VIRGIL C. SUMMER NUCLEAR STATION - EXAM 2002-301

50-395
SEPTEMBER 9 - 17, 2002

Administrative Documents
(Yellow Paper)

Facility: Summer

Date of Examination: 9/9-13/02

Examinations Developed by: Facility / NRC (circle one)

Target Date*	Task Description / Reference	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a & b)	LM
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	LM
-120	3. Facility contact briefed on security & other requirements (C.2.c)	LM
-120	4. Corporate notification letter sent (C.2.d)	LM
[-90]	[5. Reference material due (C.1.e; C.3.c)]	LM
-75	6. Integrated examination outline(s) due (C.1.e & f; C.3.d)	LM
-70	7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	LM
-45	8. Proposed examinations, supporting documentation, and reference materials due (C.1.e, f, g & h; C.3.d)	LM
-30	9. Preliminary license applications due (C.1.l; C.2.g; ES-202)	LM
-14	10. Final license applications due and assignment sheet prepared (C.1.l; C.2.g; ES-202)	LM
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	LM
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f & h; C.3.g)	LM
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	LM
-7	14. Final applications reviewed; assignment sheet updated; waiver letters sent (C.2.g, ES-204)	LM
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee and authorization granted to give written exams (if applicable) (C.3.k)	LM
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	LM

* Target dates are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.

[ ] Applies only to examinations prepared by the NRC.

Facility: Summer

Date of Examination: 9/17/02

Item	Task Description	Initials a	Initials b*	Initials c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	LM	[illegible]	[illegible]
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	LM	[illegible]	[illegible]
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	LM	[illegible]	[illegible]
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	LM	[illegible]	[illegible]
2. SIM	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	LM		[illegible]
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	LM		[illegible]
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	LM		[illegible]
3. W/T	a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	LM		[illegible]
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA.	LM		[illegible]
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	LM		[illegible]
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	LM		[illegible]
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	LM		[illegible]
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	LM		[illegible]
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	LM		[illegible]
	d. Check for duplication and overlap among exam sections.	LM		[illegible]
	e. Check the entire exam for balance of coverage.	LM		[illegible]
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	LM		[illegible]

	Printed Name / Signature	Date
a. Author	Lee Miller / [signature]	
b. Facility Reviewer (*)		
c. NRC Chief Examiner (#)	George T. Hopper / George T. Hopper	9/5/02
d. NRC Supervisor	Michael E. Ernstes / Michael E. Ernstes	9/5/02

Note: * Not applicable for NRC-developed examinations.
Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of ~~9/9/02~~ 9/16/02 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC. Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 9/9/02 ~~9/16/02~~. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	GEORGE A. LIPPARD	OPS SHIFT ENGINEER / LEAD EXAM REVIEWER	[signature]	8/6/02	[signature]	9/18/02	
2.	ALBERT R. KOON, JR	SUPV. NUCLEAR TRNG / OVERALL	[signature]	8/6/02	[signature]	9/18/02	
3.	BILL DAVIS	SRO / EXAM REVIEWER	[signature]	8/9/02	[signature]	9-18-02	
4.	Riley R. Johnson	NTC INST	Riley R. Johnson	8/12/02	Riley R. Johnson	9/18/02	
5.	Wanda P. Morris	Clerk	Wanda P. Morris	8-12-02	Wanda P. Morris	9-18-02	
6.	DAN GATLIN	OPS MGR	[signature]	8-12-02	[signature]	9-19-02	
7.	STEVEN FURSTENBERG	TRN MANAGER /	[signature]	8/14/02	[signature]	9/18/02	
8.	Tom Howell	Sr. INST, Sim Ops	[signature]	8/18/02	[signature]	9/17/02	
9.	ERIC WARDEN	NTC INST	Eric Warden	8/19/02	E Warden	9/18/02	
10.	Fred [illegible]	Shift Supervisor	[signature]	8/18/02	[signature]	9/18/02	
11.	Gerald Merchant	[illegible] INST	[signature]	9/9/02	[signature]	9/20/02	
12.	PAUL CROGEN	SHIFT ENGINEER / NTC	Paul R C	9/9/02	Paul R C	9/18/02	
13.	W.H. TURKETT	PSE CG	W H Turkett	9/10/02	W H Turkett	9/18/02	
14.	DAN R. Goldstein	Supv of OPS	[signature]	9/10/02	[signature]	9/9/02	
15.	~~Gerald Merchant~~	~~Instructor (lead)~~	~~Gerald Merchant~~	~~9/20/02~~	~~[signature]~~	~~9/20/02~~	

Gmy 9/20/02

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 9/9/02 9/16/02 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC.Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 9/9/02 9/16/02. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Randy Arms	Development JPMA.3	[signature]	8/13/02	[signature]	9/19/02	
2.	Dennis Baker	Procedure Unit Supr / CRS	[signature]	8/22/02	[signature]	9-19-02	
3.	Rick Guerra	Ops Proc. Sp. Proj. / SRO	[signature]	8/22/02	[signature]	9/19/02	
4.	~~Tom~~ 9/18/02						
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							

NOTES:

Facility: ___Summer________________ Examination Level (circle one): RO / **SRO**		Date of Examination: __9/9-13/02___ Operating Test Number: ___1_____
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	Review of License Operator Status Report to determine current active licenses. (Shift Turnover)
	Conduct of Operations	Determine adequate shift manning
A.2	Equipment Control	Evaluation of Surveillance Test results
A.3	Radiation Control	Determine personnel exposure limit for non-essential personnel
A.4	Emergency Plan	Classify an Emergency Plan Event

System / JPM Title	Type Code*	Safety Function
a. Transfer to Cold Leg Reciriculation JPS-5	DS	3
b. **Loss of Intermediate Range Instrumentation JPS-029**	LDS	7
c. Stuck Rod JPS-043	DS	1
d. Identify and isolate RCS leak to CCWS JPS-042	DS	8
e. **Response to imminent pressurized thermal shock JPS-93**	NS	4P
f. Manually initiate Reactor Building Spray JPSF-019	AS	5
g. Transfer in-service charging pump (NRC) JPSF-046	DAS	2
a. **Locally start an Emergency D/G during a loss of offsite power (with Failure of field to flash) JPPF-012**	DA	6
b. **Control Room evacuation (duties of BOP operator) (Modified JPPF-049)**	M	8
c. **Establish Demineralizer Water Alternate cooling to Charging Pumps (Failure of Chilled Water Supply) (New JPPF-NRC)**	DAR	1

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: Summer Date of Examination: 9/9-13/02 Operating Test Number:1

1. GENERAL CRITERIA		Initials a	b*	c#
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	LM		ATH
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	LM		ATH
c.	The operating test shall not duplicate items from the applicants' audit test(s)(see Section D.1.a).	N/A		ATH
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	LM		ATH
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	LM		ATH
2. WALK-THROUGH (CATEGORY A & B) CRITERIA		--	--	--
a.	Each JPM includes the following, as applicable: · initial conditions · initiating cues · references and tools, including associated procedures · reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee · specific performance criteria that include: - detailed expected actions with exact criteria and nomenclature - system response and other examiner cues - statements describing important observations to be made by the applicant - criteria for successful completion of the task - identification of critical steps and their associated performance standards - restrictions on the sequence of steps, if applicable	LM		ATH
b.	The prescripted questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.	LM		ATH
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.	LM		ATH
d.	At least 20 percent of the JPMs on each test are new or significantly modified.	LM		ATH
3. SIMULATOR (CATEGORY C) CRITERIA		--	--	--
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	LM		ATH

	Printed Name / Signature	Date
a. Author	Lee R. Miller/ Lee R Miller	9/5/02
b. Facility Reviewer(*)	N/A	
c. NRC Chief Examiner (#)	George T. Hopper George T. Hopper	9/5/02
d. NRC Supervisor	MICHAEL E. ERNSTES / Michael E. Ernstes	9/5/02

NOTE: * The facility signature is not applicable for NRC-developed tests.
Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.

Facility: Summer Date of Exam: 9/9-13/02 Scenario Numbers: 1 / 2 / Operating Test No.: 1

	QUALITATIVE ATTRIBUTES	Initials a	Initials b*	Initials c#
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	LM		ATH
2.	The scenarios consist mostly of related events.	LM		ATH
3.	Each event description consists of · the point in the scenario when it is to be initiated · the malfunction(s) that are entered to initiate the event · the symptoms/cues that will be visible to the crew · the expected operator actions (by shift position) · the event termination point (if applicable)	LM		ATH
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	LM		ATH
5.	The events are valid with regard to physics and thermodynamics.	LM		ATH
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	LM		ATH
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	N/A	—	—
8.	The simulator modeling is not altered.	LM		ATH
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	LM		ATH
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	LM		ATH
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	LM		ATH
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	LM		ATH
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	LM		ATH

	TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)	Actual Attributes	--	--	--
1.	Total malfunctions (5-8)	6 / 5 /			
2.	Malfunctions after EOP entry (1-2)	3 / 2 /			
3.	Abnormal events (2-4)	4 / 3 /			
4.	Major transients (1-2)	1 / 1 /			
5.	EOPs entered/requiring substantive actions (1-2)	2 / 2 /			
6.	EOP contingencies requiring substantive actions (0-2)	0 / 0 /			
7.	Critical tasks (2-3)	3 / 3 /			

OPERATING TEST NO.:

Applicant Type		Evolution Type	Minimum Number	Scenario Number 1	2	3 Spare	4
RO		Reactivity	1				
		Normal	1				
		Instrument / Component	4				
		Major	1				
SRO-I	As RO	Reactivity	1	1-1			
		Normal	0	1-3			
		Instrument / Component	2	1-2 1-4 1-5		3-1 3-2 3-3 3-4	
		Major	1	1-6		3-5	
	As SRO	Reactivity	0				
		Normal	1		2-1		
		Instrument / Component	2		2-2 2-3 2-4	3-1 3-2 3-3 3-4	
		Major	1		2-5	3-5	
SRO-U		Reactivity	0	1-1			
		Normal	1	1-3	2-1		
		Instrument / Component	2	1-2 1-4 1-5	2-2 2-3 2-4		
		Major	1	1-6	2-5		

Instructions:

(1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.

(2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

(3) Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirement.

Author: [signature] 7/11/02

NRC Reviewer: [signature] 8/5/02

Competencies	Applicant #1 RO/**SRO-I**/SRO-U				Applicant #2 RO/SRO-I/**SRO-U**				Applicant #3 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2, 4 5, 6	2, 3 4, 5			2. 4 5, 6	2, 3 4, 5						
Diagnose Events and Conditions	2, 4 5, 6	2, 3 4, 5			2, 4 5, 6	1, 2 4, 5						
Understand Plant and System Response	1, 2 4, 5 6	2, 3 4, 5			1, 2 4, 5 6	1, 2 3, 4 5						
Comply With and Use Procedures (1)	1, 2 3, 4 5, 6	1, 2 3, 4 5			1, 2 3, 4 5, 6	1, 2 4, 5						
Operate Control Boards (2)	1, 2 3, 5 6					1, 2 4, 5						
Communicate and Interact With the Crew	1, 2 3, 4 5, 6	1, 2 3, 4 5			1, 2 3, 4 5, 6	1, 2 3, 4 5						
Demonstrate Supervisory Ability (3)		1, 2 3, 4 5			1, 2 3, 4 5, 6							
Comply With and Use Tech. Specs. (3)		2, 4 5			1, 2 3, 4 5, 6							

Notes:

(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: 7/11/02

NRC Reviewer: 8/5/02

<table>
<tr><td colspan="5">Facility: Summer</td><td colspan="2">Date of Exam: 9/17/02</td><td colspan="3">Exam Level: RO/SRO</td></tr>
<tr><td colspan="7" rowspan="2">Item Description</td><td colspan="3">Initial</td></tr>
<tr><td>a</td><td>b*</td><td>c#</td></tr>
<tr><td>1.</td><td colspan="6">Questions and answers technically accurate and applicable to facility</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td>2.</td><td colspan="6">a. NRC K/As referenced for all questions
b. Facility learning objectives referenced as available</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td>3.</td><td colspan="6"><s>RO/SRO overlap is no more than 75 percent, and</s> SRO questions are appropriate per Section D.2.d of ES-401</td><td>N/A</td><td></td><td>AM</td></tr>
<tr><td>1.</td><td colspan="6">Question selection and duplication from the last two NRC licensing exams appears consistent with a systematic sampling process</td><td></td><td></td><td>AM</td></tr>
<tr><td>5.</td><td colspan="6">Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate:
__ the audit exam was systematically and randomly developed; or
__ the audit exam was completed before the license exam was started; or
_x_ the examinations were developed independently; or
__ the licensee certifies that there is no duplication; or
__ other (explain)</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td rowspan="2">6.</td><td rowspan="2">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</td><td colspan="2">Bank</td><td colspan="2">Modified</td><td>New</td><td rowspan="2">LM</td><td rowspan="2"></td><td rowspan="2">AM</td></tr>
<tr><td colspan="2">53</td><td colspan="2">24</td><td>23</td></tr>
<tr><td rowspan="2">7.</td><td rowspan="2">Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right</td><td colspan="3">Memory</td><td colspan="2">C/A</td><td rowspan="2">LM</td><td rowspan="2"></td><td rowspan="2">AM</td></tr>
<tr><td colspan="3">42</td><td colspan="2">58</td></tr>
<tr><td>8.</td><td colspan="6">References/handouts provided do not give away answers</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td>9.</td><td colspan="6">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</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td>10.</td><td colspan="6">Question psychometric quality and format meet ES, Appendix B, guidelines</td><td>LM</td><td></td><td>AM</td></tr>
<tr><td>11.</td><td colspan="6">The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet</td><td>LM</td><td></td><td>AM</td></tr>
</table>

	Printed Name / Signature	Date
a. Author	__Lee R. Miller / Lee R. Miller	8/13/02
b. Facility Reviewer (*)	__N/A	
c. NRC Chief Examiner (#)	AM George T. Hopper / GT Hopper	9/5/02
d. NRC Regional Supervisor	ME Michael E. Ernstes / Michael E. Ernstes	9/5/02

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.

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															001AK1.05 1. Label change to conform to facility terms 2. Change initial condition power level from 17% to 22% to get further above C-5 auto rod interlock. **1. Made label change.** **2. Made change initial condition power level 25%** *Accepted Changes*
2															No comment
3															001K5.38 Plant design does not have feedwater pump trip that results in a runback. **Changed initial condition to reflect plant design.** *Accepted Changes*
4															002A3.01 1. Label changes to conform to facility terms. 2. PZR programed level at 100% power is 60%. **1. Made label changes.** **2. Made change initial condition** **3. Changed stem to reflect "PORV has reseated"** *Accepted Changes*
5															003A2.01 Label change to conform to facility terms **Made label changes.** *Accepted Changes*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
6															003AA1.01 Label change to conform to facility terms **Made label changes.** *Accepted Changes*
7															004K6.05 Label change to conform to facility terms **Made label changes.** *Accepted Changes*
8															No comment
9															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	
10									X						006K2.04 Operations Management does not expect operators to commit power supplies to memory. **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **The K/A is valid and has a value of 3.6/3.8.** **The question remains.** *Facility felt that NRC was asking the operator to recall from memory something that was not realistic for NRC to ask at this level of detail and that this would be a post exam comment. That the level of knowledge was beyond what was expected by Operations Management.* *The question remains as a valid question for the exam.*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
11															007A4.10 1. Label change to conform to facility terms 2. Change RM-A2 to RM-A4 in distracter A **1. Made label changes.** **2. Changed RM-A2 to RM-A4 in distracter A and B.** *Accepted Changes*
12															007EA2.02 Format problem **Format problem exists only in exported copy facility worked from.** *Added reading for N44 - 101% and broke out readings for each S/G Accepted Changes*
13															008AK1.01 Request wider span for temperatures in the answer and distracters **No change necessary.** *Accepted*
14															No comment
15															No comment
16															011EK1.01 1. Label change to conform to facility terms **1. Made label changes.** *Accepted Changes*

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		
17															011K6.04 1. Suggest changes to remove effect of rod control 2. Clarify normal GP1 B/U heater status as "on". 3. Change failure from level reference failure to Tavg Median **1. Effect of rod control is not contained in answer or distracters. No additional information is need in stated initial conditions concerning rod control.** **2. Label changes made to facility specific on PZR heater groups.** **3. Changing failure would result in question not matching KA. No change made in failure.** *Accepted Changes*
18															No comment
19															013A4.02 Label change to conform to facility terms **Made label changes** *Accepted Changes*
20															013K4.16 1. Label change to conform to facility terms 2. Change distracter A to avoid possible additional correct answer **1. Made label changes** **2. Changed distracter A** *Accepted Changes*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
21															014A1.03 Correct answer A to Summer design **1. Answer A changed to median select Delta T and distracter C changed to median select Tavg** *Accepted Changes*
22															015AK3.03 Format problem **Format problem exists only in exported copy facility worked from.** *Accepted*

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		
23						X									015K3.06 Procedurally, the only viable answer is to have rod control remain in manual. Per the AOP, rod control would NOT be restored to automatic until step 17, and only after the NI had been restored and bistables reset. Although choice C is true insofar as testing how the rod control system is actually designed, an operational exam such as this tests knowledge of procedures and their usage, whereas the question is written as if testing the construction of the system at a technician level. The alternative questions provided offer knowledge on the operational level of the interface between rod control and nuclear instrumentation, as well as the effects of nuclear instrumentation failures on rod control system operation. **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **Recommended replacement questions do not match the KA. The question will be modified but will keep the intent.** *Added "with no operator actions". Accepted Changes*

