

**INITIAL SUBMITTAL OF THE WRITTEN EXAMINATION**

**WITH NRC COMMENTS ON NRC FORM ES-401-9**

**FOR THE POINT BEACH INITIAL EXAMINATION - JAN/FEB 2002**

Facility: PBNP		Date of Exam: 2/28/02-2/2/02			Exam Level: RO																																
Item Description					Initial																																
					a	b*	c#																														
1.	Questions and answers technically accurate and applicable to facility				PS	TL	Rm																														
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available				PS	TL	Rm																														
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401				N/A	N/A	N/A																														
4.	Question selection and duplication from the last two NRC licensing exams appears consistent with a systematic sampling process				N/A	N/A																															
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input checked="" type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)				PS	TL	Rm																														
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New	PS	TL	Rm																														
		63	8	29																																	
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehensive/analysis level; enter the actual question distribution at right	Memory	C/A		PS	TL	Rm																														
		43	57																																		
8.	References/handouts provided do not give away answers				PS	TL	Rm																														
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the Tier to which they are assigned; deviations are justified				PS	TL	Rm																														
10.	Question psychometric quality and format meet ES, Appendix B, Guidelines				PS	TL	Rm																														
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet				PS	TL	Rm																														
<table border="0"> <tr> <td colspan="2"></td> <td colspan="2">Printed Name / Signature</td> <td colspan="2">Date</td> </tr> <tr> <td>a.</td> <td>Author</td> <td colspan="2">Phillip A. Short</td> <td colspan="2">11/27/01</td> </tr> <tr> <td>b.</td> <td>Facility Reviewer(*)</td> <td colspan="2">Thomas G. Larson</td> <td colspan="2">12/3/01</td> </tr> <tr> <td>c.</td> <td>NRC Chief Examiner(#)</td> <td colspan="2">R.M. Morris</td> <td colspan="2">1/31/02</td> </tr> <tr> <td>d.</td> <td>NRC Regional Supervisor</td> <td colspan="2">David C. Hills</td> <td colspan="2">1/31/02</td> </tr> </table>										Printed Name / Signature		Date		a.	Author	Phillip A. Short		11/27/01		b.	Facility Reviewer(*)	Thomas G. Larson		12/3/01		c.	NRC Chief Examiner(#)	R.M. Morris		1/31/02		d.	NRC Regional Supervisor	David C. Hills		1/31/02	
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Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.																																					

Facility: PBNP		Date of Exam: 2/28/02-2/2/02			Exam Level: SRO		
Item Description					Initial		
					a	b*	c#
1.	Questions and answers technically accurate and applicable to facility				SM	TZ	Rm Sm
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available				SM	TZ	Rm Sm
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401				SM	TZ	Rm Sm
4.	Question selection and duplication from the last two NRC licensing exams appears consistent with a systematic sampling process				N/A	N/A	N/A N/A
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)				SM	TZ	Rm Sm
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New	SM	TZ	Rm Sm
		64	8	28			
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehensive/analysis level; enter the actual question distribution at right	Memory	C/A		SM	TZ	Rm Sm
		42	58				
8.	References/handouts provided do not give away answers				SM	TZ	Rm Sm
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the Tier to which they are assigned; deviations are justified				SM	TZ	Rm Sm
10.	Question psychometric quality and format meet ES, Appendix B, Guidelines				SM	TZ	Rm Sm
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet				SM	TZ	Rm Sm
a.	Author	Printed Name / Signature			Date		
b.	Facility Reviewer(*)	Phillip A. Short			11/27/01		
c.	NRC Chief Examiner(#)	Thomas G. Larson			12/3/01		
d.	NRC Regional Supervisor	R. Michael Morris			11/31/01		
		David C. Mills			9/31/02		
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.							

\* The first 30 questions were reviewed for initial review, K/A match/content - no errors detected. References verified for 100% of questions.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
1	H/N	2											B	E	The stem should state that the effects of xenon are to be ignored. <i>Statement added.</i>
2	H/N	2											B	E	Change to "stabilize using EOPs" in correct answer. <i>Statement added.</i>
3	H/B	3				x							B	U	Distractor c. is also correct - two correct answers. F not H, add stable to another distractor. <i>Modified distractor c.</i>
4	H/N	2.5											B	S	
5	F/N	2.5						x					B	US	EOP Basis Question - not RO level. &&
6	F/M	2											B	E	Level are does not match. Change one to match the other. <i>Corrected.</i>
7	H/B	4											B	S	Verify distractor d. is incorrect. <i>modified distractor d.</i>
8	H/B	2											B	E	The correct answer is the only one that contains the phrase "low vacuum." Remove. <i>Removed "low vacuum" from correct answer.</i>
9	F/N	2.5						x					B	US	Remove "best" from stem. EOP Basis Question - not RO level. <i>Removed "best" from stem. &amp;&amp;</i>
10	H/M	2.5											B	S	

## Instructions

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

- Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
  - Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).
  - Check the appropriate box if a psychometric flaw is identified:
    - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
    - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
    - The answer choices are a collection of unrelated true/false statements.
    - More than one distractor is not credible.
    - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
  - Check the appropriate box if a job content error is identified:
    - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
    - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
    - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
    - The question requires reverse logic or application compared to the job requirements.
  - Check questions that are sampled for conformance with the approved K/A and those that are designated SRO-only (K/A and license level mismatches are unacceptable).
  - Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
  - At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).
- && Learning objective & lesson plan provided which allows use on RO exam per 10CFR55.41.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
11	H/N	2.5											B	S	facility made some non-required changes to the question.
12	F/B	2											B	S	Bank, not modified. <i>Facility agreed, question is bank.</i>
13	F/N	2.5											B	U	Distractor 'a.' is technically correct. Change a. & c. <i>Added ONLY to make a. incorrect..</i>
14	H/N	3											B	E	Correct answer is the only one with "letdown" in it. <i>Modified distractor d. to ensure it was incorrect. Added "verified" to c.</i>
15	H/N	2.5											B	E	Remove "best" from the stem. <i>Removed</i>
16	F/B	2.5											B	S	
17	H/B	3											B	S	
18	F/M	2.5											B	S	
19	F/B	2						x					B	US	EOP basis question. Not required RO knowledge. Remove "best" from stem. <i>Removed "best" &amp;&amp;</i>
20	H/B	3											B	S	
21	F/N	2.5											B	E	Remove unnecessary plant conditions from stem. [no ESFAS] rework. <i>Reworked question, removed unnecessary conditions.</i>
22	H/B	2.5											B	S	
23	F/B	2.5						x					B	US	EOP basis question. Not required RO knowledge. &&
24	H/B	4											B	S	
25	H/N	4											B	S	What about distractor basis? <i>Changed distractors a. and c. to numbers corresponding to 5% change (level deviation alarm) and 25.8% (span of 0-100% program).</i>
26	H/B	3											B	S	
27	F/N	2.5						x					B	U	TS basis question. Not required RO knowledge. <i>removed SRO and TS reference from stem</i>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
28	H/B	2											B	S	
29	H/B	3						x					B	S	
30	H/N	2.5											B	S	
31	F/B	2.5											B	S	
32	F/B	3											B	E	Remove "best" from the stem. <i>Removed</i>
33	H/B	4											B	U	No correct answer as provided. "...integrated dose is verified to be less than 1E6 R" is not the same as "...NOT be relaxed until directed by TSC personnel." <i>Station reworked the correct answer.</i>
34	H/N	2.5											B	S	
35	F/N	2.5											B	S	
36	F/B	4											R	U	Not RO (Basis) Determine if c. could be a second correct answer. <i>Changed distractors c. and d. to ensure they were incorrect. &amp;&amp;</i>
37	H/B	2											B	S	Add to stem, "after plant conditions are stabilized..." <i>Added.</i>
38	H/N	2.5											R	S	
39	H/N	2.5											B	E	Remove "most" from the stem. <i>Removed.</i>
40	H/B	3											B	E	Move "1CV-142 would fail..." to the stem. <i>Station chose not to - OK.</i>
41	H/N	2											R	E	Move "SUR is..." to the stem. <i>Station chose not to - OK.</i>
42	H/B	4											B	S	
43	H/N	3											R	E	Add "without operator action." to the correct answer. <i>Added, reworked question to more closely match the K/A.</i>
44	H/B	3											B	S	
45	H/N	2.5											R	S	
46	H/B	3											B	E	Remove "best" from stem. <i>Removed.</i>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only		
47	F/B	2											R	S	
48	H/M	2.5											B	S	Change true in stem to correct. <i>Changed to correctly.</i>
49	F/B	1			x								B	U	This is a series of T/F statements. Modified question so stem was a necessary part of the question.
50	F/B	2.5											R	S	
51	F/B	2.5											R	S	
52	H/N	2.5											B	S	
53	H/B	2.0											R	U	Not higher - memorization of response to exceeding a setpoint. <i>Lower.</i>
54	F/B	3.0											B	S	
55	F/B	2.5											B	S	
56	F/N	2.5											B	S	
57	F/B	2.0											R	S	
58	F/B	2.5											R	S	
59	H/B	2.5											B	S	
60	H/N	3											B	E	Put the words, "Main Feedwater Pump suction flow will..." in the stem. <i>Station chose not to make change - OK. added "thermal" to distractors</i>
61	F/B	3											B	S	Remove "best from stem." <i>Removed.</i>
62	H/B	2.0											B	S	
63	H/N	2.5											B	E	Put the words, "Charging pump speed will...." in the stem. Verify ref. <i>Station chose not to make change - OK. Found better reference.</i>
64	H/B	2.0											B	S	
67	H/B	3											R	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
66	F/B	2.0											B	S	
67	F/B	2.0											B	E	Change c. to be iodine instead of boron (uniformity) <i>Changed.</i>
68	F/B	3											B	S	
69	H/N	2.5											B	S	
70	H/B	2.5											B	S	Remove MTC from correct answer or add to distractors. <i>Added reactivity term to distractor a.</i>
71	F/B	2.0											B	S	
72	H/B	2.5											R	US	Selected K/A is <2.5 <i>Important to this station</i>
73	H/B	2.5											B	E	Distractor d. contradicts itself (throw-away distractor). <i>Changed stem and distractor to correct.</i>
74	F/M	2.5											B	US	Not modified IAW NUREG 1021. Why was D13 correct on original? <i>Plant mod on DC buses changed answer.</i>
75	H/N	3											R	S	<i>Changed question to a "B" question.</i>
76	H/M	3											B	S	
77	H/M	3											R	S	
78	F/B	3											B	S	
79	F/B	2											B	S	
80	H/B	2.5											R	S	
81	H/N	3.0											B	US	Not expected to have lineups memorized. <i>Changed from H to L &amp;&amp;</i>
82	F/N	3.0										x	R	U	Doesn't address predicting impact part of k/a. <i>Added necessary statements to each distractor to address impact part of k/a.</i>
83	F/B	2.5											R	S	
84	F/B	2.5											B	E	Capitalize NOT in distractors a. and b. <i>Capitalized</i>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
85	F/B	2.5											R	S	
86	F/B	2.5											B	S	
87	H/B	2.5											B	US	Should be F, not H <i>Determined that some analysis needed to answer.</i>
88	H/B	2.5											B	S	
89	F/B	2.5											B	S	
90	H/B	2.5											R	S	
91	F/B	2.0											R	S	
92	H/B	2.0											B	S	
93	F/B	2.0											R	U	Requires memorization of subsequent steps in procedure. <i>Wrote replacement question.</i>
94	H/B	3.0											B	E	Remove "best" from the stem. <i>Removed.</i>
95	F/B	3.0											B	U	Requires memorization of admin procedure steps. <i>Wrote new question.</i>
96	F/B	2.5											R	S	
97	H/N	2.5											R	S	
98	H/B	3.0											B	S	
99	F/B	2.5											R	E	Remove "best" from the stem. <i>Removed.</i>
100	H/B	2.5											B	E	Remove "best" from the stem. <i>Removed.</i>
101	F/N	4											S	U	Correct answer is actually correct. Replace with incorrect answer. <i>Replaced a. with incorrect answer, capitalized "except" to highlight looking for an incorrect choice.</i>
102	H/B	3.0											S	E	Move "2P-11A will start on..." to the stem. <i>Station chose not to make modification.</i>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only		
103	H/B	3.0										x	S	UE	Incorrect K/A (Suggest 029EK3.12) <i>Corrected K/A Modified distractor c. to include procedural transition.</i>
104	F/B	2.5											S	S	
105	F/B	4.0											S	U	Should be H, not F. <i>Facility agreed.</i>
106	H/N	2.5						x					S	U	Not SRO Only. All operators are required to know this material. <i>Chose new k/a - couldn't write SRO only against old k/a, wrote new question.</i>
107	H/N	3.0											S	S	
108	H/B	3.0						x					S	U	Not SRO Only. All operators are required to know this material. <i>Modified question to include TS requirement - not RO required.</i>
109	H/N	2.5						x					S	US	Not SRO Only. All operators are required to know this material. <i>No procedural guidance provided, SRO must make the decision - SRO ONLY.</i>
110	H/B	2.5						x					S	U	Not SRO Only. All operators are required to know this material. <i>Remove "best." Removed "best." Modified question to be SRO Only.</i>
111	H/B	2.0											S	U	Direct look-up from provided reference. Not allowed. <i>Modified stem to remove RWST level. RWST level must be determined from provided information.</i>
112	F/B	2.0											S	US	Not SRO Only. System level question. <i>Design Basis Q - not RO.</i>
113	F/B	2.0											S	E	Remove 'best' from the stem.
114	H/N	2.5											S	U	Not SRO Only. System level question. <i>Changed to "B" question.</i>
115	F/B	2.5											S	S	
116	F/B	2.5											S	S	
117	F/B	3.0											S	S	
118	F/M	3.0											S	S	
119	F/N	2.0											S	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only		
120	H/B	2.5											S	U	Not SRO. Chose new k/a and used acceptable bank question.
121	H/B	2.5											S	S	Station modified stem to clarify "required" actions per RECM.
122	H/B	3.0										x	S	U	Q doesn't match the specified k/a. Q should be generic, not specific. Wrote new question to match k/a.
123	F/B	2.0											S	S	Remove best from stem. <i>Removed</i>
124	F/B	2.5											S	U	Not SRO Only. The RO would have to know this to properly respond. Station chose new k/a, wrote new SRO level question.
125	H/B	2.0											S	S	
126	H	2.5											S	S	Station chose new k/a, wrote new SRO level question.

