

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		
1	H	2												S	D, 41.10, CR
2	H	3										X		U	D, 41.10, CR – This question does not test on the effect of losing seal water to an RCP as required by the KA, but instead tests on diagnosis and operator actions in response to a loss of seal water.
3	H	3												S	D, 41.7, CR
4	H	2												S	B, 41.5, CR
5	H	3												S	B, 41.10, CR
6N03	H	3										X		U	A, 41.4, CR – The question does not test on how a loss or malfunction of the PRTS will affect containment as required by the KA.
7	H	2												S	B, 41.4, CR
8	F	3												S	A, 41.10, CR
9	H	2												S	D, 41.5, CR

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.
 - One or more distractors is (are) 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).

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	CredDist	Partial	Job-Link	Minutia	#/ units	Back-ward	Q=K/A	SRO Only		
10	F	3												S	B, 41.7, CR
11	F	2												S	B, 41.7, CR
12	H	3												S	D, 41.7, CR
13	H	3												S	B, 41.7, CR
14	F	2												S	C, 41.7, CR
15	H	3												S	A, 41.7, CR
16	H	3												S	C, 41.7, CR
17	H	3												S	B, 41.7, CR
18	H	3												S	D. 41.10, CR
19	H	3												S	A, 41.7, CR
20	H	3												S	A, 41.7, CR
21	F	3					X							E	D, 41.10, CR – It could be argued all four answers are correct in that distractors A-C are subsets of D. Recommend adding “Only” to distractors A-C.
22	F	4							X					E	D, 41.7, CR – Typically, setpoints for non-critical alarms are not are required to be memorized. Recommend checking with the facility.
23	F	4							X					E	B, 41.7, CR – Typically, setpoints for non-critical alarms are not are required to be memorized. Recommend checking with the facility.
24	F	3												S	B, 41.10, CR
25	F	3												S	B, 41.11, CR
26	F	3										X		U	A, 41.10, CR – This question does not address the “predict the impacts” part of the KA.
27	F	3			X									U	A, 41.4, CR – The four distractors are all true / false statements.
28	H	3												S	B, 41.10, CR
29	H	3												S	D, 41.5, CR
30	H	3												S	C, 41.5, OR

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	CredDist	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only		
31	H	4							X					U	C, 41.10, CR – This question tests on the subsequent actions in the ONP. Generally, candidates are not expected to have subsequent actions memorized.
32	F	3												S	C, 41.6, CR
33	F	3												S	C, 41.5, CR
34	F	3												S	A, 41.8, CR
35	H	3							X					?	D, 41.10, CR - This question tests on the subsequent actions in the ONP. Generally, candidates are not expected to have subsequent actions memorized. DISCUSS W/ LICENSEE.
36	F	3												S	D, 41.4, CR
37	H	3					X							U	B, 41.7, CR – It can be argued both B and C are correct since B is a subset of C.
38	F	3												S	C, 41.10, CR
39	F	2				X								U	D, 41.10, CR - There appears to be no correct answer.
40	H	2												S	C, 41.5, CR
41	H	3												S	C, 41.7, CR
42N03	H	3										X		U	D, 41.10, CR – The KA selected tests on a specific system procedure or an integrated procedure (e.g. startup). The question tests on an emergency procedure.
43	H	3				X	X							U	C, 41.10, OR – Distractors C and D are correct as D is a subset of C. Second, the reference provided does not contain a requirement to trip the reactor.
44	H	3												S	C, 41.10, CR
45	H	4							X			X	X	U	A, 43.2, CR – This is an SRO only question as it is testing on the application of tech specs. Second it is a KA mismatch in that it does not test on tech spec entry conditions. Last, the tech spec is not provided as an attachment and candidates are generally not expected to have tech spec actions memorized unless less the LCO is less than 1 hour.
46	H	3												S	D, 41.5, CR

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	CredDist	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
47	F	3												S	D, 41.5, CR
48	H	3												S	D, 41.10, CR

ES-401

2

Form ES-401-9

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		
49	F	3												S	B, 41.10, CR
50	H	3												S	A, 41.10, CR
51	H	3										X		U	C, 41.10, CR – The KA requires testing on EOP actions and the question tests on ONP actions.
52	F	3										X		U	C, 41.10, CR – The KA requires testing on EOP actions and the question tests on ONP actions.
53	H	3												S	B, 41.10, CR
54	H	3												S	C, 41.10, CR
55	F	3												S	C, 41.10, CR
56	H	3										X		U	B, 41.10, CR – The KA tests on loss of FW and interrelations with other systems (signals, interlocks, etc) and the question is focused on operator EOP actions.
57	H	3												S	B, 41.5, CR
58	F	2												S	A, 41.6, CR
59	H	3										X		U	D, 41.7, CR – The KA requires testing of the reasons for terminating a release and the question tests on system response.
60	H	3												S	D, 41.7, CR
61	F	3	X											E	D, 41.10, CR – Recommend changing stem to read "SG atmospheric dump valve has spuriously opened" to match the procedure and revise distractor D accordingly.
62	F	4	X						X			X	X	U	C, 43.2, CR – This question tests on TS LCO actions making it an SRO Only question. Second, the TS is not provided and the applicable

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		
															LCO is a 54 or 6 hour action statement (not required to be memorized) and the stem does not explain which limit was exceeded.
63	F	3											X	U	B, 43.2, CR – The answer for this question is found in the TS bases making it an SRO Only question.
64	F	2				X							X	U	D, 41.10, CR – Distractors A and B are not credible. The question does not involve natural circulation as required by the KA.
65	H	2												S	A, 41.10, CR
66	F	2	X					X						U	C, 41.5, CR – There is more than one variable to be met in order to be in Mode 6 that are not addressed in the stem. Distractor B could be argued to be correct.

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			
RO B= 37 (49%) M=1 (1%) N= 37 (49%)	H = 43 (75%) F = 32 (43%)												U = 21 (28%) E = 2 (3%) S = 52 (69%)			RO TOTALS
SRO B= (%) M= (%) N= (%)	H = F =												U = E =			SRO TOTALS
GENERAL COMMENTS:																
1.	This exam review was performed by S. Garchow the week of 10/01/2007.															
2.	Bank questions are indicated by B; Modified are indicated by M; New questions are indicated by N.															
3.	Comment resolution is indicated in blue.															
4.	Average difficulty is 3.0 on the RO exam. This value is within the 2.75 – 3.00 difficulty band typically seen on an average exam by this reviewer.															
5.	The 10CFR55.41/43 question distribution is (see general comment 10):															
	41.1 =	0	43.1 =	0												
	41.2 =	0	43.2 =	3												
	41.3 =	0	43.3 =	0												
	41.4 =	4	43.4 =	0												
	41.5 =	11	43.5 =	0												
	41.6 =	2	43.6 =	0												
	41.7 =	16	43.7 =	0												
	41.8 =	1														
	41.9 =	0														
	41.10 =	35														
	41.11 =	1														
	41.12 =	1														
	41.13 =	0														
	41.14 =	0														
6.	The answer distribution is:															

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			
																<p>A = 15 / 75 (20%). B = 20 / 75 (27%). C = 18 / 75 (24%). D = 22 / 75 (29%).</p>
7.																There are 3 questions with attachments provided.
8.																The RO portion of the exam is well outside the 50 – 60 % band for higher cognitive questions as required by the Written Exam Quality Checklist (ES-401-6). As graded by this reviewer, there are 57 (76%) higher cognitive questions. Recommend the Chief Examiner review these and have the facility licensee reduce the number as deemed appropriate so the exam is in compliance with the checklist. (See general comment 9.)
9.																There are over 60 questions that are scenario based. This is much higher than normal and directly contributes to the high number of cognitive questions.
10.																The exam is heavily skewed toward questions involving 10 CFR 55.41.10 (procedure based questions). The exam has about 35 questions focused on procedures which is significantly over-sampled when compared to a typical exam value of approximately 22 questions as seen by this reviewer. Recommend reducing the number of 41.10 focused questions by at least 10.
11.																There are several questions that test on subsequent actions contained in procedures. Typically, candidates are not expected to have questions of this type as memory questions unless supported by an objective. Historically, these questions are likely to be deleted from an exam during the appeal process if not supported by an objective. Note that not all the questions of this type were flagged as needing review. Recommend the facility licensee review the exam in general to ensure the questions are supported by a learning objective.
12.																In general, this exam is poorly written and based on this review, will require a significant amount of rework. It is estimated that based on both the general comments above and the number of unsatisfactory questions, one-half to two-thirds of the questions will require some amount of rework to make the exam acceptable. It is also recommended the Chief Examiner follow up with the facility licensee on how the exam was reviewed and validated.

NRC comments from Tom Stetka 10/4/2007

ES-401-9 form to follow

General Overview:

10CFR55.41 distribution as follows:

41.10	35	twice number accustomed to seeing
41.7	16	
41.5	11	
41.2	0	
41.3	0	
41.13	0	
41.14	0	
41.9	0	
41.8	1	

Reevaluate CFR55.41 ties and redistribute to cover 0 covered items

Cognitive level is high in band (This makes for overall more difficult exam), when revising questions slant more towards lower end, will result in easier test.

60 questions appear to be scenario based need to slant more towards systems based.

Generally speaking make the exam a little more fundamental.

Questions that are now considered Cognitive level 1

8, 10, 11, 21, 24, 26, 32, 33, 34, 36, 38, 39, 47, 49, 52, 58, 61, 62, 63, 64, 66, 68, 70, 71, 73, 75,
and some others

Comments on questions:

2, 6, 21, 22, 23, 26, 27, 35, 37, 39, 42, 43, 45, 51, 52, 56, 59, 61, 62, 63, 64, 66, 67, 70, 74

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	003 K6.02		
	Importance Rating	2.7		
Knowledge of the effect of a loss or malfunction on the following will have on the RCPS: RCP seals and seal water supply				
Proposed Question:	Common 2			
<p>OP-902-005, Station Blackout Recovery, directs the operator to verify closed the CCW non safety header containment isolation valves, CC-641, CC-710, ad CC-713 to isolate CCW to Containment. What is the reason for this?</p> <p>A. To prevent thermal shocking the CEDM coolers when restarting the CCW pumps.</p> <p>B. To prevent water hammer in Cntmt Bldg piping when restarting the CCW pumps.</p> <p>C. To prevent thermal shocking the RCPs when restarting the CCW pumps.</p> <p>D. To prevent running out the CCW pumps when restarting.</p>				

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. CCW valves are isolated to prevent thermal shocking RCP upon CCW pump restart and readmission to RCPs after extended loss of cooling.</p> <p>B. Incorrect. CCW valves are isolated to prevent thermal shocking RCP upon CCW pump restart and readmission to RCPs after extended loss of cooling</p> <p>C. Correct.</p> <p>D. Incorrect. CCW valves are isolated to prevent thermal shocking RCP upon CCW pump restart and readmission to RCPs after extended loss of cooling</p>	

Technical Reference(s)	OP-902-005 step 6 TGOP-902-005 Step 6	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPO10 Obj 01	(As available)
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Question Source:	Bank #	X	
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	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	Waterford 2004
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	7

Comments:
Need to look at parameters and reference

NRC Comments:

KA mismatch does not meet seal water supply tie

[New Question](#)

METHODOLOGY

CONTENTS

power is not available, place C/S to closed.

