuffle~~ and is directly supervised by a previously licensed NSO for that unit.
- C. a ^{student} ~~plant operator~~ who is enrolled in the initial license training ^{program} and is directly supervised by a certified instructor of the class.
- D. a ^{student} ~~maintenance manager~~ who is enrolled in ^{the} initial license training program and is under the direct supervision of the on shift NSO.

Answer:

D

Reference:

BAP 300-1 Conduct of Operations

Common

Tier # 3 Group # KA # 2.1.1

Importance Rating 3.7 Level of Difficulty 2

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

B - was add "test"

C + D - ~~test~~ - changing to student will give away C + D as possible answers (making it 50-50)

The candidate must read entire statement (controlled by class) to arrive at right answer.

personnel in ILT are considered "Students" or "Candidates" and not members of other departments

Question #43

Which of the following operations results in the largest reactivity change?
(BCB-1, figures 2 and 2A available for reference)

- A. Inserting 10 steps with rods initially at ¹⁹⁰200 steps on CBD at 100% power at ~~500 MWD/MTU~~ ⁸⁵EFPH.
- B. Inserting ¹⁰8 steps with rods initially at ¹⁹⁰110 steps on ^{CBD}CBC at 0% power at ~~15000 MWD/MTU~~ ^{11,500}EFPH.
- C. Withdrawing 10 steps with rods initially at 190 steps on CBD at 100% power at ~~15000 MWD/MTU~~ ^{11,500}EFPH.
- D. Withdrawing ¹⁰8 steps with rods initially at ¹⁹⁰115 steps on ^{CBD}CBC at 0% power at ~~500 MWD/MTU~~ ⁸⁵EFPH.

$$2.6 \times 10^{-26}$$

$$7 \times 10^{-26}$$

$$4.2 \times 10^{-26}$$

$$4.8 \times 10^{-26}$$

Answer:

B

Reference:

1BCB-1 Integral and Differential Rod Worth

Common

Tier # 2 Group # 1 KA # 001K5.05

Importance Rating 2.8 Level of Difficulty 4

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis x

Proposed references to be provided to applicants during examination: Integral and Differential Rod Worth vs. Steps Withdrawn

See Back for
possible alternative question

To
Difference between B+C
originally within graph reading
errors possible
change MWD/MTU to
EFPH to be consistent
with graph

Question #44

How would the RCP seals be affected if 1CV8142, #1 Seal Bypass Valve, was opened with the associated RCP running at normal operating pressure in RCS?

- A. Flow across the #1 seal will fall to 0 ^{gpm} ~~psig~~ and the seal will be damaged by overheating.
- B. Differential pressure changes across the #1 seal resulting in unbalanced seal motion.
- C. Full RCS pressure is applied to the #2 Seal causing it to become the primary seal.
- D. Pressure to the seal return line to the VCT is lowered causing flow across #2 seal to drop.

Answer:

B

References:

RCP Lesson Plan

Common

Tier # 2 Group # 1 KA # 003A1.09

Importance Rating 2.8 Level of Difficulty 3

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x _____

Proposed references to be provided to applicants during examination: _____

*Lacks operational validity
valve not used
C possible correct answer*

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:	T. FOSS	DATE:	11/28/95	QUESTION#:	
FORMAT REVIEW:	P. DiGiovanna	DATE:	3/23/99	ORIGINAL#:	SRC5031 00
TECH REVIEW:	G. SMITH	DATE:	3/23/99	SEQUENTIAL#	
QUES. TYPE	MC	POINTS:	.5	Cog Level	C Disc Value
KA#/IMP:				KO#:	S.RC2-03
Rev2 KA#					S.RC2-04
					S.RC2-04-B
					S.RC2-04-E

LESSON PLAN
REACTOR COOLANT PUMP

QUESTION:

The Operator observes that VCT pressure is 13 psig.

Which of the following describes the effect of this on operation of RCP seals?

- a. The pressure is high and may force excessive flow thru the #2 RCP seal.
- b. The pressure is low and may force excessive flow thru the #3 RCP seal.
- c. The pressure is low and insufficient flow may be achieved thru the #2 seal.
- d. The pressure is low and insufficient flow may be achieved thru the #3 seal.

ANSWER KEY/BASES/DISTRACTOR BASES:

- c. The pressure is low and insufficient flow may be achieved thru the #2 seal.

COMMENTS:

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:	B'woodbank	DATE:	2/9/99	QUESTION#:	
FORMAT REVIEW:	T. FOSS	DATE:	8/30/99	ORIGINAL#:	SRC5046 00
TECH REVIEW:	T. FOSS	DATE:	8/30/99	SEQUENTIAL#	
QUES.TYPE	MC	POINTS:	1.0	Cog Level	C
KA#/IMP:	003K6.04		2.8 3.1	Disc Value	
Rev2 KA#					
LESSON PLAN					
REACTOR COOLANT PUMP					

QUESTION:

During full power operations on Unit 1, a spurious Phase A isolation signal is received.

Which of the following describes the immediate effect upon RCP seal operation?

- a. No. 1 Seal leakoff flow increases due to loss of normal injection flow.
- b. No. 2 Seal leakoff flow increases due to higher pressure in No. 1 Seal leakoff line.
- c. No. 3 Seal leakoff flow increases due to failure of No. 1 Seal.
- d. No. 3 Seal injection decreases because Primary Water to containment has isolated.

ANSWER KEY/BASES/DISTRACTOR BASES:

- b. No. 2 Seal leakoff flow increases due to higher pressure in No. 1 Seal leakoff line.

A Phase A will cause seal leakoff flow Ctmt isolations to shut. This will cause pressure in the line to rise (normally about 30-50 psig) to 150 psig where the leakoff line relief valve to the PRT opens. Since this higher pressure is felt on the #1 seal leakoff line, more seal flow will be directed to the #2 seal and out its leakoff line. This will not affect #3 seal leakoff flow and the #1 seal does not fail. #3 seal injection is from a standpipe so supply will not be affected by a short term isolation.

COMMENTS:

Question #46

Given the following plant conditions on Unit 1:

Reactor power was at 100% when a spurious SI signal was generated

Reactor Trip Breaker B failed to open

Spurious The SI signal ~~was reset~~ cleared *Train A and B SI Reset pushbuttons were depressed*
The RH pumps, SI pumps, and 1A ~~CV~~ *CV Pump* were secured.

After the ECCS pumps were secured, a small break LOCA occurred.

Which of the following occurs when containment pressure rises to 10 psig? (Assuming no operator actions are taken)

- A. Only the MSIV and MSIV bypass valves close.
- B. 1B and 1C MSIV's close but the 1A and 1D MSIV's remain open.
- C. The 1A RH, 1A SI, and 1A CV Pumps start; the MSIV and MSIV bypass valves close.
- D. The 1B RH and 1B SI Pumps start; the MSIV and MSIV bypass valves close.

Answer:

D

References:

EF-2 ESF setpoints

Common

Tier # 2 Group # 1 KA # 013A3.02

Importance Rating 4.1 Level of Difficulty 3

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

To differentiate between cleared + reset, we changed statement to: The spurious SI signal cleared and was reset. Licensee statement of Train A and B SI signal clearing and Reset of SI

correct answer is correct answer. Lie something is wrong with it wasn't reset)

Question #48

A LOCA has occurred. Core exit thermocouple temperatures are indicating 690 °F and increasing rapidly.

The Incore Thermocouples ^{are} ~~will~~ ^{ing} provide satisfactory indication and ^{will} become ___(1)___ accurate above ___(2)___ (Assume NO core cooling is present)

- | | (1) | (2) |
|----|------|---------|
| A. | less | 700 °F |
| B. | more | 1800 °F |
| C. | more | 700 °F |
| D. | less | 1800 °F |

ANSWER:

D

REFERENCE:

Incore Instrumentation Lesson Plan

Common

Tier # 2 Group # 1 KA # 017K6.01

Importance Rating 2.7 Level of Difficulty 2

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge x Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

current wording leads
candidate to incorrect
answer due to
words

Question #51

Given the following plant conditions:

Reactor power is ⁸/₂₅%

~~A turbine trip and~~ Feedwater isolation (FWI) occurred due to P-14

The startup feedwater pump ~~was started~~ is running

What actions **MUST** be performed in order to realign valves to establish main feedwater flow to the S/G's?