### RO/SRO Question Cross-Reference (by RO #)

<u>RO/SRO X-Ref</u>	<u>RO/SRO X-Ref</u>	<u>RO Only</u>
1/4	51/-	36
2/8	52/57	38
3/9	53/-	41
4/10	54/58	43
5/32	55/60	45
6/13	56/61	47
7/14	57/-	50
8/15	58/-	51
9/16	59/62	53
10/17	60/63	57
11/19	61/64	58
12/20	62/65	65
13/21	63/66	72
14/22	64/67	75
15/23	65/-	77
16/24	66/50	80
17/1	67/54	82
18/2	68/69	83
19/25	69/70	85
20/26	70/72	90
21/5	71/73	91
22/6	72/-	93
23/29	73/74	96
24/7	74/59	97
25/30	75/-	99
26/31	76/76	
27/34	77/-	
28/35	78/77	
29/36	79/78	
30/37	80/-	
31/38	81/81	
32/18	82/-	
33/40	83/-	
34/41	84/82	
35/42	85/-	
36/-	86/83	
37/44	87/79	
38/-	88/86	
39/45	89/87	
40/46	90/-	
41/-	91/-	
42/49	92/89	
43/-	93/-	
44/51	94/91	
45/-	95/93	
46/52	96/-	
47/-	97/-	
48/53	98/95	
49/56	99/-	
50/-	100/97	

## 1. 055.03.LP2441.003 002

Given the following plant conditions:

- Unit 1 was operating at 100% power (full load) with  $T_{AVG} = T_{REF}$ .
- Reactor power / turbine power was then reduced to 430 MWe for Cross-Over Steam Dump Valve testing.
- A single Bank 'D' control rod became stuck at the reduced power level.
- Following completion of the testing, Unit 1 electrical output is returned to the previous full load value, with  $T_{AVG} = T_{REF}$ . **(Assume the stuck control rod remains undetected)**

Comparing the new full load condition to the previous full load condition, which **ONE** of the following choices indicates the correct direction of change for the listed parameters ?

	<u>Reactor Power</u>	<u>Turbine Power</u>	<u>RCS Boron Concentration</u>
A.	lower	same	lower
B.	same	same	same
✓C.	same	same	lower
D.	same	lower	higher

## 1. 055.03.LP2438.004 003

The reactor is at the point of adding heat and the following alarms/indications have occurred:

- 1P-1A RCP No. 1 Seal Delta P Low Annunciator (1C04 1C 4-11)
- 1P-1A RCP No. 1 Seal Leakage indicates less than 0.8 gpm
- 1P-1A RCP No.1 Seal Water Outlet Temperature is rising

**Based on these plant conditions, which ONE of the following is the correct sequence of actions ?**

- A. Trip the affected RCP, manually trip the reactor, and then go to EOP-0, "REACTOR TRIP AND SAFETY INJECTION".
- ✓B. Manually trip the reactor, go to EOP-0, "REACTOR TRIP AND SAFETY INJECTION", and then trip the affected RCP.
- C. Trip the affected RCP, the reactor will automatically trip, and then go to EOP-0, "REACTOR TRIP AND SAFETY INJECTION".
- D. Manually trip the reactor, go to EOP-0, "REACTOR TRIP AND SAFETY INJECTION", and then close the No. 1 seal water return MOV, 1CV-270A.

## 1. 040.02.LP0378.005 002

A reactor is operating at 100% power when a loss of offsite power occurs resulting in a reactor trip and a loss of forced reactor coolant circulation. Reactor coolant system (RCS) hot leg temperature is greater than cold leg temperature and steam generator (S/G) levels are stable. (CETC = core exit thermocouples)

**Which ONE of the following combinations of parameter trends, occurring 30 minutes after the trip, indicates that natural circulation is occurring ?**

<u>RCS HOT LEG TEMPERATURE</u>	<u>RCS COLD LEG TEMPERATURE</u>	<u>S/G PRESSURES</u>	<u>RCS (CETC) SUBCOOLING</u>
✓A. Decreasing	Stable	Stable	Increasing
B. Increasing	Decreasing	Increasing	Decreasing
C. Decreasing	Decreasing	Decreasing	Decreasing
D. Increasing	Increasing	Decreasing	Increasing

1. 043.03.LP1996.012 012

A reactor trip and turbine trip from 100% power has occurred due to a main generator lockout. Both reactor trip breakers opened as required. Actions of EOP 0.1 "Reactor Trip Response" are in progress when the following indications are observed.

One control rod indicates it is at 30 steps, its rod bottom light is not lit.

Another control rod in the same group indicates it is at 15 steps, its rod bottom light is lit.

**Based on these indications, which ONE of the following describes the correct action and the reason for that action ?**

- A. Emergency boration is required since two rods must be considered not fully inserted.
- ✓B. Emergency boration is not required since only one rod is considered to be not fully inserted.
- C. Emergency boration is not required since all rods may be considered fully inserted.
- D. Emergency boration is required since one rod did not fully insert and another rod in the same group indicates >10 steps.



1. 031.02.LP0473.005 001

Given the following plant conditions:

- Operators have diagnosed a Steam Generator Tube Rupture.
- The control room team has entered EOP-3, "Steam Generator Tube Rupture".
- Due to a Pressurizer Pressure Controller Malfunction, normal spray is unavailable for RCS depressurization.

**According to the EOP basis, why are the PORV's the next preferred method of RCS depressurization prior to using auxiliary spray ?**

- A. Reactor coolant inventory would be conserved.
- B. RCS depressurization and equalization is faster.
- C. Upper head region voiding is less likely to occur.
- ✓D. Pressurizer spray nozzle failure is less likely to occur.

1. 031.02.LP0465.001 006

During an uncontrolled depressurization of both steam generators (S/Gs) event, why is feed flow throttled to maintain 50 gpm to each S/G when level in both S/Gs are less than 29% and cooldown rate is greater than 100 F/hr ?

- ✓A. To prevent S/G tube dry out and to minimize RCS cooldown.
- B. To prevent runout from occurring on the operating auxiliary feed water pump(s) and to minimize RCS cooldown.
- C. To minimize the unmonitored release of the S/G contents to the environment and to maximize feedwater inventory to the faulted S/Gs.
- D. To minimize the temperature stress in the faulted S/G and to prevent runout from occurring on the operating auxiliary feedwater pump(s).

## 1. 043.03.LP1999.001 005

Unit 2 was operating at full power when it experienced a main steamline break. Because of difficulties shutting the MSIVs, the affected S/G has blown dry. Thirty (30) minutes after the transient, the following plant conditions exist:

- All RCPs have been stopped.
- RCS Thot is 282 °F and lowering.
- RCS Tcold is 267 °F and lowering.
- SI flow is being supplied to the RCS.
- Calculated subcooling is 285 °F and rising.
- AFW is being supplied to the intact S/G at 200 gpm.

**Given these plant conditions, which ONE of the following is correct ?**

- A. A loss of heat sink has occurred due to the S/G being dry.
- ✓B. Pressurized thermal shock has occurred and RCS pressure is to be minimized.
- C. Injection of ECCS accumulator nitrogen into the RCS will occur and cause a loss of heat sink.
- D. The loss of thermal driving head in the affected S/G will stop natural circulation flow due to stagnation of the RCS loops.

1. 052.03.LP0021.009 002

The following plant conditions exist:

- Unit 1 is coming out of a refueling outage and is holding power at 28% for chemistry concerns.
- The "A" condensate pump, "A" main feedwater pump, and the "A" circulating pump are operating.
- The "A" circulating water pump circuit breaker trips open due to ground fault.

**Assuming no operator action and given these plant conditions, what will occur ?**

- A. Neither the turbine nor reactor will trip.
- B. The reactor will trip but not cause a turbine trip.
- C. The turbine will trip but not cause a reactor trip.
- ✓D. The turbine will trip on low vacuum and cause a reactor trip.

1. 031.02.LP0462.004 002

The following plant conditions exist:

- Unit 1 has experienced a Loss of All AC Power due to severe weather conditions and failure of emergency diesel generators to start and supply safeguard buses.
- The operating crew is carrying out actions of ECA 0.0, "Loss of All AC Power".
- Immediate actions have been completed and steps to restore power are in progress.
- The operators are at a point where they are to commence cooldown and depressurization of the steam generators.

**Based on these conditions, which ONE of the following statements best describes the reason why a secondary depressurization is directed ?**

- A. To ensure the reactor remains subcritical and does not result in a restart accident.
- ✓B. To minimize RCS inventory loss through the RCP seals, which maximizes time to core uncover.
- C. To remove all the stored energy in the steam generators to prevent a secondary safety valve from lifting.
- D. To prevent a challenge to the Integrity Critical Safety Function Status Tree which is being monitored for implementation.

1. 031.00.LP0000.000 017

A breaker failure has resulted in complete deenergization of the WHITE 120V VITAL Instrument Bus, 1Y-03.

**What automatic actions will occur as a direct result of the WHITE instrument bus loss. (Assume this is the only failure or abnormal event that occurs)**

- A. Unit 1 "A" Feed Line Isolation will actuate.
- B. Unit 1 "B" Main Steam Line Isolation Valve will isolate.
- ✓C. Letdown will isolate.
- D. 1P-29 Turbine Driven Auxiliary Feedwater Pump will actuate.

1. 055.03.LP2444.001 002

Given the following plant conditions:

- Both units are at 100% Power.
- Unit 2 is aligned for ice melt.

**Which ONE of the following conditions would indicate a cause for loss of the Service Water System (inoperability) AND also meet the criteria for a subsequent Unit 1 trip ? (consider each condition separately)**

- A. Unit 1 Condenser Vacuum at 23 inches Hg.
- B. South Service Water header pressure at 55 psig.
- ✓C. South Pump Bay at -11.3 feet.
- D. North Pump Bay at -12 feet.

1. 086.01.LP2559.003 003

The fire brigade is responding to a Class "C" fire in an energized lighting panel.

**Which ONE of the following choices is an acceptable method to combat this type of fire in accordance with the PBNP Fire Protection Manual ?**

- A. Foam is a recommended agent.
- ✓B. Carbon Dioxide is a recommended agent.
- C. Water in a solid stream is a recommended agent.
- D. De-energizing the panel is the only acceptable method to extinguish this fire.



1. 055.00.LP0000.000 013

Given the following plant conditions:

- A plant worker reports a small amount of blue smoke and acrid smell originating from the Cable Spreading Room.
- The Turbine Hall AO is dispatched to verify this report and finds that the room has filled with smoke, and after a quick check, all personnel have been evacuated.
- A non-controlling channel of Pressurizer Level fails low on Unit 1.
- The Control Room Team enters AOP-10A, "Safe Shutdown-Local Control".

**Based on these conditions which ONE of the following is the correct course of action with regard to the reactor trip system ?**

- A. Unit 1 should be manually tripped from the Control Room.
- ✓B. Both Units should be manually tripped from the Control Room.
- C. Unit 1 should be manually tripped from its Rod Drive Room.
- D. Both Units should be manually tripped from their respective Rod Drive Rooms.

1. 031.02.LP0435.008 001

Given the following plant conditions:

- A Large Break LOCA has occurred in Unit 1.
- Automatic Actions in accordance with Attachment "A" of EOP-0, " Reactor Trip or Safety Injection" are being verified by the BOP operator (3rd license).
- The following items are reported as a result of this attachment:

1CV-371, "Letdown Line Isolation" light is NOT LIT on C-01.

Containment pressure is 40 psig and rising.

One (1) Containment Spray pump (P-14A) is running.

**Given this situation, which ONE of the following actions ensures containment integrity ?**

- A. All Containment Accident Fans must be RUNNING.
- B. Ensure all Spray Pump Discharge MOV's are OPEN.
- ✓C. 1CV-371A, "Letdown Isolation Valve" must be SHUT.
- D. Ensure all Containment Purge Supply and Exhaust Valves are SHUT.

1. 031.02.LP1829.007 004

A small break LOCA has occurred on Unit 1 and only RHR pumps are available for core cooling. The following plant indications exist:

- RCP's have been secured.
- RCS temperature is slowly rising.
- RCS pressure is 900 psig and slowly rising.
- Reactor Vessel water level is slowly trending downward.
- RCS subcooling is slightly negative and trending in the more negative direction.

