Entergy

Entergy Nuclear Generating Company
Chiltonville Training Center
46 Sandwich Road
Plymouth, MA 02360-2505

March 14, 2000

Mr. Julian Williams
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Williams:

Enclosed for your review are the examination materials to support the NRC Examination currently scheduled for the week of May 1, 2000. The materials are organized as follows:

Book Number	Contains	How Arranged
1	Written Examination	1) Written Examination QA Checklist Form ES-401-7 2) Proposed schedule for the examination week. 3) Individual questions followed by an appropriate reference unless the reference is from Technical Specifications, EOPs, Steam Tables, or the EAL chart, in which case, these documents are submitted in their entirety.
2	Operating Examination Part A	1) Operating Tests Quality Checklist, Form ES-301-3 (5). 2) Administrative Topics Outline, Form ES-301-1. 3) Individual Administrative JPMs followed by required references and documentation.

Book Number	Contains	How Arranged
3	Operating Examination Part B	1) Control Room Systems and Facility Walk-Through Test Outline, Form ES-301-2. 2) Individual JPMs followed by required references and documentation.
4	Operating Examination Part C	1) Simulator Scenario Quality Checklist, Form ES-301-4 (5). 2) Transient and Event Checklist, Form ES-301-5 (5). 3) Competencies Checklist, Form ES-301-6 (5). 4) Individual scenarios follow each set of checklist forms.
5	Written Examination	This is a copy of the examination only (not a key) in a ready-to-give condition.
6	Technical Specifications	Complete tabbed set of Technical Specifications.
7	Technical Specifications	Tabbed set of Technical Specifications minus definitions, safety limits, bases, and administrative section. (Set of Technical Specifications to be given to candidates taking the exam.)
8	Various Reference Material	1) EAL Charts (2) 2) Steam Tables (2) 3) Full Set of EOPs 4) Set of EOPs Minus Entry Conditions. (EOPs to be given to candidates taking the exam.)

The facility is proposing that the following material be supplied to the candidates taking the written examination:

1) Emergency Action Level Classification Chart

2) Steam Tables

3) Technical Specifications minus definitions, safety limits, bases, and administrative section.

4) EOPs minus Entry Conditions

5) Calculator

6) M-216 Sheet 1 (TBCCW)

7) PNPS 2.2.87, Page 110 of 128 (HCU Location Matrix)

8) EP-IP-400, Pages 11-12 of 16 (Protective Action Recommendation Process)

Per ES-201 Attachment 1, regarding exam security, I would request that the enclosed materials be withheld from public disclosure until after the examinations have been completed.

If I can provide any additional assistance, please feel free to call Scott Willoughby at (508) 830-7638 or myself at (508) 830-7656.

Sincerely yours,

Vincent P. Magnatta
Senior Facility Representative

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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. U/E/S	6. Explanation	
1	F	2										S		
2	F	2										S		
3	H	4	x									E	Stem clarity	Revised
4	H	2										S		
5	H	2										S		
6	H	3										S		
7	F	2										E	Verify that 'c' is not correct	verified
8	H	3				x						U	in EOPs, so other procedures do not govern.	replaced
9	F	3										S		
10	F	3										S		

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.

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			
11	F	2										S		
12	F	2										S		
13	H	3										S		
14	H	4										E	Use "directed" vs "allowed" - better word choice	revised
15	F	3										E	change "could" to "would", & Stem focus	revised
16	F	2				x						U	more than one correct answer	revised
17	F	2	x			x						U	more than one correct answer and word usage - available/	Revised
18	H	3										S		
19	H	3										S		
20	F	3										S		
21	H	4										S		
22	H	3										S		
23	H	3										S		
24	H	4										S		
25	H	3		x								E	change relief valves in 'c' to SRVs	revised
26	F	2										S		
27	H	4										S	Change answer to 'c' from 'b' (typo)	revised
28	F	2										S		
29	H	3										S		
30	H	3	x			x						U	Without procedure ref. more than one correct	revised

MASTER

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			
31	F	2										S		
32	F	2										S	Verify that HiHi does not cause auto isolation	verified
33	F	3										S		
34	F	2										S		
35	F	2				X						~~E~~ U	'b' & 'd' could also be correct (daily)	revised
36	F	1										S		
37	H	4										S		
38	F	2										S		
39	F	2										S		
40	H	3										S	typo in 'a' or → in	revised
41	F	2										S		
42	H	3										S		
43	H	4										S		
44	H	3										S		
45	F	2										S		
46	F	2										S		
47	H	4										S		
48	F	3										S	Ensure that this is required knowledge	verified
49	F	2										S		
50	F	2	X			X						U	more than one correct and distractors not credible	Revised

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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			
51	F	2										S		
52	H	3										S		
53	H	3										S	long stem - break into 2 paragraphs	revised
54	H	3										S	(Question revised after discussion) add auto...	revised
55	H	3										S		
56	F	3										S	monitor(s) typo	revised
57	F	3										S		
58	F	2										S		
59	F	2										S		
60	H	3										S	verify system operation	revised
61	H	3										S		
62	H	3										S		
63	H	4										S		
64	H	4										S	pump(s) - typo	revised
65	H	3										S		
66	F	2										E	Stem and distractors do not match	revised
67	H	3										S		
68	F	2										S		
69	F	2										S		
70	H	3										S		

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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			
71	H	2										S	Is this required knowledge?	revised
72	H	3										S		
73	H	3										S		
74	H	3										S	add accident to stem	revised
75	H	3										S		
76	F	3										S		
77	F	2										S		
78	H	4										S		
79	H	3										S		
80	F	2										S		
81	H	3										S		
82	H	3										S		
83	F	3										S		
84	F	2				X						U	more than one distractor not credible	revised
85	F	1										S		
86	H	3										S		
87	F	3	x			X						U	More than one correct answer	revised
88	F	3										S		
89	H	4										S		
90	F	2										S		

[illegible]

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			
91	F	2					x					U	more than one correct	revised
92	H	3										S	definition of core alteration	revised
93	H	3										S		
94	H	3										S		
95	H	4										S		
96	F	2										S		
97	H	3										S		
98	F	2										S		
99	H	3				X						U	Distractors not valid	revised
100	H	3										S	add "to" to 'a' - typo (question on 2 min. vs 1 min.	revised
												10	Questions judged unsat (10%)	
												84	Questions are NEW	
												12	NRC EXAM Questions	
												53	Higher level Questions	
												32	SRO level Questions - Adequate sample of 55.43 (b)	

MASTER

Facility: Pilgrim	Date of Exam: 05/01/00	Exam Level: SRO										
Tier	Group	K/A Category Points										Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	5	3	2				7	5			4	26
	2	5	2	4				4	1			1	17
	Tier Totals	10	5	6				11	6			5	43
2. Plant Systems	1	2	1	4	2	2	0	2	4	2	2	2	23
	2	1	1	1	2	1	2	3	1	0	0	1	13
	3	0	0	1	0	0	1	0	0	1	1	0	4
	Tier Totals	3	2	6	4	3	3	5	5	3	3	3	40
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		17
				5		3		2		7		

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.

6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.

7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

ES-401 BWR SRO Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp.	Points
295003 Partial or Complete Loss of AC Pwr / 6						X	2.3.10, Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	1
295006 SCRAM / 1					X		A201, Ability to determine and/or interpret the following as they apply to SCRAM: Reactor Power.	4.6	1
295007 High Reactor Pressure / 3		X					**K201, Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor/turbine pressure regulating system.	3.7	1
295009 Low Reactor Water Level / 2	X						K102, Knowledge of the operational implications of the following concepts as they apply to LOW REACTOR WATER LEVEL: Recirculation pump net positive suction head: Plant-Specific.	3.1	1
295010 High Drywell Pressure / 5			X	X			K304, Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Leak investigation. A102, Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell floor and equipment drain sumps.	3.8 3.6	1 1
295013 High Suppression Pool Temp. / 5				X			A101, Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Suppression pool cooling.	3.9	1
295014 Inadvertent Reactivity Addition / 1		X			X		K206, Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: Moderator temperature. **A203, Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of reactivity addition.	3.5 4.3	1 1
295015 Incomplete SCRAM / 1					X		A201, Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Reactor power.	4.3	1
295016 Control Room Abandonment / 7				X		X	A105, Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: D.C. electrical distribution. 2.3.5, Knowledge of use and function of personnel monitoring equipment.	2.9 2.5	1 1
295017 High Off-site Release Rate / 9		X		X			K209, Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Condenser air removal system: Plant specific. **A109, Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Standby gas treatment/FRVS.	2.9 3.8	1 1
295023 Refueling Accidents	X		X				K102, Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS: Shutdown margin. K304, Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Non-coincident SCRAM function.	3.6 3.5	1 1
295024 High Drywell Pressure / 5	X						K101, Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE: Drywell integrity: Plant specific.	4.2	1
295025 High Reactor Pressure / 3	X						K104, Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Decay heat generation.	3.9	1

** K/A was selected based on Plant-Specific Priorities. See page 12 for details.

ES-401 BWR SRO Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295026 Suppression Pool High Water Temp. / 5					X		A201, Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature.	4.2	1
295027 High Containment Temperature / 5							N/A for PNPS.		
295030 Low Suppression Pool Water Level / 5						X	**2.4.6, Knowledge of symptom based EOP mitigation strategies.	4.0	1
295031 Reactor Low Water Level / 2					X		A202, Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL: Reactor power.	4.2	1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X		X	A105, Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: CRD hydraulics system. **2.4.6, Knowledge of symptom based EOP mitigation strategies.	4.0 4.0	1 1
295038 High Off-Site Release Rate / 9				X			**A106, Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Plant ventilation.	3.6	1
500000 High Containment Hydrogen Conc. / 5	X			X			K101, Knowledge of the operational implications of the following concepts as they apply to HIGH CONTAINMENT HYDROGEN CONCENTRATIONS: Containment integrity. A106, Ability to operate and monitor the following as they apply to HIGH CONTAINMENT HYDROGEN CONTROL: Drywell sprays.	3.9 3.4	1 1
K/A Category Totals:	5	3	2	7	5	4	Group Point Total:		26

** K/A was selected based on Plant-Specific Priorities. See page 12 for details.

ES-401 BWR SRO Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4				X			A107, Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Nuclear Boiler Instrumentation System	3.2	1
295002 Loss of Main Condenser Vacuum / 3	X						K103, Knowledge of the operational implications of the following concepts as they apply to LOSS OF MAIN CONDENSER VACUUM: Loss of heat sink.	3.8	1
295004 Partial or Total Loss of DC Pwr / 6			X				K302, Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Ground isolation/fault determination	3.3	1
295005 Main Turbine Generator Trip / 3				X			A104, Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: Main generator controls	2.8	1
295008 High Reactor Water Level / 2		X					K202, Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: Reactor feedwater system	3.8	1
295011 High Containment Temperature / 5							N/A for PNPS.		
295012 High Drywell Temperature / 5							Not randomly selected.		
295018 Partial or Total Loss of CCW / 8							Not randomly selected.		
295019 Partial or Total Loss of Inst. Air / 8				X			A101, Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Backup air supply	3.3	1
295020 Inadvertent Cont. Isolation / 5 & 7			X				K303, Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell/containment temperature response	3.2	1
295021 Loss of Shutdown Cooling / 4	X						K104, Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING: Natural circulation	3.7	1
295022 Loss of CRD Pumps / 1			X				K301, Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: Reactor SCRAM	3.9	1
295028 High Drywell Temperature / 5	X						K102, Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE: Equipment environmental qualification	3.1	1
295029 High Suppression Pool Water Level / 5						X	2.1.14, Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
295032 High Secondary Containment Area Temperature / 5				X			A105, Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Affected systems so as to isolate damaged portions	3.9	1
295033 High Secondary Containment Area Radiation Levels / 9	X						K102, Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Personnel protection	4.2	1
295034 Secondary Containment Ventilation High Radiation / 9	X						K102, Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION: Radiation releases.	4.4	1

ES-401 BWR SRO Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295035 Secondary Containment High Differential Pressure / 5		X					K204, Knowledge of the interrelations between SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE and the following: Blow-out panels: Plant Specific	3.7	1
295036 Secondary Containment High Sump/Area Water Level / 5			X				K301, Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Emergency depressurization.	2.8	1
600000 Plant Fire On Site / 8					X		A209, Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: That a failed fire alarm detector exists	2.8	1
K/A Category Point Totals:	5	2	4	4	1	1	Group Point Total:		17

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ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Points
201005 RCIS												N/A for PNPS.		
202002 Recirculation Flow Control									X			A303, Ability to monitor automatic operations of the RECIRCULATION FLOW CONTROL SYSTEM including: Scoop tube operation: BWR-2, 3, 4.	3.0	1
203000 RHR/LPCI: Injection Mode			X									K302, Knowledge of the effect that a loss or malfunction of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) will have on the following: Suppression pool level.	3.5	1
206000 HPCI								X				A202, Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: Valve closures: BWR-2, 3, 4.	3.5	1
207000 Isolation (Emergency) Condenser												N/A for PNPS.		
209001 LPCS			X									K302, Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on the following: ADS logic.	3.9	1
209002 HPCS												N/A for PNPS.		
211000 SLC					X							K504, Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM: Explosive valve operation.	3.2	1
212000 RPS		X										K201, Knowledge of electrical power supplies to the following: RPS motor-generator sets.	3.3	1
215004 Source Range Monitor								X				A206, Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failed recorder.	2.5	1
215005 APRM / LPRM							X				X	2.1.8, Ability to coordinate personnel activities outside the control room. A105, Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: Lights and alarms.	3.6 3.2	1 1

ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
216000 Nuclear Boiler Instrumentation								X				A204, Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Detector diaphragm failure or leakage.	3.0	1
217000 RCIC					X							K507, Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): Assist core cooling.	3.1	1
218000 ADS										X		A407, Ability to manually operate and/or monitor in the control room: ADS valve acoustical monitor noise: Plant-Specific	3.8	1
223001 Primary CTMT and Auxiliaries								X	X			A302, Ability to monitor automatic operations of the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES including: Vacuum breaker/relief valve operation. **A207, Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High drywell pressure.	3.4 4.3	1 1
223002 PCIS/Nuclear Steam Supply Shutoff				X								K408, Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Manual defeating of selected isolations during specified emergency conditions.	3.7	1
226001 RHR/LPCI: CTMT Spray Mode				X								K405, Knowledge of RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE design feature(s) and/or interlocks which provide for the following: Pump minimum flow protection.	2.5	1
239002 SRVs											X	**2.1.9, Ability to direct personnel activities inside the control room.	4.0	1
241000 Reactor/Turbine Pressure Regulator										X		A402, Ability to manually operate and/or monitor in the control room: Reactor pressure.	4.1	1

** K/A was selected based on Plant-Specific Priorities. See page 12 for details.

ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
259002 Reactor Water Level Control			X									K304, Knowledge of the effect that a loss or malfunction of the REACTOR WATER LEVEL CONTROL SYSTEM will have on the following: Recirculation system: Plant-Specific.	3.0	1
261000 SGTS	X											K108, Knowledge of the physical connections and/or cause-effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: Process radiation monitoring system.	3.1	1
262001 AC Electrical Distribution							X					A104, Ability to predict and/or monitor changes in parameters associated with operating the A.C. ELECTRICAL DISTRIBUTION controls including: Load currents.	2.9	1
264000 EDGs	X											K104, Knowledge of the physical connections and/or cause-effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and the following: Emergency generator cooling water system.	3.3	1
290001 Secondary CTMT			X									K301, Knowledge of the effect that a loss or malfunction of the SECONDARY CONTAINMENT will have on the following: Off-site radioactive release rates.	4.4	1
K/A Category Point Totals:	2	1	4	2	2	0	2	4	2	2	2	Group Point Total:		23

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ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Points
201001 CRD Hydraulic												Not randomly selected.		
201002 RMCS							X					A103, Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Rod movement sequence lights.	2.9	1
201004 RSCS												N/A for PNPS.		
201006 RWM						X						K603, Knowledge of the effect that a loss or malfunction of the following will have on the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT-SPECIFIC): Rod position indication: P-Spec (Not-BWR6).	2.9	1
202001 Recirculation						X						K601, Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM: Jet pumps: Plant-specific.	3.7	1
204000 RWCU												Not randomly selected.		
205000 Shutdown Cooling			X									K304, Knowledge of the effect that a loss or malfunction of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) will have on the following: Recirculation loop temperatures.	3.7	1
214000 RPIS					X							K501, Knowledge of the operational implications of the following concepts as they apply to ROD POSITION INFORMATION SYSTEM: Reed switches.	2.8	1
215002 RBM												Not randomly selected.		
215003 IRM												Not randomly selected.		
219000 RHR/LPCI: Torus/Pool Cooling Mode		X										K203, Knowledge of electrical power supplies to the following: Valve control logic: Plant-Specific.	2.6	1
230000 RHR/LPCI: Torus/Pool Spray Mode											X	2.4.19, Knowledge of EOP layout/symbols/and icons.	3.7	1
234000 Fuel Handling Equipment												Not randomly selected.		
239003 MSIV Leakage Control												N/A for PNPS.		
245000 Main Turbine Gen. and Auxiliaries							X					A105, Ability to predict and/or monitor changes in parameters associated with operating the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS controls including: Reactor pressure.	3.4	1
259001 Reactor Feedwater				X								K402, Knowledge of REACTOR FEEDWATER SYSTEM design feature(s) and/or interlocks which provide for the following: Feedwater heating.	2.9	1

ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
262002 UPS (AC/DC)												N/A for PNPS.		
263000 DC Electrical Distribution				X								K401, Knowledge of D.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: Manual/automatic transfers of control: Plant-Specific.	3.4	1
271000 Offgas								X				A202, Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low dilution steam flow.	3.1	1
272000 Radiation Monitoring												Not randomly selected.		
286000 Fire Protection												Not randomly selected.		
290003 Control Room HVAC							X					A104, Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROOM HVAC controls including: Control room pressure.	2.8	1
300000 Instrument Air	X											K104, Knowledge of the connections and/or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: Cooling water to compressor.	2.9	1
400000 Component Cooling Water												Not randomly selected.		
K/A Category Point Totals:	1	1	1	2	1	2	3	1	0	0	1	Group Point Total:		13

ES-401 BWR SRO Examination Outline Form ES-401-1
Plant Systems - Tier 2/Group 3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201003 Control Rod and Drive Mechanism												Not randomly selected.		
215001 Traversing In-core Probe												Not randomly selected.		
233000 Fuel Pool Cooling and Cleanup												Not randomly selected.		
239001 Main and Reheat Steam										X		**A409, Ability to manually operate and/or monitor in the control room: Reactor pressure.	3.9	1
256000 Reactor Condensate									X			A304, Ability to monitor automatic operations of the REACTOR CONDENSATE SYSTEM including: System flow.	3.0	1
268000 Radwaste						X						K602,Knowledge of the effect that a loss or malfunction of the following will have on the RADWASTE: Plant air systems	2.6	1
288000 Plant Ventilation			X									K304, Knowledge of the effect that a loss or malfunction of the PLANT VENTILATION SYSTEMS will have on the following: Secondary containment pressure: Plant-Specific	3.3	1
290002 Reactor Vessel Internals												Not randomly selected.		
K/A Category Point Totals:	0	0	1	0	0	1	0	0	1	1	0	Group Point Total:		4

** K/A was selected based on Plant-Specific Priorities. See page 12 for details.

Plant-Specific Priorities			
System / Topic	Recommended Replacement for...	Reason	Points
295007 – K201, Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor/turbine pressure regulating system.	295007 - 2.3.9, Knowledge of the process for performing a containment purge.	Containment purge does not relate to high reactor pressure. Replace with a question from Risk Significant Human Error Probabilities.	1
295014 – A203, Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of reactivity addition.	295014 – 2.1.15, Ability to manage short-term information such as night and standing orders.	Ability to manage short-term information does not relate well to inadvertent reactivity addition. Loss of feedwater heating has occurred since the last outage. Cover this topic with a question in this area.	1
295017 – A109, Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Standby gas treatment/FRVS.	295017 - A202, Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Total number of curies released: Plant specific.	Calculating total curies is beyond on-shift SRO responsibilities. Take question from IPE Human Performance Perspectives.	1
295030 – 2.4.6, Knowledge of symptom based EOP mitigation strategies.	295030 - 2.3.7, Knowledge of the process for preparing a radiation work permit.	Preparing an RWP does not relate closely with low suppression pool water level. Replace with a question concerning mitigation of low torus water level that may be implemented during a seismic event as described in the FSAR.	1
295037 – 2.4.6, Knowledge of symptom based EOP mitigation strategies.	295037 - 2.4.33, Knowledge of the process used to track inoperable alarms.	Process used to track inoperable alarms not applicable to ATWS. Replace with 2.4.6 which can be related to Risk Significant Human Error Probabilities.	1
295038 – A106, Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Plant ventilation.	295038 - 2.4.25, Knowledge of fire protection procedures.	Fire Protection procedures do not relate to high off-site release rate. Replace with a question related to Risk Significant Human Error Probabilities.	1
223001 – A207, Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High drywell pressure.	223001 - K304, Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES will have on the following: Containment/drywell hydrogen gas concentration.	Since Pilgrim does not have hydrogen recombiners or ignitors, this KA may not be meaningful. Replace with a question related to Risk Significant Human Error Probabilities.	1
239002 – 2.1.9, Ability to direct personnel activities inside the control room.	239002 - 2.3.6, Knowledge of the requirements for reviewing and approving release permits.	Release permits not related to SRV's. Replace with a question related to Risk Significant Human Error Probabilities.	1
239001 – A409, Ability to manually operate and/or monitor in the control room: Reactor pressure.	290002 - K307, Knowledge of the effect that a loss or malfunction of the REACTOR VESSEL INTERNALS will have on the following: Nuclear boiler instrumentation.	Loss or malfunction of reactor vessel internals may not result in specific changes to nuclear boiler instrumentation. Replace with question related to Risk Significant Human Error Probabilities.	1
2.1.32, Ability to explain and apply system limits and precautions.	2.3.6, Knowledge of the requirements for reviewing and approving release permits.	Minimal involvement by SRO's in reviewing/approving release permits. Replace with a question covering specific recent LER.	1
Plant-Specific Priority Total (limit 10):			10

Facility: Pilgrim		Date of Exam: 05/01/00	Exam Level: SRO	
Category	K/A #	Topic	Imp.	Points
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements.	3.8	1
	2.1.3	Knowledge of shift turnover practices.	3.4	1
	2.1.13	Knowledge of facility requirements for controlling vital/controlled access.	2.9	1
	2.1.24	Ability to obtain and interpret station electrical and mechanical drawings.	3.1	1
	**2.1.32	Ability to explain and apply system limits and precautions.	3.8	1
	Total			5
Equipment Control	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
	2.2.7	Knowledge of the process for conducting tests or experiments not described in the safety analysis report.	3.2	1
	2.2.30	Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area/communication with fuel storage facility/systems operated from the control room in support of fueling operations/and supporting instrumentation.	3.3	1
	Total			3
Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control/including permissible levels in excess of those authorized.	3.1	1
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
	Total			2
Emergency Procedures/ Plan	2.4.11	Knowledge of abnormal condition procedures.	3.6	1
	2.4.16	Knowledge of EOP implementation hierarchy and coordination with other support procedures.	4.0	1
	2.4.17	Knowledge of EOP terms and definitions.	3.8	1
	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1
	2.4.32	Knowledge of operator response to loss of all annunciators.	3.5	1
	2.4.38	Ability to take actions called for in the facility emergency plan/including (if required) supporting or acting as emergency coordinator.	4.0	1
	2.4.44	Knowledge of emergency plan protective action recommendations.	4.0	1
	Total			7
Tier 3 Point Total				17

** K/A was selected based on Plant-Specific Priorities. See page 12 for details.

Question Number: 1

The plant is in refuel and fuel is currently being moved from the core to the spent fuel pool when power is lost to the 'C' Refuel Floor Radiation Monitor. Which ONE of the following would allow continued refuel operations?

a. Isolating the Secondary Containment and starting SBGT system.

b. Entering an active 7-day LCO.

c. Verifying that the 'A' Refuel Floor Radiation Monitor is operable.

d. Entering a tracking LCO.

Answer: a

References:

Tech Spec Table 3.2.D
10CFR55.43.(b)(4)

Explanation:

a. Correct answer. Required action in accordance with Tech Spec Table 3.2.D action 'B'.
b. While T.S. action is required, immediate action is required.
c. Since only two instruments exist per channel and two are required, the status of the 'A' monitor is not required to be known in order to determine required action.
d. While T.S. action is required, it is an action condition.

Objective:	O-RO-02-03-02, EO-14	**K/A:**	295003G2310
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 2

A plant transient has initiated a reactor scram. Which ONE of the following describes when the reactor is determined to be shutdown?

a. When APRM downscale lights are ON.

b. When APRM's indicate below 3% and lowering.

c. When power is in the SRM range.

d. When power is on or below range 7 of IRM's and lowering.

Answer: **d**

References:

PNPS 2.1.6 (page 5/13)
10CFR55.41.(b)(10)

Explanation:

a. This action is required on reactor scram, but does not assure reactor is shutdown.
b. This action corresponds to verifying that APRM recorders read below downscale setpoint.
c. Power would be expected to reach SRM range, but not required to verify shutdown.
d. Definition of shutdown.

Objective:	O-RO-03-04-04, EO-16	**K/A:**	295006A201
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 3

With the plant initially operating at 100% power, a malfunction in the selected feedwater level control instrument has caused indicated RPV level to rise with a sustained reduction in feedwater flow to the RPV. No other malfunctions occur. Following are plant conditions:

- Feedwater flow is 1.0 X 10^6 lbm/hr
- Actual RPV level is 30" and lowering
- Indicated RPV level is 35" and rising

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system and the bases for that response?

a. Reactor Recirc Runback to 26% Pump Speed to ensure adequate Recirc pump NPSH.

b. Reactor Recirc Runback to 26% Pump Speed to prevent a reactor scram.

c. Reactor Recirc Runback to 44% Pump Speed to prevent a reactor scram.

d. Reactor Recirc Runback to 44% Pump Speed to ensure adequate Recirc pump NPSH.

Answer: a

References:

Recirc Flow Control Reference Text (page 8/21)
10CFR55.41.(b)(3)

Explanation:

a. Reactor Recirc Runback to 26% Pump Speed will start immediately upon feedwater flow going less than 20%.
b. The Reactor Recirc Runback to 26% Pump Speed is based on NPSH considerations for the Reactor Recir pumps not preventing a reactor scram.
c. The Reactor Recirc Runback to 44% Pump Speed requires a RPV level of 19" to initiate.
d. The Reactor Recirc Runback to 44% Pump Speed requires a RPV level of 19" to initiate.

Objective:	O-RO-02-06-10, EO-8.	**K/A:**	295009K102
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 4

A plant startup is in progress and reactor power is 20% with the following conditions:

- Primary containment inerted IAW PNPS 2.1.1 and 2.2.70
- Drywell equipment drain leakage at 8 GPM for the past 3 shifts
- Drywell floor drain leakage increased from 1.2 GPM to 3.4 GPM over the past 3 shifts

Based on current plant conditions, which ONE of the following actions are required:

a. Reduce the leakage to within acceptable limits within 12 hours or be in hot shutdown within the following 24 hours.

b. Identify the source of leakage within 4 hours or be in hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.

c. Immediately commence a reactor shutdown and be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours without regard to the source of leakage.

d. Identify the source of leakage within 6 hours or be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours.

Answer: b

References:

Tech Spec 3.6.C.1.C
10CFR55.43.(b)(2)

Explanation:

a. Variation of T.S. 3.5.C.1.b (attached).
b. Correct answer per attached T.S. 3.6.C.1.C.
c. While a shutdown may be required based on leak identification, an immediate shutdown is NOT required.
d. Identifying the source of the leakage is limited to 4 hours per T.S. 3.6.C.1.C.

Objective:	O-RO-02-08-09, EO-8	**K/A:**	295010A102
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 5

The plant is at power when drywell pressure starts to rapidly rise. Subsequent investigation reveals that the 'A' reactor recirculation pump seals have both failed catastrophically. Based on plant conditions, what actions are required, and what is the bases for these actions?

a. Close the recirc suction valve before the discharge valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.

b. Close the recirc suction valve before the discharge valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

c. Close the recirc discharge valve before the suction valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.

d. Close the recirc discharge valve before the suction valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

Answer: a

References:

PNPS 2.4.22 (page 3/4)
10CFR55.41.(b)(5)

Explanation:

a. The discharge valve has greater capability to close against system ΔP than the suction valve. Therefore, during a seal failure event, the suction valve is closed prior to the discharge valve when isolating the Recirc pump.

b,c,d Variations of a. above

Objective:	O-RO-02-06-02, EO-15	**K/A:**	295010K304
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 6

A RCIC surveillance is in progress with the 'A' loop of RHR being placed in torus cooling. Based on plant conditions, which ONE of the following actions is required and the bases for that action?

a. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.

b. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop LPCI injection valves.

c. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.

d. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop drywell spray valves.

Answer: c

References:
PNPS 2.2.19 (page 14/148)
LER 98-007
10CFR55.43.(b)(5)

Explanation:

a. While it is true that the suppression pool cooling valves would be opened, this would not require drywell spray to be declared inoperable.
b. LPCI injection valves would still have power.
c. Correct answer.
d. While it is true that the 'A' loop drywell spray valves will lose power, this would not require declaring drywell spray inoperable.

Objective: O-RO-02-09-01, EO-12		**K/A:**	295013A101
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level: SRO		**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 7

The plant is operating at 100% power on the 100% load line when a loss of feedwater heating occurs resulting in reactor power peaking at 105%. Reactor Recirculation pump speed is being lowered in accordance with station procedures.

Based on plant conditions, which ONE of the following describes when to stop lowering Reactor Recirculation pump speed?

a. When reactor power lowers to 80%.

b. When core flow reaches 39 Mlbm/hr.

c. When core flow reaches 36 Mlbm/hr.

d. Only when Reactor Recirculation pump speed reaches minimum (26%).

Answer: b

References:

PNPS 2.4.150 (page 2/12)
PNPS 2.1.14, (page 32/36)
10CFR55.41.(b)(10)

Explanation:

a. In accordance with PNPS 2.4.150 reactor power is required to be lowered to 25% below PRETRANSIENT LEVEL (i.e., 75% not 80%).
b. Correct answer. In accordance with PNPS 2.1.14, if reactor power is at or above the 67% load line, reactor power is lowered until core flow is $\geq$ 39 Mlbm/hr.
c. Old number for core flow.
d. It would obviously stop here, but flow is only allowed to be lowered to 39 Mlbm/hr. at this point.

Objective:	O-RO-02-04-09, EO-12	**K/A:**	295014K206
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 8

The plant is operating at 100% power when an ATWS occurs concurrent with a loss of both RPS buses. Following are plant conditions:

- RPV pressure is being maintained by keeping three (3) SRVs open and cycling the 4th SRV
- Suppression pool temperature is 110°F and rising
- APRM downscale lights are ON

Based on plant conditions, boron injection is:

a. Not required.

b. Required by EOP-02.

c. Not required by EOP-02, but is required by Operations Policy Standards using RWCU.

d. Not required by EOP-02, but is required by Operations Policy Standards using SBLC.

Answer: b

References:
EOP-02
10CFR55.43.(b)(5)

Explanation:

a. Boron injection is required.
b. Correct answer. Power is ~ 15-20% (5% power/SRV). With the torus at 110° F and power at ~15-20%, the BIIT curve has been exceeded and boron injection is required.
c. Required by EOP-02.
d. Required by EOP-02.

Objective:	O-RO-03-04-04, EO-23	**K/A:**	295015A201
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 9

The plant was operating at 100% power when a fire requiring the evacuation of the control room occurs. Additionally, RCIC Outboard Injection Valve (MO-1301-48) isolates on a spurious signal and cannot be re-opened.

Based on these conditions, which ONE of the following describes the use the RCIC system?

a. May be run in pressure control, but without cooling water.

b. May be run in pressure control, but without minimum flow protection.

c. May be run in pressure control, but not lined up for injection.

d. May not be run in either pressure control or injection mode.

Answer: **d**

References:

RCIC Reference Text
10CFR55.41.(b)(7)

Explanation:

a. Cooling water line taps off before 48 valve.
b. Min. flow line taps off before 48 valve.
c. Full flow test line (pressure control) taps off between the 48 valve and 49 valve, with 48 valve closed, cannot line up for pressure control.
d. 48 valve prevents both pressure control and injection mode (see c. explanation above)

Objective:	O-RO-02-09-04, EO-2	**K/A:**	295016A105
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 10

A plant startup is in progress with the mechanical vacuum pump being placed in service per station procedures when chemistry technicians report that reactor water samples indicate high levels of coolant activity.

Under these conditions, the main steam line radiation monitors:

a. Are not required to be operable.

b. Will trip the mechanical vacuum pump when the HI setpoint is reached.

c. Will trip the mechanical vacuum pump when the HI-HI setpoint is reached.

d. Would not show an increase since no steam is flowing through the main steam lines.

Answer: c

References:
PNPS 2.1.1 (page 33/125)
Tech Spec 3.8.2
10CFR55.41.(b)(7)

Explanation:

a. Required to be operable if MSIVs open and steam flow past, the procedure requires turbine seals establish prior to starting mechanical vacuum pump.
b. HI setpoint is alarm only.
c. Correct answer. HI-HI setpoint will trip the mechanical vacuum pump.
d. Since turbine seals are established, there is steam flowing past detectors.

Objective: O-RO-02-03-02, EO-4a		**K/A:**	295017K209
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level: RO		**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 11

The plant is starting up following a refueling outage with Reactor Engineering performing an in-sequence shutdown margin demonstration. Shutdown margin has been determined to be .20% ΔK with the most reactive rod withdrawn.

Based on this information, which ONE of the following actions is required?

a. Manually scram the reactor and be in cold shutdown within 24 hours.

b. Initiate an orderly shutdown and remain in hot shutdown until the cause has been determined.

c. Initiate an orderly shutdown and be in cold shutdown within 24 hours.

d. Manually scram the reactor and remain in hot shutdown until the cause has been determined.

Answer: c

References:

Tech Spec 3.3.A and 3.3.F
10CFR55.43.(b)(2)

Explanation:

a. A manual scram is not required.
b. The plant is required to be placed in cold shutdown.
c. Correct answer per Tech Spec 3.3.F.
d. A manual scram is not required. The plant is required to be placed in cold shutdown.

Objective:	O-RO-03-04-05, EO-14	**K/A:**	295023K102
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

Question Number: 12

The plant is in refuel with the following conditions:

- New fuel is being loaded into the core
- All SRM shorting links have been removed
- SRM count rate is at 1E+5 and increasing
- SRM rod block generated

Based on plant conditions, which ONE of the following describes the response of the SRM system as the count rate increases to 5E+5 CPS?

a. A SRM Hi-Hi alarm and no other automatic actions.

b. A full reactor scram will not occur until any 2 SRM channels reach 5E+5 CPS.

c. A full reactor scram will not occur until either 'A' or 'C' AND either 'B' or 'D' SRM reaches 5E+5 CPS.

d. When any one SRM channel reaches 5E+5 counts, a full reactor scram will occur.

Answer: d

References:

M1N prints
SRM Reference Text (page 17/35)
10CFR55.41.(b)(7)

Explanation:

a. A non-coincident scram will occur when any SRM channel reaches 5E+5 CPS
b. Scram is non-coincident.
c. Scram is non-coincident.
d. Correct answer. A non-coincident scram will occur when any SRM channel reaches 5E+5 CPS

Objective:	O-RO-02-07-01, EO-9d	**K/A:**	295023K304
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 13

A loss of coolant accident has occurred and drywell spray was initiated in accordance with EOP-03. As drywell temperature and pressure are decreasing, the unacceptable region on the Drywell Spray Initiation Limit curve is entered at a drywell temperature of 250°F.

Based on plant conditions, which ONE of the following actions is the required?

a. Secure drywell spray when drywell pressure drops below 2.2 psig.

b. Secure drywell spray when torus bottom pressure drops below 2.2 psig.

c. Adjust drywell spray as necessary to maintain operation within the Drywell Spray Initiation Limit curve.

d. Immediately secure drywell spray.

Answer: a

References:
O-RO-03-04-02 (page IG-68)
10CFR55.43.(b)(5)

Explanation:

a. Correct answer per EOP-3.
b. Torus spray is secured when torus press drops below 2.2 psig, not drywell pressure.
c. No requirements or capability to adjust or thottle DW spray.
d. No requirement to secure drywell sprays if DSIL entered. Only required when DW pressure drops below 2.2 psig.

Note: 1997 NRC SRO Exam - Question #56

Objective:	O-RO-03-04-02, EO-23	**K/A:**	295024K101
Tier #: 1	**Group:** 1	**Question Source:**	Bank
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 14

The plant was operating at 100% power when a loss of coolant accident occurred. Following are plant conditions:

- Drywell temperature is 275°F
- Drywell pressure is 10 psig
- Torus water level is 130 inches
- Torus bottom pressure is 15 psig
- Reactor water level is being maintained +20 to +40 with condensate
- H_2 Concentration is 7% in the drywell and 2% in the torus
- O_2 Concentration is 6.5% in the drywell and 2% in the torus

Based on plant conditions, which ONE of the following describes the use of drywell spray?

a. Allowed by the drywell temperature control leg of EOP-03, but not allowed by the primary containment pressure control and hydrogen/oxygen control legs of EOP-03.

b. Allowed by the primary containment pressure control leg of EOP-03, but not allowed by the drywell temperature control and hydrogen/oxygen control legs of EOP-03.

c. Allowed by the hydrogen/oxygen control and drywell temperature control legs of EOP-03, but not allowed by the primary containment pressure control leg of EOP-03.

d. Allowed by the drywell temperature control and primary containment pressure control legs of EOP-03, but not allowed by the hydrogen/oxygen control leg of EOP-03.

Answer: c

References:

EOP-03
10CFR55.43.(b)(5)

Explanation:

a-d Operation is in safe region of DSIL. Drywell temperature allows spraying above 150 degrees and before 280 degrees. Primary Containment Pressure Control requires torus bottom to reach 16 psig prior to spraying. Combustible gas mixture combined with inability to lower it requires drywell spray provided that these pumps are not needed for adequate core cooling.

Objective:		**K/A:**	500000A106
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 15

Which ONE of the following actions and/or processes could jeopardize containment integrity following a sustained period of inadequate core cooling?

a. Operation of reactor building-torus and torus-drywell vacuum breakers.

b. Radiolysis of water due to hydrogen injection prior to the loss of adequate core cooling.

c. Initiation of LPCI to restore adequate core cooling.

d. A feedwater leak into containment when hydrogen injection is in service.

Answer: a

References:

Transient and Accident Studies Reference Text
10CFR55.41.(b)(5)

Explanation:

a. Would introduce oxygen when hydrogen is already present.
b. Radiolysis of water not caused by hydrogen injection.
c. This is a correct action and would not result in introducing hydrogen or oxygen.
d. Would introduce hydrogen only which is already present.

Objective:	None identified	**K/A:**	500000K101
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 16

The plant was operating at 100% when an ATWS occurred. All steps of the RPR array have been successfully completed. Which ONE of the following is the recommended method for inserting the remaining rods assuming this will not excessively delay rod insertion?

a. Insert rods starting in the center of the core and spiraling outward.

b. Insert rods starting at the core periphery and spiraling inward.

c. Insert all rods in one bank, then all rods in the other bank.

d. Insert rods in the reverse order of the pull sheets.

Answer: d

References:

PNPS 5.3.23 (page 6/19)
10CFR55.41.(b)(10)

Explanation:

a-d Per PNPS 5.3.23, the recommended method for inserting the remaining rods, assuming this will not excessively delay rod insertion, is in the reverse order of the pull sheets. Spiraling is a practice that is not used at PNPS.

Objective:	O-RO-03-04-04, EO-24	**K/A:**	295037A105
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 17

The plant was operating at 100% power when a DBA LOCA occurred. Following are plant conditions:

- Suppression pool temperature is 115°F.
- Panel Y-3 is de-energized

Based on plant conditions, which ONE of the following describes the availability of the suppression pool temperature recorder on C170?

a. Available for use.

b. Not available unless power is restored.

c. Not available because it is not a post accident monitor, otherwise, it is fully functional.

d. Not available because it has lost power. If power is restored, it is still not available because it is not a post accident monitor.

Answer: b

References:
120 VAC Reference Text, Table 4
10CFR55.41.(b)(7)

Explanation:
a-d This instrument receives power from Y-3. It is a PAM qualified instrument. The reference lists loads from Y-3 and Y-4. Y-3 supplies C-170 and Y-4 supplies C-171. Therefore, the instrument on C-170 is powered from Y-3.

Objective:	None identified	**K/A:**	295026A201
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 18

The plant was operating at 100% power when an inadvertent closure of the MSIV's occurred with a failure of control rods to insert. Following are plant conditions:

- RPV pressure being maintained 1000 psig to 1050 psig with 3 SRV's
- RPV level being maintained at 15" with FWLC in automatic
- SBLC has been initiated based on reaching BIIT with a suppression pool temperature of 115°F
- Blue scram lights are off

Based on plant conditions, which ONE of the following actions is required?

a. Verify both reactor recirculation pumps are run back to minimum speed.

b. Stop and prevent injection into the RPV from all sources except boron and CRD.

c. Perform an alternate depressurization in accordance with EOP-27 due to exceeding the HCTL.

d. Stop and prevent injection into the RPV from all sources except boron, CRD and RCIC.

Answer: b

References:
EOP-02
PNPS 5.3.23 (page 5/19)
10CFR55.43.(b)(5)

Explanation:
a. Not required before tripping the pumps because MSIVs are closed.
b. Required since you meet condition for level/power control.
c. Not required since HCTL not exceeded.
d. Not required since stopping injection from CRD, boron and RCIC is for the 'P' leg of EOP-02.

Objective:	O-RO-03-04-04, EO-23	**K/A:**	295031A202
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 19

The plant was operating at 100% power when a transient caused both recirc pumps to trip, resulting in a small break LOCA. Following are plant conditions:

- RPV level at -75" on Fuel Zone indication
- RPV pressure at 1000 psig
- Drywell temperature at 212°F.