The P-14 signal must be _____

- A. blocked and the main and aux FWI relays reset.
- B. blocked and the reactor trip breakers need to be cycled open.
- C. cleared and the FWI aux relays reset.
- D. cleared, the reactor trip breakers cycled open, and ~~the aux and~~ main FWI relays reset.

Answer:

C

References:

Main Feedwater Lesson plans

Common

Tier # 2 Group # 1 KA # ⁹056K4.19

Importance Rating 3.2 Level of Difficulty 3

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

more closely replicate
true operating conditions

D remove aux to make
incorrect

Question #55

Given the following plant conditions:

Unit 1 is in MODE 5

Unit 2 is in MODE 6

Main Control Room Ventilation radiation monitoring is provided by train A

Gas Monitor ORE-PR032B fails low

/ Control Room Gaseous Radiation Monitor

Which of the following is required to be performed?

- A. Immediately, suspend all core alterations on Unit 2.
- B. Within 1 hour initiate continuous monitoring using a portable monitor having the same alarm setpoint.
- C. Within 1 hour, place the redundant Control Room Ventilation Filtration System in the normal mode.
- D. Within ⁵~~1~~ hour start the Control Room Makeup System.

4 *(5/D)*

Answer:

C

References:

Control Room HVAC Lesson Plan

ITS ~~3.3.6~~ 3.3.7

Common

Tier # 2 Group # 1 KA # 072K2.1.14

Importance Rating 2.5 Level of Difficulty 2

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis x


Proposed references to be provided to applicants during examination:

Changed 'D' to shutdown Makeup System within 1 hr.

*Facility wanted change to 4 hrs. but candidates
not required to know 4 hr TS. ∴ the change
would render 'D' implausible
Current D is also correct
per Tech Spec*

Question #61

WHICH ONE of the following is the cause for a rapid increase in Pressurizer level following a LOCA event with a loss of subcooling margin? ^{UC}

- A. ~~A PZR vapor space leak.~~ SI Accumulator injection
- ~~B. Voiding in the reactor vessel head.~~ ^(B) 
- C. SI flow refilling the PZR.
- D. PZR reference leg temperature decreased.

ANSWER:

A

REFERENCE:

PZR Lesson Plan

Common

Tier # 1 Group # 2 KA # 000008A2.12

Importance Rating 3.4 Level of Difficulty 3

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge X Comprehension or Analysis

Proposed references to be provided to applicants during examination:

Keep 'A' as correct
change 'B'

Remove
possible
correct answer

Question #61

WHICH ONE of the following is the cause for a RAPID increase in Pressurizer level following a LOCA event with a loss of subcooling margin?

- A. A PZR vapor space ~~leak~~ ~~LOCA~~ break
- B. SI accumulator Injection.
- C. SI flow refilling the PZR.
- D. PZR reference leg temperature decreased.

ANSWER:

A

REFERENCE:

PZR Lesson Plan

Common

Tier # __1__ Group # __2__ KA # __000008A2.12__

Importance Rating __3.4__ Level of Difficulty __3__

Bank _____ Modified Bank _____ (Note changes or attach parent) New __x__

Previous NRC Exam _____

Memory or Fundamental Knowledge __X__ Comprehension or Analysis ____

Proposed references to be provided to applicants during examination: _____

Question #64

Which of the following will satisfy conditions necessary to ^{uc}manually open Containment Recirculation Valve SI8811A?

1. SI8812A - open
2. SI8812A - closed

- ~~3. SI8812B - open~~
- ~~4. SI8812B - closed~~

- ~~3, 5. CS001A - open~~
- ~~4, 6. CS001A - closed~~
- ~~7. CS001B - open~~
- ~~8. CS001B - closed~~

- ~~5, 9. RH8701A - open~~
- ~~6, 10. RH8701B - closed~~

- A. 1, 3, 5, ~~7, 10~~
- B. ~~2, 4, 6, 8, 9~~
- C. ~~1, 4, 6~~
- D. 2, 4, 6, ~~8, 10~~

Answer:

D

Reference
ECCS Lesson Plan
ECCS-3 ECCS

Common
Tier # 1 Group # 2 KA # W/E11K2.1
Importance Rating 3.6 Level of Difficulty 2
Bank _____ Modified Bank _____ (Note changes or attach parent) New x _____
Previous NRC Exam _____
Memory or Fundamental Knowledge x _____ Comprehension or Analysis _____
Proposed references to be provided to applicants during examination: _____

Remove too
confusing
not required

Question #68

Unit 1 is at 100% power with the following plant conditions:

~~All PZR heaters are energized~~ increased output on variable heaters
 Letdown flow is 75 gpm
 Charging flow is 105 gpm
 S/G levels are constant
 Tavg/Tref are matched

Which of the following events is in progress?

- A. The PZR level control channel has failed high.
- B. An atmospheric steam dump valve has opened.
- C. A S/G tube leak has occurred.
- D. PZR spray bypass flow has increased.

Answer:

C

Reference:

1BOA SEC-8

Common

Tier # 1 Group # 2 KA # 000037A2.01

Importance Rating 3.0 Level of Difficulty 4

Bank x Modified Bank _____ (Note changes or attach parent) New _____

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis x

Proposed references to be provided to applicants during examination: _____

Question #70

~~Given the following plant conditions:~~

The plant has experienced an unisolable main steam line break inside containment. The operators are implementing actions of 1BCA-2.1 "Uncontrolled Depressurization of all S/G's". Feed flow was reduced to 25 gpm to each S/G by operator action.

Based on the above conditions, which of the following describes ^{the use of} when (or if) a transition to ~~1FRH-1~~, "Loss of Secondary Heat Sink" ~~is made?~~

^{and implementation of}
The transition to ~~1FRH-1~~ is ____?
^{1BFR-H,1}

- A. Required immediately.
- B. Required when 10% NR level cannot be restored to ONE steam generator.
- C. Required when 10% NR level cannot be restored to ALL steam generators.
- D. Not required.

Answer:
D

References:
1BFR-H.

Common

Tier # 1 Group # 2 KA # W/E05A2.01

Importance Rating 3.4 Level of Difficulty 2

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

*Transition to is required
Implementation is not*

*As written - A + ~~D~~ are
correct*

6/12

Question #15

Draft #70

the complete

Given the following plant conditions:

The plant has experienced an unisolable main steam line break inside containment. The operators are implementing actions of 1BCA-2.1 "Uncontrolled Depressurization of all S/G's". Feed flow was reduced to 25 gpm to each S/G by operator action.

Based on the above conditions, which of the following describes the use of 1BFR-H.1, "Loss of Secondary Heat Sink".

~~subsequent~~ performance of procedural steps in
The transition to and implementation of 1BFR-H.1 is ____?

- A. ~~/~~ Required immediately.
- B. ~~/~~ Required when 10% NR level cannot be restored to ONE steam generator.
- C. ~~/~~ Required when 10% NR level cannot be restored to ALL steam generators.
- D. ~~/~~ Not required.

confusing wording

Question #16

Given the following plant conditions:

Reactor Power is 100%

Reactor trip breaker testing is being performed with Reactor Trip Bypass breaker A (BYA) racked in and closed

Both Reactor Trip Breakers (RTA and RTB) are closed

What would be the result if a failure of a single 15 VDC power supply in the "A" Train SSPS Logic cabinet occurred?

- A. The redundant power supply maintains normal conditions and a Rod Dev Power Rng Tilt alarm is generated.
- B. Plant conditions remain stable with the General Warning alarm remaining lit.
- C. The reactor trips when both the UV and Shunt trip coils are actuated for RTA.
- D. The reactor trips when the UV trip coils are actuated for both RTA and RTB.

Question #72

The following stable conditions are encountered when surveying a room located in the auxiliary building RPA:

General Area Radiation level in room	125 60 mrem/hr
Radiation level at 30 cm from pipe	375 mrem/hr
Radiation level on contact with pipe elbow	400 mrem/hr
Contamination levels	850 dpm/cm ² beta-gamma
	0 dpm/cm ² alpha
Airborne radiation level	0.6 DAC

What are the correct radiological postings or labels required to reflect the current radiological conditions for this room?

- A. "DANGER, HIGH RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".
- B. "CAUTION, RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".
- C. "DANGER, HIGH RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".
- D. "CAUTION, RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".

Keeping as is..
We verified initial
conditions with
an RD Inspector.