**Based on these plant conditions, which ONE of the the following choices best describes the trend of PZR level and the reason for this trend ?**

- ✓A. PZR Level is trending upward due to voiding in the Rx Vessel Head.
- B. PZR Level is trending upward due to SI Accumulator water injection.
- C. PZR Level is trending downward due to voiding in the Rx Vessel Head.
- D. PZR Level is trending downward due to SI Accumulator nitrogen injection.

1. 055.03.LP2443.004 002

According to AOP-8A, "High Reactor Coolant Activity", an alarm from which of the following would be a symptom or entry condition into this procedure ?

- A. Unit 2 Condenser Air Ejector Gas Monitor (2RE-215).
- ✓B. Failed Fuel Monitor (2RE-109).
- C. Waste Disposal System Liquid Monitor (RE-218).
- D. Steam Generator Blowdown Tank Area Monitor (2RE-222).

1. 055.03.LP2441.003 001

With the reactor operating at 70% power and turbine in IMP IN, the following symptoms occur:

- Rising NI Power.
- Turbine Power constant.
- $T_{AVG}$  greater than  $T_{REF}$ .
- Rising pressurizer pressure.
- Rising steam generator pressures.

**Assuming no operator action, which ONE of the following would initially cause the above symptoms ?**

- A. Excessive boration.
- B. Main steam line leak.
- C. Inadvertent AFW actuation.
- ✓D. Uncontrolled rod withdrawal.

1. 055.03.LP2441.004 005

The following plant conditions exist:

- Unit 1 is at 60% power.
- A dropped control rod is being recovered in accordance with AOP-6A, "Dropped Rod".
- A different rod in the same bank falls partially into the core.

**Which ONE of the following actions is required, given these conditions ?**

- ✓A. Manually trip the reactor if an automatic reactor trip did not occur.
- B. Position control rods as necessary to maintain  $T_{avg}/T_{ref}$  deviation less than 10 °F.
- C. Perform a flux map to verify the dropped rod's position, then declare the rod inoperable.
- D. Perform a shutdown margin calculation within one hour of the dropped rod and every 12 hours thereafter until the rod is declared inoperable or is restored.

1. 031.02.LP0405.005 001

Which one of the following statements correctly identifies and best supports the **basis** for verifying a reactor trip in EOP-0, "Reactor Trip or Safety Injection" ?

- A. Subcriticality is the highest priority critical safety function and is addressed as the first step of this procedure.
- B. Without a reactor trip, plant safety limits will be exceeded which will ultimately result in endangering the health and safety of the public.
- ✓C. The safeguards systems that protect the plant during accidents are designed assuming only decay heat and pump heat are being added to the reactor coolant system.
- D. Without a reactor trip, a transition to CSP-S.1, "Response to Nuclear Power Generation/ATWS", must immediately occur to provide acceptable consequences for the limiting core over-power event.

1. 043.02.LP2463.010 001

With the RCS at normal operating pressure and temperature, what is the condition of the steam entering the PRT if a PORV opens ? (ASSUME: PRT is at 100° F, 5 psig ; an ideal thermodynamic process).

- A. Superheated steam at 635° F.
- B. Superheated steam at 313° F.
- C. Saturated steam-water mixture at 213° F.
- ✓D. Saturated steam-water mixture at 228° F.



053.06.LP0486.014 001

Given the following plant conditions:

- Unit 2 has just experienced a Large Break LOCA.
- The operating crew is carrying out actions in EOP-0, "Reactor Trip or Safety Injection".
- All Engineered Safeguards Features Actuation System (ESFAS) equipment functions as designed.

**Which ONE of the following will occur from a Manual Containment Spray Actuation as opposed to an Automatic Containment Spray Actuation ?**

- A. Safety Injection will actuate.
- B. Caustic additive isolation valves will open.
- ✓C. Containment ventilation isolation will actuate.
- D. Containment spray pump discharge isolation valves will open.

1. 031.02.LP0465.001 007

The following plant parameters exist:

- RCS pressure is 1600 psig and lowering.
- Pressurizer level is slowly lowering.
- PORVs and spray valves are closed.
- All steam generator water levels are normal.
- Auxiliary building radiation monitors are rising.
- Plant ventilation radiation monitors are rising.
- Containment pressure and sump levels are normal.

**Which ONE of the following is the correct plant condition ?**

- A. Faulted Steam Generator.
- B. Ruptured Steam Generator.
- C. LOCA Inside Containment.
- ✓D. LOCA Outside Containment.

1. 031.02.LP0465.001 008

Given the following plant conditions:

- Unit 1 was operating at steady state 100% power.
- A plant trip and safety injection have occurred due to a LOCA outside containment.
- All applicable procedures have been implemented.
- The LOCA has NOT been isolated and ECA-1.1, "Loss of Containment Sump Recirculation", has been implemented.

**Which ONE of the following states the reason ECA 1.1 directs establishing only one train of SI flow under these conditions ?**

- A. To allow initiating blended makeup flow to the suction of the charging pumps.
- B. To reduce the RCS cooldown rate to less than 100 °F/hr when dumping steam at maximum rate.
- ✓C. To reduce the RWST level reduction rate and delay stopping all pumps pumping from the RWST.
- D. To allow continuing attempts to open the Sump "B" to RHR isolation valves for the idle RHR pump.

## 1. 043.03.LP1997.001 001

The reactor has tripped from 100% power due to a loss of offsite AC power. The EDGs are supplying the safeguards buses. Immediately after the transition to EOP-0.1, "Reactor Trip Response," the operator notes these indications:

<u>RCS</u>	<u>A</u>	<u>B</u>	<u>Units</u>
Th WR	584	585	°F
Tc WR	550	548	°F
Core TC's	590	---	°F
RCPs	Off	Off	---
PZR Pressure	1737	---	psig
PZR Level	10	---	%
Subcooling	27	30	°F

<u>Secondary</u>	<u>A</u>	<u>B</u>	<u>Units</u>
S/G Pressure	1010	1005	psig
S/G Level	190	190	inches
AFW Flow	110	125	gpm

**What action(s) is(are) required ?**

- A. Remain in EOP-0.1, "Reactor Trip Response," and maximize AFW flow.
- ✓B. Manually initiate safety injection and go to EOP-0, "Reactor Trip or Safety Injection."
- C. Go to CSP-H.2, "Response to Steam Generator Overpressure," and raise AFW flow.
- D. Go to CSP-C.3, "Response to Saturated Core Cooling," and start a second charging pump.

. 051.02.LP0079.001 006

— The following plant conditions are given:

- Unit 1 is at 100% full rated power.
- The Control Room Team has entered AOP-1A due to indications of a RCS leak.
- In accordance with this procedure, letdown and charging are isolated to determine leak location.
- No other operator actions are taken.
- The RCS total leakrate is 100 gpm.

**Based on these conditions and given the attached reference from the Tank Level Book, what is the maximum time the Control Room Team can operate in this condition before Pressurizer Level reaches a Reactor Trip Setpoint or Reactor Trip criteria ?**

(Assume PZR level was at programmed level at time of Letdown and Charging isolation)

A. 5 minutes.

✓B. 6 minutes.

— C. 22 minutes.

D. 23 minutes.

1. 031.03.LP2189.008 002

Given the following Unit 1 plant conditions:

- Unit 1 is in Mode 5 with RHR Cooling in progress.
- The RCS is solid.
- RHR flow is lost and CANNOT be restored.
- All other systems and components are available.

**Which ONE of the following methods of cooling will be utilized to remove the core decay heat ?**

- A. Feed the RCS with Safety Injection and use letdown to remove decay heat.
- B. Start a charging pump with flow through an RHR heat exchanger, and initiate hot leg injection.
- C. Start a charging pump with flow through an RHR heat exchanger, and initiate cold leg injection.
- ✓D. Feed a S/G using an AFW pump, and bleed steam through the respective SG atmospheric dump valve.

. 053.03.LP2416.008 002

The following plant conditions exist:

- A Unit 2 Reactor Startup in accordance with OP-1B, "Reactor Startup", is in progress following an extended outage.
- During the course of the startup, the CO notes that neither channel of Intermediate Range Nuclear Instrumentation is responding.
- The SRO, after consulting Technical Specifications (TS), notes that the startup cannot continue and reactor power must be reduced < P-6 within 2 hours.

**Which ONE of the following choices indicates the reason that TS directs this power reduction ?**

- A. Protection against a cold water accident is reduced.
- B. Protection against a rod ejection accident is reduced.
- C. Protection against a steam line break accident is reduced.
- ✓D. Protection against an uncontrolled RCCA bank rod withdrawal is reduced.

1. 055.03.LP2438.001 010

Unit 1 is shutting down from 100% power in response to a steam generator tube leak. What would be the expected trend of chemistry leak rate calculations during the shutdown and why ? (Assume the flaw size remains constant.)

- A. Leakage would increase because air ejector flow rate would decrease.
- B. Leakage would remain the same because isotopes analyzed are independent of power.
- ✓C. Leakage would decrease because primary to secondary pressure difference is reduced.
- D. Leakage cannot be determined accurately when power is being changed due to iodine spiking.



1. 031.02.LP0441.004 001

The crew is responding to a ruptured steam generator (S/G) in 2A S/G using EOP-3, "Steam Generator Tube Rupture" with the following conditions:

- 2A S/G Pressure is 700 psig.
- 2B S/G Pressure is 500 psig.
- RCS Cooldown is in progress.
- Both SI pumps are running.

**Which ONE of the following is the HIGHEST indicated core exit temperature that assures 20 °F subcooling will exist, including instrument inaccuracies of 35 °F, after subsequent RCS depressurization ?**

- A. 430 °F.
- ✓B. 450 °F.
- C. 465 °F.
- D. 485 °F.

1. 052.05.LP0169.004 010

A plant startup is in progress with the following conditions:

- Unit 1 Reactor Power is 25%.
- Generator Output Breaker is closed.
- Main Feedwater Pump 1P-28A is running in a single feedwater train configuration.

**If a trip of 1P-28A occurs, how will the Auxiliary Feedwater System respond?**

- A. Both MDAFW Pumps and the TDAFW Pump will start after a 30 second time delay.
- B. Neither MDAFW Pump will start. The TDAFW Pump will start when level in either S/G drops below 25%.
- C. Both MDAFW Pumps will start immediately. The TDAFW Pump will start when both S/G levels drop below 25%.
- ✓D. Both MDAFW Pumps will start when either S/G level drops below 25%. The TDAFW Pump will start when both S/G levels drop below 25%.

1. 043.03.LP1998.003 007

Given the following conditions on Unit 2:

- The plant was operating at 100% power.
- A plant trip occurred due to a loss of main feedwater.
- AFW flow is lost and cannot be re-established.
- CSP-H.1, "Response to Loss of Secondary Heat Sink", has been implemented.
- Both S/G wide range levels are 55 inches, slowly lowering and feed flow is not restored.

**Which ONE of the following actions must be performed in accordance with CSP-H.1 ?**

- A. Dump steam from both S/Gs at the maximum rate.
- ✓B. Initiate safety injection and then open the pressurizer PORVs.
- C. Depressurize one S/G to allow condensate pumps to supply it.
- D. Open the pressurizer PORVs, and then initiate safety injection.

1. 055.03.LP2443.002 001

The following plant conditions exist:

- Both units are operating at full power.
- No plant evolutions are in progress.
- The Unit 1 Service Water Overboard Monitor (1RE-229) is in alert on the Control Room RMS.
- The Control Room team verifies this is a valid alarm per RMSASRB guidelines and an unscheduled release is in progress.

**Which ONE of the following choices best describes additional expected control room team actions and why ?**

- A. Refer to Technical Specifications which directs a determination of effluent radiation levels after completing release.
- ✓B. Refer to AOP-4A, "High Effluent Activity", which directs the effluent release path be isolated to minimize exposure to the public.
- C. Refer to AOP-4A, "High Effluent Activity", which allows discharge to continue since the dilution to Lake Michigan would be of no concern.
- D. Refer to "Radioactive Liquid Waste Permits" section of Release Accountability Manual (RAM 3.1) which provides release requirements after an accidental release has occurred.

1. 043.03.LP1993.011 001

Given the following plant conditions:

- A large break loss of coolant accident occurred about 15 minutes ago.
- During the initial phases of the accident, containment pressure peaked at 15 psig and radiation peaked at 1E6 R/hr.
- Containment pressure has just lowered to 4.5 psig and containment radiation levels to 8E4 R/hr.

**Select the correct response concerning the use of adverse numbers during this accident.**

- A. The use of adverse containment numbers is still required until containment pressure is less than 1 psig.
- B. The use of adverse containment numbers was never required because neither adverse containment criterion was exceeded.
- ✓C. The use of adverse containment numbers is still required until containment radiation integrated dose is verified to be less than 1E6 R.
- D. The use of adverse containment numbers was required initially but is no longer necessary because containment pressure and radiation are both below the adverse containment criteria.

051.01.LP0078.008 001

Given the following plant conditions:

- Unit 1 is at Full Rated Power.
- The CO notes 1LI-428 Pressurizer Level channel (blue channel), has failed low.
- The CO also notes 1C04 1C 2-3, "PRESSURIZER LEVEL SETPOINT DEVIATION" is in alarm.