Based on plant conditions, which ONE of the following describes the reliability of the Fuel Zone Level instrument?

a. Will be unreliable since the reference leg has reached saturation temperature.

b. Will read erroneously low since it is calibrated with both reactor recirculation pumps running.

c. Will read erroneously low since it is calibrated at a reactor water temperature of 212°F.

d. Will read erroneously high since it is calibrated at a reactor water temperature of 212°F.

Answer: c

References:
PNPS 2.2.80
10CFR55.41.(b)(7)

Explanation:
a. 212°F is saturation temperature for 0 psig, not for 1000 psig.
b. Fuel zone level is calibrated with Reactor Recirculation pumps off.
c. Correct answer. Fuel zone is calibrated at 212°F reactor water temperature.
d. 212°F is saturation temperature for 0 psig, not for 1000 psig.

Objective:	O-RO-02-06-01, EO-5i	**K/A:**	295001A107
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 20

The plant was operating at 100% when a loss of main condenser vacuum occurred. Following are plant conditions:

- Main condenser at 5" Hg vacuum and stable
- RPV level at +50" and lowering slowly
- RPV pressure at 1050 psig and rising
- All scram actions complete

Based on plant conditions, which ONE of the following system(s) is(are) available for RPV pressure control?

a. SRVs only.

b. SRVs and Bypass Valves.

c. SRVs and Main Steam Line Drains.

d. SRVs, Main Steam Line Drains, HPCI and RCIC.

Answer: c

References:

Tech Spec Table 3.2 series
10CFR55.41.(b)(10)

Explanation:

a. In addition to SRVs, Main Steam Line Drains are available.
b. Bypass valves go closed at 7" Hg condenser vacuum.
c. SRVs and Main Steam Line Drains both are available, Group I isolation does not occur until 55 inches.
d. HPCI and RCIC trip at +45 inches RPV level.

Objective:	O-RO-02-09-03, EO-5	**K/A:**	295002K103
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 21

The plant is operating at 100% power with the 'A' oil pump on the 'B' Recirculation MG set out of service when a loss of D-5 occurs. Following are plant conditions:

- DC lube oil pump on the 'B' Recirculation MG set fails to start
- Amps peg high on the 'B' Recirculation MG set

Based on plant conditions, which ONE of the following describes the method for securing the 'B' Recirculation MG set and the bases for that action?

a. Scramming the plant since this will de-energize bus A-4.

b. Opening the field breaker locally since it cannot be opened from the control room.

c. Opening the drive motor breaker locally since it cannot be opened from the control room.

d. Scramming the plant since this will automatically trip the drive motor breaker when RPV level drops below +12".

Answer: a

References:
PNPS 5.3.12
10CFR55.41.(b)(10)

Explanation:
a. Correct action in accordance with PNPS 5.3.12.
b. Same as c. below.
c. This action would be correct only if the 'B' recirculation system DC emergency bearing oil pump was running, which it is not.
d. Correct action, but wrong reason, drive motor.

Objective:	None identified	**K/A:**	295004K302
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 22

A plant startup is in progress with the following conditions:

- Reactor power at 16%
- RPV level at 52" and rising due to FWLC malfunctions
- All efforts to reverse the rising RPV level trend have been unsuccessful

Based on plant conditions, which ONE of the following actions is now required?

a. Transfer RPV level control to the startup feed reg flow valve.

b. Close 1st point feedwater heater A & B outlet block valves.

c. Trip the running feed pump.

d. Scram the reactor.

Answer: **d**

References:
PNPS 2.4.49 and 2.2.82
10CFR55.41.(b)(10)

Explanation:

a. Reactor power is greater than the capacity of the startup feed regulating flow valve.
b. The purpose of shutting the block valves would be to direct flow through the startup regulating flow control valve which cannot be used at this power level.
c. The feed pump(s) shall not be tripped with the mode switch in run. The mode switch would have been placed in run at ~10-12% reactor power.
d. Correct action per PNPS 2.4.49 when RPV level is approaching the high turbine water level trip setpoint.

Objective:	O-RO-02-04-10, EO-15	**K/A:**	295008K202
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 23

The plant is operating at 100% power when the following alarms occur:

- STATOR COOLING WATER TROUBLE
- STATOR COOLING INLET FLOW LO
- TURBINE RUNBACK

There is no reactive load (0 MVAR) on the main generator. Due to a failure of the speed/load changer motor, main generator load remains constant.

Which ONE of the following is the expected automatic response of the system if no operator action is taken?

a. A turbine trip in 3 ½ minutes.

b. A generator lockout in 2 minutes.

c. A turbine trip in 2 minutes.

d. A generator lockout in 3 ½ minutes.

Answer: c

References:
PNPS 2.4.156 (page 4/5)
10CFR55.41.(b)(7)

Explanation:

a-d If the main generator fails to runback to 14,845 amps in 2 minutes or 4410 amps in 3 ½ minutes, a turbine trip will occur. Stator amps are approximately 16,000 at 100% power, therefore a turbine trip will occur in approximately 2 minutes.

Note: 1998 NRC SRO Exam - Question #41

Objective:	O-RO-02-01-08, EO-8	**K/A:**	295005A104
Tier #: 1	**Group:** 2	**Question Source:**	Bank Modified
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 24

The plant has been operating at 100% power for the last month when an instrument air header leak above the capacity of the K110, K111 and K104A, B, C air compressor occurs. The Atlas Copco air compressor must be placed in service to prevent which ONE of the following?

a. Closure of inboard MSIVs.

b. Repositioning of the reactor head vent valves (AO-220-46 and 47).

c. RBCCW surge tank level control valves failing closed.

d. Lockup of the 'A' and 'B' feedwater regulating valves (FV-642-A and B).

Answer: **d**

References:

PNPS 5.3.8, Attachment 1
10CFR55.41.(b)(7)

Explanation:

a. Inboard MSIV's on N_2.
b. Head vents fail closed, but are already closed for plant conditions.
c. RBCCW makeup valve fails open.
d. Correct answer. To preclude the 'A' and 'B' feedwater regulating valves (FV-642-A and B) from locking up on a loss of instrument air the Atlas Copco air compressor must be placed in service.

Objective:	O-RO-02-02-04, EO-9	**K/A:**	295019A101
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 25

The plant is operating at 100% power when an inadvertent Group I isolation occurs resulting in the following conditions:

- RPV level being maintained at +20" to +40"
- All control rods fully inserted
- RPV pressure peaks at 1240 psig and starts to lower
- DW temperature at 150°F and rising
- Torus temperature has remained stable during the transient

Based on plant conditions, which ONE of the following describes the response of the safety and safety/relief valves?

a. All SRVs actuated in the ADS mode.

b. All SRVs actuated in the relief mode.

c. Safety valves actuated and relief valves failed to actuate as designed.

d. Safety valves and SRVs actuated as designed.

Answer: c

References:
Tech Spec 3.6.D.1
10CFR55.41.(b)(7)

Explanation:
a. ADS would not actuate with normal reactor water level.
b. SRV's did not operate properly (1095-1115 psig).
c. Correct answer. Safety valves lifted at 1240 psig, SRV's should have opened in safety mode (1095-1115 psig) but didn't.
d. SRV's should have opened in relief mode.

Objective:	O-RO-02-04-01, EO-5	**K/A:**	295020K303
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 26

The plant is shutdown with reactor coolant temperature at 190°F when a loss of shutdown cooling occurs with both reactor recirculation pumps secured.

Based on plant conditions, which ONE of the following describes the acceptable RPV level band?

a. +20" to +25"

b. +35" to +60"

c. +30" to +40"

d. +65" to +75"

Answer: d

References:
PNPS 2.2.19 (page 117)
10CFR55.41.(b)(7)

Explanation:
a-d PNPS 2.2.19 requires that; "If water temperature is less than 212°F OR if a heat sink is not available, then water level must be maintained above +60 inches.

Note: 1998 NRC RO Exam - Question # 12

Objective:	O-RO-02-09-01, TO-4	**K/A:**	295021K104
Tier #: 1	**Group:** 2	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 27

The plant is in startup at 780 psig when the 'A' CRD pump trips. After several attempts the operators start the 'B' CRD pump. The following annunciators have alarmed on C905:

- CHARGING WTR PRESSURE LO
- CRD PUMP 'A' TRIP
- Accumulator Trouble Lights for HCU's 06-19 and 10-23

Based on current plant conditions, which ONE of the following actions is required?

Note: Refer to attached PNPS 2.2.87, Attachment 9, HCU Location Matrix

a. Immediately commence an orderly shutdown and declare the accumulators for the alarming HCU's INOP.

b. Declare the control rods for the alarming HCU's INOP and continue with the startup.

c. Immediately scram the reactor.

d. Declare the control rods for the alarming HCU's INOP and enter LCO to commence an orderly shutdown and be in cold shutdown within 24 hours.

Answer: b

References:
PNPS 2.4.4 and 2.2.87
Tech Spec 3.3.D
10CFR55.43.(b)(5)

Explanation:

(a,b,d) Tech Spec actions (or variations thereof) may be appropriate for accumulators NOT in a nine rod array, however, accumulators 06-19 and 10-23 are within a nine rod array and RPV pressure is <950 psig, therefore, these choices are incorrect.

c. Correct answer. PNPS 2.4.4 requires that, "If reactor pressure is <950 psig AND as indicated by accumulator trouble lights there is more than one inoperable accumulator in a nine rod array, THEN SCRAM the reactor AND ENTER PNPS 2.1.6". Accumulators 06-19 and 10-23 are within a nine rod array and RPV pressure is <950 psig, therefore, a scram is required.

Objective:	O-RO-06-01-03, EO-3	**K/A:**	295022K301
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 28

Alternate Depressurization is required when the drywell temperature cannot be maintained below 280°F. Which ONE of the following describes the bases for this action?

a. Prevent damage to the reactor recirculation pump seals.

b. Prevent damage to DC valve motors in the drywell.

c. Prevent failure of the drywell coolers upon restoration.

d. Prevent failure of the containment structure.

Answer: d

References:
O-RO-03-04-05 (page IG-18)
10CFR55.43.(b)(5)

Explanation:

a. Reactor recirculation pump seals could fail at high temperatures; however, this is not the bases for Alternate Depresurization when drywell temperature cannot be maintained below 280°F.
b. Same as a. above.
c. Not likely to fail and procedures do exist for slowly restoring cooling following a loss of RBCCW. However, this is not the bases for Alternate Depresurization when drywell temperature cannot be maintained below 280°F.
d. Correct answer. Containment temperatures above 280°F for extended periods of time will cause containment wall failure due to overheating.

Objective:	O-RO-03-04-05, EO-11	**K/A:**	295028K102
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

Question Number: 29

The plant was operating at 100% power when a small break LOCA occurs causing drywell and torus bottom pressure to start rising. Drywell sprays have been placed in service in accordance with EOP-03, Primary Containment Pressure Control Leg. Immediately after placing drywell spray in service a point is reached in the torus level leg of EOP-03 which requires securing drywell spray. Following are plant conditions:

- RPV pressure is 1000 psig
- Torus water level has stabilized

Based on plant conditions, which ONE of the following describes the correct Emergency Plan classification?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

Answer: **b**

References:
EOP-03
EAL Chart
10CFR55.43.(b)(5)

Explanation:

a. A UE (3.3.2.1) is required only when torus water level cannot be maintained <132" and primary containment integrity is required. Drywell sprays requiring termination based on high torus water level is indication that level cannot be maintained <180" not 132".

b. Correct answer. Drywell sprays requiring termination based on high torus water level is indication that level cannot be maintained <180" which requires an Alert classification (3.3.1.2).

c. A SAE (3.3.1.3) is required only when both torus water level and RPV pressure cannot be maintained below the "SRV Tail Pipe Level Limit" EOP figure 2. With the RPV pressure at 1000 psig and torus water level at 180" this limit has not been exceeded.

d. A GE (3.3.1.4) is required only when primary containment water level cannot be maintained <77 ft. Maintaining containment water level <77 ft. is not a concern based on current plant conditions.

Objective:	O-RO-07-02-01, EO-2	**K/A:**	295029G2114
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 30

In accordance with station procedures which ONE of the following conditions would require the component to be isolated?

a. HPCI being used to provide core cooling when the pump develops a severe packing leak causing water level on the floor of the HPCI quad to rise to 2".

b. HPCI being used to provide core cooling when a steam leak develops causing the HPCI compartment to become contaminated.

c. CRD being used to insert one control rod which failed to insert on a reactor scram when a severe packing leak develops causing CRD quad water level to rise to 2".

d. A fire hose rigged to fight a fire in the RCIC quad when a leak occurs at a fitting that causes water level in the RCIC quad to rise to 2". At the same time, RCIC turbine area temperature is 200°F.

Answer: c

References:

EOP-04
10CFR55.43.(b)(5)

Explanation:

(a,b,d) In accordance with EOP-04 any area above the maximum normal limit is required to be isolated except to shutdown the reactor, assure core cooling, suppress fire, emergency vent primary containment or vent RPV. HPCI is being used to provide core cooling in a. and b. and a fire is being suppressed in d.

c. CRD is not being used for any of the reasons stated above therefore it is required to be isolated. The reactor is considered shutdown with one control rod fully withdrawn.

Objective:	O-RO-03-04-06, EO-11	**K/A:**	295032A105
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 31

As CRS you have been assigned for the past 12 months to outage planning and have not actively been performing the functions of a SRO. Additionally, you have been scheduled to supervise refuel floor activities during the upcoming refuel outage. Prior to relieving the refuel floor SRO and assuming the watch, which ONE of the following are you required to perform?

a. Complete a minimum of 40 hours of shift functions under the direction of a SRO in the control room, including a complete plant tour and all required shift turnover procedures.

b. Complete a minimum of one shift under the direction of a SRO on the refuel floor, including review of control room logs for the past 30 days and all required shift turnover procedures.

c. Complete a minimum of 6 hours under the direction of a SRO in the control room, including a complete plant tour and review of control room logs for the past 30 days.

d. Complete a minimum of 40 hours of refuel activities under the direction of a SRO on the refuel floor, including all required shift turnover procedures.

Answer: a

References:

10CFR55.53
10CFR55.43.(b)(1)

Explanation:

a. Correct answer. 10CFR55.53e states that if a licensee has not been actively performing the functions of an operator or senior operator, the licensee may not resume activities authorized by a license issued under this part except as permitted by paragraph (f) of this section. (f) If paragraph (e) of this section is not met, before resumption of functions authorized by a license under this part, an authorized representative of the facility shall certify: (1) That the qualifications and status of the licensee are current and valid; and (2) That the licensee has completed a minimum of 40 hours of shift functions under the direction of an operator or senior operator as appropriate and in the position to which the individual will be assigned. The 40 hours must have included a complete tour of the plant and all required shift turnover procedures.
b. This requirement is specific to senior operators limited to fuel handling (LSRO).
c. This requirement is specific to operators at test and research reactors.
d. This is a variation of a. above and does not include all requirements.

Objective: O-RO-06-06-01, EO-24		**K/A:**	G.2.1.3
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level: SRO		**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 32

Given that all the following systems respond and operate as designed, which ONE of the following conditions would require manual operation to isolate?

a. Valid RB Ventilation Radiation Hi and Hi-HI alarm.

b. Valid Refuel Floor Ventilation Radiation Hi alarm.

c. Valid Off-Gas Pre-Treat Radiation Hi and Hi-Hi alarms with the Off-gas PRM selector switch on CP-600 in the Pre-treat position.

d. Valid Off-Gas Post-Treat Radiation Hi and Hi-Hi alarms with the Off-Gas PRM selector switch on CP-600 in the Post-Treat position.

Answer: a

References:
ARP C904LC A-5
EOP-04
10CFR55.41.(b)(7)

Explanation:

a. Reactor Building ventilation does not isolate on high radiation. This requires a manual isolation.

b-d All other primary Process Radiation Monitor's cause auto isolations.

Objective:	O-RO-02-03-02, EO-4e	**K/A:**	295034K102
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 33

The plant was operating at 100% power when a LOCA occurs. Due to fuel failure the torus water is highly contaminated. Subsequently, a leak develops in the 'A' RHR quad that can only be isolated by manually closing the 1001-6A (RHR pump 'A' Torus Manual Suction Valve). Following are plant conditions:

- The 'A' RHR pump is necessary to provide core cooling.
- The 'A' RHR quad has 9 inches of water on the floor and a radiation level of 1200 mr/hr.

Based on plant conditions, which ONE of the following actions is required?

a. Manually close the 1001-6A valve.

b. Operate all available sump pumps.

c. Open breakers for the RB floor drain and equipment drain pumps

d. Defeat low RPV water level isolation interlocks.

Answer: c

References:

EOP-04
10CFR55.41.(b)(10)

Explanation:

a. Isolation not allowed since "A" RHR is supplying core cooling.
b. Action is directed by EOP-04, but is overridden by step to open sump pump breaker.
c. Corrective action per override SC-1, this prevents spread of highly contaminated water outside the secondary containment.
d. Not allowed by override SC-1 since high radiation exists in reactor building.

Objective:	O-RO-03-04-06, EO-11	**K/A:**	295033K102
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 34

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

a. To prevent failure of the secondary containment.

b. To ensure that RHR pumps are available for use in the shutdown cooling.

c. To prevent further RPV inventory loss.

d. To ensure that RHR pumps are available for use in the LPCI mode.

Answer: a

References:
O-RO-03-04-06 (page IG-19)
10CFR55.43.(b)(5)

Explanation:

a-d The bases for Emergency RPV Depressurization in EOP-04 is to reduce the discharge into the secondary containment to protect the secondary containment from failing not to protect the RHR pumps or prevent inventory loss.

Objective:	O-RO-03-04-06, EO-5	**K/A:**	295036K301
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 35

Vital Area access keys (MEDECO) assigned to Operations are inventoried and accounted for:

a. Each shift and an entry made in the Primary Access Control Point Log.

b. Daily and an entry made in the CRS log.

c. Each shift and an entry made in the CRS log.

d. Daily and an entry made in the Primary Access Control Point Log.

Answer: c

References:

PNPS 1.3.10 (page 6/10)
10CFR55.41.(b)(10)

Explanation:

a. Vital Area access keys assigned to Operations are inventoried each shift; however, they are accounted for in the CRS log not the Primary Access Control Point Log.
b. Vital Area access keys assigned to Operations are inventoried each shift not daily.
c. Correct answer. Vital Area access keys assigned to Operations are inventoried each shift and accounted for in the CRS log.
d. Same as b. above

Objective:	O-RO-06-06-01, EO-5a	**K/A:**	G.2.1.13
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 36

Hotwork is to be performed in the RCIC Quad. The Maintenance Work Plan contain no requirement to disable the smoke detectors in the RCIC Quad. As a result, the smoke detectors actuate after the job has commenced. Based on this information, alarm(s) will occur in which ONE of the following panels?

a. Panel C223 in the Makeup Demin Room only.

b. Panel C220 in the Control Room only.

c. Panel C114 in the Control Room only Panel C223 in the Makeup Demin Room.

d. Panel C220 in the Control Room and Panel C223 in the Makeup Demin Room.

Answer: **d**

References:
PNPS 8.B.4.91, Attachment 1
10CFR55.41.(b)(7)

Explanation:
a-d Fire alarms are local (panel C223) and in the control room (panel C220).

Objective:	O-RO-02-10-01, EO-2a	**K/A:**	600000A209
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 37

The plant is at 40% power when a feedwater line break occurs in the drywell resulting in the following conditions:

- RPV level at +20" and rising from HPCI Injection
- Drywell pressure at 3.2 psig
- All available feedwater pumps have tripped on overcurrent

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system with no operator action?

a. 'A' Recirc pump runback to 44% speed and the 'B' Recirc pump trips.

b. 'A' and 'B' Recirc pumps runback to 26% speed.

c. 'A' Recirc pump runback to 26% and the 'B' Recirc pump trips.

d. 'A' and 'B' Recirc pumps runback to 44% speed.

Answer: c

References:

Recirc Flow Control Reference Text (page 13)
RHR Reference Text (figure 21)
10CFR55.41.(b)(7)

Explanation:

a. 'A' Recirc pump would be at 26% due to <20% feedwater flow.
b. 'B' Recirc pump would be tripped since LPCI loop select would select 'B' for injection and close the 'B' loop discharge valve.
c. Correct answer. 'A' Recirc pump would be at 26% due to <20% feedwater flow and 'B' Recirc pump would be tripped since LPCI loop select would select 'B' for injection and close the 'B' loop discharge valve.
d. B' Recirc pump would be tripped due to LPCI loop select, 'A' would be at 26% due to feed flow less than 20%.

Objective:	O-RO-02-06-10, EO-5	**K/A:**	202002A303
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 38

The 'B' RHR Pump Discharge check valve (1001-67B) seating surface is degraded causing leakage from the RHR system into the Torus. All other valves in the RHR system are in their normal standby lineup and seating properly. Which ONE of the following describes the source of water entering into the Torus?

a. Condensate Transfer.

b. The RPV.

c. RHR full flow test line.

d. Fuel Pool Cooling cross-tie.

Answer: a

References:
P&ID M-241 (RHR)
10CFR55.41.(b)(7)

Explanation:

a. Condensate transfer is lined up (ECCS keep fill) to pressurize the system back to the 1001-67B.
b. RPV pressure would not be felt at the 1001-67B since the 1001-29B is normally closed.
c. HPCI/core spray/RCIC in full flow test could pressurize the RHR system, but would be stopped at the 1001-34B and 1001-36B which are both closed.
d. Would not be connected during normal standby lineup.

Objective:	O-RO-02-09-01, EO-15	**K/A:**	203000K302
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 39

The plant was operating at 100% power when a steam line break in the HPCI room occurs. Automatic and manual isolation has failed.

The high pressure condition caused by this break is designed to be relieved via which ONE of the following?

a. Blowout panels into the 23' Aux. Bay and then through the Aux. Bay rollup door.

b. Vent pipes from the HPCI room to the 'B' RHR quad and then through the blowout panels on the RB roof.

c. Blowout panels from the HPCI room to the 23' RB and then through the blowout panels on the RB roof.

d. Blowout panels into the RB truck lock and then through the RB truck lock rollup door.

Answer: a

References:
LER 97-010-00
10CFR55.41.(b)(9)

Explanation:
a. Correct answer.
b. While vent pipes exist they are not sufficient for pressure relief.
c. Blowout panels go through the Aux. Bay.
d. Blowout panels go through the Aux. Bay.

Objective:	O-RO-02-09-03, EO-25	**K/A:**	295035K204
Tier #: 1	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 40

HPCI is being used in the pressure control mode following a reactor scram. A leak in the drywell occurs causing drywell pressure to rise to 3.0 psig. Reactor water level is currently at -10" and stable. Which ONE of the following actions would now be effective in re-establishing a means of RPV pressure control?

a. Manually realign HPCI or pressure control.

b. Manually align RCIC in pressure control.

c. Establish RWCU blowdown to the main condenser.

d. Manually cycle SRVs as required.

Answer: d

References:
HPCI Reference Text
10CFR55.41.(b)(7)

Explanation:
a. Not possible with initiation signal present.
b. Not possible with HPCI initiation signal present. The HPCI full flow test line is isolated, preventing RCIC full flow to torus.
c. A group VI isolation occurs at +12" RPV level isolating RWCU.
d. Correct answer. SRV's are still available.

Objective:	O-RO-02-09-03, EO-4	**K/A:**	206000A202
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 41

A change to procedure PNPS 2.2.20, Core Spray System, requires clarification of procedural steps to more accurately reflect Core Spray System equipment configuration. Based on this procedure change, which ONE of the following applies with regards to a Safety Evaluation?

a. A Safety Evaluation is required based on this being an intent change.

b. A Safety Evaluation is not required based on this being a non-intent change.

c. A Preliminary Evaluation Checklist is required to be completed to determine the need for a Safety Evaluation.

d. The Operations Review Committee is required to determine the need for a Safety Evaluation.

Answer: **b**

References:

NOP 98A1
10CFR55.43.(b)(3)

Explanation:

a. A Safety Evaluation is not required for non-intent changes to procedures.
b. Correct answer. This is a non-intent change as per NOP98A1. Non-intent changes to procedures do not require a safety evaluation.
c. A Preliminary Evaluation Checklist is required to be completed if it is determined that an intent change is applicable.
d. The Operations Review Committee would be required to review the change only if it were an intent change (Box C checked on PCF) and safety related (Box D checked on PCF).

Objective:	O-RO-06-06-01, EO2b	**K/A:**	G.2.2.6
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

Question Number: 42

The plant was operating at 100% power when a transient occurred resulting in an ATWS. Following are the operator actions taken and plant conditions:

- The SBLC control switch on C905 was taken to the SYS 'A' position, then through OFF to SYS 'B', then through OFF to SYS 'A'.
- The piping just downstream of the 'A' SBLC squib valve is completely obstructed.

Based on plant conditions, which ONE of the following describes the response of the 'A' SBLC pump?

a. SBLC pump 'A' never injected to the RPV.

b. SBLC pump 'A' did not inject to the RPV the first time the control switch was placed in SYS 'A', but did inject to the RPV the second time the control switch was placed in SYS 'A'.

c. SBLC pump 'A' did inject to the RPV the first time the control switch was placed in SYS 'A', but did not inject to the RPV the second time the control switch was placed in SYS 'A'.

d. SBLC pump 'A' injected to the RPV the first time the control switch was placed in SYS 'A', and also injected to the RPV the second time the control switch was placed in SYS 'A'.

Answer: b

References:
Standby Liquid Control Reference Text (figure 1)
10CFR55.41.(b)(6)

Explanation:

a. The SBLC pump 'A' will inject to the RPV after the control switch is placed in SYS 'B' and the 'B' squib valve opens. The SBLC pump 'A' and 'B' discharge into a common header and can discharge to the RPV through either squib valve.

b. Correct answer. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS'A' with the piping downstream the 'A' squib valve obstructed. However, the SBLC pump 'A' will inject to the RPV after the control switch is placed in SYS 'B' and the 'B' squib valve opens. The SBLC pump 'A' and 'B' discharge into a common header and can discharge to the RPV through either squib valve.

c. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS'A' with the piping downstream the 'A' squib valve obstructed.

d. The SBLC pump 'A' will not inject to the RPV when the control switch is placed to SYS'A' with the piping downstream the 'A' squib valve obstructed.

Note: 1998 NRC RO Exam - Question #16

Objective:	O-RO-02-06-06, EO-8	**K/A:**	211000K504
Tier #: 2	**Group:** 1	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 43

The plant is in Refuel (Cold Shutdown) with all electrical and fluid systems aligned normally. Additionally, the following conditions exist:

- Hi Level in the east Scram Discharge Instrument Volume
- The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch is in Bypass
- The Mode Switch is in Shutdown with the Scram Reset

Based on plant conditions, which ONE of the following would result in a full reactor scram?

a. Loss of bus Y-1.

b. Loss of power to Scram Discharge Instrument Volume thermocouples.

c. Loss of bus B-23.

d. High level in the west Scram Discharge Instrument Volume.

Answer: c

References:
Reactor Protection System Reference Text (figure 3 & 5)
10CFR55.41.(b)(7)

Explanation:

a. Y-1 only supplies the SDIV test/isolate switch and has no scram function but would prevent resetting a scram.

b. SDIV High Level Keylock Bypass Switch bypasses the scram that occurs due to loss of thermocouple power.

c. Correct answer. The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch can only bypass the east and west SDV Hi Water Level scram if both RPS busses are energized (see attached figure 5). If RPS 'A' de-energizes with a Hi Level in the east Scram Discharge Instrument Volume a full scram will occur.

d. The Hi Level scram for the west Scram Discharge Instrument Volume is bypassed with the scram reset and the Scram Discharge Instrument Volume Hi Level Scram Bypass Switch in Bypass.

Note: (1) 1998 NRC RO Exam - Question #17, and (2) SRO Upgrade Exam Week #4 - Question #21

Objective:	O-RO-02-07-07, EO-3j	**K/A:**	212000K201
Tier #: 2	**Group:** 1	**Question Source:**	Bank Modified
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 44

With the plant operating at 100% power a leak develops between the high and low pressure sensing points on the shutdown level transmitter. The deviation from calibration conditions prior to the leak will cause the instrument to read erroneously ___(1)___; and after the leak to read erroneously ___(2)___.

a. (1) high
(2) high

b. (1) low
(2) high

c. (1) high
(2) low

d. (1) low
(2) low

Answer: **b**

References:
Nuclear Boiler Instrumentation Text
10CFR55.41.(b)(7)

Explanation:

a-d Instrument is calibrated cold so it reads low at higher temperature. The pinhole leak will equalize d/p across the detector causing indicated level to rise.

Objective:	O-RO-02-06-01, EO-5a	**K/A:**	216000A204
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 45

During a plant startup with SRM counts at 1E+3, the recorder pen for SRM Channels A and C fails downscale. All other equipment is functioning normally.

Which ONE of the following describes the affect on SRM Channels A and C?

a. Loss of recorder indication only.

b. Loss of recorder indication and a SRM downscale rod block

c. Loss of recorder indication and the inability to withdraw SRM Channel A and C detectors.

d. Loss of recorder indication and the inability to receive an SRM upscale rod block.

Answer: a

References:
SRM Reference Text (figure 10)
10CFR55.41.(b)(6)

Explanation:
a-d SRM recorder gives indication only, does not affect any trips.

Objective:	O-RO-02-07-01, EO-3h	**K/A:**	215004A206
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 46

The plant is operating at 100% power when an LPRM fails upscale. The LPRM is placed in bypass and no other operator action is taken.

Which ONE of the following describes the expected condition of the upscale lights on panel C937 and the full core display for this LPRM?

a. C937 Upscale Light ON
Full Core Display Upscale Light ON

b. C937 Upscale Light OFF
Full Core Display Upscale Light OFF

c. C937 Upscale Light OFF
Full Core Display Upscale Light OFF

d. C937 Upscale Light ON
Full Core Display Upscale Light OFF

Answer: d

References:
LPRM Reference Text
10CFR55.41.(b)(7)

Explanation:
a-d Bypassing the LPRM inhibits the upscale trip. Panel C937 alarms must be manually reset while panel C905 full core display alarms auto reset.

Objective:	O-RO-02-07-03, EO-8	**K/A:**	215005A105
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 47

The plant is operating at 100% power when an SRV is suspected to have spuriously opened. The acoustic monitor for the SRV indicates all red lights on. Which ONE of the following would be the approximate tailpipe temperature for the affected SRV?

a. 110°F

b. 295°F

c. 340°F

d. 545°F

Answer: **b**

References:

Steam Tables
Hatch event 1/26/00
10CFR55.41.(b)(14)

Explanation:

a. 110°F is the approximate drywell ambient temperature.
b. Correct answer. 295°F is the approximate tailpipe temperature for an open SRV at power
c. 340°F is obtained by following point on the left side of the saturation curve across to the right side of the saturation curve and finding the corresponding constant temperature line.
d. 545°F is RPV saturation temperature for 1000 psig (Normal operating pressure).

Objective:	O-RO-02-04-01, EO-19	**K/A:**	218000A407
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 48

The plant is operating at power when a total loss of TBCCW occurs. Which ONE of the following describes how RPV pressure and level should be controlled in accordance with station procedures?

a. RCIC should be used in the level control mode and HPCI should be used in the pressure control mode.

b. HPCI should be used in the level control mode and RCIC should be used in the pressure control mode.

c. HPCI should be used in the level control mode and SRV's should be used to control pressure. RCIC remains shutdown.

d. RCIC should be used in the level control mode and SRV's should be used to control pressure. HPCI remains shutdown.

Answer: a

References:
PNPS 2.4.41, Section 4.0
10CFR55.41.(b)(10)

Explanation:
a-d In accordance with PNPS 2.4.41 (see attached), if a total loss of TBCCW occurs then place the HPCI turbine in the pressure control mode and RCIC turbine in the injection mode for level control.

Objective:	O-RO-02-09-04, EO-13	**K/A:**	217000K507
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 49

A worker in the Emergency Response Organization had 100mRem TEDE for the current year and 2.5 Rem TEDE lifetime prior to the declaration of an emergency. Which ONE of the following is the MAXIMUM TEDE this worker can receive over the course of the emergency without special authorization?

a. 2.4 Rem

b. 2.5 Rem

c. 4.9 Rem

d. 5.0 Rem

Answer: d

References:
EP-IP-440
10CFR55.41.(b)(12)

Explanation:

a-d EP-IP-440, Emergency Exposure Controls states that from the time an emergency is declared, ERO personnel are considered emergency workers and that emergency workers are allowed to receive 5 Rem TEDE (Whole Body) over the course of the emergency, exclusive of previous exposure and without special authorization. Choices a-c are variations of current lifetime dose and exposure limits stated in EP-IP-440.

Objective:	O-RO-07-01-06, EO-3	**K/A:**	G.2.3.4
Tier #: 3	**Group:**	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 50

The plant is in a refuel outage with a fuel assembly being lowered into the core. Based on these conditions, which ONE of the following actions is required by the control room reactor operator?

a. Verify all SRM's are fully inserted, on scale and record SRM reading on C905.

b. Verify the correct fuel assembly serial number against the Fuel Movement Schedule.

c. Inform the NOS in the main control room of the fuel bundle serial number and the "From" and "To" coordinates of that bundle.

d. Continuously monitor SRM instrumentation for count rate increase until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

Answer: d

References:
PNPS 4.3 (page 20/44)
10CFR55.41.(b)(7)

Explanation:
a-b These actions are performed prior to the fuel being moved, not when its being loaded into the core.
c. This action is performed by the members of the fuel handling crew not the control room reactor operator
d. Correct answer. In accordance with PNPS 4.3, control room personnel shall continuously monitor SRM instrumentation for count rate increase from the time the fuel bundle enters the core until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

Objective:	O-RO-02-08-06, EO-6	**K/A:**	G.2.2.30
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 51

During a loss of coolant accident, the drywell-torus vacuum breakers will open to prevent which ONE of the following?

a. Collapsing the drywell.

b. Collapsing the torus.

c. Excessive drywell internal pressure.

d. Excessive torus internal pressure.

Answer: a

References:

Primary Containment Structure Reference Text
10CFR55.41.(b)(9)

Explanation:

a-d The drywell-torus vacuum breakers open to relieve negative pressure in the drywell and prevent collapsing the drywell.

Objective:	O-RO-02-08-01, EO-2g	**K/A:**	223001A302
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 52

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Reactor power at 20%
- MSIV's isolated on hi steam flow
- All rods not full in
- RPV level at 25"
- Torus temp at 111°F

Based on plant conditions, which ONE of the following systems are available for RPV pressure control?

a. Bypass valves after bypassing the RPV Lo Level interlock and opening the MSIV's.

b. Safety relief valves.

c. RWCU in blowdown mode.

d. Main steam line drains.

Answer: b

References:
EOP-02
10CFR55.41.(b)(10)

Explanation:
a. Opening the MSIV's with indication of a steam line leak is not allowed by EOP-02.
b. Correct answer. SRV's are available
c. RWCU would have isolated on SLC initiation (BIIT exceeded).
d. Opening the MSIV's with indication of a steam line leak is not allowed by EOP-02.

Objective:	O-RO-03-04-04, EO-15	**K/A:**	223002K408
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 53

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -46" RPV level ADS is inhibited. Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.

b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.

c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

Answer: d

References:

PNPS 2.2.19 (page 22/148)
10CFR55.41.(b)(10)

Explanation:

a. Since all RHR pumps start on a LOCA signal, minimum flow is 7200 GPM.
b. Flow through only the minimum flow valves is only allowed for 2 hours.
c. Same as a. above.
d. Correct answer.

Objective:	O-RO-02-09-01, EO-9	**K/A:**	226001K405
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 54

A plant startup is in progress. Which ONE of the following occurs at approximately 940 psig?

a. The EPR setpoint is lowered to 940 psig, which results in the main turbine bypass valves starting to open.

b. The MPR setpoint is lowered to 940 psig, which results in the main turbine bypass valves starting to open.

c. The main turbine bypass valves start to open since the EPR setpoint was previously set at 940 psig.

d. The main turbine bypass valves start to open since the MPR setpoint was previously set at 940 psig.

Answer: c

References:

PNPS 2.1.1 (page 39/126)
10CFR55.41.(b)(7)

Explanation:

a. The EPR setpoint is already at 940 psig.
b. The MPR setpoint is 40-90 psi above reactor pressure.
c. Correct answer per PNPS 2.1.1.
d. The MPR setpoint is above EPR setpoint.

Objective:	O-RO-02-05-04, EO-14	**K/A:**	241000A402
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 55

With the plant operating at 100% power, the 'A' and 'B' feedwater flow detectors are inadvertently bypassed. Which ONE of the following actions will occur?

a. A reactor scram on low reactor level.

b. A reactor recirc pump runback terminating at 44%.

c. A reactor recirc pump runback terminating at 26%.

d. An initiation of a Group isolation I on high reactor level resulting in a reactor scram.

Answer: c

References:

FWLC Reference Text
10CFR55.41.(b)(7)

Explanation:

a. Actual RPV level will be increasing.
b. RPV level must be <19" and <3 RFP running to get the 26% runback.
c. Correct answer. Zero feed flow causes initiation of #1 speed limiter due to <20% feed flow.
d. Will only get the Group I on high level if you are $\leq$810 psig.

Note: (1) 1998 NRC SRO Exam - Question #27, and (2) SRO Upgrade Exam Week #5 - Question #1

Objective:	O-RO-02-04-10, EO-33	**K/A:**	259002K304
Tier #: 2	**Group:** 1	**Question Source:**	Bank Modified
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 56

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

- The 'A' SBGT fan is in AUTO
- The 'B' SBGT fan is in STBY
- The 'A' and 'B' refuel floor radiation monitor fail upscale
- The 'A' SBGT initiates, runs for 10 seconds, then trips

Based on plant conditions, which ONE of the following describes the expected automatic response of the 'B' SBGT fan?

a. Will start when the initiation signal is received, run for 65 seconds, stop, then restart.

b. Will start immediately after the 'A' SBGT fan trips and continue running uninterrupted.

c. Will start after 65 seconds and continue to run uninterrupted.

d. Will start when the initiation signal is received and continue running uninterrupted.

Answer: a

References:
Standby Gas Treatment Reference Text (page 14/25)
10CFR55.41.(b)(7)

Explanation:

a. Correct answer. The 'B' SBGT fan would start upon an initiation signal, stop after 65 seconds, then restart based upon an initiation signal present and low discharge flow (<2100 scfm).
b. The 'B' SBGT fan would initially start upon an initiation signal not only after the 'A' SBGT fan trips.
c. The 'B' SBGT fan would stop after 65 seconds.
d. The 'B' SBGT fan would trip after 65 seconds, then restart on low flow.

Note: (1) 1998 NRC SRO Exam - Question #61, and (2) SRO Upgrade Exam Week #6 - Question #15

Objective:	O-RO-02-08-03, EO-12	**K/A:**	261000K108
Tier #: 2	**Group:** 1	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 57

The plant was operating at 100% when a LOCA concurrent with a loss of offsite power has occurred. The 'B' EDG failed to start. The SBO diesel generator is started and loaded onto bus A-6. Bus A-5 is being supplied by the 'A' EDG. Based on plant conditions, which ONE of the following describes the load limit for the SBO diesel generator and the bases for that limit?

a. 1700 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

b. 1700 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.

c. 2000 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.

d. 2000 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

Answer: b

References:

PNPS 2.2.146 (page 7/44)
10CFR55.41.(b)(7)

Explanation:

a. Correct limit, however, the secured pump will be in PTL.
b. Correct answer per PNPS 2.2.146.
c. Correct reason with a load limit that is applicable only when A-5 or A-6 is being supplied.
d. Secured RHR pump will be in PTL, load limit is applicable only when A-5 or A-6 is being supplied.

Objective:	O-RO-02-09-11, EO-8b	**K/A:**	262001A104
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 58

The plant is operating at 100% power with the 'A' SBGT Train out of service and in day 3 of a 7 day LCO when the 'B' EDG jacket water cooling system fails. All other systems are fully operable and all surveillances complete.

Based on plant conditions, which ONE of the following is the MAXIMUM amount of time allowed before the plant must reach cold shutdown?

a. 24 hours.

b. 36 hours.

c. 72 hours.

d. 36 hours following the expiration of the original SBGT 7 day LCO.

Answer: b

References:

Tech Spec 3.7.B.1.c
10CFR55.43.(b)(2)

Explanation:

a. PNPS equivalent of T.S. 3.0.3
b. Correct answer per T.S. 3.7.B.1.c
c. Time limit before shutting down with one EDG and the SBODG Inop.
d. Time limit before shutting down if the EDG never went Inop.

Objective:	O-RO-06-01-03, EO-3	**K/A:**	264000K104
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 59

A control rod is withdrawn one notch. Which ONE of the following describes the sequence in which the control rod drive SETTLE, Rod IN, and Rod OUT lights will energize?

a. Rod SETTLE, Rod IN, Rod OUT

b. Rod IN, SETTLE, Rod OUT

c. Rod IN, Rod OUT, SETTLE

d. Rod OUT, SETTLE, (Rod IN light remains de-energized)

Answer: c

References:

Reactor Manual Control Reference Text (page 13)
10CFR55.41.(b)(7)

Explanation:

a-d The sequence for a rod withdrawal is; (1) drive the rod in far enough to release the collet fingers from the index tube notch so that the rod can be withdrawn past that notch – Rod IN light (2) drive the rod out past the index tube notch – Rod OUT light, and (3) allow the next notch in the index tube to settle onto the collet fingers - SETTLE.

Objective:	O-RO-02-06-08, EO-3	**K/A:**	201002A103
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 60

The plant is being started up. Reactor power is 15% with the mode switch in Run. Three control rods, which are known to be fully withdrawn and at their withdrawal limits per the rod sequence, have reed switch failures such that the Rod Worth Minimizer does not know the current position.

Which ONE of the following is allowed and would be effective in allowing continued control rod withdrawal?

a. Bypass the rod worth minimizer.

b. Fully insert the three affected control rods.

c. Enter substitute position for the affected control rods.

d. Raise reactor power above the low power setpoint using reactor recirculation pumps.

Answer: c

References:
PNPS 2.2.90 (page 9/34)
10CFR55.41.(b)(10)

Explanation:
a. This action is not allowed per Tech Specs
b. Inserting the 3 control rods will cause an insert block and a withdraw block.
c. Correct answer.
d. Not possible due to #1 speed limiter.