~~Rev level @ 30cm~~
is 375 mrem/hr
~~Gen area~~
Gen area could not
be this low

ANSWER:

C

REFERENCE:

NUCLEAR GENERAL EMPLOYEE TRAINING

Common

Tier # 3 Group # KA # 2.3.1

Importance Rating 2.6 Level of Difficulty 3

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis X

Proposed references to be provided to applicants during examination:

Question #73

An operator received radiation exposure at both Braidwood and Byron Stations during the year.

The exposure record until the last day of the year is:

	<u>Braidwood</u>	<u>Byron</u>
Deep Dose Equivalent (DDE)	275 mrem	75 mrem
Less Dose Equivalent (LDE)	15 mrem	10 mrem
Committed Effective Dose Equivalent (CEDE)	120 mrem	25 mrem
Shallow dose Equivalent (SDE)	25 mrem	15 mrem
Committed Dose Equivalent (CDE)	25 mrem	5 mrem

On the last day of the year the individual, at Byron Station, was requested to work in an area where the known radiation rate is 280 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has been collecting and it has been determined to be totally gamma radiation.

If the worker takes 15 minutes to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

- A. 450 mrem
- B. 565 mrem
- C. 595 mrem
- D. 660 mrem

ANSWER:
B

REFERENCE:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # 3 Group # KA # 2.3.4
Importance Rating 2.5 Level of Difficulty 3
Bank x Modified Bank (Note changes or attach parent) New
Previous NRC Exam
Memory or Fundamental Knowledge Comprehension or Analysis X
Proposed references to be provided to applicants during examination:

Information will remain. Question intent is to determine if candidate knows how to determine TEDE.

LDE, SDE, CDE terms are not usually used and need to shorten question to prevent excess fine from being eliminated this data base
Eliminating this data base eliminates knowledge 5/22/00

Question #77

WHICH of the following describes (1) how, and (2) why Pressurizer Level is programmed?

- A. (1) From auctioneered-high Tave
(2) Pressurizer volume is INSUFFICIENT to accommodate reactor coolant system water volume changes while limiting pressure transients.
- B. (1) From auctioneered-high Tave
(2) Pressurizer volume is ADEQUATE to accommodate reactor coolant system water volume changes while limiting pressure transients.
- C. (1) From auctioneered-high Tc
(2) Pressurizer volume is ADEQUATE to accommodate reactor coolant system water volume changes while limiting pressure transients.
- D. (1) From auctioneered-high Tc
(2) Pressurizer volume is INSUFFICIENT to accommodate reactor coolant system water volume changes while limiting pressure transients.

Without
program
level

changed
to table
format

Question #74

Unit 1 was operating at 28% power when the Loop B Reactor Coolant Pump (RCP) tripped on overcurrent.

Which ONE of the following describes the unit's initial response? (Assume no operator action.)

- A. A reactor trip occurs and ^{Loop B}unaffected loop Tav_g increases.
- B. A reactor trip occurs and ^{Loop B}unaffected loop Tav_g decreases.
- C. A reactor trip will NOT occur and ^{Loop B}unaffected loop Tav_g decreases.
- D. A reactor trip will NOT occur and ^{Loop B}unaffected loop Tav_g increases.

ANSWER:

C.

Reference:

ESF Setpoints EF-1

Common

Tier # 2 Group # 2 KA # 002K6.02

Importance Rating 3.6 Level of Difficulty 2

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

adding
"assume no rod movement"
keeping "unaffected loop".

If use unaffected Loop
The rod motion out may
cloud issue

Question #79

Following a Large Break Loss of Coolant Accident the Reactor Vessel Level Instrument System (RVLIS) is being used to monitor level. No RCPs are running. The RCS is saturated.

What is the expected response for RVLIS indication when the 1A RCP is started?

- A. Only RVLIS Head Level will read lower.
- B. Only RVLIS Plenum level will read lower.
- C. RVLIS Head and Plenum levels will read higher.
- D. RVLIS Head and Plenum levels will read accurately.

Answer:

B

References:

RVLIS Lesson Plan

Inadequate Core Cooling Detection System

Common

Tier # 2 Group # 2 KA # 016K1.01

Importance Rating 3.4 Level of Difficulty 3

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis x

Proposed references to be provided to applicants during examination:

We believe question is valid.
Tests operational characteristics
of system.

Not objective related
Tests trivial knowledge.

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:		DATE: 2/11/91	QUESTION#:	
FORMAT REVIEW:		DATE: 10/25/99	ORIGINAL#:	SIT0011 02
TECH REVIEW:		DATE: 10/25/99	SEQUENTIAL#	
QUES.TYPE	MC	POINTS: 1.0	Cog Level	Disc Value
KA#/IMP:				KO#: S.IT1-04
Rev2 KA#				
LESSON PLAN				
INADEQUATE CORE COOLING				

QUESTION:

The RVLIS Plenum Main Control Board display indicates 15%. This value indicates the ...

- a. actual level in the reactor vessel.
- b. minimum level that may be in the reactor vessel; actual level may be higher.
- c. maximum level that may be in the reactor vessel; actual level may be lower.
- d. level sensor selected by the operator for display.

ANSWER KEY/BASES/DISTRACTOR BASES:

- b. minimum level that may be in the reactor vessel; actual level may be higher.

Numerical value is conservative in that it is a guaranteed (minimum) value (for all except 0%). Once a sensor is uncovered, the next lower elevation sensor will now appear on display.

COMMENTS:

Rev 1 - Doubled point value; TJF 6/30/99

Rev 2 - Modified stem by including actual value; otherwise both b & c correct for 0% plenum; modified dist d for better accuracy; TR 99-1112; TJF 10/25/99

Question #78

The following rod position indications exist:

The DATA B failure light is lit
LED for 24 steps is lit

What will be the range of the rod, using the normal and maximum indication accuracies due to coil placement and thermal expansion?

- A. 20-32
- B. 18-30
- C. 16-30
- D. 14-28

Question #79

Following a Large Break Loss of Coolant Accident the Reactor Vessel Level Instrument System (RVLIS) is being used to monitor level. No RCPs are running. The RCS is saturated.

What is the expected response for RVLIS indication when the 1A RCP is started?

- A. Only RVLIS Head Level will read lower.
- B. Only RVLIS Plenum level will read lower.
- C. RVLIS Head and Plenum levels will read higher.
- D. RVLIS Head and Plenum levels will read accurately.

*Replaced with
attached.*

NRC
suggested
replacement.

Question #79

A small break LOCA occurred coincident with loss of offsite power. The actions of 1BEP ES-1.2 Post LOCA Cooldown and Depressurization, are being performed. Plant status is as follows:

- 1A CV pump and 1B SI pump are running
- Pressurizer level is stable at 58%
- RCS pressure is stable at 900 psig
- RVLIS indicates that a void exists in the reactor vessel head

With RCS subcooling stable at 3°F, the operator turns on a set of backup heaters to raise subcooling margin.

Which of the following describes the expected RVLIS and pressurizer level response?

- | | <u>RVLIS</u> | <u>Pressurizer</u> |
|----|--------------|--------------------|
| A. | Decrease | Increase |
| B. | Increase | Decrease |
| C. | Decrease | Decrease |
| D. | Increase | Increase |

answer B

ILT lesson plan BFR-I.3 step 8 page 11

ILT BEP ES-0.2 Step 14 page 97

ILT BEP ES 1.2 Step 18 page 89

new

Question #81

The normal containment purge system is capable of performing the following functions:

- A. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6
- B. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6
- C. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6
- D. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

Answer:

D

Reference:

VP-2 Containment Purge

Common

Tier # 2 Group # 2 KA # 029K2.1.27

Importance Rating 2.8 Level of Difficulty 2

Bank _____ Modified Bank _____ (Note changes or attach parent) New x

Previous NRC Exam _____

Memory or Fundamental Knowledge x Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

Generic - Knowledge of Function/Purpose/A match
System is available for use during refuel.
No
System not used
Trivial

REVIEW:

EXAMINATION QUESTION SHEET

AUTHOR:	T. FOSS	DATE:	6/17/98	QUESTION#:	
FORMAT REVIEW:		DATE:		ORIGINAL#:	57
TECH REVIEW:		DATE:		SEQUENTIAL#	
QUES.TYPE	cert	POINTS:	1.0	Cog Level	Disc Value
KA#/IMP:	/			LESSON PLAN	
Rev2 KA#	/			CONTAINMENT VENT	
				KO#:	S.VP1-O8
					S.VP1-O8-F
					S.VP1-O8-H
					S.AR1-04
					S.AR1-04-A-02
					S.AR1-05

QUESTION:

Given the following conditions:

- Containment mini-purge supply and exhaust is in operation.
- Containment Fuel Handling Incident Rad Monitor, RE-AR012J goes into High Alarm

What is the response of the system?