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		
24															017A1.01 1. Label change to conform to facility terms 2. Change reference to 200 degrees and 0 degrees to "much higher" and "much lower" **1. Label changes made.** **2. Changes made in what core subcooling monitor should read (Maximum subcooling and superheat)** *Accepted Changes*
25															022A1.04 Format problem **Format problem exists only in exported copy facility worked from.** *Accepted*
26															022AA2.03 1. Label change to conform to facility terms **1. Label changes made.** *Accepted Changes*
27															024AA2.02 1. Label change to conform to facility terms **1. Question will be replaced. Question can be answered using question 26.** *Accepted Changes*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	
28															026AA2.06 Want change to stem to clarify question. **Changed stem to clarify question.** *Accepted Changes*
29															026AK3.03 Editorial change **Editorial change made.** *Accepted Changes*
30															No comment
31															027AA2.16 1. Editorial change suggested. 2. Delete initial condition addressing PZR heater status **Made editorial changes and deleted initial condition addressing PZR heater status** *Accepted Changes*
32															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
33															028K2.01 Ops Management would not expect this level of detail knowledge of whether the feed is 1DB1 OR 1DB2 to be committed to memory. **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **Recommended replacement questions do not match the KA. The question will be not be changed.** *Facility felt that NRC was asking the operator to recall from memory something that was not realistic for NRC to ask at this level of detail. That the level of knowledge was beyond what was expected by Operations Management.* *The question remains as a valid question for the exam.*

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		
34															029EK3.01 Remove specific reference to -0.33 dpm and change to is negative. **No change made to -0.33 dpm. Instructor's lesson plan specifies this knowledge as WOG background document required knowledge.** *Accepted changes*
35															032AA2.06 Summer uses the Gammametric designed SR/IR nuclear instruments and therefore any questions with regards to the automatic removal of high voltage are non-applicable to the station. The alternate questions are in the same section of the K/A catalog; 4.2 Generic APE's. **Changed to a new question and added Group A from 100 to 150 steps.** *Accepted changes*
36															033A2.01 Facility design of fuel storage racks ensures < 0.95 Keff **Question was modified using facility comments.** *Accepted changes*
37								X							033AA2.02 Question is not operational in content and requires detailed knowledge of settings and circuitry **The question modified.** *Accepted changes*

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		
38															034K4.01 Replace question because FH personnel indicated all choices are justifiable to a degree. **1. Who are the FH personnel asked and are they on the security agreement?** **2. How do each of the choices protect a fuel assembly from binding while being loaded into the core?** *No additional FH personnel discussed this question, only asked personnel already on the security agreement. Added "automatically protect" and "entering the vessel" to the question. Accepted changes*
39														X	035K3.01 1. Operational experience and scenarios run on simulator showed STM PRESS LO SI will occur over varying time frames with no change in PZR level. **1. Changed answers to reflect STM PRESS LO SI and no change in PZR level.** *Accepted changes*
40															036AK1.01 Format problem **Format problem exists only in exported copy facility worked from.** *Accepted*
41															No comment
42															038EK3.08 Editorial change **Editorial change made.** *Accepted changes*

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		
43															039K1.02 1. Delete initial condition concerning Steam Dump Bypass interlock switches. 2. Add "B" to stem for steamline PORV 3. Add automatically to will not open in answer A and change distracter C reason for relief not opening. **1. Deleted initial condition concerning Steam Dump Bypass interlock switches.** **2. Added "B" to stem and modified distracter C.** *Accepted changes*
44															041A2.02 Editorial change **Editorial change made.** *Accepted changes*
45															No comment
46															054AA1.01 1. Spelled out MFP to avoid confusion. 2. Changed choices B and C **1. Spelled out MFP** **2. Proposed changes altered question focus** *Changed 'B' will remain running. Accepted changes*
47															055EG2.4.16 Editorial change **Editorial change made.** *Accepted changes*

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		
48															055G2.4.11 1. Clarification of initial conditions which are too close to trip criteria. 2. Make Answer D match trip criteria in AOP206.1 **1. Initial conditions are above the trip set points and should not lead to "A" as the correct selection.** **2. No change is made to Answer D. It is sufficient as is.** *Changed power to 35% and 350 MWe and modified answer D. Accepted changes*
49															056K1.03 Editorial change **Editorial change made.** *Accepted changes*
50															No comment
51															058AK3.02 Editorial change **Editorial change made.** *Accepted changes*
52															No comment
53															No comment
54															061K4.02 Editorial change **Editorial change made.** *Accepted changes*
55															No comment

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		
56															No comment
57															No comment
58															063K3.01 1. Requires specific, detailed knowledge of ARP-001-636, window 4-3. Request copy of ARP and informed as to all the alarms and indications that have occurred. Expectation for Operators is far more general that the question requires and requires more knowledge that an operator is trained and expected to know. **Providing a copy of ARP-001-636, window 4-3 makes the question a direct look-up. Therefore, a copy of ARP-001-636, window 4-3 is not permitted. Just because material covered by a K/A is not trained on does not mean that the question is not valid.** See question 10. **The question will not change.** *Facility felt that NRC was asking the operator to recall from memory something that was not realistic for NRC to ask at this level of detail and the Facility representative indicated that this would be a post exam comment. That the level of knowledge was beyond what was expected by Operations Management.* *The question remains as a valid question for the exam.*
59															064A4.02 Format problem **Format problem exists only in exported copy facility worked from.** *Accepted changes*
60															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
61															068AK3.17 Provide a CREP panel drawing as a reference **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **No reference will be provided.** *The facility representative stated that if one was to look at the individual question that one could not disagree with the question but looking at the entire exam, a high majority of the exam is being affected by obscure questions. Accepted*
62															No comment
63															071K3.05 Change "has failed to upscale" to fails low or as is. **Changed stem to "fails AS-IS"** *Accepted changes*
64															No comment

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		
65									X						075G2.1.32 The question implies that precautions in all SOP's should be committed to memory, which is an unrealistic expectation. However, some items concerning system operation may be committed to memory and these have been captured in the precautions of many SOP's. We recommend a reference be provided for this question (copy of the precautions for SOP 207), but we believe one of the alternate questions should be used. **Providing a copy of SOP-207 makes the question a direct look-up. Therefore, a copy of SOP-207 is not permitted. The recommended questions for replacement (two questions were provided) do not conform to the KA. The recommended questions are best suited for T2G2 System: 075 Circulating Water System.** *Facility representative considered this the worst question and did not consider this question as acceptable. He stated that the operators were not trained to this level. The facility representative was reminded that just because the operators were not trained on material did not exclude it from being tested. Changed distracter B to "0830" to make a wider span between distracter B and answer C.*
66															076A2.02 1. Added initial condition for clarification 2. Change distracter A and answer C **Will make changes to initial condition and changes to reflect true procedure flow path.** *Change reading on PI4402 to 5#. Accepted changes*

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		
67															076AK2.01 Editorial change **Editorial change made.** *Accepted changes*
68															No comment
69															No comment
70															G2.1.10 Editorial change **Editorial change made.** *Accepted changes*
71															No comment
72															G2.1.29 1. Delete one initial condition 2. Change distracter A to eliminate it as a viable alternative. **1. Initial condition deleted.** **2. Distracter A is changed to eliminate it as a viable alternative** *Accepted changes*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws: Stem Focus	Cues	T/F	Cred. Dist.	Partial	4. Job Content Flaws: Job-Link	Minutia	#/ units	Back-ward	5. Other: Q= K/A	SRO Only	6. U/E/S	7. Explanation
73															G2.1.3 1. Badging is outside protected area, changing intended criteria. moved reason to vacate CR "inside the fence". 2. Removed references to Station log. CRS has discretion to log temp. relief if so desired. **1. SAP-200 (page 8) 6.2.7F ...when the relieved operator remains on site and is expected to return to his assigned duties, does not require a Station Log Book entry.** **2. The question asks for the MINIMUM items an unexpected or temporary relief turnover should include. No change to the question is required.** *Based on on-shift experience and particular supervisor discretion rather than the procedure, the applicants may not choose the correct answer. There were additional comments that the requirement of "remain on site" was interpreted as "remain inside the protected area."* *Individual relieved will remain inside the protected area. Added procedural reference to what is the* ***MINIMUM*** *required by.*
74															No comment
75															No comment
76															G2.2.19 Change distracter A to eliminate it as a viable alternative. **Distracter A has been changed.** *Accepted changes*
77															No comment
78															No comment

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		
79															G2.3.1 Add the words "annual" and "limit" to Occupational Dose for clarification. **The words "annual" and "limit" have been added to Occupational Dose for clarification.** *Accepted changes*
80															No comment
81															G2.4.10 Amplify initial conditions to provide realistic means of receiving RCP oil information **Change was made to provide amplifying information.** *Accepted changes*
82															G2.4.11 1. Add to initial conditions to specify operating in GOP-9 and change RHR flow and amps from "are oscillating" to" begin to oscillate" 2. Change answer C from 900 gpm for 33 minutes to 450 gpm to stabilize amps and flow. **1. GOP-9 reference has been added to initial conditions** **2. Additional information of maintaining level 3" above half-pipe was not added. This information could affect the distracters.** **3. Distracter C has been changed from 33 minutes to 40 minutes.** *Accepted changes*
83															No comment
84															No comment
85															No comment

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		
86															No comment
87															No comment
88															No comment
89															No comment
90															W/E05EK3.2 1. Change the initial conditions to delete the following: The unit is in an Emergency condition. The operators verified that a secondary heat sink is required All RCPs are tripped 2. Make clear that the RCP's are tripped in step 17 of EOP-15.0 **1. Initial conditions were changed to delete "The unit is in an Emergency condition".** **2. Initial conditions were changed to indicate that all RCP's were tripped per EOP-15.0** step 7. *Accepted changes*

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		
91															W/E06EK1.3 Provide EOP12.0 as a reference. Not memory item. **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **Providing a copy of EOP-12.0 makes the question a direct look-up. Therefore, a copy of EOP-12.0 is not permitted.** **No reference will be provided.** *The facility representative stated that this was a function of the STA, Shift Engineer, and they did not expect the SRO to know all entry conditions for all the EOP's (Red/Orange path).*
92															W/E08EK1.1 Editorial change **Editorial change made.** *Accepted changes*
93															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
94															W/E09EA2.1 Question requires memory knowledge of EOP1.3 in its entirety. No criteria given which would force EOP1.4 provided. **Initial condition directed at CST will be expanded indicating CST level is not adequate to support at Natural Circ cooldown rate of <50 F/hr. The question does not require memory knowledge of EOP-1.3 in its entirety. It does require an overall knowledge of the EOP1.3 and 1.4, the relation between the two, and when transition from one to the other should be done.** *The facility representative thought that EOP-1.3 and EOP-1.4 are obscure and that they were sensitive to the failures from the last exam. They did state that the operators were trained on all EOP's.* *Will expand Answer D to remove reference to "perform the first 9 steps'.*
95															W/E11 G2.4.9 Can answer D be discounted? FCV-605A opening fully could push flow to runout. **The initial conditions has been corrected FCV-605 should be HCV-603. Given the RCS Hot Leg Level at 16 inches, vortexing will occur before the RHR pump would trip from being in runout.** *Accepted changes, but would like answer D to be more wrong.*
96															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	
97															W/E13EA1.1 EOP 15.1 is very obscure procedure and is therefore rarely used. If the question in it's current form is used, then a copy of the EOP should be provided and the answer changed as indicated to allow for the TDEFW pump to simply be started if "B" or "C" is the affected S/G. No reference is made to the only steam supply being from the affected S/G and therefore there is no correct answer as written. Our recommendation would be to make the question more broad in scope as exampled by the questions provided. **Providing a copy of EOP-15.1 makes the question a direct look-up. Therefore, a copy of EOP-15.1 is not permitted. The correct answer will be modified to delete the reference "using the 'B' S/G as the steam supply" because an assumption must be made that the highest S/G pressure for those S/Gs that can supply steam is the "B" S/G. The recommended question for replacement (only one provided) does not conform to the KA. The recommended question is best suited for T2G2 System: 035 Steam Generator System (S/GS).** **The question was changed to S/G A.** *The facility representative stated that the changes to the questions represents what is in the procedure, but that if one was to look at the individual question that one could not disagree with the question but looking at the entire exam, a high majority of the exam is being affected by obscure questions. The facility representative stated that they had a problem with about 10% of the exam in that the applicants will not have the required detailed level of knowledge.*
98															No comment

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
99															W/E15EA2.1 Provide EOP-12.0 as reference. **Through their training, operators must learn set points, immediate actions, system designs and interrelationships, administrative procedures, and applications of knowledge to the job. The knowledge that is learned is expected to be demonstrated through the NRC examination format that measures recognition and recall of safety-significant knowledge without relying on references. This approach is consistent with the timely retrieval of information that may be required during the licensed operators' job and that might otherwise not be possible if the applicants prepared only for open-reference examinations. If too many open-reference questions are allowed on the initial licensing examination, the need and ability to learn and retrieve a broad body of knowledge would be lessened. Similarly, the confidence that the baseline body of knowledge had been truly established could be questioned. (Taken from Operator Licensing FAQ # 42)** **Providing a copy of EOP-12.0 makes the question a direct look-up. Therefore, a copy of EOP-12.0 is not permitted. If provided for this question, it could be used to answer question 91.** **No reference will be provided.** *The facility representative stated that if one was to look at the individual question that one could not disagree with the question but looking at the entire exam, a high majority of the exam is being affected by obscure questions.*
100															No comment

Monday, August 26, 2002

Mr. Miller and Mr. Rose:

After a detailed review of all 100 Written Exam items, we have concurred that there are 37 questions, which require no further changes and are ready-as-is for the 9/17/02 SRO Exam at V.C. Summer. These exam questions numbers are:

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Additionally, we have identified another 45 items, which we are classifying as requiring "Minor Changes." These "Minor Changes" include such items as: re-formatting text, correcting spelling or capitalization, correction of non-plant-specific terms, and also providing clearer information and correcting minor stem and distractor errors. They do not change the intent of the question or of the K/A item they are testing. We are re-checking these items one last time this morning, and I will: (1) fax you the marked-up version of these questions AND: (2) E-mail you our proposed corrected version, shortly after lunch today, August 26, 2002.

I will also E-mail you early this afternoon the Simulator and In-Plant Walkthrough JPM's with your comments from last week incorporated. Attached also to this E-mail you will find the Third or Backup Scenario, both the D-1 attachment as well as our write-up of expected actions and procedural flowpath.

The thirty-seven (37) "as-is" items plus the forty-five (45) "Minor Change" items you will have after lunch, coupled with the nine (9) items we submitted comments on last Friday, brings the total to ninety-one (91) items. We are reviewing the remaining nine (9) items today with Operations Management to ensure they meet management expectations, for there are some questions in our minds as to their technical accuracy or whether the information they test is appropriately tested in the Closed-Reference mode as currently written.

We look forward to discussing the Exam with you on Thursday, August 29 at the Region II Offices. We anticipate arriving at your offices around 0830 on Thursday. Please feel free to contact me at (803) 931-5162 should you have any additional questions concerning exam materials.

G. Lippard

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. U/E/S	6. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward		
10									✓				See attached
23						✓							See attached
35													Question N/A for VCS design; see attached
37								✓					See attached
39												✓	See attached
58									✓				See attached
65									✓				See attached
97													

Instructions

[Refer to Appendix B for additional information regarding each of the following concepts.]

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
   - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
   - The answer choices are a collection of unrelated true/false statements.
   - 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).
4. Check the appropriate box if a job content error is identified:
   - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - The question requires reverse logic or application compared to the job requirements.
5. 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?
6. For any "U" ratings, at a minimum, explain how the Appendix B psychometric attributes are not being met.

97. W/E13EA1.1 1

-"B" S/G Pressure is 1250 psig.
-"B" Narrow range level is 82%
-EOP-15.1, "Response to Steam Generator Overpressure has been entered.
-The condenser is not available.
-The "B" PORV is stuck closed.

Which ONE of the following describes the preferred method to reduce "B" S/G pressure in accordance with EOP-15.1?

A. Commence an RCS cooldown to below 565 ^{O}F.

B. Start the TD EFW pump using the "B" S/G as the steam supply.

C. Isolate EFW to the "B" Steam Generator.

D. Establish Blowdown from the "B" Steam Generator.

Lesson Plan EOP-15.1 Response to Steam Generator Overpressure. Objective 2108.
Bank Question 3924.

A. Incorrect, this would be done if starting the TD EFW did not work.

B. Correct, the procedure directs the operator to lower pressure by starting the TD EFW to lower S/G pressure.

C. Incorrect, this would be done after B.

D. Incorrect, this would be done to lower level.

Comments on questions we to consider for replacement

97. EOP 15.1 is a yellow path entry procedure. The answer to this question is step 4 alternative action and it is not an immediate operator action. This is a very obscure procedure and is therefore rarely used. If the question in it's current form is used, then a copy of the EOP should be provided and the answer changed as indicated to allow for the TDEFW pump to simply be started if "B" or "C" is the affected S/G. No reference is made to the only steam supply being from the affected S/G and therefore there is no correct answer as written. Our recommendation would be to make the question more broad in scope as exampled by the questions provided.

Recommended Question for Replacement

97. W/E13EA1.1 1

-"B" S/G Pressure is 1250 psig.
-"B" Narrow range level is 82%
-EOP-15.1, "Response to Steam Generator Overpressure has been entered.
-The condenser is not available.
-The "B" PORV is stuck closed.

Which ONE of the following describes the preferred method to reduce "B" S/G pressure in accordance with EOP-15.1?

A. Commence an RCS cooldown to below 565 ^{o}F.

B. Start the TD EFW pump.

C. Isolate EFW to the "B" Steam Generator.

D. Establish Blowdown from the "B" Steam Generator.

K/A catalog page

W/E **Westinghouse**
13 **Steam Generator Overpressure**
EA1.1 1 **Ability to operate and/or monitor the following as they apply to the S/G overpressure; Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.**

97. W/E13EA1.1 1

The plant is operating at 100% power. The steam dump system in its normal alignment. A failure occurs which results in an Indicated pressure of 1150 PSIG on IPI 2010. Which of the following describes the operation of the "B" steamline PORV, IPV 2010 due to this condition;

A. Since the steam dump system is in the TAVG mode, the PORV will **ONLY** open if the required difference exists between indicated average temperature and reference temperature and the steam dumps receive an arming signal.

B. The PORV will automatically swap to the PWR RLF mode when pressure reaches 1133 PSIG and will open to relieve pressure. The valve will be controlled by the M/A station and will close at approximately 1090 PSIG.

C. As long as the condenser available interlock is present, the PORV is blocked from opening. The only way to allow the PORV to open would be to place the steam dump mode selector switch to the RESET position.