Objective:	O-RO-02-07-06, EO-9c	**K/A:**	201006K603
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 61

The plant is shutdown with the 'B' loop of RHR in shutdown cooling. The 'A' reactor recirculation pump is running. Due to improper maintenance activities MO-1001-18B, RHR loop 'B' minimum flow valve, opens, which results in the RPV level lowering to +10".

Based on plant conditions, which ONE of the following would provide accurate indication of reactor water temperature?

a. Reactor vessel flange temperature.

b. 'B' reactor recirc pump suction temperature.

c. Reactor vessel bottom drain temperature.

d. 'A' reactor recirc pump suction temperature.

Answer: d

References:

P&ID M252 (sheet 2)
10CFR55.41.(b)(7)

Explanation:

a. With the RPV level at +10 inches, it is nowhere near the RPV flange.
b. SDC isolates at +12" and the fact that the recirc pump discharge valve is closed would prevent any natural circulation through the loop.
c. RWCU isolates at +12", therefore there is no flow through the vessel bottom drain.
d. Correct answer.

Objective:	O-RO-02-09-01, EO-15	**K/A:**	205000K304
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 62

The operators are lowering CRD drive water ΔP that results in a sufficient enough change in CRD cooling water ΔP to cause control rod 06-19 to drift. Control rod 06-19 is currently selected, is not being moved by RMCS, and had an original position of 46.

Based on these conditions, which ONE of the following describes the response of the rod drift alarm for rod 06-19 and bases for that response?

a. Will not alarm based on the rod being selected.

b. Will alarm when the reed switch for notch position 46 opens.

c. Will alarm when the reed switch for notch position 45 opens.

d. Will alarm when the reed switch for notch position 47 closes.

Answer: b

References:
ARP C905LA3
RPIS Reference Text (page 9/22)
10CFR55.41.(b)(7)

Explanation:
a. Rod being selected does not inhibit drift alarm. Must also be moving rod with RMCS.
b. Correct answer.
c. Incorrect since reed switch for notch position 45 should close.
d. Incorrect since rod would be drifting in and reed switch for odd position should close.

Objective:	O-RO-02-09-01, EO-15	**K/A:**	214000K501
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 63

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Torus water level at 130"
- Drywell temperature at 150°F
- Torus bottom pressure at 60 psig and rising
- Drywell pressure at 55 psig

Based on plant conditions, which ONE of the following describes the requirement and use of containment sprays?

a. Drywell and torus sprays are both required. Pumps required for adequate core cooling may be directed to the torus and drywell.

b. Torus spray is required. Pumps required for adequate core cooling may be diverted to spray the torus. Drywell spray is prohibited.

c. Drywell and torus sprays are both required. RHR pumps required for adequate core cooling may NOT be diverted to spray the torus and drywell.

d. Torus spray is required. RHR pumps required to provide adequate core cooling may NOT be diverted to spray to torus. Drywell spray is prohibited.

Answer: a

References:

EOP-03
10CFR55.43.(b)(5)

Explanation:

a. Correct answer per EOP-03, Step P-18.
b. Drywell spray is required (without the DSIL curve).
c. Can sacrifice adequate core cooling to establish containment sprays.
d. Same as b. and c. above.

Objective:	O-RO-03-04-02, EO-3i	**K/A:**	230000G2419
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 64

The plant is operating at 100% power with drywell pressure at 1.6 psig and slowly rising. Following are plant conditions:

- The 'B' RHR pump is in torus cooling
- RPV level at +30" and stable.

The reactor is then manually scrammed. One minute later a loss of bus D-5 occurs. Two minutes following the loss of D-5 drywell pressure reaches 2.2 psig

Which ONE of the following describes the expected automatic response of the 'B' RHR pumps and the MO-1001-34B, RHR Loop 'B' torus block valve?

a. The 'B' RHR pump will trip when D-5 de-energizes and MO-1001-34B will close when drywell pressure reaches 2.2 psig.

b. The 'B' RHR pump will remain running and MO-1001-34B will close when drywell pressure reaches 2.2 psig.

c. The 'B' RHR pump will trip and MO-1001-34B will close when D-5 de-energizes.

d. The 'B' RHR pump will remain running and MO-1001-34B will remain open.

Answer: d

References:
M1H-40 (sheet 18/19)
M1H-9-12 (sheet 5/19)
10CFR55.41.(b)(7)

Explanation:

a-d RHR pump 'B' cannot trip and MO-1001-34B will not go closed on a high drywell pressure signal of 2.2 psig.

Objective:	O-RO-03-04-02,EO-3i	**K/A:**	219000K203
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 65

The plant was operating at 20% power when a transient occurred requiring the operators to manually scram the reactor. Following are plant conditions:

- Reactor power is on IRM range 5 and decreasing
- Three control rods are at position 06 and all other control rods are fully inserted
- No other scram signals exist

Which ONE of the following actions is required to insert the three control rods at position 06?

a. Execute PNPS 2.1.6, "Reactor Scram" only

b. Enter EOP-01, then exit EOP-01 and enter EOP-02 at R-1.

c. Enter PNPS 2.1.6, "Reactor Scram" and then EOP-02 at R-1.

d. Execute PNPS 2.1.6, "Reactor Scram" and then PNPS 5.3.23, "Alternate Rod Insertion".

Answer: d

References:

PNPS 2.1.6 (page 5 & 6/13)
10CFR55.41.(b)(10)

Explanation:

a. PNPS 2.1.6 requires PNPS 5.3.23 to executed when any control rod is not fully inserted.
b. Execution of EOP-01 and EOP-02 is not required based on reactor power being < 3%.
c. EOP-02 entry from PNPS 2.1.6 is only required if the reactor is not shutdown.
d. Correct answer. PNPS 2.1.6 requires that any control rod not fully inserted be inserted using the methods detailed in PNPS 5.3.23, Alternate Rod Insertion.

Note: 1997 NRC SRO Exam - Question # 43

Objective:	O-RO-03-04-04, EO-24	**K/A:**	G.2.4.11
Tier #: 3	**Group:**	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 66

The plant was operating at 100% power when a loss of TBCCW has occurred. Attempts to start the temporary air compressor have failed.

Based on plant conditions, which ONE of the following may be used to pressurize the instrument air header in accordance with PNPS procedures?

a. Using demineralized water to cool instrument air compressor K-111.

b. Using fire water to cool instrument air compressor K-111.

c. Using demineralized water to cool instrument air compressor K-104A.

d. Using fire water to cool instrument air compressor K-104A.

Answer: a

References:

PNPS 2.2.36 (page 19/67)
10CFR55.41.(b)(10)

Explanation:

a. Correct answer.
b. Wrong cooling system.
c. Wrong compressor.
d. Wrong cooling system and wrong compressor.

Objective:	O-RO-02-02-04, EO-9	**K/A:**	300000K104
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 67

Upon receipt of a turbine trip, water flashing in the 1st point heaters will NOT cause a turbine overspeed condition based on which ONE of the following?

a. The Combined Intermediate Valves going shut.

b. A MOV in the 1st point heaters extraction steam line going shut.

c. An AOV in the 1st point heaters extraction steam line going shut.

d. The water in the 1st point heater is of a low enough energy that flashing is not a problem.

Answer: a

References:

Feedwater Heating Reference Text
10CFR55.41.(b)(4)

Explanation:

a. Correct answer.
b. The 1st point heater MOV does not close on a turbine trip.
c. The 2nd, 3rd, and 4th point heaters have AO's in line.
d. This is the reason why the 5th point heater does not need non-return protection.

Objective:	O-RO-02-04-09, EO-13	**K/A:**	259001K402
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 68

The plant is operating at 100% power when a loss of all annunciators occurs. Based on plant conditions, which ONE of the following actions is required?

a. Log A-5 and A-6 buses every ½ hour. Restore the alarms or be in cold shutdown within 24 hours.

b. Log A-5 and A-6 bus voltages every ½ hour until the annunciators are restored.

c. Immediately commence an orderly shutdown and be in cold shutdown within 24 hours.

d. Jumper circuitry such that a LOCA signal will initiate a load shed.

Answer: **b**

References:

Tech Spec Table 3.2.B.1
10CFR55.43.(b)(2)

Explanation:

a. Contains correct answer plus the Pilgrim version of Tech Spec 3.0.3.
b. Correct answer. Tech Spec Table 3.2.B.1 requires that in the event that the alarm system is determined inoperable, commence logging safety related bus voltage every ½ hour until such time as the alarm is restored to operable status.
c. Pilgrim version of Tech Spec 3.0.3.
d. This is why parameter is maintained (for load shed purposes), but this is not required.

Objective:	O-RO-06-01-03, EO-3	**K/A:**	G.2.4.32
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 69

Which ONE of the following is the bases for maintaining the Turbine Building Ventilation System in operation while executing EOP-05?

a. Prevents Reactor Building Ventilation from entering the Turbine Building.

b. Prevents a direct reactor scram due to high temperature in the MSL tunnel.

c. Prevents having an unmonitored ground release from the Turbine Building.

d. Ensures adequate dilution of the gases discharged through the stack.

Answer: c

References:

O-RO-03-04-07 (page 7-8)
10CFR55.43.(b)(4)

Explanation:

a. Maintaining the secondary containment at a negative pressure prevents this.
b. MSL high temperature is Group I Isolation.
c. Correct answer. Operation of the TB HVAC preserves TB accessibility and helps minimize potential for an undesirable non-elevated release.
d. Concerned with ground release.

Objective:	None identified	**K/A:**	259038A106
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

Question Number: 70

The plant is starting up from a refuel outage. At 104 psig RPV pressure, the RCIC system is placed in standby operation. When placing RCIC in standby operation, in accordance with station procedures, operators are required to ___(1)___ to avoid ___(2)___.

a. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system initiation.

b. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) overpressurizing downstream piping.

c. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system isolation.

d. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) excessive heatup of downstream piping.

Answer: c

References:

PNPS 2.2.125, Attachment 5
LER 99-010
10CFR55.41.(b)(7)

Explanation:

a. The procedure requires that the operator slowly jog open MO-1301-16 to preclude a system isolation on high steam flow not a system initiation.
b. MO-1301-17, outboard steam isolation valve, seals-in to open/close (no throttle capabilities) and does not have a bypass equalizing valve. Additionally, MO-1301-17 is opened prior to MO-1301-16 by procedure.
c. Correct answer (LER 99-010).
d. MO-1301-17, outboard steam isolation valve, seals-in to open/close (no throttle capabilities) and does not have a bypass equalizing valve. Additionally, MO-1301-17 is opened prior to MO-1301-16 by procedure.

Objective:	O-RO-02-09-04, EO-10	**K/A:**	G.2.1.32
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 71

The plant is operating at 100% power when a SRV opens. In accordance with station procedures, which ONE of the following actions is required?

a. Scram the reactor if Torus water temperature rises 5°F to prevent exceeding HCTL.

b. Simultaneously de-energize bus D-4 and bus D-5 to interrupt power to the SRV solenoids.

c. Simultaneously open breaker 1 on bus D-4 and breaker 1 on bus D-5 to interrupt power to the SRV solenoids.

d. Separately cycle breaker 1 on bus D-4 followed by breaker 1 on bus D-5 to interrupt power to the ADS logic.

Answer: c

References:
PNPS 2.4.29
10CFR55.43.(b)(5)

Explanation:

a. A scram is required if the SRV is open for 5 minutes.
b. De-energizing the busses is not required.
c. Correct answer.
d. Sequentially cycling breakers will not de-energize logic or solenoids.

Objective:	O-RO-03-04-09, EO-5	**K/A:**	239002G219
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 72

The plant was operating at 100% power when a transient resulting in an ATWS occurs. Following are plant conditions:

- Boron is being injected with the SBLC system
- Initial SBLC tank level was 4100 gallons. Current SBLC tank level is 3000 gallons
- RPV level is -100" and is being lowered to reduce reactor power

Based on plant conditions, which ONE of the following actions is required?

a. Raise RPV level to the +12" to +45" band and perform Alternate Depressurization.

b. Maintain RPV level at its current value. Do not perform Alternate Depressurization.

c. Maintain RPV level at its current value and perform Alternate Depressurization.

d. Raise RPV level to the +12" to +45" band. Do not perform Alternate Depressurization.

Answer: d

References:
EOP-02
Risk Significant Human Error Probabilities, Table A.1-1-Component XDEPRESSXY
10CFR55.43.(b)(5)

Explanation:
a. Alternate Depressurization not required.
b-c Since HSBW has been injected EOP-2 requires that RPV level be increased to +12" to +45" band.
d. Correct answer.

Note: 1997 NRC SRO Exam - Question # 44

Objective:	O-RO-03-04-04, EO-25	**K/A:**	295037G246
Tier #: 1	**Group:** 1	**Question Source:**	Bank
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 73

While executing EOP-01, it is determined that Alternate Depressurization is anticipated. Based on these conditions, which ONE of the following describes the opening of the bypass valves?

a. Bypass valves should be opened without regard to the effect on RPV level and cooldown rate.

b. Bypass valves should be opened while maintaining RPV level in the desired band. Cooldown rate limitations may be exceeded.

c. Bypass valves should be opened while maintaining cooldown rate within limits. RPV level may be allowed to go outside the desired band.

d. Bypass valves should be opened while maintaining reactor water level in the desired band and cooldown rate within limits.

Answer: **b**

References:

Operations Policy Standards (page 10-11)
Risk Significant Human Error Probabilities, Table A.1-1-Component XDEPRESSXY
10CFR55.41.(b)(7)

Explanation:

a. Not allowed to exceed the desired level band.
b. Correct answer.
c. Cooldown rate may be disregarded. Reactor water level not allowed to exceed the desired band.
d. Cooldown rate may be disregarded.

Objective:	O-RO-03-04-03, EO-17	**K/A:**	239001A409
Tier #: 2	**Group:** 3	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 74

The plant was operating at 100% power when a loss of coolant occurs resulting in the following plant conditions:

- Torus water level is 150" and stable.
- Containment pressure is rising rapidly.

Which ONE of the following describes the vent path and requirement for venting the primary containment?

The primary containment is vented through the:

a. Torus before torus bottom pressure reaches 60 psig.

b. Torus, but only after torus bottom pressure exceeds 60 psig.

c. Drywell before torus bottom pressure reaches 60 psig.

d. Drywell, but only after torus bottom pressure exceeds 60 psig.

Answer: **a**

References:
EOP-03
Risk Significant Human Error Probabilities, Table A.1-1-Component MXXDTVOPRY
10CFR55.43.(b)(5)

Explanation:
a. Correct answer.
b. Must be done before 60 psig torus bottom pressure.
c. Incorrect vent path for 130 inches torus level.
d. Incorrect vent path for 130 inches torus level. Must be done before 60 psig torus bottom pressure.

Objective:	O-RO-03-04-05, EO-13	**K/A:**	223001A207
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 75

Which ONE of the following describes the effect of leaving the Mechanical Pressure Regulator sensing line isolation valve closed during a reactor startup?

a. EPR will control reactor pressure when it exceeds 200 psig.

b. Turbine bypass valves can only be opened by raising the MPR setpoint.

c. Turbine bypass valves would not open when steam pressure increased to MPR setpoint.

d. There will be no adverse effect because the turbine stop valves are closed.

Answer: c

References:
MHC Reference Text
10CFR55.41.(b)(7)

Explanation:

a. EPR does not control pressure at this setpoint.
b. Turbine bypass valves will not receive an open signal from the MPR regardless of MPR setpoint.
c. Correct answer. MPR will be sensing a low pressure due to isolation valve being closed and will not respond to increasing pressure.
d. Turbine stop valves are not a consideration for this question.

Objective:	O-RO-02-05-04, EO-5	**K/A:**	295007K201
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 76

The primary containment is required to be vented regardless of radioactive release rate:

a. If drywell hydrogen concentration reaches 6% with drywell oxygen concentration of 3%.

b. If more than two general areas in the reactor building exceed 135°F.

c. Before Torus pressure and Torus level exceeds the pressure suppression pressure limit.

d. Before Torus bottom pressure exceeds the primary containment pressure limit.

Answer: **d**

References:

EOP-3
10CFR55.43.(b)(5)

Explanation:

a. Venting the containment regardless of radioactive release rate requires a hydrogen concentration of 6% and an oxygen concentration of 5%.

b. Greater than 135°F in more than two general areas in the reactor building requires Alternate Depressurization not venting the containment regardless of radioactive release rate.

c. Torus pressure and torus level exceeding the pressure suppression pressure limit requires Alternate Depressurization not venting the containment regardless of radioactive release rate.

d. Correct answer. In accordance with EOP-3 venting the containment regardless of radioactive release rate is required before torus pressure exceeds the primary containment pressure limit.

Objective:	O-RO-03-04-05, EO-14	**K/A:**	295017A109
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 77

The plant is operating at 100% power when a loss of bus Y-1 occurs. Bus Y-1 has been transferred to B-15. Based on plant conditions, which ONE of the following feedwater heaters will require extraction steam to be re-established?

a. 2nd and 3rd point heaters.

b. 1st and 2nd point heaters.

c. 3rd and 4th point heaters.

d. 4th and 5th point heaters.

Answer: a

References:

PNPS 2.4.150 (page 5/12)
History of Loss of FW Heating since last outage
10CFR55.41.(b)(10)

Explanation:

a-d Only the 2nd and 3rd point heaters lose extraction steam on a loss of Y-1. Motor operated valves closed.

Objective:	O-RO-02-04-09, EO-13	**K/A:**	295014A203
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 78

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- RPV level at -50" and stable
- Torus water level at 98" and lowering

Based on plant conditions ___(1)___ is (are) required to be secured at ___(2)___ to prevent ___(3)___ .

a. (1) HPCI; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.

b. (1) SRV's; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.

c. (1) HPCI; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

d. (1) SRV's; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

Answer: a

References:
O-RO-03-04-05 (page 28 &29)
10CFR55.43.(b)(5)

Explanation:
a. Correct answer.
b. SRV's can be operated at a torus level of 95".
c. HPCI is required to be secured at a torus level of 95" to prevent exceeding PCPL, not PSPL.
d. SRV's can be operated at a torus level of 90".

Note: 1998 NRC SRO Exam - Question #67

Objective:	O-RO-03-04-05, EO-7	**K/A:**	295030G246
Tier #: 1	**Group:** 1	**Question Source:**	Bank Modified
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 79

The plant was operating at 100% power when a DBA loss of coolant accident occurred resulting in the declaration of a General Emergency. Following are plant conditions:

- Primary containment is being vented IAW EOP-3 step H-13 and PNPS 5.4.6
- CHRM's are indicating 2.8E4 R/Hr.
- Wind direction is from 090°

Based on plant conditions, which ONE of the following Protective Action Recommendations is required?

Note: Refer to attached EP-IP-400, Attachment 1

a. Evacuate sub-areas 1, 12 and 3. Shelter all other sub-areas.

b. Evacuate sub-areas 1, 12, 2, 3, 4, 6, 7, 8 and 11. Shelter all other sub-areas.

c. Evacuate sub-areas 1 and 12. Shelter all other sub-areas.

d. Evacuate sub-areas 1, 12, 2, 3 and 4. Shelter all other sub-areas.

Answer: b

References:
EP-IP-400, Attachment 1
10CFR55.43.(b)(5)

Explanation:
a. The criteria for only evacuating the 2 mile ring has not been met.
b. Correct answer – criteria for evacuating 5 mile ring has been met.
c. Same as "a." above.
d. Sub-areas stated for evacuation are calculated from a wind direction of 270°.

Objective:	O-RO-03-04-05, EO-7	**K/A:**	G.2.4.44
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 80

An Alert has been declared. Which ONE of the following is an Emergency Director responsibility which may be delegated?

a. Approval of press releases

b. Off-site Protection Action Recommendations

c. Termination of an Alert

d. Authorizing the use potassium iodine by on-site personnel

Answer: **d**

References:

EP-IP-200, Section 4.0
10CFR55.43.(b)(5)

Explanation:

a-d EP-IP-200, On-Call Emergency Director, Section 4.0 defines authorizing the use of potassium iodide as a delegable responsibility of the Emergency Director.

Note: 1998 NRC SRO Exam - Question #99

Objective:	O-RO-07-04-01, EO-6	**K/A:**	G.2.4.38
Tier #: 3	**Group:**	**Question Source:**	Bank Modified
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 81

The plant was operating at 100% power when a loss of coolant accident occurred causing a RPV depressurization and rapid increase in drywell temperature. Following are plant conditions:

- Drywell temperature is approaching 280°F
- Drywell Pressure is 20 psig
- RPV level is unknown

Based on plant conditions, which ONE of the following describes the use of the RHR pumps?

a. Use both loops of RHR to spray the drywell before drywell temperature reaches 280°F.

b. Use both loops of RHR to spray the drywell, but only after drywell temperature reaches 280°F.

c. Use both loops of RHR to inject to the RPV.

d. Close the MO-1001-19 RHR cross-tie valve. Use one loop of RHR to spray the drywell before drywell temperature reaches 280°F. Use the other loop of RHR to inject to the RPV.

Answer: c

References:

Operations Policy Standards
EOP-03 and 16
10CFR55.43.(b)(5)

Explanation:

a-d The Operations Policy Standards states that RPV flooding conditions has priority over primary containment control actions unless the associated EOP-3 action(s) includes the icon for "Core Uncovery Allowed" is present. In this case, it is not present.

Objective:	O-RO-03-04-08, EO-9b	**K/A:**	G.2.4.16
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 82

The plant is operating normally at 100% power when a leak occurs on the suction line of RCIC. Water level is 3 inches in the RCIC quadrant when the leak is discovered. Level in the RCIC quadrant is currently approaching 6 inches. In accordance with Emergency Operating Procedures, the leak ____(1)____ required to be isolated and a reactor scram ____(2)____ required before reaching 6 inches in the RCIC quadrant.

a. (1) is, (2) is

b. (1) is, (2) is not

c. (1) is not, (2) is

d. (1) is not, (2) is not

Answer: **b**

References:

EOP-04 and 01
O-RO-03-04-06 (page IG-17)
10CFR55.43.(b)(5)

Explanation:

a. Correct if the system is incorrectly classified as a primary system.
b. Correct answer.
c. Correct if the system was incorrectly determined to be needed for adequate core cooling and incorrectly classified the system as a primary system.
d. Correct if the system was incorrectly determined to be needed for adequate core cooling.

Objective:	O-RO-03-04-06, EO-4	**K/A:**	G.2.4.17
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 83

ADS has been initiated and a blowdown is in progress. Which ONE of the following actions would terminate the blowdown and prevent ADS from re-initiation?

a. Placing the core spray and RHR pumps in pull-to-lock.

b. Depressing the ADS initiation logic reset pushbutton.

c. Placing the ADS initiation inhibit switch to inhibit and placing the core spray and RHR pumps in pull-to-lock.

d. Depressing the ADS initiation logic reset pushbutton and placing the ADS initiation inhibit switch to inhibit.

Answer: **d**

References:

ADS Reference Text
10CFR55.41.(b)(7)

Explanation:

a. Once ADS has been initiated, the LPCS/RHR pump running interlock is sealed in. Placing the core spray and RHR pumps in pull-to-lock would have no effect on terminating ADS.
b. Depressing the ADS initiation logic reset pushbutton would only reset the 105 second timer. ADS would re-initiate after 105 seconds when the timer timed out.
c. Variation of a. and b.
d. Correct answer.

Objective:	O-RO-02-09-05, EO-15	**K/A:**	209001K302
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 84

The plant is operating at 100% power when it is discovered that the keylock switch for opening the HPCI alternate shutdown panel has been tampered with. In accordance with PNPS 5.3.14, “Security Incidents”, which ONE of the following is to be immediately informed of this condition?

a. The Emergency Off-Site Manager

b. The Federal Bureau of Investigation

c. The SAS or CAS operator

d. The Plymouth Police Department

Answer: c

References:
PNPS 5.3.14 (page 2/12)
10CFR55.41.(b)(10)

Explanation:

a-d In accordance with PNPS 5.3.14, the immediate action is to inform the SAS or CAS operator.

Objective:	None identified	**K/A:**	G.2.4.28
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 85

The plant was operating at 100% power when a transient causes a loss of feedwater concurrent with a Group I isolation. Based on decay heat generation and SRV operation, which ONE of the following system(s) is(are) designed to provide the minimum makeup requirements to the RPV to maintain RPV level above top of active fuel?

a. RCIC only.

b. RCIC and ADS.

c. HPCI only.

d. ADS and low pressure injection.

Answer: a

References:
PNPS FSAR Volume 2, Section 4.7.5
10CFR55.41.(b)(8)

Explanation:

a. Correct answer. After a loss of feedwater and vessel isolation the RCIC system is sufficient to maintain reactor water level above TAF.
b. Only RCIC is required to maintain RPV level above TAF after a loss of feedwater and vessel isolation event, not RCIC and HPCI.
c. HPCI is provided to ensure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break LOCA that does not result in the rapid depressurization of the RPV.
d. ADS is only required when other means, including RCIC and/or HPCI, are incapable of maintaining RPV water level.

Objective:	O-RO-02-09-04, EO-5	**K/A:**	295025K104
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 86

It is desired to isolate the makeup to the TBCCW head tank to allow maintenance inside the tank during an outage. Which ONE of the following would allow the use of LV-4141 as an isolation point when preparing this DANGER tagout?

Note: Refer to attached P&ID M-216, Sheet 1

a. Setting LV-4141 at the minimum level position.

b. DANGER tagging the air supply of LV-4141 in the open position.

c. DANGER tagging the air supply to LV-4141 in the closed position.

d. Applying a gag to LV-4141 to prevent it from opening.

Answer: d

References:

P&ID M-216, Sheet 1
PNPS 1.4.5 (page19/80)
10CFR55.41.(b)(10)

Explanation:

a. While this would close the valve, it could still fail open on loss of air.
b. While this would prevent air isolation, a loss of air system would result in valve failing open.
c. This would cause the valve to fail open.
d. Correct answer. In accordance with PNPS 1.4.5.

Objective:	O-RO-06-06-01, EO-12	**K/A:**	G.2.1.24
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 87

A test is being planned that would introduce the possibility of an accident not previously evaluated in the FSAR. Based on this condition, permission from which ONE of the following is required prior to performing the test?

a. OSS

b. Operations Department Manager

c. Plant Manager

d. U.S. Nuclear Regulatory Commission

Answer: d

References:
10CFR50.59
NOP 83ES (page 10/56)
10CFR55.43.(b)(3)

Explanation:

a-d In accordance with 10CFR50.59, a licensee shall obtain a license amendment pursuant to 10CFR 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would create a possibility for and accident of a different type than any previously evaluated in the final safety analysis report (as updated)

Objective:	None identified	**K/A:**	G.2.2.7
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 88

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- Drywell hydrogen concentration at 6.5%
- Drywell oxygen concentration at 2%
- Torus hydrogen concentration at 3%
- Torus oxygen concentration at 5.5%

While venting primary containment in response to these conditions it ___(1)___ permissible to exceed the release rate LCO. Jumper installation ___(2)___ permitted in order to bypass isolations allowing the venting to take place.

a. (1) is, (2) is

b. (1) is, (2) is not

c. (1) is not, (2) is

d. (1) is not, (2) is not

Answer: a

References:
EOP-03
10CFR55.43.(b)(5)

Explanation:
a-d In accordance with EOP-03, Step A-13, allows exceeding release rates and installation of jumpers based on these plant conditions.

Objective:	O-RO-03-04-05, EO-14	**K/A:**	G.2.3.8
Tier #: 3	**Group:**	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Memory - Fundamental

SRO Exam Answer Key

Question Number: 89

The plant is operating at 100% power when the "TORUS ROOM TROUGH HI/LO" alarm is received in the control room. Investigation reveals that the water level in the trough is below the bottom of the two pipes located in the torus troughs.

If a LOCA in the drywell were to occur, which ONE of the following would be of potential concern with regards to the condition of the torus trough?

a. Loss of pressure suppression pressure capability.

b. Over-pressurization of the secondary containment.

c. Ground release through the secondary containment.

d. Vent path directly from the drywell to torus room.

Answer: c

References:

PNPS FSAR Volume 2, Section 5.3.3.3
10CFR55.41.(b)(7)

Explanation:

a. Pressure suppression pressure capability is a function of the torus not the torus trough.
b. Based on the low torus trough level, there is even less likelihood that pressurization of the secondary containment will occur.
c. Correct answer. The torus trough provide for a water seal between the secondary containment (dewatering lines) and the torus room. Based on stated conditions this water seal has been lost and a path to outside the secondary exists.
d. Loss of the water seal results in a vent path from the secondary containment to the torus room, not the drywell to the torus room.

Objective:	None identified	**K/A:**	290001K301
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 90

A lead in a safety related system is to be lifted and you have been directed to verify this activity. Which ONE of the following describes how this verification is to be performed?

a. Independent and direct.

b. Non-independent and direct.

c. Independent and indirect.

d. Non-independent and indirect.

Answer: b

References:
PNPS 1.3.34 (page 40/48)
10CFR55.41.(b)(10)

Explanation:
a-d In accordance with PNPS 1.3.34 , Conduct of Operations, this action is to be non-independent and direct.

Note: 1998 NRC SRO Exam - Question #92

Objective:	O-RO-06-06-01, EO-12	**K/A:**	G.2.1.1
Tier #: 3	**Group:**	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 91

A plant transient has occurred resulting in an Alert declaration and a control room evacuation. An operator is being dispatched from the OSC to enter a High Radiation Area for local operation of equipment and has reviewed the applicable, job specific RWP and current survey map of the area. No additional dosimetry requirements have been identified.

Which ONE of the following is(are) the MINIMUM personnel monitoring requirement(s) for making this High Radiation Area entry?

a. TLD.

b. TLD and Self-Indicating Dosimeter.

c. An escort who has a TLD.

d. An escort who has a Self-Indicating Dosimeter.

Answer: b

References:
PNPS 6.1-014 (page 10/29)
10CFR55.41.(b)(12)

Explanation:

a-d In accordance with PNPS 6.1-014, TLD and dose rate device which has alarm function will allow entry.

Objective:	None identified	**K/A:**	295016G235
Tier #: 1	**Group:** 1	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 92

The plant is in refuel with core reload complete and the Reactor Building truck lock doors open in support of a control rod drive shipment. Based on current plant conditions, which ONE of the following activities is allowed to be performed?

a. Movement of new fuel to the spent fuel pool.

b. Replacement of LPRM's.

c. Replacement of control rod blades.

d. Control rod scram time testing.

Answer: b

References:
Tech Spec 1.0 & 3.7.C
10CFR55.43.(b)(7)

Explanation:

a. Secondary containment integrity does not exist based on both RB truck lock doors being open. As such, movement of fuel (core alteration) is not permitted.
b. Correct answer. Replacement of LPRM's is not considered a core alteration, therefore, secondary containment integrity is not required.
c. Secondary containment integrity does not exist based on both RB truck lock doors being open. As such, control rod blade replacement (core alteration) is not permitted.
d. Secondary containment integrity does not exist based on both RB truck lock doors being open. Additionally, core reload is completed, and as such, control rod movement is not permitted.

Objective:	O-RO-06-01-03, EO-3	**K/A:**	215005G218
Tier #: 2	**Group:** 1	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 93

The plant is operating at 100% power when instrument air is lost to the following valves:

- AO-7011A, Drywell Equipment Drain Sump Discharge to Radwaste
- AO-7017A, Drywell Floor Drain Sump Discharge to Radwaste.

Based on these conditions, which ONE of the following actions is(are) required?

Note: All other systems are fully operable.

a. Ensure that AO-7011B, Drywell Equipment Drain Sump Discharge to Radwaste, and AO-7017B, Drywell Floor Drain Sump Discharge to Radwaste are open and that administrative controls are placed on the operation of AO-7011B and AO-7017B.

b. Gag open AO-7011A and AO-7017A.

c. Be in hot shutdown within 12 hours and in cold shutdown within the following 24 hours.

d. Be in cold shutdown within 24 hours.

Answer: c

References:
Tech Spec 3.6.C.2.b.1
PNPS 5.3.8 (page 11/11)
10CFR55.43.(b)(2)

Explanation:

a. This action is contrary to the requirements of Tech Spec 3.7.A.2.B that in the event any automatic Primary Containment Isolation Valve becomes inoperable, at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition.

b. Gagging open AO-7011A and AO-7017A allows pumping of the sumps but does not address the requirements of Tech Spec 3.7.A.2.B.

c. Correct Answer. Tech Spec 3.6.C.2.b.1 requires that at least one drywell sump monitoring system shall be operable; otherwise, be in Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.

d. This action would only be required if no leakage detection systems were operable (Tech Spec 3.6.C.2.c.

Note: SRO Upgrade On-Shift Exam - Question #18

Objective:	O-RO-06-01-03, EO-3	**K/A:**	268000K602
Tier #: 2	**Group:** 3	**Question Source:**	Bank Modified
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 94

The plant is operating at 90% power with the Reactor Feed Pump Tripping Sequence switch in the ABC position. If the 'B' condensate pump tripped, which ONE of the following automatic actions would occur?

a. The 'A' feed pump only would trip.

b. The 'B' feed pump only would trip.

c. The 'C' feed pump only would trip.

d. All 3 feed pumps would trip.

Answer: a

References:
Feedwater and Condensate Reference Text
10CFR55.41.(b)(7)

Explanation:

a. With the RFP tripping sequence in the ABC position, when any condensate pump trips, the first RFP to trip will be the 'A' pump.

b-d Same as above.

Note: SRO Upgrade Exam Week #4 - Question #11

Objective:	O-RO-02-04-02, EO-9b	**K/A:**	256000A304
Tier #: 2	**Group:** 1	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 95

The plant was operating at 100% power when a loss of 480 VAC bus B-21 occurred. Based on the loss of bus B-21, which ONE of the following describes the response of the Reactor Building Ventilation System and secondary containment pressure?

a. RB supply and exhaust fans de-energize and the secondary containment becomes less negative.

b. Only the RB exhaust fans de-energize and the secondary containment becomes less negative.

c. RB supply and exhaust fans remain running and the secondary containment pressure remains constant.

d. Only the RB supply fans de-energize and the secondary containment becomes more negative.

Answer: d

References:

PNPS 2.2.40, Attachment 2
10CFR55.41.(b)(7)

Explanation:

a-d Reactor Building supply fans supplied by B-21. Reactor Building exhaust fans supplied by B-19. Supply fans will lose power. With exhaust fans still running, containment will become more negative.

Objective:	O-RO-02-08-05, EO-14	**K/A:**	288000K304
Tier #: 2	**Group:** 3	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

Question Number: 96

The plant is operating at 100% power. Which ONE of the following conditions would cause automatic closure of the condenser vapor valves and subsequent loss of main condenser vacuum?

a. 70 psig steam pressure to the SJAE inlet.

b. 10 psig downstream of the SJAE condenser.

c. 2600 lbm/hr steam flow to the jet compressor.

d. 225°F downstream of the SJAE condenser.

Answer: c

References:

Main Condenser Vacuum and Air Removal Reference Text (page 20/33)
10CFR55.41.(b)(7)

Explanation:

a. Setpoint is 40 psig.
b. Setpoint is 35 psig.
c. Correct answer (<2750 lbm/hr)
d. Setpoint is 250°F.

Note: (1) 1998 NRC RO Exam - Question #50, and (2) SRO Upgrade Exam Week #7 - Question #7

Objective:	O-RO-02-04-03, EO-10	**K/A:**	271000A202
Tier #: 2	**Group:** 2	**Question Source:**	Bank
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 97

The plant is at 30% power with RPV pressure at 955 psig. A shutdown is in progress following a record breaking 600 day run when an inadvertent main turbine trip occurs. Assuming no operator action is taken, which ONE of the following describes the expected RPV pressure several minutes following the turbine trip?

a. 810 psig

b. 940 psig

c. 955 psig

d. 1095 psig

Answer: **b**

References:

RPS Reference Text
MHC Reference Text
10CFR55.41.(b)(7)

Explanation:

a. Group I isolation setpoint.
b. Correct answer. Since at 30% power, first stage pressure will be above 108 psig, a turbine trip will cause a reactor scram. This will result in MHC controlling pressure at 940 psig.
c. Pre-transient reactor pressure.
d. Relief valve setpoint.

Objective:	O-RO-02-07-02, EO-22	**K/A:**	245000A105
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 98

During normal plant operations the control room is maintained at a ____(1)____ pressure and during accident conditions (with initiation of the CREAF) at a ____(2)____ pressure.

a. (1) positive, (2) negative

b. (1) negative, (2) negative

c. (1) negative, (2) positive

d. (1) positive, (2) positive

Answer: **d**

References:
PNPS FSAR Volume 4 Section 10.17
10CFR55.41.(b)(7)

Explanation:

a-d During all modes of operation the control room is maintained at a positive pressure relative to the surrounding areas.

Objective:	None identified	**K/A:**	290003A104
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Memory - Fundamental

Question Number: 99

The plant is in power ascension operating at 78% power with total core flow at 49 X 10^6 lbm/hr with recirculation pump speeds matched when a transient occurs resulting in the following:

- Total core flow drops to 46 X 10^6 lbm/hr
- Reactor power decreases to 76%
- Jet pump #5 and #10 at 2.6 X 10^6 lbm/hr each
- Jet pump #15 at 2.1 X 10^6 lbm/hr
- Jet pump #20 at 1.7 X 10^6 lbm/hr
- 'A' Jet Pump Total Flow at 26 X 10^6 lbm/hr
- 'B' Jet Pump Total Flow at 20 X 10^6 lbm/hr

Based on plant conditions, which ONE of the following describes the cause of the transient and the required actions?

a. A failure of the 'A' recirculation loop flow instrumentation. Restore recirculation loop flows to within limits or be in Cold Shutdown within 24 hours.

b. A failure of the 'B' recirculation loop flow instrumentation. Restore recirculation loop flows to within limits or be in Cold Shutdown within 24 hours.

c. A failure of a 'B' recirculation loop jet pump. An orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

d. A failure of an 'A' recirculation loop jet pump. An orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

Answer: c

References:

Tech Spec 3.6.E.1
10CFR55.43.(b)(2)

Explanation:

a-b Although an instrumentation failure may account for the flow indications, it would not account for the power decrease. Additionally, the required action is for a mismatch of recirc pump speeds not recirc loop flows.

c. Correct answer

d. The jet pump riser failure occurred on the #20 jet pump which is on the 'B' recirculation loop. Therefore, failure of the 'A' recirculation loop jet pump is incorrect.

Objective:	O-RO-06-01-03, EO-3	**K/A:**	202001K601
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	SRO	**Cognitive Level:**	Comprehension-Analysis

SRO Exam Answer Key

Question Number: 100

The plant is operating at 100% power when a loss of bus D-16 occurs. All other systems are aligned normally. Five minutes later bus D-16 is restored.

The expected response of 125 VDC panel D-6 upon the loss of D-16 will be to ___(1)___ and upon restoration of D-16 to ___(2)___.

a. (1) immediately transfer D-17
(2) transfer back to D-16 after 2 minutes

b. (1) transfer after 2 minutes to D-17
(2) immediately transfer back to D-16

c. (1) immediately transfer to D-17
(2) immediately transfer back to D-16

d. (1) immediately transfer to D-17
(2) remain on D-17 indefinitely unless manual action is taken to transfer back to D-16

Answer: **a**

References:

PNPS 2.2.14 (page 8/200)
10CFR55.41.(b)(7)

Explanation:

a. Correct answer.
b. Immediately transfers on a loss of 'A' 125 VDC battery, 2 minute delay on transfer back of 'A'
c. The 2 minute delay occurs before the transfer back to the 'A' supply
d. Upon restoration of the 'A' 125 VDC battery panel D-6 will auto transfer back after 2 minutes

Objective:	O-RO-02-01-02, EO-3e	**K/A:**	263000K401
Tier #: 2	**Group:** 2	**Question Source:**	New
Exam Level:	RO	**Cognitive Level:**	Comprehension-Analysis

#2

Comments on Operating Test- *Master File*

Comments on Section A

In general, the JPMs appeared weak. There was a lot of time spent on procedure review with little important decision making or SRO level knowledge demonstrated.

A.1.1 JPM was more RO level. Revise the JPM to be more of an SRO type JPM, calling for review and approval of the procedure change.

A.1.2 Delete the Mode change JPM because it simply involved filling out a form and did not demonstrate adequate SRO level knowledge. Replace with two questions.

A.2 Delete tagout JPM because it demonstrated very little SRO knowledge. Replace with a P&ID type JPM that has candidate trace flowpath for pumping firewater into the RPV via the RHR system.

A.3 Delete JPM that involved actions (notifications) taken for lost radioactive source. Replace with ~~JPM on actions to allow entry into RCA~~. two questions

A.4 Revise JPM to require candidate to determine PARs. Also step requiring evacuating the public from the shorefront and recreation areas should be critical to be similar to the critical step of evacuating workers from the protected area.

Comments on Section B

Add instructions for candidate to inform examiner when JPM (task) is complete.

EPR/MPR JPM — Stop JPM after reactor scram, rather than after completing scram actions. Provide cue to make it more natural for candidate to be monitoring system after initial change is made to the system.

RWCU JPM — Add step to open MO-76

SBGT JPM — (Replaced EDG JPM which was on the audit exam.) Add note for examiner to direct candidate to place control switches for AO-98 and AO-101 in AUTO, if status is questioned by the candidate.

Comments on Section C

Add a task for EP classification at the end of each scenario.

Switch scenario 5 for 4 so that scenario #4 is the backup scenario.

Facility: Pilgrim
Examination Level: SRO(U)

Date of Examination: 05/01/00
Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Temp. Modification of Procedures	JPM – Prepare non-intent procedure change.
	Mode Change	JPM – Process documentation for mode switch to run/enter active LCO for APRM functional.
A.2	Tagging	JPM - Prepare tagout for MO-2301-15 valve HPCI full flow test #2.
A.3	Procedures to Reduce Excessive Levels of Radiation	JPM – Perform required notifications for loss of radioactive material.
A.4	Emergency Classification	JPM – Classify SAE due to ATWS.