- Minimize RCS Leakage – Isolate Letdown, Control Bleedoff, CCW to RCPs, and PSL. CVC, CBO, and PSL conserves RCS inventory. CCW to RCPs protects against thermal shocking RCP seals upon restoration of power. Letdown is assumed to be isolated on high temperature after loss of charging flow. The analysis assumes that letdown will not isolate for 2 minutes. All the listed valves fail closed on loss of power or air.

Step Number 6 Minimize RCS Leakage

Objective

The intent of this step is to minimize loss of RCS inventory and prevent core uncover, since there is no RCS make up capability during a SBO. Ensuring a minimal RCS leak rate reduces the rate of depressurization attributed to RCS leakage.

Instructions

Minimal RCS leakage can be met by ensuring the following are isolated:

- Letdown isolation valves
- RCP controlled bleedoff line isolation valves
- RCS sample lines isolation valves

All of the containment isolation valves listed above will fail closed on loss of power or air.

Letdown is assumed to isolate on high temperature after a loss of charging flow. The analysis assumes that letdown will not isolate for two minutes, but the actual isolation is approximately 15 seconds, after the loss of charging flow.

CCW valves to the RCPs are closed to ensure upon restoration of power the RCP seals are not thermally shocked when CCW is started.

Contingency Actions

None

Justification for Deviations

Waterford includes a plant specific deviation to close the CCW valves to the RCPs. When power is restored the CCW pump will start and CCW cooling may be restored to the RCPs. The valves are closed to ensure the operator has control of the evolution and to prevent thermally shocking the RCPs.

References

1. EC-M88-020, Station Blackout (SBO) Reactor Coolant System Inventory

OP-902-005

- Minimize RCS Leakage – Isolate Letdown, Control Bleedoff, CCW to RCPs, and PSL. CVC, CBO, and PSL conserves RCS inventory. CCW to RCPs protects against thermal shocking RCP seals upon restoration of power. Letdown is assumed to be isolated on high temperature after loss of charging flow. The analysis assumes that letdown will not isolate for 2 minutes. All the listed valves fail closed on loss of power or air.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	007 K3.01		
	Importance Rating	3.3		

Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment	
Proposed Question:	Common 6
<p>A Steam Generator Tube Rupture has occurred that resulted in an automatic SIAS/CIAS.</p> <p>Which ONE of the following would result in rising containment pressure, due to automatic alignment to the Quench Tank?</p> <ul style="list-style-type: none"> A. RCP Control Bleedoff B. RCP Vapor Seal Leak Off C. Reactor Head Vent Header D. Pressurizer Vent Header 	

Proposed Answer:	A
Explanation (Optional):	
<p>A is correct because RC-606, RCP Control Bleedoff Inside Containment Isolation Valve closes on a CIAS, redirecting RCP control bleedoff to the quench tank through a relief valve. Containment pressure would rise when quench tank rupture disc relieves.</p> <p>B is incorrect because RCP vapor seal leakoff is directed to the Reactor Drain Tank at all times.</p> <p>C is incorrect because the Reactor head vent must be aligned to the quench tank manually.</p> <p>D is incorrect because the Pressurizer vent must be aligned to the quench tank manually.</p>	

Technical Reference(s)	WLP-OPS-RCS00	(Attach if not previously provided)

Proposed references to be provided to applicants during	None
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examination:	
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Learning Objective:	WLP-OPS-RCS00 obj 2	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	2003 NRC #32
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	X

Comments:

NRC Comments:

KA mismatch

[Reworded question](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	062 G2.4.6		
	Importance Rating	3.1		

Emergency Procedures/Plan: Knowledge of symptom based EOP mitigation strategies	
Proposed Question:	Common 21
<p>Given the Following:</p> <ul style="list-style-type: none"> • EFW pump A is OOS due to a pump bearing replacement. • At 0930 the reactor was manually tripped due to loss of both Main Feedwater pumps • Tavg is 547°F. • EFAS-1 and EFAS-2 actuated one minute after the trip. • EFW Pump AB tripped on overspeed when EFAS occurred due to a failure of the EFW pump governor. • EFW Pump B is running normally. • OP-902-006, Loss of Main Feedwater Recovery Procedure has been entered. • The time is now 1010. <p>Based on given plant conditions, how many RCPs must be secured?</p> <p>A. Only 1</p> <p>B. Only 2</p> <p>C. Only 3</p> <p>D. All 4</p>	

Proposed Answer:	D
Explanation (Optional):	
<p>A. Incorrect.</p> <p>B. Incorrect.</p> <p>C. Incorrect.</p> <p>D. Correct.</p>	

Technical Reference(s)	OP-902-006	(Attach if not previously
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		provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPE06 obj 4	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

NRC Comments:

Editorial
 Could be argued all 4 answers correct
 If have to secure 4 then have to secure 1,2,3
 Add "only" to distractors A,B and C
 1 only
 2 only
 3 only
 all 4

[Reworded question per recommendation](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	063 K4.04		
	Importance Rating	2.6		

Knowledge of dc electrical system design feature(s) and/or interlock(s) which provide for the following: Trips	
Proposed Question:	Common 22
<p>The following conditions exist in the plant:</p> <ul style="list-style-type: none"> • The BATTERY CHGR SA1 TROUBLE annunciator comes in on CP-35 in the Control Room • The RAB Watch is sent to the A Switchgear to investigate <p>Which ONE of the following has caused the alarm?</p> <p>A. A Low Voltage Shutdown occurred at 129 VDC.</p> <p>B. A Low Voltage Shutdown occurred at 134 VDC.</p> <p>C. A High Voltage Shutdown occurred at 139 VDC.</p> <p>D. A High Voltage Shutdown occurred at 144 VDC.</p>	

Proposed Answer:	D
Explanation (Optional):	
<p>A. Incorrect. Low voltage alarm at 129 VDC but not shutdown</p> <p>B. Incorrect. 134 VDC is a typical float charge</p> <p>C. Incorrect. 139 VDC is a typical equalizing charge</p> <p>D. Correct. High voltage shutdown occurs at 144 VDC</p>	

Technical Reference(s)	OP-006-003	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-DC00, #6	(As available)
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Question Source:	Bank #	WF3-	
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		NRC-82-B	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	7

Comments:

NRC Comments:

Editorial
 Memorization of alarm setpoints
 When resubmit final include copy of learning objective

OBJECTIVES:

STATE the purpose of the DC Distribution system. [1]

STATE the design basis of the system. [2]

STATE the purpose of the major components: [3]

- Battery Chargers
- Battery
- Distribution Panels

EXPLAIN how a battery charger operates. [4]

Given a one line diagram of the system, LABEL the components, buses, and PDP's. [5]

IDENTIFY the causes of alarms associated with the system. [6]

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	064 K6.08		
	Importance Rating	3.2		

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Fuel oil storage tanks	
Proposed Question:	Common 23
<p>Given the following conditions:</p> <ul style="list-style-type: none"> • Emergency Diesel Generator 'B' is operating at 4.4 kW for OP-903-068 surveillance testing. • The following alarm is received: <ul style="list-style-type: none"> • EDG B FUEL OIL XFER PUMP PWR LOST • Fuel Oil Feed Tank "B" indicates 100 percent on CP-1 • The RAB watch reports that the breaker for Fuel Oil Transfer Pump 'B' breaker is tripped, and the motor is too hot to touch. <p>Based on these conditions, what is the MAXIMUM time Emergency Diesel Generator 'B' continue to operate with no additional actions?</p> <p>A. 1 hour</p> <p>B. 2 hours</p> <p>C. 1 day</p> <p>D. 7 days</p>	

Proposed Answer:	B
Explanation (Optional):	
<p>A. Incorrect. The auto start setpoint of the Fuel Oil Transfer pump is -30 inches which corresponds to a 1 hours run time plus 10 %</p> <p>B. Correct. The feed tank holds a two-hour supply of fuel based on 600 gal capacity</p>	

and 307 gal/hr consumption.
 C. Incorrect.
 D. Incorrect. The Storage tank holds about a seven-day supply of fuel

Technical Reference(s)	SD EDG Page 16	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-EDG obj 7	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	X
	55.43	2

Comments:

NRC Comments:

Editorial
 Memorization of alarm setpoints
 When resubmit final include copy of learning objective

[New question](#)

SYSTEM DESCRIPTION EDG

FUEL OIL FEED TANK

This vertical, cylindrical, carbon steel tank is designed for 15 psig and 125°F. Its capacity is sufficient to maintain at least 60 minutes of operation at 100% load plus 10% margin at the level where oil is added automatically. This amounts to 339 gallons based on usage of 307.8 gallons/hour plus 10%. The tank's overflow volume is 613 gallons. It is filled from the Fuel Oil Storage Tank by the Fuel Oil Transfer Pump. The Fuel Oil Transfer Pump will start at a feed tank level of -30 inches (EGF-ILS-6907A (B)) below the overflow centerline, and stop at a feed tank level of -6 inches (EGF-ILS-6908A (B)). The Fuel Oil Transfer Pump can also be operated in manual at the local control panel. The storage tank is normally filled by trucks. An emergency fill connection is provided for use during flooding of the area and can be filled from a barge. The transfer pumps are required for operability but can be cross-connected if necessary for transferring oil.

The following tank levels are referenced from the overflow line except for EGF-ILS-6903A (B), which is referenced from the bottom tangent of the tank. Level indication is available in the Control Room on EGF-ILI-6903-1A (B) over a range of 0-100% and locally on EGF-ILI-6903A (B) over a range of 0-6 feet. Low and high level alarms are provided locally by EGF-ILS-6906A(B) at -34 in. and by EGF-ILS-6903A (B) at 70 in., respectively. A FUEL OIL DAY TANK HI/LO alarm is provided at G2 and G4 on Cabinet D in the Control Room with high and low setpoints of -32 in. (EGF-ILS-6906A (B)) and -4 in. (EGF-ILS-6908A (B)), respectively. At -34 in. level, an EDG UNAVAILABLE alarm will annunciate at G1 and G3 on Cabinet D in the Control Room. The tank's UNID is EGF-MTNK-0002A (B).

FUEL OIL STORAGE TANK

This vertical, cylindrical, carbon steel, atmospheric tank has a useable volume of 40,747 gallons of fuel oil and an overflow volume of 41,579 gallons. Its design temperature is 125°F. It is designed to hold enough fuel oil to supply its diesel engine for seven days based on calculations done in support of the safety analyses. The Technical Specification requirement to have at least 39,300 gallons of fuel oil stored in the tank is based on the time dependent loads of the EDG following a loss of offsite power (LOOP) and a design bases accident.

Tank level is provided locally in the Fuel Oil Storage Tank Room on EGF-ILI-6994.1A (B) over a range of 0-100%. High and low levels are annunciated in the Control Room at K2 and K4 on Cabinet D at 98.8% and 93.5%, respectively, as sensed by EGF-IAA-6994A (B). The high level alarm is intended to prevent overflowing the storage tank weir wall, and the low level is intended to prevent going below the Tech Spec limit (5 day limit plus two hours consumption). The tank's UNID is EGF-MTNK-0001A (B).

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	076 A2.01		
	Importance Rating	3.5		

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

Proposed Question:	Common 26
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Given the following:

- The plant is at 100% power.
- TCW Pump B is in service.
- TCW Pump A is tagged for repair.

- The following alarms are received in the control room:
 - TURB CLNG WTR PUMP B TRIP/TROUBLE
 - TURB CLNG WATER DISCH HDR PRESS LO

- Operator actions fail to restore TCW flow.

