12/27/95

NOTE TO: NRC Document Control Desk
Mail Stop 0-5-D-24

FROM: Virgil Curley, Licensing Assistant
Operating Licensing Branch, RI

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON
March 12, 15-19, 1995, AT Limerick Unit 1+2
DOCKET #50-352/353

On March 12, 15-19 1995 Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

Item #1 - a) Facility submitted proposed + final outline and initial exam submittal (proposed + final walk-through) designated for distribution under RIDS Code A070.

b) As given operating examination, designated for distribution under RIDS Code A070.

Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

A070

PDR ADOCK 05000352

Limerick Training Center
341 Longview Road
Linfield, PA 19468-1041

Original Submittal

PECO NUCLEAR

A UNIT OF PECO ENERGY

PECO Energy Company
Limerick Generating Station
PO Box 2300
Sanatoga, PA 19464-0920
610 718 4000
Fax 610 718 4028

February 16, 1999

Mr. Herb Williams, Chief Examiner
U. S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Subject: Limerick Generating Station
1999 Licensed Operator Examination

Dear Mr. Williams:

Enclosed is the 1998-1999 NRC Initial License Examination for the scheduled Operator Examination to be administered in March 1999.

These materials are to be withheld from public disclosure until after the examinations are complete.

Respectfully,

Peter M Orpha

P. M. Orphanos
Manager, Operations Training

Enclosures

Facility: Limerick Generating Station	Date of Exam: 3/12/99	Exam Level: RO/SRO		
	Item Description	Initial		
		a	b	c
1.	Questions and answers technically accurate and applicable to facility	WMT	PM GMS	
2.	NRC K/As and learning objectives referenced for all questions	WMT	PM GMS	
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per 10 CFR 55.43	WMT	PM GMS	
4.	Question duplication from [practice exams, quizzes, and] the last two licensing exams is no more than 25 percent [N/A for NRC-developed exams]	WMT	PM GMS	
5.	No question duplication from the license screening/audit exam	WMT	PM GMS	
6.	Bank use meets limits (no more than 50 percent from the bank / at least 10 percent new)	WMT	PM GMS	
7.	At least 50 percent of the questions on the exam (including all new questions) are written at the comprehension/analysis level	WMT	PM GMS	
8.	References/handouts provided do not give away answers	WMT	PM GMS	
9.	Question distribution meets previously approved examination outline; deviations are justified	WMT	PM GMS	
10.	Question psychometric quality and format meet ES, Appendix B, guidelines	WMT	PM GMS	
11.	The exam contains 100, one-point, multiple choice items; the total is correct and corresponds to value on cover sheet	WMT	PM GMS	

	Printed Name / Signature	Date
a. Author	William M. Tracey / William M Tracey	2/15/99
b. Facility Reviewer(*)	Pete M Orphanos / Peter M Orphanos Gary M Schierbaum / Gary M Schierbaum	2/15/99 2-15-99
c. NRC Chief Examiner(*)		
d. NRC Regional Supervisor(*)		

Note: (*) The facility reviewer's signature is not applicable for NRC-developed examinations; two independent NRC reviews are required.
( ) See special instructions (Section E.2.c) for shaded boxes.

A070

ES-301 Operating Test Quality Assurance Checklist Form ES-301-3

Facility: Limerick Generating Station	Date of Examination: 3/12/99	Operating Test Number:		
	1. GENERAL CRITERIA	Initials a	Initials b	Initials c
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	WMT	PMW GMS	
b.	Repetition from operating tests used during previous licensing examinations is within acceptable limits (30% for the walk-through) and should not compromise test integrity.	WMT	PMW GMS	
c.	Day-to-day repetition between this and other operating tests to be administered is within acceptable limits (30% of bank JPMs for the walk-through; none for the simulator).	WMT	PMW GMS	
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	WMT	PMW GMS	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	WMT	PMW GMS	
	2. WALK-THROUGH (CATEGORY A & B) CRITERIA	—	—	—
a.	Each JPM includes the following, as applicable: · initial conditions · initiating cues · references and tools, including associated procedures · validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee · specific performance criteria that include: - detailed expected actions with exact criteria and nomenclature - system response and other examiner cues - statements describing important observations to be made by the applicant - criteria for successful completion of the task - identification of critical steps and their associated performance standards - restrictions on the sequence of steps, if applicable	WMT	PMW GMS	
b.	Prescripted (Administrative and JPM follow-up) questions are predominantly open reference and meet the criteria in Appendix C.	WMT	PMW GMS	
c.	There are no direct look-up questions; memory level questions do not permit the use of references.	WMT	PMW GMS	
d.	At least 20 percent of the JPMs and questions on each test are new or significantly modified.	WMT	PMW GMS	
	3. SIMULATOR (CATEGORY C) CRITERIA	—	—	—
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	WMT	PMW GMS	

	Printed Name / Signature	Date
a. Author	William M Tracey / William M. Tracey	2/15/99
b. Facility Reviewer	G. M. Schiendelman / GMS; P. Papanos / Peter Papanos	2/15/99; 2/14/99
c. NRC Chief Examiner (*)		
d. NRC Supervisor (*)		

(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.