D. The PORV will not open because its automatic opening in this condition would result in an uncontrolled cooldown. In order for the PORV to open, both steam dump interlock switches must be taken to the BYP INTLK position.

65. 075G2.1.32 1

-The Unit is starting up after a refueling outage.
-The Circulating water system is being started up.
-At 0800 the 'A' CW pump was started and secured due to a water box cover leaking.
-At 0810 the 'A' pump was started again, but tripped immediately.

Which one of the following describes the earliest time that the "'A' Circulating water pump could be restarted?

A. 'A' circulating pump can be started at any time, six pump starts per day are allowed.

B. 0840 is the earliest that the 'A' circulating water pump could be started.

C. 0850 is the earliest that the 'A' circulating water pump could be started.

D. 0910 is the earliest that the 'A' circulating water pump could be started.

SOP-207, precautions and limitations # 4.
Lesson Plan TB-08 Circulating Water System, objective TB-8-07.

A. Incorrect, the pump is limited to six starts per day, but should have 40 minutes after two attempts of starting from cold conditions.

B. Incorrect, this would be correct if the applicant choose 30 minutes as the cooldown time.

C. Correct, 0810 + 40 minutes would be 0850, this would be the earliest time.

D. Incorrect, this would be correct if the applicant choose 60 minutes as the cooldown time.

Comments on questions we to consider for replacement

65. SOP 207, Circulating Water System, is a multi-level use procedure. However, section III A, startup of the circ water system, is a continuous use procedure. Operations management expectation is that all precautions are reviewed prior to starting any component or system. This makes the review of precautions mandatory and should not be committed to memory. The starting duties of all pumps are listed in the specific SOP precautions and should always be reviewed prior to equipment operation. The question implies that precautions in all SOP's should be committed to memory, which is an unrealistic expectation. However, some items concerning system operation may be committed to memory and these have been captured in the precautions of many SOP's. We believe our questions are more in-keeping with that standard and require prompt operator attention. We recommend a reference be provided for this question (copy of the precautions for SOP 207) if the question is used in its original form, but we believe one of the alternative questions should be used.

Recommended Question for Replacement

65. 075G2.1.32 1

The plant is operating at 100% power during the winter months and is using two circulating pump operation with "A" and "B" circulating water pumps running. The "C" circulating water pump is idle and available for use. What would be the expected plant response to a trip of the "B" circulating water pump?

A. The "B" circulating water pump discharge valve will close and the "A" circulating water pump continues to run unaffected.

B. The "B" circulating water pump discharge valve will close and the "A" circulating water pump discharge valve will close to the 30% open position.

C. The "B circulating water pump discharge valve will not close and must be closed by the operator to prevent backflow and the "A" circulating water pump continues to run unaffected.

D. The "B circulating water pump discharge valve will not close and must be closed by the operator to prevent backflow and the "A" circulating water pump discharge valve will close to the 30% open position.

Answer: B

K/A catalog page

075 **Circulating Water System**
G2.1.32 1 **Generic Knowledges and Ability: ability to explain and apply all system limits and precautions.**

Change to the CCW system

Question: 73

65. 075G2.1.32 1

Normally, if the running Component Cooling Water (CCW) pump in the ACTIVE train were to trip, the non-essential loads would be:

A. Protected since the standby pump would start.

B. Protected since the INACTIVE loop CCW pump would start.

C. Lost until the swing pump could be properly racked into the ACTIVE loop.

D. Lost until the INACTIVE loop could be valved into the non-essential loop.

Answer: A

58. 063K3.01 1

Diesel Generator 'A' is running for a surveillance when DPN1HA is de-energized.

What is the immediate effect on Diesel Generator 'A' by the loss of DPN1HA?

A. Diesel will continue to run, the diesel can be stopped from local STOP PB but not the MCB Test switch, and only the emergency engine protective trips are enabled.

B. Diesel will continue to run, the diesel can not be stopped from the local STOP PB or the MCB TEST switch, and the engine protective trips are disabled.

C. Diesel will continue to run, Diesel speed control is locked at current speed, the diesel can be stopped from the local STOP PB but not from the MCB TEST switch, and the emergency engine protective trips are disabled.

D. Diesel will immediately trip due to the engine protective trips being actuated.

REF: Summer Exam Bank #555
ARP-001 4-3 DG A Loss of DC

Distracter A - incorrect, D/G can not be stopped from the local Stop PB and no protective trips are enabled.

Answer B - correct, the ability to shutdown the D/G by placing the Test switch in stop (MCB) or by depressing the STOP PB (Local) is lost. The D/G engine protective trips are disabled due to the inability to energize XVX10998A-DG, Air to Fuel Rack S/D Cyl solenoid valve.

Distracter C - incorrect, speed control is not affected, the D/G can not be stopped from the local Stop PB, and the engine protective trips are disabled.

Distracter D - incorrect, the D/G will not immediately trip.

Recommended Question for Replacement

58. 063K3.01 1

What will be the response of D/G "A" if a Safety Injection occurs while DPN-1HA is deengergized?

A. Diesel will not start because DC fuel oil pump is deengergized.

B. Diesel will not start because DC air start solenoids are deenergized.

C. Diesel will start and remain in standby ready for loading.

D. Diesel will start, but exciter will fail to field flash.

K/A catalog page 3.6-6

063	**DC Electrical Distribution**
K3.01 1	**Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following; the EDG**

Comments on questions we to consider for replacement

58. Requires the operator to have specific, detailed knowledge of ARP-001-636, window 4-3. In order to answer a question to this level of detail, the operator needs to be provided with a copy of the ARP for this specific window and be informed as to all the alarms and indications that have occurred. The expectation for operators is far more general and the original question is to the level that an operator is both trained and expected to know from memory. If the reference is not provided, then we believe the original form of the question should be used.

39. 035K3.01 1

Given the following plant conditions:

- The unit is operating at 75% steady state power
- All systems are in automatic control
- MSIV PVM-2801B slowly goes full closed

Which one of the following indicates the initial RCS response to the closure of MSIV PVM-2801B? (Assume no operator actions)

A. RCS loops "A, B, C's" Tavg decrease together. PZR level decreases as expected for a Reactor Trip. The Reactor trips on low Tavg and High Steam Flow on S/G "B".

B. RCS loops "A and C's" Tavg increases while RCS loop "B" Tavg increase is greater than the increase for RCS Loops "A and C". PZR level increases. No Reactor trip occurs.

C. RCS loops "A and C's" Tavg increases while RCS loop "B" Tavg decreases. PZR level decreases. Reactor trips on Turbine trip.

D. RCS loops "A and C's" Tavg decreases while RCS loop "B" Tavg increase is greater than the increase for RCS Loops "A and C". PZR level decreases. No Reactor trip occurs.

REF: TB-2 Main Steam System
TB-5 Turbine Control and Protection System
IC-9 Reactor Protection and Safeguards Actuation System
AB-2 Reactor Coolant System

Distracter A - incorrect, RCS loop Tavgs will not decrease together and the reactor will not trip.
Distracter B - incorrect, RCS loop A and C Tavgs will decrease not increase. PZR decreases not increase.
Distracter C - incorrect, RCS loop A and C Tavgs will decrease not increase. The reactor does not trip.
Answer D - correct, with no reactor trip, RCS Loop A and C Tavg decreases and Loop B Tavg increases, and PZR level decreases.

Comments on questions we to consider for replacement

39. V.C. Summer Station has operational experience with this very issue. We ran this scenario on the simulator over varying timeframes and each produced the same result. The possibility exists that the rate of closure could be slow enough to prevent a STM PRESS LO SI, so it is necessary to remove any discussion of a slowly failing MSIV to preclude confusion. Based on operational experience, a STM PRESS LO SI will occur, and the simulator provided reiteration. There was no perceptible change in pressurizer level, so all reference to pressurizer level change has been removed. The effects observed on the simulator have been captured in answer B, and the other distractors modified accordingly based on the original distractors provided and the corrected data from the simulator.

Recommended Question for Replacement

39. 035K3.01 1

K/A catalog page 3.4-14

035 **Heat Removal From Reactor Core; Primary System; Steam Generator System**

K3.01 1 **Knowledge of the effect that a loss or malfunction of the S/Gs will have on the following: RCS**

39. 035K3.01 1

Given the following plant conditions:

- The unit is operating at 75% steady state power
- All systems are in automatic control
- The IB operator is performing STP 121.002, Main Steam Valve Operability Test on "B" main steam isolation valve (PVM 2801B). A failure results in the full closure of PVM 2801B.

Which one of the following indicates the initial RCS response to the closure of MSIV PVM-2801B? (Assume no operator actions)

A. RCS loops "A" and "C" TAVG begin to decrease; "B" loop TAVG begins to increase. No reactor trip or safety injection occurs.

B. RCS loops "A" and "C" TAVG begin to decrease; "B" loop TAVG begins to increase. Reactor trip and safety injection occurs due to STM PRESS LO SI.

C. RCS loops "A" and "C" TAVG begin to increase; "B" loop TAVG begins to decrease. No reactor trip or safety injection occurs.

D. RCS loops "A" and "C" TAVG begin to decrease; "B" loop TAVG begins to increase. Reactor trip and safety injection occurs due to STM PRESS LO SI.

Correct answer: **B**

Comments on questions we to consider for replacement

37. This question is not linked to the job requirement of any licensed operator. The question has a valid K/A, but is not operational in content and requires detailed knowledge of settings and circuitry which are the responsibility of the I&C technician. Operators should be tested on IR channel response, automatic actions, and subsequent power limitations. The effects of changing to the Cambelling mode of operation are observable by the board operator, but the variations are too great to capture in the static situation that exists in a written examination. The indications listed do not necessarily constitute improper calibration and could only be determined by a technician, not an operator. The alternative questions clearly test the K/A listed and provide operationally sound alternatives to the indications given.

Recommended Question for Replacement

37. 033AA2.02 1

K/A catalog page 4.2-26

033	**Generic Abnormal Plant Evolutions; Loss of intermediate range nuclear instrumentation**
AA2.02 1	**Ability to determine and interpret the following as they apply to the Loss of Intermediate Nuclear Range Instrumentation; indications of unreliable intermediate-range channel operation.**

Possible replacement question

LORT 600

37. 033AA2.02 1

During a plant startup with reactor power at 10-3%, N-31 and N-35, Source and Intermediate Range Instruments fail low due to a loss of voltage to the fission chamber detectors. The maximum power level that is allowed prior to repairing the NI's is;

A. 1%

B. 5%

C. 10%

D. 25%

Correct answer: B

QUESTION: <u>1700</u>

37. 033AA2.02 1

Plant startup is in progress. Reactor power is 3%, control rods are in **MANUAL** and T_{avg} is being maintained on the steam dumps when a fault develops in the fission chamber (that supplies both the 'A' Source Range and 'A' Intermediate Range instruments) and causes both to spike HIGH, then fail LOW. Which ONE (1) of the following describes the expected plant response assuming no operator action?

a. The reactor will trip on SR High Flux.

b. The reactor will trip on IR High Flux.

c. The reactor will remain at 3% power.

d. The reactor will trip on High Positive Flux Rate.

Recommended Question for Replacement

#1700 ANSWER: **b.**

#1700 COMMENTS:

a. SR trip blocked by P-6
b. trip occurs since 1/2 IR instruments exceeds 25% and no block was accomplished at P-10
d. Hi flux rate trip is in PR instruments

QUESTION: <u>1701</u>

37. 033AA2.02 1

A plant startup is in progress. Reactor power is 3%, control rods are in **MANUAL**, and T_{avg} is being maintained on the steam dumps when N-35B, Intermediate Range Instrument fails LOW. Which ONE (1) of the following describes the expected plant response, assuming no operator action?

a. The reactor will trip on SR high flux.

b. The reactor will remain at 3% power.

c. The reactor will trip on negative flux rate.

d. All Intermediate Range high flux trips will be disabled.

#1701 ANSWER: **b.**

#1701 COMMENTS:

a. SR High flux trip is unblocked when <u>BOTH</u> IR <7.5 10^{-6}%.
c. No longer trip signal
d. Still below P-10, cannot block N-36 trip.
(Rev. 1, Revised per MRF 90007. Distractor d. clarified - N36 IR trip is operable, 9/14/94).

35. 032AA2.03 1

-Refueling operations are in progress.
-SR N-31 and 32 read 15 cps.
-Both IR NIs indicate off-scale LOW.
-PR N-41 is out of service, all appropriate bistables are tripped.
-All other power range channels are reading 0%.

A failure has occurred on PR N-43 causing it to drift high to about 25%power.

Which ONE of the following actions are required?

A. Immediately terminate all fuel movement in progress and emergency borate per AOP-106.1 "Emergency Boration."

B. Immediately terminate all fuel movement in progress and determine the boron concentration of the RCS at least once per 12 hours.

C. Notify Maintenance to investigate the power range instrument failure and continue with the refueling.

D. Place the Rod Stop Bypass switch for the failed PR channel to bypass and continue with the refueling.

Bank Question From Farley Exam Bank.
Lesson plan IC-8 Nuclear Instrumentation, objectives IC-8-32,37, and 38.

A. Incorrect, Terminating all fuel movement is correct, but AOP-106.1 Emergency Boration is not required.

B. Correct, with a loss of both source range detectors (Auto de-energized due to 2/4 > P-10 technical specifications direct the these actions.

C. Incorrect, IAW TS 3.9.2 refueling may not continue until the source ranges are returned to service.

D. Incorrect, this would be the actions that would be taken if the plant was at power, and this will not allow the refueling to be continued.

Comments on questions we to consider for replacement

35. V.C. Summer uses the Gammametric designed SR/IR nuclear instruments and therefore any questions with regards to the automatic removal of high voltage are nonapplicable to the station. The alternative questions are in the same section of the K/A catalog; 4.2 GENERIC APE's.

Recommended Question for Replacement

35. 032AA2.03 1

K/A catalog page 4.2-25

032	**Generic Abnormal Plant Evolutions; Loss of source range nuclear instrumentation**
AA2.03 1	**Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation; expected values of Source range indication when high voltage is automatically removed.**

Possible replacement questions – new K/A item requireds

LORT 139 (modified)

35. New K/A number required: 032AA2.06 1 confirmation of reactor trip.

A reactor startup is in progress. The NROATC is in the process of verifying that the ALL RODS ON BOTTOM annunciator has cleared. A voltage spike on N-32 causes the Source Range Instrument to peg high and then fail low. The rods remain at their previous position and N-31 indicates normally. Given these conditions, the NROATC should:

A. Insert a manual reactor trip and enter EOP 1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION

B. Bypass N-32 and continue with the reactor startup since Tech Specs only requires one of two sources ranges to be operable and N-31 indicates normally.

C. Stop withdrawing rods since Tech Spec s requires both SR channels to be operable and, with one channel inoperable, all positive reactivity additions must be suspended.

D. Shutdown the reactor per GOP 5, REACTOR SHUTDOWN FROM STARTUP TO HOT STANDBY

Correct answer: A

QUESTION: 1874

35. New K/A number required: 036AA2.02 1 Fuel Handling Incidents: ability to determine and the following as they apply to the Fuel Handling Incidents; occurrence of a fuel handling incident.

The following plant conditions exist:

- The Unit is in MODE 6.
- One (1) source range neutron flux monitor is out of service.
- The Source Range Audio Count Rate Drawer is out of service.
- Core alterations are in progress.

Which ONE (1) of the following Technical Specification Action Statements should be implemented?

a. Suspend ALL operations involving positive reactivity changes.

Recommended Question for Replacement

b. Emergency borate the RCS until a boron concentration of 2150 ppm is established.

c. Immediately evacuate the refueling area until the Audio Count Rate is returned to service.

d. Replace the Reactor Vessel Head until both neutron flux monitor and neutron flux alarm are returned to service.

#1874 ANSWER: a.

Comments on questions we to consider for replacement

23. Procedurally, the only viable answer is to have rod control remain in manual. This an immediate operator action per AOP 401.10, POWER RANGE CHANNEL FAILURE. Per the AOP, rod control would NOT be restored to automatic until step 17, and only after the NI had been restored and bistables reset. Although choice C is true insofar as testing how the rod control system is actually designed, an operational exam such as this tests knowledge of procedures and their usage, whereas the question is written as if testing the construction of the system at a technician level. Additionally, with no rate of change in answers B and D, there would be no demanded rod motion and therefore no THEORETICAL reason to prevent restoration of rod control to automatic, although any of these choices would be in direct violation of current procedures. These choices therefore make the question confusing as three answers offer distractors which emphasize rate-of-change circuitry. Reference IC-5, Rod Control, page 23, specifically states that operation of JS408 is not covered by procedures. The alternative questions provided offer knowledge on the operational level of the interface between rod control and nuclear instrumentation, as well as the effects of nuclear instrumentation failures on rod control system operation.

Recommended Question for Replacement

23. 015K3.06 1

K/A catalog page 3.7-5

015 - **Nuclear Instrumentation System**
K3.06 1 **Knowledge of the effect that a loss or malfunction of the NIS will have on The following; Reactor regulating system**

Possible replacement questions

QUESTION: 1153

The following plant conditions exist:

- ROD CNTRL BANK SEL is in AUTO.
- Control bank D is at 220 steps
- Power according to First Stage pressure is an equivalent 90 percent.
- Power range instrument N-44 has been slowly drifting high at one quarter percent per hour for the past 8 hours.

Which ONE (1) of the following describes the effect this failure will have on the rod control system?

a. Rods move IN due to the power rate mismatch.

b. Rods move OUT due to the power rate mismatch.

c. Rods do NOT move.

d. Rods move IN due to the T_{ave}/T_{ref} mismatch.

#1153 ANSWER:

c.

QUESTION: 4103 (modified)

Which one of the following parameters determines the magnitude of the gain imposed by the Variable Gain Unit in the Reactor (Rod) Control Unit?

a. Median select Tavg.

b. NI channel N-44 power.

c. Turbine impulse pressure.

d. Power mismatch change rate.

#4103 ANSWER:

c.

Recommended Question for Replacement

QUESTION: 2018 (modified)

Which ONE (1) of the following failures will cause automatic rod insertion?

a. Median select T_{avg} signal fails LOW.

b. Rod Control Urgent Failure.

c. Power range N44 fails HIGH.

d. First stage turbine pressure fails HIGH.