Which ONE of the following describes the impact AND the actions required IAW OP-901-512 for these conditions?

- A. Generator Winding damage, Trip the reactor.
- B. Loss of Generator Hydrogen, Trip the reactor.
- C. Generator Winding damage, Initiate a plant shutdown to remove the main generator from service.
- D. Loss of Generator Hydrogen, Initiate a plant shutdown to remove the main generator from service.

Proposed Answer:	A
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Explanation (Optional):

- A. Correct. Section E1 of AOP
- B. Incorrect. Main Generator will be damaged if operating for 2-3 minutes with no TCW. Generator H2 will be maintained by air side and hydrogen side seal oil.

- C. Incorrect. A reactor trip is required because the Main Generator will be damaged if operating for 2-3 minutes with no TCW
- D. Incorrect. A reactor trip is required because the Main Generator will be damaged if operating for 2-3 minutes with no TCW

Technical Reference(s)	OP-901-512, E1	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPO50 obj 3	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

NRC Comments:

Unacceptable
KA mismatch

[New question](#)

E₁ LOSS OF TURBINE COOLING WATER PUMPS (CONT'D)

CAUTION

AT 100% POWER A TOTAL LOSS OF TURBINE COOLING WATER WILL RESULT IN SIGNIFICANT MAIN TURBINE DAMAGE IN 2-3 MINUTES WITH THE GENERATOR AS THE MOST LIMITING COMPONENT.

3. IF BOTH Turbine Cooling Water pumps are unavailable AND flow can NOT be restored, THEN perform the following:
 - 3.1 Manually trip the Reactor.
 - 3.2 Verify Main Turbine tripped.
 - 3.3 Go to OP-902-000, STANDARD POST TRIP ACTIONS, AND perform concurrently with this procedure.
 - 3.4 Announce the following two times:
ATTENTION STATION PERSONNEL, ATTENTION STATION PERSONNEL, BREAKING CONDENSER VACUUM
 - 3.5 Close ALL Steam Bypass Control valves by performing the following:
 - 3.5.1 Place STEAM BYPASS MASTER controller (MS-IPIC-1010) in MAN.
 - 3.5.3 Slowly lower output of STEAM BYPASS MASTER controller
 - 3.6 Verify Steam Generator pressure maintained at approximately 992 psig by Atmospheric Dump valves.

CAUTION

MAIN FEEDWATER PUMPS WILL TRIP WHEN MAIN STEAM IS ISOLATED.

- 3.7 Close BOTH Main Steam Isolation Valves (MS 124A AND MS 124B).
- 3.8 Open Condenser Vacuum Breaker valves by simultaneously depressing THINK push button AND placing CNDSR VAC BKR control switch to OPEN.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	1		
	K/A #	078 A3.01		
	Importance Rating	3.1		

Ability to monitor automatic operation of the IAS, including: Air pressure	
Proposed Question:	Common 27
<p>Given the following conditions:</p> <ul style="list-style-type: none"> • 100 percent power • Instrument Air Header pressure is 120 psig <p>An air leak occurs, causing Instrument Air Header pressure to drop to 100 psig. Which of the following describes the status of the instrument air system?</p> <p>A. SA-125 Station Air Backup is OPEN, SA-123 Air dryer Bypass is OPEN</p> <p>B. SA-125 Station Air Backup is CLOSED, SA-123 Air dryer Bypass is OPEN</p> <p>C. SA-125 Station Air Backup is OPEN, SA-123 Air dryer Bypass is CLOSED</p> <p>D. SA-125 Station Air Backup is CLOSED, SA-123 Air dryer Bypass is CLOSED</p>	

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. SA-125 opens at 105 psig SA-123 opens at 95 psig</p> <p>B. Incorrect. SA-125 opens at 105 psig SA-123 opens at 95 psig</p> <p>C. Correct</p> <p>D. Incorrect. SA-125 opens at 105 psig SA-123 opens at 95 psig</p>	

Technical Reference(s)	SD AIR, R7, pg 8 OP-003-016	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-AIR00 obj. 01	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	5

Comments:

NRC Comments:

Unacceptable
True false statements

[New question](#)

9.0 AUTOMATIC FUNCTIONS

- 9.1 Standby Compressor Starts (IA-IPS-9715A(B))..... 105 PSIG, dropping
- 9.2 Instrument Air Compressor Unloads (IA-IPS-9717A(B))..... 120 PSIG, rising
- 9.3 Instrument Air Compressor Loads (IA-IPS-9717A(B)) 112 PSIG, dropping
- 9.4 Station Air to Inst Air Pressure Regulator, SA-125, begins to
Open (SA-IPIC-9821)..... 105 PSIG (Variable
setpoint), dropping
- 9.5 Instrument Air Dryers Bypass Solenoid Valve, SA-123,
Opens (IA-IPS-9719) 95 PSIG, dropping

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	2		
	K/A #	033 A2.03		
	Importance Rating	3.1		

Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Abnormal Spent Fuel Pool water level or loss of water level

Proposed Question:	Common 35
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Given the following:

- The RAB watch has just completed opening the Fuel Transfer Tube Gate Valve in the FHB.
- The RAB Watch reports that SFP level dropped to 41 feet when he was opening the valve.

Which of the following is true for this situation?

- A. Low Spent Fuel Pool level Alarm only, fill from Primary Makeup.
- B. Low Spent Fuel Pool Level Alarm and CMU Auto makeup Valve Opens to refill the SFP
- C. Low Spent Fuel Pool Level Alarm and running SFP Cooling Pump trips, fill from Condensate Storage Pool.
- D. Low Spent Fuel Pool Alarm and FHB Isolation Actuation occurs, fill form the Refueling Water Storage Pool.

Proposed Answer:	C
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Explanation (Optional):

- A. Incorrect. SFP cooling pumps trips at 41.6 feet. Primary makeup is not used to fill SFP
- B. Incorrect. SFP cooling pumps trips at 41.6 feet, CMU makeup is aligned manually
- C. Correct. SFP Cooling pumps trip at 41' 6". SFP is filled from CSP or RWSP
- D. Incorrect. SFP Cooling pumps trip at 41' 6". Alarm at 43' 9". Do not isolate FHB vent, just check it

Technical Reference(s)	OP-901-513	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-FS00 obj 3	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10
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Comments:

NRC Comments:

Unacceptable

Memorize Subsequent actions from memory

Will need objective to support if we require from memory

[New question system knowledge of SFP pump trips and systems available for filling SFP](#)

C AUTOMATIC ACTIONS

1. Spent Fuel Pool Cooling Pumps trip on low-low Spent Fuel Pool level of 41'6" MSL (FS-ILS-2000-A2).

Though not part of the FS system, the Component Cooling Water Make-up Pumps provide a means of transferring water from the Condensate Storage Pool (CSP) to the SFP. Water from the CSP is used for normal makeup to the SFP to account for water loss due to evaporation.

SYSTEM FLOWPATHS

SFP Cooling

Two Fuel Pool Cooling Pumps take suction near the top of the SFP (Figure 1). The pumps discharge to one full capacity heat exchanger or to the Backup heat exchanger. Both of these heat exchangers are cooled by the Component Cooling Water (CCW) System. The SFP water is then discharged to the SFP at the +36'6" elevation.

SFP Purification/RWSP Make-up

The Fuel Pool Purification Pump takes suction from the SFP at elevation +40'6". A basket strainer is provided in the pump suction to remove any relatively large particulate matter. The screen size is 1/16" holes. The pump circulates the water to a 5-micron filter via FS-318 and 321. After passing through the filter, the water flows to the ion exchanger via FS-326 and 329. After passing through the ion exchanger, the water is returned to the SFP through FS-341, 343, and 345. A wye strainer is installed downstream of FS-341 to prevent resin beads from being discharged into the SFP in the event of ion exchanger retention element failure.

RWSP Purification/Make-up to SFP

The RWSP Purification Pump takes suction on the RWSP through FS-425 and 423. The water is then discharged through FS-428, 429, 420, and 321 to the Fuel Pool Filter. After passing through the filter, the water flows through FS-326 and 329, and through the ion exchanger. The water is then returned to the RWSP via FS-341, 343, 401, and 404.

Adding make-up water to the SFP from the RWSP uses the same flowpath, except that the return flowpath back to the RWSP is not utilized. Flow from the ion exchanger is directed to the SFP through FS-345 instead. Makeup from the RWSP is normally used when water loss is from leakage past gates.

Water may be drawn from the SFP and discharged to the RWSP using the SFP purification line-up by routing flow through FS-401 and 404 with FS-345 shut.

E SUBSEQUENT OPERATOR ACTIONS

		PLACEKEEPER		
		START	DONE	N/A
1.	If Spent Fuel Pool Cooling malfunction is due to loss of Component Cooling Water, <u>then go to</u> OP-901-510, Component Cooling Water System Malfunction.		<input type="checkbox"/>	<input type="checkbox"/>
2.	If Spent Fuel Pool level < 43'9" MSL (low level alarm setpoint), <u>then</u> perform the following:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1	Add makeup to Spent Fuel Pool from Refueling Water Storage Pool <u>or</u> Condensate Storage Pool in accordance with OP-002-006, Fuel Pool Cooling And Purification.	<input type="checkbox"/>	<input type="checkbox"/>	
2.2	If a Spent Fuel Pool leak is indicated by abnormal Spent Fuel Pool level loss <u>or</u> frequent makeup, <u>then</u> attempt to locate source of leakage by verifying the following:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.1	Check Spent Fuel Pool leak detection valves at FHB +1 <u>and</u> FHB -35 for leakage.		<input type="checkbox"/>	
2.2.2	Secure Spent Fuel Pool Purification in accordance with OP-002-006, Fuel Pool Cooling and Purification.		<input type="checkbox"/>	
2.2.3	Perform a system walkdown.		<input type="checkbox"/>	
3.	If Normal Fuel Handling Building Ventilation isolates due to high radiation alarm, <u>then</u> implement OP-901-404, High Airborne Activity In Fuel Handling Building concurrently with this procedure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	2		
	Group #	2		
	K/A #	045 K4.43		
	Importance Rating	2.8		

Knowledge of MT/G system design feature(s) and/or inter-lock(s) which provide for the following: T-ave. program, in relation to SDS controller

Proposed Question: Common 37

Given the following:

- The plant is operating at 100% power.
- Tavg and PZR level are on program.
- A Main Turbine Governor Valve fails closed.
- Generator load drops by approximately 30%.

Which ONE of the following describes the operation of the SBCS for this condition?

- A. All 6 SBCS valves are available to modulate, Quick Open is blocked for all 6 valves
- B. All 6 SBCS valves are available to modulate and for Quick Open.
- C. SBCS valves 1 through 5 are available for Quick Open, Valve 6 is blocked.
- D. SBCS valves 1 through 5 are available to modulate, Valve 6 is blocked.