Facility: Pilgrim
Examination Level: SRO(U)
Date of Examination: 05/01/00
Operating Test Number: 1

B.1 Control Room Systems

	System / JPM Title	Type Code*	Safety Function
a.	EDG / Monthly Load Test/Start and Load EDG – KW Oscillations.	M, A, S	6
b.	RWCU/Establish RWCU reject to main condenser during plant startup.	N, S, L	2
c.	Rx/Turbine press regulating/transfer to MPR at power/pressure oscillations.	D, A, S	3

B.2 Facility Walk-Through

a.	RHR/LPCI/Injection Mode/X-tie Fire Water to RHR.	M, R	4
b.	RPS/Transfer 'B' RPS to backup – secure 'B' RPS MG Set.	M	7

* 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

Scenario Outline

Facility: Pilgrim   Scenario No.: 1   Op-Test No.: 1

Examiners: ____________   Operators: ____________

Objectives: To evaluate the applicants' ability to lower reactor power; respond to a failure of the selected FWLC Instrument, an isolable leak on the Core Spray System, a small break LOCA, and a loss of feedwater which leads to alternate depressurization.

Initial Conditions: 100% power, HPCI OOS. 'A' TBCCW pump is in service.

Turnover: The plant is operating at 100% power, HPCI is out of service for aux oil pump replacement. Currently in Day 2 of 14 day LCO. All required surveillances complete. 'B' TBCCW pump is out of service for maintenance, expected to return to service tomorrow. The Feedwater Flow Correction Factor is NOT applied.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Lower Rx power in response to report of 'B' RFP overheating. (To be verbally reported shortly after shift turnover.)
2	FW-24	I	Downscale failure of selected FWLC level instrument. (Inserted when directed by Chief Examiner.)
3	N/A Verbal Report	C	Leak on 'B' core spray suction (isolable). (Reported when directed by Chief Examiner.)
4	PC-01	M	Small Break LOCA. (Inserted when directed by Chief Examiner.)
5	ED-08	C	Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization. (Pre-inserted to occur upon A-1 transfer.)
6	RC-02	C	RCIC Turbine Trip. (Pre-inserted to occur when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Facility: Pilgrim Scenario No.: 2 Op-Test No.: 2

Examiners: ____________ Operators: ____________

Objectives: To evaluate the applicants' ability to place the third RFP in service, respond to squib valve failure, APRM upscale failure, and loss of vacuum resulting in an incomplete scram with SBLC failure.

Initial Conditions: 58% power, no equipment out of service.

Turnover: The plant is starting up from a one week outage for equipment repairs. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to place the third RFP in service and continue with the power ascension. PNPS 2.2.96 has been completed through Step 7.3.1[7] for starting the 'A' RFP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place third RFP in service. (Direction given in shift turnover.)
2	I/O	C	Failure of 'A' squib valve. (Inserted upon direction of Chief Examiner.)
3	NM-20	I	APRM 'B' upscale failure. (Inserted upon direction of Chief Examiner.)
4		M	Loss of vacuum – ATWS. (Loss of vacuum inserted upon direction of Chief Examiner. ATWS is pre-inserted.)
5	TC-14	C	Main Turbine bypass valves fail to open. (Pre-inserted)
6	LP-01/ LP-02	C	Trip of 'B' SBLC pump/discharge line of 'A' SBLC clogged. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Facility: Pilgrim   Scenario No.: 3   Op-Test No.: 3

Examiners: ____________   Operators: ____________

Objectives: To evaluate the applicants' ability to place the standby RBCCW pump in service, respond to a trip of an RPS MG set resulting in a single rod scram, loss of RBCCW leading to high drywell temperature and alternate depressurization with a failure of one SRV to open.

Initial Conditions: 100% power, no equipment out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. It was reported last shift that SBLC tank concentration was 8.3% boron by weight. L.C.O. 3.4.A has been entered. Chemistry is making calculations for an addition. Directions for the shift are to support Chemistry and to remove 'D' RBCCW pump from service to allow repair of seal leak.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place standby RBCCW pump in service, remove 'D' RBCCW pump from service. (Instruction given as part of turnover.)
2	RP-09/ RD-11A	I	Trip of 'B' RPS MG Set/one rod scrams (Rod 42-07). (Failure of RPS solenoid pre-inserted. MG set trip inserted as directed by Chief Examiner.)
3	CW-06	C	Unisolable gross seal failure of RBCCW pump causes loss of 'B' loop RBCCW. (Inserted as directed by Chief Examiner.)
4	TC-14	C	Main Turbine Bypass Valves fail closed. (Pre-inserted)
5	N/A	M	Alternate Depressurization on high DW temp.
6	MS-15	C	'B' SRV fails to open. (Inserted upon initiation of Alternate Depressurization.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Facility: Pilgrim Scenario No.: 4 Op-Test No.: 4

Examiners: Operators:

Objectives: To evaluate the applicants' ability to transfer CRD FCV's, respond to a reactor recirc pump runaway, a steam leak on RCIC with isolation failure which will result in alternate depressurization, and a failure of bus A-5 transfer.

Initial Conditions: 100% power, EOL IC, no equipment out of service, 'A' CRD FCV in service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to transfer to 'B' CRD FCV to allow maintenance on the 'A' CRD FCV.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Transfer CRD FCV. (Instruction given as part of turnover.)
2	H1S1	I	'A' recirc pump runaway. (Inserted at direction of Chief Examiner.)
3	RC-06	M	Steam leak in RCIC quad/drive to Alternate Depressurization. (Inserted at direction of Chief Examiner.)
4	CO-R5	C	Auto/Manual isolation of RCIC fails. (Pre-inserted)
5	RPWA 7-8 RPWB 7-8	C	RBIS Failure. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Facility: Pilgrim   Scenario No.: 5   Op-Test No.: Spare

Examiners: Operators:

Objectives: To evaluate the applicants' ability to respond to a loss of the startup transformer, a leak in the drywell, with a failure of high pressure injection.

Initial Conditions: 100% power, shutdown transformer out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. The plant is currently in day 4 of 7 of Tech.Spec. 3.9.B.1.b. Directions for shift are to continue to operate at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	ED-04	C	Loss of Startup Transformer. (Inserted on direction of Chief Examiner.)
2	N/A	N	Power reduction to 25% per T.S. 3.9.B.2. (Completed as a result of Event 1.)
3	PC-01	M	Leak in drywell/reactor scram. (Inserted on direction of Chief Examiner.)
4	HP-04/ HP-06	I	HPCI flow controller failure. (Pre-inserted to have flow controller fail upon reaching 4250 GPM HPCI flow. Inverter failure inserted upon direction of Chief Examiner.)
5	RC-02	C	RCIC Inop – Trip Throttle Valve Trip. (Pre-inserted to trip when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 299-03-04-026

Task Title: Prepare Non-Intent Procedure Change

Job Performance Measure No: Admin 1

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: ____ aminer: ____

Date: ____

Copy of Operating exam (as submitted)

Method of Testin

Simulated Perforr rformance: ____

Classroom: ____ ____ Plant: ✓

Read to the Exam

"I will explain the in ... ...ıuıuons, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: You are the OSS. The plant is operating at 100% power. Charging of the SBLC Nitrogen Accumulators is scheduled for this shift and the appropriate resources have been allocated. However, the operators performing the job found that PNPS 2.2.24 Attachment 5 step [2]h refers to valve 56B(A) instead of valve 56A(B). They are standing by to complete this work.

Task Standard: The Candidate shall complete a Permanent Revision, Non-Intent change to PNPS 2.2.24 with no failure of critical tasks. Steps may be performed in any order.

Required Materials: None.

General References: PNPS 2.2.24, NOP98A1

Initiating Cue: Process an appropriate procedure change to allow this job to proceed.

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Locates and reviews appropriate procedures.

Standard: Candidate determines that NOP98A1 is the appropriate procedure, reviews NOP98A1.

Comment:

_____ **Performance Step 2:** Determines that this change should be a permanent revision. Refers to section 6.1.3 of NOP 98A1.

Standard: Candidate refers to NOP 98A1 section 6.1.3.

Comment:

_____ **Performance Step 3:** Determines that this job constitutes emergent work. (based on the job being scheduled and resources allocated.) Transitions to section 6.1.3.3 of NOP 98A1.

Standard: Candidate refers to 6.1.3.3 of NOP 98A1.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 4:** Obtain a copy of Procedure Change Form (PCF) from the procedure work group, or an equivalent electronic copy.

Standard: Candidate obtains a PCF.

Comment: Once the candidate demonstrates ability to obtain PCF, supply him with a copy of a PCF.

✓ **Performance Step 5:** Complete PCF sections A, B, C, and D.

Standard: PCF sections A, B, C, and D completed per attached PCF.

Comment: While it is expected that the candidate will process the change as an emergent, non-intent change, the critical portion is that the change is processed per NOP98A1. If the candidate elects to process the change as another type change (such as an intent change), this step should be satisfactory provided the candidate follows the procedure for making that type change. Critical portion of the PCF completion is identification of the proper procedure to be changed and proper description of the change.

✓ **Performance Step 6:** Markup a current revision of the procedure, working closely with affected disciplines for input, review, and concurrence.

Standard: Candidate marks up 2.2.24 Attachment 5 step [2]h to read 1101-56A[B].

Comment: The examiner will act as affected disciplines. However no additional input, review or concurrence should be required.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 7:** Determines whether the revision constitutes an intent change.

Standard: Change classified as non-intent change per definitions. (changing equipment identifiers).

Comment:

✓ **Performance Step 8:** PCF initiator shall submit the marked up procedure, PCF and PEC (If required) to the procedure owner.

Standard: Candidate identifies need to supply marked up procedure and PCF to procedure owner.

Comment: When the candidate asks for the procedure owner, cue him that "The procedure owner is unavailable". In this case, the OSS (candidate) acts as the procedure owner.

_____ **Performance Step 9:** Determine the need for technical review and/or validation.

Standard: Candidate determines that technical review and validation are not required.

Comment: While there is enough information available to justify NOT performing technical review and validation, the candidate may conservatively elect to perform these tasks. If he does so, this is a conservative decision and should not be viewed as unsatisfactory. If the candidate pursues either of the tasks, cue him that "Technical review and validation are complete".

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 10:** Submit PCF and marked up procedure to owner for approval.

Standard: Candidate approves procedure (Section F) for the owner.

Comment:

____ **Performance Step 11:** Discuss changes with OSS.

Standard: Initiator is the OSS. No discussion required.

Comment:

____ **Performance step 12:** Submit revisions to OA for processing.

Standard: Change submitted to the OA.

Comment: Examiner will accept the changes as OA and cue the candidate that:
"I will process the change."

Terminating Cue: Inform the candidate that "this completes the JPM" when PCF and documentation submitted to OA (examiner).

VERIFICATION OF COMPLETION

JPM No.: ______________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ______________________

Number of attempts: ______________________

Time to complete: ______________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________ ____________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 341-03-02-018

Task Title: Process Documentation for Mode Switch to Run/Enter Active LCO for APRM Functional Test

Job Performance Measure No: Admin 2

Position: SRO

K/A Reference: G 2.1.33, RO-3.4/SRO-4.0

Examinee: ____________

NRC Examiner: ____________

Date: ____________

Method of Testing:

Simulated Performance: ✓

Actual Performance: ____

Classroom: ____

Simulator: ____ Plant: ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: You are the CRS. The Plant is being started up from a refueling outage. The mode switch was just placed in RUN. Reactor power is 10%. PNPS 2.1.1 is being used (supply candidate with copy of PNPS 2.1.1 marked up as appropriate).

Task Standard: The Candidate will proceed with directing the startup, will recognize the need to enter an active LCO and process the associated documentation without any failure of critical steps. Steps may be performed in any order.

Required Materials: Master Surveillance Test Procedure (MSTP).

General References: PNPS 2.1.1, PNPS 1.3.34.2, Technical Specifications.

Initiating Cue: Proceed with the plant startup.

Time Critical Task: NO

Validation Time: 30 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Identify and review applicable procedure.

Standard: Candidate identifies that PNPS 2.1.1 (presented during initial conditions) as applicable procedure, reviews PNPS 2.1.1.

Comment:

_____ **Performance Step 2:** If the APRM Functional Test has not been performed within the previous seven days, initiate an active LCO against Tech Spec 4.1.1, note 7.

Standard: Candidate reviews MSTP and determines that APRM Functional Test was last performed 4/1/00.

Comment: When the candidate reviews the MSTP cue him that, "The last completion date for the APRM Functional was on 4/1/00."

_____ **Performance Step 3:** Identify and review the governing procedure.

Standard: Candidate identifies that PNPS 1.3.34.2 is applicable and reviews procedure.

Comment:

_____ **Performance Step 4:** Determine whether the entry condition is a routine activity.

Standard: Candidate determines that this is NOT a routine activity.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_✓_ **Performance step 5:** Complete an LCO form and LCO log for Tech Spec Table 4.1.1. note 7.

Standard: LCO form and LCO log completed per attached sheets.

Comment: Critical portion is identifying the correct flag date/time and the action required if the flag date/time is reached.

Comment: If the candidate enters "per Table 3.1.1" in the Action Required block, ask him to identify what actions are specifically required.

Terminating Cue: Inform the candidate that "this completes the JPM" when PNPS step [113]a is completed.

VERIFICATION OF COMPLETION

JPM No.: ______________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ______________________

Number of attempts: ______________________

Time to complete: ______________________

Question Documentation:

Question: ______________________

Response: ______________________

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________ __________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 299-03-04-026

Task Title: Prepare Tag Change Request to Allow Diagnostic Testing on MO-2301-15, HPCI Full Flow Test #2

Job Performance Measure No: Admin 3

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: ______

NRC Examiner: ______

Date: ______

Method of Testing:

Simulated Performance: ✓

Actual Performance: ______

Classroom: ______

Simulator: ______ Plant: ✓

Read to Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: The plant is at 100% power with the HPCI System inoperable in day 2 of a scheduled 7day LCO for planned maintenance. All required surveillance testing for HPCI System outage is complete. You have been given this tagout and tag change request to allow MOV diagnostic testing on MO-2301-15. The test is scheduled to be performed during this LCO maintenance outage. All components should initially be tagged in the normal position. The MOV diagnostic engineer will require operations to re-position the components later this shift.

Task Standard: The candidate shall complete the tagout in accordance with PNPS 1.4.5 with no failure of critical steps. Steps may be performed in any order.

Required Materials: Tagout Request, Tagout Assignment Sheet

General References: PNPS 1.4.5

Initiating Cue: Prepare a standard Tag Change Request to allow testing on MO-2301-15.

Time Critical Task: NO

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Identify and review applicable procedures.

Standard: Candidate identifies and locates PNPS 1.4.5 and reviews General Instructions. Identifies Section 6.19 and 6.8 as the applicable sections.

Comment:

✓ **Performance Step 2**: Assign tag numbers to additional tags. Add tag numbers 26, 27, 28, 29, device number, and component descriptions, tag type and component position on Tagout Request Sheet.

Standard: Tagout Change Request sheet completed per attached.

Comment: Critical portion is identifying proper device number to be tagged, tag type and component position.

✓ **Performance Step 3:** Obtains from OA permission to alter the tagout.

Standard: Tagout altering approved per attached. Cue the candidate that job #1, MR #10,000,000 has been approved for altering by the cognizant supervisor on this date and time.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 4:** Present the tagout assignment sheet and the Tag Change Request sheet to the requestor.

Standard: Tagout requestor enters tag no., device no., description, tag type, tag position on tagout assignment sheet in the tagout sheet and signs Tagout Request sheet in the Tagout Sheet modified by block.

Comment: Examiner should copy information from the Tagout Change Request sheet tag additions block to Tagout Assignment Sheet.

✓ **Performance Step 5:** Obtain OSS permission to modify the tagout.

Standard: Tag Change sheet signed by OSS in the "NWE/NOS permission to alter" block.

Comment: Examiner signs for OSS.

Terminating Cue: Cue the candidate that this concludes the JPM.

VERIFICATION OF COMPLETION

JPM No.: ______________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ______________________

Number of attempts: ______________________

Time to complete: ______________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________ __________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 015-05-02-004

Task Title: Perform Required Notification for Loss of Radioactive Material

Job Performance Measure No: Admin 4

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: ______

NRC Examiner: ______

Date: ______

Method of Testing:

Simulated Performance: ✓

Actual Performance: ______

Classroom: ______

Simulator: ______

Plant: ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: It has been determined by the RP Manager that a source has been lost. This source contains Special Nuclear Material and the quantity is approximately twice that listed in Appendix C of 10CFR20. It is believed that the source was inadvertently included in a shipment to Barnwell, SC of high level waste generated during cleanup of the spent fuel pool and that no dose limits are expected to be exceeded.

Task Standard: The candidate shall determine and complete the required notifications with no failure of critical steps. Steps may be performed in any order.

Required Materials: Event notification worksheet

General References: PNPS 1.3.12, 10CFR50.72, and 10CFR20

Initiating Cue: You are the OSS. Determine any required notifications of plant personnel and off site personnel. Complete any required notifications.

Time Critical Task: YES – 1 Hour

Note: Time critical is only applicable to time from determination of need for notification until notification is complete.

Validation Time: 25 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Determine appropriate procedure to follow.

Standard: Operator refers to PNPS 1.3.12.

Comment:

_____ **Performance Step 2:** Ensure that the plant is/will remain in a safe condition.

Standard: Operator determines that no threat exists to the safe operation of the plant.

Comment:

_____ **Performance Step 3:** Ascertain all the facts concerning the situation.

Standard: Candidate is aware of all pertinent facts (from the Initial Conditions).

Comment: If the candidate asks for any more information, cue him that "no other information is available".

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

______ **Performance Step 4:** Review the Technical Specifications to determine out of service time, redundant system testing, reportability, etc..

Standard: Candidate determines that no Technical Specifications are currently applicable.

Comment:

______ **Performance Step 5:** Review PNPS 1.3.12, "Problem Report Program" and generate report as required.

Standard: Candidate identifies the need to write a Problem Report.

Comment: When the Candidate pursues writing a Problem Report, cue him that "Another SRO will write the Problem Report."

✓ **Performance Step 6:** Review PNPS 1.3.12, Attachment 2, to determine 10CFR50.72 reportability to the NRC.

Standard: Candidate determines that this event is reportable within 1 hour to the NRC in accordance with 10CFR70.52.

Comment: Critical Start Time: ____________

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 7:** Utilize Attachment 4 during periods of unscheduled power reductions.

Standard: Candidate determines that no power reduction is required and Attachment 4 is not needed.

Comment:

_____ **Performance Step 8:** Review PNPS 1.3.9, "Reports", and determine reportability to Offsite Agencies.

Standard: Candidate identifies the need to refer to PNPS 1.3.9.

Comment: Cue the candidate that another SRO will review PNPS 1.3.9 and give recommendations.

_____ **Performance Step 9:** Determine impact on continued availability.

Standard: Candidate determines that availability is not affected.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 10:** Notify the ODM when:

- An unplanned Active Shutdown LCO of seven days or less is entered.
- Any 10CFR50.72 notification is made to the NRC.
- Any notification is made to the plant manager in accordance with 1.3.12, Attachment 1.
- Any plant condition that the OSS believes warrants the attention of the ODM.

Standard: Candidate determines the need to notify the ODM and performs this notification.

Comment: Examiner will acknowledge the report as the ODM.

_____ **Performance Step 11:** Contact the Plant Manager (or on-call PM), the NRC Resident Inspector, and the Regulatory and Industry Affairs Superintendent and inform them of the situation if required by Attachment 1 of PNPS 1.3.12.

Standard: Candidate determines that Plant Manager, the NRC Resident Inspector, and the Regulatory and Industry Affairs Superintendent require notification and implements notification.

Comment:

_✓_ **Performance step 12:** Contact the NRC Operations Center and make notifications per 10CFR70.52.

Standard: NRC Operations Center notified using ENS phone.

Comment: Critical Stop Time: ____________

Terminating Cue: Inform the candidate that "this completes the JPM" when NRC Operations Center Notification is made.

VERIFICATION OF COMPLETION

JPM No.: ____________________

Examinee's Name: ____________________

Examiner's Name: ____________________

Date performed: ____________________

Number of attempts: ____________________

Time to complete: ____________________

Question Documentation:

Question: ____________________

____

____

Response: ____________________

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ____________________ __________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 015-05-02-013

Task Title: Classify GE Due to ATWS

Job Performance Measure No: Admin 5

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: ____________

NRC Examiner: ____________

Date: ____________

Method of Testing:

Simulated Performance: ✓

Actual Performance: ____________

Classroom: ____________

Simulator: ____________ Plant: ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: The plant has experienced an ATWS with the following conditions: (Provide copy of Attachment 2 to candidate)

- All efforts to insert control rods have been unsuccessful
- The Main Condenser is not available
- SRVs are being used to control pressure in a band of 1000-1050 psig
- Reactor power is 30% and is lowering due to termination of injection to the RPV
- Torus water temperature is 120°F and rising
- Torus water level is 129 inches and stable
- Drywell pressure is 15 psig
- Torus bottom pressure is 19 psig
- No release is in progress
- Wind is from 90 degrees at 5 mph
- All efforts to inject boron have been unsuccessful

Task Standard: A general emergency shall be declared due to exceeding EAL 2.3.1.4. The Initial Notification Form shall be completed and given to the Operations Assistant within 15 minutes. The E-Plan shall be completed up to, and including Step 5.2.4 of EP-IP-100. Steps may be performed in any order provided critical time frames are met.

Required Materials: Initial Notification Form, EAL chart

General References: EP-IP-100 Rev. 12

Initiating Cue: You are the OSS. Implement the Emergency Plan as appropriate.

Time Critical Task: YES – 15 minutes from the declaration to notify State and Local authorities and 1 hour, but as soon as practical, from the declaration to notify the NRC.

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Operator verifies the plant conditions.

Standard: Operator verifies the plant conditions which may require entry into a classifiable event.

Comment:

_____ **Performance Step 2:** Operator compares plant indications against EALs.

Standard: Operator references EALs.

Comment: Successful completion of this step will be verified by the correct EAL number being recorded on the Initial Notification Form, If the candidate pursues determination of Protection Action Recommendations, cue him that "the third SRO will evaluate Protection Action Recommendations and present you with a recommendation for your approval."

_____ **Performance Step 3:** Operator announces to the control room the declared emergency.

Standard: Operator announces that a General Emergency has been declared, EAL 2.3.1.4 and announces that he is the director.

Comment: CRITICAL TIME START:________________

_✓_ **Performance Step 4:** Operator designates appropriate assembly area based on wind direction.

Standard: Operator designates that the Support Building cafeteria as the assembly area.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 5**: Operator notifies security.

Standard: Operator contacts security by Gaitronix, telephone, or other means and informs/directs them of the following:

- Designated assembly area.
- The time of the declaration.
- To ensure that personnel in the support building are sent to the assembly area.
- To initiate personnel accountability.
- Evacuate/verify evacuated public access areas.

Comment: Examiner should acknowledge this information as security.

_✓_ **Performance Step 6:** Operator evacuates protected area.

Standard: Operator states the following from EP-IP-100 twice:

"Attention all personnel; attention all personnel: A General Emergency has been declared due to ["Synopsis of ATWS conditions"]. All on-call members of the Emergency Response Organization report to your designated emergency response facility. All other personnel evacuate to the Support Building cafeteria. There will be no eating, drinking or smoking until further notice."

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 7:** Operator evacuates shorefront and recreation areas.

Standard: Operator turns on outside speakers and states the following:

"Attention please! Attention please! This is Pilgrim Station. Please leave the recreation areas without delay." (Turn **off** the outside speakers.)

Comment:

_____ **Performance Step 8:** Operator notifies or directs notification of ERO.

Standard: Operator directs the OA to standby for Emergency Response Organization Notification.

Comment: If told as OA to activate the ERO, cue the candidate that "I will activate the ERO."

✓ **Performance Step 9:** Operator completes the Initial Notification Form.

Standard: Operator completes the Initial Notification Form.

Comment: Refer to Attachment 1 of this JPM to verify accuracy on the Initial Notification Form. When the Candidate reaches block 6, cue him as the 3rd SRO that you recommend evacuating a 2-mile ring and 5 miles downwind in subarea 1, 12, 3, and sheltering all other subareas. Critical portions have an asterisk (*) on Attachment 1.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance step 10:** Operator directs the Initial Notification Form to be transmitted to State and Local Authorities.

Standard: Operator directs the OA to transmit the Initial Notification Form over the DNN.

Comment: Cue the Candidate that "I will transmit the form over the DNN."

✓ **Performance step 11:** Operator informs the NRC.

Standard: Operator contacts the NRC via the ENS line and notifies them that a 10CFR notification is being made, Section 50.72(a) (3), a General Emergency has been declared.

Comment: Cue the Candidate that "The NRC understands you are declaring a General Emergency, and notifying the NRC that of a 10CFR50.72(a) (3) notification."

Cue the candidate as Security "That accountability is complete."

Terminating Cue: Inform the candidate after notifications are made to State/Local authorities and NRC that, "This completes the JPM."

VERIFICATION OF COMPLETION

JPM No.: ______________________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ________________________

Number of attempts: _____________________

Time to complete: _______________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________________________ _______________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Attachment 1

Initial Notification Form Completion Checklist

1. Block 1 "**Actual Event**" – [Checked]

2. *Block 2 "**Time**" – [Time of Declaration of Event]
   "**Date**" – [Date of Declaration of Event]
   "**Entered**" – [Checked]
   "A General Emergency" – [Checked]

3. * Block 3 "**EAL No.**" [2.3.1.4]
   Note: Exact wording not a critical task

"Brief Description of Event"

4. * Block 4 **"Is Not"** – [Checked]
   "Is Below" – [Checked]

5. * Block 5 "Meteorological Data As Of "
   [time of most recent meteorological data from any source]
   Wind Direction from - [90deg] to [270deg]

At – [5 mph]

6. * Block 6 "**Shelter subareas**" [checked]
   2,4,5,6,7,8,9,10,11 circled
   "Evacuate subareas" [checked]
   1,12,3 circled
7. Block 7 No critical or non-critical tasks associated with this field
8. Block 8 No critical or non-critical tasks associated with this field
9. Block 9 [NO checks or areas circled]
10. * Block 10 **Approved for release** – [Operators Signature]

Attachment 2

Initial Conditions for JPM Admin 5.

The plant has experienced an ATWS with the following conditions:

- All efforts to insert control rods have been unsuccessful
- The Main Condenser is not available
- SRVs are being used to control pressure in a band of 1000-1050 psig
- Reactor power is 30% and is lowering due to termination of injection to the RPV
- Torus water temperature is 120°F and rising
- Torus water level is 129 inches and stable
- Drywell pressure is 15 psig
- Torus bottom pressure is 19 psig
- No release is in progress
- Wind is from 90 degrees at 5 mph
- All efforts to inject boron have been unsuccessful

Job Performance Measure
Worksheet

Facility:	Pilgrim	Task No:	261-02-01-003
Task Title:	Monthly load test/Start and load EDG	JPM No:	1
K/A Reference:	264000A404 3.7/3.7	Position:	RO/SRO
Examinee:		NRC Examiner:	
Date:			

Method of testing:

Simulated Performance		Actual Performance	✓		
Classroom		Simulator	✓	Plant	

READ TO THE EXAMINEE:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Monthly surveillance of the "A" Emergency Diesel Generator is scheduled; preparations are complete for performance. The local prestart is complete. Communications have been established with an operator in the "A" EDG room.

Task Standard: Manually start and load an Emergency Diesel Generator IAW PNPS 8.9.1. There shall be no failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of order.

Required Materials: Key to the EDG "A" Test Switch

General References: PNPS 8.9.1

Initiating Cue: "[Operator's Name], perform the monthly surveillance of the "A" Emergency Diesel Generator IAW PNPS 8.9.1."

Time Critical Task: NO

Validation Time: 15 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Review the applicable section of the procedure.

Standard: Operator reviews precautions, limitations, and Attachment 1 of PNPS 8.9.1.

Comment: All critical steps must be performed in the order written unless otherwise noted. All components are located on the panel C3 in the Control Room unless otherwise noted. Cue the candidates that "All prerequisites are met for starting the 'A' EDG. Begin with step 1.2 of PNPS 8.9.1 Attachment 1."

✓ **Performance Step 2:** Insert key and rotate EDG 'A' test switch clockwise into the TEST position.

Standard: Green light off, amber light on.

Comment:

✓ **Performance Step 3:** Rotate EDG 'A' Governor Mode Selector Switch clockwise to "DROOP".

Standard: Green light off, red light on.

Comment:

_____ **Performance Step 4:** Verify EDG 'A' voltage regulator mode selector switch is in "AUTO".

Standard: Switch in "AUTO".

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 5:** NOTIFY the operator at the diesel to perform Section 1.3 of Attachment 1 (Local Diesel Start).

Standard: a) Operator uses Gaitronics System to notify operator at 'A' Diesel Generator Room to perform 1.3 of Attachment 1 (local EDG start).

b) Operator uses Gaitronics system to notify operator at 'A' Diesel Generator Room to start EDG 'A' and time the start up.

Comment: a) Cue candidate that: "Attachment 1 section 1.3 is complete through step 12; ready to load the diesel".

b) Simulator operator must start the 'A' EDG.

Note: Annunciator EDG "A" sys trouble must be reset by Booth Operator.

____ **Performance Step 6:** Record diesel VOLTAGE and FREQUENCY as indicated on Panel C3.

Standard: Time, Voltage & frequency recorded.

Comment:

____ **Performance Step 7:** Rotate EDG 'A' voltage regulator setpoint adjuster clockwise momentarily to increase voltage by 100v.

Standard: Voltage meter increases by approx. 100v (vertical C-3).

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 8:** Rotate EDG 'A' voltage regulator setpoint adjuster counterclockwise momentarily to lower voltage by 200v.

Standard: Voltage meter decreases by 200v (vertical C3).

Comment:

✓ **Performance Step 9**: Insert key and rotate the synch switch clockwise to the "ON" position.

Standard: Synch switch is in "ON" position, lights are on, and needle is rotating.

Comment:

____ **Performance Step 10:** Set incoming voltage slightly above running.

Standard: Incoming voltage slightly above running.

Comment: This may be required to be re-performed after adjusting speed.

____ **Performance Step 11:** Rotate the EDG 'A' Governor Speed Control Switch clockwise until freq. increases by one hertz.

Standard: Frequency Meter (vertical C3) increases by 1Hz.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

______ **Performance Step 12:** Rotate the EDG 'A' Governor Speed Control Switch counterclockwise until freq. decreases by two hertz.

Standard: Frequency Meter (Vertical C3) decreases by 2 Hz.

Comment:

______ **Performance Step 13:** Rotate EDG 'A' Governor Speed Control clockwise to produce a slow rotation in the fast direction.

Standard: Synchroscope is rotating slowly clockwise.

Comment:

✓ **Performance Step 14:** Rotate control switch for breaker A509 EDG 'A' to Bus A5 clockwise to synch the diesel on bus.

Standard: Bus is paralleled at approx. 5 degrees before in phase indication on synchroscope.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 15:** Rotate EDG 'A' Governor Speed Control Switch clockwise to increase load to 500 KW.

Standard: EDG 'A' power meter, Vertical C3, indicates approximately 500 KW.

Comment: After 500 KW load is achieved, load oscillation should be inserted. (Booth operator manually oscillates load $\pm$ 250 KW.)

✓ **Performance Step 16:** Recognizes that load is oscillating.

Standard: CRS informed of load oscillations.

Comment: If asked what actions to take, respond as CRS, that the operator should follow his station procedure.

Performance Step 17: Rotates EDG 'A' Voltage regulator setpoint adjustor switch counterclockwise to lower reactive load to 0 KVAR.

Standard: Zero KVAR is indicated on Vertical C3.

Comment: Depending on how severe the candidate judges the oscillations to be, he may open the EDG "A" breaker without performing this step.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 18:** Rotate EDG 'A' Governor Speed Control Switch to lower load to 100 KW.

Standard: EDG A power meter, Vertical C3, indicates 50-150KW.

Comment: Depending on how severe the candidate judges the oscillations to be, he may open the EDG "A" breaker without performing this step.

✓ **Performance Step 19:** Operator rotates Control Switch for breaker A509 EDG 'A' to Bus A-5 counterclockwise to remove EDG 'A' from Bus A-5

Standard: A509 breaker has green light on red light off.

Comment:

Terminating Cue: After the 'A' EDG is removed from Bus A-5 inform the candidate that the JPM is complete.

VERIFICATION OF COMPLETION

JPM No.: ______________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ______________________

Number of attempts: ______________________

Time to complete: ______________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________________ __________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

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      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

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      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility:	Pilgrim	Task No:	204-01-01-002
Task Title:	Establish RWCU Reject to Main Condenser During Plant Startup	JPM No:	2
K/A Reference:	204000A403 3.2/3.1	Position:	RO/SRO
Examinee:		NRC Examiner:	
Date:			

Method of testing:

Simulated Performance		Actual Performance	✓
Classroom		Simulator ✓	Plant

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Preparations for plant startup are being made. CRD has just been started and reactor water level is at 45-50" and is increasing due to CRD cooling water.

Task Standard: The system shall be operated in accordance with all applicable precautions and limitations. The system procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of order.

Required Materials: None.

General References: PNPS 2.2.83

Initiating Cue: "[Operator's name], establish RWCU reject flow to the main condenser and establish 60 GPM reject flow rate".

Time Critical Task: NO

Validation Time: 10 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Operator reviews Precautions and Limitations and Section 7.3.1 of PNPS 2.2.83.

Comment:

√ **Performance Step 2:** Open MO-1201-78, Reject to Condenser Block Valve.

Standard: MO-1201-78, Control Switch (C904), rotated clockwise to fully open valve. Red light on/green light off.

Comment: If asked as CRS, inform candidate the MO-1201-78 should be fully opened.

____ **Performance Step 3:** Slowly open CV-1239, Reject Flow Control Valve, to establish desired flow rate.

Standard: Knob for CV-1239 (C904 vertical) rotated clockwise until FI-1290-11 (C904 vertical) reads approximately 60 GPM.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 4:** Monitor non-regenerative heat exchanger outlet temperature while increasing reject flow.

Standard: T/SS-1290-28 (904 vertical) placed in position 3. TI-1290-21 (904 vertical) monitored.

Comment:

✓ **Performance Step 5:** Reduce RWCU flow as required to maintain non-regenerative heat exchanger outlet temperature less than 130°F by any of the following methods:

- Throttle closed MO-1201-80, Return Isolation Valve
- Throttle closed FV-1279-15A and FV-1279-15B
- Throttle closed CV-1239, Reject Flow Control Valve

Standard: Flow controlled such that TI-1290-21 (C904 vertical) is less than 130°F.

Comment: Critical portion is maintaining flow such that non-regenerative level exchanger outlet temperature is less than 130°F.

✓ **Performance Step 6:** Slowly open CV-1239, Reject Control Valve to establish desired reject flow rate.

Standard: Control knob for CV-12398 (C904 vertical) and adjust such that FI-1290-11 (C904 vertical) reads approximately 60 GPM.

Comment:

Terminating Cue: Cue the Candidate that this concludes the JPM

VERIFICATION OF COMPLETION

JPM No.: ____________________

Examinee's Name: ____________________

Examiner's Name: ____________________

Date performed: ____________________

Number of attempts: ____________________

Time to complete: ____________________

Question Documentation:

Question: ____________________

____

____

Response: ____________________

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ____________________ __________

Job Performance Measure
Quality Checklist

Every JPM should:

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4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

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      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No: 241-01-01-028

Task Title: Transfer From the EPR to the MPR

JPM No: 3

K/A Reference: 241000A103 3.9/3.8

Position: RO/SRO

Examinee: ____________

NRC Examiner: ____________

Date: ____________

Method of testing:

Simulated Performance ____________

Actual Performance ✓

Classroom ____________

Simulator ✓ Plant ____________

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions:

- You are the ATC operator.
- The plant is operating at approximately 50% power.
- Plant pressure control is currently on the EPR.
- The MPR must be placed in service to facilitate a short vendor inspection of the EPR.
- Another operator is standing by to tag the EPR as soon as it is removed from service.
- Reactor Engineering has performed an evaluation that allows operation for 24 hours with the EPR out of service.

Task Standard: The system shall be operated in accordance with all applicable precautions and limitations. The system procedure and the immediate actions of the off-normal procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of sequence.

Required Materials: Tagout for EPR, Spare operator to control Reactor Water Level post scram

General References: PNPS 2.2.99, PNPS 2.4.37, PNPS 2.1.6

Job Performance Measure
Worksheet

Initiating Cue: "[Operator's name], you are to remove the EPR from service in accordance with procedure 2.2.99 and then stand by to place the EPR back in service once the inspection is complete."

Time Critical Task: NO

Validation Time: 15 Minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Operator reviews Precautions and Limitations and Section 7.4.2 of PNPS 2.2.99. Operator may also review 2.4.37, "Turbine Control Systems Malfunctions".

Comment: All components are located in control room panel C-2 horizontal section unless otherwise noted.

✓ **Performance Step 2:** Place the MPR setpoint control switch to "LOWER" to adjust to a setpoint slightly below the EPR setpoint, per ZI-3021 and ZI-3013.

Standard: Operator rotates the "MPR SETPT" control switch to the "LOWER" position until the "MPR SETPOINT" (ZI-3021) indication is below the "EPR SETPOINT" (ZI-3013) indication.

Comment:

____ **Performance Step 3:** Verify that the MPR has taken control by response of regulator instruments, steam pressure and MPR setpoint pressure control red light.

Standard: Operator observes that "MPR CONTROL POSITION" (ZI-3020) indicator rises and "EPR CONTROL POSITION" (ZI-3014) drops off to minimum. Operator looks at PR- 3050 (or other reactor/main steam pressure) and observes a slight decrease in main steam pressure. MPR red light on; EPR green light on.

Note: Simulator operator should:

1) Tag the EPR.
2) Tell the candidate via CRS that work has begun.
3) Insert pressure oscillations.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Dtep 4:** Operator identifies that RPV pressure is oscillating.

Standard: Operator observes ZI-3020 pointer oscillating or observes reactor pressure indication is oscillating.

Comment:

___ **Performance Step 5:** Operator observes APRM's or asks another operator to do so, and determines that reactor power is less than 90%.

Standard: Operator looks at the APRM recorders on 905 panel, or asks another operator to do so.

Comment: Reactor power was turned over as being at 50%.

___ **Performance Step 6:** Operator rotates the MPR switch to the lower position to take control with the MPR.

Standard: MPR red light on, green light off.

Comment: This step may be omitted since the MPR is already in control.

___ **Performance Step 7:** Operator rotates the MPR switch to the raise position to allow the EPR to take control.

Standard: MPR red light off, green light on.

Comment: Not performed since the EPR is tagged off.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Operator determines that pressure oscillations are still occurring.

Standard: Operator notifies CRS that pressure is still oscillating.

Comment: If the operator does not recommend scramming the reactor when he reports oscillations are continuing, ask him what action is dictated by procedure.

✓ **Performance Step 9:** Operator manually scrams the reactor.

Standard: Mode switch on C-905 is in shutdown.

Comment:. The candidate should be cued at this point by the examiner, acting as the CRS to scram the reactor and carry out PNPS 2.1.6 and another operator will control reactor water level.

Performance Step 10: Verify and announce status of APRM downscales.

Standard: APRM downscales (C905 Apron Section) are verified and announcement is made.

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 11:** Verify all control rods inserted.

Standard: Operator verifies all rods in by one of the following:

- By observing the "FULL IN" green indicators on the full core display.
- By placing the Reactor Mode Switch in "REFUEL" position, turning the rod power select switch to the "OFF" position and then back to the "ON" position, and then observing the "REFUEL PERMISSIVE" white light illuminated.
- By observing individual control rod position by selecting each control rod on the rod select matrix and observing control rod position on the four rod display.
- By observing the control rod position print out by depressing the F9 key on 3D Monicore Graphics mode.
- By observing control rod position displayed on the Control Room CRT from the "ROD POSITION" function of the EPIC program (format #500).
- By observing that the "ALL RODS IN" value for EPIC computer point "CALLRODS" is "YES".

Comment:

_____ **Performance Step 12:** Insert IRM and SRM detectors. Select two SRMs for recording and place APRM/IRM selector switch to IRM.

Standard:
1. All SRMs and IRMs selected
2. SRM/IRM insert switch depressed
3. SRM selector switch to A or C and B or D
4. Eight APRM/IRM/RBM selector switches to IRM

Comment: Controls are on C-905.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 13:** Verify or manually place reactor recirc pumps at minimum speed.

Standard: Individual recirc flow controllers on C-904 verified at approximately 26%.

Comment:

_____ **Performance Step 14:** Verify or manually trip the turbine.

Standard: Operator verifies by stop valve position on C-2 (or other means) that the turbine is tripped.

Comment:

Terminating Cue: When the operator has completed the immediate action steps of 2.1.6, inform that the JPM is complete.

VERIFICATION OF COMPLETION

JPM No.: ______________________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ________________________

Number of attempts: ____________________

Time to complete: ______________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ________________________________ ____________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

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4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

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   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim	Task No: 200-05-04-072
Task Title: Cross-tie Fire Water with RHR	JPM No: 4
K/A Reference: 295031A108 3.8/3.8	Position: RO/SRO
Examinee:	NRC Examiner:
Date:	

Method of testing:

Simulated Performance	Actual Performance ✓	
Classroom	Simulator ✓	Plant

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Due to a large LOCA, the need exists to cross-tie Fire Water to RHR. PNPS 5.3.26 is complete through Step 2.1[1](a)(4).

Task Standard: The Fire Water System is lined up to the RHR System in accordance with PNPS 5.3.26. The procedure shall be followed without failure of any critical elements. Critical steps must be performed in order. Other tasks may be performed out of sequence.

Required Materials: Locked valve key (for 1001-53 valve).

General References: 5.3.26

Initiating Cue: "[State the operator's name], you are to continue lining up to cross-tie Fire Water with RHR leaving the 'B' RHR loop isolated. Inform the control room when ready to start the motor driven fire water pump".

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Procedure PNPS 5.3.26 reviewed.

Comment:

_____ **Performance Step 2:** Obtain locked valve key for 1001-53.

Standard: Locked valve key in operators possession. Key may be obtained from Control Room Annex.

Comment:

_____ **Performance Step 3:** Locate valve 1-DR-121 and simulate checking valve closed.

Standard: Operator locates 1-DR-121, and simulates taking the valve handwheel in the closed direction.

Comment: 1-DR-121 is located approximately 3' South of the West corner of MCC-B15. Cue the candidates that the handwheel will not move in the clockwise direction.