- BOTH Trains of*
- A. ~~All four containment~~ mini-purge supply and exhaust valves close and the running fans remain running.
- BOTH Trains of*
- B. ~~All four containment~~ mini-purge supply and exhaust valves close and the running fans trip.
- C. One train of mini-purge supply and exhaust valves close and the running fans remain running.
- D. One train of mini-purge supply and exhaust valves close and the running fans trip.

ANSWER KEY/BASES/DISTRACTOR BASES:

- D. One train of mini-purge supply and exhaust valves close and the running fans trip.

COMMENTS:

From Millstone 1997 ILT NRC RO Exam

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:		DATE: 1/16/92	QUESTION#:	
FORMAT REVIEW:		DATE: 8/10/99	ORIGINAL#:	SVP0013 01
TECH REVIEW:		DATE: 8/10/99	SEQUENTIAL#	
QUES. TYPE	MC	POINTS: .5	Cog Level	Disc Value
KA#/IMP:	/			KO#: S.VP1-04
Rev2 KA#	/			
			LESSON PLAN	
			CONTAINMENT VENT	

QUESTION:

The unit is in Mode 1 with containment pressure at 0.8 psig. Which of the following flow paths is used to to vent the containment to reduce pressure?

- a. Main purge supply line
- b. Main purge exhaust line
- c. Mini purge supply line
- d. Mini purge exhaust line

ANSWER KEY/BASES/DISTRACTOR BASES:

- d. Mini purge exhaust line

COMMENTS:

REV.1 2/20/92/ TJF;Cut pt. value in half.

6/2

Question #81

The normal containment purge system is capable of performing the following functions:

- A. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6
- B. One complete air change out ~~in~~ containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6
- C. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6
- D. One complete air change out ~~in~~ containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

Answer:

D

Reference:

VP-2 Containment Purge

System Not Used

Common

Tier # 2 Group # 2 KA # 029K2.1.27

Importance Rating 2.8 Level of Difficulty 2

Bank _____ Modified Bank _____ (Note changes or attach parent) New x

Previous NRC Exam _____

Memory or Fundamental Knowledge x Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

Given the following on Unit 1:

- Refueling is in progress with fuel being transferred from Containment to the Spent Fuel Pool (SFP)
- Spent Fuel Pool level is stable at 24' 6" (424' 3")
- Containment Mini Purge is in progress with supply and exhaust fans running

The crew has just completed a transfer of the SFP Cooling loops and the 1B SFP Cooling Pump has just been stopped when the following occur:

- SPENT FUEL PIT LEVEL HIGH LOW annunciator (1-1-C1) alarms
- Local level is reported at 424' 1"

What condition is the cause of this alarm?

- a. Containment Ventilation Isolation occurred.
- b. The Mini-Purge Supply fan tripped on overcurrent.
- c. The Fuel Handling Building Charcoal Booster Fans started on Unit 2 SI.
- d. Stopping the 1B SFP Cooling Pump resulted in a cooldown of the SFP water.

Answer b Exam Level B Cognitive Level Application Facility: Braidwood ExamDate: 6/7/99
 Tier: Plant Systems RO Group: 2 SRO Group: 2

033 Spent Fuel Pool Cooling System

A1. Ability to predict and/or monitor changes in parameters associated with operating the Spent Fuel Pool Cooling System controls including:

A1.01 Spent fuel pool water level

2.7 3.3

Explanation of Answer When the Mini-Purge Supply fan tripped and the Exhaust fan continued to run, CNMT pressure dropped resulting in increased pressure differential between the SFP area and CNMT. Since the SFP (transfer pit) and refueling cavity are connected, the pressure difference resulted in raising the level in the refueling cavity and lowering the level of the SFP. All other conditions result in NO change of SFP level or an expected rise in SF level. The operation of the FHB charcoal adsorbers fans would tend to raise level by decreasing FHB pressure (or have NO change). A CNMT Vent Isol occurs CNMT pressure should NOT change since both Minipurge Supply and Exhaust are both affected.

Reference Title	Facility Reference Number	Section	Page	Revisio	L. O.
Alarm Response	BwAR 1-1-C1	A.2.e	1		
Spent Fuel Pool Cooling and Cleanup	Chapter 51/I1-FC-XL-02	II.A.3.e	8	5	3, 7.a
Containment Mini-Purge Sys Operation	BwOP VQ-6	D	1	11E2	

Material Required for Examination

Comment Type Comment

Question Source: New

Question Modification Method:

Question Source Comments:

Record Number: 53 RO Number: 44 SRO Number: 42

6/12.
review.

Question #81

The normal containment purge system is capable of performing one complete air change out every hour and is designed for safe access to containment within (1) hour(s) after a planned reactor shutdown in Modes (2).

- | | (1) | (2) |
|----|-----|------------|
| A. | 1 | 4, 5 and 6 |
| B. | 1 | 5 and 6 |
| C. | 3 | 4, 5 and 6 |
| D. | 3 | 5 and 6 |

Question #82

irradiated?

If all fuel racks in the Spent Fuel Pool are filled with radiated fuel assemblies, what is the MINIMUM boron concentration required to maintain a safe reactivity condition of less than 0.95 Keff? (Assume Holtec SFP Storage Racks)

- A. 0 ppm
B. ~~1250~~ 150 ppm
C. ~~2000~~ 300 ppm
D. ~~2400~~ 500 ppm

ANSWER;
C

REFERENCE:
ITS Tech Spec 3.7.15

Common

Tier # 2 Group # 2 KA # 033A4.05

Importance Rating 3.1 Level of Difficulty 2

Bank _____ Modified Bank _____ (Note changes or attach parent) New x

Previous NRC Exam _____

Memory or Fundamental Knowledge x Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

is this live w
new fuel racks?

Question #83

What is the mechanism that MINIMIZES the effect of shrink on indicated narrow range level for the D-5 S/G's when load is reduced from 80% to approximately 60% on the loss of a feed pump?

- A. The circulatory velocity in the downcomer increases causing a pressure decrease.
- B. Constant tempering flow reduces the preheat requirements for the incoming feedwater.
- C. The level program maintains mass constant in the S/G.
- D. The location of the lower level tap experiences a rise in static pressure that tends to offset the drop in the steaming rate.

Answer:
D

References:
S/G Lesson Plan

Common

Tier # 2 Group # 2 KA # 035A1.0T

Importance Rating 3.8 Level of Difficulty 3

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge x Comprehension or Analysis

Proposed references to be provided to applicants during examination:

Changed KA to more appropriate

Kept question because it

demonstrated / tested

difference between Unit 1 & 2.

Mechanism not ~~trivial~~ knowledge
important

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:	B'woodBank	DATE:	4/29/99	QUESTION#:	
FORMAT REVIEW:	T. FOSS	DATE:	7/27/99	ORIGINAL#:	SSG0026 00
TECH REVIEW:	T. FOSS	DATE:	7/27/99	SEQUENTIAL#	236
QUES. TYPE	MC	POINTS:	1.0	Cog Level	C
KA#/IMP:		Disc Value		KO#:	S.SG1-08-A
Rev2 KA#	035A1.01				S.SG1-08-C
					S.SG1-03
					A.IC1-12-A
					A.IC1-12-C

QUESTION:

Both Unit 1 Steam Generator Wide Range (WR) and Narrow Range (NR) level channels read approximately 60% indicated level while at power.

Which of the following is a correct statement concerning S/G WR and NR level indication during normal 100% power operations.

- a. WR level indicates HIGHER than actual level because WR is cold calibrated.
- b. WR level indicates LOWER than actual level because WR is cold calibrated.
- c. NR level indicates LOWER than actual level because NR is cold calibrated.
- d. NR level indicates HIGHER than actual level because NR is cold calibrated.

ANSWER KEY/BASES/DISTRACTOR BASES:

- b. WR level indicates LOWER than actual level because WR is cold calibrated.

WR S/G level is cold calibrated (65-104°F) and NR S/G level is corrected for decreased density at operating temperatures, thus WR will read lower than actual level as temperature rises.