Proposed Answer: B

Explanation (Optional):

- A Incorrect. Valves will quick open, modulation also available
- B Correct. Quick open blocked by Tavg <562 on reactor trip. #6 valve blocked on any reactor trip. Quick open is available to all valves to maintain steam pressure during a load rejection
- C Incorrect. Credible because conditions could exist with reactor trip that would result in this function
- D Incorrect. Quick open would only be blocked for 1 valve if a trip occurred, modulation is available

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Technical Reference(s)	WLP-OPS-SBC00	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-SBC obj 4	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	7

Comments:

NRC Comments:

B and c could both be argued to be correct b subset of c
Modify c and d only 5 will open

[Reworded question](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	007 EA2.02		
	Importance Rating	4.3		

Ability to determine or interpret the following as they apply to a reactor trip: Proper actions to be taken if the automatic safety functions have not taken place

Proposed Question: Common 39

Given the following:

- The plant was at 100% power.
- A reactor trip occurred.
- The crew is performing Standard Post Trip Actions.
- BOTH Generator Output Breakers remain closed.
- The Generator Exciter Field Breaker remains closed.

Which of the following will the BOP perform in response to the generator not being tripped?

- A. Manually OPEN all 3 breakers from CP-1.
- B. Transfer BOTH electrical busses from the UAT to the SUT.
- C. Manually trip the Main Generator using EITHER GENERATOR EMERG TRIP pushbutton.
- D. Manually trip the Main Generator using BOTH GENERATOR EMERG TRIP pushbuttons.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Busses must be transferred first
- B. Incorrect. After bus transfer, breakers must be opened
- C. Incorrect. Not enough action. BOTH pushbuttons must be depressed
- D. Correct.

Technical Reference(s)	OP-902-000, step 2.b contingency	(Attach if not previously provided)
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Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPE01 obj. 09	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

NRC Comments:

No correct answer
 Stem says what actions will bop perform first
 Modify stem to say which of the following BOP will perform to response to generator not being tripped
 Will make fundamental question

[Reworded per recommendation](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	011 G2.1.23		
	Importance Rating	3.9		

Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Proposed Question: Common 42

Given the following:

- A Small Break LOCA is in progress.
- The crew has diagnosed into OP-902-002, LOCA Recovery Procedure and performed all required steps.
- Containment Temperature is 205°F and slowly lowering.

Which of the following criteria would preclude transitioning into OP-009-005, Shutdown Cooling System procedure and placing a Shutdown Cooling Train in service.?

- A. RCS Subcooling is 28°F and slowly rising.
- B. Pressurizer Pressure is 420 psia and stable.
- C. RCS That is 345°F and stable.
- D. Pressurizer Level 33% and steady.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Minimum subcooling requirement is met.
- B. Correct. Less than 392 psia required.
- C. Incorrect. That required to be less than 350°F.
- D. Incorrect. Pressurizer Level is required to be greater than 33%.

Technical Reference(s)	LOCA OP-902-002 OP-009-005, SDC System Procedure Precautions and Limitations.	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPE02 obj 17	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

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

10 CFR Part 55 Content:	55.41	10
	55.43	

Comments:

NRC Comments:

Unacceptable
 KA mismatch
 Test EOP not integrated or normal procedure or system op
 Meant to be NOP or SOP not EOP actions

[New question OP-902-002 and OP-009-005 SDC entry conditions](#)

3.2 LIMITATIONS

- 3.2.1 Shutdown Cooling shall not be initiated until Reactor Coolant System (RCS) temperature <350°F and RCS Pressure <392 PSIA. [P-4055]
- 3.2.2 RCS temperature changes shall be limited by the following:
- A maximum heatup rate of 60°F per hour
 - A maximum cooldown rate of 100°F per hour
- 3.2.3 RCS temperature and pressure shall be limited in accordance with the limit lines shown on Technical Specification Figures 3.4-2 and 3.4-3 with instrument uncertainty incorporated for pressure and temperature as follows: [ER-W3-2004-00439]
- Subtract 30°F from indicated temperature
 - Add 35 PSI to the indicated pressure from the following instruments:
 - CP-2
 - RC IPI0103 (100-750 PSIA)
 - RC IPI0104 (100-750 PSIA)
 - CP-4
 - RC IPI0105 (100-750 PSIA)
 - RC IPI0106 (100-750 PSIA)
 - CP-7
 - RC IPI0101A(B,C,D) (1500-2500 PSIA)
 - LCP-43
 - RC IPI0105-1 (100-750 PSIA)
 - RC IPI0106-1 (100-750 PSIA)
 - Add 110 PSI to the indicated pressure from the following instruments:
 - CP-2
 - RC IPI0102A3 (B3) (0-3000 PSIA)
 - CP-4
 - RC IPI0102A2 (B2) (0-3000 PSIA)
 - CP-7
 - RC IPI0102A (B,C,D) (0-3000 PSIA)
 - LCP-43
 - RC IPI0102A1 (B1,C1,D1) (0-3000 PSIA)
- 3.2.4 Maximum flow through a Purification Ion Exchanger is 126 GPM.

INSTRUCTIONS

CONTINGENCY ACTIONS

Secure Operating EDGs

- * 49. **IF ANY** emergency diesel generator is operating unloaded **AND** is **NO** longer needed, **THEN** secure the emergency diesel generator.

**Perform Post Trip Plant Alignment
Appendix**

- * 50. REFER TO Appendix 24, "Post Trip Plant Alignment," and perform the applicable steps.

SDC Entry Conditions

- * 51. **IF ALL** of the following SDC entry conditions are established:
 - Pressurizer level is greater than 33%
 - RCS subcooling is greater than or equal to 28°F
 - Pressurizer pressure is less than 392 psia
 - RCS T_H is less than 350°F
 - RCS activity will **NOT** result in unacceptable radiological consequences outside containment

THEN GO TO OP-009-005, "Shutdown Cooling System" and place the LTOPs and SDC in service.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	022 AK1.03		
	Importance Rating	3.0		

Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Pump Makeup: Relationship between charging flow and PZR level	
Proposed Question:	Common 43
<p>Plant status is as follows:</p> <ul style="list-style-type: none"> • Reactor power is 70%. • The operating Charging Pump trips. • The backup Charging Pumps cannot be started. <p>SELECT the highest Pressurizer level at which the reactor should be manually tripped.</p> <p>A. 48%</p> <p>B. 40%</p> <p>C. 37%</p> <p>D. 33%</p>	

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. Trip not required this corresponds to program level plausible if wrong curve used</p> <p>B. Incorrect. Trip not required</p> <p>C. Correct. OP-901-112 Attachment A</p> <p>D. Incorrect. Trip should occur prior to this level</p>	

Technical Reference(s)	OP-901-112	(Attach if not previously provided)

Proposed references to be provided to applicants during	OP-901-112, Att 1,
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examination:	PDB RCS Temp band vs power
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Learning Objective:	WLP-OPS-PPO10 obj. 03	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

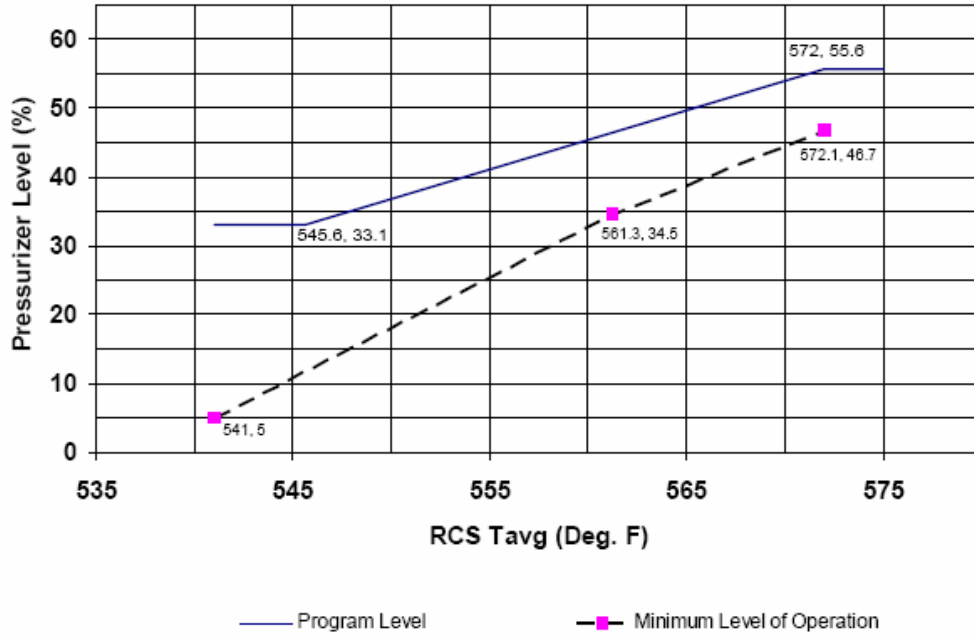
D subset of c 2 right answers if have to trip at 37 also have to trip at 33
Reference: doesn't show where trip needed
Sent 110 should be 112 reference needs to direct tripping

[Reworded based on recommendations included correct documentation reference](#)

E3 GAS BOUND CHARGING PUMPS

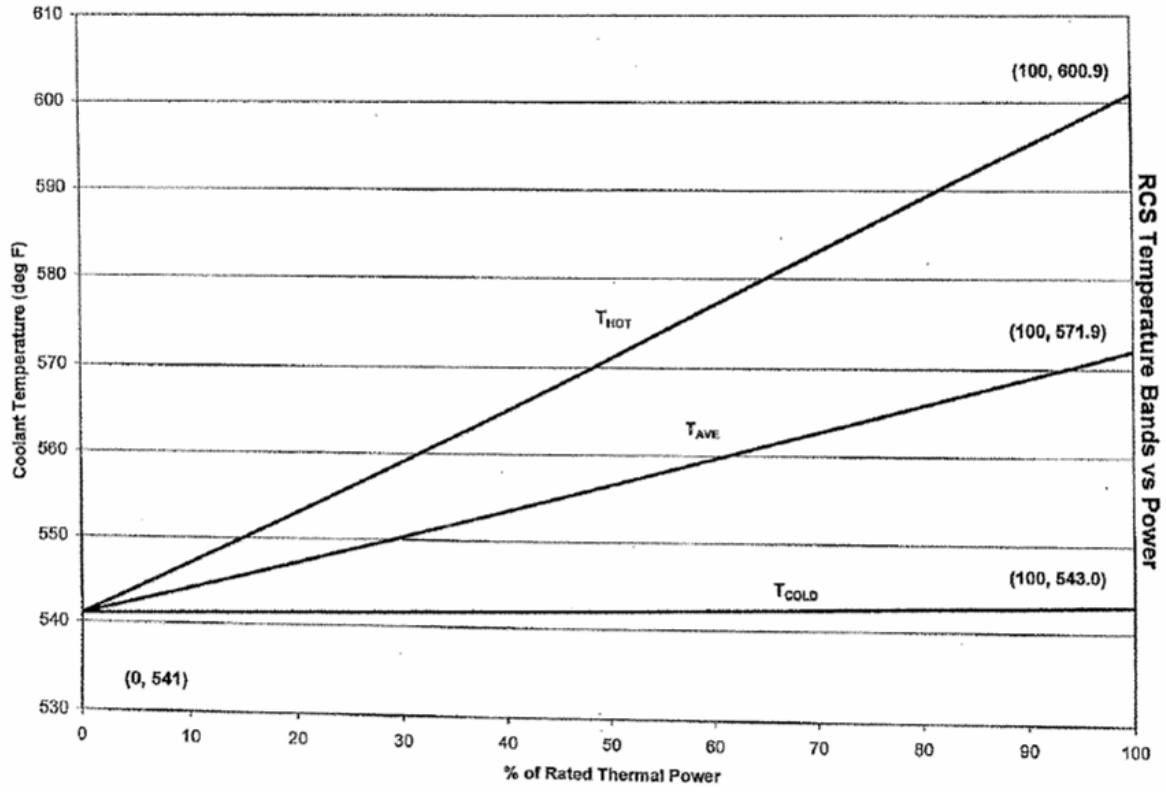
3. Perform the following to vent Charging Pumps:
 - 3.1 Unlock AND Close CVC-209, Charging Pumps Header Isol Valve.
 - 3.2 Vent Charging Pumps by throttling Open the following vents:
 - CVC-1922A Charging Pump A Discharge Relief Vent
 - CVC-1922AB Charging Pump AB Discharge Relief Vent
 - CVC-1922B Charging Pump B Discharge Relief Vent.
 - 3.3 WHEN a steady stream of water from the Charging Pump discharge relief vents is indicated, THEN Close the following valves:
 - CVC-1922A Charging Pump A Discharge Relief Vent
 - CVC-1922AB Charging Pump AB Discharge Relief Vent
 - CVC-1922B Charging Pump B Discharge Relief Vent
 - 3.4 Open and Lock CVC-209, Charging Pumps Header Isol Valve.
4. IF normal Charging flow can NOT be established AND Pressurizer level falls below minimum Pressurizer level for operation in accordance with Attachment 1, Pressurizer Level Versus Tave Curve, THEN perform the following:
 - 4.1 Trip the Reactor.
 - 4.2 Implement OP-902-000, STANDARD POST TRIP ACTIONS, concurrently with completion of this step.
 - 4.3 WHEN PZR PRESSURE LO PRETRIP annunciator alarms, THEN reset Pressurizer Pressure Low Trip setpoint on ALL FOUR channels.
 - 4.4 Reduce Pressurizer pressure to <1400 PSIA.