_____ **Performance Step 4:** Locates, remove the locking tie wrap, and simulate closing valve 10-HO-516.

Standard: Operator locates valve 10-HO-516, simulates removing the tie wrap, and closes the valve.

Comment: Cue the candidate that the tie wrap is removed and the valve is rotating in the clockwise direction. The valve stops and will not move any further in the clockwise direction.

Note: 10-HO-516 and 10-HO-517 are located adjacent to valve 1-DR-121.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

______ **Performance Step 5:** Locates, remove the locking tie wrap, and simulate closing valve 10-HO-517.

Standard: Operator locates valve 10-HO-517, simulates removing the tie wrap, and closes the valve.

Comment: Cue the candidate that the tie wrap is removed and the valve is rotating in the clockwise direction. The valve stops and will not move any further in the clockwise direction.

✓ **Performance Step 6:** Locate, remove the locking tie wrap, and simulate opening valve 10-HO-511.

Standard: Operator locates valve 10-HO-511, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve. 10-HO-511 is located slightly south and 5' above MCC-B15.

✓ **Performance Step 7:** Locates, remove the locking tie wrap, and simulate opening valve 8-I-56.

Standard: Operator locates valve 8-I-56, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve. 8-I-56 is located above the RHR/Fire Water spool piece on the 23' level of the Aux Bay.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

___✓___ **Performance Step 8:** Locate, remove the locking tie wrap, and simulate opening valve 3-I-57.

Standard: Operator locates valve 3-I-57, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve. 3-I-57 is located below valve 8I-56.

_____ **Performance Step 9:** Locates and simulate opening valve ¾-TT-103.

Standard: Operator locates valve ¾-TT-103, and simulates opening the valve.

Comment: Cue the candidate that the valve handwheel is moving in the counterclockwise direction, and then stops. 3/4-TT-103 is located above the spool piece.

_____ **Performance Step 10:** Locate and simulate opening valve ¾-RT-5.

Standard: Operator locates valve ¾-RT-5, and simulates opening the valve.

Comment: Cue the candidate that the valve handwheel is moving in the counterclockwise direction, and then stops. 3/4-RT-5 is located adjacent to ¾-TT-103.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance step 11:** Locate and simulate closing HO-1001-53, RHR Manual Cross-tie Valve.

Standard: Operator locates HO-1001-53, simulates unlocking the handwheel and closing the valve.

Comment: Cue the candidate that the lock is removed, the valve handwheel is moving in the clockwise direction, and then stops. The RHR/Fire Water System is now aligned for fire pump start. The operator should inform you that the JPM is complete.

Terminating Cue: This completes the JPM

VERIFICATION OF COMPLETION

JPM No.: ____________________

Examinee's Name: ____________________

Examiner's Name: ____________________

Date performed: ____________________

Number of attempts: ____________________

Time to complete: ____________________

Question Documentation:

Question: ____

____

____

Response: ____

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________________ ____________

Job Performance Measure
Quality Checklist

Every JPM should:

1. ✓ Be supported by facility licensee's job task analysis.

2. ✓ Be operationally important (meets NRC K/A Catalog threshold criterion of 2.5 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ Be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. Include the following, as applicable:

   a. ✓ Initial conditions

   b. ✓ Initiating cues

   c. ✓ References and tools, including associated procedures

   d. ✓ Validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ Specific performance criteria that include:

      (1) ✓ Expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ System response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ Statements describing important observations that should be made by the examinee

      (4) ✓ Criteria for successful completion of the task

      (5) ✓ Identification of those steps that are considered critical

      (6) ✓ Restrictions on the sequence of steps

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No: 212-01-04-003

Task Title: Transfer RPS 'B' to Alternate Power and Secure 'B' RPS MG Set

JPM No: 5

K/A Reference: 212000A201 3.7/3.9

Position: RO/SRO

Examinee: ______

NRC Examiner: ______

Date: ______

Method of testing:

Simulated Performance ______

Actual Performance ✓

Classroom ______

Simulator ✓ Plant ______

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Plant conditions are as follows:

- The 'B' RPS MG set requires repairs.
- The alternate power supply is available for use. EPA #6 circuit breaker is closed.
- "POWER OUT" light is energized on EPA #6.

Task Standard: 'B' RPS bus transferred to alternate power supply and 'B' RPS MG set secured. The RPS system shall be operated in accordance with all applicable system precautions and limitations. The system procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of sequence.

Required Materials: Electrical switchgear key (CR-50)

General References: PNPS 2.2.79

Initiating Cue: "[Operator's name], utilizing this copy of PNPS procedure 2.2.79, transfer RPS bus 'B' to the alternate power supply and secure the 'B' RPS MG set.

Time Critical Task: NO

Validation Time: 10 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Precautions, limitations and section 7.1.5 of PNPS 2.2.79.

Comment:

✓ **Performance Step 2:** Unlock cabinet C511 with electrical switchgear key.

Standard: Operator locates correct cabinet and unlocks.

Comment:

✓ **Performance Step 3:** Push "B Generator Feed" breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 4:** Push "B2 ALTERNATE FEED TO BUS B" breaker up to the "ON" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the up position."

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 5:** Push EPA #4 circuit breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 6:** Push EPA #3 circuit breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 7:** Push MG set B Output breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Push and hold STOP pushbutton until:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Standard: Candidate locates and depresses the STOP pushbutton until:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Comment: After STOP pushbutton is depressed wait 10 seconds and cue the candidate that:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Terminating Cue: Candidate then informs CRS that task is complete.

VERIFICATION OF COMPLETION

JPM No.: ______________________

Examinee's Name: ______________________

Examiner's Name: ______________________

Date performed: ______________________

Number of attempts: ______________________

Time to complete: ______________________

Question Documentation:

Question: ______________________

____

____

Response: ______________________

____

____

Result: **SAT** or **UNSAT**

Examiner's signature and date: ______________________ ____________

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      (6) ✓ Restrictions on the sequence of steps

Scenario Outline

Facility: Pilgrim   Scenario No.: 1   Op-Test No.: 1

Examiners: ______   Operators: ______

Objectives: To evaluate the applicants' ability to lower reactor power; respond to a failure of the selected FWLC Instrument, an isolable leak on the Core Spray System, a small break LOCA, and a loss of feedwater which leads to alternate depressurization.

Initial Conditions: 100% power, HPCI OOS. 'A' TBCCW pump is in service.

Turnover: The plant is operating at 100% power, HPCI is out of service for aux oil pump replacement. Currently in Day 2 of 14 day LCO. All required surveillances complete. 'B' TBCCW pump is out of service for maintenance, expected to return to service tomorrow. The Feedwater Flow Correction Factor is NOT applied.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Lower Rx power in response to report of 'B' RFP overheating. (To be verbally reported shortly after shift turnover.)
2	FW-24	I	Downscale failure of selected FWLC level instrument. (Inserted when directed by Chief Examiner.)
3	N/A Verbal Report	C	Leak on 'B' core spray suction (isolable). (Reported when directed by Chief Examiner.)
4	PC-01	M	Small Break LOCA. (Inserted when directed by Chief Examiner.)
5	ED-08	C	Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization. (Pre-inserted to occur upon A-1 transfer.)
6	RC-02	C	RCIC Turbine Trip. (Pre-inserted to occur when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Page 1 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	CRS	Receive report from electrical maintenance of overheating on the 'B' Reactor Feed Pump motor with the need to remove the pump from service as soon as practical.
	CRS	Brief crew on the power reduction. Direct the power reduction in accordance with PNPS 2.1.14.
	CRS	Direct reducing reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr.
	RO	Reduce reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr. Monitor core flow reactor power, reactor pressure, and reactor water level on Panel C905.
	RO	Insert control rods in reverse order of the pull sheet. Monitor reactor power, reactor pressure, and reactor water level on Panel C905.
	CRS	When reactor power is reduced to less than 60%, direct removal of the 'B' Reactor Feed Pump from service.
	BOP	Turn the RFP TRIP SEQUENCE SELECT switch to OFF.
	BOP	Stop the 'B' RFP by placing Control Switch to STOP.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 1	Page 2 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	RO	Verify reactor water level.
	BOP	Acknowledge and reset all RFP annunciators.
	BOP	Verify amps are normal on Reactor Feed Pumps 'A' and 'C'.
	BOP	Verify RFP 'B' Aux Oil Pump auto starts.
	BOP	Verify RFP 'B' Recirc Valve (FV-3436) closes.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 1 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Rx feed pump high water level channel alarm downscale.
	RO/BOP	Refer to ARP.
	RO	Check feedwater narrow range level indication (LR-640-26 on Panel C905).
	RO	Determine which channel (A or B) is malfunctioning.
	RO	Select unaffected channel with Reactor Level Selector Switch on C905. **NOTE: CRITICAL TASK**
	RO	Recognize/announce #2 Speed Limiter Runback on Reactor Recirc Pump.
	RO	Refer to ARP.
	CRS	Direct resetting runback.
	RO	Lower demanded speed on both Reactor Recirc Pumps until a discernable speed decrease occurs. **Note:** This step may not be required if pump speed was already less than 44%.
	RO	Reset runback on both Reactor Recirc Pumps by momentarily depressing the runback reset pushbuttons.
	CRS	Direct I&C to investigate and correct cause of alarm.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 2 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to Tech. Spec. Table 3.2.F.
	CRS	Enter 30 day active LCO for failure of one FWLC Level instrument.
	CRS	Brief crew on the need to manually trip the RFPs if the high level trip setpoint is exceeded.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 Page 1 of 1

Event Description: Leak on 'B' core spray suction (isolable). Report will be of three inches of water on the floor in the Quad with leak located between MO-1401-3B 'B' Core Spray suction and the 'B' Core Spray Pump.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize entry into EOP-04.
	CRS	Direct isolation of the 'B' Core Spray Pump Suction. (Closure of MO-1401-3B and placement of 'B' Core Spray Pump in Pull to Lock.)
	BOP	Obtain key and take keylock for MO-1401-3B to Close Position.
	BOP	Place 'B' Core Spray Pump in Pull to Lock.
	CRS	Recognize entry condition/enter Tech Spec 3.5.C.2. and 3.5.C.3 Recognize with HPCI OOS and Core Spray inoperable that 3.5.C.3 requires the plant to be in cold shutdown within 24 hours.
	CRS	Brief crew, inform ODM and make preparation for plant shutdown.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 1 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Direct venting of the drywell.
	BOP	Open AO-5043A, Drywell Normal Exhaust Isolation Valve.
	BOP	Open AO-5043B, Drywell Normal Exhaust Isolation Valve.
	BOP	Verify open or open: a) AO-N-98, Contaminated Exh to SGTS Inlet Plenum b) AO-N-101, Refuel Floor Exh to SGTS Inlet Plenum

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 2 of 8
Event Description: Small Break LOCA			

Time	Position	Applicant's Actions or Behavior
	BOP	Verify or establish: a) AO-N-99, Train 'A' Inlet Damper, is open b) AO-N-108, Train 'A' Outlet Damper, is open c) VEX-210B, Standby Gas Fan 'B', in standby d) Start VEX-210A, Standby Gas Fan 'A', Panel C7 by placing the control switch in "Run"
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "Shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01/03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 3 of 8				

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 4 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 5 of 8
Event Description: Small Break LOCA			

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 6 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 7 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 8 of 8
Event Description: Small Break LOCA			

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 - +45 inches using Table 'A'.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Page 1 of 1

Event Description: Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce lockout of Bus A-1 and Loss of Feedwater
	CRS	Direct investigation of bus A-1 lockout.
	CRS	Direct restarting the ‘B’ Reactor Feed Pump.
	BOP	Restart the ‘B’ Reactor Feed Pump.
	BOP	Recognize/announce the immediate trip of the ‘B’ Reactor Feed Pump.
	CRS	Direct injection with RCIC.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 Page 1 of 2

Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)

Time	Position	Applicant's Actions or Behavior
	BOP	Momentarily depress the RCIC System Injection Mode push button. (Following are actions for auto mode, the candidate may elect to use manual mode).
	BOP	Verify the MANUAL START SEQUENCE indicating light is energized.
	BOP	Verify the following: - MO-1301-61, TURBINE SUPPLY VALVE, has opened. - MO-1301-49, INJ VLV #2, has opened. - MO-1301-60, PUMP MIN FLOW VLV closes when flow exceeds 100 GPM - AO-1301-34 and AO-1301-35, STEAM LINE DRN VLVs, close. - AO-1301-12 and AO-1301-13, BAROMETRIC CONDR DRN VLVs, close - MO-1301-62, COOLING WTR SUPPLY VLV, opens. - P-222, VACUUM PUMP, starts. - P-221, CONDENSATE PUMP, starts. - RCIC flow levels off and stays at 400 GPM, indicating that FIC-1340-1, INJECTION FLOW CONTROL, has control of turbine speed.
	BOP	Perform the following: (**Note:** These are the steps for manual mode. The candidate may elect to use the auto mode) Verify FIC-1340-1,INJECTION FLOW CONTROL, is in AUTO and set for 400 GPM - OPEN/VERIFY OPEN MO-1301-62, COOLING WTR SUPPLY VLV - START/VERIFY RUNNING P-222, VACUUM PUMP - OPEN/VERIFY OPEN MO-1301-60 PUMP MIN FLOW VLV - SIMULTANEOUSLY OPEN MO-1301-61, TURBINE SUPPLY VLV AND MO-1301-49 INJ VLV #2 - OBSERVE that flow is supplied to reactor vessel and stabilizes at 400 GPM. - VERIFY MO-1301-60, PUMP MIN FLOW VLV closes as flow increases. - MONITOR system operation and adjust FIC-1340-1 as necessary to maintain desired reactor water level

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 6 Page 2 of 2
Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)		

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce RCIC turbine trip.
	BOP	Check RCIC Turbine Stop Valve closed.
	BOP	Close MO-1301-49 INJ VLV #2.
	CRS	Direct NLO to check RCIC turbine. (Report will be that the turbine trip throttle valve is tripped and problems are being encountered in getting the valve to stay reset.)

Scenario Outline

Facility: Pilgrim   Scenario No.: 2   Op-Test No.: 2

Examiners: ______________   Operators: ______________

Objectives: To evaluate the applicants' ability to place the third RFP in service, respond to squib valve failure, APRM upscale failure, and loss of vacuum resulting in an incomplete scram with SBLC failure.

Initial Conditions: 58% power, no equipment out of service.

Turnover: The plant is starting up from a one week outage for equipment repairs. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to place the third RFP in service and continue with the power ascension. PNPS 2.2.96 has been completed through Step 7.3.1[7] for starting the 'A' RFP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place third RFP in service. (Direction given in shift turnover.)
2	I/O	C	Failure of 'A' squib valve. (Inserted upon direction of Chief Examiner.)
3	NM-20	I	APRM 'B' upscale failure. (Inserted upon direction of Chief Examiner.)
4		M	Loss of vacuum – ATWS. (Loss of vacuum inserted upon direction of Chief Examiner. ATWS is pre-inserted.)
5	TC-14	C	Main Turbine bypass valves fail to open. (Pre-inserted)
6	LP-01/ LP-02	C	Trip of 'B' SBLC pump/discharge line of 'A' SBLC clogged. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 1	Page 1 of 2

Event Description: Place third RFP In Service

Time	Position	Applicant's Actions or Behavior
	CRS	Direct/brief placing 'A' RFP in service
	BOP	Direct NLO to adjust the RFP lube oil cooler(s) TBCCW outlet valve(s) to maintain 90°F to 110°F oil temperature.
	BOP	Verify that the RFP suction pressure is greater than 250 psig.
	BOP	Place the associated RFP 'A' recirc valve (A=FV-3435) control switch (Panel C1) in the "Open" position.
	BOP	Verify that the RFP trip sequence enable switch is in "off" (Panel C1).
	BOP	Start RFP by placing C/S on Panel C1 in "start" position.
	RO	Verify reactor water level.
	RO	Verify total feedwater flow.
	BOP	Place associated RFP 'A' recirc valve control switch (A=FV-3435) on Panel C1 in "Auto".
	BOP	Verify the following reactor feed pumps indicators on Panel C1: (a) PI-3429, Suct Press (b) PI-3448, Disch Press RFP 'A' (c) PI-3458, Disch Press RFP 'B' (d) PI-3468, Disch Press RFP 'C'
	BOP	Verify appropriate reactor feed pumps RFP 'A', 'B', or 'C' motor current indicators on Panel C1 for normal operating amperage (approximately 600 amps.).

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 1	Page 2 of 2

Event Description: Place third RFP In Service

Time	Position	Applicant's Actions or Behavior
	BOP	Verify associated auxiliary L.O. Pump RFP 'A', '(P-152A) has auto-shutdown light indication (Panel C1).
	BOP	Have NLO verify RFP lube oil cooler(s) TBCCW outlet valves are returned to the full open position.
	BOP	Place RFP trip sequence select switch in sequence desired, then place RFP trip sequence enable switch in "on" position.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 2	Page 1 of 1

Event Description: Failure of 'A' Squib Valve

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Squib Vlv Continuity Failure Alarm.
	CRS/RO	Refer to ARP.
	RO	Check amber squib valve continuity lights (1106A, 1106B) on Panel C905.
	RO	Check ammeters on back of Panel C905.
	RO	Determine which circuit is experiencing a loss of continuity.
	CRS	Direct troubleshoot and repair of faulty circuit.
	CRS	Ensure Tech. Spec. 3.4.B and 3.4.C/4.4.3 are satisfied.
	CRS	Enter 7 day LCO for SBLC failure.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 3	Page 1 of 1

Event Description: APRM 'B' Upscale Failure

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce RPS Channel 'B' APRM Hi-Hi INOP Alarm.
	RO	Check reactor power at C905 and Recirc Pumps 'A' & 'B' flow at Panel C904.
	RO	Check APRM status lights on Panel C905.
	RO	Bypass the alarming APRM channel and reset half-scram as directed.
	CRS	Direct I&C to investigate and correct cause of HI-HI INOP condition.
	CRS	Ensure Tech. Specs. 3.1 and 3.2.C are satisfied. Initiate tracking LCO for APRM 'B' failure.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 1 of 7
Event Description: Loss of Vacuum – ATWS			

Time	Position	Applicant's Actions or Behavior
	ALL	Recognize/announce lowering condenser vacuum.
	CRS	Direct actions of PNPS 2.4.36.
	RO	Reduce reactor power in accordance with PNPS 2.1.14, Sections 7.10 and 7.11 to stop the vacuum decrease.
	RO	Reduce Reactor Recirc Pump Speed to lower core flow to 39 Mlbm/hr.
	RO	Insert Control Rods using Reverse Order of Pull Sheet or Rapid Power Reduction Array as directed.
	CRS	When main condenser vacuum is lowering and is approaching the Turbine trip setpoint (22") with no indication of recovering, then prior to Turbine trip, order manual reactor scram. **Note:** If the crew is able to stabilize vacuum with the air-in leakage malfunction maximized, the vacuum breakers will be opened from the IF upon direction from the examiners.
	RO	Recognize/announce failure to scram: - Initiate ARI - Verify/runback recirc pumps to minimum - Verify reactor power above 3% - Trip both reactor recirculation pumps
	CRS	Notify Reactor Engineering.
	CRS	Direct inhibiting ADS.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 2 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	RO	Insert control rods using PNPS 5.3.23: - Order CRD-25 valve closed - Bypass Rod Worth Minimizer - Throttle closed MO-302-8 to raise drive water pressure by 50 psi - Rapidly insert RPR rods - Rapidly insert ROPS rods
	CRS	Direct I&C to bypass RPS and ARI trips.
	RO	When I&C reports RPS and ARI trips are bypassed: - Reset scram on panel C905 - Place air dump test switch to isolate - Verify "SPVAH Pressure Lo" alarm clear - Place air dump test switch to norm - When "SDIV Level Hi" or "SDIV East Not Drained" and SDIV West Not Drained" are clear, initiate a manual scram - Repeat above scram/reset scram steps **NOTE: CRITICAL TASK**
	RO	Maintain level –125 to +45 with FWLC in auto until below 10% power. Level control should then be placed on Startup Feed Reg Valve.

Scenario Outline

Op-Test No.:	2	Scenario No.:	2	Event No.:	4	Page 3	of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	CRS	Direct terminating/preventing injection if: 1) BIIT is exceeded 2) DW pressure is 2.2 psig or an SRV is open 3) Reactor power >3% 4) Level above TAF **NOTE:** This is not expected when started from approximately 60% power.
	RO/BOP	If/when directed to terminate/prevent injection: 1) Close FRV downstream block valve 2) Close S/U FRV 3) Place core spray pumps in PTL 4) Place HPCI aux oil pump in PTL 5) Trip RCIC turbine 6) Place RHR pumps in PTL except as needed for containment/cooling
	CRS	Direct placing torus cooling in service
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 4 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" OR (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". AND • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.

Scenario Outline

Op-Test No.:	2	Scenario No.:	2	Event No.:	4	Page 5	of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	CRS	Direct placing H_2/O_2 monitoring in service when time permits.
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 6 of 7
Event Description: Loss of Vacuum – ATWS			

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Scenario Outline

Op-Test No.:	2	Scenario No.:	2	Event No.:	4	Page 7 of 7	

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: **SWITCH** — **POSITION** (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: **SWITCH** — **POSITION** (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 5	Page 1 of 1

Event Description: Main Turbine bypass valves fail to open.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 6 Page 1 of 2

Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged

Time	Position	Applicant's Actions or Behavior
	CRS	Direct initiation of SBLC as required by EOP-02 or Operations Policy Statement.
	RO	Start one SBLC system by placing the SLC ACTUATE switch to SYS A or SYS B position on Panel C905 (**Note:** Candidate will likely choose SYS 'B' due to earlier failure of SYS 'A' squib valve).
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. (**NOTE:** This annunciator will already be on due to earlier failure of squib valve.) - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
	RO	Recognizes/reports that the 'B' SBLC pump trips immediately after starting.
	CRS	Direct using other train of SBLC.
	RO	Start the other SBLC train with the SLC ACTUATE switch. (**Note:** The "Other" train is probably the 'A' train.)

Scenario Outline

Op-Test No.: 2   Scenario No.: 2   Event No.: 6   Page 2 of 2

Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged

Time	Position	Applicant's Actions or Behavior
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. (**Note:** This annunciator will already be on due to earlier failure of squib valve.) - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
		Recognize/report that after starting the 'A' SBLC train, the 'A' SBLC pump discharge pressure is high (approximately relief valve setpoint) and that tank level is not lowering.
	ALL	Determine that SBLC is not injecting boron.
	CRS	Direct injection of SBLC using RWCU.

Scenario Outline

Facility: Pilgrim   Scenario No.: 3   Op-Test No.: 3

Examiners: Operators:

Objectives: To evaluate the applicants' ability to place the standby RBCCW pump in service, respond to a trip of an RPS MG set resulting in a single rod scram, loss of RBCCW leading to high drywell temperature and alternate depressurization with a failure of one SRV to open.

Initial Conditions: 100% power, no equipment out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. It was reported last shift that SBLC tank concentration was 8.3% boron by weight. L.C.O. 3.4.A has been entered. Chemistry is making calculations for an addition. Directions for the shift are to support Chemistry and to remove 'D' RBCCW pump from service to allow repair of seal leak.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place standby RBCCW pump in service, remove 'D' RBCCW pump from service. (Instruction given as part of turnover.)
2	RP-09/ RD-11A	I	Trip of 'B' RPS MG Set/one rod scrams (Rod 42-07). (Failure of RPS solenoid pre-inserted. MG set trip inserted as directed by Chief Examiner.)
3	CW-06	C	Unisolable gross seal failure of RBCCW pump causes loss of 'B' loop RBCCW. (Inserted as directed by Chief Examiner.)
4	TC-14	C	Main Turbine Bypass Valves fail closed. (Pre-inserted)
5	N/A	M	Alternate Depressurization on high DW temp.
6	MS-15	C	'B' SRV fails to open. (Inserted upon initiation of Alternate Depressurization.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 1 Page 1 of 1

Event Description: Place Standby RBCCW Pump In Service, Remove 'D' RBCCW Pump from Service

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct placing 'E' or 'F' RBCCW pump in service and removing 'D' RBCCW pump from service.
	BOP	Start the 'E' or 'F' RBCCW pump from Panel C-1.
	BOP	Verify loop 'B' RBCCW pressure.
	BOP	Stop 'D' RBCCW pump from Panel C-1.
	CRS	Enter tracking LCO per Tech. Spec. 3.5.B.

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 2	Page 1 of 1	

Event Description: Trip of 'B' RPS MG Set/One Rod Scrams

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce trip of 'B' RPS MG set and one control rod scram.
	CRS	Refer to PNPS 2.4.11: - Diagnose rod as no longer drifting (fully inserted) - Contact Reactor Engineering for direction
	RO	Refer to ARP.
	CRS	Direct transfer RPS bus 'B' to Standby Transformer (Panel C511) and reset half-scram.
	CRS	Direct I&C to determine the cause of the breaker trip and inspect equipment powered from this source for electrical faults.
	CRS	Ensure Tech. Spec. 3.1 and 3.1.1 satisfied.
	CRS	Direct checking and replacement of 'A' RPS fuse for rod 42-07.
	CRS	When advised by Reactor Engineering, brief/direct recovery of scrammed control rod. **Note:** When asked as Reactor Engineer, advise the CRS that rod 42-07 may be withdrawn to its pre-transient position without adjusting recirc flow.
	RO	Recover scrammed rod 42-07 as advised by Reactor Engineering to pre-transient position.

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 3	Page 1 of 1	

Event Description: Unisolable Gross Seal Failure of RBCCW Pump Causes Loss of 'B' Loop RBCCW

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to/direct actions of PNPS 2.4.42.
	BOP	If the standby pump has not started, then start the standby pump. **Note:** Standby Pump(s) will start, run for 5 seconds, then trip.
	CRS	Direct NLO to investigate the pump(s) trip.
	CRS	Direct NLO to crosstie Loops 'A' and 'B' of RBCCW together.
	RO/CRS/BOP	Monitor increasing drywell pressure and temperature due to loss of drywell cooling.
	CRS	Brief/direct reactor scram prior to reaching 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS	Enter EOP-01 and EOP-03 on high drywell pressure/temperature.
	CRS	Direct reactor water level band of +20 to +40 inches and reactor pressure band of 900-1050 psig.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 4 Page 1 of 1

Event Description: Main Turbine Bypass Valves Fail Closed

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 5 Page 1 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Review EOP-03. Recognize that drywell spray is prohibited since the drywell atmosphere does not meet the DWSIL curve.
	CRS	Direct actions to have Maintenance and Operations get RBCCW crosstied. (After the plant has been manually scrammed the CRS will be given the report that problems are being encountered with getting the crosstie valves open. The control room will also receive information from the personnel working on the crosstie that it looks like they are almost to get the cross-tie valves open.)
	RO/BOP	Monitor/report on drywell temperature increase.
	CRS	Brief crew on EOP-17 actions prior to reaching 280 degrees F in the drywell.
	CRS	Make the determination that drywell temperature cannot be maintained below 280 degrees F. Transition to EOP-17.
	CRS	Direct alternate depressurization.
	BOP	Open all SRVs as directed. **NOTE: CRITICAL TASK** (**Note:** If reactor pressure approaches saturation pressure for drywell temperature, RPV level oscillations will be inserted)
	RO/CRS/BOP	Recognize oscillations in RPV level indications due to high drywell temperature.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 5 Page 2 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/enter EOP-16
	RO/BOP	Control injection using EOP-16 Table K systems to maintain: - 4 SRVs open - RPV pressure not decreasing, at least 50 psig above torus pressure but as low as practical

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 6	Page 1 of 1
Event Description: 'B' SRV Fails to Open			

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/report that 'B' SRV has failed to open.
	CRS	Enter PNPS 5.3.24 to rapidly depressurize.
	BOP	Perform Alternate Depressurization in accordance with PNPS 5.3.24. **NOTE: CRITICAL TASK** (**NOTE:** While opening the 'B' SRV from the Alternate Shutdown Panel is the most likely action, the candidate would also be allowed by 5.3.24 to use Main Steam Line Drains, HPCI, RCIC, or Head Vents to assist in depressurizing.)
	BOP	Report success in opening SRV 'B' from Alternate Shutdown Panel.

Scenario Outline

Facility: Pilgrim   Scenario No.: 4   Op-Test No.: 4

Examiners: ______   Operators: ______

Objectives: To evaluate the applicants' ability to transfer CRD FCV's, respond to a reactor recirc pump runaway, a steam leak on RCIC with isolation failure which will result in alternate depressurization, and a failure of bus A-5 transfer.

Initial Conditions: 100% power, EOL IC, no equipment out of service, 'A' CRD FCV in service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to transfer to 'B' CRD FCV to allow maintenance on the 'A' CRD FCV.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Transfer CRD FCV. (Instruction given as part of turnover.)
2	H1S1	I	'A' recirc pump runaway. (Inserted at direction of Chief Examiner.)
3	RC-06	M	Steam leak in RCIC quad/drive to Alternate Depressurization. (Inserted at direction of Chief Examiner.)
4	CO-R5	C	Auto/Manual isolation of RCIC fails. (Pre-inserted)
5	RPWA 7-8 RPWB 7-8	C	RBIS Failure. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 1 Page 1 of 1

Event Description: Transfer CRD FCV

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/Direct changeover of flow control valves.
	RO	Establish communications between Control Room and the master control station.
	RO	At Panel C905, place FIC-340-1, CRD Flow Control, setpoint to 0 GPM (controller may be left in automatic).
	RO	Direct NLO to: 1) Slowly open 301-40B, Standby Flow Control Valve 'B' Inlet Valve. 2) Slowly open 301-41B, Outlet Valve from Standby Flow Control Valve. 3) Close 301-41A, Outlet Valve from In-Service Flow Control Valve. 4) Close 301-40A, Inlet Valve for the Previously In-Service Flow Control Valve. 5) On local valve control panel, swap Selector Switch 3B-S1, for electrical signal to E/P unit, from valve in-service to standby valve position. 6) Swap valve 301-29, CRD Air Diversion Valve to Selected Flow Control Valve, from valve in-service position to that of standby valve.
	RO	At Panel C905, slowly raise setpoint of FIC-340-1, CRD flow control, to 50 GPM, observing the flow increase as setpoint increases.
	RO	At Panel C905, check the following ΔP indicators and adjust pressures if needed: - Drive water differential pressure - Cooling water differential pressure

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 2	Page 1 of 2

Event Description: 'A' Recirc Pump Runaway

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize/announce increasing reactor power.
	CRS	Refer to PNPS 2.4.13.
	RO/CRS	Determine the cause of the unexplained rapid increase in reactor power and follow the procedure(s) as appropriate to the transient: • Reactor Recirculation System Speed or Flow Control System Malfunction, PNPS 2.4.20.
	CRS/RO	Refer to PNPS 2.4.20.
	RO	If it is determined that a malfunction in one of the individual pump controllers has occurred, then initiate a scoop tube lockup by depressing the Manual Scoop Tube Positioner Lockup pushbutton (located on Panel C904)
	RO	Report attempt to lock scoop tube as unsuccessful.
	RO	If the malfunction is severe and could lead to a reactor scram, then trip the malfunctioning reactor recirculation pump and refer to PNPS 2.4.17, "Recirculation Pump(s) Trip".
	CRS	Direct tripping of 'A' Reactor Recirc Pump.
	RO	Trip 'A' Reactor Recirc Pump as directed. **NOTE: CRITICAL TASK**
	RO	Adjust speed of 'B' Reactor Recirc Pump to 80%.
	RO	Close affected MO-202-5A, Pump Discharge Valve and re-open after 5 minutes.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 2	Page 2 of 2
Event Description: 'A' Recirc Pump Runaway			

Time	Position	Applicant's Actions or Behavior
	RO	Determine Total Core Flow (a) Determine direction of flow through idle jet pumps. (b) Calculate Total Core Flow (TCF).
	RO	Use current reactor power and plot position on the power/flow map using the calculated total core flow. If the plotted position is NOT within an allowable operating region, then perform the actions required in accordance with PNPS 2.1.14, Sections 7.10 and 7.11. **Note:** Expect to be in the monitored region of the power to flow map.
	RO	After the recirculation pump is secured, adjust total core flow to greater than 27.6 Mllb/hr. **Note:** Expected total core flow should be approximately 34 Mlbm/hr.
	CRS	Consult facility operating license. Determine that the plant must be in hot shutdown within 24 hours.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 3	Page 1 of 2

Event Description: Steam Leak in RCIC Quad/Drive to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce fire alarm in RCIC.
	BOP	Check/report area temperature alarms in RCIC quad.
	CRS	Dispatch NLO to investigate fire alarm in RCIC quad.
	CRS	Enter EOP-04 on high area temperature in RCIC quad.
	CRS	Direct isolation of RCIC when report of steam leak is received.
	CRS	Direct RP to take EOP-04 surveys.
	CRS	Direct starting all area coolers.
	CRS	Before any area temperature exceeds Max Safe Value, enter EOP-01.
	RO	Place mode switch in shutdown and enter PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	RO	Maintain reactor water level +20 - +40 inches using feedwater.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 3	Page 2 of 2

Event Description: Steam Leak in RCIC Quad/Drive to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	CRS	When temperature exceeds Max Safe Value in two areas, exit EOP-01 pressure control leg and enter EOP-17.
	BOP	Open all SRV's. **NOTE: CRITICAL TASK**
	BOP	Verify (Acoustic Monitor or Tailpipe Temperature) that all SRV's are open.
	CRS	Exit EOP-17 and re-enter EOP-01 pressure control leg.

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 4 Page 1 of 1

Event Description: Auto/Manual Isolation of RCIC Fails

Time	Position	Applicant's Actions or Behavior
	RO/CRS/BOP	Recognize failure of RCIC to isolate
	CRS	Direct manual isolation of RCIC.
	BOP	Attempt to manual close MO-1301-16 and MO-1301-17. Report the attempt was unsuccessful.
	CRS	Dispatch Maintenance or NLO's to attempt to close MO-1301-16 and MO-1301-17.

Scenario Outline

Op-Test No.: 4   Scenario No.: 4   Event No.: 5   Page 1 of 1

Event Description: RBIS Failure

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce failure of RBIS.
	CRS	Direct manually inserting RBIS.
	BOP	Manually initiate RBIS (Panel C-7). **NOTE: CRITICAL TASK**
	BOP	Report success at manually inserting RBIS.

Scenario Outline

Facility: Pilgrim Scenario No.: 5 Op-Test No.: Spare

Examiners: ______ Operators: ______

Objectives: To evaluate the applicants' ability to respond to a loss of the startup transformer, a leak in the drywell, with a failure of high pressure injection.

Initial Conditions: 100% power, shutdown transformer out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. The plant is currently in day 4 of 7 of Tech.Spec. 3.9.B.1.b. Directions for shift are to continue to operate at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	ED-04	C	Loss of Startup Transformer. (Inserted on direction of Chief Examiner.)
2	N/A	N	Power reduction to 25% per T.S. 3.9.B.2. (Completed as a result of Event 1.)
3	PC-01	M	Leak in drywell/reactor scram. (Inserted on direction of Chief Examiner.)
4	HP-04/ HP-06	I	HPCI flow controller failure. (Pre-inserted to have flow controller fail upon reaching 4250 GPM HPCI flow. Inverter failure inserted upon direction of Chief Examiner.)
5	RC-02	C	RCIC Inop – Trip Throttle Valve Trip. (Pre-inserted to trip when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 1	Page 1 of 1

Event Description: Loss of Startup Transformer

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce loss of startup transformer.
	CRS	Direct Electrical Maintenance/NLO to investigate cause of loss of startup transformer.
	CRS	Recognize/announce entry to Tech. Spec. 3.9.B.2 for loss of startup and shutdown transformer.
	CRS	Recognize need to reduce power to less than 25%.
	CRS	Direct reduction in power.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 2 Page 1 of 1

Event Description: Power Reduction to 25% per Tech. Spec. 3.9.B.2

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct plant shutdown in accordance with PNPS 2.1.5.
	CRS	Notify REMVEC and start reducing power.
	RO	As directed, place/verify one of the two feedwater reg valves into manual control in accordance with PNPS 2.2.82, Section 7.4.1. FW reg valve 'B' is preferred.
	RO	As directed, verify/adjust APRM Gain Adjustment Factors (AGAFs) value to less than or equal to 0.975 prior to reducing reactor power below 87% rated.
	RO	Refer to the Pilgrim Power/Flow Map (Attachment 2) and reduce power by reducing core flow at a rate not greater than 1% of rated power per minute.
	RO	Adjust speed/load changer per PNPS 2.1.6.
	RO	At a core flow of 39 Mlb/hr, stop reducing core flow and begin inserting control rods.
	RO	At 60% reactor power, place RFP trip sequence, enable selector switch to "off" and remove one reactor feed pump (RFP) from service.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 3

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 2 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01 and EOP-03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 3 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 4 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 5 of 7
Event Description: Leak in Drywell/Reactor Scram			

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 6 of 7
Event Description: Leak in Drywell/Reactor Scram			

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5 Event No.: 3 Page 7 of 7
Event Description:	Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 to +45 inches using Table 'A' systems.

Scenario Outline

Op-Test No.: Spare   Scenario No.: 5   Event No.: 4   Page 1 of 1

Event Description: HPCI Flow Controller Failure

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce failure of HPCI controller.
	CRS	Direct taking HPCI to manual control.
	BOP	Place HPCI controller in manual. Use HPCI to restore reactor water level. **NOTE: CRITICAL TASK**
	CRS	Direct I&C to troubleshoot HPCI controller.
	BOP	Recognize/announce loss of HPCI inverter/loss of HPCI system.
	CRS	Direct I&C to perform further troubleshooting on HPCI.
	CRS	If not already started, start RCIC in injection mode.
	BOP	Start RCIC as directed.

#-

No change in outline

SRO Exam

Question Number: 1

The plant is in refuel and fuel is currently being moved from the core to the spent fuel pool when power is lost to the 'C' Refuel Floor Radiation Monitor. Which ONE of the following would allow continued refuel operations?

a. Isolating the Secondary Containment and starting SBGT system.

b. Entering an active 7-day LCO.

c. Verifying that the 'A' Refuel Floor Radiation Monitor is operable.

d. Entering a tracking LCO.

Question Number: 2

A plant transient has initiated a reactor scram. Which ONE of the following describes when the reactor is determined to be shutdown?

a. When APRM downscale lights are ON.

b. When APRM's indicate below 3% and lowering.

c. When power is in the SRM range.

d. When power is on or below range 7 of IRM's and lowering.

Question Number: 3

With the plant initially operating at 100% power, a malfunction in the selected feedwater level control instrument has caused INDICATED RPV level to rise with a sustained reduction in feedwater flow to the RPV. No other malfunctions occur. Following are plant conditions:

- Feedwater flow is 1.0 X 10^6 lbm/hr
- Actual RPV level is 30" and lowering
- Indicated RPV level is 35" and rising

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system and the bases for that response?

a. Reactor Recirc Runback to 26% Pump Speed to ensure adequate Recirc pump NPSH.

b. Reactor Recirc Runback to 26% Pump Speed to prevent a reactor scram.

c. Reactor Recirc Runback to 44% Pump Speed to prevent a reactor scram.

d. Reactor Recirc Runback to 44% Pump Speed to ensure adequate Recirc pump NPSH.

Question Number: 4

A plant startup is in progress and reactor power is 20% with the following conditions:

- Primary containment inerted IAW PNPS 2.1.1 and 2.2.70
- Drywell equipment drain leakage at 8 GPM for the past 3 shifts
- Drywell floor drain leakage increased from 1.2 GPM to 3.4 GPM over the past 3 shifts

Based on current plant conditions, which ONE of the following actions are required?

a. Reduce the leakage to within acceptable limits within 12 hours or be in hot shutdown within the following 24 hours.

b. Identify the source of leakage within 4 hours or be in hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.

c. Immediately commence a reactor shutdown and be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours without regard to the source of leakage.

d. Identify the source of leakage within 6 hours or be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours.

Question Number: 5

The plant is at power when drywell pressure starts to rapidly rise. Subsequent investigation reveals that the 'A' reactor recirculation pump seals have both failed catastrophically. Based on plant conditions, what actions are required, and what is the bases for these actions?

a. Close the recirc suction valve before the discharge valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.

b. Close the recirc suction valve before the discharge valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

c. Close the recirc discharge valve before the suction valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.

d. Close the recirc discharge valve before the suction valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

Question Number: 6

A RCIC surveillance is in progress with the 'A' loop of RHR being placed in torus cooling. Based on plant conditions, which ONE of the following actions is required and the bases for that action?

a. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.

b. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop LPCI injection valves.

c. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.

d. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop drywell spray valves.

Question Number: 7

The plant is operating at 100% power on the 100% load line when a loss of feedwater heating occurs resulting in reactor power peaking at 105%. Reactor Recirculation pump speed is being lowered in accordance with station procedures.

Based on plant conditions, which ONE of the following describes when to stop lowering Reactor Recirculation pump speed in accordance with PNPS 2.1.14?

a. When reactor power lowers to 80%.

b. When core flow reaches 39 Mlbm/hr.

c. When core flow reaches 36 Mlbm/hr.

d. Only when Reactor Recirculation pump speed reaches minimum (26%).

Question Number: 8

The plant is operating at 100% power when an ATWS occurs concurrent with a loss of both RPS buses and bus A5. Following are plant conditions:

- RPV pressure is being maintained by keeping three (3) SRVs open and cycling the 4th SRV
- Suppression pool temperature is 110°F and rising
- APRM downscale lights are ON

Based on plant conditions, boron injection is ____(1)____ and ____(2)____ available to perform boron injection.

a. (1) required, (2) only SBLC train 'B' is

b. (1) not required, (2) both SBLC trains 'A' and 'B' are

c. (1) required, (2) only SBLC train 'A' is

d. (1) not required, (2) only SBLC train 'B' is

Question Number: 9

The plant was operating at 100% power when a fire requiring the evacuation of the control room occurs. Additionally, RCIC Outboard Injection Valve (MO-1301-48) isolates on a spurious signal and cannot be re-opened.