COMMENTS:

Question #89

Given the following conditions on Unit 1:

A LOCA has occurred.

The crew is in EP-0 at step 15 with the following plant conditions:

CETCs are reading ¹⁰⁹⁰1190 °F
RCS pressure is 1950 psig
Containment pressure 6 psig and increasing
S/G pressures are 1180 psig
AFW maximum flow capability 400 gpm
S/G levels (NR): 1A S/G 25%, 1B S/G 24%, 1C S/G 26%, 1D S/G 30%

Based on the above conditions, what is the proper procedure to be in?

- A. FR-C.1, "Response to Inadequate Core Cooling"
- B. FR-H.1, "Response to a Loss of Secondary Heat Sink"
- C. FR-Z.1, "Response to High Containment Pressure"
- D. ^{Transition to}~~Stay in~~ EP-1, "Loss of Reactor or Secondary Coolant"

Answer:

B

Reference:

1BFR-H.1 LOSS OF SECONDARY HEAT SINK

Common

Tier # 3 Group # KA # 2.4.1

Importance Rating 4.3 Level of Difficulty 2

Bank Modified Bank **(Note changes or attach parent)** New x

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis x

Proposed references to be provided to applicants during examination:

*Remove # too close
to 1200, my pick
last ↑ to 1200.*

Question #92

Unit 1 instrument air pressure decreased from 95 psig to 90 psig. What operator actions are required to prevent inadvertent operation of affected components during restoration of instrument air to containment?

- 15, at 400° F
Isolated and then returned to 95 psig
The instrument air to containment was
- A. PZR Spray Valve Controllers are taken to MANUAL and placed at 0% demand.
 - B. Charging Flow Controller, 1CV121, is taken to MANUAL and placed at 0% demand.
 - C. RH Heat Exchanger Bypass Flow Control Valves are taken to MANUAL and placed at 0% demand.
 - D. 1CC130A, 1A Letdown Heat Exchanger Outlet Temperature Controller, is taken to MANUAL and placed at 0% demand.

ANSWER:

A

REFERENCE:

1BOA SEC-4

Common

Tier # 1 Group # 3 KA # 000065A1.03

Importance Rating 2.9 Level of Difficulty 3

Bank x Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge X Comprehension or Analysis

Proposed references to be provided to applicants during examination:

Candidate should know that TA isolates to containment
no change made.

Clarify
what TA was
isolated to

6/2

Question #21

*depressurized to
containment air
isolates.*

*Reworded
item*

Unit 1 was at 400°F when instrument air pressure isolated. The standby service air compressor quickly restored header pressure to above 95 psig. What operator actions are required to prevent ~~inadvertent~~ operation of affected components during restoration?

unintended

- A. PZR Spray Valve Controllers are taken to MANUAL and placed at 0% demand.
- B. Charging Flow Controller, 1CV121, is taken to MANUAL and placed at 0% demand.
- C. RH Heat Exchanger Bypass Flow Control Valves are taken to MANUAL and placed at 0% demand.
- D. 1CC130A, 1A Letdown Heat Exchanger Outlet Temperature Controller, is taken to MANUAL and placed at 0% demand.

Question #22

The following plant condition exists:

Unit 1 is in HOT SHUTDOWN.

Which of the following is the MAXIMUM allowable Unit 1 containment internal pressure reading in accordance with Technical Specifications 3.6.4, "Containment Pressure"?

- A. -.10 psig
- B. -.50 psig
- C. +.50 psig
- D. +1.0 psig

6/12

Question #21

Unit 1 was at 400°F when the instrument air header depressurized. Immediate actions were taken in accordance with 1BOA SEC-4, "Loss of Instrument Air". The cause of the instrument air problem was quickly repaired and the standby service air compressor restored header pressure to above 95 psig. During restoration from this loss of instrument air, operators took manual actions to prevent unintended operation of equipment. Which of the following controllers would the operators place in MANUAL with a 0% demand to prevent unintended operation?

A. PZR Spray Valve Controllers

→ 1RY455B
1RY455C

B. Charging Flow Controller, 1CV121

C. Controller.....for the RH Heat Exchanger Bypass Flow Control Valves

→ 1A RH 618, 1B RH 619

D. 1A Letdown Heat Exchanger Outlet Temperature Controller, 1CC130A

→ 1CC1300 - 1B

Question #22

The following plant condition exists:

Unit 1 is in HOT SHUTDOWN.

Which of the following is the MAXIMUM allowable Unit 1 containment internal pressure reading in accordance with Technical Specifications 3.6.4, "Containment Pressure"?

A. -.10 psig

B. -.50 psig

C. +.50 psig

D. +1.0 psig

Question #97

Which ONE of the following is an indication that recombination is occurring after having placed the Hydrogen Recombiners in service?

- A. Hydrogen Recombiner power increases to 20 KW.
- B. Containment dewpoint decreases after Hydrogen Recombiners are placed in service.
- C. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.
- D. Containment pressure decreases after Hydrogen Recombiners are placed in service.

ANSWER:
C

REFERENCE:
OBOSR 6.8.1-1

Common

Tier # 2 Group # 3 KA # 028A4.01

Importance Rating 4.0 Level of Difficulty 3

Bank _____ Modified Bank _____ (Note changes or attach parent) New x

Previous NRC Exam _____

Memory or Fundamental Knowledge x Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

*System knowledge
Keep question as is.*

*Q not valid
No KO*

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:		DATE: 1/16/92	QUESTION#:			
FORMAT REVIEW:		DATE: 7/28/99	ORIGINAL#:	SHG0002 00		
TECH REVIEW:		DATE: 7/28/99	SEQUENTIAL#			
QUES.TYPE	MC	POINTS: 1.0	Cog Level	Disc Value	KO#:	S.HG1-03
KA#/IMP:			LESSON PLAN			
Rev2 KA#			COMBUSTIBLE GAS			

QUESTION:

Which list of components correctly describes the flowpath for a H₂ recombiner?

Cnmt suction, ...

- a. blower, reaction chamber, gas heater, gas cooler, cnmt return.
- b. gas heater, reaction chamber, blower, gas cooler, cnmt return.
- c. gas heater, blower, reaction chamber, gas cooler, cnmt return.
- d. blower, gas heater, reaction chamber, gas cooler, cnmt return.

ANSWER KEY/BASES/DISTRACTOR BASES:

- d. blower, gas heater, reaction chamber, gas cooler, cnmt return.

COMMENTS:

REVIEW:**EXAMINATION QUESTION SHEET**

AUTHOR:	<u>G. WACHS</u>	DATE:	<u>11/15/96</u>	QUESTION#:	<u> </u>
FORMAT REVIEW:	<u>T. FOSS</u>	DATE:	<u>7/30/99</u>	ORIGINAL#:	<u>SHG0016 00</u>
TECH REVIEW:	<u>T. FOSS</u>	DATE:	<u>7/30/99</u>	SEQUENTIAL#	<u> </u>
QES.TYPE	<u>MC</u>	POINTS:	<u>.5</u>	Cog Level	<u> </u> Disc Value <u> </u> KO#:
KA#/IMP:	<u> </u> / <u> </u>				<u>S.HG1-06</u>
Rev2 KA#	<u> </u> / <u> </u>				<u>S.HG1-06-A</u>
				LESSON PLAN	<u> </u>
				COMBUSTIBLE GAS	<u> </u>

QUESTION:

How is the hydrogen concentration of the process stream of the containment hydrogen recombiners maintained at less than 5%?

- a. The outlet flow is recirculated back to the inlet to ensure reaction chamber hydrogen concentration is within limits.
- b. A neutral gas is used to dilute the process stream.
- c. The hydrogen purge system is used to dilute the containment atmosphere to maintain hydrogen concentration less than 5%.
- d. Design basis limits are established to ensure hydrogen production is maintained below this concentration.

ANSWER KEY/BASES/DISTRACTOR BASES:

- b. A neutral gas is used to dilute the process stream.

COMMENTS:

6/12

Question #23

The following microampere readings were taken from the Power Range NIS detectors:

	N41	N42	N43	N44
Detector A (Upper)	360	330	345	325
Detector B (Lower)	360	365	360	375

The 100% current value for all detectors is 400 microamperes. Which of the following detectors has the most limiting Quadrant Power Tilt Ratio?

with

channels
has the

- A. N41
- B. N42
- C. N43
- D. N44

Question #24

Which of the following conditions will cause radwaste key locked release tank outlet valves 0WX353 and 0WX896 to auto-close?