Facility: Limerick Generating Station	Date of Exam: 3/12/99	Scenario Numbers: A1(2)/B1(2)/C1(2)/D1(2)/E1(2)	Operating Test No.:

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

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

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A1	C1	D1	
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1			2	
	Normal	0			1	
	Instrument	1			2	
	Component	1			2	
	Major	1			3	
SRO-I #1						
As SRO	Reactivity	0	1	1		
	Normal	1	2	2		
	Instrument	1	4	5		
	Component	1	3	3		
	Major	1	5	4		
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A2	C2	D2	
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1			2	
	Normal	0			1	
	Instrument	1			2	
	Component	1			2	
	Major	1			3	
SRO-I #2						
As SRO	Reactivity	0	1	1		
	Normal	1	2	2		
	Instrument	1	4	5		
	Component	1	3	3		
	Major	1	5	4		
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A1	B1	D1	
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1	1			
	Normal	0	2			
	Instrument	1	5			
	Component	1	6			
	Major	1	5			
SRO-I #3						
As SRO	Reactivity	0		2	2	
	Normal	1		1	1	
	Instrument	1		3	2	
	Component	1		5	3	
	Major	1		6	3	
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			B2	D2	E1	
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0	2	2		
	Normal	1	1	1	1	
	Instrument	1	3	2	3	
	Component	1	5	3	2	
	Major	1	6	3	3	

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A2	B1	C1	
RO #1	Reactivity	1	1			
	Normal	1	2		2	
	Instrument	2	5	5	4	
	Component	2	6	5	5	
	Major	1	5	6	4	
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A1	B1	C2	
RO #2	Reactivity	1		2		
	Normal	1		1	2	
	Instrument	2	4	3	4	
	Component	2	3	4	5	
	Major	1	5	6	4	
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			A2	B2	E1	
RO #3	Reactivity	1		2		
	Normal	1		1	1	
	Instrument	2	4	3		
	Component	2	3	4	4	
	Major	1	5	6	3	
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			C1	D1	E1	
RO #4	Reactivity	1	1			
	Normal	1		1		
	Instrument	2	4	2	3	
	Component	2	3	3	2	
	Major	1	4	3	3	
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number			
			B2	C2	D2	
RO #5	Reactivity	1		1		
	Normal	1			1	
	Instrument	2	5	4	2	
	Component	2	5	3	3	
	Major	1	6	4	3	
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2) Reactivity manipulations must be significant as defined in Appendix D.

Author: William M. Tracey William M. Tracey

Chief Examiner: _____

Competencies	Applicant #1 RO/(SRO-I)/SRO-U				Applicant #2 RO/(SRO-I)/SRO-U				Applicant #3 RO/(SRO-I)/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2,4	3,5	2,3	/	2,4	3,5	2,3	/	2,5,6	3,4,6	2,3	/
Diagnose Events and Conditions	2,3,4,6	3,4,5	2,3	/	2,3,4,6	3,4,5	2,3	/	5,6,2	3-7	2,3	/
Understand Plant and System Response	4,5,6	3,4,5	2,3	/	4,5,6	3,4,5	2,3	/	5,6,2	3,4,6,7	2,3	/
Comply With and Use Procedures (1)	3,4,5,6	1,3,4,5	2,3	/	3,4,5,6	1,3,4,5	2,3	/	1,2,5,6	1,3,4-7	2,3	/
Operate Control Boards (2)			2,3	/			2,3	/	1,2,5,6			/
Communicate and Interact With the Crew	1-6	1-5	2,3	/	1-6	1-5	2,3	/	1,2,5,6	1-7	1-3	/
Demonstrate Supervisory Ability (3)	1-6	1-5		/	1-6	1-5		/		1-7	1-3	/
Comply With and Use Tech. Specs. (3)	2	3		/	2	3		/		1,3	1,2	/

Notes:

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

Instructions:

Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

Author: William M Tracey
Chief Examiner: William M. Tracey

Competencies	Applicant #24 RO/SRO-I/(SRO-U)				Applicant #25 (RO)/SRO-I/SRO-U				Applicant #26 (RO)/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	3,4 6	2,3	2,4	/	2,5, 6	4,5, 6,7	3,4, 5	/	2,3, 5,6	2,5, 6	3,4, 5	/
Diagnose Events and Conditions	3-7	2,3	2,4	/	2,5, 6	4,5	3,4, 5	/	2-6	2,5, 6	3,4, 5	/
Understand Plant and System Response	3,4, 6,7	2,3	2,3, 4	/	2,5, 6	4,5	3,4, 5	/	2,4, 5,6	1,2, 5,6	3,4, 5	/
Comply With and Use Procedures (1)	1,3, 4-7	2,3	2,3, 4	/	1,2, 5,6	4,5	1-5	/	3-6	1,2, 5,6	1-5	/
Operate Control Boards (2)				/	1,2, 5,6	4,5	1-5	/	4-6	1,2, 5,6	1-5	/
Communicate and Interact With the Crew	1-7	1-3	1-4	/	2,5, 6,1	4,5 6	1-5	/	2-6	1,2, 5,6	1-5	/
Demonstrate Supervisory Ability (3)	1-7	1-3	1-4	/				/				/
Comply With and Use Tech. Specs. (3)	1,3	1,2	2	/				/				/