#2018 ANSWER:

d. (1.00)

Recommended Question for Replacement

23. 015K3.06 1

K/A catalog page 3.7-5

015 Nuclear Instrumentation System
K3.06 1 Reactor regulating system

Possible replacement questions

QUESTION: 1153

The following plant conditions exist:

- ROD CNTRL BANK SEL is in AUTO.
- Control bank D is at 220 steps
- Power according to First Stage pressure is an equivalent 90 percent.
- Power range instrument N-44 has been slowly drifting high at one quarter percent per hour for the past 8 hours.

Which ONE (1) of the following describes the effect this failure will have on the rod control system?

a. Rods move IN due to the power rate mismatch.

b. Rods move OUT due to the power rate mismatch.

c. Rods do NOT move.

d. Rods move IN due to the T_{ave}/T_{ref} mismatch.

#1153 ANSWER:

c.

QUESTION: 4103

Which one of the following parameters determines the magnitude of the gain imposed by the Nonlinear Gain Unit in the Reactor (Rod) Control Unit?

a. Median select Tavg.

b. NI channel N-44 power.

c. Turbine impulse pressure.

d. Power mismatch change rate.

#4103 ANSWER:

d.

10. 006K2.04 1

-Unit is at 100% power.
-The Electric Plant is in a normal full power line-up.

Which ONE of the following is the power supply to MVG-8808C ACCUM DISCH ISOL.

A. 1DA2Y

B. 1DA2X

C. 1DB2Y

D. 1DB2X

Question from previous Farley Exam. (1999) Modified for Summer.
Lesson Plan AB-10, Emergency Core Cooling System. Objective AB-10-13.

A. Incorrect, wrong train of power.

B. Correct, this is the power supply stated in the lesson material.

C. Incorrect, power for this valve does not come from 1DB.

D. Incorrect, power for this valve does not come from 1DB.

Comments on questions we to consider for replacement

10. Operations Management at V.C. Summer Station does not expect operators to commit power supplies to memory to this detailed level. Although an operator should recognize that a ESF related valve would be on an MCC supplied from a class 1e bus, it has never been expected nor desired to have an operator commit each power supply to memory. Our procedures, specifically EOP's, capture the power supply and breaker location when the procedure calls for local operation. Furthermore, the operation of these components is so critical that the procedure should be references each and every time the components are operated. Any questioning that implies that power supplies should be memorized to this level of detail invites a mistake should an operator fail to have perfect memory and the implication be that their memory is the established requirement. It is considered acceptable for operators to understand the operation of the power lockouts and their operation is considered "skill of the craft" and is therefore a required operator knowledge. We believe our replacements are more in-keeping with both V.C Summer Station operations management as well as the NRCs philosophies and expectations.

Recommended Question for Replacement

10. 006K2.04 1

K/A catalog page 3.2-17

006 Emergency Core Cooling System
K2.04 1 Knowledge of power supplies; ESFAS-operated valves

Possible replacement question

10. 006K2.04 1

The plant is operating at 100% power. All ESF electrical equipment is in its normal configuration. Which of the following "A" train valves can be energized by taking the TRN A PWR LCKOUT switch to the ON position?

A. MVG 8884 CHG LP A TO HOT LEG

B. MVG 8706A RHR LP A TO CHG PP

C. MVG 8808A A (Accumulator) DISCH ISOL

D. MVG 8701A RCS LP A TO PUMP A

Correct answer: A

Possible replacement question

10. 006K2.04 1

The operating crew is performing EOP 2.3, TRANSFER TO HOT LEG RECIRCULATION. All ESF electrical equipment is in its normal configuration. What steps must be taken to open MVG 8886 CHG LP B TO HOT LEGS?

A. Place MVG 8886 CHG LP B TO HOT LEGS to the open position

B. Locally unlock and close the breaker for MVG 8886, then place MVG 8886 CHG LP B TO HOT LEGS to the open position

C. Place TRN B PWR LCKOUT to the ON position, then place MVG 8886 CHG LP B TO HOT LEGS to the open position

D. Locally open the breaker for MVG 8886, reinstall the control power fuses, close the breaker for MVG 8886, then place MVG 8886 CHG LP B TO HOT LEGS to the open position

Correct answer: C

Recommended Question for Replacement

Possible replacement question – new K/A item

10. New K/A number required: 006K2.01 1 Knowledge of bus power supplies for the following; ECCS pumps

The plant is operating at 100% power. A problem develops with XFMR 1DA1 & 1DA2 FEED and the breaker trips open. Which of the following loads will be lost due to this fault:

A. "A" Charging Pump

B. "A" RHR Pump

C. "A" MDEFW Pump

D. "A" RB Spray Pump

Correct answer: B

95. W/E11G2.4.9 1

Given the following conditions:

- The plant is in Cold Shutdown with RCS temperature at 110 deg. F.
- RHR pump A and RHR heat exchanger A are in operation.
- RCS Hot leg level is at 16 inches (mid-loop operations) .
- RHR Heat Exchanger A Outlet Flow Control Valve (FCV-605A) has just stroked from 20% open to full open due to a circuit fault.

If NO operator action is taken, which ONE of the following will occur to cause a loss of RHR cooling?

A. RHR pump overspeed trip from runout due to low discharge pressure.

B. RHR pump loss of suction due to vortexing at the RCS loop suction.

C. RHR pump overcurrent trip due to high discharge pressure.

D. RHR pump overcurrent trip caused by pump runout due to low discharge pressure.

REF: Indian Point Exam 1996
AB-7 RHR
SOP-115 RHR
AOP-115.5 Loss of RHR with RCS not Intact (Mode 5)

No answer given, but we assume 'B' is correct; however, can 'D' be discounted? FCV-605A opening fully could push flow to runout. Need to agree upon a plausible change to 'D'.

99. W/E15EA2.1 1

-A Large Break LOCA has Occurred.
-EOP-2.2 "Transfer to Cold Leg Recirculation" has just been completed.
-The STA reports the following conditions:
  -Reactor Building Pressure 2.0 psig.
  -Reactor Building Radiation 10 R/HR.
  -RHR Sump Level 420 ft.

Which ONE of the following describes the immediate containment concern and the correct procedure to enter?

A. Inadequate suction to the RHR pumps, transition to EOP-2.4 "Loss of Emergency Coolant Recirculation."

B. Erroneous instrumentation readings, transition to EOP-17.2 "Response to High Reactor Building Radiation Level," when desired.

C. Reactor Building structural integrity; transition to EOP-17.0 "Response to High Reactor Building Pressure."

D. Flooding vital equipment in the Reactor Building; transition to EOP-17.1 "Response to Reactor Building Flooding."

Modified from Diablo Canyon 99 exam.
Lesson Plan EOP-17.1 "Response to Reactor Building Flooding," objective 2180.

A. Incorrect, RHR sump level is adequate, Loss of emergency coolant recirculation is not the procedure that is required to be entered with these conditions.

B. Incorrect, Radiation levels are high, but EOP-17.2 is entered on operator discretion and sump level is a higher priority.

C. Incorrect, Pressure is somewhat high, however it does not meet the threshold for entry (12psig). in a large break LOCA this procedure would have already been performed, and re-entry is not required.

D. Correct, Reactor Building sump level is high and flooding is a concern and level has reached the threshold value to enter EOP-17.1.

Provide EOP-12.0
Requires memory level knowledge of a "yellow path" EOP entry which would be tracked by the Shift Engineer

MINOR

1. 001AK1.05 1

The following conditions exist:

- Reactor power = ~~17~~ 22%
- Control Bank D is at 137 steps withdrawn
- Rod control is in AUTO
- ~~PT-446 Turbine Impulse Pressure is selected for input to the rod control system~~
  TREF 1ST STAGE PRESS switch is selected to PT 446 for input to the rod control system

If PT-446 fails HIGH, how will the rods in Control Bank D respond?

A. Move inward at 48 steps per minute.

B. Move inward at 72 steps per minute.

C. Move outward at 72 steps per minute.

D. Move outward at 48 steps per minute.

REF: Kewaunee Exam 1997
IC-5 Rod Control
TB-5 Turbine Control and Protection System

Distracter A - 48 SPM is the speed for manual operation of control banks and wrong direction.

Distracter B - inward movement is a misapplication of PT-485 failing high.

Answer C - correct maximum speed of 72 SPM in the outward direction

Distracter D - 48 SPM is the speed for manual operation of control banks.

- Changed power from 17% to 22% to get further above C-5 auto rod interlock
- Made 4th item match MCB nomenclature

MINOR

3. 001K5.38 1

The following plant conditions exist:

Problems with stator water cooling results in a turbine runback from 100% power (equilibrium conditions) to 45% power.

~~- A feedwater pump trip results in a turbine runback from 100% power equilibrium conditions to 60% power. The crew immediately reduces reactor power to 45%.~~

- Ten hours after the runback, it is desired to maintain Tavg on program and reactor power constant.

Which ONE of the following describes rod motion requirements over the next TWO HOURS? (Assume boron concentration is maintained constant.)

A. Rods will have to be periodically withdrawn since xenon concentration will follow its post-runback build-in rate.

B. Rods will have to be periodically inserted since xenon concentration will be decreasing due to decay.

C. Rods will have to be withdrawn since the new power level will result in a high rate of xenon build-in.

D. Rods will have to be inserted since the new power level will cause a high rate of xenon burnout.

REF: Kewaunee Exam 1997

- Changed first info point to reflect an actual turbine runback signal for VCS. There is no auto runback on FWP trip. VCS has 3 FWP's at 100%. Loss of one requires an operator controlled power reduction to approx. 90%

MINOR

4. 002A3.01 1

The following conditions exist:

- Reactor power 100%
- RCS activity is elevated but below Technical Specification levels
- Pzr pressure 2225 psig
- Pzr level ~~44%~~ 60%
- ~~Leak rate 10 gpm~~ RCS leak rate is approximately 10 gpm based on CHG NET.
- An attempt has been made to reseat PORV "A", PCV-445A

- When conditions stabilize
  - Reactor power 100%
  - Pzr pressure 2228 psig
  - Pzr level ~~44%~~ 60%

How would the operator be able to tell if the PORV has closed?

A. The PORV tailpipe temperature should first decrease and then begin to increase to alarm setpoint.

B. Position lights for PCV-445A showing CLOSE indication.

C. Level change in RCDT.

D. Lower readings for containment radiation monitors ~~RE-0011A/0012A~~. RM-A2

REF: Braidwood Exam1998
IC-3, Pressurizer Pressure and Level Control
SOP-101, Reactor Coolant System

- Changed 100% PZR LVL to actual plant value of 60%
- Amplified leak rate bullet to reflect 10 gpm based on NET CHARGING
- Changed choice "D" to VCS Terminology for rad monitor (RM-A2)

MINOR

5. 003A2,01 1

With the plant operating at 100% power the crew took the following actions:

- "RCP ~~A STNDPIP LVL~~ HI/LO" alarm ~~annunciates and~~ XCP-617 2-4 was entered
- "Reactor Coolant Pump ~~Seal Failure", AOP-101.2~~ was entered
- "Operational ~~Leakage Test~~", STP-114.002 determined ~~that #2 seal~~ for 'A' RCP has failed.

Which one of the following actions should the crew take on determination of #2 seal for 'A' RCP has failed?

A. Immediately trip the reactor and secure 'A' RCP.

B. Reduce reactor power to < 38% within thirty (30) minutes and then secure 'A' RCP.

C. Isolate seal injection flow to the "A" RCP and continue normal plant operation provided RCP bearing temperatures are not exceeded.

D. Continue normal plant operation provided 'A' RCP total #1 seal flow is between 0.8 gpm and 6.0 gpm.

REF: Summer Exam Bank Question #3657 Modified
ARP XCP-617 2-4 RCP Standpipe HI/LO Alarm
AOP-101.2 Reactor Coolant Pump Seal Failure

Distracter A incorrect, action not required for #2 seal failure.
Distracter B incorrect, action not required for #2 seal failure.
Distracter C incorrect, Seal injection flow should not be isolated to any running RCP.

Rev.1 changed distracter "c" to "isolate seal injection flow" because as it was previously worded, an argument could be made for two correct answers.

Change the above to:

- ANNUNCIATOR XCP 617 2-4 "RCP A STNDPIP LVL HI/LO" WAS RECEIVED AND IT HAS BEEN DETERMINED TO BE A HIGH LEVEL ALARM PER THE ARP
- "REACTOR COOLANT PUMP SEAL FAILURE", AOP-101.2 WAS ENTERED
- "OPERATIONAL LEAKAGE TEST", STP 114.002 DETERMINED THAT #2 SEAL FOR 'A' RCP HAS APPROXIMATELY 2.2 GPM SEAL LEAKOFF BASED ON RCDT LEVEL CHANGE
- INDICATED FLOW ON FR-154A, RCP SL LKOFF HI RANGE, INDICATES 3.0 GPM FOR 'A' RCP.

---

must provide additional information to allow the student to quantify #1 plus #2 Seal Leakoff. The question as currently written does not say how #2 Seal failed (it could cock and have zero flow), thus, more data must be given to arrive at "D" as the correct answer.

MINOR

6. 003AA1.01 1 Remove

Given the following ~~Unit 1~~ plant conditions:

- Reactor Power is 20%
- Bank D rods are at 55 steps
- One(1) ~~A~~ Control Bank D rod was dropped and recovered
- The ~~Pulse-to-Analog~~ {P/A} Converter was NOT reset per Step 14 of AOP-403.6, Dropped Control Rod.

What effect will these events have on continued rod control system operation?
As control rods are ...

A. withdrawn, ~~Over Temperature~~ OT Delta T Will NOT stop Control Bank D withdrawal when required.

B. inserted, the ~~Rod Insertion Limit~~ ROD INSERTION LIMIT LO-LO Alarm will be received at a lower actual rod position.

C. inserted, Bank C control rods will begin insertion at a lower value of Control Bank D actual position.

D. withdrawn, the Bank D Rod Withdrawal ~~Hi Limit Alarm~~ Limit Stop (C-11) is ~~will~~ NOT ~~alarm~~ instated before Control Bank D is fully withdrawn.

REF: Prairie Island Exam 1997
Summer Cycle 13 COLR
AOP-403.6 Dropped Control Rod
IC-5 Rod Control

Distracter A - Incorrect, the Pulse-to-Analog Converter does not input to the OTDT

Answer B - Correct

Distracter C - Incorrect, Bank C control rods will begin to insert at a higher value of Control Bank D position.

Distracter D - Incorrect, the Pulse-to-Analog Converter will think the Bank D rods are higher than actual.

EDITORIAL ONLY to match plant terminology

MINOR

7. 004K6.05 1

Given the following plant conditions:

The plant - Unit 1 is at 100% power, with CVCS aligned for normal operation.
- One orifice isolation valve is in service.
- VCT level is 32%.
- All controls are in automatic. LT- 112, VCT level transmitter, fails high.

CAPS

move to line by itself

60gpm

Which one of the following describes the final actual VCT level?
(Assume no operator action.)

A. Increases to 71% and stabilizes.

B. Increases to 100% (full).

C. Cycles between 20% and 40% due to auto-makeup.

D. Decreases to 0% (empty).

REF: Farley Exam 1998
AB-3 Chemical and Volume Control System

Distracter A - Level will not reach 71% because auto makeup will stop at 40% and with LCV-115A open level will begin decreasing.
Distracter B - Level will initially decrease as LCV-115A diverts. Level will decrease until auto Makeup starts when VCT level reaches 20% but will stop increasing when auto makeup stops at 40%.
Answer C - Level will cycle between 20% and 40% because makeup flow is greater than flow through LCV-115A.
Distracter D - Level will decrease because LVC-115A is open until 20% level when auto makeup begins and causes level to increase.

EDITORIAL ONLY

MINOR

11. 007A4.10 1

The plant is ~~Unit is~~ at 100% power.
-An instrument failure occurred and a PZR PORV opened.
-The operator has taken the PORV to the closed position; however, a mid-position (dual) indication remains.
~~-The PORV indicates dual.~~

affected

Which ONE of the following describes the initial indications the operator could use to verify that the PORV was not fully closed after the PORV was placed in ~~closed~~? the CLOSE position?

A. Tailpipe temperature would rise to between 200-300 ^oF, PRT pressure would rise, RM-~~A2~~ 4 would alarm. ?

B. Tailpipe temperature would rise to between 500-600 ^oF, PRT temperature would rise, RM-A2 would alarm.

C. Tailpipe temperature would rise to between 200-300 ^oF, PRT pressure would rise, VCT leve would lower.

D. Tailpipe temperature would rise to between 500-600 ^oF, PRT temperature would rise, Reactor Building Pressure would increase.

Modified from bank question 541.
Lesson Plan AB-2 Reactor Coolant System, Objective AB-2-14.

A. Incorrect, RM-A2 would not alarm until the PRT ruptured.

B. Incorrect, tailpipe temperature will not rise to 500-600 degrees F, and RM-A2 will not alarm until the PRT ruptures.

C. Correct, this is the correct tailpipe temperatures, PRT pressure will rise and VCT level will lower. (Could put charging system flow would increase)

D. Incorrect, RB pressure will not increase until the PRT ruptures.

Stem: Editorial only
Changed distractor 'A' from RM-A2 to RM-A4. to rule it out as a possible choice. It is true that RM-A2 alarms when the PRT ruptures, but the question states that the PORV was NOT successfully closed; therefore, the PRT WILL rupture.
Another option is to leave RM-A2 in distractor "A" and provide a PRT pressure to reflect that the PRT has not ruptured.

FORMAT

12. 007EA2.02 1

Given the following conditions:
Reactor power is at 100% steady state

	1	2	3	
Power Range NIS	102%	103%	102%	
PZR pressure	1880 psig	1910 psig	2500 psig	
(455) (456)	(457)	instrument numbers		
PZR level	72%	92%	90%	
	(459)	(460)	(462)	instrument numbers
T_{ave}	584F	585F	582F	
S/G levels *	43% (A)	34% (B)	89% (C)	

*(all S/G instruments for a S/G read the same level)

What is the FIRST required action for these conditions?