ATTACHMENT 1: PRESSURIZER LEVEL VERSUS TAVE CURVE



Plant Data Book Required Change for
ER-W3-2003-0055-000

Nominal Temperature Program



Plant Data Book

RCS Temperature Bands vs Power

Figure 1

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	026 G2.1.33		
	Importance Rating	3.4		

Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Proposed Question: Common 45

Given the following conditions:

- The unit is at 100% power.
- CCW Pump AB is OOS.

1200 CCW Pump "A" declared INOPERABLE due to a failed surveillance.
 1227 CCW Pump "B" also declared INOPERABLE due to the results of a common cause failure analysis.
 1254 Plant Shutdown to Mode 3 commenced.
 1319 CCW Pump "A" returned to OPERABLE status.
 1338 CCW Pump "B" returned to OPERABLE status.

Which ONE (1) of the following describes the Technical Specification requirements for operation of the plant?

Plant conditions...

- A. allowed the plant shutdown to be terminated no earlier than 1319.
- B. allowed the plant shutdown to be terminated no earlier than 1327.
- C. require that the Shutdown to Mode 3 is completed by 1827.
- D. require that the Shutdown to Mode 3 is completed by 1927.

Proposed Answer: A

Explanation (Optional):

- A. Correct. CSP minimum pool level is 92%
- B. Incorrect. SIT pressure is 600-677 psig
- C. Incorrect. RWSP boron concentration spec 2050-2900 ppm
- D. Incorrect. CS riser surveillance is >149.5 MSL TS logs = > 182 ft

Technical Reference(s)	TS 3.0.3, TS section 3.7	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-TS04 obj. 1,2	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	10
		2

Comments:
WTSI Bank

NRC Comments:

SRO only question
RO which of the following require entering ts
Control room display look at it require ts entry
KA mismatch
Stem gives you that your in an LCO
Take something out of tech spec logs give numbers ask which one is outside TS limit

[We would like to discuss this question.](#)

[An alternate question has been proposed](#)

Plant conditions are as follows:

- Plant is in Mode 1 at 100% power following a refueling outage.
- Dry Bulb Temperature is 92°F.
- Wet Bulb Temperature is 88°F.
- Auxiliary Component Cooling Water (ACCW) Trains 'A' & 'B' are in service with flow at 2000 GPM per train.
- The RAB watch calls and reports that ACC-132A, ACC HEADER A TO WET CLG TOWER INLET ISOL is Locked Closed, and should be Locked Open.

Based upon these conditions determine the appropriate action?

- A. No action required, Wet Cooling Tower is OPERABLE with other three valves verified Locked Open.
- B. ACCW Train 'A' is INOPERABLE, enter T.S. 3.7.3 for ACCW Train 'A' and cascading Tech Specs.
- C. Wet Cooling Tower 'A' is INOPERABLE, enter T.S. 3.7.4 for Ultimate Heat Sink Only.
- D. ACCW Train 'A' is OPERABLE, but Wet Cooling Tower 'A' is INOPERABLE, enter T.S. 3.7.4 for Ultimate Heat Sink and cascading Tech Specs.

Proposed answer: B

- A. Incorrect, all valves required to be open for Operability of ACCW Train per OP-100-014.
- B. Correct. The ACCW Train is declared inoperable, and cascading TS are entered per OP-100-014
- C. Incorrect. Cascading Tech Specs must be entered for this condition.
- D. Incorrect. The ACCW Train cannot be Operable with the Ultimate Heat Sink Inoperable.

Technical Reference: OP-100-014

T.S. 3.7.3 & 3.7.4

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	057 AK3.01		
	Importance Rating	4.1		

Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital ac electrical instrument bus

Proposed Question: Common 51

Given the following:

- The plant is at 70% power.
- Auxiliary Component Cooling Water Pump “A” is running.
- A loss of bus MA has occurred.

Which ONE (1) of the following the action that will be required to control Component Cooling Water temperature, and reason for the action?

- Manually control dry cooling tower and wet cooling tower train A fans because CC HX A ACC Outlet TCV (ACC-126A) fails closed, resulting in loss of temperature control.
- Manually throttle cooling tower wet basin M/U valve (CMU-410A) to maintain wet basin level because CC HX A ACC Outlet TCV (ACC-126A) fails closed, resulting in loss of Wet Basin level control..
- Manually control dry cooling tower and wet cooling tower train A fans because CC HX A ACC Outlet TCV (ACC-126A) fails open, resulting in loss of temperature control.
- Manually isolate cooling tower wet basin M/U valve (CMU-410A) to prevent a high wet basin level because CC HX A ACC Outlet TCV (ACC-126A) fails open.

Proposed Answer: C

Explanation (Optional):

- Incorrect. Valve fails open, but actions correct
- Incorrect. Valve fails open, actions not correct
- Correct. Part of action for manually controlling CCW temperature with A ACCW in

service.
D. Incorrect. Would throttle M/U valve, would not isolate it.

Technical Reference(s)	OP-901-312	(Attach if not previously provided)
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Proposed references to be provided to applicants during examination: None

Learning Objective: WLP-OPS-CC00 obj. 03, 04 (As available)
WLP-OPS-PPE30 obj. 03

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

Question History: Last NRC Exam

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

10 CFR Part 55 Content: 55.41 10

Comments:

NRC Comments:

KA mismatch
Reasons for response not asking why is it

[Reworded question](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	058 AK3.02		
	Importance Rating	4.0		

Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Actions contained in EOP for loss of dc power	
Proposed Question:	Common 52
<p>Given the following:</p> <ul style="list-style-type: none"> • Emergency Diesel Generator 'A' is running loaded. • A loss of DC control power occurs. <p>Which of the following describes the effect of the loss of DC control power on the EDG and its auxiliaries?</p> <p>A. The EDG fuel racks will trip and the EDG must be declared inoperable.</p> <p>B. The lube oil cooler temperature control valve will fail to the full cooling position.</p> <p>C. Fuel oil transfer pump starts and must be secured to prevent overfilling the feed tank.</p> <p>D. Jacket cooling water valves fail open and the jacket water heater loses power.</p>	

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. Loss of DC will not trip fuel racks</p> <p>B. Incorrect.</p> <p>C. Correct.</p> <p>D. Incorrect.</p>	

Technical Reference(s)	OP-901-313	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPO30 obj 3	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	10

Comments:

NRC Comments:

KA mismatch
Reasons for response not asking why is it
Asking what happens
Basis
Interlocks functions
What is the basis for
Loss of dc take some actions why does the operator do this
Reason for action

[We would like to discuss this question](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	1		
	K/A #	E06 EK2.1		
	Importance Rating	3.3		

Knowledge of the interrelations between the (Loss of Feedwater) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Proposed Question: Common 56

Given the following:

- The reactor has tripped due to a loss of Main Feedwater.
- Standard Post Trip Actions have been carried out in accordance with OP-902-000
- Diagnostics has directed the crew to OP-902-006, Loss of Main Feedwater Recovery.
- CSP level is 30% and dropping with CMU-141, CSP LCV Bypass, open.

Which ONE of the following describes when and how the crew will align EFW Pump suction to ACCW in accordance with OP-902-006 and Appendix 10?

- A. At 25% CSP level, EFW Pump suctions must be aligned to their respective train of ACCW.
- B. At 25% CSP level, EFW Pump suctions must be aligned to one operating train of ACCW.
- C. At 11% CSP level, EFW Pump suctions must be aligned to their respective train of ACCW.
- D. At 11% CSP level, EFW Pump suctions must be aligned to one operating train of ACCW.

Proposed Answer: B

Explanation (Optional):

- A. Incorrect. Not required to be aligned by train.
- B. Correct.
- C. Incorrect. Wrong level and not required to be train-specific. 11% credible because it is the minimum level for CSP to supply EFW
- D. Incorrect. Wrong level

Technical Reference(s)	OP-902-006	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPE06 obj 9	(As available)
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Question Source:	Bank #	WF3-OPS-5662-A	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	10

Comments:

KA mismatch
 Loss of feedwater
 Feed pump turbine fails because of that
 Instrument fails as a result interlock failure modes auto manual actions
 Systems questions not procedure

[We would like to discuss this question.](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	2		
	K/A #	059 AK3.01		
	Importance Rating	3.5		

Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release:
Termination of release of radioactive liquid

Proposed Question: Common 59

Given the following:

- Waste Condensate Tank B is being discharged to the Circ Water system.
- The following indications are observed in the Control Room:
 - WASTE LIQUID DISCH ACTIVITY HI annunciator in alarm on CP-4
 - EFFLUENT RAD MONITORING SYS ACTIVITY HI-HI annunciator in alarm on CP-36

Based on the above conditions, which ONE of the following describes plant response?

- A. ONLY BM-547, Boron Management Discharge to Circ Water Auto Isolation Valve, closes.
- B. ONLY LWM-441, Liquid Waste to Circ Water Shutoff Valve, closes.
- C. BM-547, Boron Management Discharge to Circ Water Auto Isolation Valve, closes.
BM-549, Boron Management Discharge to Circ Water Flow Control Valve closes.
- D. LWM-441, Liquid Waste to Circ Water Shutoff Valve, closes.
LWM-442, Liquid Waste to Circ Water Control Valve, closes.

Proposed Answer: D

Explanation (Optional):

- A. Incorrect. Valve does not close for this alarm
- B. Incorrect. Valve closes, but the flow control valve also closes
- C. Incorrect. Both of these valves are initiated from a different rad monitor alarm
- D. Correct.