Notes:

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

Instructions:

Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

Author: William M. Tracey
Chief Examiner: William M. Tracey

Competencies	Applicant #17 (RO) SRO-I/SRO-U				Applicant #18 (RO) SRO-I/SRO-U				Applicant #19 (RO) SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2,3, 5,6	2,5, 6	2,4	/	3,4, 5	2,3	2	/	4,5, 6,7	3,4, 5	2,3	/
Diagnose Events and Conditions	2-6	2,5, 6	2,4	/	3,4, 5	1,2, 3	2,3	/	4,5	3,4, 5	1,2, 3	/
Understand Plant and System Response	2,4, 5,6	1,2, 5,6	2,4	/	1,3, 4,5	1,2, 3	2,3	/	4,5	1,3, 4,5	1,2, 3	/
Comply With and Use Procedures (1)	3-6	1,2, 5,6	1,2 4	/	1,3, 4,5	1,2, 3	2,3	/	4,5	1,3 4,5	1,2, 3	/
Operate Control Boards (2)	4-6	1,2, 5,6	1,2, 4	/	1,3, 4	1,2, 3	2,3	/	4,5	1,3, 4	1,2, 3	/
Communicate and Interact With the Crew	2-6	1,2, 5,6	1,2, 4	/	1,3, 4	1,2, 3	2,3	/	4,5, 6	1,3, 4	1,2, 3	/
Demonstrate Supervisory Ability (3)				/				/				/
Comply With and Use Tech. Specs. (3)				/				/				/

Notes:

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

Instructions:

Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

Author: William M. Tracey
Chief Examiner: William M. Tracey

Facility: Limerick Generating Station Date of Examination: 3/12/99 Examination Level RO

Operating Test Number: _____

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Alarms and Indications	Annunciator Mode (OM-L-7.1)
		Alarm Response - Local Panel (OM-L-7.1)
	Plant Procedures	Plant Evolution/Special Test (A-C-23)
		Procedure Prerequisites (OM-C-9.1)
A.2	Clearance and Tagging	ESW Blocking (P&ID M-11)
		Blocking Requirements (CAT Manual)
A.3	Radiation Control	ARM Failure (S27.10.A)
		Liquid Release (S63.1.C)
A.4	Emergency Communications	Station Evacuation (ERP-120)
		Authority during Emergency (ERP-200)

Facility: Limerick Generating Station	Date of Examination: 3/12/99	Examination Level SRO
Operating Test Number: _____		

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Shift Staffing	Minimum Staffing (T.S. 6.2/TRM 6.2)
		Non operator manipulations (OM-L-3.2:3)
	Valve Control	Locked devices (A-C-8)
		Check-off Lists (OM-C-10.7)
A.2	Maintenance Requirements	Fire System Impairment (AG-CG-12.1)
		Temporary Plant Alteration (MOD-C-7)
A.3	Radiation Exposure Limits	Planned Special Exposure (HP-C-106/108)
		Admin. Dose Limits (HP-C-106)
A.4	Emergency Plant Operations	Protective Action Recommendation (ERP-101)
		Loss of Communications (SE-12)

Individual Walk-Through Test Outline

Facility: Limerick Generating Station Date of Examination: 3/12/99 Exam Level SRO(I)

Operating Test No.: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance - Description
1. SLC / Manual Initiate SBLC / A, S, D	1	a. K4.03 - 3.9 - SBLC Heater/Operability
		b. K4.08 - 4.2 - SBLC Operation with loss of RRCS
2. FWLC / Transfer RFP Control / N, S	2	a. K1.05 - 3.2 - FW Operation with trip of cond pump
		b. K1.19 - 3.3 - RRCS Feedwater Runback
3. RWM / RWM Operability Verification / N, S, L	7	a. K1.02 - 3.4 - Reed switch failure
		b. K1.04- 3.2 - Steam flow
4. RHR / SD Cooling flow reduction / S, D, A, L	4	a. G2.2.18 - 3.6 - T.S / OSG guide for SD cooling
		b. A1.01 - 3.2 - HTX flow
5. RHRSW / Swap from Pond to Tower / N, S	8	a. K1.01 - 3.3 - Pond to service water Tie
		b. K1.03 - 3.0 - Loss of pwr to Rad Monitor
6. ADS / Alt DC Cont power to Div I ADS / M, P	3	a. K4.01 - 3.9 - Initiation Logic
		b. K4.04 - 3.6 - Long term pneumatics
7. RPS,NS4 / Rx Scram & MSV closure / A, D, P	7	a. K1.10 - 3.4 - Turbine pressure effect on RPS
		b. K3.05 - 3.8 - RPS Logic Channel
8. AC / Dist Xfer D11 from 101 to 201 / N, S	6	a. K4.05 - 3.6 - Sync Scope Rotation
		b. A3.04 - 3.6 - Load Sequencing
9. CRD / Drain SDV / R, D, P	1	a. K4.01 - 2.6 - Pump Run out protection
		b. A1.08 - 3.4 - SDV Vent fails
10. MCR HVAC / Reset Hi Rad Isol / D, S	9	a. K6.01 - 2.9 - Loss of Power T.S.
		b. A2.03 - 3.6 - Reconfiguration failure