A. Trip the reactor and initiate actions of EOP-1.0, Reactor Trip/Safety Injection Actuation.

B. Verify a turbine runback is initiated.

C. Reduce power to LESS THAN 100% indicated to ensure 8 hour average does NOT exceed 100% power.

D. Initiate a MANUAL Safety Injection and initiate actions of EOP-1.0, Reactor Trip/Safety Injection Actuation.

REF: Braidwood Exam 2000
EOP-1.0 Reactor Trip/Safety Injection Actuation
IC-9 Reactor Protection and Safeguards Actuation System

Trip	setpoints	Logic
Low PZR Press	1870	2/3
High PZR Press	2380	2/3
High PZR Lvl	92	2/3
Low S/G Lvl	27	2/3
High S/G Lvl	79	2/3 on any S/G

Answer A - Reactor Trip required by turbine trip on high S/G level in (C) S/G

Distracter B - No indications provided that would require a turbine runback.

Distracter C - Not the first action required, but could be focused on if Rx trip required not realized.

Distracter D - Not required by indication provided.

MINOR

13. 008AK1.01 1

Which one of the following represents the conditions of the steam entering the PRT from a leaking PORV if pressurizer pressure is 1385 psig and PRT pressure is 5 psig? (Assume an ideal thermodynamic process)

A. Superheated steam 260-270 degrees F

B. Superheated steam 240-250 degrees F

SEPARATION?

C. Saturated steam 225-235 degrees F

D. Saturated steam 275-285 degrees F

REF: Mollier Diagram
SOURCE: 2000 Summer Exam and Watts Bar RO exam 1998

Reference provided - Steam tables and Mollier Diagram

If the Mollier Diagram is used to determine the temperature, the applicant could start with the intersection of 1400 psia and the saturation line. A reasonable range of enthalpy at this intersection would be 1172-1175 btu/lbm. Following a constant enthalpy of 1172 btu/lbm to the point where it intersects 20 psia (given PRT pressure of 5 psig plus 15 psia) will yield a temperature almost exactly half-way between 240°F and 280°F.

Using the Steam Tables would yield a calculated value of 260.1°F for an enthalpy of 1172 btu/lbm.

- If the correct answer per Mollier is 260°F and per Tables is 260.1, consider expanding the range (or shifting it) to make the correct choice fall more mid-range. A straightedge shift of 1/32" could make the correct answer appear ≈ 255°F, and the examinee must then decide between "A" and "B"

Consider:

Super-heated { A. ~~___~~ 255 - 265°F
B. 235 - 245°F

MINOR

16. 011EK1.01 1

Given ~~the~~ following plant conditions:

The operating Shift has → ~~You have~~ just entered EOP-2.1, Post-LOCA Cooldown and Depressurization.
- Containment pressure has not exceeded ~~4 psig~~ ? 3.4 PSIG
The shift is → ~~You are~~ confirming that Natural Circulation exists

Which one of the following conditions provides indication that natural circulation exists?

A. RCS Hot leg temperatures are trending to saturation temperature for steam pressure.

B. S/G pressures are slowly increasing.

C. RCS subcooling based on core exit TC's is 40 degrees F and slowly increasing.

D. The delta-T across the S/G's are 10 degrees F and slowly decreasing.

REF: Robinson Exam 1996
EOP-2.1, Post-LOCA Cooldown and Depressurization

Distracter A - RCS Hot leg temperature should be stable or decreasing for natural circulation indication.

Distractor B - S/G pressure should be stable or decreasing for natural circulation indication.

Answer C - correct

Distracter D - a 10 degree delta-T across the S/Gs would not indicate natural circulation

STEM:

- EDITORIAL
- Gave actual pressure value of 3.4 PSIG, vs. saying "less than 4 PSIG" since VCS value for Hi-1 is 3.6 PSIG, and this value is used for adverse CNTMT.

MIN OK

17. 011K6.04 1

The following conditions exist:

- PZR level is at programmed level of 55% for current stable plant conditions
- ALL systems are operating correctly in automatic with the exception of Rod Control being in MANUAL to adjust Power Range Channel N-44 gain while performing STP 102.002, Power Range Heat Balance.
- GP1 PZR HTRS are energized (Normal PZR heater alignment)

What is the initial plant response ~~for a PZR level controller malfunction that results in a level reference signal decrease of 5%~~? caused by Median Select Tavg failing to a value 5°F lower than its current value?

GP II A. PZR backup heaters energize and the proportional heaters are ~~off~~ on, the "PZR LCS DEV HI/LO" annunciator actuates, and charging flow decreases.

GP II B. PZR backup heaters energize and proportional heaters are on, the "PZR LCS DEV HI/LO" annunciator actuates, and the charging flow increases.

C. Charging flow increases to the new program level of 60% and there is no change in PZR heater status (proportional heaters are on and the GP1 backup heater~~s~~ ~~are off~~ is on)

D. Charging flow decreases to the new program level of 50% and there is no change in PZR heater status (proportional heaters are on and the GP1 backup heater~~s~~ ~~are off~~ is on)

REF: NEW
IC-3 Pressurizer Pressure and Level Control
ARP-001 XCP-616 PZR LCS DEV HI/LO

∴ Changed stem to:

- Remove effect of Rod Control
- Clarify normal GP1 B/U heater status as "ON"
- Change failure from "Level reference" failure to Tavg MEDIAN, so that the direction of the failure is not ambiguous.

MINOR

19. 013A4.02 1

Given the following plant conditions:

- Two minutes ago an MSIV inadvertently closed causing secondary safeties to lift and a reactor trip and safety injection due to low ~~pressurizer~~ steamline pressure signal to be generated.
- The reactor trip breakers failed to open.
- The operators tripped the reactor by opening ~~Generator 1 and 2 Generator and Motor breakers on the Rod Drive MG Control cabinet~~ both Rod Drive MG set motor and generator breakers. per EOP-~~13~~ 13.0, Response to Abnormal Nuclear Power Generation.
- It is now desired to reset SI and secure SI equipment.
- RCS pressure is 1800 psia.

Which one of the following will prevent resetting SI from the Main Control Board under these conditions?

A. RCS pressure is less than SI setpoint.

B. The SI timing relays.

C. Permissive P- 11 has actuated.

D. Permissive P-4 has not actuated.

REF: Farley Exam 1998
IC-9 Reactor Protection and Safeguards Actuation System
EOP-13.0, Response to Abnormal Nuclear Power Generation
EOP-1.0, Reactor Trip/Safety Injection Actuation

Distracter A - P- 11 is the set point above which a blocked SI signal will auto unblock. Being below P-11 will not prevent resetting SI.
Distracter B - SI will not reset if the 60 second timer is active, but the timer timed out 1 minute ago.
Distracter C - Pressurizer pressure below the SI setpoint will initiate an SI signal but will not prevent resetting SI.
Answer D - With the reactor trip breakers closed the required P-4 signal will not be generated and SI cannot be reset from the MCB.

EDITORIAL,
PLUS:
VCS has OE that SI occurs on LO STM PRESS on MSIV closure due to Lead/Lag circuit.

MINOR

20. 013K4.16 1

~~You are in procedure~~ The operating crew is performing EOP-16.0, Response to Imminent Pressurized Thermal Shock, with all 3 RCPs running.

Which one of the following actions is correct in order to avoid, or limit, thermal shock or pressurized thermal shock to the reactor pressure vessel?

A. ~~Stabilize~~ Raise RCS pressure ~~and maintain that pressure to provide adequate soak time~~ to increase subcooling.

B. Cooldown at maximum rate using the steam generators.

C. Isolate the accumulators.

D. Stop all reactor coolant pumps.

REF: Cook Exam 2001
EOP 16.0, Response to Imminent Pressurized Thermal Shock
EOP-16.1, Response to Anticipated Imminent Pressurized Thermal Shock

To offset thermal stress caused by cooldown, the cooldown must be stopped, temperature stabilized and pressure reduced.

Distracter A - pressure should be reduced.
Distracter B - cooldown should be minimized.
Answer C - Isolate all SI Accumulators to prevent injection of cold water that could cause additional thermal stresses
Distracter D - RCP are restarted if stopped and restart criteria met.

Editorial on stem

Changed choice "A" because, at the end of the procedure, after 40°F subcooling is reached, the operator does hold pressure stable to support the RCS temp soak.

21. 014A1.03 1

Which one of the following is used as the reactor power input to the rod insertion limit (RIL) computer?

A. Median Selected ~~Tavg~~ Delta T

B. First stage impulse pressure

C. Calculated Thermal Power

D. Calculated Steam Flow

REF: Cook Exam 2001
IC-6 RCS Temperature Indication System

The median selected Î Tavg is sent to the rod insertion limit programmers.

Corrected choice 'A'. Some plants use Med. Select Tavg, but VCS uses Median Select ΔT as an indicator of power To program RIL

MINOR

22. 015AK3.03 1

Remove space

SPACE

Given the following conditions:
- Reactor power is at 100% steady state.
- RCP "B" VIBR HI alarm has lit
- Excessive vibration is confirmed on RCP "B" with 20 mils shaft vibration and increased
f Frame vibrations

Which ONE of the following statements is correct regarding the course of action required?

A. Reduce Reactor power to less than 38% (P-8 permissive is illuminated) and secure RCP "B".

B. RCP "B" should be tripped prior to a reactor trip to minimize pump damage.

C. Trip the reactor prior to tripping RCP "B" to prevent an automatic trip and unnecessary challenge to a safety system.

D. RCP "B" should be tripped per SOP-101, Reactor Coolant System, and proceed to Hot Standby per GOP-4, Power Operation, and GOP-5, Reactor Shutdown from Startup to Hot Standby.

REF: ARP-001 Panel XCP-618 Annunciator Point 1-3 and SOP-101

Distracter A - incorrect, reflects the method for removing one reactor coolant pump from service per SOP-101 Rev 22, Reactor Coolant System.

Distracter B - incorrect, with reactor power >38% and Shaft vibration > 20 mils and Frame vibration increased the reactor should be tripped first then RCP "B".

Answer C - correct, per ARP-001 Panel XCP-618 Annunciator Point 1-3

Distracter D - incorrect, ARP-001 Panel XCP-618 Annunciator Point 1-3 actions for Reactor Power <38%.

EDITORIAL ONLY

24. 017A1.01 1

An OPEN has developed in a thermocouple used by the Subcooling Monitor. What impact will the failed thermocouple have on the Subcooling Monitor after steady state conditions are reached?

The Core Subcooling Monitor will:

A. ~~The Subcooling monitor will~~ indicate ~~>200 degrees~~ *much higher* subcooling.

B. ~~Subcooling Margin Monitor will~~ use the other thermocouple assigned in the core quadrant.

C. ~~Subcooling Margin Monitor will~~ use the affected thermocouple and will indicate ~~subcooling <0 degrees~~ *much lower subcooling*.

D. ~~Subcooling Margin Monitor will~~ indicate normal subcooling.

REF: Braidwood Exam 2000
IC-7 Incore Instrumentation System

Distracter A - incorrect, an open would result in a high temperature indication and low indication of subcooling.
Distracter B - incorrect, auctioneered high value for the assigned thermocouples is used.
Answer C - correct, auctioneered high value for the assigned thermocouples is used and the open would result in low indication of subcooling.
Distracter D - incorrect, auctioneered high value for the assigned thermocouples is used.

Editorial:

- *Clean up choices*
- *Change references to 200°, and < 0° to "much higher" and "much lower" Actual value is not what is being tested, but direction of failure*

FORMAT

25. 022A1.04 1

Given the following:
- The plant is operating at 75% reactor power.
- The Reactor Building sump was pumped down to the Floor Drain Tank twenty minutes ago.

Which one of the following would provide an alarm for a 0.7 GPM leak from the reactor coolant system to the Reactor building?

A. Reactor Building Sump level

B. Reactor Building Radiation level

C. Reactor Building Temperature

D. Reactor Building Cooling Unit condensate drain flow

REF: GS-7 Leak Detection

Distracter A - incorrect, sump level would provide indications of leaks >10GPM
Distracter B - incorrect, radiation level will cause an alarm when leakage exceeds 1 gpm
Distracter C - incorrect, temperature may not increase until leakage is excessive.
Correct D - condensate drain flow will alarm when leakage exceeds 0.5 GPM

MINOR

26. 022AA2.03 1

-The Plant is at 100% power.
-Rector Makeup System is in AUTO. SP Reactor
-Rod Control is in Manual.
-The Reactor Operator notices that Tavg has decreased 2 °F.

Which ONE of the following could contribute to decrease in RCS temperature.

A. The mixed bed demineralizer is depleted and is no longer removing boron ions.

B. A newly replaced CVCS mixed bed demineralizer was put in service.

C. The Boric acid filter is clogged preventing boric acid from mixing in the blender.

D. FCV-113A, BA TO BLENDER ~~Boric Acid to Blender Control Valve~~ has failed open with FCV-113B MU TO CHG PP in the open position ~~in the open position~~.

Bank question # 786.
Lesson Plan AB-5 Reactor Makeup System, objective AB-5-14.

A. Incorrect, the mixed bed being depleted and not removing boron would cause Tavg to increase.

B. Incorrect, Placing a new CVCS mixed bed demineralizer in service would tend to dilute the RCS causing Tavg to increase.

C. Incorrect, If the boric acid filter was clogged boron would tend to be blocked from entering the RCS this would not cause Tavg to decrease.

D. Correct, This is a valid boration flowpath and could borate the RCS and cause Tavg to decrease.

Cleanup GRAMMAR

Editorial only

MLN

27. 024AA2.02 1

A plant transient has resulted in a condition that requires rapid emergency boration. The NROATC begins emergency boration ~~via the Emergency Borate valve (MVT-8104)~~. by taking the switch for MVG-8104, EMERG BORATE, to the OPEN position

- FI-110, EMERG BORATION FLOW, read 0 gpm.
- Investigation reveals MVG-8104, EMERG BORATE, will not open.
- Charging flow is 50 gpm.

What operator actions are required next to supply boric acid flow to the RCS?

A. Transfer charging pump suction to the RWST.

B. Open ~~FCVs 113A and 113B to borate through the blender~~. FCV-113A, BA TO BLENDER, and FCV-113 B, MU TO CHG PP to borate through the blender

C. Open FCV-113A, BA TO BLENDER, FCV-~~168B~~ 168B, MU WTR TO BLENDER, and XVD-8439, BORIC ACID CHARGING PUMPS SUCT HDR VLV to emergency borate through the blender.

D. Set ~~flow controller 113~~ FCV 113 A&B, BA FLOW controller to maximum to automatically borate.

REF: Summer Exam Bank #504

Distracter A - Incorrect; Insufficient charging flow rate at RWST boron concentration (<2,500 ppm).

Answer B - Correct

Distracter C - Incorrect; 168B should be verified CLOSED and opening 8439 will not borate through the blender.

Distracter D - Incorrect; Ineffective unless auto makeup in progress.

Rev. 1, (04/12/93) Reformatted stem and given information to eliminate "lookup"; ARP was originally given in stem. Revised COMMENT because original comment was not justified.

Rev. 2, (05/12/93) Replaced "Transfer charging pump suction to the RWST" with "Align gravity drain from the BATs to the charging pump suction" due to Ops. Rep. concerns that original choice a was too defendable as an alternative; therefore, two answers were potentially correct.

Rev. 3, (06/18/93) Restored original choice b. from Rev 1. Reduced charging flow to 50 gpm to ensure that flowrate would be insufficient to achieve an equivalent boric acid flowrate of 30 gpm at 7000 ppm.

Rev.4, (dow 01/21/02) changed wording in stem to "a condition that requires rapid emergency boration" to agree with the latest rev of AOP-106.1.

Editorial Only, inserting noun names.

28. 026AA2.06 1

SPACE THAT

Given that the following conditions exist:
- A small break LOCA to containment has occurred from 100% power ?
- The four pumps ~~listed below are running~~

Procedurally, which ONE of the following pumps ~~will be damaged~~ must be secured in the shortest time following a subsequent loss of Component Cooling Water due to potential damage?

A. Reactor Coolant Pump

B. Charging Pump

C. Residual Heat Removal Pump

D. Reactor Building Spray Pump

REF: Summer LO 4783, AOP-118.1 Rev 2
CFR 55.41(7,8,10) apply

Source: Kewaunee 1997, correct answer and distracter d changed to be specific to Summer

Distracter A Any running RCP should be stopped within 10 minutes or if a temperature limit associated with the RCP is reached.

Answer B Any running Charging pump should be stopped within 1 minute

Distracter C RHR pumps should not be run longer than 90 minutes without CCW flow

Distracter D Not supplied by CCW

Editorial Only.
Clarify procedural requirements vs. Engineering design.

29. 026AK3.03 1

Given the following information: SPACE
- ~~You have~~ been directed to enter EOP-14.0, Response to Inadequate Core Cooling, due to a red path on the Core Cooling critical safety function status tree.
- RCS pressure is approximately 1100 psig.
- RCPs are secured with the "A" charging pumps providing seal injection.
- Component Cooling Water (CCW) flow has been lost to the containment.
- In Step 3 of EOP-14.0, it is noted that CCW is not available to the RCPs.

Which one of the following actions should the Control Room staff undertake?

A. Disregard the lack of CCW flow to containment, and continue with EOP-14.0.

B. Stop at this point in EOP-14.0; do not continue until an RCP is running.

C. Continue with EOP-14.0 while attempting to reestablish CCW flow to the RCPs as personnel resources permit.

D. Complete actions to depressurize the steam generators to 140 psig, and then attempt to reestablish CCW flow to the RCPs.

REF: Summer Exam Bank #387

a. CCW should be restored if possible to preserve RCP availability.
b. Procedure may restart pumps w/o support conditions as a "last ditch" effort.
c. Consistent w/general guidance when unable to complete a step.
d. Inconsistent w/sequence of procedure.

Requires examinee to interpret and apply alternative action listed after determining support conditions are not met per SOP- 101.

Editorial Only

31. 027AA2.16 1

~~Given the following:~~

- PT-444, CNTRL CHAN PRESS PSIG, indication fails low.
- ~~Control and both Backup PZR heater groups energized.~~

MINOR

CAPS

What are the immediate actions that should be taken per AOP-401.5, Pressurizer Pressure Control Channel Failure?

A. Compare PI-444 and PI-445 control channel pressure indications normal, Verify the PZR PORVs are closed, Ensure Rod Control Bank select switch is in Auto.