- A. High alarm on 0PR10J, Station Blowdown Rad. Monitor.
- B. Circulating water blowdown flow of 9500 gpm.
- C. Both Inlet and Outlet valves of a release tank inadvertently opened.
- D. Conductivity level of 0.22 micro-mhos on the outlet of the radwaste mixed bed demineralizer.

SRO - 6/2

Question #4

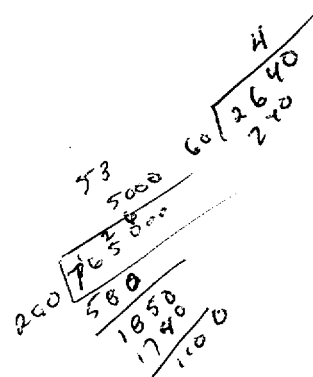
The Reactor was tripped 2 hours ago due to a RCP problem. A large LOCA occurred 1 hour ago. A subsequent loss of Emergency Coolant Recirculation occurred. 1BCA-1.1 is the procedure in effect with a RWST level of 60% (assuming 100% accuracy of level instrumentation).

Given the minimum ECCS flow required (from figure 1BCA 1.1-1), when must all pumps be stopped due to RWST level? (Assume no RWST make up will exist)

- A. 9 hours, 10 minutes
- B. 10 hours, 40 minutes
- C. 13 hours, 40 minutes
- D. 15 hours, 10 minutes

Answer:
C

Reference:
1BCA-1.1
ECCS Lesson Plan
10 CFR 55.43(b)(5)
290 gpm at 238500 gallons



RO____ SRO__x____
Tier # __1__ Group # __1__ KA # __W/E01K2.2__
Importance Rating __3.9__ Level of Difficulty __3__
Bank _____ Modified Bank _____ (Note changes or attach parent) New __x__
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis __x__
Proposed references to be provided to applicants during examination: Figure 1BCA 1.1-1

Reg'd to know RWST
% - gallons from mem?

Given the following conditions for Unit 1:

- A reactor trip and SI occurred at 0700
- RH system problems resulted in a loss of recirculation capability
- Current time is 1350
- RCS subcooling - 10°F
- 1A and 1B CV Pumps are running
- High Head SI flow - 350 gpm
- 1A SI Pump flow - 80 gpm
- 1B SI Pump flow - 110 gpm

*BWD 1999
CERT
EXAM*

Which of the following identifies the ECCS pumps that should remain running following determination of minimum SI flow for decay heat removal? (Assume equal flow from each CV Pump.)

- a. BOTH SI Pumps.
- b. BOTH Charging Pumps.
- c. 1A Charging Pump and 1A SI Pump.
- d. 1A Charging Pump and 1B SI Pump.

Answer **C** Exam Level **S** Cognitive Level **Application** Facility: Braidwood ExamDate: 5/3/99
Tier: Emergency and Abnormal Plant Evolutions RO Group: 2 SRO Group: 2

E11 Loss of Emergency Coolant Recirculation

EK2. Knowledge of the interrelations between Loss of Emergency Coolant Recirculation and the following:

EK2.2 Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal 3.9 4.3 systems, and relations between the proper operation of these systems to the operation of the facility.

Explanation of Answer Based on Figure 1BwCA 1.1-1, at 6 hours 50 min. following the trip (410 minutes), the required ECCS flow is approx. 205 gpm. With Chg flow per pump of 175 gpm (350/2), the additional 80 gpm flow from the 1A SI pump represents the ECCS flow situation as close a possible to the minimum reqs.

Reference Title	Facility Reference Number	Section	Page	Revisio	L. O.
Required ECCS Flow VS Time From Trip CA-1.1 LP	Figure 1BwCA 1.1-1				4

Material Required for Examination Figure 1BwCA 1.1-1 Required ECCS Flow VS Time From Trip

Comment Type Comment

Question Source: Salem 1998 NRC Exam

Question Modification Method:

Question Source Comments:

Record Number: 107 RO Number: SRO Number: 99

Question #6

agree?
What is expected
Knowledge from
memory?

Given the following plant conditions:

Unit 1 was operating at 100% power for 30 days.

Unit 1 tripped due to a loss of off-site power.

CST level is at 200,000 gallons.

CST is the ONLY source of S/G feedwater.

Both AFW pumps are running.

Steam generator atmospheric relief valves are being used to dump steam.

?

If the unit remains in Hot Standby, which ONE of the following is the minimum time it will take to deplete the CST contents for these conditions based on the minimum required CST level?

- A. 10 hours
B. 9 hours
C. 8 hours
D. 7 hours

438 /

50° F / 11R

2 hours in Hot standby
C/O 350°

ANSWER

B

REFERENCE

Technical Specifications: Bases 3/4.7.6

Objective 11 of Lesson Plan Chp. 26, Auxiliary Feedwater.

10 CFR 55.43(b)(5)

SRO

Tier # 2 Group # 1 KA # 061000A104

Importance Rating 3.9 Level of Difficulty

Bank X Modified Bank (Note changes or attach parent) New

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis X

Proposed references to be provided to applicants during examination:

Qhrs based on 'old'
caution from BOP ESO-2
which has been removed.

Question #7

Given the following Unit 1 plant conditions:

A loss of all AC power has occurred

MSIVs indicate shut

Pressurizer PORVs indicate shut and letdown has isolated

No RMS high alarms are in

BCA-0.0, "Loss of all AC power Unit 1" is in effect.

Per BCA-0.0, certain Engineered Safeguards equipment control switches are placed in the PULL-OUT position. Which ~~one~~ of the following events is prevented by this switch alignment?

- A. An uncontrolled depressurization of the RCS
- B. An uncontrolled start of large loads on safeguards AC buses
- C. An uncontrolled cooldown of the RCS and possible reactor restart
- D. An uncontrolled use of water that may be needed for long term cooldown

Answer:

B

Reference:

Lesson plan for BCA-0.0, "Loss of all AC power Unit 1"

10 CFR 55.43(b)(5)

RO ___ SRO ___x___

Tier # _1_ Group # _1_ KA # _000055K302_

Importance Rating _4.6_ Level of Difficulty _____

Bank _____ Modified Bank _____ (Note changes or attach parent) New ___x___

Previous NRC Exam _____

Memory or Fundamental Knowledge _____ Comprehension or Analysis ___X___

Proposed references to be provided to applicants during examination: _____

SRO Question 8 replacement.

In accordance with 2 BOA Pri-5, "Control Room Inaccessibility," which of the following is performed for a fire in the control room prior to leaving?

- a. Stop the 2A + 2B RCP's
- b. ~~Trip both MFP's~~ (Verify Feedwater Isolation)
- c. open both PZR PORV's
- d. ~~Shut all MSIV's and bypass valves.~~ (Verify Main Steam line Isolation)

(b answer)

ARE 067 6 2.4.7 Vogtle 1999

Question #13

SRO 6/12

Given the following timeline: (Assume appropriate TS actions have been completed or in progress)

	<i>Sunday</i>	<i>0600</i>	<i>ACB 1414</i>	
5/22/2000	<i>Monday</i>	0600	0600 <i>0600</i>	<i>ESF Credible BKR OOS</i> (one qualified circuit for one bus OOS)
5/24/2000	<i>Wednesday</i>	<i>0800</i> 1000		Plant operator discovers large pool of oil on floor in 1B DG room. 1B DG declared inoperable.
5/24/2000	<i>Wednesday</i>	<i>1000</i> 2000		Circuit returned to service <i>ACB 1414 Returned to Service</i> ACB 1414 <i>ACB 1414</i>
5/27/2000	<i>Saturday</i>	0200		Major thunderstorm in area, knocks out (one qualified circuit) . <i>Unit 2 SAT's</i>

If the 1B DG and/or circuit cannot be repaired within the appropriate LCO time period, when is the LATEST time the unit would be required to be in MODE 3?