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

Individual Walk-Through Test Outline

Facility: Limerick Generating Station Date of Examination: 3/12/99 Exam Level : RO

Operating Test No.: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance - Description
1. HPCI/Swap Suction Sources/ D, S	2	a. K5.08 - 3.0 - Vacuum Breakers
		b. K4.12 - 2.9 - Sealing Steam
2. Recirculation/Start 2nd RRP/ M, S, A, L	4	a. K1.03 - 3.2 - Reactor Mod Temp
		b. A2.17 - 3.1 - Loss of Seal Cooling
3. A.C. Dist/Sync Main Gen to Grid/ D, S	6	a. K4.05 - 3.4 - Sync. Gen to Grid
		b. K2.01 - 3.3 - Off Site Sources
4. NS4 / Reset a Gp III Isol / S, D	5	a. K1.02 - 3.3 - Hi temp isol logic
		b. A2.03 - 2.9 - Flow cont valve fails open
5. RHRSW/S/D an RHRSW Pump/ D, S	8	a. A1.01 - 2.8 - Spray Network Draining
		b. K2.01 - 2.9 - Flow requirements
6. CRD/Drain the SDV/ R, D, P	1	a. K4.01 - 2.5 - Pump Run out Protection
		b. A1.08 - 3.4 - SDV Vent fails
7. RPS, NS4/Rx Scram & MSV Closure/ A, D, P	7	a. K1.10 - 3.2 - Turb Press effect on RPS
		b. K3.05 - 3.7 - RPS Logic Channel
8. ADS/Alt. DC Control Power to DIV1 ADS/ M, P	3	a. K4.01 - 3.7 - Initiation Logic
		b. K4.04 - 3.5 - Long Term Pneumatics
9. Main Turb/Load Limit Logic Function/ N, S	3	a. K1.02 - 3.9 - EHC Response to Rx Power Change
		b. K1.05 - 3.5 - Change in flow to Turb during Testing
10. MCR HVAC/Swap HVAC Loops/ N, S	9	a. K1.04 - 2.8 - CL_2/RAD Isol Differences
		b. A3.01 - 3.3 - Respond to Fan Trip

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

Facility: Limerick Generating Station Date of Examination: 3/12/99 Exam Level SRO(U)

Operating Test No.: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance - Description
1. SLC / Manual Initiate SBLC / A, S, D	1	a. K4.03 - 3.9 - SBLC Heater / Operability
		b. K4.08 - 4.2 - SBLC Operation with loss of RRCS
2. RHRSW / Swap from Pond to Tower / N, S	8	a. G2.4.34 - 3.6 - Xfer Cont to remote S/D pump
		b. K1.03 - 3.0 - Loss of pwr to Rad Monitor
3. RHR / SD Cooling flow reduction / S, D, A, L	4	a. G2.2.18 - 3.6 - T.S / OSG guide for SD cooling
		b. A1.01 - 3.2 - HTX flow
4. ADS / Alt DC Cont power to Div I ADS / M, P, R	3	a. K4.01 - 3.9 - Initiation Logic
		b. K4.04 - 3.6 - Long term pneumatics
5. RPS,NS4 / Rx Scram & MSV closure / A, D, P	7	a. K1.10 - 3.4 - Turbine Pressure effect on RPS
		b. K3.05 - 3.8 - RPS Logic Channel

[redacted]

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

BWR SRO Examination Outline

Facility: Limerick Generating Station	Date of Exam: 03/12/99	Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	5	3	5				5	4			4	26
	2	3	3	2				3	2			4	17
	Tier Totals	8	6	7				8	6			8	43
2. Plant Systems	1	2	2	2	3	2	2	2	2	2	2	2	23
	2	2	1	1	1	1	1	2	1	1	1	1	13
	3	1			1		1		1				4
	Tier Totals	5	3	3	5	3	4	4	4	3	3	3	40
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		17
					4		5		4		4		

Note:
- Attempt to distribute topics among all K/A categories; select at least one topic from every K/A category within each tier.
- Actual point totals must match those specified in the table.
- 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.
- Systems/evolutions within each group are identified on the associated outline.
- The shaded areas are not applicable to the category/tier.