Based on these conditions, which ONE of the following describes the use the RCIC system?

a. May be run in pressure control, but without cooling water.

b. May be run in pressure control, but without minimum flow protection.

c. May be run in pressure control, but not lined up for injection.

d. May not be run in either pressure control or injection mode.

Question Number: 10

A plant startup is in progress with the mechanical vacuum pump being placed in service per station procedures when chemistry technicians report that reactor water samples indicate high levels of coolant activity.

Under these conditions, the main steam line radiation monitors:

a. Are not required to be operable.

b. Will trip the mechanical vacuum pump when the HI setpoint is reached.

c. Will trip the mechanical vacuum pump when the HI-HI setpoint is reached.

d. Would not show an increase since no steam is flowing through the main steam lines.

Question Number: 11

The plant is starting up following a refueling outage with Reactor Engineering performing an in-sequence shutdown margin demonstration. Shutdown margin has been determined to be .20% ΔK with the most reactive rod withdrawn.

Based on this information, which ONE of the following actions is required?

a. Manually scram the reactor and be in cold shutdown within 24 hours.

b. Initiate an orderly shutdown and remain in hot shutdown until the cause has been determined.

c. Initiate an orderly shutdown and be in cold shutdown within 24 hours.

d. Manually scram the reactor and remain in hot shutdown until the cause has been determined.

Question Number: 12

The plant is in refuel with the following conditions:

- New fuel is being loaded into the core
- All SRM shorting links have been removed
- SRM count rate is at 1E+5 and increasing
- SRM rod block generated

Based on plant conditions, which ONE of the following describes the response of the SRM system as the count rate increases to 5E+5 CPS?

a. A SRM Hi-Hi alarm and no other automatic actions.

b. A full reactor scram will not occur until any 2 SRM channels reach 5E+5 CPS.

c. A full reactor scram will not occur until either 'A' or 'C' AND either 'B' or 'D' SRM reaches 5E+5 CPS.

d. When any one SRM channel reaches 5E+5 counts, a full reactor scram will occur.

Question Number: 13

A loss of coolant accident has occurred and drywell spray was initiated in accordance with EOP-03. As drywell temperature and pressure are decreasing, the unacceptable region on the Drywell Spray Initiation Limit curve is entered at a drywell temperature of 250°F.

Based on plant conditions, which ONE of the following actions is the required?

a. Secure drywell spray when drywell pressure drops below 2.2 psig.

b. Secure drywell spray when torus bottom pressure drops below 2.2 psig.

c. Adjust drywell spray as necessary to maintain operation within the Drywell Spray Initiation Limit curve.

d. Immediately secure drywell spray.

Question Number: 14

The plant was operating at 100% power when a loss of coolant accident occurred. Following are plant conditions:

- Drywell temperature is 275°F
- Drywell pressure is 10 psig
- Torus water level is 130 inches
- Torus bottom pressure is 15 psig
- Reactor water level is being maintained +20 to +40 with condensate
- H_2 Concentration is 7% in the drywell and 2% in the torus
- O_2 Concentration is 6.5% in the drywell and 2% in the torus

Based on plant conditions, which ONE of the following describes the use of drywell spray?

a. Directed by the drywell temperature control leg of EOP-03, but not directed by the primary containment pressure control and hydrogen/oxygen control legs of EOP-03.

b. Directed by the primary containment pressure control leg of EOP-03, but not directed by the drywell temperature control and hydrogen/oxygen control legs of EOP-03.

c. Directed by the hydrogen/oxygen control and drywell temperature control legs of EOP-03, but not directed by the primary containment pressure control leg of EOP-03.

d. Directed by the drywell temperature control and primary containment pressure control legs of EOP-03, but not directed by the hydrogen/oxygen control leg of EOP-03.

Question Number: 15

Which ONE of the following actions and/or processes would create an environment, which would have the potential to adversely affect containment integrity following a sustained period of inadequate core cooling?

a. The operation of reactor building-torus and torus-drywell vacuum breakers.

b. The radiolyses of water due to hydrogen injection prior to the loss of adequate core cooling.

c. The initiation of LPCI to restore adequate core cooling.

d. A feedwater leak into the containment when hydrogen injection is in service.

Question Number: 16

The plant was operating at 100% power when an ATWS occurred.
Which ONE of the following methods for inserting control rods is FIRST directed by PNPS 5.3.23?

a. Insert rods starting in the center of the core and spiraling outward.

b. Insert all rods in one group, then all rods in the next group.

c. Insert rods in the reverse order of the pull sheets.

d. Insert all steps of the RPR array.

Question Number: 17

The plant was operating at 100% power when a DBA LOCA occurred and panel Y-4 de-energized. Which ONE of the following describes the operability and use of the suppression pool water temperature recorder on panel C170 under current plant conditions?

a. Operable and qualified for use as a Post Accident Monitor.

b. Not operable and not qualified for use as a Post Accident Monitor.

c. Operable but not qualified for use as a Post Accident Monitor.

d. Not operable but qualified for use as a Post Accident Monitor.

Question Number: 18

The plant was operating at 100% power when an inadvertent closure of the MSIV's occurred with a failure of control rods to insert. Following are plant conditions:

- RPV pressure being maintained 1000 psig to 1050 psig with 3 SRV's
- RPV level being maintained at 15" with FWLC in automatic
- SBLC has been initiated based on reaching BIIT with a suppression pool temperature of 115°F
- Blue scram lights are off

Based on plant conditions, which ONE of the following actions is required?

a. Verify both reactor recirculation pumps are run back to minimum speed.

b. Stop and prevent injection into the RPV from all sources except boron and CRD.

c. Perform an alternate depressurization in accordance with EOP-27 due to exceeding the HCTL.

d. Stop and prevent injection into the RPV from all sources except boron, CRD and RCIC.

Question Number: 19

The plant was operating at 100% power when a transient caused both recirc pumps to trip, resulting in a small break LOCA. Following are plant conditions:

- RPV level at -75" on Fuel Zone indication
- RPV pressure at 1000 psig
- Drywell temperature at 212°F.

Based on plant conditions, which ONE of the following describes the reliability of the Fuel Zone Level instrument?

a. Will be unreliable since the reference leg has reached saturation temperature.

b. Will read erroneously low since it is calibrated with both reactor recirculation pumps running.

c. Will read erroneously low since it is calibrated at a reactor water temperature of 212°F

d. Will read erroneously high since it is calibrated at a reactor water temperature of 212°F.

Question Number: 20

The plant was operating at 100% when a loss of main condenser vacuum occurred. Following are plant conditions:

- Main condenser at 5" Hg vacuum and stable
- RPV level at +50" and lowering slowly
- RPV pressure at 1050 psig and rising
- All scram actions complete

Based on plant conditions, which ONE of the following system(s) is(are) available for RPV pressure control?

a. SRVs only.

b. SRVs and Bypass Valves.

c. SRVs and Main Steam Line Drains.

d. SRVs, Main Steam Line Drains, HPCI and RCIC.

Question Number: 21

The plant is operating at 100% power with the 'A' oil pump on the 'B' Recirculation MG set out of service when a loss of D-5 occurs. Following are plant conditions:

- DC lube oil pump on the 'B' Recirculation MG set fails to start
- Amps peg high on the 'B' Recirculation MG set

Based on plant conditions, which ONE of the following describes the method for securing the 'B' Recirculation MG set and the bases for that action?

a. Scramming the plant since this will de-energize bus A-4.

b. Opening the field breaker locally since it cannot be opened from the control room.

c. Opening the drive motor breaker locally since it cannot be opened from the control room.

d. Scramming the plant since this will automatically trip the drive motor breaker when RPV level drops below +12".

Question Number: 22

A plant startup is in progress with the following conditions:

- Reactor power at 16%
- RPV level at 52" and rising due to FWLC malfunctions
- All efforts to reverse the rising RPV level trend have been unsuccessful

Based on plant conditions, which ONE of the following actions is now required?

a. Transfer RPV level control to the startup feed reg flow valve.

b. Close 1st point feedwater heater A & B outlet block valves.

c. Trip the running feed pump.

d. Scram the reactor.

Question Number: 23

The plant is operating at 100% power when the following alarms occur:

- STATOR COOLING WATER TROUBLE
- STATOR COOLING INLET FLOW LO
- TURBINE RUNBACK

There is no reactive load (0 MVAR) on the main generator. Due to a failure of the speed/load changer motor, main generator load remains constant.

Which ONE of the following is the expected automatic response of the system if no operator action is taken?

a. A turbine trip in 3 ½ minutes.

b. A generator lockout in 2 minutes.

c. A turbine trip in 2 minutes.

d. A generator lockout in 3 ½ minutes.

Question Number: 24

The plant has been operating at 100% power for the last month when an instrument air header leak above the capacity of the K110, K111 and K104A, B, C air compressor occurs. The Atlas Copco air compressor must be placed in service to prevent which ONE of the following?

a. Closure of inboard MSIVs.

b. Repositioning of the reactor head vent valves (AO-220-46 and 47).

c. RBCCW surge tank level control valves failing closed.

d. Lockup of the 'A' and 'B' feedwater regulating valves (FV-642-A and B).

Question Number: 25

The plant is operating at 100% power when an inadvertent Group I isolation occurs resulting in the following conditions:

- RPV level being maintained at +20" to +40"
- All control rods fully inserted
- RPV pressure peaks at 1240 psig and starts to lower
- DW temperature at 150°F and rising
- Torus temperature has remained stable during the transient

Based on plant conditions, which ONE of the following describes the response of the safety and safety/relief valves?

a. All SRVs actuated in the ADS mode.

b. All SRVs actuated in the relief mode.

c. Safety valves actuated and SRV's failed to actuate as designed.

d. Safety valves and SRVs actuated as designed.

Question Number: 26

The plant is shutdown with reactor coolant temperature at 190°F when a loss of shutdown cooling occurs with both reactor recirculation pumps secured.

Based on plant conditions, which ONE of the following describes the acceptable RPV level band?

a. +20" to +25"

b. +35" to +60"

c. +30" to +40"

d. +65" to +75"

Question Number: 27

The plant is in startup at 780 psig when the 'A' CRD pump trips. After several attempts the operators start the 'B' CRD pump. The following annunciators have alarmed on C905:

- CHARGING WTR PRESSURE LO
- CRD PUMP 'A' TRIP
- Accumulator Trouble Lights for HCU's 06-19 and 10-23

Based on current plant conditions, which ONE of the following actions is required?

Note: Refer to attached PNPS 2.2.87, Attachment 9, HCU Location Matrix

a. Immediately commence an orderly shutdown and declare the accumulators for the alarming HCU's INOP.

b. Declare the control rods for the alarming HCU's INOP and continue with the startup.

c. Immediately scram the reactor.

d. Declare the control rods for the alarming HCU's INOP and enter LCO to commence an orderly shutdown and be in cold shutdown within 24 hours.

Question Number: 28

Alternate Depressurization is required when the drywell temperature cannot be maintained below 280°F. Which ONE of the following describes the bases for this action?

a. Prevent damage to the reactor recirculation pump seals.

b. Prevent damage to DC valve motors in the drywell.

c. Prevent failure of the drywell coolers upon restoration.

d. Prevent failure of the containment structure.

Question Number: 29

The plant was operating at 100% power when a small break LOCA occurs causing drywell and torus bottom pressure to start rising. Drywell sprays have been placed in service in accordance with EOP-03, Primary Containment Pressure Control Leg. Immediately after placing drywell spray in service a point is reached in the torus level leg of EOP-03 which requires securing drywell spray. Following are plant conditions:

- RPV pressure is 1000 psig
- Torus water level has stabilized

Based on plant conditions, which ONE of the following describes the correct Emergency Plan classification?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

Question Number: 30

In accordance with EOP's, which ONE of the following conditions would require the component to be isolated?

a. HPCI being used to provide core cooling when the pump develops a severe packing leak causing water level on the floor of the HPCI quad to rise to 2".

b. HPCI being used to provide core cooling when a steam leak develops causing the HPCI compartment to become contaminated.

c. CRD being used to insert one control rod which failed to insert on a reactor scram when a severe packing leak develops causing CRD quad water level to rise to 2".

d. A fire hose rigged to fight a fire in the RCIC quad when a leak occurs at a fitting that causes water level in the RCIC quad to rise to 2". At the same time, RCIC turbine area temperature is 200°F.

Question Number: 31

As CRS you have been assigned for the past 12 months to outage planning and have not actively been performing the functions of a SRO. Additionally, you have been scheduled to supervise refuel floor activities during the upcoming refuel outage. Prior to relieving the refuel floor SRO and assuming the watch, which ONE of the following are you required to perform?

a. Complete a minimum of 40 hours of shift functions under the direction of a SRO in the control room, including a complete plant tour and all required shift turnover procedures.

b. Complete a minimum of one shift under the direction of a SRO on the refuel floor, including review of control room logs for the past 30 days and all required shift turnover procedures.

c. Complete a minimum of 6 hours under the direction of a SRO in the control room, including a complete plant tour and review of control room logs for the past 30 days.

d. Complete a minimum of 40 hours of refuel activities under the direction of a SRO on the refuel floor, including all required shift turnover procedures.

Question Number: 32

Given that all the following systems respond and operate as designed, which ONE of the following conditions would require manual operation to isolate?

a. Valid RB Ventilation Radiation Hi and Hi-Hi alarm.

b. Valid Refuel Floor Ventilation Radiation Hi alarm.

c. Valid Off-Gas Pre-Treat Radiation Hi and Hi-Hi alarms with the Off-gas PRM selector switch on CP-600 in the Pre-treat position.

d. Valid Off-Gas Post-Treat Radiation Hi and Hi-Hi alarms with the Off-Gas PRM selector switch on CP-600 in the Post-Treat position.

Question Number: 33

The plant was operating at 100% power when a LOCA occurs. Due to fuel failure the torus water is highly contaminated. Subsequently, a leak develops in the 'A' RHR quad that can only be isolated by manually closing the 1001-6A (RHR pump 'C' Torus Manual Suction Valve). Following are plant conditions:

- The 'C' RHR pump is necessary to provide core cooling.
- The 'A' RHR quad has 9 inches of water on the floor and a radiation level of 1200 mr/hr.

Based on plant conditions, which ONE of the following actions is required?

a. Manually close the 1001-6A valve.

b. Operate all available sump pumps.

c. Open breakers for the RB floor drain and equipment drain pumps

d. Defeat low RPV water level isolation interlocks.

Question Number: 34

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

a. To prevent failure of the secondary containment.

b. To ensure that RHR pumps are available for use in the shutdown cooling.

c. To prevent further RPV inventory loss.

d. To ensure that RHR pumps are available for use in the LPCI mode.

Question Deleted. Answers a, b, d may all be considered correct.

Refer to exam analysis for details.

[signature] 5/3/00

M. Santiago 5/4/00

Question Number: 35

Which ONE of the following satisfies the requirements of PNPS 1.3.10 regarding Vital Area access keys assigned to Operations?

Keys are inventoried and accounted for:

a. Each shift and an entry made in the Primary Access Control Point Log.

b. Daily and an entry made in the CRS log.

c. Each shift and an entry made in the CRS log.

d. Daily and an entry made in the Primary Access Control Point Log.

Question Number: 36

Hotwork is to be performed in the RCIC Quad. The Maintenance Work Plan contain no requirement to disable the smoke detectors in the RCIC Quad. As a result, the smoke detectors actuate after the job has commenced. Based on this information, alarm(s) will occur in which ONE of the following panels?

a. Panel C223 in the Makeup Demin Room only.

b. Panel C220 in the Control Room only.

c. Panel C114 in the Control Room only Panel C223 in the Makeup Demin Room.

d. Panel C220 in the Control Room and Panel C223 in the Makeup Demin Room.

Question Number: 37

The plant is at 40% power when a feedwater line break occurs in the drywell resulting in the following conditions:

- RPV level at +20" and rising from HPCI Injection
- Drywell pressure at 3.2 psig
- All available feedwater pumps have tripped on overcurrent

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system with no operator action?

a. 'A' Recirc pump runback to 44% speed and the 'B' Recirc pump trips.

b. 'A' and 'B' Recirc pumps runback to 26% speed.

c. 'A' Recirc pump runback to 26% and the 'B' Recirc pump trips.

d. 'A' and 'B' Recirc pumps runback to 44% speed.

Question Number: 38

The 'B' RHR Pump Discharge check valve (1001-67B) seating surface is degraded causing leakage from the RHR system into the Torus. All other valves in the RHR system are in their normal standby lineup and seating properly. Which ONE of the following describes the source of water entering into the Torus?

a. Condensate Transfer.

b. The RPV.

c. RHR full flow test line.

d. Fuel Pool Cooling cross-tie.

Question Number: 39

The plant was operating at 100% power when a steam line break in the HPCI room occurs. Automatic and manual isolation has failed.

The high pressure condition caused by this break is designed to be relieved via which ONE of the following?

a. Blowout panels into the 23' Aux. Bay and then through the Aux. Bay rollup door.

b. Vent pipes from the HPCI room to the 'B' RHR quad and then through the blowout panels on the RB roof.

c. Blowout panels from the HPCI room to the 23' RB and then through the blowout panels on the RB roof.

d. Blowout panels into the RB truck lock and then through the RB truck lock rollup door.

Question Number: 40

HPCI is being used in the pressure control mode following a reactor scram. A leak in the drywell occurs causing drywell pressure to rise to 3.0 psig. RPV water level is currently at -10" and stable. Which ONE of the following actions would now be effective in re-establishing a means of RPV pressure control?

a. Manually realign HPCI in pressure control.

b. Manually align RCIC in pressure control.

c. Establish RWCU blowdown to the main condenser.

d. Manually cycle SRVs as required.

Question Number: 41

A change to procedure PNPS 2.2.20, Core Spray System, requires clarification of procedural steps to more accurately reflect Core Spray System equipment configuration. Based on this procedure change, which ONE of the following applies with regards to a Safety Evaluation?

a. A Safety Evaluation is required based on this being an intent change.

b. A Safety Evaluation is not required based on this being a non-intent change.

c. A Preliminary Evaluation Checklist is required to be completed to determine the need for a Safety Evaluation.

d. The Operations Review Committee is required to determine the need for a Safety Evaluation.

Question Number: 42

The plant was operating at 100% power when a transient occurred resulting in an ATWS. Following are the operator actions taken and plant conditions:

- The SBLC control switch on C905 was taken to the SYS 'A' position, then through OFF to SYS 'B', then through OFF to SYS 'A'.
- The piping just downstream of the 'A' SBLC squib valve is completely obstructed.

Based on plant conditions, which ONE of the following describes the response of the 'A' SBLC pump?

a. SBLC pump 'A' never injected to the RPV.

b. SBLC pump 'A' did not inject to the RPV the first time the control switch was placed in SYS 'A', but did inject to the RPV the second time the control switch was placed in SYS 'A'.

c. SBLC pump 'A' did inject to the RPV the first time the control switch was placed in SYS 'A', but did not inject to the RPV the second time the control switch was placed in SYS 'A'.

d. SBLC pump 'A' injected to the RPV the first time the control switch was placed in SYS 'A', and also injected to the RPV the second time the control switch was placed in SYS 'A'.

Question Number: 43

The plant is in Refuel (Cold Shutdown) with all electrical and fluid systems aligned normally. Additionally, the following conditions exist:

- Hi Level in the east Scram Discharge Instrument Volume
- The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch is in Bypass
- The Mode Switch is in Shutdown with the Scram Reset

Based on plant conditions, which ONE of the following would result in a full reactor scram?

a. Loss of bus Y-1.

b. Loss of power to Scram Discharge Instrument Volume thermocouples.

c. Loss of bus B-23.

d. High level in the west Scram Discharge Instrument Volume.

Question Number: 44

With the plant operating at 100% power a leak develops between the high and low pressure sensing points on the shutdown level transmitter. The deviation from calibration conditions prior to the leak will cause the instrument to read erroneously ___(1)___; and after the leak to read erroneously ___(2)___.

a. (1) high
(2) high

b. (1) low
(2) high

c. (1) high
(2) low

d. (1) low
(2) low

Question Number: 45

During a plant startup with SRM counts at 1E+3, the recorder pen for SRM Channels A and C fails downscale. All other equipment is functioning normally.

Which ONE of the following describes the affect on SRM Channels A and C?

a. Loss of recorder indication only.

b. Loss of recorder indication and a SRM downscale rod block

c. Loss of recorder indication and the inability to withdraw SRM Channel A and C detectors.

d. Loss of recorder indication and the inability to receive an SRM upscale rod block.

SRO Exam

Question Number: 46

The plant is operating at 100% power when an LPRM fails upscale. The LPRM is placed in bypass and no other operator action is taken.

Which ONE of the following describes the expected condition of the upscale lights on panel C937 and the full core display for this LPRM?

a. C937 Upscale Light ON
Full Core Display Upscale Light ON

b. C937 Upscale Light OFF
Full Core Display Upscale Light OFF

c. C937 Upscale Light OFF
Full Core Display Upscale Light ~~OFF~~ ON

d. C937 Upscale Light ON
Full Core Display Upscale Light OFF

Changed during exam after conversation with Chief Examiner.

[signature] 5/3/00

M. Santiago 5/4/00

Question Number: 47

The plant is operating at 100% power when an SRV is suspected to have spuriously opened. The acoustic monitor for the SRV indicates all red lights on. Which ONE of the following would be the approximate tailpipe temperature for the affected SRV?

a. 110°F

b. 295°F

c. 340°F

d. 545°F

Question Number: 48

The plant is operating at power when a total loss of TBCCW occurs. Which ONE of the following describes how RPV pressure and level should be controlled in accordance with station procedures?

a. RCIC should be used in the level control mode and HPCI should be used in the pressure control mode.

b. HPCI should be used in the level control mode and RCIC should be used in the pressure control mode.

c. HPCI should be used in the level control mode and SRV's should be used to control pressure. RCIC remains shutdown.

d. RCIC should be used in the level control mode and SRV's should be used to control pressure. HPCI remains shutdown.

Question Number: 49

A worker in the Emergency Response Organization had 100mRem TEDE for the current year and 2.5 Rem TEDE lifetime prior to the declaration of an emergency. Which ONE of the following is the MAXIMUM TEDE this worker can receive over the course of the emergency without special authorization?

a. 2.4 Rem

b. 2.5 Rem

c. 4.9 Rem

d. 5.0 Rem

Question Number: 50

The plant is in a refuel outage. Fuel movements began last shift following the completion of all Tech Spec and administratively required refueling and neutron monitoring surveillances. No surveillances are scheduled or required during the present shift. Currently, a fuel assembly is over the core and ready to be lowered by refueling personnel.

Based on these conditions, which ONE of the following actions is required by the control room reactor operator?

a. Verify a control rod withdrawal block is received when the refueling mast is lowered from the “Full Up” position.

b. Verify refuel mode single rod permissive interlock light illuminates when the refueling mast is unloaded.

c. Inform undervessel maintenance personnel to leave the area to avoid being in a high radiation area.

d. Continuously monitor SRM instrumentation for count rate increase until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

Question Number: 51

During a loss of coolant accident, the drywell-torus vacuum breakers will open to prevent which ONE of the following?

a. Collapsing the drywell.

b. Collapsing the torus.

c. Excessive drywell internal pressure.

d. Excessive torus internal pressure.

Question Number: 52

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Reactor power at 20%
- MSIV's isolated on hi steam flow
- All rods not full in
- RPV level at 25"
- Torus temp at 111°F

Based on plant conditions, which ONE of the following systems are available for RPV pressure control?

a. Bypass valves after bypassing the RPV Lo Level interlock and opening the MSIV's.

b. Safety relief valves.

c. RWCU in blowdown mode.

d. Main steam line drains.

Question Number: 53

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -46" RPV level ADS is inhibited.
Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.

b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.

c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

Question Number: 54

A plant startup is in progress. Main turbine bypass valves would be expected to start opening at approximately ___(1)___ psig due to reaching the ___(2)___ setpoint.

a. (1) 810, (2) EPR

b. (1) 810, (2) MPR

c. (1) 940, (2) EPR

d. (1) 940, (2) MPR

Question Number: 55

With the plant operating at 100% power, the ‘A’ and ‘B’ feedwater flow detectors are inadvertently bypassed. Which ONE of the following actions will occur?

a. A reactor scram on low reactor level.

b. A reactor recirc pump runback terminating at 44%.

c. A reactor recirc pump runback terminating at 26%.

d. An initiation of a Group I isolation on high reactor level resulting in a reactor scram.

Question Number: 56

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

- The 'A' SBGT fan is in AUTO
- The 'B' SBGT fan is in STBY
- The 'A' and 'B' refuel floor radiation monitors fail upscale
- The 'A' SBGT initiates, runs for 10 seconds, then trips

Based on plant conditions, which ONE of the following describes the expected automatic response of the 'B' SBGT fan?

a. Will start when the initiation signal is received, run for 65 seconds, stop, then restart.

b. Will start immediately after the 'A' SBGT fan trips and continue running uninterrupted.

c. Will start after 65 seconds and continue to run uninterrupted.

d. Will start when the initiation signal is received and continue running uninterrupted.

Question Number: 57

The plant was operating at 100% when a LOCA concurrent with a loss of offsite power has occurred. The 'B' EDG failed to start. The SBO diesel generator is started and loaded onto bus A-6. Bus A-5 is being supplied by the 'A' EDG. Based on plant conditions, which ONE of the following describes the load limit for the SBO diesel generator and the bases for that limit?

a. 1700 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

b. 1700 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.

c. 2000 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.

d. 2000 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

Question Number: 58

The plant is operating at 100% power with the 'A' SBGT Train out of service and in day 3 of a 7 day LCO when the 'B' EDG jacket water cooling system fails. All other systems are fully operable and all surveillances complete.

Based on plant conditions, which ONE of the following is the MAXIMUM amount of time allowed before the plant must reach cold shutdown?

a. 24 hours.

b. 36 hours.

c. 72 hours.

d. 36 hours following the expiration of the original SBGT 7 day LCO.

Question Number: 59

A control rod is withdrawn one notch. Which ONE of the following describes the sequence in which the control rod drive SETTLE, Rod IN, and Rod OUT lights will energize?

a. Rod SETTLE, Rod IN, Rod OUT

b. Rod IN, SETTLE, Rod OUT

c. Rod IN, Rod OUT, SETTLE

d. Rod OUT, SETTLE, (Rod IN light remains de-energized)

Question Number: 60

The plant is being started up. Reactor power is 15% with the mode switch in Run. Three control rods, which are known to be fully withdrawn and at their withdrawal limits per the rod sequence, have reed switch failures such that the Rod Worth Minimizer does not know the current position.

Which ONE of the following is allowed and would be effective in allowing continued control rod withdrawal?

a. Bypass the rod worth minimizer.

b. Fully insert the three affected control rods.

c. Enter substitute position for each of the affected control rods.

d. Raise reactor power above the low power setpoint using reactor recirculation pumps.

Question Number: 61

The plant is shutdown with the 'B' loop of RHR in shutdown cooling. The 'A' reactor recirculation pump is running. Due to improper maintenance activities MO-1001-18B, RHR loop 'B' minimum flow valve, opens, which results in the RPV level lowering to +10".

Based on plant conditions, which ONE of the following would provide accurate indication of reactor water temperature?

a. Reactor vessel flange temperature.

b. 'B' reactor recirc pump suction temperature.

c. Reactor vessel bottom drain temperature.

d. 'A' reactor recirc pump suction temperature.

Question Number: 62

The operators are lowering CRD drive water ΔP that results in a sufficient enough change in CRD cooling water ΔP to cause control rod 06-19 to drift. Control rod 06-19 is currently selected, is not being moved by RMCS, and had an original position of 46.

Based on these conditions, which ONE of the following describes the response of the rod drift alarm for rod 06-19 and bases for that response?

a. Will not alarm based on the rod being selected.

b. Will alarm when the reed switch for notch position 46 opens.

c. Will alarm when the reed switch for notch position 45 opens.

d. Will alarm when the reed switch for notch position 47 closes.

Question Number: 63

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Torus water level at 130"
- Drywell temperature at 150°F
- Torus bottom pressure at 60 psig and rising
- Drywell pressure at 55 psig

Based on plant conditions, which ONE of the following describes the requirement and use of containment sprays?

a. Drywell and torus sprays are both required. Pumps required for adequate core cooling may be directed to the torus and drywell.

b. Torus spray is required. Pumps required for adequate core cooling may be diverted to spray the torus. Drywell spray is prohibited.

c. Drywell and torus sprays are both required. RHR pumps required for adequate core cooling may NOT be diverted to spray the torus and drywell.

d. Torus spray is required. RHR pumps required to provide adequate core cooling may NOT be diverted to spray to torus. Drywell spray is prohibited.

Question Number: 64

The plant is operating at 100% power with drywell pressure at 1.6 psig and slowly rising. Following are plant conditions:

- The 'B' RHR pump is in torus cooling
- RPV level at +30" and stable.

The reactor is then manually scrammed. One minute later a loss of bus D-5 occurs. Two minutes following the loss of D-5 drywell pressure reaches 2.2 psig

Which ONE of the following describes the expected automatic response of the 'B' RHR pump and the MO-1001-34B, RHR Loop 'B' torus block valve?

a. The 'B' RHR pump will trip when D-5 de-energizes and MO-1001-34B will close when drywell pressure reaches 2.2 psig.

b. The 'B' RHR pump will remain running and MO-1001-34B will close when drywell pressure reaches 2.2 psig.

c. The 'B' RHR pump will trip and MO-1001-34B will close when D-5 de-energizes.

d. The 'B' RHR pump will remain running and MO-1001-34B will remain open.

Question Number: 65

The plant was operating at 20% power when a transient occurred requiring the operators to manually scram the reactor. Following are plant conditions:

- Reactor power is on IRM range 5 and decreasing
- Three control rods are at position 06 and all other control rods are fully inserted
- No other scram signals exist

Which ONE of the following actions is required to insert the three control rods at position 06?

a. Execute PNPS 2.1.6, “Reactor Scram” only

b. Enter EOP-01, then exit EOP-01 and enter EOP-02 at R-1.

c. Enter PNPS 2.1.6, “Reactor Scram” and then EOP-02 at R-1.

d. Execute PNPS 2.1.6, “Reactor Scram” and then PNPS 5.3.23, “Alternate Rod Insertion”.

Question Number: 66

The plant was operating at 100% power when a loss of TBCCW has occurred. Attempts to start the temporary air compressor have failed.

Based on plant conditions, which ONE of the following methods may be used to provide temporary cooling in order to restart an air compressor and restore instrument air pressure in accordance with PNPS procedures?

a. Lineup demineralized water to cool instrument air compressor K-111.

b. Lineup fire water to cool instrument air compressor K-111.

c. Lineup demineralized water to cool instrument air compressor K-104A.

d. Lineup fire water to cool instrument air compressor K-104A.

Question Number: 67

Upon receipt of a turbine trip, water flashing in the 1st point heaters will NOT cause a turbine overspeed condition based on which ONE of the following?

a. The Combined Intermediate Valves going shut.

b. A MOV in the 1st point heaters extraction steam line going shut.

c. An AOV in the 1st point heaters extraction steam line going shut.

d. The water in the 1st point heater is of a low enough energy that flashing is not a problem.

Question Number: 68

The plant is operating at 100% power when a loss of all annunciators occurs. Based on plant conditions, which ONE of the following actions is required?

a. Log A-5 and A-6 buses every ½ hour. Restore the alarms or be in cold shutdown within 24 hours.

b. Log A-5 and A-6 bus voltages every ½ hour until the annunciators are restored.

c. Immediately commence an orderly shutdown and be in cold shutdown within 24 hours.

d. Jumper circuitry such that a LOCA signal will initiate a load shed.

Question Number: 69

Which ONE of the following is the bases for maintaining the Turbine Building Ventilation System in operation while executing EOP-05?

a. Prevents Reactor Building Ventilation from entering the Turbine Building.

b. Prevents a direct reactor scram due to high temperature in the MSL tunnel.

c. Prevents having an unmonitored ground release from the Turbine Building.

d. Ensures adequate dilution of the gases discharged through the stack.

Question Number: 70

The plant is starting up from a refuel outage. At 104 psig RPV pressure, the RCIC system is placed in standby operation. When placing RCIC in standby operation, in accordance with station procedures, operators are required to ____(1)____ to avoid ____(2)____.

a. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system initiation.

b. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) overpressurizing downstream piping.

c. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system isolation.

d. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) excessive heatup of downstream piping.

Question Number: 71

The plant is operating at 100% power when a SRV opens. In accordance with station procedures, which ONE of the following actions is required?

a. Scram the reactor if Torus water temperature rises 5°F to prevent exceeding HCTL.

b. Simultaneously de-energize bus D-4 and bus D-5 to interrupt power to the SRV solenoids.

c. Simultaneously open appropriate breaker on bus D-4 and appropriate breaker on bus D-5 to interrupt power to the SRV solenoids.

d. Separately cycle appropriate breaker on bus D-4 followed by appropriate breaker on bus D-5 to interrupt power to the ADS logic.

Question Number: 72

The plant was operating at 100% power when a transient resulting in an ATWS occurs. Following are plant conditions:

- Boron is being injected with the SBLC system
- Initial SBLC tank level was 4100 gallons. Current SBLC tank level is 3000 gallons
- RPV level is -100" and is being lowered to reduce reactor power

Based on plant conditions, which ONE of the following actions is required?

a. Raise RPV level to the +12" to +45" band and perform Alternate Depressurization.

b. Maintain RPV level at its current value. Do not perform Alternate Depressurization.

c. Maintain RPV level at its current value and perform Alternate Depressurization.

d. Raise RPV level to the +12" to +45" band. Do not perform Alternate Depressurization.

Question Number: 73

While executing EOP-01, it is determined that Alternate Depressurization is anticipated. Based on these conditions, which ONE of the following describes the opening of the bypass valves?

a. Bypass valves should be opened without regard to the effect on RPV level and cooldown rate.

b. Bypass valves should be opened while maintaining RPV level in the desired band. Cooldown rate limitations may be exceeded.

c. Bypass valves should be opened while maintaining cooldown rate within limits. RPV level may be allowed to go outside the desired band.

d. Bypass valves should be opened while maintaining reactor water level in the desired band and cooldown rate within limits.

Question Number: 74

The plant was operating at 100% power when a loss of coolant accident occurs resulting in the following plant conditions:

- Torus water level is 150" and stable.
- Containment pressure is rising rapidly.

Which ONE of the following describes the vent path and requirement for venting the primary containment?

The primary containment is vented through the:

a. Torus before torus bottom pressure reaches 60 psig.

b. Torus, but only after torus bottom pressure exceeds 60 psig.

c. Drywell before torus bottom pressure reaches 60 psig.

d. Drywell, but only after torus bottom pressure exceeds 60 psig.

Question Number: 75

Which ONE of the following describes the effect of leaving the Mechanical Pressure Regulator sensing line isolation valve closed during a reactor startup?

a. EPR will control reactor pressure when it exceeds 200 psig.

b. Turbine bypass valves can only be opened by raising the MPR setpoint.

c. Turbine bypass valves would not open when steam pressure increased to MPR setpoint.

d. There will be no adverse effect because the turbine stop valves are closed.

Question Number: 76

The primary containment is required to be vented regardless of radioactive release rate:

a. If drywell hydrogen concentration reaches 6% with drywell oxygen concentration of 3%.

b. If more than two general areas in the reactor building exceed 135°F.

c. Before Torus pressure and Torus level exceeds the pressure suppression pressure limit.

d. Before Torus bottom pressure exceeds the primary containment pressure limit.

Question Number: 77

The plant is operating at 100% power when a loss of bus Y-1 occurs. Bus Y-1 has been transferred to B-15. Based on plant conditions, which ONE of the following feedwater heaters will require extraction steam to be re-established?

a. 2^{nd} and 3^{rd} point heaters.

b. 1^{st} and 2^{nd} point heaters.

c. 3^{rd} and 4^{th} point heaters.

d. 4^{th} and 5^{th} point heaters.

Question Number: 78

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- RPV level at -50" and stable
- Torus water level at 98" and lowering

Based on plant conditions ____(1)____ is (are) required to be secured at ____(2)____ to prevent ____(3)____ .

a. (1) HPCI; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.

b. (1) SRV's; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.

c. (1) HPCI; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

d. (1) SRV's; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

Question Number: 79

The plant was operating at 100% power when a DBA loss of coolant accident occurred resulting in the declaration of a General Emergency. Following are plant conditions:

- Primary containment is being vented IAW EOP-3 step H-13 and PNPS 5.4.6
- CHRM's are indicating 2.8E4 R/Hr.
- Wind direction is from 090°

Based on plant conditions, which ONE of the following Protective Action Recommendations is required?

Note: Refer to attached EP-IP-400, Attachment 1

a. Evacuate sub-areas 1, 12 and 3. Shelter all other sub-areas.

b. Evacuate sub-areas 1, 12, 2, 3, 4, 6, 7, 8 and 11. Shelter all other sub-areas.

c. Evacuate sub-areas 1 and 12. Shelter all other sub-areas.

d. Evacuate sub-areas 1, 12, 2, 3 and 4. Shelter all other sub-areas.

Question Number: 80

An Alert has been declared. Which ONE of the following is an Emergency Director responsibility which may be delegated?

a. Approval of press releases

b. Off-site Protection Action Recommendations

c. Termination of an Alert

d. Authorizing the use potassium iodine by on-site personnel

Question Number: 81

The plant was operating at 100% power when a loss of coolant accident occurred causing a RPV depressurization and rapid increase in drywell temperature. Following are plant conditions:

- Drywell temperature is approaching 280°F
- Drywell Pressure is 20 psig
- RPV level is unknown

Based on plant conditions, which ONE of the following describes the use of the RHR pumps?

a. Use both loops of RHR to spray the drywell before drywell temperature reaches 280°F.

b. Use both loops of RHR to spray the drywell, but only after drywell temperature reaches 280°F.

c. Use both loops of RHR to inject to the RPV.

d. Close the MO-1001-19 RHR cross-tie valve. Use one loop of RHR to spray the drywell before drywell temperature reaches 280°F. Use the other loop of RHR to inject to the RPV.

Question Number: 82

The plant is operating normally at 100% power when a leak occurs on the suction line of RCIC. Water level is 3 inches in the RCIC quadrant when the leak is discovered. Level in the RCIC quadrant is currently approaching 6 inches. In accordance with Emergency Operating Procedures, the leak ____(1)____ required to be isolated and a reactor scram ____(2)____ required before reaching 6 inches in the RCIC quadrant.

a. (1) is, (2) is

b. (1) is, (2) is not

c. (1) is not, (2) is

d. (1) is not, (2) is not

Question Number: 83

ADS has been initiated and a blowdown is in progress. Which ONE of the following actions would terminate the blowdown and prevent ADS from re-initiation?

a. Placing the core spray and RHR pumps in pull-to-lock.

b. Depressing the ADS initiation logic reset pushbutton.

c. Placing the ADS initiation inhibit switch to inhibit and placing the core spray and RHR pumps in pull-to-lock.

d. Depressing the ADS initiation logic reset pushbutton and placing the ADS initiation inhibit switch to inhibit.

Question Number: 84

The plant is operating at 100% power when it is discovered that the keylock switch for opening the HPCI alternate shutdown panel has been tampered with. In accordance with PNPS 5.3.14, "Security Incidents", which ONE of the following is to be immediately informed of this condition?

a. NRC resident

b. The Plant Manager

c. The SAS or CAS operator

d. Access Authorization Supervisor

Question Number: 85

The plant was operating at 100% power when a transient causes a loss of feedwater concurrent with a Group I isolation. Based on decay heat generation and SRV operation, which ONE of the following system(s) is(are) designed to provide the minimum makeup requirements to the RPV to maintain RPV level above top of active fuel?

a. RCIC only.

b. RCIC and ADS.

c. HPCI only.

d. ADS and low pressure injection.

Question Number: 86

It is desired to isolate the makeup to the TBCCW head tank to allow maintenance inside the tank during an outage. Which ONE of the following would allow the use of LV-4141 as an isolation point when preparing this DANGER tagout?

Note: Refer to attached P&ID M-216, Sheet 1

a. Setting LV-4141 at the minimum level position.

b. DANGER tagging the air supply of LV-4141 in the open position.

c. DANGER tagging the air supply to LV-4141 in the closed position.

d. Applying a gag to LV-4141 to prevent it from opening.

Question Number: 87

A Special Test is being planned that would introduce the possibility of an accident not previously evaluated in the FSAR. Based on this information and in accordance with 10CFR50.59 and plant procedures, which ONE of the following is required prior to the conduct of the test?

a. ORC review only

b. NRC approval only

c. Safety evaluation only

d. ORC review and NRC approval

Question Number: 88

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- Drywell hydrogen concentration at 6.5%
- Drywell oxygen concentration at 2%
- Torus hydrogen concentration at 3%
- Torus oxygen concentration at 5.5%

While venting primary containment in response to these conditions it ____(1)____ permissible to exceed the release rate LCO. Jumper installation ____(2)____ permitted in order to bypass isolations allowing the venting to take place.

a. (1) is, (2) is

b. (1) is, (2) is not

c. (1) is not, (2) is

d. (1) is not, (2) is not

Question Number: 89

The plant is operating at 100% power when the "TORUS ROOM TROUGH HI/LO" alarm is received in the control room. Investigation reveals that the water level in the trough is below the bottom of the two pipes located in the torus troughs.

If a LOCA in the drywell were to occur, which ONE of the following would be of potential concern with regards to the condition of the torus trough?

a. Loss of pressure suppression pressure capability.

b. Over-pressurization of the secondary containment.

c. Ground release through the secondary containment.

d. Vent path directly from the drywell to torus room.

Question Number: 90

A lead in a safety related system is to be lifted and you have been directed to verify this activity. Which ONE of the following describes how this verification is to be performed?

a. Independent and direct.

b. Non-independent and direct.

c. Independent and indirect.

d. Non-independent and indirect.

Question Number: 91

The plant has been scrammed and a control room evacuation conducted. Following are plant conditions:

- MO-1301-17, RCIC Outboard Steam Isolation Valve, has failed closed.
- Dose rates in the TIP Room are unknown.
- The TIP Room Door is posted as GRAVE DANGER --VERY HIGH RADIATION AREA – TWO PERSONS REQUIRED FOR ENTRY.
- The OSS has determined that plant conditions DO NOT warrant an emergency entry to the TIP room. (i.e. all normal requirements for entry to a VERY HIGH RADIATION AREA are in effect.)
- A properly qualified door guard is standing by.