B. Ensure Rod Control Bank select switch is in Auto, Maintain RCS pressure between 2220 and 2250 ~~psig.~~ PSIG.

C. Verify the PZR PORVs are closed, Compare PZR control channel with protection channel indications, Check PI-444 control channel pressure indication normal.

D. Maintain RCS pressure between 2220 and 2250 psig, Compare PZR control channel with protection channel indications

REF: AOP-401-5 rev 3

Distracter A PI-445 control channel pressure indications normal and Ensure Rod Control Bank select switch is in Auto are supplemental steps.

Distracter B Ensure Rod Control Bank select switch is in Auto and Maintain RCS pressure between 2220 and 2250 psig are supplemental steps.

Answer C Correct, three immediate actions

Distracter D Maintain RCS pressure between 2220 and 2250 psig is a supplemental step.

Editorial Only

MINOR

34. 029EK3.01 1

-The ~~Unit~~ plant is at 100% power.
-A total loss of feed has occurred.
-Steam generator lo-lo level alarms have come in.
-An Automatic Reactor Trip did not occur.
-A Manual Reactor Trip is initiated.

Which ONE of the following describes a correct method of verifying that the reactor is tripped, and the reason for tripping the reactor.

A. Verify Rod all bottom lights lit, OR RCS Temperature trending down; to ensure an RCS over pressurization event will not occur.

B. Verify all reactor trip AND bypass breakers open, AND SUR ~~decreasing at -0.33 dpm~~ is negative; to ensure only decay and RCP heat are being added to the RCS.

C. Verify Reactor Power trending down, AND RCS Temperature trending down; to ensure an RCS over pressurization event will not occur.

D. Verify Reactor Power trending down OR All rod bottom lights lit; to ensure only decay heat and RCP heat is being added to the RCS.

EOP 1.0 "Reactor Trip and Safety Injection", and EOP-13.0 "RESPONSE TO ABNORMAL NUCLEAR POWER GENERATION". Lesson Plan EOP-13.0 objective 2040.

A. Incorrect RCS temperature trending down is not an indication of a Reactor trip, and this is the wrong reason according to the WOG and lesson plan.

B. Correct, these are indications that a reactor trip has occurred, and this is the correct reason for performing the trip IAW the WOG. and Lesson Plan.

C. Incorrect, Reactor Power trending down is one indication that a trip may have occurred, but is also an indication of just a down power condition, and temperature can be indications of the same thing, and this is not the correct reason for verifying the reactor tripped.

D. Incorrect, the procedure requires both of these actions to be performed to verify that the reactor is tripped.

Editorial Only:

Remove specific reference to -0.33 dpm since this takes several ~~seconds~~ minutes to be established.

FORMAT

40. 036AK1.01 1

The following plant conditions exist:

Format bullets

- MODE 6 with CORE ALTERATIONS in progress.
  - The REFUEL CAV LVL HI/LO annunciator is actuated.
  - RMG-17A & B (RB Manipulator Crane monitors) have high radiation alarms.
  - The SFP gate is installed.

Which one (1) of the following would require immediate evacuation of the Reactor Building per AOP-123.1, 'Decreasing Level in the Spent Fuel Pool or Refueling Cavity during Refueling'?

A. Low pressure alarm on the SFP gate boot seals.

B. Leaking of the SFP.

C. Readings on RMG-17A(B)=25 R/hr.

D. Actuation of the SFP LVL HI/LO annunciator.

REF: Summer Exam Bank #1758
Distracter A incorrect, since corrective actions can be taken to repressurize the seal without evacuation of RB.
Distracter B incorrect, incorrect because SFP can be isolated from RB even if it is leaking.
ANSWER C
Distracter D Incorrect, incorrect because SFP can be isolated from RB even if it is leaking.

CORE ALTERATIONS was used vs. fuel shuffle to eliminate questions about the credibility of the SFP gate being installed during fuel movement. An initial condition of "SFP gate installed" makes choice"a" a viable destructor.

AOP-123.1 Caution states that RB should be evacuated if dose rates > 20 R/hr.

MINOR

42. 038EK3.08 1

-A SGTR is in progress on the 'B' S/G.
-The Crew has implemented EOP-4.0 "Steam Generator Tube Rupture."
FI -PI-943 indicates 200 gpm.
-The crew is at the step for determining the required core exit thermocouples for cool down. one word
-The Reactor Operator reports that RCS pressure has reached 1340 psig.

Which ONE of the following describes what action should be taken next and why?

A. Trip all RCP's. RCP's should be tripped anytime during EOP-4.0 if the trip criteria is met.

B. Do not trip RCP's. Trip criteria does not apply and a controlled cooldown is imminent.

C. Trip all RCP's. The trip criteria has been met and injection flow has been verified.

D. Do not trip RCP's. RCP trip criteria only applies prior to isolation of the steam generator.

Modified Bank Question # 292 open reference bank.
Lesson Plan EOP-4.0 objective # 1919.

A. Incorrect, RCP's should be tripped but the trip criteria only applies prior to a operator controlled cooldown.

B. Incorrect, the trip criteria is met, and a cooldown has not be commenced.

C. Correct, the trip criteria is met and Injection flow has been verified, and an operator controlled cooldown has not been started.

D. Incorrect, the RCP trip criteria applies up until the point that a controlled cooldown has be started.

Editorial Only

43. 039K1.02 1

Given the following conditions: NOUN NAMES!

- The plant is at 100% power
- Steam Dump Mode Selector switch is selected to "Tavg"
- PORV Manual/Auto stations are selected to "automatic ~~mode~~".
- ~~Train "A" and "B" Steam Dump Bypass interlock switches are positioned to "ON"~~
- Steamline "B" pressure transmitter for Loop "B", PT-2010 fails LOW

Which one of the following describes the response of the "B" steamline ~~power reliefs~~ PORV?

PACES

A. The "B" S/G power relief will ~~not~~ NOT AUTOMATICALLY open in an overpressure condition ~~but will open if the reactor trips~~.
B. The "B" S/G power relief will lift and remain open until P-12 is received.
C. The "B" S/G power relief will ~~not~~ NOT open ~~in either PORV mode or in Tavg control mode~~. ~~due to either pressure or temperature~~ due to a C-7B load rejection signal.
D. The "B" S/G power relief will open and remain open until the reactor trips.

REF: IC-01 Steam Dump System

Answer A - Correct, PT-2010 provides the pressure input to PORV mode selection.
Distracter B - "B" S/G power relief will not open in relief mode.
Distracter C - "B" S/G power relief will open in Tavg control mode.
Distracter D - "B" S/G power relief will not open in relief mode.

Editorial, and:
In stem, remove line referring to 'ON' position on BYP INTLK switches. There is no such position.

Choice 'A': P-4 presence removes the arming signal to the Bank 3 & 4 valves. Thus, the PORV can only auto-swap to power relief mode if pressure on IPT 2010 rises to > 1133 psig. Low failure prevents this. The PORV can only be opened if taken to PWR RLF mode and opened manually.

Added choice 'C': Added a reference to the C-7B signal as a plausible distractor. The PORV would open in response to a > 50% load rejection.

FORMAT.

44. 041A2.02 1

The plant ~~Unit~~ is at 80% power
-A failure in the steam dump control circuitry causes the bank one steam dumps to open.
-The operator immediately takes the Train A and B Steam Dump interlock bypass switch to OFF-RESET to close the valves.
-One of the valves fails to close.

Which one of the following describes the approximate power level that the plant will reach, and what action(s) will mitigate the event?

A. Power will rise to 92% and stabilize; an emergency boration should be commenced to reduce power, until valve can be isolated.

B. Power will rise to 86% and stabilize; an emergency boration should be commenced to reduce power, until valve can be isolated.

C. Power will rise to 92% and stabilize; turbine load must be reduced to lower power, until valve can be isolated.

D. Power will rise to 86% and stabilize; turbine load must be reduced to lower power, until valve can be isolated.

Modified from Summer Bank question #2578.
Lesson Plan, IC-1 Steam Dumps, objective # IC-1-20.

A. Incorrect, with only one valve open power should rise about 6%, and turbine load would have to be reduced to reduce power.

B. Incorrect, this would be the correct power rise, however turbine load should be reduced to lower power until the valve can be isolated.

C. Incorrect, this would be the power rise if both valves were open.

D. Correct, this is the correct power rise and action to take to reduce power.

McNok

46. 054AA1.01 1

-A plant startup is in progress.
-MDEFW pumps are being used to control S/G levels.
-The 'A' ~~MFP is started.~~ Main Feedwater Pump is started
-'A' MDEFW pump has been secured.
Just prior to securing the 'B' MDEFW pump the (B) ~~MFP~~ trips. 'A' Main Feedwater Pump
SPACE -Immediately ~~following~~ the following annunciators illuminate.
-"EFP SUCT HDR PRESS LO XFER TO SW"
-"MD EFP A (B) SUCT PRESS LO"

Which ONE of the following describes the correct status of the EFW system based on the above conditions?

A. Both MDEFW pumps will receive an auto start signal, all the EFW FCV's will get a full open signal, and suction will transfer to SW immediately.

B. ~~Both~~ "B" MDEFW pump~~s~~ will remain running, all the EFW FCV's will get a full open signal, and suction will transfer to SW after a 5 second time delay.

C. ~~Both~~ "B" MDEFW pump~~s~~ will remain running, all the EFW FCV's will remain as is, and suction will transfer to SW after a 5 second time delay.

D. Both MDEFW pumps will receive an auto start signal, all the EFW FCV's will remain as is, and suction will transfer to SW immediately.

Lesson Plan IB-3 Emergency Feedwater, objective # IB-3-13 and 16.
Modified from a bank question from the Summer Bank, and Watts Bar Bank.

A. Incorrect, The B MDEFW pump is already running, the A pump will auto start, the FCV's will not get a full open signal in this condition, and the transfer is delayed 5 seconds.

B. Incorrect, the FCV's will not get a full open signal.

C. Correct, both pumps will be running, the FCV's will be as is and the transfer has a 5 second time delay.

D. Incorrect, B pump is already running, and the transfer is delayed 5 seconds.

Editorial:
Spelled out MFP to avoid confusion
Corrected choices b. and c.; they both stated conditions which did not match the stem, and could easily be ruled out

[illegible]

47. 055EG2.4.16 1

The following plant conditions exist:

- Operators are performing immediate Operator Actions ([redacted]) of EOP-1.0, Reactor Trip/ [redacted] Safety Injection.
- A RED path condition exists on HEAT SINK.

Which ONE of the following actions should be taken if ALL power is lost to the AC emergency busses?

A. Immediately, transition to EOP-6.0, Loss of All ESF AC Power.

B. Complete [redacted] Immediate Operator Actions of EOP-1.0 and then transition to EOP-15.0 Response to Loss of Secondary Heat Sink

C. Immediately, transition to EOP-15.0 Response to Loss of Secondary Heat Sink

D. Complete [redacted] Immediate Operator Actions of EOP-1.0 and then transition to EOP-6.0, Loss of All ESF AC Power.

REF: Summer Exam Bank #1894

48. 055G2.4.11 1

-NIs indicate ~~31%~~ 41% power.
-Turbine Load Is ~~310~~ 400 MWe.
-CVP A/B/C TRIP annunciator is lit.
-Condenser Vacuum is 4.5 inches Hg absolute, and absolute pressure is slowly increasing.

Which ONE of the following describes the correct actions to be taken to mitigate this event?

A. Trip the Turbine and go to AOP-214.1 "Turbine Trip."

B. Start the standby Main Condenser Vacuum Pump and an Auxiliary Vacuum pump and reduce turbine load to 20% at 5% per minute.

C. Trip the reactor, trip the turbine, and enter EOP-1.0, "Reactor Trip/Safety Injection Actuation."

D. Start the standby Main Condenser Vacuum pump and an Auxiliary Vacuum Pump. ~~if main condenser pressure does not decrease, trip the turbine~~. Begin a turbine load reduction. If condenser pressure reaches 5 inches Hg absolute and turbine load is < 300 MWe, trip the turbine

Modified from Bank question #4363.
Lesson Plan AOP-206.1 "Decreasing Main Condenser Vacuum", objective # 3021.
AOP-206.1.

A. Incorrect, conditions for tripping the turbine is < 300MWe and main condenser pressure > 5 inches absolute.

B. Incorrect, Starting the vacuum pumps are correct, however a caution prior to step 4 instructs the operator not to reduce load to 30%.

C. Incorrect, Conditions are not met for a reactor trip at this time.(< 50% power)

D. Correct, IAW AOP-206.1 the operator should start the vacuum pumps if pressure does not decrease then the RNO would have the operator trip the turbine.

Editorial:

- Clarifies initial conditions in Stem and makes "D" match the trip criteria in AOP 206.1.

The question's initial conditions, as currently written are too close already to the trip criteria specified in the AOP precautions, leading to "a" as a choice.

Minor

49. 056K1.03 1

Given the following:

The plant ~~- Unit~~ is operating at 100% power

- Condensate and feedwater ~~is in~~ are ~~normal full power~~ their normal lineup
- A failure of a card in the process racks causes the deaerator startup drain valve to - go full open.

eliminate SPACE.

Which one of the following describes the affect on the main feedwater system? (Assume no operator action is taken.)

A. Feedwater Booster and Feedwater pumps trip.

B. Feedwater Booster and Feedwater pumps will not trip.

C. Feedwater Booster pumps do not trip and Feedwater pumps will trip.

D. Feedwater pumps "C" and "B" will trip and Feedwater pump "A" will not trip.

REF: TB-6 Condensate System
TB-7 Feedwater System

The deaerator level is drained to the condenser. Deaerator storage tank Lo-Lo-Lo Level (2 of 3) trips the feedwater booster pumps and feedwater pumps.

Editorial Only

MINOR

51. 058AK3.02 1
~~Actions contained in EOP for loss of DC power~~

The following plant conditions exist:

- The plant tripped from MODE 1
- Voltage on Bus es 1DA and 1DB is zero
- EOP-6.0, Loss of All ESF AC Power, has been entered.
- An SI signal has been generated.
- Attempts to restore ESF power have been unsuccessful.
- All ESF equipment has been placed in pull-to-lock.

IF DC power supplies start degrading, w Which EOP provides direction to meet the conditions and why are the actions, if any, necessary?

A. EOP-6.2, 'Loss of All ESF AC Power Recovery with SI R required'; no specific actions are required for DC power supplies, ~~required~~ Auxiliary Building batteries are designed for this condition.

B. EOP-1.5, 'Rediagnosis'; actions serve to maintain DC voltage above 103 VDC.

C. EOP-6.0, 'Loss of All ESF AC Power'; actions serve to maintain DC voltage above 108 VDC.

D. SAMGs; conditions are outside design bases and actions will be dictated by TSC.

REF: EOP-6.0,'Loss of All ESF AC Power'
GS-3, DC Power

Distracter A - incorrect, Operators would remain in EOP-6.0 and EOP-6.0 provides direction to maintain DC voltage above 1.8 VDC.

Distracter B - incorrect. Operators would remain in EOP-6.0

Answer C - correct, EOP-6.0 provides direction to maintain DC voltage above 1.8 VDC.

Distracter D - incorrect, direction to minimize DC loads is provided in EOP-6.0.

Editorial Only.

MINOR

~~54. 061K4.02 1~~

Given the following plant conditions:

- The plant was operating steady-state at 100% power.
- 'B' diesel generator was being load tested for periodic surveil~~lance testing~~.
- A reactor trip coincident with a complete loss of the Offsite grid has just occurred, Safety Injection was NOT actuated.
- All offsite power to the safeguards buses has been lost.
- The Train 'A' ESF loading sequencer (ESFLS) malfunctioned and initiated NO actions.
- NO operator actions have been taken in response to the Loss of Offsite Power.
- 'B' diesel generator is still running with its output breaker still closed.

D G

Which one of the following states the operating status of the Emergency Feedwater (EFW) pumps one minute after the plant trip and loss of offsite power occurred?

A. Only TDEFP running

B. Only "A" MDEFW and TDEFP running

C. Only "B" MDEFW and TDEFP running

D. Only "B" MDEFW running

REF: Summer 1998 Audit Exam RO98001

Distracter A - incorrect, 'A' MDEFW will not start

Distracter B - incorrect, 'A' MDEFW will not start

Answer C - correct, TDEFW pump start occurs due to monetary loss of IDA and IDB.
'B' MDEFW starts undervoltage on the associated bus (XSW1DB).

Distracter D - incorrect, TDEFW will start also.

Editorial Only

clean up format

59. 064A4.02 1

The following plant conditions exist:

- A loss of all ESF AC power has occurred.
- Bus 1DA Normal Feed breaker and Bus 1DA ALT FEED breaker open, but D/G 'A' fails to start automatically.
- D/G 'A' is locally started, but the Bus 1DA DG FEED breaker fails to close.
- The local 86 lockout relay has not actuated and the condition of the 'A' Diesel Local Control Panel Status lights is as follows:
  - "READY FOR LOAD" - Not Lit
  - "READY FOR AUTO START" - Not Lit
  - "EMERG. START" - Bright

SPACE

- The IB AO reports that D/G speed is 508 RPM.
- The IB AO reports D/G voltage is 6470 volts

Which ONE of the following conditions could be preventing the Bus 1DA D/G FEED breaker from automatically closing and what action would correct this condition?

A. Diesel Generator relays not reset, reset generator relays locally.

B. Diesel Speed below minimum, adjust D/G speed using local speed adjust.

C. Diesel Control Mode switch in local, place mode control switch in remote.

D. Diesel Voltage below minimum, raise D/G voltage using local voltage adjust.

Modified from open reference bank question 560.
Lesson plan IB-5 Diesel Generator System, objective # ib-5-19.

A. Incorrect, only the 86 lockout relay will prevent the breaker from closing on emergency start and the 86 relay has not picked up.

B. Incorrect, speed is greater than 504 rpm, therefore this will not prevent the breaker from closing.

C. Incorrect, the position of the mode switch has no effect on the breaker on an emergency start.

D. Correct, Voltage < 90% will prevent the output breaker from closing.

63. 071K3.05 1

-A waste gas release is in progress. LOW
-RM-A10 is in service, but has failed ~~to upscale~~ during the release. ?