- A. at ~~1000~~⁰⁸⁰⁰ on Saturday, 5/27/2000
- B. at 1200 on Saturday, 5/27/2000 ✓
- C. at ~~1600~~¹⁴⁰⁰ on Saturday, 5/27/2000
- D. at 2000 on Saturday, 5/27/2000

ANSWER

☒ C *b*

REFERENCE:

TS 3.8.1

10 CFR 55.43(b)(2)

SRO

Tier # 3 Group # KA # 2.2.23

Importance Rating 3.8 Level of Difficulty

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis X

Proposed references to be provided to applicants during examination: TS 3.8.1

- A. Assumes 72 hours directly
- B. 6 day rule (most limiting) + 6 hours
- C. 72 hr DG rule + 6 hours
- D. 12 hr rule + 6 hours

FACILITY REVIEWER: Need credible event for one qualified circuit for one bus OOS

changed starting time to keep 6 day rule as limiting

- add statement that system is need to avoid shutdown concern.

Replacement for
Draft SKO 18 / Actual
93

The detector for 1RT-AR011, Containment Fuel Handling Incident Train A Rad monitor, fails causing the output to go high.

Which of the following would occur due to this failure?

- a. Closes 1VQ005A, Containment Mini Flow Purge Exhaust Isolation.
- b. Upward movement of Refueling Machine hoist is inhibited.
- c. Starts 0VA04CA, Fuel Handling Building Charcoal Booster Fan.
- d. Prevents 1PR039, Containment Atmosphere to Process Outside Isol valve, from being opened.

Answer a Cognitive Level - Memory

Facility: Braidwood

ExamDate: 6/7/99

ARE 060

AE 201

2.6/2.9

Question #21

Unit 2 was operating at 100% power when a large break LOCA occurred. All safeguards equipment responded as designed. The crew has transitioned to 2BEP-1, "Loss of Reactor or Secondary Coolant."

Station

Which of the following radiation monitor alarms must receive the highest priority from the Emergency Director?

- A. 2RT-AR001 (Containment Area)
- B. 2RT-AR011 (Containment Fuel Handling Incident)
- C. 2RT-PR011 (Containment Atmosphere)
- D. 2RT-AR020 (NEED NAME) Containment High Range

ANSWER:
D

Basis?

REFERENCE:
Lesson Plan s49r01.doc
10 CFR 55.43.5

SRO

Tier # 3 Group # _____ KA # 2.4.45
Importance Rating 3.6 Level of Difficulty 2
Bank _____ Modified Bank _____ (Note changes or attach parent) New x
Previous NRC Exam _____
Memory or Fundamental Knowledge X Comprehension or Analysis _____
Proposed references to be provided to applicants during examination: _____

FACILITY REVIEWER: Need name of 2RT-AR020. Also, are other distractors correct?

Which of the following radiation monitors will be used by the Station Director in assessing the emergency action levels (EALs)?

Question #22

Unit 1 was at 100% power when the following events occurred:

- ALL S/G faulted into the containment
- Upon transition from 1BEP-0 to 1BEP-2, a RED path is noted on the containment critical safety function, so the actions of BFR-Z.1, "Response to High Containment Pressure" are performed.
- Auxiliary Feedwater has been throttled to 25 gpm to each steam generator
- When directed by BFR-Z.1 to return to procedure and step in effect, the following status is noted on the CSF status tress:

Subcriticality: Green
Core Cooling: Green
Heat Sink: Red
Integrity: Orange
Containment: Red
Inventory: Yellow

Which ONE of the following procedures will contain the next steps to be performed?

- A. 1BEP-2, "Faulted Steam Generator Isolation"
- B. 1BFR-H.1, "Response to Loss of Secondary Heat Sink"
- C. 1BFR-P.1, "Response to Imminent Pressurized Thermal Shock Condition"
- D. 1BFR-Z.1, "Response to High Containment Pressure"

ANSWER:

C

REFERENCE

1BFR-P.1, 1BFR-H.1
10 CFR 55.43(b)(5)

SRO

Tier # 1 Group # 1 KA # W/E14EK1.04

Importance Rating 3.6 Level of Difficulty 3

Bank Modified Bank (Note changes or attach parent) New x

Previous NRC Exam

Memory or Fundamental Knowledge Comprehension or Analysis X

Proposed references to be provided to applicants during examination:

- Which of the following procedural actions will be performed next?
- a. Isolate the faulted SG's in accordance with ~~BEP-2~~ ^{BEP-2}
 - b. Feed and Bleed in accord w/ BFR-H.1 ^{Perform RCS Soak}
 - c. ~~Isolate the SG's~~ in accordance with BFR-P.1
 - d. Verify Containment Spray lineup in accord w/ BFR-Z.1

Question #25

5th draft 25.

6/2

While reviewing the results of a valve stroke timing surveillance on the safety injection system, you recall that the motor operated valve actuators had been modified during the last outage. You note that the procedure had not been revised to reflect the new valve stroke times which were discussed during the last requalification cycle training class. You notify the system engineer who confirms that the acceptance criteria should have been changed when the modification was closed out.

Which ONE of the following actions are required?

- A. Complete a Procedure Deviation Form noting the new stroke times per the modification and your discussion with the system engineer.
- B. Line out/initial the procedure steps and replace values with the new stroke times. Note on the front of the surveillance noting your discussion with the system engineer.
- C. Complete a Procedure Approval/History Form for a temporary procedure and obtain the SFAM approval prior to approving the surveillance results.
- D. Complete a Procedure Validation Form and request a PORC review prior to approving the surveillance results.

ANSWER:

D

REFERENCES:

AD-AA-101

10 CFR 55.43(b)(3)

*Beyond req'd
I know from
mem?*

SRO

Tier # 3 Group # _____ KA # 2.2.6

Importance Rating 3.3 Level of Difficulty _____

Bank _____ Modified Bank _____ (Note changes or attach parent) New x

Previous NRC Exam _____

Memory or Fundamental Knowledge X Comprehension or Analysis _____

Proposed references to be provided to applicants during examination: _____

Question #125

Page 71 of 71

*SRO draft 25
final 100.*
*new impeller
SI pump discharge flow
installed*

While reviewing the results of a ~~valve stroke timing~~ surveillance on the safety injection system, you recall that the ~~motor-operated valve actuators~~ had been ~~modified~~ during the last outage. You note that the procedure had not been revised to reflect the new ~~valve stroke times~~ which were discussed during the last requalification cycle training class. You notify the system engineer who confirms that the acceptance criteria should have been changed when the modification was closed out.

Which of the following actions are required?

- flow rates*
- A. Line out/initial the procedure steps and replace values with the new ~~stroke times~~.
Approve the surveillance results based on new values. *flow rate*
 - B. Approve the surveillance results based on the current procedure.
 - C. Obtain a second SRO review and approval of the procedure change prior to approving the surveillance results.
 - D. Obtain a permanent procedure change prior to approving the surveillance results.

MEMORANDUM TO: File

FROM: Ann Marie Stone, Chief Examiner, Byron June 2000 Examination

SUBJECT: BYRON JUNE 2000 EXAMINATION

DATE: July 26, 2000

The following items should be noted concerning the Byron Examination:

Outlines - Operating test:

1. The examination preparation process started in January 2000. I was in the process of certifying as a Chief Examiner. I signed the outline forms when I reviewed the documents; however since I was not certified as a chief examiner at that time, I re-reviewed and signed after I completed certification. A certified chief examiner, Dell McNeil, was involved in the development process.
2. I discussed the conduct of the scenarios with the facility representative in February 2000. It was agreed that due to the number of candidates (I believe 14), the NRC would administer the same scenario several times a day until each crew was tested. This meant that the NRC needed to develop 3 scenarios and a spare in order to test each candidate and maintain examination security. In March 2000, the facility changed the contact person and in turnover, this agreement was not discussed. In May 2000, the new facility representative did not like the proposed schedule and requested that an individual complete the scenarios in one day. With a reduced class size of 9, this meant that 6 scenarios would be needed to complete the examination. It was mutually agreed that the facility would develop the 3 additional scenarios.

Written Examination:

1. ES 401-9 form was not completed since the examination was developed by the NRC. The author made changes to the exam based on comments generated during our internal review. I reviewed the exam using ES401-9 principles but did not retain my copy.
2. ALL changes are documented in the table titled "NRC RESOLUTION TO FACILITY COMMENTS OF NRC WRITTEN EXAM." Enough detail is documented to track the changes.
3. The facility licensee reviewed the written examination on May 19, June 2, and June 12, 2000. The entire May 19 and SRO June 2 copies were retained as this was the original examination reviewed by the facility. Only substantive changes made to the exam from their reviews were retained. For example, if the facility recommended a significant change to a distractor, the facility marked-up copy was retained. However, if the facility made a minor word change (capitalized NOT), the marked-up copy was not retained for this file. (ALL changes are documented in the table from comment #2)

4. The columns "Draft RO" and "Draft SRO" refer to the May 19 and June 2 copies respectively. As noted, question numbers changed from the original RO to the final RO exam. These changes are noted. For example, Draft RO#19 is the same question as Draft SRO#60. This question later became FINAL RO#60 and FINAL SRO#35. Originally, this question was intended to be an RO-only question. After reviews, the question became a common question.
5. The table has several entries with an "★". The changes made to these questions were evaluated with respect to the quality of the NRC review. (In most cases, these changes were substantial.)