**Based on these plant conditions and alarms, what are the indications you expect to see for the following items: ?**

Charging Pump Speed/    PZR Proportional Heaters/    Letdown Flow

A. LOWERING	ON	IN SERVICE
B. LOWERING	OFF	ISOLATED
✓C. RISING	OFF	ISOLATED
D. RISING	ON	IN SERVICE

1. 055.03.LP2442.003 001

Several interlocks have been designed into the manipulator crane used for fuel handling operations.

**According to the FSAR, what is the reason for the interlocks associated with the manipulator crane ?**

- A. They provide additional protection during RCCA unlatching operations.
- B. They ensure the worst case fuel handling accident cannot occur, thus ensuring 10 CFR 100 limits are not exceeded.
- C. They provide sole protection in the event of a maximum potential earthquake.
- ✓D. They provide additional safety features and physical limitations on fuel handling operations.

1. 043.03.LP2000.006 002

CSP-Z.2, "Response to Containment Flooding," is entered when containment sump "B" level is greater than 74 inches.

**Which ONE of the following correctly states the major concern to the operator if containment sump "B" level were to exceed 74 inches ?**

- ✓A. Plant components required for long-term cooling of the core and/or containment could be damaged and rendered inoperable.
- B. The sodium hydroxide tank does not contain enough volume to "neutralize" a larger volume of sump "B" contents to the correct pH.
- C. Containment design does not include the additional pressure from a larger depth of water in the event containment pressure exceeds 60 psig.
- D. The containment sump "B" valves (SI-850 A/B) design does not include the additional pressure from a larger depth of water in the event containment pressure exceeds 60 psig.



1. 043.01.LP0449.003 001

Given the following plant conditions:

- Unit 2 is operating at 90 % Reactor Power.
- Rod Control is in automatic with Bank "D" Control Rods at 210 steps.
- A Turbine Runback occurs for one minute.

**Which ONE of the following choices correctly reflects control rod position and axial flux response ?**

CONTROL ROD POSITION

AXIAL FLUX

✓A. Lower in the core

Lower in the core

B. Lower in the core

Higher in the core

C. Higher in the core

Lower in the core

D. Higher in the core

Higher in the core

051.01.LP0125.003 001

Given the following plant conditions:

- Unit 2 has just been manually tripped due to excessive Alewife buildup on the Traveling Water Screens.
- Unit 1 has been reduced to 80% Power.
- Five minutes has elapsed since the trip and all equipment and automatic functions have operated as designed.

**Based on these conditions, which ONE of the following correctly states the power supply to Unit 2 "A" Reactor Coolant Pump ?**

- A. 2A-01 from 2X-02.
- B. 2A-02 from 2X-02.
- ✓C. 2A-01 from 2X-04.
- D. 2A-02 from 2X-04.

1. 043.02.LP2461.010 002

Given the following plant conditions:

- Unit 1 operating at full licensed power.
- The control room operator inadvertently turns the control switch for Reactor Coolant Pump 1P-1A to STOP.
- Assume no other operator action and that the plant functions as designed.

**Analyze the following responses and predict which is most correct regarding expected Unit 1 parameter response over the next one minute time period.**

<u>Total RCS Flow</u>	<u>S/G Pressures</u>	<u>Pressurizer Level</u>
✓A. Decreases	Increase	Decreases
B. Decreases	Remains the Same	Decreases
C. Remains the Same	Increases	Increases
D. Decreases	Increases	Remains the Same

051.02.LP0079.001 005

Which ONE of the following describes the indications that would be seen if the air line that supplies Instrument Air to 1CV-142, the charging line flow control valve, catastrophically ruptured ?

- ✓A. 1CV-142 would fail open and cause Reactor Coolant Pump seal water flow to lower.
- B. 1CV-142 would fail open and cause Reactor Coolant Pump seal water flow to rise.
- C. 1CV-142 would fail closed and isolate Reactor Coolant Pump seal flow, while maximizing charging.
- D. 1CV-142 would fail closed and cause the discharge reliefs on the charging pumps to lift, and Reactor Coolant Pump seal water injection flow to remain essentially the same.

051.02.LP0079.006 003

The following plant conditions exist:

- A Unit 1 startup is in progress.
- Reactor power is 2% and steady.
- Steam dumps are in steam pressure control.
- CVCS is in a normal plant startup alignment.
- Rod control is in manual.

The non-regenerative HX outlet temperature control valve (CC-130), cycles full open.

**Which ONE of the following describes the plant response to this event ? (Assume no operator action)**

- ✓A. SUR is positive and reactor power increases.
- B. SUR is positive and reactor power decreases.
- C. SUR is negative and reactor power decreases.
- D. SUR is zero and reactor power remains constant.

051.03.LP0066.001 006

Unit 2 was initially at 100% power and after an initiating event, the following plant conditions exist:

- Unit 2 "A" Steam Generator Narrow Range Level is 10% and lowering.
- Unit 2 "A" Steam Generator pressure is 400 psig and lowering.
- Unit 2 Containment Pressure is 2.1 psig and lowering.
- 4.16 kV AC Bus 2A05 indicates zero volts on C-02.

**What is the status of Unit 2 Emergency Core Cooling System (ECCS) equipment ?**

- A. All ECCS equipment is operating.
- B. None of the ECCS equipment is operating.
- C. Only "A" Train ECCS equipment is operating.
- ✓D. Only "B" Train ECCS equipment is operating.

053.06.LP0486.005 001

Following a Unit 1 Automatic Safety Injection (SI) and Containment Spray (CS) actuation, the following conditions exist:

- Containment Pressure = 30 psig.
- SI has NOT been reset.
- The normal feeder breaker to 4.16 kV Bus 1A-06 has inadvertently tripped due to an improper overcurrent relay setting.
- G-03 EDG output breaker has failed to auto-close.
- G-03 EDG output breaker to 1A-06 is then manually closed.

**Which ONE of the following correctly applies to the conditions just described ?**

- ✓A. SI pump "B" and CS pump "B" will both automatically restart.
- B. SI pump "B" and CS pump "B" must be restarted by using the individual pump breaker control switches.
- C. SI pump "B" will automatically restart, but CS pump "B" must be restarted using the individual pump breaker control switch.
- D. CS pump "B" will automatically restart, but SI pump "B" must be restarted using the individual pump breaker control switch.

053.03.LP2416.009 002

The following Unit 1 conditions exist:

Procedure in effect: OP-3B, "Reactor Shutdown"

N-35: 2E-11 amps

N-36: 3E-9 amps

The RO depresses the intermediate range permissive defeat push buttons, which results in a SR HIGH FLUX reactor trip.

**Which ONE of the following conditions for N-35 and N-36 would have caused this event ?**

- A. N-35 properly compensated  
N-36 overcompensated
- ✓B. N-35 overcompensated  
N-36 properly compensated
- C. N-35 properly compensated  
N-36 undercompensated
- D. N-35 undercompensated  
N-36 properly compensated



1. 031.02.LP1829.007 003

The following plant conditions exist:

- Unit 1 experiences a Large Break Loss of Coolant Accident during a reactor startup.
- All equipment functions as designed and the Control Room team has reached the point in EOP-0 "Reactor Trip or Safety Injection" where monitoring Critical Safety Function Status Trees is required.
- It is then reported by the third license that RWST level is at 58%.

**Which ONE of the following statements describes the immediate result that voiding in the downcomer region would have on the Source Range instrumentation and procedure used to mitigate these plant conditions ?**  
(CSP-S.2, "Response to Loss of Core Shutdown").

- A. A decrease in water density would reduce fission and result in a lower source range count rate, operators can address condition using CSP-S.2.
- B. The displacement of boron would increase fission and result in a higher source range count rate, operators must address condition using CSP-S.2.
- ✓C. The displacement of water would increase the neutron leakage and result in a higher source range count rate, operators should continue in the EOP set.
- D. The location of the source range detectors effectively shields the effects of voiding and results in no change in source range count rate, operators should continue in the EOP set.

1. 031.02.LP0435.002 001

Given the following plant conditions:

- Unit 2 has tripped due to a Small Break LOCA.
- RCS subcooling is 10 °F.
- In-Core Thermocouples are reading 595 °F and stable.
- SI Pumps are running at shutoff head.
- Operators are currently entering EOP-1.2, " Small Break LOCA Cooldown and Depressurization"

**Based on these conditions, which ONE of the following choices best describes the RCS cooling conditions ?**

- A. Reflux Cooling.
- B. Natural Circulation Cooling.
- C. Normal Forced RCS Cooling.
- ✓D. Inadequate Natural Circulation Cooling.

. 051.05.LP0057.003 001

What is the power supply to 1W-1C1, the Unit 1 "C" Accident fan?

A. 1A01

B. 1A05

C. 1B01

✓D. 1B04

1. 043.02.LP2463.009 002

Given the following plant conditions:

- Unit 1 Reactor/Turbine tripped from 100% power on Low PZR Pressure.
- A Design Basis LOCA has occurred.
- Subcooling margin is less than 0 °F.
- 4.16 kV AC Bus 1A05 indicates 0 volts.
- PZR Level is 0 %
- 1SW-2907, "Containment Ventilation Cooler Outlet Emergency Flow Control Valve" cannot be OPENED.
- Operators are responding using EOP-0, "Reactor Trip or Safety Injection".
- Assume all other equipment is functioning normally.

**Which ONE of the following statements is true with respect to the above conditions ?**

(CSP-Z.1, "Response to High Containment Pressure")

- A. It is unlikely adverse Containment conditions exist, operators will continue in EOP-0.
- B. Containment design pressure will be exceeded, operators will need to transition to CSP-Z.1.
- C. Containment Pressure will not exceed 25 psig, entry conditions for CSP-Z.1 will not be met.
- ✓D. Containment Pressure will not exceed design pressure, entry conditions for CSP-Z.1 will be met.

1. 052.05.LP0102.004 002

Which ONE of the following statements identifies correct automatic actions associated with the Condensate and Feedwater systems?

- A. Both Condensate Pumps will trip on a Safety Injection signal
- ✓B. Sustained loss of both Condensate Pumps will result in a low suction pressure trip of both Main Feedwater Pumps
- C. Condensate Pump Mini-Recirc Flow Control Valve (CS-2252) will open when the Low Pressure Feedwater Heater Bypass Valve (CS-2273) opens
- D. Exhaust Hood Spray valves will shut when the Low Pressure Feedwater Heater Bypass Valve (CS-2273) opens

1. 052.05.LP0102.001 001

Which ONE of the following statements is the basis for the heater drain tank and condensate pumps automatically tripping on a high containment pressure signal at 5 psig ?

- A. To prevent overfeeding a steam generator that has a S/G tube rupture.
- B. To reduce non-essential loads to prevent overloading the diesel generators.
- C. To prevent pump damage while pumps are dead-headed due to main feedwater isolation.
- ✓D. To minimize the containment pressure transient during a steam line break by limiting S/G inventory.

1. 052.05.LP0128.004 006

Given the following plant conditions:

- Unit 1 is operating at 100 % power.
- All systems are operating normally.
- A manual reactor trip is initiated via the 1C-04 pushbuttons.

**Which ONE of the following statements describes the expected response of the Main Feed Regulating Valves ?**

- A. They immediately close within 5 seconds.
- ✓B. They open fully within 10 seconds, then close within 20 seconds after  $T_{avg}$  is  $< 554^{\circ}\text{F}$ .
- C. They open fully within 10 seconds, then close within 5 seconds after  $T_{avg}$  is  $< 554^{\circ}\text{F}$ .
- D. They remain open and automatically throttle as needed to maintain 40% steam generator level.

1. 052.05.LP0131.005 001

The following plant conditions exist:

- Unit 2 is at 10% power.
- The Control Operator is focused on numerous start-up tasks which results in the "A" Steam Generator (S/G) water level reaching 80%.
- Both S/G's are being controlled in manual on the Feedwater Regulating Valve Bypasses.

**Which ONE of the following choices correctly reflects how the control room operator will recover S/G water level to normal programmed level ?**

- A. Place the S/G "A" Feedwater Regulating Valve Bypass in AUTO.
- B. No action is necessary, the system will automatically compensate.
- C. Close the "A" Feedwater Regulating Valve Bypass until normal level is obtained and then adjust accordingly.
- ✓D. Push the S/G "A" Feedwater Regulating Valve Bypass Reset pushbutton when level is below 78% and adjust accordingly until normal level is obtained.



1. 052.05.LP0169.005 001

A Low-Low Steam Generator Level was received on 2/3 channels in the Unit 1 'A' Steam Generator ('B' Steam Generator is normal at 64%).

**Which ONE of the following is the expected Auxiliary Feedwater system line-up for this condition ?**

- A. 1P-29 Turbine driven AFW Pump Feeding both Unit 1 Steam Generators.
- ✓B. P-38A and P-38B (the A & B Motor Driven AFW Pumps) running feeding both Unit 1 Steam Generators.
- C. P-38A and P-38B (the A & B Motor Driven AFW Pumps) running feeding the 1A Steam Generator only.
- D. 1P-29 Turbine Driven AFW Pump, and P-38A Motor Driven AFW Pump running feeding the 1A Steam Generator only.