Which ONE of the following describes the effect of this failure on the release in progress?

A. If its setpoint is exceeded, RM-G10 Auxiliary Building Waste Gas Decay Tank Area monitor will alarm and close HCV-014 and terminate the release.

B. The release will be monitored by RM-G10 Auxiliary Building Waste Gas Decay Tank Area, but nc automatic actions will occur.

C. If its setpoint is exceeded, RM-A3 Main Plant Vent Exhaust monitor will alarm and close HCV-014 and terminate the release.

D. The release will be monitored by RM-A3 Main Plant Vent Exhaust monitor, but RM-A3 has no automatic functions.

Lesson Plan GS-9 Radiation Monitoring Systems, objective GS-9-18.

A. Incorrect, RM-G10 monitors the waste gas decay tank area and would not indicate upscale conditions unless a leak was in progress, and has no automatic actions.

B. Incorrect, RM-G10 monitors the area but should not upscale unless a leak occurs.

C. Correct, if its setpoint is exceeded RM-3A will close HCV-014.

D. The release will be monitored by RM-3A, however it does have automatic functions.

Editorial Only

"Failed to upscale" may confuse; sounds like it has failed TO the upper part of the scale, i.e., failed high. What we mean is that it fails to respond, i.e. fails low (or as is)

THE PLANT IS IN A

66. 076A2.02 1

- Normal Service Water system alignment with 'A' and 'B' SW pumps running

-XCP-604 1-2 "SWP A/C TRIP" alarms.

-Annunciator XCP-604 1-4 "SWP A/C DISH PRESS LOW" alarms.

-Annunciators XCP-605 1-4 "SWP B/C DISH PRESS LOW" alarms. 5

-PI-4402, Service Water Pump "A" Discharge Pressure, indicates ~~18~~ psig.

-PI-4422, Service Water Pump "B" Discharge Pressure, indicates 48 psig.

-"A" SW pump will not restart.

Which ONE of the following describes the actions that should be taken to mitigate this event?

A. Enter SOP-117 "Service Water System", and ~~secure any running diesel generators.~~ ensure 'C' SW pump automatically started on low header pressure

B. Enter AOP-117.1 "Total Loss of Service Water", and trip all RCPs.

C. ~~Reference SOP-117 "Service Water System", and start the "C" SW pump.~~ Enter AOP-117.1, "Total Loss of Service Water", and reference SOP-117, "Service Water System", and align and start 'C' SW pump in 'A' train

D. Reference AOP-118.1"Total Loss of Component Cooling Water", and isolate all CCW loads.

Modified from Bank question # 3101. (NEED TO CHECK SW PRESSURE VALUES)

Reference: AOP-117.1 "Total Loss of Service Water."

A. Incorrect, SOP-117 will be referenced, however if diesel generators are required, fire service water would be aligned to supply.

B. Incorrect, AOP-117.1 is a procedure to enter however the procedure allows stopping up to 2 RCPs when plant conditions permit.

C. Correct, AOP-117.1 directs the operator to refer to SOP-117 and to start the spare service water pump, this would mitigate this event.

D. Incorrect, AOP-118.1 may be referenced, but only unnecessary CCW loads would be isolated.

Editorial:

- Added initial condition for clarification
- Changed choice 'A': Securing a D/G with no SW is an expected action, making it unacceptable as a distracter
- Changed choice 'C' to reflect true procedure flowpath.

MINOR

67. 076AK2.01 1 R

What type of detectors are used for ~~P~~RM-L1, Primary Coolant Letdown Monitor, ~~inputs~~ for monitoring high reactor coolant activity, ~~and~~ where are the sensing location for RM-L1?

A. A scintillation and a Geiger-Mueller detector, located ~~near~~ on the letdown line upstream of the BTRS Demins

B. Two scintillation detectors, located ~~near~~ on the letdown line upstream of the BTRS Demins

C. A scintillation and a Geiger-Mueller detector, located ~~near~~ on the letdown line downstream of the BTRS Demins

D. Two Geiger-Mueller detectors, located ~~near~~ on the letdown line downstream of the BTRS Demins

REF: Kewaunee exam 2000
General Systems GS-9 Radiation Monitoring System Rev 6

Answer A - correct

Distracter B - Incorrect, Use of two different detectors with overlapping ranges.

Distracter C - Incorrect, location is upstream of the BTRS Demins

Distracter D - Incorrect, Use of two different detectors with overlapping ranges and location is upstream of the BTRS Demins

Editorial Only

MINOR

70. G2.1.10 1

The plant ~~Unit~~ is at 100% power.

-The TD EFW pump is Tagged out for bearing replacement.

-Both Motor Driven ~~EFW pumps~~ have just been declared inoperable due to a common problem.

remove space

Which ONE of the following describes the actions that must be taken?

A. Restore at least one EFW pump to operable status or be in Hot Shutdown within 1 hour.

B. Immediately trip the reactor and initiate safety injection, using the Main Feedwater pumps to maintain S/G levels.

C. Restore at least one EFW pump to operable status within 1 hour, and a second EFW pump within 6 hours, or be in Hot Standby in the next 6 hours.

D. IMMEDIATELY initiate actions to restore at least one EFW pump to operable status as soon as possible.

Bank Question, from Farley exam bank.
T.S. 3.7.1.2

A. Incorrect, this is not the action called for in the T.S.

B. Incorrect, a reactor trip is not required by the T.S.

C. Incorrect, TS does not allow for 1 hour to restore one EFW pump to service.

D. Correct, the TS directs to initiate actions to restore one EFW pump to operable status as soon as possible.

Editorial:
Format Only
Added to choice "d" the word "immediately" to match T.S. 3.7.1.2

MINOR

72. G2.1.29 1
-The plant is MODE 5 preparing to startup.
~~-You are the Shift Supervisor.~~
-A Valve lineup is being conducted on the CVCS.
-Several Valves are reported to need verification in the open position at the 412' level of the Reactor Building.

REMOVE SPACE

-None of these valves are designated "IV Exempt."
-Local Radiation levels are about 50 mr/hr.
-The initial positioner received 25 mrem performing his portion.

Which ONE of the following courses of action is preferred? WOULD BE BY THE SHIFT SUPERVISOR

A. ~~Order verifications by several persons to limit individual exposures.~~ SINCE THE SYSTEM IS CVCS AND IS THEREFORE CRITICAL, NO WAIVER OF INDEPENDENT VERIFICATION IS PERMITTED.

B. Order verification be performed by Health Physics to ensure ALARA compliance.

C. Waive the independent verification to reduce personnel exposures by verifying correct position by alternate means.

D. Have the verifier with the most experience perform the independent verifications in the shortest amount of time possible.

Bank question from 1992 Summer NRC Exam.
SAP-153.

A. Incorrect, SAP-153 directs the shift supervisor to waive the IV if the dose received will be greater than 10mr, and should consider verifying position by alternate means.

B. Incorrect, SAP-153 directs the shift supervisor to waive the IV if the dose received will be greater than 10mr, and should consider verifying position by alternate means.

C. Correct, this is the action that is directed in SAP-153.

D. Incorrect, SAP-153 directs the shift supervisor to waive the IV if the dose received will be greater than 10mr, and should consider verifying position by alternate means.

EDITORIAL

THIS IS A RECOMMENDED ACTION, NOT DIRECTED

ANSWER A. WAS A VIABLE ALTERNATIVE. CHANGES MAKE A. INCORRECT.

MINOR

76. G2.2.19 1

Which ONE of the following describes the type of work that would be ranked as a PRIORITY 1 Maintenance Work Request (MWR)?

A. Work orders written to reduce radiation levels or stop sources of contamination. ~~Corrective items to avoid a major plant load reduct~~ion.

B. Major plant modification items.

C. Compliance items to ensure that a 72-hour action statement time limit is not exceeded.

D. Improvement items for plant efficiency.

*REFERENCE 1992 Summer NRC exam.
1. SNS SAP-300, Rev. 8
2. SNS SAP-601, pp. 3, & 4.

A. Incorrect, IAW SAP-300 priority 1 MWRs are those that must start immediately and be worked through to completion including the call out of maintenance personnel and the establishment of shift work if necessary.

B. Incorrect, IAW SAP-300 priority 1 MWRs are those that must start immediately and be worked through to completion including the call out of maintenance personnel and the establishment of shift work if necessary.

C. Correct, this meets the definition in SAP-300.

D. Incorrect, IAW SAP-300 priority 1 MWRs are those that must start immediately and be worked through to completion including the call out of maintenance personnel and the establishment of shift work if necessary.

Changed "a", since, as currently written, this reflects a PRI-1 criteria in SAP-300 & 601

MINOR

81. G2.4.10 1

-Unit is at 33% reactor power following a start-up.
-Annunciator XCP-617 point 1-5 "RCP A LOW OIL RESVR LVL HI/LO" is in.
-Electrical Maintenance has determined that the ~~oil level is 1.80 inches above static level.~~ alarm is due to a high level per EMP 295.007, "RCP MOTOR OIL LEVEL AND ALARM CHECK."
-An oil level ~~has been observed in the sightglass.~~

Which ONE of the following describes the appropriate action(s) to be taken?

A. Immediately Trip the Reactor and secure RCP "A" in accordance with SOP-101.

B. Secure RCP "A" in accordance with SOP-101, and be in Hot standby per GOP-4 and GOP-5 within one hour.

C. Monitor bearing temperature, if bearing temperature exceeds 195°F then secure RCP "A" in accordance with SOP-101, and be in Hot Standby per GOP-4 and GOP-5 within one hour.

D. Monitor bearing temperature, if bearing temperature exceeds 195°F then immediately trip the reactor and secure RCP "A" in accordance with SOP-101.

ARP XCP-617 annunciator point 1-5.
AB-4 Reactor Coolant Pump Lesson Plan enabling objective AB-4-20.

A. Incorrect, this would be the correct action if power was greater than 38%, and there was no level in the sight glass.

B. Incorrect this would be the correct action if there was no level in the sight glass with current plant conditions.

C. Correct, with the level high but still in the sight glass the ARP has the crew monitor the lower radial bearing temperature and if it exceeds 195 degrees F then secure the pump and proceed to hot standby.

D. Incorrect, this would be the correct action if the reactor was greater than 38%.

Editorial Change to stem to provide a realistic means of receiving the RCP oil information

CLARIFY
– RB IS INACCESSIBLE w/o SPECIAL ENTRY ⇒ 33% POWER
– EMP ONLY VERIFIES WHETHER ALARM IS HI OR LO w/o ENTRY

MINOR

82. G2.4.11 1
The plant is being operated per GOP-9, "Mid Loop Operation" with Hot Leg level being maintained 3" above half-pipe.
~~-The Unit is operating at Mid-nozzle.~~
~~-RHR is in service.~~
-The operating RHR pump flow and amps ~~are oscillating.~~ begin to oscillate
-AOP-115.1 "RHR Pump Vortexing" has been entered.

Which ONE of the following would require tripping the running RHR pump?

A. RHR temperature rises to 215°F.

B. RCS Hot Leg Level decreases to 15 inches.

C. RHR flow is reduced to ~~900 gpm for 33 minutes~~. 450 gpm to stabilize amps and flow

D. RCS Pressure decreases to less than 50 psig.

Modified from VCS bank questions 2355 and 1870.
VCS AOP 115.1 Lesson Plan objective 2277.

A. Incorrect, the procedure directs the crew to implement STP-103.001 and to monitor Hot leg temperature, but does not direct the tripping of a RHR pump for these conditions.

B. Incorrect, the procedure directs the crew to trip the running RHR pump if level drops to less than 14 inches.

C. Correct, the caution prior to step one states that the RHR pump should be limited to less than 30 minutes with less than 1000 gpm flow rate.

D. Incorrect, at mid loop pressure in the RCS should already be less than 50 psig.

Editorial change to stem to give proper procedure

Changed "C" to test the instantaneous, vs. 30 min trip limit. Reasoning is that SRO should know inst. limit, but will be referencing procedure w/in 30 min time frame.

[illegible]

90. W/E05EK3.2 1

~~-The Unit is in an Emergency condition~~.
-EOP-15.0 "Response to loss of Secondary Heat Sink" has been entered.
~~-The Operators verify that a Secondary Heat sink is required.~~
-Attempts to establish EFW Flow have failed.
-All ~~RCP's are Tripped~~. Per direction of EOP-15.0, step 7, all RCP's are tripped

Which ONE of the following is the primary reason for securing the RCP's at this point in the procedure?

A. This will establish natural circulation conditions and will tend to mitigate the transient.

B. They are secured to prevent the heat added by the RCPs from adversely affecting indications used to determine whether or not RCS bleed and feed will be required.

C. This will reduce RCS pressure to ensure subsequent SI flow is adequate for ECCS requirements.

D. They are secured to reduce the heat input from the RCPs, thereby delaying the need for bleed and feed and gaining time to establish a means of supplying FW to a S/G.

Bank Question Modified some what from a Farley version of same question.
Lesson Plan EOP-15.0 Response to Loss of Secondary Heat Sink. Objective # 2095.

A. Incorrect, natural circulation conditions will not mitigate this transient with out water in the Steam Generators.

B. Incorrect, The heat added to the indications by the RCPs will not have an effect on whether bleed or feed will be required.

C. Incorrect, RCS pressure may be reduced some but by itself this will not ensure that SI flow will be adequate.

D. Correct, Securing RCPs will reduce the heat input to the RCS and delay the need for going to feed and bleed.

Editorial comment only.
Make it clear that RCP's tripped in EOP-15.0, not prior to entry.

RCP'S ARE TRIPPED IN STEP 17, WHICH IS THE FIRST STEP OF FEED AND BLEED. NEED TO CLARIFY THAT RCPS ARE SECURED IN STEP 7 SO THAT "D" IS CLEARLY CORRECT.

MINOR

92. W/E08EK1.1 1

Given the following:

- The plant is in an emergency condition.
- An excessive RCS cooldown has taken place in combination with an increase in RCS pressure.
- The control room operators identify a RED path on the integrity status tree and start implementing EOP-16.0, Response to Imminent Pressurized Thermal Shock Condition.
- As per EOP-16.0, they allow the RCS to heat up, and they reduce RCS pressure.
- When RCS subcooling has been reduced to 40°F, the operators notice that the integrity status tree has changed from a RED path to a YELLOW path condition. At the same time, they identify an ORANGE path on the containment status tree.

Clean up format

What actions should the operators take?

A. Go immediately to Step 1 of EOP-17.0 because the containment status tree has a higher priority than the integrity status tree.

B. Go immediately to Step 1 of EOP-17.0, Response to High Containment Pressure, because ORANGE path has a higher priority than a YELLOW path.

status trees

C. Complete the actions of EOP-16.0, regardless of conditions on the other CSF[redacted] because EOP-16.0 was entered due to RED path condition.

D. Complete the actions of EOP-16.0 because, once entered, EOP-16.0 should be performed to completion, unless pre-empted by a higher priority condition.

REF: EOP-16.0, Response to Imminent Pressurized Thermal Shock Condition.

SOURCE: Summer Exam Bank 2961

Editorial only

33. 028K2.01 1
Initial Conditions:
-Unit was at 100% power.
-A D/G tagged out for maintenance.

-A LOCA is in progress in conjunction with a loss of off-site power.
-EOP's are being performed and the crew is at the step for placing the H_2 Recombiners in service.

Which ONE of the following correctly describes the available recombiner and the source of power?

A. "A" recombiner from 1DA1

B. "B" recombiner from 1DB1

C. "A" recombiner from 1DA2

D. "B" recombiner from 1DB2

Lesson Plan GS 2 "Safeguards Power", Objective GS-2-20, and 21.

A. Incorrect, with the A D/G tagged out the A recombiner will not be available with an LOSP.

B. Incorrect, this recombiner will be available, but from bus 1BD2.

C. Incorrect, this recombiner will not be available.

D. Correct, this recombiner will be available and is powered from 1BD2.

Recommend that the question be replaced. While H_2 recombiners are Post-Accident, safety related equipment, they are normally energized, seldom operated components. Op Management would expect the operator to know that the H_2 recs. are 480v powered, detailed knowledge of whether the feed is 1DB1 or 1DB2 is not expected to be committed to memory.

See attached suggestions (slightly different, but higher level K/A's)

Recommended Question for Replacement

33. 028K5.04 1

The operating crew is performing EOP 2.0, LOSS OF REACTOR OR SECONDARY COOLANT, in response to a LOCA inside containment. Both hydrogen analyzers have been placed in service per SOP 122 and H2 concentration is currently 3% on both indicators. EOP 2.0 directs that one post accident hydrogen recombiner be started and placed in service for this condition. After the local operator reports that "A" post accident H2 recombiner has been placed in service at the required power setting, the NROATC reports that RB H2 concentration has increased to 3.6%. The correct course of action would be;

A. Increase the power setting by 4 KW above the previous setting for the "A" post accident H2 recombiner.

B. Secure the "A" post accident H2 recombiner to eliminate the source of heat input to the building.

C. Place "B" post accident H2 recombiner in service to provide an additional means of H2 removal from containment.

D. Secure the "A" post accident H2 recombiner as it has failed and place the "B" H2 recombiner in service per SOP 122.

Correct answer: A

Reference: SOP 122, page 4 of 14, step 2.18

33. 028K5.01 1

Which of the following Reactor Building hydrogen concentrations would be considered excessive and prevent the operating crew from procedurally starting a post accident H2 recombiner;

A. 0.5%

B. 3%

C. 6%

D. 10%

Correct answer: C

Reference: AB-15, Post Accident Hydrogen Removal, page 29 of 34

Recommended Question for Replacement

33. 028K5.03 1

Which of the following will not add to the expected hydrogen generation during post accident conditions in the reactor building;

A. zirconium-water reactions

B. radiolytic decomposition of water

C. corrosion of metals within containment

D. fission product gas release

Correct answer: D

Reference: T/S Bases, page B 3/4 6-5

36. 033A2.01 1

Given the following: CORE OFFLOAD IS COMPLETE
- ~~Previous refuel activity has loaded the Spent Fuel Pool.~~
- All core alterations have stopped.
- The Spent Fuel pool is isolated from the Transfer Canal.
- Decreasing boron concentration has been verified by sample analysis in the Spent Fuel Pool

What impact would this have, if any, on parameters associated with the Spent Fuel Pool and what actions and/or procedure(s) would be used to correct or mitigate the consequences of this situation?