Technical Reference(s)	WLP-OPS-PPO40	(Attach if not previously provided)
	OP-901-414	

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-LWM obj 5	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	

Comments:
WF3-OPS-4222B

KA mismatch
Basis or reason
System question

We see no credible way to test the reason behind why we terminate an inadvertent liquid radioactive release. This is very basic fundamental knowledge of protecting the safety and health of the public.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	2		
	K/A #	068 AA1.01		
	Importance Rating	4.3		

Ability to operate and / or monitor the following as they apply to the Control Room Evacuation:: S/G atmospheric relief valve	
Proposed Question:	Common 61
<p>Given the following:</p> <ul style="list-style-type: none"> • The plant was at 100% power. • A fire developed in the control room, requiring the control room to be evacuated. • The crew is performing OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown. • Atmospheric Dump Valves have spuriously opened <p>Which ONE of the following describes ONLY actions that will be performed <u>prior</u> to leaving the control room?</p> <p>A. Initiate RCS boration and de-energize Atmospheric Dump Valve Controllers.</p> <p>B. Trip RCPs and de-energize Atmospheric Dump Valve Controllers.</p> <p>C. Initiate RCS boration and Place Atmospheric Dump Valves in MANUAL with 0 output.</p> <p>D. Place Atmospheric Dump Valves in MANUAL with 0 output and trip RCPs.</p>	

Proposed Answer:	D
Explanation (Optional):	
<p>A. Incorrect. Do not de-energize controllers, place in manual. Boration initiated later</p> <p>B. Incorrect. Do not de-energize controllers</p> <p>C. Incorrect. Boration is initiated after evacuation</p> <p>D. Correct. ADVs in manual with 0 output only if erratic operation is observed.</p>	

Technical Reference(s)	OP-901-502	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPO51 obj 2	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

Editorial

Change stem to read "ADV spuriously opened" to match procedural wording.

[Changed to reflect procedural wording](#)

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	2		
	K/A #	076 G2.1.32		
	Importance Rating	3.4		

Conduct of Operations: Ability to explain and apply all system limits and precautions	
Proposed Question:	Common 62
<p>Given the following:</p> <ul style="list-style-type: none"> • A load reduction from 100% to 70% power was performed. • Chemistry sample indicates that gross RCS activity exceeds TS 3.4.7 limits. • The CRS determines that a plant shutdown is required. <p>Which ONE (1) of the following describes additional actions taken to minimize the potential for radioactive release?</p> <p>A. Isolate Letdown.</p> <p>B. Place an additional ion exchanger in service if the DF is < 1.0.</p> <p>C. Cool down the RCS to below 500 degrees F.</p> <p>D. Place Condensate Polishers in service with resin per Chemistry instructions.</p>	

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. Letdown would be raised to clean up RCS</p> <p>B. Incorrect. If SF >1.0 would perform this action</p> <p>C. Correct. RCS cooled down to below SG ARV setpoints in case of a subsequent SGTR</p> <p>D. Incorrect. Clean up of secondary with this action. Primary has high activity</p>	

Technical Reference(s)	TS 3.4.7	(Attach if not previously provided)
	OP-901-410	

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-TS04 obj 3	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	10
		2

Comments:

SRO only question
 More than 1 hour action
 Sop precautions and limits

There are no credible system limits pertaining to High RCS activity. We would like to discuss this question.
 If this question is still unacceptable we will have to replace the KA

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	2		
	K/A #	A11 G2.1.27		
	Importance Rating	2.8		

Conduct of Operations: Knowledge of system purpose and or function.	
Proposed Question:	Common 63
<p>During an ESDE inside containment, which ONE of the following components functions to provide a boundary to allow controlled EFW flow to the unaffected SG?</p> <p>A. Main Steam Isolation Valve.</p> <p>B. Main Feedwater Isolation Valve.</p> <p>C. Main Feedwater Regulating Valve.</p> <p>D. Startup Feedwater Regulating Valves</p>	

Proposed Answer:	B
Explanation (Optional):	
<p>A. Incorrect. MSIV ensures no more than 1 SG blows down</p> <p>B. Correct.</p> <p>C. Incorrect. Ensures that RCS cooldown will be limited by closing</p> <p>D. Incorrect. Same function as Main Feedwater Regulating Valve</p>	

Technical Reference(s)	TS Basis 3.7.1.6	(Attach if not previously provided)
	FW00 LP	

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-FW00, obj 6	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	5

Comments:

SRO only
Reference TS basis
System procedure description
Provide SD instead of tech specs

[System Description documentation provided](#)

SD-FW

- also supplies condensate to the Feedwater System through a 12 inch bypass line around the steam generator feed pumps.
- Emergency Feedwater System - supplies water in an emergency when the Feedwater System fails to operate.
- One six-inch emergency feedwater pipe ties into each steam generator feedwater line downstream of feedwater isolation valves, FW-184A and B. Under normal conditions, the Emergency Feedwater System is not operating. Only in an emergency when the Feedwater System fails to operate does the Emergency Feedwater System start to deliver water to the steam generator at a sufficient rate for the safe shutdown of the reactor.
- Steam Generator Blowdown - Two four-inch pipes from downstream of the feedwater control valves (one from each steam generator feedwater supply line) are connected to the steam generator blowdown line going to the blowdown filter and blowdown demineralizer. Used to clean the required volume of water by recirculating it from the condenser hotwell through condensate and feedwater piping, the blowdown demineralizer and then back to the condenser hotwell. The water is recirculated until it reaches the quality of condensate that is acceptable for feeding the steam generators. This method of feedwater cleanup is not used due to the installation of full flow Condensate Polisher System.
- Main Steam Isolation Signal - controls in part the operation of the feedwater isolation valves.
 - The Main Steam Isolation Signal (MSIS) is part of the Engineered Safety Features Actuation System (ESFAS). The Main Steam Isolation Signal isolates the steam generators and their main feedwater supply in the event of a steam line break accident. Main steam isolation is achieved by closing both Main Steam Isolation Valves MS-124A(B). Main Feedwater isolation is achieved by closing Main Feedwater Isolation Valves FW-184A(B). MSIS also closes FW-173A(B), Main Feedwater Regulating Valves and FW-166A(B), Startup Feedwater Regulating Valves as a backup to closing FW-184A(B). MSIS is initiated by two-out-of-four low steam generator pressure signals from either steam generator. Each steam generator pressure signal forms its own two-out-of-four logic. An MSIS is also generated by two-out-of-four high containment pressures.
 - Manual initiation of an MSIS signal may be performed in the main Control Room. A pretrip alarm is initiated at 100 PSIA above the setpoint to provide audible and visible indication of an approach to a trip condition.
- Main Steam and Reheat Steam - Provide steam to drive Steam Generator Feed Pump Turbines.
- Extraction Steam - Heats FW in the heaters.
- Reactor Coolant - heats the feedwater in the steam generators.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	1		
	Group #	2		
	K/A #	A13 AK1.1		
	Importance Rating	3.0		

Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations) Components, capacity, and function of emergency systems.

Proposed Question: Common 64

Given the following:

- A loss of offsite power occurred 1 hour ago due to a tornado touching down in the switchyard
- EFW pumps are supplying Steam Generators
- That is currently 500°F
- CSP level is 85 percent
- DWST is unavailable due to tornado damage

Which of the following describes the AVAILABLE feedwater **AND** the MAXIMUM time remaining to place Shutdown Cooling in service?

- A. 99,000 gal, 6.
- B. 99,000 gal, 10 hours.
- C. 150,000 gal, 6 hours.
- D. 150,000 gal, 10 hours.

Proposed Answer: A

Explanation (Optional):

- A. Correct. 27000 gal required, DWST= 0 CSP=179010-53000 = **99010** available curve 2J 1 hour after shutdown = 6 hours
- B. Incorrect. 10 hours if using wrong time after shutdown curve
- C. Incorrect. 150000 gal if 53000 not subtracted, 6 hours if curve 2H used
- D. Incorrect. 150000 gal if 53000 not subtracted curve 2j for 150000 = 10 hours

Technical Reference(s)	OP-902-003 step 24 OP-902-009 att 2-G, H, I, J	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	OP-902-009 att 2-G OP-902-009 att 2-H OP-902-009 att 2-I OP-902-009 att 2-J
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Learning Objective:	WLP-OPS-PPE01 obj 11	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	10

Comments:
W3-NRC-1704A

A B not plausible
Doesn't involve nat circ

[New question](#)

INSTRUCTIONSCONTINGENCY ACTIONS

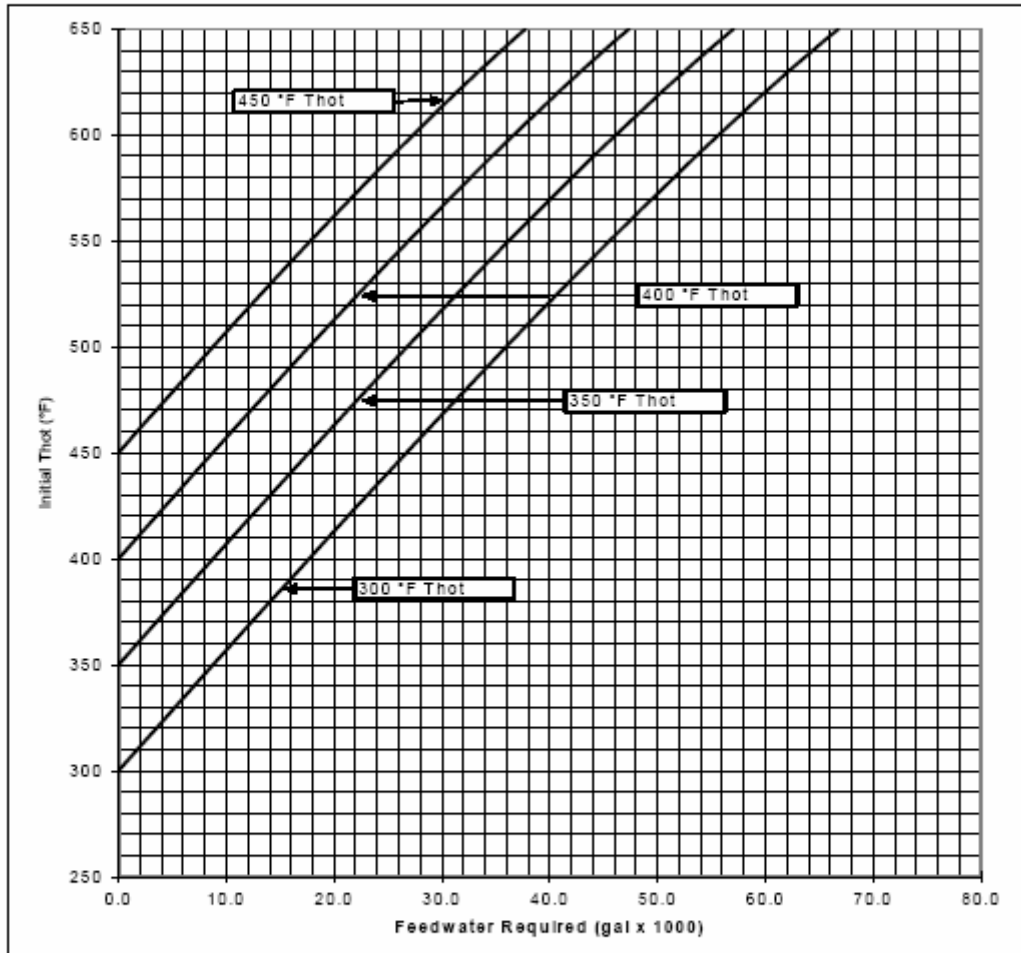
NOTE

Step 24 should be completed before continuing.