1. 052.05.LP0169.009 001

The turbine-driven auxiliary feedwater pump trips on low suction pressure and the low suction pressure condition has **NOT** cleared.

**Which ONE of the following statements describes the operator action required to restart the pump?**

- A. Place the control switch for the Low Suction/Overspeed Trip Valve Reset Operator (MS-2082) in the CLOSE position, then the OPEN position.
- B. Locally reset the low suction pressure trip while the Low Suction/Overspeed Trip valve Reset Operator (MS-2082) is CLOSED, then select AUTO.
- C. Place the control switches for the steam supply MOVs (MS-2019 & 2020) in the CLOSE position, then place in the OPEN position, then leave in AUTO.
- ✓D. Place the control switch for the Low Suction/Overspeed Trip Valve Reset Operator (MS-2082) in the OPEN position, then the CLOSE position, then the OPEN position.

1. 051.04.LP0063.005 003

Which ONE of the following events will occur on a high alarm on RE-223, "Waste Distillate Discharge Liquid Process Monitor"?

- A. Indication only - no automatic actions, manual action is required.
- B. RCV-018, "Waste Liquid Overboard Valve" receives a CLOSE signal.
- ✓C. FCV-LW-15, "Waste Distillate Overboard Valve" receives a CLOSE signal.
- D. FCV-LW-15, "Waste Distillate Overboard Valve" and RCV-018, "Waste Liquid Overboard Valve" receive a CLOSE signal.

051.04.LP0052.004 003

While performing a gas decay tank discharge, what would be the effect if WG-14, "Radiation Control Valve", supply air line ruptured ? (Assume no other plant evolutions are in progress)

- A. WG-14 fails open, discharge would secure, vent stack radiation would decrease.
- ✓B. WG-14 fails shut, discharge would secure, vent stack radiation would decrease.
- C. WG-14 fails shut, discharge would continue, vent stack radiation would increase.
- D. No effect, discharge would continue, vent stack radiation would remain the same.

051.00.LP0000.000 010

Which ONE of the following Radioactive Gaseous Waste Effluent Monitors has an automatic control function associated with its design to isolate a waste gas release when high noble gas activity is sensed ?

- A. RE-221, "Drumming Area Ventilation".
- B. RE-224, "Gas Stripper Building Exhaust".
- C. RE-225, "Combined Air Ejector Low Range".
- ✓D. RE-214, "Auxiliary Building Exhaust Ventilation"

. 053.05.LP0288.006 001

A malfunction in the RMS causes a high radiation signal in the control room. This will cause the control room ventilation to shift to a mode of operation which provides \_\_\_\_\_.

- A. 100% recirculation.
- B. 5% outside air, 95% recirculation.
- C. 100% recirculation with 25% of it filtered.
- ✓D. 75% recirculation, 25% filtered outside air.

1. 086.03.LP2579.006 002

While removing a source, RP personnel drop it on the floor 10 ft. from an area monitor. If this area monitor is reading 2 R/hr, what is the approximate dose rate 1 ft. from the dropped source ?

- A. 20 R/hr.
- ✓B. 200 R/hr.
- C. 2000 R/hr.
- D. 20,000 R/hr.

1. 052.05.LP0169.006 002

Given the following plant conditions:

- Unit 1 is at 100% power. All plant controls are in a normal full power alignment.
- A maintenance activity has just resulted in an inadvertent start of 1P-29, Turbine Driven Auxiliary Feedwater Pump.
- 1P-29 has reached rated speed and is injecting to both Steam Generators.

**Under these conditions, which ONE of the following is correct regarding the response of the secondary coolant system (Main Feedwater) and resulting response of the primary coolant system ?**

- A. Main Feedwater Pump suction flow will rise, actual reactor power will lower.
- B. Main Feedwater Pump suction flow will lower, indicated reactor power will rise.
- C. Main Feedwater Pump suction flow will rise, indicated reactor power will lower.
- ✓D. Main Feedwater Pump suction flow will lower, actual reactor power will rise.



051.03.LP0066.004 001

Which ONE of the following statements best describes the interlock/system configuration associated with Unit 2 SI Test Line Return Isolation Valves (2SI-897A and B) ?

- A. These valves are air-operated and fail shut on a loss of instrument air.
- B. These valves cannot be opened unless "A" or "B" RHR pump suction from sump "B" MOV (2SI-851A and B) are full open.
- C. Both valves must be full closed to open "A" or "B" RHR pump suction from sump "B" MOV (2SI-851A and B).
- ✓D. Either valve must be full closed to open "A" or "B" RHR pump suction from sump "B" MOV (2SI-851A and B).

1. 031.02.LP0405.014 002

Given the following plant conditions:

- Unit 1 reactor operating normally at 100% power.
- A safety injection is inadvertently initiated.
- No LOCA exists and all equipment functions as designed.
- No operator actions are taken.

**Which ONE of the following correctly describes reactor coolant system (RCS) pressure response and the cause of this response ?**

- A. RCS pressure will INCREASE to the pressurizer PORV setpoint and be maintained there by PORV operation.
- ✓B. RCS pressure will DECREASE due to cooldown, then INCREASE due to pressurizer heater actuation.
- C. RCS pressure will DECREASE due to cooldown, then INCREASE to normal operating pressure due to safety injection.
- D. RCS pressure will INCREASE to shut-off head of the safety injection pumps, then DECREASE due to pressurizer spray actuation.

051.01.LP0078.005 001

Given the following plant conditions:

- Unit 1 is at 100% power, steady-state conditions.
- An internal failure associated with Master Pressurizer Pressure Controller PC-431K has caused both Unit 1 pressurizer spray valves to open approximately 25%.
- All pressurizer pressure channels indicate a lowering pressurizer pressure.

**Which ONE of the following choices is correct regarding the initial response of the pressurizer level control system to this failure and the procedure used to mitigate this transient ?**

(AOP-24, "Response to Instrument Malfunctions")

- A. Charging pump speed will rise due to lowering pressurizer level, AOP-24 can be used to address the failure of the controller.
- ✓B. Charging pump speed will lower due to rising pressurizer level, AOP-24 can be used to address the failure of the controller.
- C. Charging pump speed will rise due to lowering pressurizer level, AOP-24 cannot be used since a controller has failed, not an instrument.
- Ⓞ D. Charging pump speed will lower due to rising pressurizer level, AOP-24 cannot be used since a controller has failed, not an instrument.

. 053.02.LP0315.001 003

With reactor power at 100%, the  $T_{\text{hot}}$  transmitter TE-401A fails LOW.

Which ONE of the following describes the effects of this failure on the corresponding  $T_{\text{avg}}$  and Delta-T indications which provide input to RPS ?

	<u><math>T_{\text{avg}}</math></u>	<u>Delta-T</u>
--	------------------------------------	----------------

- |     |           |           |
|-----|-----------|-----------|
| A.  | Increases | Increases |
| B.  | Decreases | Increases |
| C.  | Increases | Decreases |
| ✓D. | Decreases | Decreases |

053.02.LP0315.008 004

During performance of an NIS power range heat balance at 100% power, a Reactor Engineer uses a feedwater temperature 30 °F lower than actual.

**Would the calculated value of power be HIGHER or LOWER than actual power, and would an adjustment of the NIS power range channels, based on this value, be CONSERVATIVE or NON-CONSERVATIVE with respect to Reactor Protection setpoints ?**

- ✓A. Higher/conservative
- B. Higher/non-conservative
- C. Lower/conservative
- D. Lower/non-conservative

65

053.01.LP1547.006 006

Which ONE of the following instrument failures would directly cause a change in the rod insertion limits ?

- ✓A. A  $T_{\text{hot}}$  RTD failing HIGH.
- B. Impulse pressure failing HIGH.
- C. A Power Range NIS channel failing HIGH.
- D. A pressurizer pressure channel failing LOW.

66

051.03.LP0064.001 002

Containment Spray Pumps are designed to protect the Containment Structure against overpressure conditions. In addition, Sodium Hydroxide is injected into the Spray system for introduction into the Containment environment in order to maintain Containment Sump "B" pH.

**What is the reason for controlling the pH ?**

- ✓A. Maintains Iodine in solution.
- B. Maintains Hydrogen in solution.
- C. Reduces Boron concentration in solution.
- D. Reduces Hydrogen concentration in solution.

67

051.05.LP0057.006 002

Unit 2 is in the middle of refueling (core load in progress). A power supply failure has resulted in the de-energization of SPING 22, the Unit 2 Containment Purge Exhaust SPING.

**What effect will this have on the Containment Ventilation System ?**

- A. No effect since the unit is in refueling (Mode 6).
- B. The Radiation Monitoring System will automatically initiate a Containment Isolation (CI) signal to cause the Containment Ventilation System to isolate.
- ✓C. The Radiation Monitoring System will automatically shut the Purge Supply and Exhaust valves, which in turn causes the Purge Supply and Exhaust fans to trip off.
- D. The Radiation Monitoring System will automatically shut the Purge Supply and Exhaust valves, but the Purge Supply and Exhaust fans must be manually secured from the Control Room.



1. 055.03.LP2442.008 004

Unit 2 is in a refueling outage, 10 days after shutdown, and has just completed a full core offload to the Spent Fuel Pool (SFP). A complete loss of SFP cooling occurs at 0300 due to mechanical failure of both SFP pumps. The current temperature of the SFP is 90 °F. The control room has entered AOP-8F "Loss of SFP Cooling".

**Given these plant conditions and AOP-8F, Figure 1, which ONE of the following indicates the earliest clock time at which boiling will be occurring in the SFP ?**

- A. 1700
- B. 1800
- ✓C. 1900
- D. 2000

1. 043.01.LP0444.002 002

Given the following plant conditions:

- Turbine load is at 100%.
- CS-2273 (LP Feedwater Heater Bypass Valve) opens.

**How and why will reactor power respond to this condition ?**

- A. Reactor power will remain constant, the plant is designed to operate with one # 5 Feedwater Heater bypassed.
- ✓B. Reactor power will increase due to the colder water entering the steam generators causing Tcold to drop, MTC will add positive reactivity.
- C. Reactor power will increase for a very short time due to the increased feed flow, but then decreases as the steam generator pressure increases. The net result is reactor power has decreased.
- D. Reactor power will decrease due to the decrease in steam generator pressure caused by the colder feedwater entering the feed ring. Less reactor power is needed to produce steam.

1. 052.02.LP0153.009 001

Which ONE of the following describes the location of the radiation monitors used to detect Unit 1 Main Steam System radiation (1RE-231 and 1RE-232) ?

- A. On the safety valve outlets.
- ✓B. On the line upstream of the MSIV's.
- C. On the line downstream of the atmospheric steam dumps.
- D. On the main steam equalizing header downstream of the MSIVs.

## 1. 055.01.LP0262.001 003

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- 1C03 1F 1-5, "Condenser delta T High" alarm is received.
- Upon investigation the turbine hall AO reports that Vacuum Priming is operating normally and the Air Ejector Lineup is normal.
- Additionally the AO reports condenser delta T is 51° F and rising.

**Based on this information your next action would be to \_\_\_\_\_.**

- A. enter AOP-17A, "Rapid Power Reduction" and reduce load until condenser delta T is restored to normal.
- B. direct the turbine hall AO to manually open the exhaust hood spray valves to lower condenser delta T per ARB.
- ✓C. immediately trip the reactor and enter EOP-0, "Reactor Trip or Safety Injection" since operation with condenser delta T > 50°F is not allowed.
- D. direct the turbine hall AO to open the condensate cooler outlet valve to increase cooling of the condensate that is returning to the main condenser per ARB.

1. 055.03.LP2440.001 001

Both units are at rated power with all controls in automatic. Power is lost to all of the Unit 1 safeguards buses and the normal supply breaker to 1A06 fails closed.

**What effect, if any, would this have on emergency diesel generator operations ?**

- A. All EDGs would start, but only G03 would supply it's respective bus.
- ✓B. All EDGs would start, but only G01 would supply it's respective bus.
- C. Only G01 and G03 would start, and both would supply their respective buses.
- D. No effect, all EDGs will start and both G01 and G03 will power their respective buses.

1. 055.03.LP2440.005 002

According to AOP 0.0 "Vital DC System Malfunction", a loss of which ONE of the following would cause a DUAL UNIT TRIP ?

✓A. D01

B. D13

C. D18

D. D21

1. 054.02.LP0133.001 004

Given the following plant conditions:

- Both Units are operating at Full Rated Power.
- A Loss of Off-Site Power occurs on Unit 2 with no Safety Injection signal.
- Prior to the Loss of Off-Site power, Service Water Pumps P-32A and D and Component Cooling Water Pump 2P-11A were running.

**Given these plant conditions, which ONE of the following describes the expected response of the emergency diesel generators and related equipment ?**

- A. All EDG's automatically start, P-32A remains running, P-32D and 2P-11A restart once power is restored to the safeguards bus and immediately load onto the bus.
- ✓B. All EDG's automatically start, P-32A remains running, P-32B,C,D,E & F will sequence onto their safeguard buses once power is restored, and 2P-11A & B will immediately restart upon power restoration.
- C. Only Unit 2 "A" and "B" Train EDG's (G-02 & G-04) automatically start, P-32A remains running, P-32D and 2P-11A restart once power is restored to the safeguards bus and immediately load onto the bus.
- D. Only Unit 2 "A" and "B" Train EDG's (G-02 & G-04) automatically start, P-32A,B,C,D,E & F will sequence onto their safeguard buses once power is restored, and 2P-11A & B will immediately restart upon power restoration.