A. By the fuel rack design, Keff would remain less than 0.95. Use SOP-123 to transfer water from the transfer canal and the reactor cavity.

B. By the fuel rack design, Keff would remain less than 0.95. Use SOP-123 to drop the spent fuel pool level 5 feet and make up to the pool from the RWST.

C. The spent fuel could reach criticality. Use AOP-123.2 and SOP-123 to transfer boric acid from the Boric Acid Tanks to the Recycle Holdup Tank and then pump to the Spent Fuel Pool.

D. The spent fuel could reach criticality, the situation is not covered by the AOPs or EOPs, but would be covered by the SAMGs.

REF: AOP-123.2 DECREASING BORON CONCENTRATION IN THE SPENT FUEL POOL OR REFUEL CAVITY
SOP-123 Spent Fuel Pool System

ANSWER ~~Distracter~~ A ~~- Keff could reach 1~~ SOP-123 is not used to transfer water from the transfer canal or reactor cavity
Distracter B ~~- Keff could reach 1~~. SOP-123 is not used to transfer water from the RWST.
DISTRACTOR ~~Answer~~ C ~~- Keff could reach 1. Use AOP-123.2 and SOP-123~~. INCORRECT USE OF SOP AND IMPROPER RACK DESIGN
Distracter D - Actions not covered by SAMGs

REFERENCE: GS-4 FUEL HANDLING

PAGE 17 OF 82 "THE LATTICE SPACING PROVIDES A Keff LESS THAN 0.95 WHEN THE PIT IS FILLED WITH FUEL OF THE HIGHEST ENRICHMENT/LOWEST BURNUP PERMITTED FOR THAT AREA AND MODERATED BY UNBORATED WATER."

COMBINING SECOND HALF OF "A" WITH FIRST HALF OF "C" AND VICE VERSA CREATES A CORRECT RESPONSE "A".

See attached "clean copy" of fix.

Modified

36. 033A2.01 1

Given the following:
- Core Offload is complete.
- All core alterations have stopped.
- The Spent Fuel pool is isolated from the Transfer Canal.
- Decreasing boron concentration has been verified by sample analysis in the Spent Fuel Pool

What impact would this have, if any, on parameters associated with the Spent Fuel Pool and what actions and/or procedure(s) would be used to correct or mitigate the consequences of this situation?

A. By the fuel rack design, Keff would remain less than 0.95. Use AOP-123.2 and SOP-123 to transfer boric acid from the Boric Acid Tanks to the Recycle Holdup Tank and then pump to the Spent Fuel Pool.

B. By the fuel rack design, Keff would remain less than 0.95. Use SOP-123 to drop the spent fuel pool level 5 feet and make up to the pool from the RWST.

C. The spent fuel could reach criticality. Use SOP-123 to transfer water from the transfer canal and the reactor cavity.

D. The spent fuel could reach criticality, the situation is not covered by the AOPs or EOPs, but would be covered by the SAMGs.

38. 034K4.01 1

Which ONE of the following helps protect a fuel assembly from binding while being loaded into the core?

A. The Gripper being fully engaged.

B. Using slow speed when the fuel assembly is entering the core.

C. Hoist Overload interlock.

D. Slack Cable interlock.

Lesson Plan GS-4 Fuel Handling System. Objective GS-4-17.
Modified from Bank question # 2015.

A. Incorrect, the gripper being fully engaged does not prevent or alert the operator to a binding condition.

B. Incorrect, the use of slow speed will not prevent the fuel assembly to bind.

C. Incorrect, an underload interlock would protect the fuel, but an overload would not occur while placing the fuel into the core.

D. Correct, the slack cable would stop fuel descent into the core if the fuel began to bind.

Replace.
Discussed with FH personnel.
All choices are justifiable to a degree.

See recommended replacements

Recommended Question for Replacement

A. 38. 034K4.02 1

The refueling upending machine uses ____________ as a hydraulic fluid because ____________ .

A. demineralized water; it prevents reactor cavity contamination and/or visibility loss in the event of a leak

B. demineralized water; it provides both a cooling medium as well as a source of makeup due to controlled leakage which effectively offsets evaporation.

C. DTE oil light; it is clear and will not impact visibility in the event of a hydraulic fluid leak.

D. DTE oil light; it is a water-soluble lubricant and has been proven to be a non-contaminant when coming in contact with both fuel assemblies and RCS components.

Correct answer: A

Reference: GS-4 Fuel Handling, page 40 of 82

38. 034K5.03 1

Technical Specification 3.9.3 requires that the reactor have been subcritical for a minimum of 100 hours prior to the movement of irradiated fuel in the pressure vessel. What is the basis for this T/S?

A. Allow sufficient time for decay heat to subside to an acceptable level prior to changes in core geometry.

B. Ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products.

C. Allow adequate time for radiation levels to subside to minimize personnel exposure prior to performing reactor vessel head removal.

D. This time is based solely on the 120 minimum time limit prior to draining to mid-loop and is not applicable unless mid-loop operation is required prior to refueling.

Correct answer: B

Reference: T/S Bases, page B 3/4 9-1
Provide reference copy of Tech. Spec. 3.9.3

61. 068AK3.17 1

Given the following plant conditions:
- Conditions exist that warrant a Control Room Evacuation.
- Offsite power is not available.
- AOP-600.1, Control Room Evacuation, actions are complete to step 21 Alternative Action - The Control Room can not be re-entered.
- Plant Management directs initiation of plant cooldown and entry to GOP-8, Plant Shutdown from Hot Standby to Cold Shutdown with Control Room Inaccessible (Mode 3 to Mode 5)

After borating the RCS to cold, xenon-free shutdown concentration per GOP-8, how is the Pressurizer boron concentration equalized with the RCS?

A. By increasing normal PZR spray flow with PZR heaters in manual to maintain PZR pressure.

B. By increasing Auxiliary Spray to the PZR with PZR heaters in manual to maintain PZR pressure.

C. By raising and lowering PZR level using PZR heaters to maintain PZR pressure.

D. By using normal boration flowpath and Auxiliary spray flowpath at the same time using PZR heaters to maintain PZR pressure.

REF: GOP-8, Plant Shutdown from Hot Standby to Cold Shutdown with Control Room Inaccessible (Mode 3 to Mode 5)
AOP-600.1, Control Room Evacuation

Distracter A - RCPs have been tripped as initial conditions of GOP-8. Normal spray not available.

Distracter B - Use of Auxiliary spray not directed by procedure GOP-8.

Answer C - Step 3.5 GOP-8 equalize PZR boron concentration by in-surge and out-surge

Distracter D - Use of Auxiliary spray not directed by procedure GOP-8.

Provide CREP panel drawing as a reference.

73. G2.1.3 1

-The NROATC desires to leave the control room for approximately 30 minutes to ~~get a new picture for his badge.~~ View a training tape in the Operations Manager's Office

Which ONE of the following describes the MINIMUM items that a unexpected or temporary relief should include?

A. Discuss existing plant conditions, and anticipated evolutions~~, and log the turnover in the Station Log Book.~~

B. Discuss existing plant conditions, anticipated evolutions, and review the Main Control board controls, instrumentation and annunciators.

C. Review the Main Control board controls, instrumentation and annunciators and ~~log the turnover in the Station Log Book~~. complete a turnover sheet.

D. ~~Review the Main Control board controls, instrumentation and annunciators, complete a turnover sheet, and log the turnover in the Station Log Book.~~ Discuss existing plant conditions, anticipated evolutions, and complete a turnover sheet

Bank Question 1992 Summer NRC exam modified slightly.
Reference: SAP-200, pages 7 and 8.

A. Incorrect, Logging the turnover is only required if the NROATC is leaving the site.

B. Correct, IAW SAP-200 these are the minimum actions required for a temporary relief.

C. Incorrect, Logging is not required and all the actions are not listed.

D. Incorrect, a turnover sheet is not required and the turnover does not have to be logged.

2 Changes:

- Badging is outside protected area, changing intended criteria. Moved reason to vacate CR "inside the fence".
- Removed references to Station Log. CRS has discretion to log temp. relief if so desired. We have seen it handled both ways.
- See attached "clean copy" of fix

Modified

73. G2.1.31

The NROATC desires to leave the control room for approximately 30 minutes to view a training tape in the Operations Manager's Office.

Which ONE of the following describes the MINIMUM items that a unexpected or temporary relief should include?

A. Discuss existing plant conditions and anticipated evolutions.

B. Discuss existing plant conditions, anticipated evolutions and review the Main Control Board controls, instrumentation and annunciators.

C. Review the Main Control Board controls, instrumentation and annunciators and complete a turnover sheet.

D. Discuss existing plant conditions, and anticipated evolutions, and complete a turnover sheet.

MINOR

79. G2.3.1 1

Which ONE of the following dose components are combined to determined a Radiation Worker's Occupational ANNUAL Dose LIMIT?

A. Total Effective Dose Equivalent and Committed Effective Dose Equivalent.

B. Deep Dose Equivalent and Committed Effective Dose Equivalent.

C. Total Effective Dose Equivalent and Planned Special Exposures.

D. Committed Effective Dose Equivalent and Planned Special Exposures, only.

Bank Question from Surry NRC Exam 2002.

A. Incorrect, the components that make up a Radiation Worker's Occupational Dose is DDE and CEDE. DDE + CEDE = TEDE

B. Correct, DDE and CEDE.

C. Incorrect, the components that make up a Radiation Worker's Occupational Dose is DDE and CEDE.

D. Incorrect, the components that make up a Radiation Worker's Occupational Dose is DDE and CEDE.

ADD THE WORDS "ANNUAL" AND "LIMIT" TO CLARIFY THE DIFFERENCE BETWEEN RECORDED DOSE AND ANNUAL LIMIT, MAKING CHOICE "D" INCORRECT. PSE's ARE TRACKED, BUT ARE SEPARATE FROM BUT IN ADDITION TO ANNUAL DOSE LIMITS.

91. W/E06EK1.3 1

A LOCA is in progress with all RCPs secured, and the control room operators are attempting to stabilize plant conditions. An operator who is monitoring plant parameters observes the following:

• RVLIS Narrow range:	50%	move over
• RVLIS upper head range:	← 0%	
• Core exit TCs:	780F	
• RCS Pressure	885 psig	

Which one of the following describes current core cooling conditions and operational requirements?

A. Subcooled. Operator action is not required because core cooling is satisfactory.

B. Saturated. At their discretion, the operators can take action to restore subcooled core cooling per EOP-14.2, "Response to Saturated Core Cooling."

C. Degraded. Prompt action must be taken per EOP-14.1, "Response to Degraded Core Cooling," or conditions could degrade.

D. Inadequate. Prompt action must be taken per EOP-14.0 "Response to Inadequate Core Cooling, or core uncovery and fuel damage could occur.

Modified from a Bank Question # 425.
Lesson Plan EOP-14.1 Response to Degraded Core Cooling, objective # 2070 and 2071.

A. Incorrect, the conditions given indicate that the RCS is in a superheat condition.

B. Incorrect, the conditions given indicate that the RCS is in a superheat condition.

C. Correct, the conditions given indicate that the RCS is in a degraded core cooling condition, and this is the correct remedial action to take.

D. Incorrect, the conditions given indicate a degraded core cooling condition.

Provide EOP 12.0 as a reference.
Not memory item.

94. W/E09EA2.1 1

-A Loss of Off Site power has occurred due to a seismic event.
-Diesel Generators have started and are supplying electrical power.
-The CST has developed a leak and it has been determined that CST level is not Space. adequate.
-EOP-1.1 has been completed.
-RVLIS is available.

Which ONE of the following describes the correct procedure transition?

A. Transition to EOP-1.3 "Natural Circulation Cooldown"~~, and proceed to cooldown to cold shutdown.~~

B. Transition to GOP-6.0 "Plant Shutdown From Hot Standby To Hot Shutdown," ~~then continue to cold shutdown using GOP-7.0.~~

C. Transition directly to EOP-1.4 "Natural Circulation Cooldown With Steam Void in Vessel" and continue to cold shutdown.

D. ~~Transition to EOP-1.3 "Natural Circulation Cooldown," perform the first 9 steps, and then transition to EOP-1.4 "Natural Circulation Cooldown With Steam Void in Vessel" and continue to cold shutdown~~
Transition to EOP 15.0, "Response to Loss of Secondary Heat Sink." Without adequate CST level, EFW is in jeopardy of being lost.

New Question. Lesson Plan EOP-1.4 Natural Circulation Cooldown with Steam Void in Vessel, Objective # 1806.

A. Incorrect, the team will transition to EOP-13.0, but will not continue to cold shutdown using this procedure with CST level not adequate.

B. Incorrect, RCPs are not available therefore a forced cooldown can not be performed.

C. Incorrect, EOP-1.4 is the correct procedure to transition to, but transition must be performed after the first 9 steps of EOP1.3 is complete.

D. Correct, EOP-1.3 should be entered, the first 9 steps completed and then a transition to EOP 1.4 should be done.

Question as written requires memory knowledge of EOP 1.3 in its entirety.
Besides, there is no criteria given which would force EOP1.4 provided, anyway.
See attached "clean copy" of fix

Modified

94. W/E09EA2.1 1

-A Loss of Off Site power has occurred due to a seismic event.
-Diesel Generators have started and are supplying electrical power.
-The CST has developed a leak and it has been determined that CST level is not adequate.
-EOP-1.1 has been completed.
-RVLIS is available.

Which ONE of the following describes the correct procedure transition?

A. Transition to EOP-1.3 "Natural Circulation Cooldown'.

B. Transition to GOP-6.0 "Plant Shutdown From Hot Standby To Hot Shutdown."

C. Transition directly to EOP-1.4 "Natural Circulation Cooldown With Steam Void in Vessel" and continue to cold shutdown.

D. Transition to EOP-15.0, "Response to Loss of Secondary Heat Sink." Without adequate CST level, EFW is in jeopardy of being lost.

95. W/E11G2.4.9 1

Given the following conditions:

- The plant is in Cold Shutdown with RCS temperature at 110 deg. F.
- RHR pump A and RHR heat exchanger A are in operation.
- RCS Hot leg level is at 16 inches (mid-loop operations).
- RHR Heat Exchanger A Outlet Flow Control Valve (FCV-605A) has just stroked from 20% open to full open due to a circuit fault.

If NO operator action is taken, which ONE of the following will occur to cause a loss of RHR cooling?

A. RHR pump overspeed trip from runout due to low discharge pressure.

B. RHR pump loss of suction due to vortexing at the RCS loop suction.

C. RHR pump overcurrent trip due to high discharge pressure.

D. RHR pump overcurrent trip caused by pump runout due to low discharge pressure.

REF: Indian Point Exam 1996
AB-7 RHR
SOP-115 RHR
AOP-115.5 Loss of RHR with RCS not Intact (Mode 5)

No answer given, but we assume 'B' is correct; however, can 'D' be discounted? FCV-605A opening fully could push flow to runout. Need to agree upon a plausible change to 'D'.

99. W/E15EA2.1 1

-A Large Break LOCA has Occurred.
-EOP-2.2 "Transfer to Cold Leg Recirculation" has just been completed.
-The STA reports the following conditions:
- -Reactor Building Pressure 2.0 psig.
- -Reactor Building Radiation 10 R/HR.
- -RHR Sump Level 420 ft.

Which ONE of the following describes the immediate containment concern and the correct procedure to enter?

A. Inadequate suction to the RHR pumps, transition to EOP-2.4 "Loss of Emergency Coolant Recirculation."

B. Erroneous instrumentation readings, transition to EOP-17.2 "Response to High Reactor Building Radiation Level," when desired.

C. Reactor Building structural integrity; transition to EOP-17.0 "Response to High Reactor Building Pressure."

D. Flooding vital equipment in the Reactor Building; transition to EOP-17.1 "Response to Reactor Building Flooding."

Modified from Diablo Canyon 99 exam.
Lesson Plan EOP-17.1 "Response to Reactor Building Flooding," objective 2180.

A. Incorrect, RHR sump level is adequate, Loss of emergency coolant recirculation is not the procedure that is required to be entered with these conditions.

B. Incorrect, Radiation levels are high, but EOP-17.2 is entered on operator discretion and sump level is a higher priority.

C. Incorrect, Pressure is somewhat high, however it does not meet the threshold for entry (12psig). in a large break LOCA this procedure would have already been performed, and re-entry is not required.

D. Correct, Reactor Building sump level is high and flooding is a concern and level has reached the threshold value to enter EOP-17.1.

Provide EOP-12.0
Requires memory level knowledge of a "yellow path" EOP entry which would be tracked by the Shift Engineer

Facility:	Date of Exam:		Exam Level: RO/SRO	
	Item Description	Initials a	Initials b	Initials c
1.	Clean answer sheets copied before grading	SR		LM
2.	Answer key changes and question deletions justified and documented	SR		LM
3.	Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	SR		LM
4.	Grading for all borderline cases (80% +/- 2%) reviewed in detail	N/A SR		N/A LM
5.	All other failing examinations checked to ensure that grades are justified	N/A SR		N/A LM
6.	Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	SR		LM

	Printed Name / Signature	Date
a. Grader	STEVEN D. ROSE / [signature]	9/25/02
b. Facility Reviewer(*)	N/A	
c. NRC Chief Examiner (*)	[signature]	9/27/02
d. NRC Supervisor (*)	[signature]	10/4/02

(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.

	Task Description	Date Complete
1.	Facility written exam comments or graded exams received and verified complete	09/26/02
2.	Facility written exam comments reviewed and incorporated and NRC grading completed, if necessary	09/26/02
3.	Operating tests graded by NRC examiners	09/30/02
4.	NRC Chief examiner review of written exam and operating test grading completed	10/01/02
5.	Responsible supervisor review completed	10/04/02
6.	Management (licensing official) review completed	10/07/02
7.	License and denial letters mailed	10/10/02
8.	Facility notified of results	10/10/02
9.	Examination report issued (refer to NRC MC 0610)	10/23/02
10.	Reference material returned after final resolution of any appeals	N/A