Based on plant conditions, which ONE of the following requirements must be met to enter the TIP room in order to open MO-1301-17?

a. An additional operator with a radiation dose rate meter who is qualified to use the meter must be dressed out and standing by to enter the room if required.

b. An additional operator with a radiation dose rate meter who is qualified to use the meter must actually enter the TIP Room with you.

c. A RPT equipped with a radiation dose rate meter must be dressed out and standing by to enter the room if required.

d. A RPT equipped with a radiation dose rate meter must actually enter the TIP Room with you.

Question Number: 92

The plant is in refuel with core reload complete and the Reactor Building truck lock doors open in support of a control rod drive shipment. Based on current plant conditions, which ONE of the following activities is allowed to be performed?

a. Movement of new fuel to the spent fuel pool.

b. Replacement of LPRM's.

c. Replacement of control rod blades.

d. Control rod scram time testing.

Question Number: 93

The plant is operating at 100% power when instrument air is lost to the following valves:

- AO-7011A, Drywell Equipment Drain Sump Discharge to Radwaste
- AO-7017A, Drywell Floor Drain Sump Discharge to Radwaste.

Based on these conditions, which ONE of the following actions is(are) required?

Note: All other systems are fully operable.

a. Ensure that AO-7011B, Drywell Equipment Drain Sump Discharge to Radwaste, and AO-7017B, Drywell Floor Drain Sump Discharge to Radwaste are open and that administrative controls are placed on the operation of AO-7011B and AO-7017B.

b. Gag open AO-7011A and AO-7017A.

c. Be in hot shutdown within 12 hours and in cold shutdown within the following 24 hours.

d. Be in cold shutdown within 24 hours.

Question Number: 94

The plant is operating at 90% power with the Reactor Feed Pump Tripping Sequence switch in the ABC position. If the 'B' condensate pump tripped, which ONE of the following automatic actions would occur?

a. The 'A' feed pump only would trip.

b. The 'B' feed pump only would trip.

c. The 'C' feed pump only would trip.

d. All 3 feed pumps would trip.

Question Number: 95

The plant was operating at 100% power when a loss of 480 VAC bus B-21 occurred. Based on the loss of bus B-21, which ONE of the following describes the response of the Reactor Building Ventilation System and secondary containment pressure?

a. RB supply and exhaust fans de-energize and the secondary containment becomes less negative.

b. Only the RB exhaust fans de-energize and the secondary containment becomes less negative.

c. RB supply and exhaust fans remain running and the secondary containment pressure remains constant.

d. Only the RB supply fans de-energize and the secondary containment becomes more negative.

Question Number: 96

The plant is operating at 100% power. Which ONE of the following conditions would cause automatic closure of the condenser vapor valves and subsequent loss of main condenser vacuum?

a. 70 psig steam pressure to the SJAE inlet.

b. 10 psig downstream of the SJAE condenser.

c. 2600 lbm/hr steam flow to the jet compressor.

d. 225°F downstream of the SJAE condenser.

Question Number: 97

The plant is at 30% power with RPV pressure at 955 psig. A shutdown is in progress following a record breaking 600 day run when an inadvertent main turbine trip occurs. Assuming no operator action is taken, which ONE of the following describes the expected RPV pressure several minutes following the turbine trip?

a. 810 psig

b. 940 psig

c. 955 psig

d. 1095 psig

Question Number: 98

During normal plant operations the control room is maintained at a ______(1)____ pressure and during accident conditions (with initiation of the CREAF) at a ____(2)_____ pressure.

a. (1) positive, (2) negative

b. (1) negative, (2) negative

c. (1) negative, (2) positive

d. (1) positive, (2) positive

Question Number: 99

The plant was operating at 98% power when #15 jet pump flow drops to 0.1 X 10^6 lbm/hr indicating a jet pump failure.
Based on this condition, the expected plant response would be for reactor power to___(1)____ and Recirc Loop 'B' flow to____(2)___.

a. (1) decrease, (2) decrease

b. (1) increase, (2) increase

c. (1) decrease, (2) increase

d. (1) increase, (2) decrease

Question Number: 100

The plant is operating at 100% power when a loss of bus D-16 occurs. All other systems are aligned normally. Five minutes later bus D-16 is restored.

The expected response of 125 VDC panel D-6 upon the loss of D-16 will be to ___(1)___ and upon restoration of D-16 to ___(2)___.

a. (1) immediately transfer to D-17
(2) transfer back to D-16 after a time delay

b. (1) transfer to D-17 after a time delay
(2) immediately transfer back to D-16

c. (1) immediately transfer to D-17
(2) immediately transfer back to D-16

d. (1) immediately transfer to D-17
(2) remain on D-17 indefinitely unless manual action is taken to transfer back to D-16

ANSWER KEY

Question Number	Correct Answer
1	a
2	d
3	a
4	b
5	a
6	c
7	b
8	a
9	d
10	c
11	c
12	d
13	a
14	c
15	a
16	d
17	a
18	b
19	c
20	c
21	a
22	d
23	c
24	d
25	c
26	d
27	c
28	d
29	b
30	c
31	a
32	a
33	c
34	DELETED
35	c
36	d
37	c
38	a
39	a
40	d
41	b
42	b
43	c
44	b
45	a
46	d
47	b
48	a
49	d
50	d
51	a
52	b
53	c
54	c
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56	a
57	b
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72	d
73	b
74	a
75	c
76	d
77	a
78	a
79	b
80	d
81	c
82	b
83	d
84	c
85	a
86	d
87	d
88	a
89	c
90	b
91	d
92	b
93	c
94	a
95	d
96	c
97	b
98	d
99	c
100	a

Facility: Pilgrim
Examination Level: SRO(U)

Date of Examination: 05/01/00
Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Temp. Modification of Procedures	JPM – Prepare intent procedure change.
	Fuel Handling	Question #1: Fuel orientation verification Question #2: SRM operability requirements
A.2	P&ID Use	JPM – Trace flowpath for Firewater to RPV.
A.3	Radiation Work Permits	Question #1: Required Radiological Postings Question #2: Entering High Radiation Areas Under General RWP
A.4	Emergency Classification	JPM – Classify GE due to ATWS.

Facility: Pilgrim	Date of Examination: 05/01/00
Examination Level: SRO(U)	Operating Test Number: 1

B.1 Control Room Systems

	System / JPM Title	Type Code*	Safety Function
a.	~~EDG / Monthly Load Test/Start and Load EDG – KW Oscillations~~. Manually start SGBT & Vent the Torus	M, A, S	~~6~~ 9
b.	RWCU/Establish RWCU reject to main condenser during plant startup.	N, S, L	2
c.	Rx/Turbine press regulating/transfer to MPR at power/pressure oscillations.	D, A, S	3

B.2 Facility Walk-Through

a.	RHR/LPCI/Injection Mode/X-tie Fire Water to RHR.	M, R	4
b.	RPS/Transfer 'B' RPS to backup – secure 'B' RPS MG Set.	M	7

* 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

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 299-03-04-026

Task Title: Review Procedure Change to PNPS 8.M.1-20

Job Performance Measure No: Admin 7

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: __________

NRC Examiner: __________

Date: __________

Method of Testing:

Simulated Performance __________ Actual Performance ✓

Classroom __________ Simulator __________ Plant ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: You are the OSS. The plant is operating at 100% power. It was just determined that the functional test of the SDIV High Level Bypass Switch Rod Block was not performed during the last outage per 8.M.1-20 Attachment 5. An I&C Supervisor has presented you with a procedure change which will allow performance of this test with the installation of jumpers in C905 which will simulate the Mode Switch in Shutdown or Refuel in the SDIV High Level Bypass Circuitry.

Task Standard: The candidate shall determine that the submitted change cannot be approved as a non-intent change, will determine the required type of change, and will complete the PCF through Section D.

Required Materials: Marked up PCF.

General References: PNPS 8.M.1-20, NOP98A1

Initiating Cue: (Operators name) Process the procedure change in accordance with NOP98A1 and inform the examiner when complete. (Present candidate with marked up PCF and 8.M.1-20).

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

______ **Performance Step 1:** Locates and reviews appropriate procedures.

Standard: Candidate determines that NOP98A1 is the appropriate procedure, reviews NOP98A1.

Comment:

✓ **Performance Step 2:** Determines that this change cannot be processed as a Non-Intent Change.

Standard: Candidate determines that this change is an intent change and does NOT continue processing as a non-intent change.

Comment:

Cue: Once the candidate determines that the change is an intent change, the examiner may need to cue him to determine the appropriate type change and process the change per the applicable requirements of NOP98A1.

______ **Performance Step 3:** Candidate refers to section 6.1.4[5] and determines that this is an intent change and that 6.1.3 must be referenced. Refers to 6.1.3 and determines that since the revision is an intent change to a Safety Related Procedure, the change must be processed in accordance with section 6.1.3.2 of NOP98A1 as an "Intent Change Permanent Revision".

Standard: Candidate determines that the change must be processed as an "Intent Change Permanent Revision".

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 4:** Obtain a copy of Procedure Change Form (PCF) from the procedure work group, or an equivalent electronic copy.

Standard: Candidate obtains a PCF.

Comment: Once the candidate demonstrates ability to obtain PCF, supply him with a copy of a PCF. Candidate may also elect to simply mark up the PCF that was originally supplied.

✓ **Performance Step 5:** Complete PCF sections A, B, C, and D.

Standard: PCF sections A, B, C, and D completed per attached PCF.

Comment: Critical portion is identifying change as an intent change, checking at least one box in Section C and checking at least one box in Section D.

Terminating Cue: When PCF is complete through Section D, the examiner should inform the candidate that no further actions are required.

Information Provided to Candidate

Initial Conditions: You are the OSS. The plant is operating at 100% power. It was just determined that the functional test of the SDIV High Level Bypass Switch Rod Block was not performed during the last outage per 8.M.1-20 Attachment 5. An I&C Supervisor has presented you with a procedure change which will allow performance of this test with the installation of jumpers in C905 which will simulate the Mode Switch in Shutdown or Refuel in the SDIV High Level Bypass Circuitry.

Initiating Cue: Process the procedure change in accordance with NOP98A1 and inform the examiner when complete.

Fuel Handling Operations
Admin Question #1:

You are supervising fuel moves when the fuel bundle that is grappled to the refuel bridge mast becomes ungrappled and drops on top of the vessel. What immediate actions are required?

Answer:

Terminate all fuel handling/refuel floor operations (0.5)
Evacuate the refuel floor (0.5)

Note: Another immediate operator action is to lower any grappled fuel bundle to the nearest location, however the question should indicate to the candidate that no fuel bundle is presently grappled.

Closed Reference

Reference: PNPS 5.4.3 Immediate Actions

K/A: 2.1.8, 3.8/3.6

Fuel Handling Operations
Admin Question #2:

You are ready to commence unloading the core at the beginning of a refueling outage. The first fuel bundle to be removed is in position 02-23. Which SRMs have to be operable to allow removing this fuel bundle and what requirements must be met to consider these SRMs operable?

Answer:

SRM D operable and either SRM A or C operable.(0.5)

The SRMs must be inserted to normal operating level (0.25) and
have a minimum reading of 3 cps (0.25)

Note: Candidate may also say that special movable dunking type detector may be used during major core alterations provided this detector is connected to normal SRM circuitry. However, this is not required for full credit.

Open Reference

Reference: PNPS 4.3 page 44 of 44
T.S. 3.10.B

K/A: 2.1.12, 2.9/4.0

Job Performance Measure
Worksheet

Facility: Pilgrim	Task No.: 200-05-01-006
Task Title: P&ID Trace	Job Performance Measure No: Admin 6
K/A Reference: G 2.1.24, RO-2.8/SRO-3.1	Position: RO/SRO
Examinee:	NRC Examiner:
Date:	

Method of Testing:

Simulated Performance	Actual Performance ✓	
Classroom	Simulator	Plant ✓

Read to Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: In accordance with EOP-01 FireWater is required to be cross-tied with RHR.

Task Standard: The candidate successfully traces the flowpath from the 'A' Fire Water Storage Tank to the RPV via the 'A' RHR Loop. Steps may be performed in any order.

Required Materials: Highlighter

General References: P&ID M-218 Sheets 1 and 2, M-241 Sheet 1

Initiating Cue: "(Operator's name), using the P&ID's and a highlighter, trace the FireWater flowpath from the 'A Fire Water Storage Tank to the RPV using the 'A' RHR Loop and inform the examiner when complete."

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Identify correct P&IDs to trace the flowpath.

Standard: Candidate identifies and locates P&ID's M-218 Sheets 1 and 2, and M-241 Sheet 1.

Comment: Candidate will highlight flowpaths listed below.

✓ **Performance Step 2:** Using P&ID M218 Sheet 2 (H-6) locate FireWater Storage Tank 107A.

Standard: Using P&ID M218 Sheet 2 candidate locates FireWater Storage Tank 107A (H-6).

Comment:

✓ **Performance Step 3:** Using P&ID M218 Sheet 2 (D-5) locate Motor Driven Fire Pump P-135.

Standard: Using P&ID M218 Sheet 2 candidate locates Motor Driven Fire Pump P-135 (D-5).

Comment:

_____ **Performance Step 4:** Transition from P&ID M218 Sheet 2 (D-2) to P&ID M218 Sheet 1 (G-8).

Standard: Candidate transitions from P&ID M218 Sheet 2 (D-2) to P&ID M218 Sheet 1 (G-8).

Comment:

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 5:** Using P&ID M218 Sheet 1 locate the removable spool piece (G-6).

Standard: Using P&ID M218 Sheet 1 candidate locates the removable spool piece (G-6).

Comment:

Performance Step 6: Transition from P&ID M218 Sheet 1 (G-6) to P&ID M241 Sheet 1 (B-3).

Standard: Candidate transitions from P&ID M218 Sheet 1 (G-6) to P&ID M241 Sheet 1 (B-3).

Comment:

✓ **Performance Step 7**: Using P&ID M241 Sheet 1 (B-3) trace flowpath to RPV.

Standard: Candidate traces flowpath to RPV using P&ID M241 Sheet 1 (B-3) to (G-5).

Comment:

Terminating Cue: When the flowpath has been traced and highlighted, the candidate should inform the examiner that the task is complete.

Information Provided to Candidate

Initial Conditions: In accordance with EOP-01 FireWater is required to be cross-tied with RHR.

Initiating Cue: Using the P&ID's and a highlighter, trace the FireWater flowpath from the 'A Fire Water Storage Tank to the RPV using the 'A' RHR Loop and inform the examiner when complete.

Radiation Work Permits
Admin Question #1:

Using the attached survey, identify the radiological postings required at the entrance to the 'A' RHR Valve Room, if any.

Answer:

Caution (or Danger), High Radiation Area (0.33)
Caution, Contaminated Area (0.33)
RWP Required For Entry (0.33)

Open Reference

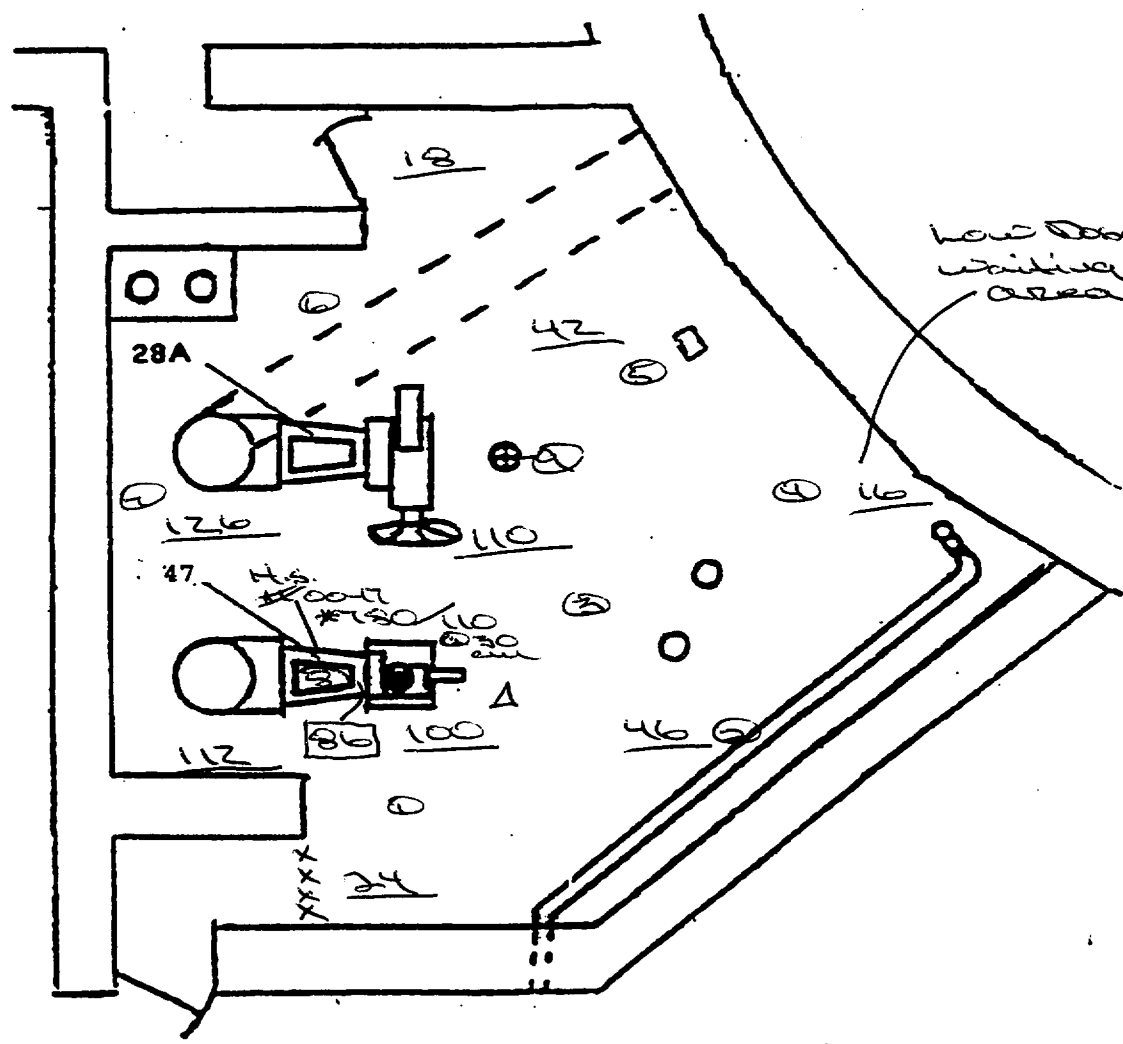
Reference: PNPS 6.1-025 Rev 7 Section 3.0 Definition of Contaminated Area and High Radiation Area, Section 8.2 and 8.8

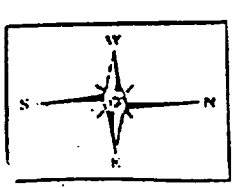
K/A: 2.3.10 2.9/3.3

RADIOLOGICAL SURVEY FORM

Survey By: R.P. Tech (Print)	Signature: RP Tech		MAP # 33
Dose Rate Inst.: RO-2	Cont. Inst.: RM-14	Alpha Contamination inst.: SAC-4	Date: 5/7/00
Serial No.: 8356	Serial No.: 3317	Serial No.: N/A	Time: 1140
Cal Due: 8/19/00	Cal Due: 7/27/00	Cal Due: / /	Rx Power: 100 %
Routine / Specific RWP 00-101	Probe No.: 921	Collimated Probe #	H2 Level: 32 SCFM
Surveyor's Dose: 2.6 mR	Cal Due: 8/11/00	Cal Due: / /	Status Map Updated Initial: RP

A VALVE RM





Contamination

#	Beta	Location
1	6K	floor
2	1K	pipe
3	2K	floor
4	1K	floor
5	1K	floor
6	1K	floor
7	1K	wall
8	2K	47 valve
9	4K	drain
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

AIRBORNE = .03 DAC

1. Circled number indicates smear location
2. Smears in dpm/100cm2 unless indicated
3. Triangles indicate air sample locations
4. Underlined numbers are gamma dose in mr
5. Squares indicate Beta dose rates in mrad/hr
6. *Indicate contact dose rates in mr/hr /mrad
7. Contamination in KDPM unless noted

FOR TRAINING USE ONLY!!

COMMENTS: Lead removed from 47 valve
Updated Hot spot label 00-47

ROS Review: ____________

Radiation Work Permits
Admin Question #2:

Under what conditions may a General RWP be used for access to a High Radiation Area?

Answer:

Operator Rounds (operator assigned to Radwaste inclusive) or inspections (0.5)

Radiation Protection entries and surveys (0.5)

Open Reference

Reference: 6.1-031 Rev Page 8

K/A: 2.3.10 2.9/3.3

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No.: 015-05-02-013

Task Title: Classify GE Due to ATWS

Job Performance Measure No: Admin 5

K/A Reference: G 2.2.6, RO-2.3/SRO-3.3

Position: SRO

Examinee: ____________

NRC Examiner: ____________

Date: ____________

Method of Testing:

Simulated Performance ✓

Actual Performance ____________

Classroom ____________

Simulator ________

Plant ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: The plant has experienced an ATWS with the following conditions: All efforts to insert control rods have been unsuccessful.

- The Main Condenser is not available
- SRVs are being used to control pressure in a band of 1000-1050 psig
- Reactor power is 30% and is lowering due to termination of injection to the RPV
- Torus water temperature is 120°F and rising
- Torus water level is 129 inches and stable
- Drywell pressure is 15 psig
- Torus bottom pressure is 19 psig
- No release is in progress
- Wind is from 90 degrees at 5 mph
- All efforts to inject boron have been unsuccessful

Task Standard: A general emergency shall be declared due to exceeding EAL 2.3.1.4. The Initial Notification Form shall be completed and given to the Operations Assistant within 15 minutes. The E-Plan shall be completed up to, and including Step 5.2.4 of EP-IP-100. Steps may be performed in any order provided critical time frames are met.

Required Materials: Initial Notification Form, EAL chart

Job Performance Measure
Worksheet

General References: EP-IP-100 Rev. 12

Initiating Cue: (Operator's name), you are the OSS. Implement the Emergency Plan as appropriate up to and including notifying the NRC (simulated). Inform the examiner when this task is complete.

Time Critical Task: YES – 15 minutes from the declaration to notify State and Local authorities and 1 hour, but as soon as practical, from the declaration to notify the NRC.

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Operator verifies the plant conditions.

Standard: Operator verifies the plant conditions which may require entry into a classifiable event.

Comment:

_____ **Performance Step 2:** Operator compares plant indications against EALs.

Standard: Operator references EALs.

Comment: Successful completion of this step will be verified by the correct EAL number being recorded on the Initial Notification Form.

_____ **Performance Step 3:** Operator announces to the control room the declared emergency.

Standard: Operator announces that a General Emergency has been declared, EAL 2.3.1.4 and announces that he is the director.

Comment: CRITICAL TIME START:________________

__✓__ **Performance Step 4:** Operator designates appropriate assembly area based on wind direction.

Standard: Operator designates that the Support Building cafeteria as the assembly area.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 5**: Operator notifies security.

Standard: Operator contacts security by Gaitronix, telephone, or other means and informs/directs them of the following:

- Designated assembly area.
- The time of the declaration.
- To ensure that personnel in the support building are sent to the assembly area.
- To initiate personnel accountability.
- Evacuate/verify evacuated public access areas.

Comment: Examiner should acknowledge this information as security.

__✓__ **Performance Step 6:** Operator evacuates protected area.

Standard: Operator states the following from EP-IP-100 twice:

"Attention all personnel; attention all personnel: A General Emergency has been declared due to ["Synopsis of ATWS conditions"]. All on-call members of the Emergency Response Organization report to your designated emergency response facility. All other personnel evacuate to the Support Building cafeteria. There will be no eating, drinking or smoking until further notice."

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_✓_ **Performance Step 7:** Operator evacuates shorefront and recreation areas.

Standard: Operator turns on outside speakers and states the following:

"Attention please! Attention please! This is Pilgrim Station. Please leave the recreation areas without delay." (Turn **off** the outside speakers.)

Comment:

____ **Performance Step 8:** Operator notifies or directs notification of ERO.

Standard: Operator directs the OA to standby for Emergency Response Organization Notification.

Comment: If told as OA to activate the ERO, cue the candidate that "I will activate the ERO."

_✓_ **Performance Step 9:** Operator completes the Initial Notification Form.

Standard: Operator completes the Initial Notification Form.

Comment: Refer to Attachment 1 of this JPM to verify accuracy on the Initial Notification Form. Critical portions have an asterisk (*) on Attachment 1.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

_✓_ **Performance step 10:** Operator directs the Initial Notification Form to be transmitted to State and Local Authorities.

Standard: Operator directs the OA to transmit the Initial Notification Form over the DNN.

Comment: Cue the Candidate that "I will transmit the form over the DNN."

_✓_ **Performance step 11:** Operator informs the NRC.

Standard: Operator contacts the NRC via the ENS line and notifies them that a 10CFR notification is being made, Section 50.72(a) (3), a General Emergency has been declared.

Comment: Cue the Candidate that "The NRC understands you are declaring a General Emergency, and notifying the NRC that of a 10CFR50.72(a) (3) notification."

Cue the candidate as Security that "accountability is complete."

Terminating Cue: After notifications are made to State/Local authorities and NRC, the candidate should inform the examiner that this completes the task.

Scenario Outline

Facility: Pilgrim   Scenario No.: 1   Op-Test No.: 1

Examiners: ______   Operators: ______

Objectives: To evaluate the applicants' ability to lower reactor power; respond to a failure of the selected FWLC Instrument, an isolable leak on the Core Spray System, a small break LOCA, and a loss of feedwater which leads to alternate depressurization.

Initial Conditions: 100% power, HPCI OOS. 'A' TBCCW pump is in service.

Turnover: The plant is operating at 100% power, HPCI is out of service for aux oil pump replacement. Currently in day 2 of 14 day LCO. All required surveillances complete. 'B' TBCCW pump is out of service for maintenance, expected to return to service tomorrow. The Feedwater Flow Correction Factor is NOT applied.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Lower Rx power in response to report of 'B' RFP overheating. (To be verbally reported shortly after shift turnover.)
2	FW-24	I	Downscale failure of selected FWLC level instrument. (Inserted when directed by Chief Examiner.)
3	N/A Verbal Report	C	Leak on 'B' core spray suction (isolable). (Reported when directed by Chief Examiner.)
4	PC-01	M	Small Break LOCA. (Inserted when directed by Chief Examiner.)
5	ED-08	C	Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization. (Pre-inserted to occur upon A-1 transfer.)
6	RC-02	C	RCIC Turbine Trip. (Pre-inserted to occur when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 1	Page 1 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	CRS	Receive report from electrical maintenance of overheating on the 'B' Reactor Feed Pump motor with the need to remove the pump from service as soon as practical. **Note:** When making the report to the control room on the 'B' RFP overheating ensure it is clear that pump failure is not imminent.
	CRS	Brief crew on the power reduction. Direct the power reduction in accordance with PNPS 2.1.14.
	CRS	Direct reducing reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr.
	RO	Reduce reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr. Monitor core flow reactor power, reactor pressure, and reactor water level on Panel C905.
	RO	Insert control rods in reverse order of the pull sheet. Monitor reactor power, reactor pressure, and reactor water level on Panel C905.
	CRS	When reactor power is reduced to less than 60%, direct removal of the 'B' Reactor Feed Pump from service.
	BOP	Turn the RFP TRIP SEQUENCE SELECT switch to OFF.
	BOP	Stop the 'B' RFP by placing Control Switch to STOP.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Page 2 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	RO	Verify reactor water level.
	BOP	Acknowledge and reset all RFP annunciators.
	BOP	Verify amps are normal on Reactor Feed Pumps 'A' and 'C'.
	BOP	Verify RFP 'B' Aux Oil Pump auto starts.
	BOP	Verify RFP 'B' Recirc Valve (FV-3436) closes.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 2	Page 1 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Rx feed pump high water level channel alarm downscale.
	RO/BOP	Refer to ARP.
	RO	Check feedwater narrow range level indication (LR-640-26 on Panel C905).
	RO	Determine which channel (A or B) is malfunctioning.
	RO	Select unaffected channel with Reactor Level Selector Switch on C905. **NOTE: CRITICAL TASK**
	RO	Recognize/announce #2 Speed Limiter Runback on Reactor Recirc Pump.
	RO	Refer to ARP.
	CRS	Direct resetting runback.
	RO	Lower demanded speed on both Reactor Recirc Pumps until a discernable speed decrease occurs. **Note:** This step may not be required if pump speed was already less than 44%.
	RO	Reset runback on both Reactor Recirc Pumps by momentarily depressing the runback reset pushbuttons.
	CRS	Direct I&C to investigate and correct cause of alarm.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 2 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to Tech. Spec. Table 3.2.F.
	CRS	Enter 30 day active LCO for failure of one FWLC Level instrument.
	CRS	Brief crew on the need to manually trip the RFPs if the high level trip setpoint is exceeded.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 3	Page 1 of 1

Event Description: Leak on 'B' core spray suction (isolable). Report will be of three inches of water on the floor in the Quad with leak located between MO-1401-3B 'B' Core Spray suction and the 'B' Core Spray Pump.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize entry into EOP-04.
	CRS	Direct isolation of the 'B' Core Spray Pump Suction. (Closure of MO-1401-3B and placement of 'B' Core Spray Pump in Pull to Lock.)
	BOP	Obtain key and take keylock for MO-1401-3B to Close Position.
	BOP	Place 'B' Core Spray Pump in Pull to Lock.
	CRS	Recognize entry condition/enter Tech Spec 3.5.C.2. and 3.5.C.3 Recognize with HPCI OOS and Core Spray inoperable that 3.5.C.3 requires the plant to be in cold shutdown within 24 hours.
	CRS	Brief crew, inform ODM and make preparation for plant shutdown.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 1 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Direct venting of the drywell.
	BOP	Open AO-5043A, Drywell Normal Exhaust Isolation Valve.
	BOP	Open AO-5043B, Drywell Normal Exhaust Isolation Valve.
	BOP	Verify open or open: a) AO-N-98, Contaminated Exh to SGTS Inlet Plenum b) AO-N-101, Refuel Floor Exh to SGTS Inlet Plenum

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 2 of 8
Event Description: Small Break LOCA			

Time	Position	Applicant's Actions or Behavior
	BOP	Verify or establish: a) AO-N-99, Train 'A' Inlet Damper, is open b) AO-N-108, Train 'A' Outlet Damper, is open c) VEX-210B, Standby Gas Fan 'B', in standby d) Start VEX-210A, Standby Gas Fan 'A', Panel C7 by placing the control switch in "Run"
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "Shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01/03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 3 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 4 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Op-Test No.: 1	Scenario No.: 1	Event No.: 4 Page 5 of 8
Event Description: Small Break LOCA		

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: 1   Scenario No.: 1   Event No.: 4   Page 6 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the “open” position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the “open” position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to “on”.
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to “on”.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 7 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 4	Page 8 of 8
Event Description: Small Break LOCA			

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 - +45 inches using Table 'A'.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 5	Page 1 of 1

Event Description: Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce lockout of Bus A-1 and Loss of Feedwater
	CRS	Direct investigation of bus A-1 lockout.
	CRS	Direct restarting the 'B' Reactor Feed Pump.
	BOP	Restart the 'B' Reactor Feed Pump.
	BOP	Recognize/announce the immediate trip of the 'B' Reactor Feed Pump.
	CRS	Direct injection with RCIC.

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 6	Page 1 of 2	

Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)

Time	Position	Applicant's Actions or Behavior
	BOP	Momentarily depress the RCIC System Injection Mode push button. (Following are actions for auto mode, the candidate may elect to use manual mode).
	BOP	Verify the MANUAL START SEQUENCE indicating light is energized.
	BOP	Verify the following: - MO-1301-61, TURBINE SUPPLY VALVE, has opened. - MO-1301-49, INJ VLV #2, has opened. - MO-1301-60, PUMP MIN FLOW VLV closes when flow exceeds 100 GPM - AO-1301-34 and AO-1301-35, STEAM LINE DRN VLVs, close. - AO-1301-12 and AO-1301-13, BAROMETRIC CONDR DRN VLVs, close - MO-1301-62, COOLING WTR SUPPLY VLV, opens. - P-222, VACUUM PUMP, starts. - P-221, CONDENSATE PUMP, starts. - RCIC flow levels off and stays at 400 GPM, indicating that FIC-1340-1, INJECTION FLOW CONTROL, has control of turbine speed.
	BOP	Perform the following: (**Note:** These are the steps for manual mode. The candidate may elect to use the auto mode) Verify FIC-1340-1,INJECTION FLOW CONTROL, is in AUTO and set for 400 GPM - OPEN/VERIFY OPEN MO-1301-62, COOLING WTR SUPPLY VLV - START/VERIFY RUNNING P-222, VACUUM PUMP - OPEN/VERIFY OPEN MO-1301-60 PUMP MIN FLOW VLV - SIMULTANEOUSLY OPEN MO-1301-61, TURBINE SUPPLY VLV AND MO-1301-49 INJ VLV #2 - OBSERVE that flow is supplied to reactor vessel and stabilizes at 400 GPM. - VERIFY MO-1301-60, PUMP MIN FLOW VLV closes as flow increases. - MONITOR system operation and adjust FIC-1340-1 as necessary to maintain desired reactor water level

Scenario Outline

Op-Test No.: 1	Scenario No.: 1	Event No.: 6	Page 2 of 2

Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce RCIC turbine trip.
	BOP	Check RCIC Turbine Stop Valve closed.
	BOP	Close MO-1301-49 INJ VLV #2.
	CRS	Direct NLO to check RCIC turbine. (Report will be that the turbine trip throttle valve is tripped and problems are being encountered in getting the valve to stay reset.)
	CRS	Classify the event as an Alert 3.4.1.2 "Primary containment pressure cannot be maintained <2.2 psig."

Scenario Outline

Facility: Pilgrim Scenario No.: 2 Op-Test No.: 2

Examiners: Operators:

Objectives: To evaluate the applicants' ability to place the third RFP in service, respond to squib valve failure, APRM upscale failure, and loss of vacuum resulting in an incomplete scram with SBLC failure.

Initial Conditions: 58% power, no equipment out of service.

Turnover: The plant is starting up from a one week outage for equipment repairs. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to place the third RFP in service and continue with the power ascension. PNPS 2.2.96 has been completed through Step 7.3.1[7] for starting the 'A' RFP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place third RFP in service. (Direction given in shift turnover.)
2	I/O	C	Failure of 'A' squib valve. (Inserted upon direction of Chief Examiner.)
3	NM-20	I	APRM 'B' upscale failure. (Inserted upon direction of Chief Examiner.)
4		M	Loss of vacuum – ATWS. (Loss of vacuum inserted upon direction of Chief Examiner. ATWS is pre-inserted.)
5	TC-14	C	Main Turbine bypass valves fail to open. (Pre-inserted)
6	LP-01/ LP-02	C	Trip of 'B' SBLC pump/discharge line of 'A' SBLC clogged. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 1 Page 1 of 2

Event Description: Place third RFP In Service

Time	Position	Applicant's Actions or Behavior
	CRS	Direct/brief placing 'A' RFP in service
	BOP	Direct NLO to adjust the RFP lube oil cooler(s) TBCCW outlet valve(s) to maintain 90°F to 110°F oil temperature.
	BOP	Verify that the RFP suction pressure is greater than 250 psig.
	BOP	Place the associated RFP 'A' recirc valve (A=FV-3435) control switch (Panel C1) in the "Open" position.
	BOP	Verify that the RFP trip sequence enable switch is in "off" (Panel C1).
	BOP	Start RFP by placing C/S on Panel C1 in "start" position.
	RO	Verify reactor water level.
	RO	Verify total feedwater flow.
	BOP	Place associated RFP 'A' recirc valve control switch (A=FV-3435) on Panel C1 in "Auto".
	BOP	Verify the following reactor feed pumps indicators on Panel C1: (a) PI-3429, Suct Press (b) PI-3448, Disch Press RFP 'A' (c) PI-3458, Disch Press RFP 'B' (d) PI-3468, Disch Press RFP 'C'
	BOP	Verify appropriate reactor feed pumps RFP 'A', 'B', or 'C' motor current indicators on Panel C1 for normal operating amperage (approximately 600 amps.).

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 1	Page 2 of 2
Event Description: Place third RFP In Service			

Time	Position	Applicant's Actions or Behavior
	BOP	Verify associated auxiliary L.O. Pump RFP 'A', '(P-152A) has auto-shutdown light indication (Panel C1).
	BOP	Have NLO verify RFP lube oil cooler(s) TBCCW outlet valves are returned to the full open position.
	BOP	Place RFP trip sequence select switch in sequence desired, then place RFP trip sequence enable switch in "on" position.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 2 Page 1 of 1

Event Description: Failure of 'A' Squib Valve

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Squib Vlv Continuity Failure Alarm.
	CRS/RO	Refer to ARP.
	RO	Check amber squib valve continuity lights (1106A, 1106B) on Panel C905.
	RO	Check ammeters on back of Panel C905.
	RO	Determine which circuit is experiencing a loss of continuity.
	CRS	Direct troubleshoot and repair of faulty circuit.
	CRS	Ensure Tech. Spec. 3.4.B and 3.4.C/4.4.3 are satisfied.
	CRS	Enter 7 day LCO for SBLC failure.

Scenario Outline

Op-Test No.:	2	Scenario No.:	2	Event No.:	3	Page 1	of 1

Event Description: APRM ‘B’ Upscale Failure

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce RPS Channel ‘B’ APRM Hi-Hi INOP Alarm.
	RO	Check reactor power at C905 and Recirc Pumps ‘A’ & ‘B’ flow at Panel C904.
	RO	Check APRM status lights on Panel C905.
	RO	Bypass the alarming APRM channel and reset half-scram as directed.
	CRS	Direct I&C to investigate and correct cause of HI-HI INOP condition.
	CRS	Ensure Tech. Specs. 3.1 and 3.2.C are satisfied. Initiate tracking LCO for APRM ‘B’ failure.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 1 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	ALL	Recognize/announce lowering condenser vacuum.
	CRS	Direct actions of PNPS 2.4.36.
	RO	Reduce reactor power in accordance with PNPS 2.1.14, Sections 7.10 and 7.11 to stop the vacuum decrease.
	RO	Reduce Reactor Recirc Pump Speed to lower core flow to 39 Mlbm/hr.
	RO	Insert Control Rods using Reverse Order of Pull Sheet or Rapid Power Reduction Array as directed.
	CRS	When main condenser vacuum is lowering and is approaching the Turbine trip setpoint (22") with no indication of recovering, then prior to Turbine trip, order manual reactor scram. **Note:** If the crew is able to stabilize vacuum with the air-in leakage malfunction maximized, the vacuum breakers will be opened from the IF upon direction from the examiners.
	RO	Recognize/announce failure to scram: - Initiate ARI - Verify/runback recirc pumps to minimum - Verify reactor power above 3% - Trip both reactor recirculation pumps
	CRS	Notify Reactor Engineering.
	CRS	Direct inhibiting ADS.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 2 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	RO	Insert control rods using PNPS 5.3.23: - Order CRD-25 valve closed - Bypass Rod Worth Minimizer - Throttle closed MO-302-8 to raise drive water pressure by 50 psi - Rapidly insert RPR rods - Rapidly insert ROPS rods
	CRS	Direct I&C to bypass RPS and ARI trips.
	RO	When I&C reports RPS and ARI trips are bypassed: - Reset scram on panel C905 - Place air dump test switch to isolate - Verify "SPVAH Pressure Lo" alarm clear - Place air dump test switch to norm - When "SDIV Level Hi" or "SDIV East Not Drained" and SDIV West Not Drained" are clear, initiate a manual scram - Repeat above scram/reset scram steps **NOTE: CRITICAL TASK**
	RO	Maintain level –125 to +45 with FWLC in auto until below 10% power. Level control should then be placed on Startup Feed Reg Valve.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 3 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	CRS	Direct terminating/preventing injection if: 1) BIIT is exceeded 2) DW pressure is 2.2 psig or an SRV is open 3) Reactor power >3% 4) Level above TAF **NOTE:** This is not expected when started from approximately 60% power.
	RO/BOP	If/when directed to terminate/prevent injection: 1) Close FRV downstream block valve 2) Close S/U FRV 3) Place core spray pumps in PTL 4) Place HPCI aux oil pump in PTL 5) Trip RCIC turbine 6) Place RHR pumps in PTL except as needed for containment/cooling
	CRS	Direct placing torus cooling in service
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.

Scenario Outline

Op-Test No.:	2	Scenario No.:	2	Event No.:	4	Page 4	of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" OR (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". AND • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 5 of 7
Event Description: Loss of Vacuum – ATWS			

Time	Position	Applicant's Actions or Behavior
	CRS	Direct placing H_2/O_2 monitoring in service when time permits.
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: 2   Scenario No.: 2   Event No.: 4   Page 6 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 4	Page 7 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 5	Page 1 of 1			

Event Description: Main Turbine bypass valves fail to open.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed.

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 6	Page 1 of 2
Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged			

Time	Position	Applicant's Actions or Behavior
	CRS	Direct initiation of SBLC as required by EOP-02 or Operations Policy Statement.
	RO	Start one SBLC system by placing the SLC ACTUATE switch to SYS A or SYS B position on Panel C905 (**Note:** Candidate will likely choose SYS 'B' due to earlier failure of SYS 'A' squib valve).
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. (**NOTE:** This annunciator will already be on due to earlier failure of squib valve.) - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
	RO	Recognizes/reports that the 'B' SBLC pump trips immediately after starting.
	CRS	Direct using other train of SBLC.
	RO	Start the other SBLC train with the SLC ACTUATE switch. (**Note:** The "Other" train is probably the 'A' train.)