051.02.LP0313.003 003

Both units are in a normal at-power lineup and the following occurs:

- A Unit 1 letdown line leak develops in the Non-Regenerative Heat Exchanger cubicle.

**Which ONE of the following pairs of radiation monitors would first detect this radioactive release ?**

- ✓A. RE-214 (Aux Building Exhaust Vent Noble Gas Monitor)  
RE-315 (Aux Building Sping Low Range Gas Monitor)
- B. RE-325 (Drumming Area Ventilation Noble Gas Monitor)  
RE-315 (Aux Building Sping Low Range Gas Monitor)
- C. RE-214 (Aux Building Exhaust Vent Noble Gas Monitor)  
1RE-305 (Unit 1 Purge Exhaust Noble Gas Monitors)
- D. RE-325 (Drumming Area Ventilation Noble Gas Monitor)  
RE-224 (Gas Stripper Building Exhaust Noble Gas Monitor)



1. 052.01.LP0151.003 002

Given the following plant conditions:

-Both units are operating at full power.

-Unit 1 has just tripped due to a lockout on High Voltage Station Transformer 1X03, combined with a failure of the "fast bus transfer" on the 13.8 kV level.

**Which ONE of the following statements best describes the status of the circulating water system and procedure(s) that will mitigate circumstances related to the affected unit, if any ?**

(EOP-0, "Reactor Trip or Safety Injection")

(AOP-5A, "Loss of Condenser Vacuum")

- A. Unit 2 Circulating Water (CW) pumps trip, Unit 2 CW discharge valves remain open, EOP-0 is entered for Units 1 and 2, and AOP-5A for Unit 2.
- ✓B. Unit 1 CW pumps trip and their associated discharge valves close. EOP-0 and AOP-5A are entered for Unit 1 only.
- C. There is no effect on any running CW pump or discharge valve since these are still powered via Low Voltage Station Transformer 1X04. EOP-0 is entered on Unit 1 only.
- D. Unit 1 CW pumps trip and their associated discharge valves remain open. EOP-0 and AOP-5A are entered for Unit 1 only.

1. 052.06.LP0338.004 008

Given the following plant conditions:

- Unit 2 has recently returned to 100% power following a refueling outage.
- The Control Room has received several annunciators causing the crew to enter AOP-5B, "Loss of Instrument Air".
- All Service Air and Instrument Air compressors are running, however, Instrument Air pressure still cannot be restored greater than 80 psig.

**Based on these conditions, what is the expected response based on design features of the service air and instrument air systems ?**

- A. Only Instrument Air back-up valves (IA-3079/3014) have opened.
- B. Only Instrument Air dryer bypass valves (IA-3094-S/3000-S) have opened.
- ✓C. Both Instrument Air back-up valves (IA-3079/3014) and Instrument Air dryer bypass valves (IA-3094-S/3000-S) have opened.
- D. Neither Instrument Air back-up valves (IA-3079/3014) or Instrument Air dryer bypass valves (IA-3094-S/3000-S) have opened.

1. 052.05 165

CSP-H.1, "Response to Loss of Secondary Heat Sink," directs that AFW be established to restore cooling to the SG's.

**Which ONE of the following choices describes the procedural options to restore a suction source to the AFW pumps ?**

- ✓A. Condensate Storage Tank (CST), service water, fire water.
- B. CST, condenser hotwell, fire water.
- C. Main feedwater, CST, service water.
- D. Main feedwater, fire water, condenser hotwell.

051.03.LP0069.011 001

Given the following plant conditions:

- Reactor Coolant System temperature is 320 °F.
- Reactor Coolant System pressure is 370 psig.
- RHR cooldown operations has been established with both RHR pumps and heat exchangers in service.
- A cooldown rate of 80 °F/hr has been established.

**Which ONE of the following failures will cause the cooldown rate to increase ?**

- ✓A. Loss of control air to RH-626 (RHR HX Bypass FCV).
- B. Loss of power to CC-738A (HX-11A RHR HX-Shell Side Inlet Valve).
- C. Maximum control air signal to RH-624 (HX-11A RHR HX Outlet FCV).
- D. The bellows in FT-626 (RHR System Return Line Flow) fails by rupturing.

80

051.01.LP0078.002 004

Given the following plant conditions:

Unit 2 is in cold shutdown.

Reactor coolant system draindown is in progress, Cold Calibration Pressurizer level indication is 60% and slowly lowering.

OP-4D Part 1 "Draining the Reactor Coolant System" is the procedure in effect.

**Which ONE of the following is correct regarding the current line-up of the Pressurizer Relief Tank (PRT) ?**

- A. A manual vent valve is opened, venting the PRT directly to the Containment atmosphere to provide a backfill source to the pressurizer as level is lowered.
- B. The PRT is vented directly to purge exhaust to provide a backfill source to the pressurizer as level is lowered.
- ✓C. The PRT is aligned to the Nitrogen Header, which provides a backfill source to the pressurizer as level is lowered.
- D. The PRT rupture disk is removed, venting the PRT directly to the Containment atmosphere to provide a backfill source to the pressurizer as level is lowered.

1. 055.03.LP2444.009 005

Given the following plant conditions:

- Both units are at 100% power.
- Unit 2 has just experienced a failure of BOTH Component Cooling Water (CCW) pumps.
- AOP-9B "Component Cooling System Malfunction" has been entered, however, neither Unit 2 CCW pump will start.

**All of the following are required actions per AOP-9B for these conditions  
EXCEPT:**

- A. Stop both Reactor Coolant Pumps (RCPs).
- B. Transfer the Condenser Steam Dump Mode Selector Switch to manual.
- ✓C. Maximize seal injection to both RCPs.
- D. Trip the Unit 2 reactor.

1. 052.02.LP0035.007 001

Which ONE of the following describes the result of taking the STEAM DUMP MODE SELECTOR SWITCH to MANUAL ? (Assume all other controllers and switches remain in their normal, full power alignment.)

- A. Allows the atmospheric steam dumps to be manually controlled at the remote shutdown local control station.
- B. Allows the atmospheric steam dumps to modulate open as necessary to maintain RCS temperature at the controller setpoint.
- C. Allows the condenser steam dumps to be manually opened and closed using the manual control knob on the steam dump controller.
- ✓D. Allows the condenser steam dumps to modulate open as necessary to maintain main steam header pressure at the controller setpoint.

1. 052.03.LP0021.005 001

A single channel of the independent overspeed protection fails low.

**What immediate effect does this have on turbine generator operation and how would the operators know of the failure ?**

- ✓A. The turbine will not trip, and the operator will have the "Turbine Overspeed Channel Alert" for indication of the failure.
- B. The turbine will not trip, and the operator will have the "Turbine Stop Valve 1 of 2 Closed" for indication of the failure.
- C. The turbine will trip and the operator would utilize the first out for "Turbine Overspeed" for indication of the failure.
- D. The turbine will trip and the operator would utilize the first out for "Turbine Stop Valves Two Closed" for indication of the failure.



051.06.LP0086.008 001

Given the following plant conditions;

- Both Units are at Full Power.
- An "A" Train and "B" Train Service Water Pump is running supplying normal plant loads.

**What is the expected response of the Service Water System to a Unit 2 Safety Injection Signal ?**

- A. SW-2869/2870, Cross-Connect valves, shut to isolate West Header.
- B. If only four SW Pumps start, then all Unit 2 Turbine Hall loads are isolated.
- C. Spent Fuel Pool Heat Exchanger Outlet Valves SW-2930A/2930B close and Spent Fuel Pool Heat Exchanger Inlet Valves SW-2927A/2937B remain open.
- ✓D. 2SW-2907/2908, 2HX-15A-D Containment Recirc Heat exchanger emergency flow control valves, open to increase flow to Containment Accident Coolers.

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1. 055.03.LP2439.005 001

The Instrument Air header has an unisolable rupture in the line and air header pressure is slowly but steadily lowering.

**Which ONE of the following events will eventually occur as a result of the lowering pressure ? (ASSUME NO OPERATOR ACTION)**

- ✓A. The main steam isolation valves will shut.
- B. RCP seal injection flow will go to maximum.
- C. Charging pump 2P-2C will reduce speed to minimum.
- D. Pressurizer pressure will decrease until the low pressure trip.

043.01 007

Following a reactor trip on Unit 1, the following indications are noted:

- SW flow to air cooling units: 980 gpm
- Containment area radiation elevation 66' RE102: 28 mR/hr
- Containment pressure: 25 psig
- Containment "A" sump level: 100 %

**Based on the indications given and assuming all systems are in AUTO and function as designed, \_\_\_\_\_**

- ✓A. CI should have occurred, MSIVs should have shut.
- B. CI should NOT have occurred, MSIVs should have shut.
- C. CI should have occurred and MSIVs should remain open.
- ✓D. CI should NOT have occurred, MSIVs should remain open.

## 1. 043.02.LP2462.002 001

You are assuming the midshift watch on Unit 2. Rod control is in MANUAL due to a failed  $T_{ave} / T_{ref}$  comparator. Shortly after assuming the watch, you observe the following abnormal plant indications:

- Reactor coolant system temperature has rapidly lowered approximately 2 degrees °F.
- "A" & "B" S/G level deviation annunciators on 2CO3 are illuminated,
- Automatic charging pump speed is rising, and
- Overpower delta-T runback annunciator on 2CO4 has illuminated.

**Which ONE of the following events is the most likely cause of these indications ?**

- A. Dropped control rod.
- ✓B. Excessive load increase.
- C. Loss of normal feedwater.
- D. Loss of external electrical load.

1. 043.02.LP2463.002 002

The operators monitor parameters to ensure that the safety analysis assumptions for Shutdown Margin, Ejected Rod Worth, and Power Distribution Peaking Factors are preserved.

(QPTR - Quadrant Power Tilt Ratio)

(DNBR - Departure from Nucleate Boiling Ratio)

(AFD - Axial Flux Difference)

(CHF - Critical Heat Flux)

**Which ONE of the following is a list of these operator monitored parameters ?**

- A. QPTR, DNBR, AFD, and Rod Insertion Limits.
- B. Rod Alignment Limits, CHF, AFD, QPTR.
- ✓C. Rod Insertion Limits, AFD, QPTR, Rod Alignment Limits.
- D. RCS Pressure, Rod Insertion Limits, Critical Boron Concentration, CHF.

1. 043.03.LP1996.012 007

Unit 2 is operating at 100% power when a sequence of annunciators actuate, indicating a loss of feedwater and a reactor trip, but **NO** reactor trip occurs. The following plant status is noted:

- All attempts to perform a manual reactor trip fail.
- An urgent failure prevents all rod motion.
- All auxiliary feedwater pumps are operating.
- The turbine remains on-line (AUTO turbine trip did not occur).
- Reactor power remains near 100%.
- Reactor coolant system temperature and pressure slowly increase from 100% power values.

**Which ONE of the following correctly states the action that the operator should take to mitigate the transient from this condition ?**

- ✓A. Trip the turbine to avoid an excessive pressure increase after the steam generator tubes uncover.
- B. Open the PORVs immediately because the increasing pressure will take the pressurizer solid, resulting in insufficient water relief.
- C. Align maximum auxiliary feedwater flow to one steam generator to maintain it as a heat sink for cooldown of the reactor coolant system.
- D. Reduce turbine load slowly to avoid a rapid reactor coolant system temperature and pressure increase, leading to opening of a pressurizer safety valve.

051.03.LP0066.006 001

Which ONE of the following conditions would be indicated by a bright illuminated status light on the "SI/SPRAY Ready Panel" with the Unit at FULL POWER ?

**A component** \_\_\_\_\_.

- A. has lost DC control power.
- B. has lost AC control power.
- C. is in its normal alignment condition.
- ✓D. is in an abnormal alignment condition.

057.01.LP0616.001 001

Unit 2 has been operating at 50% power for several days due to "A" Main Feedwater Pump, 2P-28A, being OOS for maintenance. A severe plant transient occurs. The result is several automatic trip signals being generated without the reactor trip breakers opening; however, a manual trip is successfully performed. After stabilizing the plant, a Post Trip Review indicated the following simultaneous peak readings occurred during the transient:

- RCS Pressure 2385 psig.
- Reactor Power 52%.
- RCS  $T_h$  = 670 °F.
- RCS  $T_c$  = 640 °F.
- Both RCP's are running.

**Given the attached TS 2.0 reference, which ONE of the following statements is correct ?**

- A. No safety limits were exceeded.
- ✓B. The Reactor Core Safety Limit was exceeded.
- C. The RCS Pressure Safety Limit was exceeded.
- D. Both the Reactor Core and RCS Pressure Safety Limits were exceeded.



1. 055.03.LP2442.008 003

Given the following plant conditions:

- While moving an irradiated fuel assembly from the SFP upender to the pool, the cable holding the spent fuel pool handling tool breaks.
- The fuel assembly drops to the fuel transfer canal floor.
- Gas bubbles are seen rising from the fuel assembly.
- All of this information is reported to you in the control room.
- The SFP Area Low Range Monitor (RE-105) is in alert.