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.**	**Pts**
295003 Partial or Complete Loss of AC Pwr / VI				1			A1.03 HPCI/RCIC natural ventilation (37)	4.4	1
295006 SCRAM / I		1					K2.04 Scram caused by turbine trip (33)	3.7	1
295007 High Reactor Pressure / III						1	G2.4.49 Immediate actions for high reactor pressure (38)	4.0	1
295009 Low Reactor Water Level / II				1			A1.02 Setpoint setdown (39)	4.0	1
295010 High Drywell Pressure / V	1	1					K2.02 SP/DW ΔP (34) K1.03 Drywell leak (87S)	3.5 3.4	1 1
295013 High Suppression Pool Temp. / V				1			A1.01 Inadvertent LOCA w/ Suppression Pool cooling (40)	3.9	1
295014 Inadvertent Reactivity Addition / I	1		1				K3.01 Why scram if SLC injects (41) K1.06 FW heater trip (53)	4.1 3.9	1 1
295015 Incomplete SCRAM / I			1				K3.01 Why must RWM be bypassed w/rod stuck out (35)	3.7	1
295016 Control Room Abandonment / VII			1	1			K3.03 Why transfer switches used at RSP (42) A1.04 4 KV Interlocks (84S)	3.7 3.2	1 1
295017 High Off-site Release Rate / IX						1	G2.4.1 T-104 Entry conditions (43)	4.6	1
295023 Refueling Accidents Cooling Mode / VIII		1	1				K2.05 High Rad RF HVAC, SBGT alignment (44) K3.02 Bridge grapple (86S)	3.7 3.8	1 1
295024 High Drywell Pressure / V	1						K1.01 Why < 38.7ft to spray DW (45)	4.2	1
295025 High Reactor Pressure / III	1						K1.05 Reactor pressure above safety limits (79S)	4.7	1
295026 Suppression Pool High Water Temp. / V	1					1	K1.01 Pump NPSH limits (47) G2.4.6 High SP Temp T-102 (88S)	3.4 4.0	1 1
[redacted]									
295030 Low Suppression Pool Water Level / V					1		A2.02 Low Supp Pool level, where to read temperature (46)	3.9	1
295031 Reactor Low Water Level / II			1	1			K3.04 T-111 -201 Steam Cooling (48) A1.08 Alternate injection systems (81S)	4.3 3.9	1 1
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / I					1		A2.05 T-101 Rod full in indication (49)	4.3	1
295038 High Off-site Release Rate / IX					1		A2.04 T-104 Stack release and source (50)	4.5	1
500000 High Containment Hydrogen Conc. / V					1	1	A2.03 T-102 H_2/O_2 limits (51) G2.4.8 T-228 (85S)	3.8 3.7	1 1
K/A Category Totals:	**5**	**3**	**5**	**5**	**4**	**4**	**Group Point Total:**		**26**

ES-401	BWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2							Form ES-401-1	
E/APE # / Name / Safety Function	**K1**	**K2**	**K3**	**A1**	**A2**	**G**	**K/A Topic(s)**	**Imp.**	**Pts**
295001 Partial or Complete Loss of Forced Core Flow Circulation / I & IV						1	G2.4.49 Recirc trip in startup (65)	4.0	1
295002 Loss of Main Condenser Vacuum / III			1				K3.02 Turbine low load and back pressure limit (55)	3.4	1
295004 Partial or Total Loss of DC Pwr / VI		1					K2.03 E-1FD CEHVAC (56)	3.3	1
295005 Main Turbine Generator Trip / III				1			A1.05 Turbine Trip with bypass failure (52)	3.6	1
295008 High Reactor Water Level / II		1					K2.02 RFP trips (57)	3.8	1
295012 High Drywell Temperature / V									
295018 Partial or Total Loss of CCW / VIII				1			A1.01 ESW B/U to service water (36)	3.4	1
295019 Partial or Total Loss of Inst. Air / VIII		1					K2.02 Why Recirc S/D (58)	3.0	1
295020 Inadvertent Cont. Isolation / V & VII						1	G2.1.12 T.S for both DWCW valves bypassed (80S)	4.0	1
295021 Loss of Shutdown Cooling / IV					1		A2.04 Loss SDC with level < +60" (60)	3.5	1
295022 Loss of CRD Pumps / I	1						K1.01 CRD pump trip and rod scrams (82S)	3.4	1
295028 High Drywell Temperature / V	1						K1.01 T-102 curve DW/T-1 (61)	3.7	1
295029 High Suppression Pool Water Level / V						1	G2.4.18 Why 115.8 ft SP level limit (62)	3.6	1
295032 High Secondary Containment Area Temperature / V	1						K1.04 Define MSO (70S)	3.6	1
295033 High Secondary Containment Area Radiation Levels / IX					1		A2.03 ARM alarm and source (63)	4.2	1
295034 Secondary Containment Ventilation High Radiation / IX				1			A1.03 RE High Rad (64)	3.9	1
295035 Secondary Containment High Differential Pressure / V									
295036 Secondary Containment High Sump/Area Water Level / V						1	G2.4.6 T-103 with high sump level (83S)	4.0	1
600000 Plant Fire On Site / VIII			1				K3.04 A/C/N SRV SE-1 (54)	3.4	1
K/A Category Point Totals:	**3**	**3**	**2**	**3**	**2**	**4**	**Group Point Total:**		**17**