Scenario Outline

Op-Test No.: 2	Scenario No.: 2	Event No.: 6	Page 2 of 2

Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged

Time	Position	Applicant's Actions or Behavior
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. **Note:** This annunciator will already be on due to earlier failure of squib valve. - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
		Recognize/report that after starting the 'A' SBLC train, the 'A' SBLC pump discharge pressure is high (approximately relief valve setpoint) and that tank level is not lowering.
	ALL	Determine that SBLC is not injecting boron.
	CRS	Direct injection of SBLC using RWCU.
	CRS	Classify the event as an Alert 2.3.1.2, "A reactor scram has been initiated and the reactor is not shutdown" **Note:** As of this time no boron has been injected using SBLC or RWCU

Scenario Outline

Facility: Pilgrim   Scenario No.: 3   Op-Test No.: 3

Examiners: ____________________   Operators: ____________________

Objectives: To evaluate the applicants' ability to place the standby RBCCW pump in service, respond to a trip of an RPS MG set resulting in a single rod scram, loss of RBCCW leading to high drywell temperature and alternate depressurization with a failure of one SRV to open.

Initial Conditions: 100% power, no equipment out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. It was reported last shift that SBLC tank concentration was 8.3% boron by weight. L.C.O. 3.4.A has been entered. Chemistry is making calculations for an addition. Directions for the shift are to support Chemistry and to remove 'D' RBCCW pump from service to allow repair of seal leak.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place standby RBCCW pump in service, remove 'D' RBCCW pump from service. (Instruction given as part of turnover.)
2	RP-09/ RD-11A	I	Trip of 'B' RPS MG Set/one rod scrams (Rod 42-07). (Failure of RPS solenoid pre-inserted. MG set trip inserted as directed by Chief Examiner.)
3	CW-06	C	Unisolable gross seal failure of RBCCW pump causes loss of 'B' loop RBCCW. (Inserted as directed by Chief Examiner.)
4	TC-14	C	Main Turbine Bypass Valves fail closed. (Pre-inserted)
5	N/A	M	Alternate Depressurization on high DW temp.
6	MS-15	C	'B' SRV fails to open. (Inserted upon initiation of Alternate Depressurization.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 1 Page 1 of 1

Event Description: Place Standby RBCCW Pump In Service, Remove 'D' RBCCW Pump from Service

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct placing 'E' or 'F' RBCCW pump in service and removing 'D' RBCCW pump from service.
	BOP	Start the 'E' or 'F' RBCCW pump from Panel C-1.
	BOP	Verify loop 'B' RBCCW pressure.
	BOP	Stop 'D' RBCCW pump from Panel C-1.
	CRS	Enter tracking LCO per Tech. Spec. 3.5.B.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 2 Page 1 of 1

Event Description: Trip of 'B' RPS MG Set/One Rod Scrams

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce trip of 'B' RPS MG set and one control rod scram.
	CRS	Refer to PNPS 2.4.11: - Diagnose rod as no longer drifting (fully inserted) - Contact Reactor Engineering for direction
	RO	Refer to ARP.
	CRS	Direct transfer RPS bus 'B' to Standby Transformer (Panel C511) and reset half-scram.
	CRS	Direct I&C to determine the cause of the breaker trip and inspect equipment powered from this source for electrical faults.
	CRS	Ensure Tech. Spec. 3.1 and 3.1.1 satisfied.
	CRS	Direct checking and replacement of 'A' RPS fuse for rod 42-07.
	CRS	When advised by Reactor Engineering, brief/direct recovery of scrammed control rod. **Note:** When asked as Reactor Engineer, advise the CRS that rod 42-07 may be withdrawn to its pre-transient position without adjusting recirc flow.
	RO	Recover scrammed rod 42-07 as advised by Reactor Engineering to pre-transient position.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 3 Page 1 of 1

Event Description: Unisolable Gross Seal Failure of RBCCW Pump Causes Loss of 'B' Loop RBCCW

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to/direct actions of PNPS 2.4.42.
	BOP	If the standby pump has not started, then start the standby pump. **Note:** Standby Pump(s) will start, run for 5 seconds, then trip.
	CRS	Direct NLO to investigate the pump(s) trip.
	CRS	Direct NLO to crosstie Loops 'A' and 'B' of RBCCW together.
	RO/CRS/BOP	Monitor increasing drywell pressure and temperature due to loss of drywell cooling.
	CRS	Brief/direct reactor scram prior to reaching 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS	Enter EOP-01 and EOP-03 on high drywell pressure/temperature.
	CRS	Direct reactor water level band of +20 to +40 inches and reactor pressure band of 900-1050 psig.

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 4	Page 1 of 1

Event Description: Main Turbine Bypass Valves Fail Closed

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 5 Page 1 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Review EOP-03. Recognize that drywell spray is prohibited since the drywell atmosphere does not meet the DWSIL curve.
	CRS	Direct actions to have Maintenance and Operations get RBCCW crosstied. (After the plant has been manually scrammed the CRS will be given the report that problems are being encountered with getting the crosstie valves open. The control room will also receive information from the personnel working on the crosstie that it looks like they are almost to get the cross-tie valves open.)
	RO/BOP	Monitor/report on drywell temperature increase.
	CRS	Brief crew on EOP-17 actions prior to reaching 280 degrees F in the drywell.
	CRS	Make the determination that drywell temperature cannot be maintained below 280 degrees F. Transition to EOP-17.
	CRS	Direct alternate depressurization.
	BOP	Open all SRVs as directed. **NOTE: CRITICAL TASK** (**Note:** If reactor pressure approaches saturation pressure for drywell temperature, RPV level oscillations will be inserted)
	RO/CRS/BOP	Recognize oscillations in RPV level indications due to high drywell temperature.

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 5	Page 2 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/enter EOP-16
	RO/BOP	Control injection using EOP-16 Table K systems to maintain: - 4 SRVs open - RPV pressure not decreasing, at least 50 psig above torus pressure but as low as practical

Scenario Outline

Op-Test No.: 3	Scenario No.: 3	Event No.: 6	Page 1 of 1

Event Description: 'B' SRV Fails to Open

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/report that 'B' SRV has failed to open.
	CRS	Enter PNPS 5.3.24 to rapidly depressurize.
	BOP	Perform Alternate Depressurization in accordance with PNPS 5.3.24. **NOTE: CRITICAL TASK** (**NOTE:** While opening the 'B' SRV from the Alternate Shutdown Panel is the most likely action, the candidate would also be allowed by 5.3.24 to use Main Steam Line Drains, HPCI, RCIC, or Head Vents to assist in depressurizing.)
	BOP	Report success in opening SRV 'B' from Alternate Shutdown Panel.
	CRS	Classify the event as a Site Area Emergency 3.1.1.3, " Bulk drywell temperature cannot be maintained <280°F as determined by PNPS procedure 2.1.27, Drywell Temperature Indication"

Scenario Outline

Facility: Pilgrim   Scenario No.: 4   Op-Test No.: Spare

Examiners: ______   Operators: ______

Objectives: To evaluate the applicants' ability to transfer CRD FCV's, respond to a reactor recirc pump runaway, a steam leak on RCIC with isolation failure which will result in alternate depressurization, and a failure of bus A-5 transfer.

Initial Conditions: 100% power, MOL IC, no equipment out of service, 'A' CRD FCV in service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to transfer to 'B' CRD FCV to allow maintenance on the 'A' CRD FCV.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Transfer CRD FCV. (Instruction given as part of turnover.)
2	H1S1	I	'A' recirc pump runaway. (Inserted at direction of Chief Examiner.)
3	RC-06	M	Steam leak in RCIC quad/drive to Alternate Depressurization. (Inserted at direction of Chief Examiner.)
4	CO-R5	C	Auto/Manual isolation of RCIC fails. (Pre-inserted)
5	RPWA 7-8 RPWB 7-8	C	RBIS Failure. (Pre-inserted)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: 4   Scenario No.: 4   Event No.: 1   Page 1 of 1

Event Description: Transfer CRD FCV

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/Direct changeover of flow control valves.
	RO	Establish communications between Control Room and the master control station.
	RO	At Panel C905, place FIC-340-1, CRD Flow Control, setpoint to 0 GPM (controller may be left in automatic).
	RO	Direct NLO to: 1) Slowly open 301-40B, Standby Flow Control Valve 'B' Inlet Valve. 2) Slowly open 301-41B, Outlet Valve from Standby Flow Control Valve. 3) Close 301-41A, Outlet Valve from In-Service Flow Control Valve. 4) Close 301-40A, Inlet Valve for the Previously In-Service Flow Control Valve. 5) On local valve control panel, swap Selector Switch 3B-S1, for electrical signal to E/P unit, from valve in-service to standby valve position. 6) Swap valve 301-29, CRD Air Diversion Valve to Selected Flow Control Valve, from valve in-service position to that of standby valve.
	RO	At Panel C905, slowly raise setpoint of FIC-340-1, CRD flow control, to 50 GPM, observing the flow increase as setpoint increases.
	RO	At Panel C905, check the following ΔP indicators and adjust pressures if needed: - Drive water differential pressure - Cooling water differential pressure

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 2 Page 1 of 2

Event Description: 'A' Recirc Pump Runaway

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize/announce increasing reactor power.
	CRS	Refer to PNPS 2.4.13.
	RO/CRS	Determine the cause of the unexplained rapid increase in reactor power and follow the procedure(s) as appropriate to the transient: • Reactor Recirculation System Speed or Flow Control System Malfunction, PNPS 2.4.20.
	CRS/RO	Refer to PNPS 2.4.20.
	RO	If it is determined that a malfunction in one of the individual pump controllers has occurred, then initiate a scoop tube lockup by depressing the Manual Scoop Tube Positioner Lockup pushbutton (located on Panel C904)
	RO	Report attempt to lock scoop tube as unsuccessful.
	RO	If the malfunction is severe and could lead to a reactor scram, then trip the malfunctioning reactor recirculation pump and refer to PNPS 2.4.17, "Recirculation Pump(s) Trip".
	CRS	Direct tripping of 'A' Reactor Recirc Pump.
	RO	Trip 'A' Reactor Recirc Pump as directed. **NOTE: CRITICAL TASK**
	RO	Adjust speed of 'B' Reactor Recirc Pump to 80%.
	RO	Close affected MO-202-5A, Pump Discharge Valve and re-open after 5 minutes.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 2	Page 2 of 2

Event Description: 'A' Recirc Pump Runaway

Time	Position	Applicant's Actions or Behavior
	RO	Determine Total Core Flow (a) Determine direction of flow through idle jet pumps. (b) Calculate Total Core Flow (TCF).
	RO	Use current reactor power and plot position on the power/flow map using the calculated total core flow. If the plotted position is NOT within an allowable operating region, then perform the actions required in accordance with PNPS 2.1.14, Sections 7.10 and 7.11. **Note:** Expect to be in the monitored region of the power to flow map.
	RO	After the recirculation pump is secured, adjust total core flow to greater than 27.6 Mlb/hr. **Note:** Expected total core flow should be approximately 34 Mlbm/hr.
	CRS	Consult facility operating license. Determine that the plant must be in hot shutdown within 24 hours.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 3	Page 1 of 2
Event Description: Steam Leak in RCIC Quad/Drive to Alternate Depressurization			

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce fire alarm in RCIC.
	BOP	Check/report area temperature alarms in RCIC quad.
	CRS	Dispatch NLO to investigate fire alarm in RCIC quad.
	CRS	Enter EOP-04 on high area temperature in RCIC quad.
	CRS	Direct isolation of RCIC when report of steam leak is received.
	CRS	Direct RP to take EOP-04 surveys.
	CRS	Direct starting all area coolers.
	CRS	Before any area temperature exceeds Max Safe Value, enter EOP-01.
	RO	Place mode switch in shutdown and enter PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to “IRM”.
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	RO	Maintain reactor water level +20 - +40 inches using feedwater.

Scenario Outline

Op-Test No.: 4	Scenario No.: 4	Event No.: 3 Page 2 of 2
Event Description:	Steam Leak in RCIC Quad/Drive to Alternate Depressurization	

Time	Position	Applicant's Actions or Behavior
	CRS	When temperature exceeds Max Safe Value in two areas, exit EOP-01 pressure control leg and enter EOP-17.
	BOP	Open all SRV's. **NOTE: CRITICAL TASK**
	BOP	Verify (Acoustic Monitor or Tailpipe Temperature) that all SRV's are open.
	CRS	Exit EOP-17 and re-enter EOP-01 pressure control leg.

Scenario Outline

Op-Test No.:	4	Scenario No.:	4	Event No.:	4	Page 1 of 1	

Event Description: Auto/Manual Isolation of RCIC Fails

Time	Position	Applicant's Actions or Behavior
	RO/CRS/BOP	Recognize failure of RCIC to isolate
	CRS	Direct manual isolation of RCIC.
	BOP	Attempt to manual close MO-1301-16 and MO-1301-17. Report the attempt was unsuccessful.
	CRS	Dispatch Maintenance or NLO's to attempt to close MO-1301-16 and MO-1301-17.

Scenario Outline

Op-Test No.:	4	Scenario No.:	4	Event No.:	5	Page	1 of 1

Event Description: RBIS Failure

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce failure of RBIS.
	CRS	Direct manually inserting RBIS.
	BOP	Manually initiate RBIS (Panel C-7). **NOTE: CRITICAL TASK**
	BOP	Report success at manually inserting RBIS.
	CRS	Classify the event as a Site Area Emergency 4.2.1.3, " Secondary containment area temperatures exceed the Maximum Safe Operating Value in two or more areas EOP Table L AND a primary system is discharging into the area AND reactor coolant temperature is >212°F with irradiated fuel in the vessel."

Scenario Outline

Facility: Pilgrim Scenario No.: 5 Op-Test No.: 4

Examiners: ______ Operators: ______

Objectives: To evaluate the applicants' ability to respond to a loss of the startup transformer, a leak in the drywell, with a failure of high pressure injection.

Initial Conditions: 100% power, shutdown transformer out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. The plant is currently in day 4 of 7 of Tech.Spec. 3.9.B.1.b. Directions for shift are to continue to operate at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	ED-04	C	Loss of Startup Transformer. (Inserted on direction of Chief Examiner.)
2	N/A	N	Power reduction to 25% per T.S. 3.9.B.2. (Completed as a result of Event 1.)
3	PC-01	M	Leak in drywell/reactor scram. (Inserted on direction of Chief Examiner.)
4	HP-04/ HP-06	I	HPCI flow controller failure. (Pre-inserted to have flow controller fail upon reaching 4250 GPM HPCI flow. Inverter failure inserted upon direction of Chief Examiner.)
5	RC-02	C	RCIC Inop – Trip Throttle Valve Trip. (Pre-inserted to trip when RCIC flow reaches 400 GPM.)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 1	Page 1 of 1

Event Description: Loss of Startup Transformer

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce loss of startup transformer.
	CRS	Direct Electrical Maintenance/NLO to investigate cause of loss of startup transformer.
	CRS	Recognize/announce entry to Tech. Spec. 3.9.B.2 for loss of startup and shutdown transformer.
	CRS	Recognize need to reduce power to less than 25%.
	CRS	Direct reduction in power.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 2 Page 1 of 1

Event Description: Power Reduction to 25% per Tech. Spec. 3.9.B.2

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct plant shutdown in accordance with PNPS 2.1.5.
	CRS	Notify REMVEC and start reducing power.
	RO	As directed, place/verify one of the two feedwater reg valves into manual control in accordance with PNPS 2.2.82, Section 7.4.1. FW reg valve 'B' is preferred.
	RO	As directed, verify/adjust APRM Gain Adjustment Factors (AGAFs) value to less than or equal to 0.975 prior to reducing reactor power below 87% rated.
	RO	Refer to the Pilgrim Power/Flow Map (Attachment 2) and reduce power by reducing core flow at a rate not greater than 1% of rated power per minute.
	RO	Adjust speed/load changer per PNPS 2.1.6.
	RO	At a core flow of 39 Mlb/hr, stop reducing core flow and begin inserting control rods.
	RO	At 60% reactor power, place RFP trip sequence, enable selector switch to "off" and remove one reactor feed pump (RFP) from service.

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 1 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".

Scenario Outline

Op-Test No.:	Spare	Scenario No.:	5	Event No.:	3	Page	2 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01 and EOP-03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 3 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 4 of 7
Event Description: Leak in Drywell/Reactor Scram			

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 3	Page 5 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 6 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 7 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 to +45 inches using Table 'A' systems.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 4 Page 1 of 1

Event Description: HPCI Flow Controller Failure

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce failure of HPCI controller.
	CRS	Direct taking HPCI to manual control.
	BOP	Place HPCI controller in manual. Use HPCI to restore reactor water level.
	CRS	Direct I&C to troubleshoot HPCI controller.
	BOP	Recognize/announce loss of HPCI inverter/loss of HPCI system.
	CRS	Direct I&C to perform further troubleshooting on HPCI.
	CRS	If not already started, start RCIC in injection mode.
	BOP	Start RCIC as directed.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 5 Page 1 of 2

Event Description: RCIC Turbine Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Momentarily depress the RCIC System Injection Mode push button. (Following this step are actions for auto mode, the candidate may elect to use manual mode).
	BOP	Verify the MANUAL START SEQUENCE indicating light is energized.
	BOP	Verify to following: - MO-1301-61, TURBINE SUPPLY VALVE, has opened - MO-1301-49, INJ VLV #2, has opened - MO-1301-60, PUMP MIN FLOW VLV closes when flow exceeds 100 GPM - AO-1301-34 and AO-1301-35, STEAM LINE DRN VLVs, close - AO-1301-12 and AO-1301-13, BAROMETRIC CONDR DRN VLVs, close - MO-1301-62, COOLING WTR SUPPLY VLV, opens - P-222, VACUUM PUMP, starts - P-221, CONDENSATE PUMP, starts - RCIC flow levels off and stays at 400 GPM, indicating that FIC-1340-1, INJECTION FLOW CONTROL, has control of turbine speed.

Scenario Outline

Op-Test No.: Spare	Scenario No.: 5	Event No.: 5	Page 2 of 2
Event Description: RCIC Turbine Trip			

Time	Position	Applicant's Actions or Behavior
	BOP	Perform the following: (**Note**: These are the steps for manual mode. The candidate may elect to use the auto mode.) - Verify FIC-1340-1,INJECTION FLOW CONTROL, is in AUTO and set fo 400 GPM - OPEN/VERIFY OPEN MO-1301-62, COOLING WTR SUPPLY VLV - START/VERIFY RUNNING P-222, VACUUM PUMP - OPEN/VERIFY OPEN MO-1301-60 PUMP MIN FLOW VLV - SIMULTANEOUSLY OPEN MO-1301-61, TURBINE SUPPLY VLV AND MO-1301-49 INJ VLV #2 - OBSERVE that flow is supplied to reactor vessel and stabilizes at 400 GPM - VERIFY MO-1301-60, PUMP MIN FLOW VLV closes as flow increases - MONITOR system operation and adjust FIC-1340-1 as necessary to maintain desired reactor water level
	BOP	Recognize/announce RCIC turbine trip.
	BOP	Check RCIC Turbine Stop Valve closed
	BOP	Close MO-1301-49 INJ VLV #2.
	CRS	Direct NLO to check RCIC turbine. (Report will be that the turbine trip throttle valve is tripped and problems are being encountered in getting the valve to stay reset.)
	CRS	Classify the event as an Alert 3.4.1.2, “Primary containment pressure cannot be maintained <2.2 psig.”

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No: 204-01-01-002

Task Title: Establish RWCU Reject to Main Condenser During Plant Startup

JPM No: 2

K/A Reference: 204000A403 3.2/3.1

Position: RO/SRO

Examinee: ______

NRC Examiner: ______

Date: ______

Method of testing:

Simulated Performance ______

Actual Performance ✓

Classroom ______

Simulator ✓

Plant ______

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Preparations for plant startup are being made. CRD has just been started and reactor water level is at 45-50" and is increasing due to CRD cooling water.

Task Standard: The system shall be operated in accordance with all applicable precautions and limitations. The system procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of order.

Required Materials: None.

General References: PNPS 2.2.83

Initiating Cue: "[Operator's name], establish RWCU reject flow to the main condenser and establish a 60 GPM reject flow rate. Inform me when the task is complete."

Time Critical Task: NO

Validation Time: 10 minutes

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

______ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Operator reviews Precautions and Limitations and Section 7.3.1 of PNPS 2.2.83.

Comment:

✓ **Performance Step 2:** Open MO-1201-78, Reject to Condenser Block Valve.

Standard: MO-1201-78, Control Switch (C904), rotated clockwise to fully open valve. Red light on/green light off.

Comment: If asked as CRS, inform candidate the MO-1201-78 should be fully opened.

______ **Performance Step 3:** Slowly open CV-1239, Reject Flow Control Valve, to establish desired flow rate.

Standard: Knob for CV-1239 (C904 vertical) rotated clockwise until FI-1290-11 (C904 vertical) reads approximately 60 GPM.

Comment: Based on low pressure conditions, the desired flow rate of 60GPM cannot be established without opening MO-1201-76, Restricting Orifice Bypass Valve. Procedural guidance allows opening of MO-1201-76 as directed by CRS. If asked, direct candidate to open MO-1201-76 as necessary to obtain 60 GPM.

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 4:** Slowly open MO-1201-76, Restricting Orifice Bypass Valve, to establish desired flow rate.

Standard: Control switch for MO-1201-76 (C904) is rotated clockwise to establish a flow rate of approximately 60 GPM.

Comment:

Performance Step 5: Monitor non-regenerative heat exchanger outlet temperature while increasing reject flow.

Standard: T/SS-1290-28 (904 vertical) placed in position 3. TI-1290-21 (904 vertical) monitored.

Comment:

✓ **Performance Step 6:** Reduce RWCU flow as required to maintain non-regenerative heat exchanger outlet temperature less than 130°F by any of the following methods:

- Throttle closed MO-1201-80, Return Isolation Valve
- Throttle closed FV-1279-15A and FV-1279-15B
- Throttle closed CV-1239, Reject Flow Control Valve

Standard: Flow controlled such that TI-1290-21 (C904 vertical) is less than 130°F.

Comment: Critical portion is maintaining flow such that non-regenerative heat exchanger outlet temperature is less than 130°F.

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 7:** Slowly open CV-1239, Reject Control Valve to establish desired reject flow rate.

Standard: Control knob for CV-1239 (C904 vertical) and adjust such that FI-1290-11 (C904 vertical) reads approximately 60 GPM.

Comment:

Terminating Cue: When a reject flow rate of 60 GPM has been established the candidate should inform the examiner that the task is complete.

Information Provided to Candidate

Initial Conditions: Preparations for plant startup are being made. CRD has just been started and reactor water level is at 45-50" and is increasing due to CRD cooling water.

Initiating Cue: Establish RWCU reject flow to the main condenser and establish a 60 GPM reject flow rate. Inform me when the task is complete.

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No: 241-01-01-028

Task Title: Transfer From the EPR to the MPR

JPM No: 3

K/A Reference: 241000A103 3.9/3.8

Position: RO/SRO

Examinee: ____________________

NRC Examiner: ____________________

Date: ____________________

Method of testing:

Simulated Performance ____________

Actual Performance ✓

Classroom ____________

Simulator ✓

Plant ______

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions:

- You are the ATC operator.
- The plant is operating at approximately 50% power.
- Plant pressure control is currently on the EPR.
- The MPR must be placed in service to facilitate a short vendor inspection of the EPR.
- Another operator is standing by to tag the EPR as soon as it is removed from service.
- Reactor Engineering has performed an evaluation that allows operation for 24 hours with the EPR out of service.

Task Standard: The system shall be operated in accordance with all applicable precautions and limitations. The system procedure and the immediate actions of the off-normal procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of sequence.

Required Materials: None

General References: PNPS 2.2.99, PNPS 2.4.37, and PNPS 2.1.6

Job Performance Measure
Worksheet

Initiating Cue: "[Operator's name], you are to remove the EPR from service in accordance with procedure 2.2.99, notify the field operator to tag out the EPR and then stand by to place the EPR back in service once the inspection is complete. Inform me when the EPR is returned to service."

Time Critical Task: NO

Validation Time: 15 Minutes

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Operator reviews Precautions and Limitations and Section 7.4.2 of PNPS 2.2.99. Operator may also review 2.4.37, "Turbine Control Systems Malfunctions".

Comment: All components are located in control room panel C-2 horizontal section unless otherwise noted.

✓ **Performance Step 2:** Place the MPR setpoint control switch to "LOWER" to adjust to a setpoint slightly below the EPR setpoint, per ZI-3021 and ZI-3013.

Standard: Operator rotates the "MPR SETPT" control switch to the "LOWER" position until the "MPR SETPOINT" (ZI-3021) indication is below the "EPR SETPOINT" (ZI-3013) indication.

Comment:

_____ **Performance Step 3:** Verify that the MPR has taken control by response of regulator instruments, steam pressure and MPR setpoint pressure control red light.

Standard: Operator observes that "MPR CONTROL POSITION" (ZI-3020) indicator rises and "EPR CONTROL POSITION" (ZI-3014) drops off to minimum. Operator looks at PR- 3050 (or other reactor/main steam pressure) and observes a slight decrease in main steam pressure. MPR red light on; EPR green light on.
The candidate should then contact the field operator (simulator operator) when the EPR is removed from service so he can start the tagout.

Comment: Simulator operator should:

1) Remove power to the EPR.
2) Tell the candidate via CRS that work has begun.
3) Insert pressure oscillations.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 4:** Operator identifies that RPV pressure is oscillating.

Standard: Operator observes ZI-3020 pointer oscillating or observes reactor pressure indication is oscillating.

Comment:

Performance Step 5: Operator observes APRM's or asks another operator to do so, and determines that reactor power is less than 90%.

Standard: Operator looks at the APRM recorders on 905 panel, or asks another operator to do so.

Comment: Reactor power was turned over as being at 50%.

Performance Step 6: Operator rotates the MPR switch to the lower position to take control with the MPR.

Standard: MPR red light on, green light off.

Comment: This step may be omitted since the MPR is already in control.

Performance Step 7: Operator rotates the MPR switch to the raise position to allow the EPR to take control.

Standard: MPR red light off, green light on.

Comment: Not performed since the EPR is tagged off.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Operator determines that pressure oscillations are still occurring.

Standard: Operator notifies CRS that pressure is still oscillating.

Comment: If the operator does not recommend scramming the reactor when he reports oscillations are continuing, ask him what action is dictated by procedure.

✓ **Performance Step 9:** Operator manually scrams the reactor.

Standard: Mode switch on C-905 is in shutdown.

Comment:

Terminating Cue: When the candidate has scrammed the reactor the examiner will inform him that the task is complete.

Information Provided to Candidate

Initial Conditions:

- You are the ATC operator.
- The plant is operating at approximately 50% power.
- Plant pressure control is currently on the EPR.
- The MPR must be placed in service to facilitate a short vendor inspection of the EPR.
- Another operator is standing by to tag the EPR as soon as it is removed from service.
- Reactor Engineering has performed an evaluation that allows operation for 24 hours with the EPR out of service.

Initiating Cue: Remove the EPR from service in accordance with procedure 2.2.99, notify the field operator to tag out the EPR and then stand by to place the EPR back in service once the inspection is complete. Inform me when the EPR is returned to service."

Job Performance Measure
Worksheet

Facility: Pilgrim	Task No: 200-05-04-072
Task Title: Cross-tie Fire Water with RHR	JPM No: 4
K/A Reference: 295031A108 3.8/3.8	Position: RO/SRO
Examinee:	NRC Examiner:
Date:	

Method of testing:

Simulated Performance ✓	Actual Performance
Classroom	Simulator Plant ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Due to a large LOCA, the need exists to cross-tie Fire Water to RHR. PNPS 5.3.26 is complete through Step 2.1[1](a)(4).

Task Standard: The Fire Water System is lined up to the RHR System in accordance with PNPS 5.3.26. The procedure shall be followed without failure of any critical elements. Critical steps must be performed in order. Other tasks may be performed out of sequence.

Required Materials: Locked valve key (for 1001-53 valve).

General References: 5.3.26

Initiating Cue: "[State the operator's name], you are to continue lining up to crosstie Fire Water with RHR leaving the 'B' RHR loop isolated. Inform the control room when ready to start the motor driven fire water pump. Inform me when the task is complete".

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: PNPS 5.3.26 reviewed.

Comment:

_____ **Performance Step 2:** Obtain locked valve key for 1001-53.

Standard: Locked valve key in candidates possession. Key may be obtained from Control Room Annex.

Comment:

_____ **Performance Step 3:** Locate valve 1-DR-121 and simulate checking valve closed.

Standard: Operator locates 1-DR-121, and simulates taking the valve handwheel in the closed direction.

Comment: Cue the candidates that the handwheel will not move in the clockwise direction.

Note: 1-DR-121 is located approximately 3' South of the West corner of MCC-B15.

_____ **Performance Step 4:** Locate, remove the locking tie wrap, and simulate closing valve 10-HO-516.

Standard: Operator locates valve 10-HO-516, simulates removing the tie wrap, and closes the valve.

Comment: Cue the candidate that the tie wrap is removed and the valve is rotating in the clockwise direction. The valve stops and will not move any further in the clockwise direction.

Note: 10-HO-516 and 10-HO-517 are located adjacent to valve 1-DR-121.

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

____ **Performance Step 5:** Locate, remove the locking tie wrap, and simulate closing valve 10-HO-517.

Standard: Operator locates valve 10-HO-517, and simulates removing the tie wrap and closing the valve.

Comment: Cue the candidate that the tie wrap is removed and the valve is rotating in the clockwise direction. The valve stops and will not move any further in the clockwise direction.

✓ **Performance Step 6:** Locate, remove the locking tie wrap, and simulate opening valve 10-HO-511.

Standard: Operator locates valve 10-HO-511, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve.

Note: 10-HO-511 is located slightly south and 5' above MCC-B15.

✓ **Performance Step 7:** Locate, remove the locking tie wrap, and simulate opening valve 8-I-56.

Standard: Operator locates valve 8-I-56, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve.

Note: 8-I-56 is located above the RHR/Fire Water spool piece on the 23' level of the Aux Bay.

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Locate, remove the locking tie wrap, and simulate opening valve 3-I-57.

Standard: Operator locates valve 3-I-57, simulates removing the tie wrap, and using the installed chain operator, opens the valve.

Comment: Cue the candidate that the tie wrap is removed and the chain is pulled, causing the valve to rotate in the counterclockwise direction. The chain stops and will not move any further. The valve stem is fully extended from the valve.

Note: 3-I-57 is located below valve 8-I-56.

Performance Step 9: Locate and simulate opening valve ¾-TT-103.

Standard: Operator locates valve ¾-TT-103, and simulates opening the valve.

Comment: Cue the candidate that the valve handwheel is moving in the counterclockwise direction, and then stops.

Note: 3/4-TT-103 is located above the spool piece.

Performance Step 10: Locate and simulate opening valve ¾-RT-5.

Standard: Operator locates valve ¾-RT-5, and simulates opening the valve.

Comment: Cue the candidate that the valve handwheel is moving in the counterclockwise direction, and then stops.

Note: 3/4-RT-5 is located adjacent to ¾-TT-103.

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance step 11:** Locate and simulate closing HO-1001-53, RHR Manual Cross-tie Valve.

Standard: Operator locates HO-1001-53, simulates unlocking the handwheel and closing the valve.

Comment: Cue the candidate that the lock is removed, the valve handwheel is moving in the clockwise direction, and then stops.

Note: HO-1001-53 is located on the CRD mezzanine against the Torus room wall

Terminating Cue: When Fire Water has been crosstied to the RHR system (with the 'B' RHR loop isolated) and the control room has been informed to start the motor driven fire water pump the candidate should inform the examiner that the task is complete.

Information Provided to Candidate

Initial Conditions: Due to a large LOCA, the need exists to cross-tie Fire Water to RHR. PNPS 5.3.26 is complete through Step 2.1[1](a)(4).

Initiating Cue: "Continue lining up to crosstie Fire Water with RHR leaving the 'B' RHR loop isolated. Inform the control room when ready to start the motor driven firewater pump. Inform me when the task is complete".

Job Performance Measure
Worksheet

Facility: Pilgrim

Task No: 212-01-04-003

Task Title: Transfer RPS 'B' to Alternate Power and Secure 'B' RPS MG Set

JPM No: 5

K/A Reference: 212000A201 3.7/3.9

Position: RO/SRO

Examinee: ______

NRC Examiner: ______

Date: ______

Method of testing:

Simulated Performance ✓

Actual Performance ______

Classroom ______

Simulator ______

Plant ✓

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Plant conditions are as follows:

- The 'B' RPS MG set requires repairs.
- The alternate power supply is available for use. EPA #6 circuit breaker is closed.
- "POWER OUT" light is energized on EPA #6.

Task Standard: 'B' RPS bus transferred to alternate power supply and 'B' RPS MG set secured. The RPS system shall be operated in accordance with all applicable system precautions and limitations. The system procedure shall be followed without failure of critical elements. Critical steps must be performed in order. Other steps may be performed out of sequence.

Required Materials: Electrical switchgear key (CR-50)

General References: PNPS 2.2.79

Initiating Cue: "[Operator's name], utilizing this copy of PNPS procedure 2.2.79, transfer RPS bus 'B' to the alternate power supply and secure the 'B' RPS MG set. Inform me when the task is complete."

Time Critical Task: NO

Validation Time: 10 minutes

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

____ **Performance Step 1:** Review the applicable sections of the procedure.

Standard: Operator reviews Precautions, Limitations and section 7.1.5 of PNPS 2.2.79.

Comment:

✓ **Performance Step 2:** Unlock cabinet C511 with electrical switchgear key.

Standard: Operator locates and unlocks correct cabinet.

Comment:

✓ **Performance Step 3:** Push "B Generator Feed" breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 4:** Push "B2 ALTERNATE FEED TO BUS B" breaker up to the "ON" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the up position."

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 5:** Push EPA #4 circuit breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 6:** Push EPA #3 circuit breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

✓ **Performance Step 7:** Push MG set B Output breaker down to the "OFF" position.

Standard: Operator locates correct breaker and motions in the proper direction.

Comment: Cue the candidate that, "You hear a click and the breaker is in the down position."

PERFORMANCE INFORMATION

(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Push and hold STOP pushbutton until:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Standard: Candidate locates and depresses the STOP pushbutton until:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Comment: After STOP pushbutton is depressed wait 10 seconds and cue the candidate that:

1) Red "Motor ON" light on panel E22 is de-energized and
2) Green "Motor OFF" light on panel E22 is energized and
3) Both white generator lights on panel E22 are de-energized

Terminating Cue: When RPS bus 'B' has been transferred to the alternate power supply and the 'B' RPS MG set secured the candidate should inform the examiner that the task is complete.

Information Provided to Candidate

Initial Conditions: Plant conditions are as follows:

- The 'B' RPS MG set requires repairs.
- The alternate power supply is available for use. EPA #6 circuit breaker is closed.
- "POWER OUT" light is energized on EPA #6.

Initiating Cue: "Utilizing this copy of PNPS procedure 2.2.79, transfer RPS bus 'B' to the alternate power supply and secure the 'B' RPS MG set. Inform me when the task is complete."

Job Performance Measure
Worksheet

Facility:	Pilgrim	Task No:	223-04-01-001
Task Title:	Manually Start SGBT and Vent the Torus	JPM No:	6
K/A Reference:	261000A404 3.3/3.4	Position:	RO/SRO
Examinee:		NRC Examiner:	
Date:			

Method of testing:

Simulated Performance		Actual Performance	✓
Classroom		Simulator ✓	Plant

Read to the Examinee:

"I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied."

Initial Conditions: Plant conditions are as follows:

- The plant is at power with the mode switch in "RUN".
- The OSS has determined that a reduction in torus airspace pressure will restore the drywell-to-torus differential pressure to within specification".

Task Standard: The torus is initially aligned correctly for the torus venting evolution. The operator recognizes the alarms/indications associated with a leak in the drywell and takes action to secure the torus venting lineup. The primary containment atmosphere control and standby gas treatment systems shall be operated in accordance with all applicable system precautions and limitations. The system procedure shall be followed without failure of critical tasks.

Required Materials: None

General References: PNPS 2.2.70, Rev. 66

Initiating Cue: "[Operator's name], vent the torus using the 'B' train of Standby Gas Treatment in accordance with PNPS 2.2.70, Section 7.3 and 7.3.3. Inform me when the task is complete."

Time Critical Task: NO

Validation Time: 15 minutes

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 1:** Operator reviews PNPS 2.2.70, Section 7.3.

Standard: PNPS 2.2.70, Section 7.3 reviewed.

Comment:

_____ **Performance Step 2:** Operator refers to Technical Specifications 3.7.A.1.k.

Standard: Operator references T.S. Section 3.7.A.1.k.

NOTE: T.S. 3.7.A.1.k – The differential pressure may be reduced to less than 1.17 psid for a maximum of four (4) hours for maintenance activities on the differential pressure control system and during required operability testing of the HPCI system, the relief valves, the RCIC system and the drywell suppression chamber vacuum breakers.

Comment:

_____ **Performance Step 3:** Operator references Section 7.10 of PNPS 2.2.70 to determine conditions which may indicate a leak in containment and require securing venting.

Standard: Operator references the following "NOTE" of Section 7.10:

The following alarms may be indicative of a reactor coolant leak inside containment:

- "C19A/B TROUBLE" (C904LC-B3)
- DRYWELL EQUIPMENT/FLOOR DRAIN SUMP HIGH FLOW" on Panel C20
- Any drywell cooler leaking alarm on Panel C7L

The purpose of this section is to specify the actions required when indication of a reactor coolant leak exists.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 4:** Operator rotates "AO-5041A, Torus Normal Exhaust Isolation Valve", control switch to the "OPEN" position.

Standard: Red light on, green light off.

Comment:

✓ **Performance Step 5:** Operator rotates "AO-5041B, Torus Normal Exhaust Isolation Valve", control switch to the "OPEN" position.

Standard: Red light on, green light off.

Comment:

✓ **Performance Step 6:** Operator rotates "AO-N-98, Contaminated Exhaust to SGTS Inlet Plenum", control switch to the "OPEN" position.

Standard: Red light on, green light off.

Comment:

✓ **Performance Step 7:** Operator rotates "AO-N-101, Refuel Floor Exhaust to SGTS Inlet Plenum", control switch to the "OPEN" position.

Standard: Red light on, green light off.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

✓ **Performance Step 8:** Operator rotates "AO-N-112, Train 'B' Outlet Damper", control switch to the "OPEN" position.

Standard: Red light on, green light off.

Comment:

Performance Step 9: Operator verifies "VEX-210A, Standby Gas Fan 'A'", control switch in "AUTO" position.

Standard: VEX-210A control switch in "AUTO".

Comment:

✓ **Performance Step 10:** Operator rotates "AO-N-106, Train 'B' Inlet Damper", control switch to the "OPEN" position.

Standard: Damper AO-N-106 has red light on, green light off. Fan VEX-210B is red light on, green light off.

Comment:

Performance Step 11: Operator proceeds to the main control room to report start time to CRS for recording in the CRS log.

Standard: Operator reports VEX-210B start time to CRS.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

____ **Performance Step 12:** Operator acknowledges annunciators C7L-C5 & C6 and C904LC-B3.

Standard: Operator references ARP for alarms received after pressing alarm acknowledge PB on C7 and C904.

Comment:

____ **Performance Step 13:** Operator reports receipt of annunciators to CRS.

Standard: Operator reports alarming conditions and ARP actions for C904LC-B3 and C7L-C5 & C6.

Comment:

✓ **Performance Step 14:** Operator exits procedure 2.2.70, Section 7.3.3 and enters Section 7.10.

Standard: Operator exits Section 7.3.3 and enters Section 7.10.

Comment:

____ **Performance Step 15:** Operator verifies "SV-5030A, N_2 Makeup Supply Block Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 16:** Operator verifies "AO-5035A, Drywell Purge Supply Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

_____ **Performance Step 17:** Operator verifies "AO-5036A, Torus Purge Supply Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

✓ **Performance Step 18:** Operator verifies "AO-5041A, Torus Normal Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

✓ **Performance Step 19:** Operator verifies "AO-5041B, Torus Normal Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

______ **Performance Step 20:** Operator verifies "AO-5042A, Torus Purge Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

______ **Performance Step 21:** Operator verifies "AO-5042B, Torus Purge Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

______ **Performance Step 22:** Operator verifies "AO-5043A, Drywell Normal Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

______ **Performance Step 23:** Operator verifies "AO-5043B, Drywell Normal Exhaust Isolation Valve", control switch in the "CLOSE" position.

Standard: Green light on, red light off.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

_____ **Performance Step 24:** Operator verifies “AO-5044A, Drywell Purge Exhaust Isolation Valve”, control switch in the “CLOSE” position.

Standard: Green light on, red light off.

Comment:

_____ **Performance Step 25:** Operator verifies “AO-5044B, Drywell Purge Exhaust Isolation Valve”, control switch in the “CLOSE” position.

Standard: Green light on, red light off.

Comment:

✓ **Performance Step 26:** Operator rotates “AO-N-106, Train ‘B’ Inlet Damper”, control switch to the “AUTO” position.

Standard: Green light on, red light off.

Comment:

_____ **Performance Step 27:** Operator verifies “AO-N-99, Train ‘A’ Inlet Damper”, control switch to the “AUTO” position.

Standard: Green light on, red light off.

Comment:

PERFORMANCE INFORMATION
(Critical steps denoted with a check mark)

______ **Performance Step 28:** Operator verifies "AO-N-108, Train 'A' Outlet Damper", control switch to the "AUTO" position.

Standard: Green light on, red light off.

Comment:

✓ **Performance Step 29:** Operator verifies "AO-N-112, Train 'B' Outlet Damper", control switch to the "AUTO" position.

Standard: Green light on, red light off.

Comment: Procedurally, AO-N-98, Contaminated Exhaust to SGTS Inlet Plenum, and AO-N-101, Refuel Floor Exhaust to SGTS Inlet Plenum, are not required to be closed. However, if the candidate asks permission to close these valves give direction to do so.

Terminating Cue: When 'B' SBGT has been started and subsequently secured due to the drywell leak, the candidate should inform the examiner that the task is complete.

Information Provided to Candidate

Initial Conditions: Plant conditions are as follows:

- The plant is at power with the mode switch in "RUN".
- The OSS has determined that a reduction in torus airspace pressure will restore the drywell-to-torus differential pressure to within specification".

Initiating Cue: Vent the torus using the 'B' train of Standby Gas Treatment in accordance with PNPS 2.2.70, Section 7.3 and 7.3.3. Inform me when the task is complete."