Operating Test:

In general, the facility made few comments regarding the operating tests - their comments as well as those generated by the examiners during validation week are discussed below:

A. Administrative Job Performance Measures

A.1.a Shutdown Margin Calculation

- a. Specific values that the candidates were to determine are not included in the JPM documentation - these values can be found in the completed SDM worksheets which were provided to the examiners during validation week and during the examination.
- b. A number of changes were made during validation week due to logistics. We had intended to have one applicant perform this JPM while the other two of the crew performed simulator JPMs. However, due to the availability of one examiner and the simulator, it was decided to run this JPM in a classroom setting. Therefore, the information which were in cues or obtained from the simulator had to be given to the candidates in the initial conditions. Other changes were made accordingly.
- c. The SDM calculation was re-validated during the examination week because the candidates determined different values than the validation week's answer key. This discrepancy was due to an incorrect cue given during validation week (hours since shutdown).

A.1.b. Shift Turnover

- a. No significant changes made between validation to examination week. Added turnover sheets and log entries which are attached to the Final, As-Administered package.

A.2 Tag-out

- a. During validation week, the facility expressed concern that this JPM was too long and that it was too difficult. It was agreed that if the facility could produce another tag-out, we would review it. Later the week, the

licensee agreed to use the tagout as-is. No significant changes were made during validation week.

- b. Before the examination, Jeff Heaton contacted me with a concern about two of the faults - specifically, the 1HS-CS002 electrical reference and the wrong breaker name for the 1B CS breaker. He stated that these errors were not realistic as this data is contained in the database for the out-of-service. I agreed. Two additional faults were added to replace these. The errors included:
 - tagging out the 1A CS breaker instead of the 1B CS breaker
 - changing a mandatory OOS tag to an INFO ONLY tag.

A.3 Containment Entry - RO

- a. During validation week, it was determined that the procedure used for containment entry had been significantly revised and the new revision was to be issued on Thursday of validation week. We decided to drop this JPM and develop a different one.
- b. The new JPM involved performing a containment purge. This JPM was developed and written during validation week and is included in the Final, As-Administered package.

A.3 Gaseous Release - SRO

- a. During validation, significant changes were needed on this JPM due to a misunderstanding of operations involvement in a gaseous release. The JPM was essentially re-written during validation week. The Final, As-Administered package contains the rewrite.

A.4 Communication of NARS form - RO

- a. During validation, the facility expressed concern with this JPM stating that the ROs haven't performed this task. This concern was unjustified and we maintained the JPM as-is.
- b. Minor changes were made to the JPM during validation week - including adding more cues and putting steps in proper order (The procedure used was not user-friendly which was brought to the facility attention during validation week. A condition report was generated after the examination to capture all procedure concerns.)

A.4 NARS form (classify event and complete paperwork) - SRO

- a. During validation week, the facility expressed concern that the initial conditions would not necessarily result in a General Emergency since there was no secondary containment release - the containment isolation valves were not specified. We agreed and modified the initial conditions with the licensee's assistance.

B. Walk-through Job Performance Measures

In general, the as-submitted copies contained incorrect light indications due to green-board concept. Author assumed that open was red and green was closed; however, at Byron, green can be open if this is the normal, 100% expected position.

B.1.a Align ECCS to Hot Leg Recirc

- a. No significant changes during validation week.
- b. Critical step #6 (close train A RH HX discharge crosstie header valve) was found not to be critical during examination week. Procedure does not direct closure of the valve and having the valve open does not impact flow rates within the header ring.

B.1.b Manual Makeup to RCS

- a. Title changed from RCS to VCT
- b. Minor changes to include additional notes to the examiner.

B.1.c Manual Pressurizer Pressure Control

- a. Critical step #3 (select operable PZR pressure control channel) was found not to be critical - removed.

B.1.d. Control of Steam Dumps

- a. Critical step #4(ensure manual pressure controller is set for 1092 psig) was found not to be critical - removed.
- b. Performance steps #2 (ensure pressure mode controller in manual with 0% demand) and #6 (slowly decrease the pressure setpoint) were found to be critical during validation week.

B.1.e. Synchronize D/G to a Bus

- a. During validation week, we determined that there was no procedural guidance to require the candidates to trip the EDG breaker when the fault occurred. The facility suggested including an annunciator for a lockout which would then require the candidate to trip the output breaker. We agreed to the change since we needed procedural requirements for a critical step.
- b. Added information to initial conditions as needed.

B.1.f. Channel Check on WRGM

- a. Procedure was revised. Changes reflect new revision.

B.1.g Cool the PRT

- a. Critical step #13 (Ensure PRT pressure remains >0 psig) was found not to be critical.
- b. Minor editorial changes.

B2.a. Startup the Rod Drive MG Set

- a. Minor changes. Gave direction to go to Unit 2 to use a photograph to locate switches. Gave more direction on expected actions.

B.2.b Local Control of Charging

- a. During validation week, it was discovered that a valve was located in a high radiation area. With the assistance of the facility, we modified the JPM such that the candidate would simulate the actions on a similar valve. The facility created tags to be used during the JPM task.

B.2.c Unsteam Bind a MD AFW Pump - no changes made

C. Dynamic Scenarios

C.1 NRC-Developed #1

- a. Added Stator cooling water pump failure because we needed a back-up BOP component failure in case the BOP didn't not respond to the emergency borate valve failure.
- b. Added information in turnover regarding rate of power increase and completed TS surveillances for out-of-service EDG.
- c. Eliminated actions for SG tube rupture and decided to end when condition was recognized.
- d. Event #6 - Changed Logic cabinet failure to Power cabinet failure for desired affect.
- e. The facility expressed concern with the rod control urgent failure and the ATWS. We expected the candidate to drive in rods manually using bank select. The facility argued that there was not procedural requirement and that the candidates were not taught this. We responded that the EOP required the candidate to "manually" drive in rods and this included placing the control switch to bank select, if necessary. After validation week, we obtained additional information from the Westinghouse owners' group that placing the switch in bank select was NOT expected. Therefore, this fault/event was eliminated during examination week.
- f. As-Administered Changes: (1) as noted in comment e and (2) Reordered sequence such that Event #5 (Auct Tave failure) became Event #1.

C.2 NRC-Developed #2

- a. Added 1B CCP failure to auto start to ensure one component failure for the RO position. During validation week, the BOP operator responded to the failure of the auto sump swapover.
- b. Added information in turnover regarding rate of power increase and completed TS surveillances for out-of-service EDG.
- c. Added specific failure codes for the simulator operator.
- d. Eliminated information on potential Orange Path as this information was not needed - never obtained conditions.
- e. As-Administered Changes: Eliminated Event #1 as the failure was not needed.

C.3 NRC-Developed #3

- a. During validation week, the facility had a concern with the timing of major steam line break in relationship to the recovery actions of the inadvertent safety injection. It was decided to wait until actions were complete before initiating the steam line break.
- c. Added specific failure codes for the simulator operator.
- d. Eliminated information on potential Orange Path as this information was not needed - never obtained conditions.

C.4 NRC-Developed #4

- a. Eliminated Event #4 (PR channel N-42 fails low) as it was not needed.
- b. Added information in turnover regarding rate of power increase and completed TS surveillances for out-of-service EDG.

C.5 Facility-Developed #1

- a. No significant changes to D-2 forms.
- b. Changed IC and initial power level to get desired affect, increased tube rupture from 400 gpm to 460 gpm

C.6 Facility-Developed #2

- a. No significant changes to D-2 forms.
- b. Added note for simulator operator to insert PZR PORV failure after pressure increases to setpoint.

C.7 Facility-Developed #3

This scenario was not needed. The events were reviewed during validation week for possible inclusion into other scenarios. No changes were made. This scenario is NOT included in the Final, As-Administered package.