ES-401	BWR SRO Examination Outline Plant Systems - Tier 2/Group 1											Form ES-401-1		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
202002 Recirculation Flow Control									1			A3.03 Scoop tube (15)	3.0	1
203000 RHR/LPCI: Injection Mode						1						K6.09 LPCI injection valve control (8)	3.4	1
206000 HPCI				1								K4.11 HPCI speed in manual (6)	3.5	1
							1					A1.08 HPCI isolation signal (16)	4.0	1
209001 LPCS		1										K2.02 Loss of D12 (7)	2.7	1
								1				A2.02 Core Spray interlock (25)	3.2	1
211000 SLC					1							K5.06 Tank level fails (2)	3.2	1
212000 RPS	1											K1.06 Half Scram SDV valve position (1)	3.6	1
215004 Source Range Monitor					1							K5.03 Moving SRM & period indication (10)	2.8	1
215005 APRM / LPRM			1									K3.08 LPRM failure and core thermal calculations (11)	3.4	1
216000 Nuclear Boiler Instrumentation											1	G2.4.3 How to tell EQ (17)	3.8	1
217000 RCIC								1				A2.15 Steam Line Break indications (9)	3.8	1
218000 ADS				1								K4.01 Excess flow check (5)	3.9	1
223001 Primary CTMT and Auxiliaries	1											K1.01 Purge supply line (26)	3.9	1
223002 PCIS/Nuclear Steam Supply Shutoff			1									K3.18 Single channel and RE HVAC (27)	3.1	1
226001 RHR/LPCI: CTMT Spray Mode		1										K2.02 DW Spray (32)	2.9	1
239002 SRV's										1		A4.03 SRV indication (24)	3.9	1
241000 Reactor/Turbine Pressure Regulator									1			A3.11 CIV operation (30)	3.1	1
259002 Reactor Water Level Control							1					A1.04 MGU failure (29)	3.6	1
261000 SGTS				1								K4.01 SGBT start zones intertied (31)	3.8	1
262001 AC Electrical Distribution											1	G2.1.12 T.S. One offsite source (76S)	4.0	1
264000 EDG's										1		A4.03 Iso- Droop Swap (23)	3.4	1
290001 Secondary CTMT						1						K6.08 Loss of Air on HVAC (28)	2.8	1
K/A Category Point Totals:	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**Group Point Total:**		**23**

ES-401	BWR SRO Examination Outline Plant Systems - Tier 2/Group 2											Form ES-401-1		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
201001 CRD Hydraulic										1		A4.03 Flow control failure (19)	2.8	1
201002 RMCS								1				A2.01 Sequence timer malfunction. (20)	2.8	1
201006 RWM	1											K1.05 Purpose of System (21)	3.8	1
202001 Recirculation							1					A1.10 Seal flow (14)	2.7	1
204000 RWCU							1					A1.09 Filter out of service (12)	3.2	1
205000 Shutdown Cooling											1	G2.1.12 Loss of SDC (78S)	4.0	1
214000 RPIS														
215002 RBM									1			A3.04 RBM indication (68)	3.5	1
215003 IRM														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
234000 Fuel Handling Equipment					1							K5.02 Boundary Zone Computer (66)	3.7	1
245000 Main Turbine Gen. and Auxiliaries						1						K6.04 Generator Load capability (22)	2.7	1
259001 Reactor Feedwater														
262002 UPS (AC/DC)														
263000 DC Electrical Distribution	1											K1.02 250 DC with 1 charger (77S)	3.3	1
271000 Offgas														
272000 Radiation Monitoring			1									K3.04 Main Steam Line Rad (67)	3.8	1
286000 Fire Protection														
290003 Control Room HVAC				1								K4.01 What toxic gas will initiate (4)	3.2	1
300000 Instrument Air														
400000 Component Cooling Water		1										K2.01 RHRSW power supply (3)	3.0	1
K/A Category Point Totals:	2	1	1	1	1	1	2	1	1	1	1	**Group Point Total:**		13

ES-401	BWR SRO Examination Outline Plant Systems - Tier 2/Group 3											Form ES-401-1		
System # / Name	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**A1**	**A2**	**A3**	**A4**	**G**	**K/A Topic(s)**	**Imp.**	**Pts**
201003 Control Rod and Drive Mechanism								1				A2.06 Loss of cooling (18)	3.1	1
215001 Traversing In-core Probe														
233000 Fuel Pool Cooling and Cleanup						1						K6.10 Cavity Seal failure (69)	3.3	1
239001 Main and Reheat Steam				1								K4.06 Main Steam Alternate Drain (59)	3.2	1
256000 Reactor Condensate														
268000 Radwaste														
288000 Plant Ventilation														
290002 Reactor Vessel Internals	1											K1.02 Carry under/Recirc Pump (13)	3.2	1
K/A Category Point Totals:	**1**			**1**		**1**		**1**				**Group Point Total:**		**4**