**Which ONE of the following actions would be required for these conditions ?**

- A. Secure Spent Fuel Pool Supply Fans.
- B. Close the Fuel Transfer Tube Gate Valve.
- C. Sound the Containment Evacuation Alarm.
- ✓D. Order Auxiliary Building immediate evacuation.

1. 086.03.LP2576.003 003

Operations and RP have just completed filling the spent resin High Integrity Container (HIC) with spent resin. The results of a subsequent radiation survey is as follows:

Top of shielded HIC by fill head: 2500 mr/hr on contact and 1200 mr/hr @ 30 cm

Sides of shield: 100 mr/hr on contact and 60 mr/hr @ 30 cm.

**Which ONE of the following best describes the required radiological postings ?**

- ✓A. The HIC should be posted as a High Radiation area with a red flashing light.
- B. The HIC should be posted as a High Radiation area without a red flashing light.
- C. No postings are required because you need a ladder to access the top of the shielded HIC.
- D. The PAB truck bay should be barricaded with locked gate access and posted as a Very High Radiation area.

1. 086.03.LP2577.002 001

During the upcoming outage, a modification in the reactor coolant loop is scheduled. Twenty individuals will work 75 hours each, inside an average field of 15 mr/hr.

**Who has the final review and approval authority for this job in accordance with the PBNP Alara Program ?**

- A. Work Group Manager.
- ✓B. Site Vice-President.
- C. Radiation Protection Manager.
- D. Production Planning Manager.

1. 086.03.LP2575.001 001

You are exiting the Radiation Control Area (RCA) after completing a plant tour. The PCM-1B Personnel Contamination Monitor alarms and indicates contamination on your left shoe. You exit the PCM-1B and perform a frisk using a hand held frisker. No contamination is detected during the frisk.

**In this situation, which ONE of the following is the proper method for you to exit the RCA ?**

- A. Proceed directly to the Portal Monitors.
- B. Exit the RCA, bypassing the Portal Monitors.
- C. Perform one additional PCM-1B recount, if no PCM-1B alarm is received, proceed to the Portal Monitors.
- ✓D. Perform two additional PCM-1B recounts, if no PCM-1B alarm is received, proceed to the Portal Monitors.

053.03.LP2416.011 003

Given the following plant conditions:

- Unit 1 startup is in progress with reactor power at 6% and stable.
- All systems are in a normal lineup with no equipment out of service.
- Procedure in effect is OP-1C "Low Power Operation To Normal Power Operation".
- As the Unit 1 Control Operator moves rods out one step to continue the power ascension, control rods continue to step out.
- Rod movement is terminated by the Control Operator by manually tripping the reactor.
- Just prior to the manual trip, reactor power is noted to be 22%.
- EOP-0 "Reactor Trip or Safety Injection" is entered.

**Which ONE of the following is correct regarding these events.**

- A. An automatic reactor trip should not have occurred since the Low Power Range Trip was automatically bypassed when power went above the P-10 interlock.
- ✓B. An automatic reactor trip should have occurred since the Low Power Range Trip was not bypassed and exceeded its reactor trip setpoint.
- C. An automatic reactor trip should have occurred since the "At-Power Trips" were enabled when power went above the P-7 interlock.
- D. An automatic reactor trip should have occurred since the Intermediate Range Trip was not bypassed and exceeded its reactor trip setpoint.

1. 031.03.LP2437.001 001

Given the following Unit 1 plant conditions:

- OP-3C, "Hot Shutdown to Cold Shutdown", is in progress and has been completed up to and including placing the Residual Heat Removal System in service.
- Both RCPs are in operation.
- 4.16 kV AC Bus 1A05 is de-energized.
- 4.16 kV AC Bus 1A06 is energized
- 480 V AC Bus 1B03 is de-energized
- 480 V AC Bus 1B04 is de-energized

**Which ONE of the following choices indicates the correct course of action based on the PBNP procedure network ?**

- A. Transition to ECA-0.0, "Loss of All AC Power".
- ✓B. Transition to SEP-3.0, "Loss of All AC Power to a Shutdown Unit".
- C. Remain in OP-3C, "Hot Shutdown to Cold Shutdown", and commence a cooldown to cold shutdown utilizing the Steam-driven Auxiliary Feedwater Pump and the S/G atmospheric dump valves under manual control.
- D. Secure the RCPs and transition to EOP-0.2, "Natural Circulation Cooldown".

1. 031.00.LP0000.000 002

Many of PBNP's Emergency Operating Procedures (EOP's) contain the following caution:

***"If offsite power is lost after SI reset, manual action may be required to restart safeguard equipment"***

Which ONE of the following choices best represents the basis for this caution statement ?

- A. Automatic SI signals are not blocked after SI reset.
- B. The SI logic requires a manual operator action to remove the undervoltage signal to the reset circuitry.
- C. Manual action must be taken to realign all safeguards equipment, otherwise equipment would not restart.
- ✓D. Normal sequencing of safeguards loads onto vital buses subsequent to diesel-generator startup may not occur.

1. 043.03.LP1996.002 002

Given the following plant conditions:

- A reactor start-up is in progress.
- Reactor criticality has been achieved and critical rod height data is being recorded.
- A bank of rods suddenly drops into the core.
- Intermediate Range power is lowering.
- The operator immediately pushes the reactor trip pushbuttons, but the reactor trip breakers do not open.
- Safety Injection actuates on low PZR pressure.

**The correct course of action is best described by which ONE of the following statements ?**

(EOP-0, "Reactor Trip Or Safety Injection")

(EOP-0.1, "Reactor Trip Response")

(CSP-S.1. "Response To Nuclear Power Generation/ATWS")

- A. Transition from EOP-0 to CSP-S.1.
- B. Complete EOP-0 Immediate Actions and transition to EOP-0.1.
- C. Locally open reactor trip breakers and once opened exit EOP-0.
- ✓D. Complete EOP-0 Immediate actions and continue until first transition out.



## 1. 086.01.LP2568.006 001

A dropped Rod has occurred and the Operating Crew is responding in accordance with plant procedures. A step in the procedure references Technical Specifications and states "If Axial Flux Difference (AFD) cannot be restored within the required band, then reduce thermal power to less than or equal to 50% within the next 3 hours".

**The basis for this action includes all except which ONE of the following choices ?**

- ✓A. To minimize the amount of axial flux difference until the dropped rod is recovered.
- B. To prevent invalidating the conclusions of the transient and accident analyses with regard to fuel clad integrity.
- C. To limit power distribution skewing so core peaking factors are consistent with assumptions used in the safety analyses.
- D. To ensure Heat Flux Hot Channel Factor is not exceeded during normal operation or in the event of xenon redistribution following power changes.

051.06.LP0084.004 004

Given the following plant conditions:

- Unit 2 is at Full Power.
- 2P-11B, CCW pump is running with 2P-11A in standby.
- A breaker malfunction occurs which results in 0 volts indicated on 2B04.

**Assuming no operator action taken unless specified in the response, what is the effect of this transient and what procedure(s) will you direct as DOS to correct this situation ?**

(AOP-9B, "Component Cooling Water Malfunction")

(AOP-18B, "Train "B" Equipment Operations")

- A. 2P-11A will start on low pressure and 2P-11B will automatically restart when power is restored to the buses, only AOP-9B should be entered.
- B. 2P-11A will start on the UV on 2B04 and the breaker for 2P-11B will trip open and remain that way until reset by operators, only AOP-18B should be entered.
- ✓C. 2P-11A will start on low pressure and 2P-11B will automatically restart when power is restored to the buses, both AOP-9B and AOP-18B should be entered.
- D. 2P-11A will start on the UV on 2B04 and the breaker for 2P-11B will trip open and remain that way until reset by operators, both AOP-9B and AOP-18B should be entered.

## 1. 043.03.LP1996.013 001

Unit 1 is at 100% power, middle-of-life, when the reactor fails to trip when required. The operators take actions in accordance with CSP-S.1, "Response to Nuclear Power Generation / ATWS." The following plant conditions are noted when the operators get to the step which is to, "Verify Reactor Subcritical:"

- Reactor trip breakers are NOT OPEN,
- Control rods are NOT FULLY INSERTED,
- Normal and emergency boration, including the RWST flowpath, CANNOT be established because of blockage in the flow paths,
- All power range channels indicate 4% power, and
- Both intermediate range startup rates (SUR) indicate +0.1 dpm.

**Which ONE of the following describes the action you would take and reason why, given these conditions ?**

- ✓A. Allow the reactor coolant system to heatup while continuing with efforts to establish normal or emergency boration. The heatup will insert negative reactivity.
- B. Exit CSP-S.1 and return to the procedure and step in effect. Power is less than 5%, which is the design power level for auxiliary feedwater heat removal capability.
- C. Maintain stable reactor coolant system temperature while returning to procedure and step in effect. Stable temperatures preclude positive reactivity insertion by dilution.
- D. Exit CSP-S.1 and transition to CSP-S.2, "Response to Loss of Core Shutdown," since power ranges are less than 5% with an intermediate range startup rate that is NOT more negative than -0.2 dpm.

## 1. 031.02.LP1829.001 001

In EOP-0, "Reactor Trip or Safety Injection", the reactor coolant pumps are required to be tripped if at least one safety injection pump is running and capable of delivering flow AND RCS subcooling is  $< [60\text{ }^{\circ}\text{F}] 30\text{ }^{\circ}\text{F}$  based on core exit thermocouples AND an operator controlled cooldown is not in progress.

**The basis for this action is \_\_\_\_\_.**

- A. to allow the steam generator tubes to drain and provide RCS inventory to the core.
- B. to prevent reactor coolant pump damage from cavitation due to operation with two phase flow.
- C. to prevent damage to the reactor coolant pump seal stack which could result in additional mass loss from the RCS.
- ✓D. to avoid the excessive RCS inventory loss that would occur if the reactor coolant pumps were left running and then tripped later in a small break LOCA event.

## 1. 031.02.LP0435.010 003

Operators are responding to a small break LOCA on Unit 1. While completing the first pass through EOP-1.2, "Small Break LOCA Cooldown and Depressurization", "A" SI pump was stopped as directed, but pressurizer level did not allow securing the second SI pump. While depressurizing the RCS to raise pressurizer level above 34%, subcooling momentarily drops to 32 °F before the spray valve is shut.

**Which ONE of the following actions should be taken ?**

- A. Manually actuate SI.
- B. Start the 'A' SI pump only until subcooling is restored, then stop it.
- C. Start the 'A' SI pump and leave it running until SI reduction or termination criteria are satisfied.
- ✓D. Wait and see if subcooling recovers after the spray valve goes shut. If subcooling recovers, then no action is needed.

053.03.LP2416.010 002

A Reactor Trip occurred approximately 20 minutes ago and the following plant conditions exist:

- Reactor Coolant Pumps (RCPs) were secured due to high vibrations.
- The control room team is working their way through EOP-0.1, "Reactor Trip Response" and anticipates a cooldown to inspect RCPs.
- The Reactor Operator notes both channels of Intermediate Nuclear Instrumentation are reading  $< 1.0 \times 10^{-10}$  amps and lowering.
- Both Channels of Source Range Instrumentation are reading zero.

**Based on these conditions, how will you confirm the reactor is maintained in a subcritical tripped condition ?**

- A. Verify IRPI and Demand Counters are reading zero.
- B. Verify shutdown bank control rod bottom lights remain lit.
- C. Verify Source Range Startup Rate Channels are zero or negative.
- ✓D. Verify Intermediate Range Startup Rate Channels are more negative than -0.2 dpm.

1. 086.01.LP2568.006 002

The following plant conditions exist:

- Following a capacity test, Battery Charger D-108 is re-aligned to DC Bus D-04.
- A supervisory review of the D-108 Battery Charger capacity test has discovered that 6 hours after starting the test, battery charger output dropped to 123 volts. (assume this discovery is concurrent with the D-108 re-alignment to D-04)

**Based on this information and the attachments provided from Technical Specifications (TS) , which of the following choices is the correct course of action ?**

- A. DC Bus D-04 is operable and no TS action is required.
- ✓B. Declare DC Bus D-04 inoperable and restore it to operable status within 2 hours.
- C. DC Bus D-04 can be considered operable if an Operability Determination is completed.
- D. Declare DC Bus D-04 inoperable, immediately declare associated supported required features inoperable, and restore D-04 to operable status within 2 hours.

1. 043.02.LP2462.005 001

Given the following plant conditions:

- Both units have been operating at 100% power for greater than 100 days.
- 1P-29, Unit 1 turbine driven auxiliary feedwater pump, has been out of service for 32 hours for bearing replacement.
- A complete loss of off-site power on Unit 1 occurs due to severe weather conditions.
- Emergency Diesel Generator G-02 fails to start.

**Assuming that all other plant equipment functions as designed and with no operator action, which ONE of the following statements best describes the expected Unit 1 plant response with regards to the Auxiliary Feedwater System?**

- A. Only Motor Driven Auxiliary Feedwater Pump P-38B is running, supplying the Unit 1 'B' Steam Generator.
- ✓B. Both Motor Driven Auxiliary Feedwater Pumps P-38A and P-38B are running, supplying the Unit 1 'A' and 'B' Steam Generators, respectively.
- C. Only Motor Driven Auxiliary Feedwater Pump P-38A is running, supplying the Unit 1 'A' Steam Generator.
- D. Only Motor Driven Auxiliary Feedwater Pump P-38B is running, supplying the Unit 1 'A' and 'B' Steam Generators.