Evaluate Need for Cooldown

- * 24. Evaluate the need for a plant cooldown based on **ALL** of the following:
 - Plant status
 - Auxiliary systems availability
 - IF EFW pumps are supplying the steam generators, **THEN REFER TO** Appendix 2-G, "Condensate Inventory Curves" and verify the condensate inventory is greater than the minimum required for plant cooldown

Figures
Attachment 2-G: Feedwater for Sensible Heat Removal

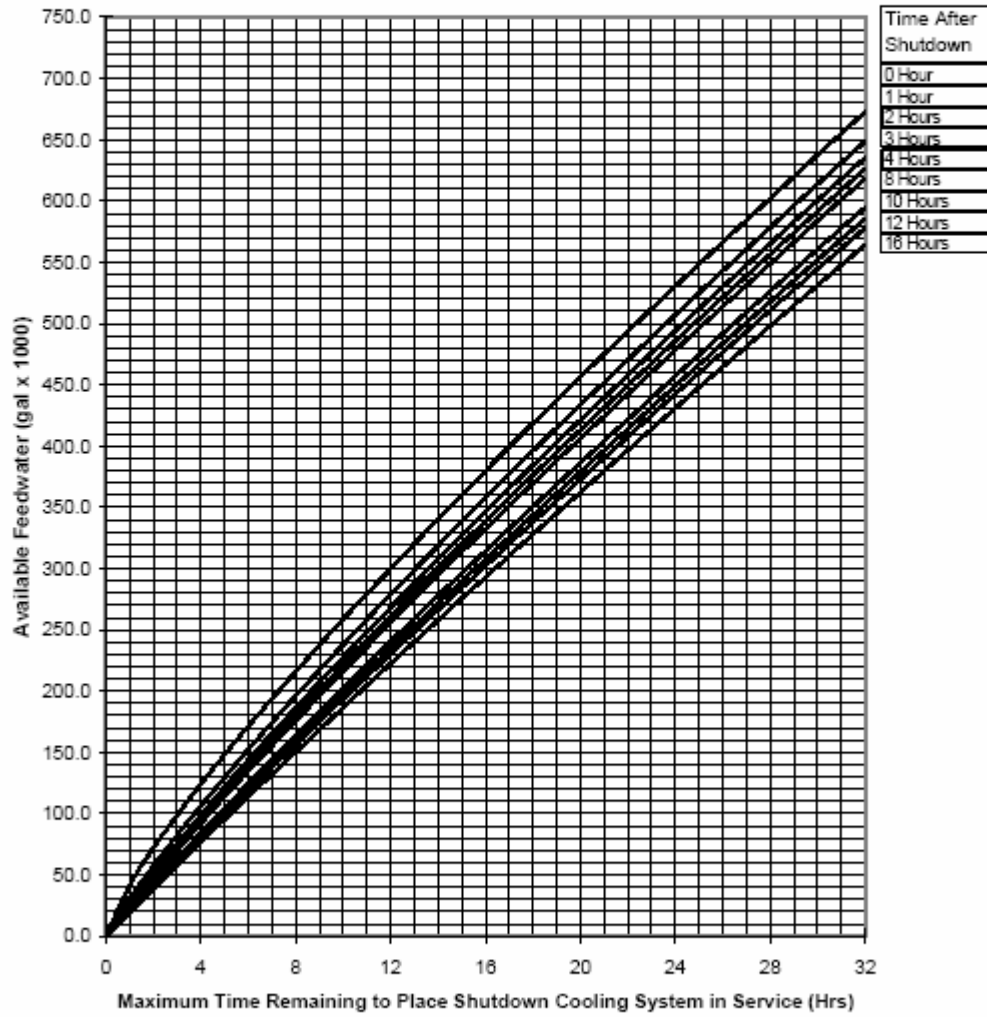


DWST Volume = 5000 gal / % x _____ % - 58,000 gal = _____ gal
 CSP Volume = 2106 gal / % x _____ % - 53,000 gal = _____ gal
 Total Feedwater = DWST Volume + CSP Volume = _____ gal
 Available Feedwater = Total Feedwater - Feedwater Required from Att. 2-G
 = _____ Total - _____ Required = _____ gal

End of Attachment 2-G

Figures

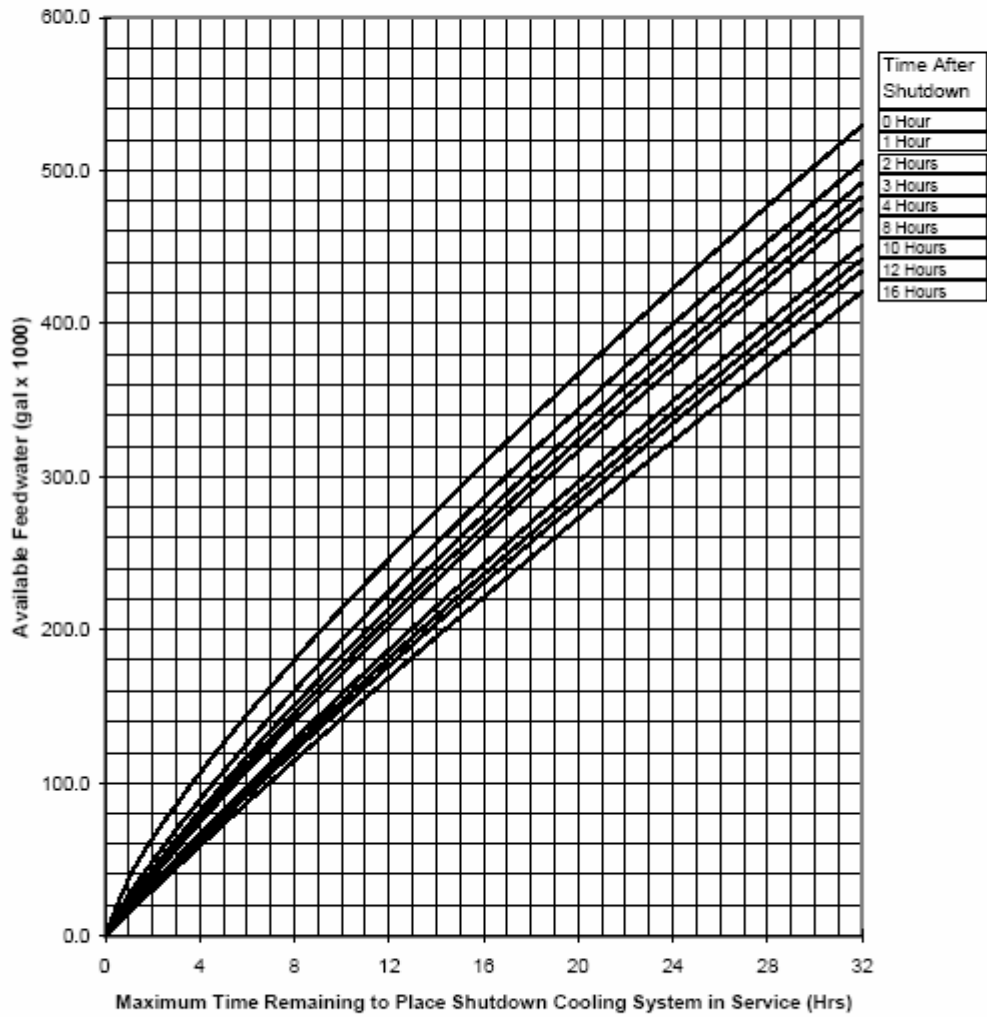
End of Attachment 2-H: Condensate Inventory Curve Four RCPs Operating



End of Attachment 2-H

Figures

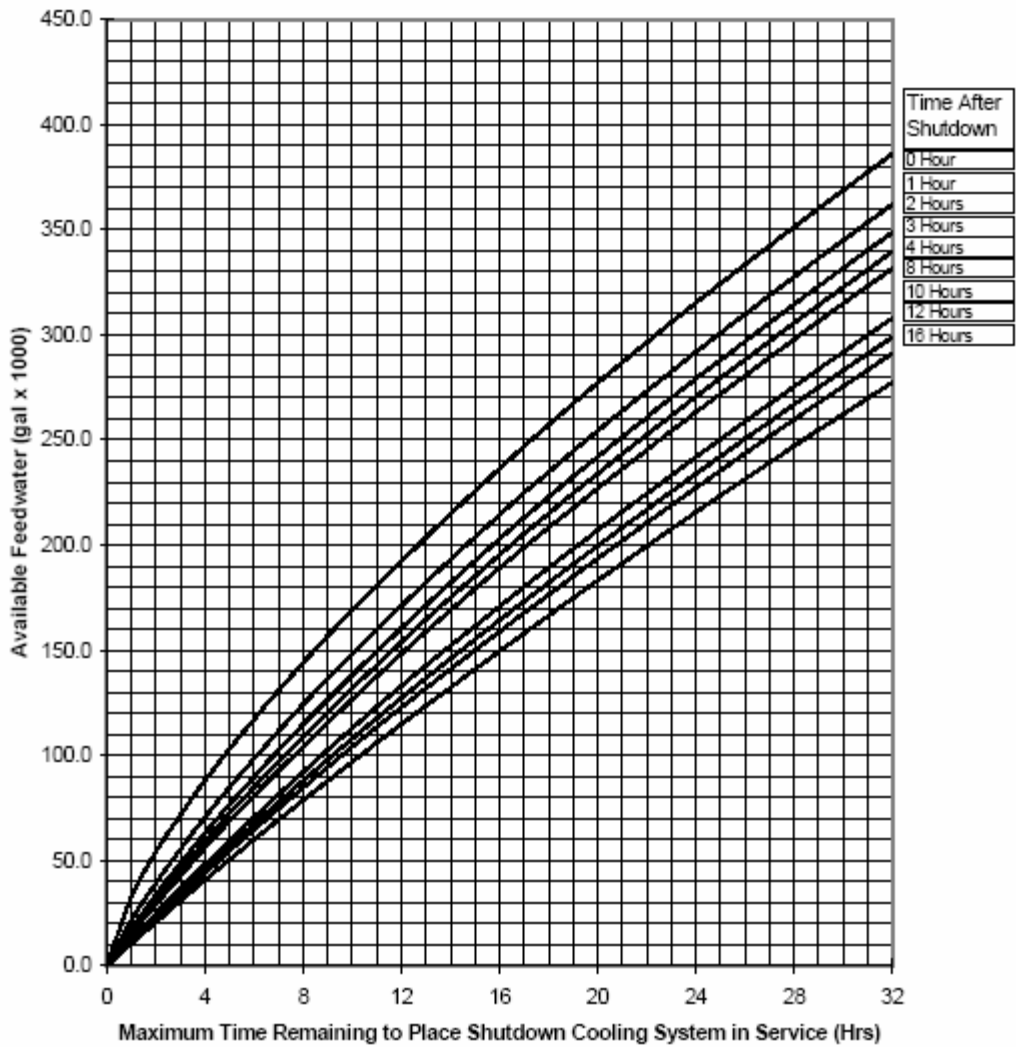
Attachment 2-I: Condensate Inventory Curve Two RCPs Operating



End of Attachment 2-I

Figures

Attachment 2-J: Condensate Inventory Curve NO RCPs Operating



End of Attachment 2-J

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	3		
	Group #	1		
	K/A #	2.1.22		
	Importance Rating	2.8		