SRO GENERIC KNOWLEDGE AND ABILITIES OUTLINE

Facility:	Date of Exam: 3/12/99			Exam Level: SRO
Category	K/A #	Topic	Imp.	Points
Conduct of Operations	2.1.18	Short term relief (71)	3.0	1
	2.1.1	Operation of Equipment (72)	3.8	1
	2.1.26	Protective Devices (89S)	2.6	1
	2.1.20	Procedure Use in Contaminated Area (90S)	4.2	1
	Total			4
Equipment Control	2.2.11	Temporary Change to Procedure (73)	3.4	1
	2.2.14	Backseated Valve (91S)	3.0	1
	2.2.13	Special Condition Tags (92S)	3.8	1
	2.2.26	Core Alterations (93S)	3.7	1
	2.2.12	Surveillance Procedures (94S)	3.4	1
	Total			5
Radiation Control	2.3.2	Verification of Valves in Rad Area (74)	2.9	1
	2.3.10	Locked Rad Keys (95S)	3.3	1
	2.3.1	Dose Limits (96S)	3.0	1
	2.3.4	Posting Requirements (97S)	3.1	1
	Total			4
Emergency Procedures and Plan	2.4.14	SAMP Entry (75)	3.9	1
	2.4.43	Classification Upgrade (98S)	3.5	1
	2.4.11	Medical Team (99S)	3.6	1
	2.4.6	SAMP 1 Sheet (100S)	4.0	1
	Total			4
Tier 1 Target Point Total (SRO)				17

BWR RO Examination Outline

Facility: Limerick Generating Station		Date of Exam: 3/12/99							Exam Level: RO				
Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	2	3				2	2			2	13
	2	2	3	3				4	4			3	19
	3	1	1					1	1				4
	Tier Totals	5	6	6				7	7			5	36
2. Plant Systems	1	3	2	3	3	2	3	2	3	2	3	2	28
	2	2	2	1	3	1	2	2	2	1	2	1	19
	3	1				1	1		1				4
	Tier Totals	6	4	4	6	4	6	4	6	3	5	3	51
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		13
					4		3		3		3		

Note:
- Attempt to distribute topics among all K/A categories; select at least one topic from every K/A category within each tier.
- Actual point totals must match those specified in the table.
- 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.
- Systems/evolutions within each group are identified on the associated outline.
- The shaded areas are not applicable to the category/tier.

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1							Form ES-401-2	
E/APE # / Name / Safety Function	**K1**	**K2**	**K3**	**A1**	**A2**	**G**	**K/A Topic(s)**	**Imp.**	**Pts**
295005 Main Turbine Generator Trip / III				1			A1.05 Turbine Trip with bypass failure (52)	3.6	1
295006 SCRAM / I		1					K2.04 Scram caused by turbine trip (33)	3.6	1
295007 High Reactor Pressure / III						1	G2.4.49 Immediate actions for high reactor pressure (38)	4.0	1
295009 Low Reactor Water Level / II				1			A1.02 Setpoint set down (39)	4.0	1
295010 High Drywell Pressure / V		1					K2.02 SP/DW ΔP (34)	3.3	1
295014 Inadvertent Reactivity Addition / I	 1		1				K3.01 Why scram if SLC injects (41) K1.06 FW heater trip (53)	4.1 3.8	1 1
295015 Incomplete SCRAM / I			1				K3.01 Why must RWM be bypassed w /rod stuck out (35)	3.4	1
295024 High Drywell Pressure / V	1						K1.01 Why < 38.7 ft to spray DW (45)	4.1	1
295025 High Reactor Pressure / III						1	G2.4.18 Why manually open SRV is > 990 psig (78R)	2.7	1
295031 Reactor Low Water Level / II			1				K3.04 T-111 -201 Steam Cooling (48)	4.0	1
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / I					1		A2.05 T-101 Rod full in indication (49)	4.2	1
500000 High Containment Hydrogen Conc. / V					1		A2.03 T-102 H_2O_2 limits (51)	3.3	1
K/A Category Totals:	**2**	**2**	**3**	**2**	**2**	**2**	**Group Point Total:**		**13**