**1. 055.00.LP0000.000 001**

Given the following plant conditions:

- Unit 1 is at 100% power with all control systems in automatic,
- A controller malfunction causes the charging line control valve (1CV-142) to go CLOSED.
- The valve will not respond to any control operator actions.
- The bypass valve around 1CV-142 (1CV-323B) CANNOT be opened.

**As SRO, which ONE of the following course of actions should be taken for continued plant operation ?**

- ✓A. Secure letdown, go to one charging pump at reduced speed, and establish excess letdown.
- B. Secure letdown, go to one charging pump at minimum speed, then reduce reactor power to 15% at the normal ramp rate of 15%/hr.
- C. Establish an auxiliary charging flowpath, maintain normal letdown on one orifice, and maintain a normal charging pump combination.
- D. Verify CCW flow through the RCP thermal barrier heat exchanger > 25 gpm, verify RCP seal leakoff < 5 gpm, and secure letdown and all operating charging pumps.

031.00.LP0000.000 020

Given the following plant conditions:

- I & C testing is in progress.
- Unit 1 is operating at full power.
- C01 B 2-5 (Unit 1 Containment Isolation) annunciates.
- All of the lights on the Unit 1 Containment Isolation Panel 'A' and 'B' are lit.
- Assume no immediate operator actions occur.

**Based only on these plant conditions, which ONE of the following choices best predicts a plant outcome and appropriate procedure that should be used to mitigate this situation ?**

(EOP-0, "Reactor Trip or Safety Injection")

(AOP-9B, "Component Cooling System Malfunctions")

(AOP-27, "Recovery from Inadvertent Containment Isolation")

- ✓A. Letdown line isolation occurs and AOP-27 should be entered.
- B. Safety Injection actuation occurs and EOP-0 should be entered.
- C. Seal injection isolation to RCPs occurs and AOP-27 should be entered.
- ⌋ D. Component cooling water isolation to radwaste components occurs and AOP-9B should be entered.

## 1. 000.00.LP0000.000.00 003

Following a large break LOCA with the RHR pumps inoperable, the operators transition to ECA 1.1, "Loss of Emergency Coolant Recirculation". The following plant conditions exist:

- Containment Pressure is 55 psig.
- RCS Pressure is 150 psig.
- RWST Level is 26%.

**Given the attached reference from ECA 1.1, which ONE of the following is the correct combination of Containment Recirculation Fans and Containment Spray Pumps to operate under these conditions ?**

- A. 1 Accident Fan, no Spray Pump.
- B. 2 Accident Fans, 2 Spray Pumps.
- C. 3 Accident Fans, 1 Spray Pump.
- ✓D. 4 Accident Fans, 0 Spray Pumps.

1. 043.OO.LP0000.000 001

Which ONE of the following describes the design usage of the Hydrogen Recombiners following a Loss of Coolant Accident (LOCA) ?

- A. The recombiners are designed to remove hydrogen released into the containment from all sources following a DBA LOCA. They can be safely operated at all containment hydrogen concentrations.
- ✓B. The recombiners are designed to remove hydrogen released into the containment from all sources following a DBA LOCA. They can be safely operated only when containment hydrogen concentration is less than 5%.
- C. The recombiners are designed to rapidly remove the hydrogen generated by the zirconium-water reaction during inadequate core cooling conditions. They can be safely operated at all containment hydrogen concentrations.
- D. The recombiners are designed to rapidly remove the hydrogen generated by the zirconium-water reaction during inadequate core cooling. They can be safely operated only when containment hydrogen concentration is less than 5%.

. 043.02.LP2464.001 001

Chapter 14 of the FSAR provides an analysis of an off-loaded fuel assembly which is dropped onto the floor of the spent fuel pool.

**Which ONE of the following choices best describes the outcome of this analysis ? (Assume that only the dropped fuel assembly is affected).**

- A. Recriticality hazards would be presented and site boundary radiation levels could exceed 10 CFR 100 limits.
- ✓B. No criticality hazard would be presented and site boundary radiation levels would not exceed 10 CFR 100 limits.
- C. No criticality hazard would be presented, however site boundary radiation levels could exceed 10 CFR 100 limits.
- D. Recriticality hazards would be presented, however site boundary radiation levels would not exceed 10 CFR 100 limits.

1. 054.02.LP0133.001 005

The following plant conditions exist:

- Both Units are at 100% power in Mode 1.
- G-04 Emergency Diesel Generator (EDG) is tagged out due to fuel oil contamination discovered in the G-04 EDG Day Tank (T-176B).
- G-04 EDG Day Tank (T-176B) is drained.
- G-03 EDG is aligned to 4.16 kV buses 1A06 and 2A06 per OI-35.
- A fault occurs on Low Voltage Station Transformer 2X04.
- All systems function normally with the exception that G-03 EDG fails to start due to a major mechanical failure.
- Operations personnel are attempting to restore G-04 EDG to service.

**Which ONE of the following is correct with respect to the fuel oil supply for the G-04 EDG.**

- A. G-04 EDG Fuel Oil Transfer Pump (P-207B) CAN be used to refill the G-04 Day Tank (T-176B) since P-207B is powered from 480 V MCC 2B40.
- B. G-04 EDG Fuel Oil Transfer Pump (P-207B) CANNOT be used to refill the G-04 Day Tank (T-176B) since P-207B is powered from 480 V MCC 1B40.
- ✓C. G-04 EDG Fuel Oil Transfer Pump (P-207B) CANNOT be used to refill the G-04 Day Tank (T-176B) since P-207B is powered from 480 V MCC 2B40.
- D. G-04 EDG Fuel Oil Transfer Pump (P-207B) CAN be used to refill the G-04 Day Tank (T-176B) since P-207B is powered from 480 V MCC 1B40.

1. 031.03.LP2189.006 002

While in SEP-1, "Degraded RHR system Capability" you have completed suction refill of the RHR pumps and restarted the previously running pump. You note erratic operation after the pump start.

**In accordance with SEP-1, which ONE of the following is your next action ?**

- A. Secure the pump immediately as required.
- B. Immediately start the other idle RHR pump.
- C. Continue to operate the pump as this response is expected.
- ✓D. Continue to operate the pump for up to 2 minutes. If erratic operation continues, secure the pump.

1. 086.01.LP2559.001 001

Both Units are at 100% Power. The mid-shift crew is at minimum shift crew composition per OM 3.1, Operations Shift Staffing Requirements." At 0015, the third license (third RO) is required to leave due to an emergency at home.

**Which ONE of the following actions, if any, must be taken ?**

- A. No action is required as long as an individual holding an active RO license is assigned to each Unit.
- B. The Duty Operations Supervisor (DOS) can assume the third license duties until the next shift arrives at 0650.
- C. The Duty and Call Superintendent (DCS) must report to the Control Room until minimum staffing requirements are met.
- ✓D. The Shift Technical Advisor (STA) must report to the Control Room and shall remain there until minimum staffing requirements are met.



. 031.01.LP0158.004 001

Due to plant conditions requiring prompt actions to mitigate damage to the RCPs, an emergent temporary change is being considered to the EOP in use.

**At a minimum, which ONE of the following requirements must be met ?**

- A. An SRO must approve the actions and the DCS notified. The action, time they were performed, and the reason for the temp change must be logged, and a one hour notification to the NRC must be made.
- B. The DCS and an SRO must approve the actions. The action cannot violate the intent of the procedure. The action taken and the reason must be logged, and a one hour notification to the NRC must be made.
- C. An SRO must direct the actions taken. The actions are then logged with a reason given, approval by the DSS and a procedure feed back submitted as soon as possible for consideration of a permanent change to the procedure.
- ✓D. Cognizant group supervisor and an SRO must approve the actions. The action cannot violate the intent of the procedure. The actions taken and the reason for the actions must be logged. A Condition Report must be generated documenting the actions as soon as possible.

1. 086.01.LP2560.002 003

A temporary change to a safety related Operations procedure has been submitted. This temporary change requires a full 10 CFR 50.59/72.48 evaluation.

**Which ONE of the following choices indicates the correct individual(s) and/or group(s) who must give FINAL review and approval PRIOR to use of the procedure ?**

- A. Off-Site Review Committee (OSRC) and the Manager's Supervisory Staff (MSS)
- B. Duty and Call Superintendent (DCS) and the OSRC
- ✓C. MSS and the Operations Manager
- D. Operations Manager and the DCS

1. 043.02.LP2464.004 001

Which ONE of the following events is considered to be the limiting event for operation of the Atmospheric Dump Valves ?

- A. small break loss of coolant accident.
- ✓B. steam generator tube rupture with a loss of offsite power.
- C. large break loss of coolant accident.
- D. steam generator tube rupture without a loss of offsite power.

1. 086.03.LP2578.002 001

Which ONE of the individuals listed below would require an administrative dose limit extension ?

- A. A newly hired contract maintenance worker who has already received 2300 mrem Total Effective Dose Equivalent (TEDE) at a different facility and has been assigned to a job at Point Beach (PBNP) where he is expected to receive an additional 1200 mrem TEDE exposure.
- B. A PBNP maintenance worker who has already received 1200 mrem Total Effective Dose Equivalent (TEDE) and has been assigned to a job where he is expected to receive an additional 500 mrem TEDE exposure.
- ✓C. A PBNP maintenance worker who has already received 1800 mrem Total Effective Dose Equivalent (TEDE) and has been assigned to a job where he is expected to receive an additional 500 mrem TEDE exposure.
- D. A newly hired contract maintenance worker who has already received 1200 mrem Total Effective Dose Equivalent (TEDE) at a different facility and has been assigned to a job at Point Beach (PBNP) where he is expected to receive an additional 1000 mrem TEDE exposure.

. 086.00.LP0000.000 006

- Both Units are at Full Power.
- RE-214, Auxiliary Building Vent Exhaust Gas Monitor, was previously removed from service.
- 1RE-215, Condenser Air Ejector Gas Monitor, is being taken out of service for maintenance while operating at full power.

**Using the given reference from the Radiological Effluent Control Manual (RECM), which ONE of the following statements describes the impact on effluent releases via this pathway ?**

(Assume all other radioactive gaseous effluent monitoring instruments are available other than those mentioned above).

- ✓A. There are no actions necessary.
- B. Releases may continue provided grab samples are collected at least once per 12 hours.
- C. Releases may continue provided grab samples are collected at least once per 24 hours.
- D. Releases may continue provided samples are continuously collected with auxiliary equipment.

1. 043.03.LP2000.007 001

The following plant conditions exist:

- Procedure in effect - EOP-1, "Loss of Reactor or Secondary Coolant".
- Containment pressure - 65 psig and rising.

The operators transition to CSP-Z.1, "Response to Containment High Pressure," and upon completion of all of the steps in CSP-Z.1, the containment pressure is noted to be 62 psig.

**Which ONE of the following correctly states the required action of the SRO for these conditions ?**

- A. The SRO should repeat the steps of CSP-Z.1 until the RED path condition clears.
- B. The SRO should return to step 1 of EOP-1 and re initiate the procedure in its entirety.
- ✓C. The SRO should return to EOP-1 at the step in effect. CSP-Z.1 should not be repeated.
- D. The SRO should repeat the steps of CSP-Z.1 one time, then return to EOP-1 at step in effect.

086.00.LP0000.000 005

A fire is reported to the control room by an Office Assistant and verified by an Auxilliary Operator in the area of Unit Two Lube Oil Storage Room.

**According to NP 1.9.14, "Fire Protection Organization", which of the following best describes a responsibility of the Duty Operating Supervisor (DOS) regarding fire emergency response guidelines ?**

**The DOS should \_\_\_\_\_.**

- A. relieve the third licensed control operator who will act as a fire brigade member.
- ✓B. proceed to the scene to act as the fire brigade leader, after ensuring the DSS is in the control room.
- C. contact the Two Creeks Volunteer Fire Department for assistance as soon as fire magnitude is known.
- D. relieve the Duty Shift Superintendant (DSS), who will proceed to the scene of the fire to direct activities.

086.00.LP0000.000 007

Given the following plant conditions:

- Unit 1 automatically tripped from 100% power due to a confirmed Steam Line Break into Containment.
- The operating crew enters EOP-0, "Reactor Trip or Safety Injection".
- Numerous control room annunciators are coming in and being master acknowledged by the Control Operators.
- One of these annunciators is "LP Feedwater Heater 1,2, or 3 Level Low" on 1CO3.

**According to OM 1.1, "Conduct of Operations", what is the standard and expectation for alarm response to this alarm during this situation ?**

- ✓A. Prompt verbalization of this alarm not required and should not interfere with EOP response.
- B. Prompt verbalization of the unexpected alarm, state reason if known, communicate to DOS and reference ARB.
- C. Prompt verbalization of the expected alarm, state reason if known, and reference ARB when mitigating action is expected.
- D. Prompt verbalization of the critical alarm, state reason if known, obtain DOS acknowledgment, and reference ARB's while stabilizing the plant.



1. 086.04.LP2581.003 002

A Site Emergency was declared at 1745.

Which ONE of the following indicates the **LATEST** acceptable time to notify the Nuclear Regulatory Commission of Event Classification ?

- A. 1755
- B. 1810
- ✓C. 1830
- D. 2130