Ability to determine Mode of Operation.	
Proposed Question:	Common 66
<p>Given the following plant conditions:</p> <ul style="list-style-type: none"> • RCS average temperature: 425 °F • All control rods: Fully inserted • RCS cooldown rate: 30F/hour <p>What is the current plant Mode as defined in Technical Specifications for these conditions?</p> <p>A.) MODE 1</p> <p>B.) MODE 2</p> <p>C.) MODE 3</p> <p>D.) MODE 4</p>	

Proposed Answer:	C
Explanation (Optional):	
<p>A. Incorrect. Mode 1 = >5% would require control rods to be withdrawn $K_{eff} \geq .99$</p> <p>B. Incorrect. shutdown control rods would be withdrawn $K_{eff} \geq .99$</p> <p>C. Correct. $<.99$, 0%. $t_{avg} > 350$</p> <p>D. Incorrect. Mode 4 $350 > t_{avg} > 200$</p>	

Technical Reference(s)	TS Definitions	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-TS00 Obj. 03	(As available)
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Question Source:	Bank #	X	Palisades NRC 2006
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	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	Palisades NRC 2006
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

More than one variable to mode 6
 Maybe multiple variables
 250
 RX.98
 Pressure
 Based on this M-1,2,3,4

[New question NRC Exam Palisades 2006](#)

TABLE 1.2

OPERATIONAL MODES

<u>OPERATIONAL MODE</u>	<u>REACTIVITY CONDITION, K_{eff}</u>	<u>% OF RATED THERMAL POWER*</u>	<u>AVERAGE COOLANT TEMPERATURE</u>
1. POWER OPERATION	≥ 0.99	$> 5\%$	$\geq 350^{\circ}\text{F}$
2. STARTUP	≥ 0.99	$\leq 5\%$	$\geq 350^{\circ}\text{F}$
3. HOT STANDBY	< 0.99	0	$\geq 350^{\circ}\text{F}$
4. HOT SHUTDOWN	< 0.99	0	$350^{\circ}\text{F} > T_{avg} > 200^{\circ}\text{F}$
5. COLD SHUTDOWN	< 0.99	0	$\leq 200^{\circ}\text{F}$
6. REFUELING**	≤ 0.95	0	$\leq 140^{\circ}\text{F}$

* Excluding decay heat.

** Fuel in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	3		
	Group #	1		
	K/A #	G2.1.11		
	Importance Rating	3.0		

Knowledge of less than 1 hour technical specification action statements for systems	
Proposed Question:	Common 67
<p>Given the following conditions:</p> <ol style="list-style-type: none"> 1. Mode 5 2. RCS temperature 105°F 3. SG #1 is being placed in wet layup using AFW pump 4. SG temperature 100°F 5. The operator notices that SG #1 has been overfilled and SG pressure is at 300 psig <p>What is the SG status in regards to Technical Specifications?</p> <ol style="list-style-type: none"> A. Pressure/temperature limitation satisfied B. SG temperature high and SG pressure high, pressure/temperature LCO NOT met. C. SG pressure and temperature low, pressure/temperature LCO NOT met. D. SG temperature low and SG pressure high, pressure/temperature LCO NOT met 	

Proposed Answer:	D
Explanation (Optional):	
<ol style="list-style-type: none"> A. Incorrect. SG temp > 115 when SG press > 210 psig B. Incorrect. SG temp > 115 when SG press > 210 psig C. Incorrect. SG temp > 115 when SG press > 210 psig D. Correct. 	

Technical Reference(s)	TS section 3.7.2	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None

Learning Objective:	WLP-OPS-CB00 obj 7	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)
	New		

Question History:	Last NRC Exam	Waterford 1995
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Question Cognitive Level:	Memory or Fundamental Knowledge	
	Comprehension or Analysis	X

10 CFR Part 55 Content:	55.41	6
	55.43	2

Comments:
WF3-NRC -3556-A

Only one expected to know from memory
 Could recognize correct answer

[New question](#)

PLANT SYSTEMS

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2 The temperature of the secondary coolant in the steam generators shall be greater than 115°F when the pressure of the secondary coolant is greater than 210 psig.

APPLICABILITY: At all times.

ACTION:

With the requirements of the above specification not satisfied:

- a. Reduce the steam generator pressure to less than or equal to 210 psig within 30 minutes, and
- b. Perform an engineering evaluation to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation prior to increasing its temperatures above 200°F.

SURVEILLANCE REQUIREMENTS

4.7.2 The pressure of the steam generators shall be determined to be less than 210 psig at least once per hour when the temperature of the secondary coolant is less than 115°F.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	3		
	Group #	2		
	K/A #	2.2.13		
	Importance Rating	3.6		

Knowledge of tagging and clearance procedures.	
Proposed Question:	Common 70
<p>Which ONE of the following is TRUE if a Motor Operated Valve is being tagged for isolation and must be manually closed?</p> <p>A. The Clearance's Tagged Position must be changed to Manually Closed.</p> <p>B. The MOV must be manually stroked to prove operability.</p> <p>C. The System Engineer must concur with closing the MOV manually.</p> <p>D. The MOV should be manually cracked off its shut seat when clearing the Danger Tag.</p>	

Proposed Answer:	D
Explanation (Optional):	
<p>Incorrect. Tagout position must be changed to "Manually Torqued closed"</p> <p>Incorrect. MOV must be electrically stroked to prove operability</p> <p>Incorrect. SM/CRS permission required</p> <p>Correct.</p>	

Technical Reference(s)	OP-102	(Attach if not previously provided)

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPA00 obj 2	(As available)
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Question Source:	Bank #	X	
	Modified Bank #		(Note changes or attach parent)

	New		
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Question History:	Last NRC Exam	2002 Waterford
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:
W3-OPS-7261-A
Level of difficulty = 1

[New question](#)

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102	REV. 5
		INFORMATIONAL USE	PAGE <u>116</u> of <u>123</u>	

3.2 TAG's ON ELECTRICAL EQUIPMENT

3.2.1 For the Placement 1st Verification, alternate methods should be used to verify a breaker is opened after operating the breaker mechanism and before hanging the tag to ensure the breaker mechanism has actually opened the breaker. Alternate methods include, but are not limited to:

3.2.1.1 For all breakers except Gould (rotary style) Molded Case circuit breakers:

- Appropriate Annunciator/Alarm at the time breaker is turned off
- Loss of Indication, at the time breaker is turned off
- A check is performed to verify that no voltage exists on all phases of the load side of the breaker

3.2.1.2 For Gould (rotary style) Molded Case circuit breakers, a check is performed to verify that no voltage exists on all phases of the load side of the breaker.

3.2.1.3 In the case where no alternate indication is available, proper operation of the breaker will be observed.

3.2.2 For the Placement 2nd Verification, alternate methods should be used to verify the breaker mechanism has actually opened the breaker. Alternate methods include, but are not limited to:

3.2.2.1 For all breakers except Gould (rotary style) Molded Case circuit breakers:

- Appropriate Annunciator/Alarm
- Loss of Indication
- A check is performed to verify that no voltage exists on all phases of the load side of the breaker

3.2.2.2 For Gould (rotary style) Molded Case circuit breakers, a check is performed to verify that no voltage exists on all phases of the load side of the breaker.

3.3 TAGS ON MECHANICAL EQUIPMENT

3.3.1 If a motor operated valve must be manually closed to provide isolation, then perform the following:

3.3.1.1 Obtain SM/CRS permission prior to manually torquing the valve.

3.3.1.2 On the tagout, annotate the valve as being manually torqued closed.

3.3.1.3 When clearing the tag, then manually crack the valve off its closed seat.

3.3.1.4 Electrically stroke the valve to prove Operability.

Examination Outline Cross-reference:	Level	RO		SRO
	Tier #	3		
	Group #	4		
	K/A #	G2.4.2		
	Importance Rating	3.9		

Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.	
Proposed Question:	Common 74
<p>Which of the following requires entry into OP-902-000, Standard Post Trip Actions?</p> <p>A. S/G water level 26% Narrow range</p> <p>B. Pressurizer Pressure 2308 psia.</p> <p>C. Departure from Nucleate Boiling Ratio 1.36</p> <p>D. Lo Steam Generator flow 23 psid</p>	

Proposed Answer:	A
Explanation (Optional):	
<p>A. Correct. SG level less than 27.4% requires a reactor trip</p> <p>B. Incorrect. PZR press 2308 is pretrip, 2350 is RX trip setpoint</p> <p>C. Incorrect. DNBR 1.36 is pretrip, Rx trip is 1.26</p> <p>D. Incorrect. Low SG flow RCS side = 19 PSID</p>	

Technical Reference(s)	PPS SD	(Attach if not previously provided)
	OP-902-000, OP-901-201	

Proposed references to be provided to applicants during examination:	None
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Learning Objective:	WLP-OPS-PPO20 obj 2	(As available)
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Question Source:	Bank #		
	Modified Bank #		(Note changes or attach parent)
	New	X	

Question History:	Last NRC Exam	
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Question Cognitive Level:	Memory or Fundamental Knowledge	X
	Comprehension or Analysis	

10 CFR Part 55 Content:	55.41	10

Comments:

KA mismatch
Setpoint entry to EOP

[New question](#)

2.0 ENTRY CONDITIONS

The Standard Post Trip Actions may be entered when **ANY** or **ALL** of the following symptom(s) of a Reactor Trip exist:

- CEA bottom lights on
- Rapid drop in reactor power
- Reactor trip circuit breakers open
- RPS trip setpoint exceeded

End of Section 2.0

TABLES

TABLE 1- REACTOR TRIP SIGNALS

<u>TRIP SIGNAL</u>	<u>SETPOINT AND COINCIDENCE</u>	<u>BASIS</u>
High linear power	$\geq 108\%$ (2/4) (Excore calibrated sum power)	CEA ejection accident and DNBR
High log power	$\geq 0.257\%$ (2/4) (bypassable above $10^{-4}\%$ power; auto bypass removed $< 10^{-4}\%$)	Unplanned criticality or dilution accident
High LPD	≥ 21.0 KW/ft (2/4) (bypassable below $10^{-4}\%$ power)	Fuel centerline melting
Low DNBR	≤ 1.26 (2/4) (bypassable below $10^{-4}\%$ power)	DNBR
High Pressurizer pressure	≥ 2350 PSIA (2/4)	RCS overpressure
Low Pressurizer pressure	≤ 1684 PSIA (variable) (2/4)	DNBR and LOCA
Low SG water level	$\leq 27.4\%$ (2/4 level transmitters on 1/2 SGs)	Loss of heat sink
Low SG pressure	≤ 666 PSIA (variable) (2/4 pressure transmitters on 1/2 SGs)	MSLB
High Containment pressure	≥ 17.1 PSIA (2/4)	LOCA or MSLB inside Containment
High SG water level	$\geq 87.7\%$ (2/4 pressure transmitters on 1/2 SGs)	Moisture carryover to turbine and SG overflow
Low SG flow (RCS side)	≤ 19.0 PSID (2/4 on 1/2 SG primary side)	RCP shaft break and DNBR
Turbine trip	Auto stop oil pressure < 45 PSIG (2/3) (if enabled and reactor power $> 65\%$)	No credit taken in FSAR.
Manual	Manual (2/2 pushbuttons CP-8) Manual (2/2 pushbuttons CP-2)	Operator judgment
Manual Diverse reactor trip	Manual (2/2 pushbuttons CP-2)	Operator judgment