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2						Form ES-401-2		
E/APE # / Name / Safety Function	**K1**	**K2**	**K3**	**A1**	**A2**	**G**	**K/A Topic(s)**	**Imp.**	**Pts**
295001 Partial or Complete Loss of Forced Core Flow Circulation / I & IV						1	G2.4.49 Recirc trip in startup (65)	4.0	1
295002 Loss of Main Condenser Vacuum / III			1				K3.02 Turbine low load and back pressure limit (55)	3.4	1
295003 Partial or Complete Loss of AC Pwr / VI				1			A1.03 HPCI/RCIC natural ventilation (37)	4.4	1
295004 Partial or Complete Loss of DC Pwr / VI		1					K2.03 E-1FD CEHVAC (56)	3.3	1
295008 High Reactor Water Level / II		1					K2.02 RFP trips (57)	3.6	1
295012 High Drywell Temperature / V									
295013 High Suppression Pool Temp. / V				1			A1.01 Inadvertent LOCA w/ Suppression Pool cooling (40)	3.9	1
295016 Control Room Abandonment / VII			1				K3.03 Why transfer switches used at RSP (42)	3.5	1
295017 High Off-site Release Rate / IX						1	G2.4.1 T-104 Entry conditions (43)	4.3	1
295018 Partial or Complete Loss of CCW / VIII				1			A1.01 ESW B/U to service water (36)	3.3	1
295019 Partial or Complete Loss of Inst. Air / VIII		1					K2.02 Why Recirc S/D (58)	2.9	1
295020 Inadvertent Cont. Isolation / V & VII					1		A2.06 H_2O_2 isolation (79R)	3.4	1
295022 Loss of CRD Pumps / I									
295026 High Suppression Pool Water Temp. / V	1						K1.01 Pump NPSH limits (47)	3.0	1
295028 High Drywell Temperature / V	1						K1.01 T-102 curve DW/T-1 (61)	3.5	1
295029 High Suppression Pool Water Level / V						1	G2.4.18 Why 115.8 ft SP level limit (62)	2.7	1
295030 Low Suppression Pool Water Level / V					1		A2.02 Low Supp Pool level, where to read temperature (46)	3.9	1
295033 High Secondary Containment Area Radiation Levels / IX					1		A2.03 ARM alarm and source (63)	3.7	1
295034 Secondary Containment Ventilation High Radiation / IX				1			A1.03 RE High Rad (64)	4.0	1
295038 High Off-site Release Rate / IX					1		A2.04 T-104 Stack release and source (50)	4.1	1
600000 Plant Fire On Site / VIII			1				K3.04 A/C/N SRV SE-1 (54)	2.8	1
K/A Category Point Totals:	**2**	**3**	**3**	**4**	**4**	**3**	**Group Point Total:**		**19**

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 3						Form ES-401-2		
E/APE # / Name / Safety Function	**K1**	**K2**	**K3**	**A1**	**A2**	**G**	**K/A Topic(s)**	**Imp.**	**Pts**
295021 Loss of Shutdown Cooling / IV					1		A2.04 Loss of SDC with level < +60" (60)	3.6	1
295023 Refueling Accidents / VIII		1					K2.05 High Rad RF HVAC, SBGT alignment (44)	3.5	1
295032 High Secondary Containment Area Temperature / V	1						K1.04 Define MSO (70)	3.1	1
295035 Secondary Containment High Differential Pressure / V									
295036 Secondary Containment High Sump/Area Water Level / V				1			A1.04 Sump isolated due to high rad (81R)	3.1	1
K/A Category Point Totals:	**1**	**1**		**1**	**1**		**Group Point Total:**		**4**

ES-401	BWR RO Examination Outline Plant Systems - Tier 2/Group 1											Form ES-401-2		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
201001 CRD Hydraulic										1		A4.03 Flow control failure (19)	2.9	1
201002 RMCS								1				A2.01 Sequence timer malfunction (20)	2.7	1
202002 Recirculation Flow Control									1			A3.03 Scoop tube (15)	3.1	1
203000 RHR/LPCI: Injection Mode						1						K6.09 LPCI injection valve control (8)	3.4	1
206000 HPCI				1								K4.11 HPCI speed control in man. (6)	3.4	1
							1					A1.08 HPCI isolation signal (16)	4.1	1
209001 LPCS		1										K2.02 Loss of D22 (7)	2.5	1
								1				A2.02 Core Spray interlock (25)	3.2	1
209002 HPCS														
211000 SLC		1										K2.01 Pump Power (89R)	2.9	1
					1							K5.06 Tank level fail (2)	3.0	1
212000 RPS	1											K1.06 Half Scram SDV valve pos (1)	3.5	1
											1	G2.4.49 Setpoint exceeded (92R)	4.0	1
215003 IRM			1									K3.01 IRM loss of power RPS effect (76R)	3.9	1
215004 SRM					1							K5.03 Moving SRM & period indication(10)	2.8	1
215005 APRM / LPRM			1									K3.08 LPRM failure, core thermal calc (11)	3.0	1
216000 Nuclear Boiler Instrumentation											1	G2.4.3 How to tell EQ (17)	3.5	1
217000 RCIC						1						K6.04 CST low level (90R)	3.5	1
								1				A2.15 Steam Line Break indications (9)	3.8	1
218000 ADS				1								K4.01 Excess flow check (5)	3.7	1
223001 Primary CTMT and Auxiliaries	1											K1.01 Purge supply line (26)	3.7	1
223002 PCIS/Nuclear Steam Supply Shutoff			1									K3.18 Single channel and RE HVAC (27)	3.0	1
239002 SRV's										1		A4.03 SRV indication (24)	3.8	1
241000 Reactor/Turbine Pressure Regulator									1			A3.11 CIV operation (30)	3.3	1
259001 Reactor Feedwater	1											K1.20 RFP steam supply (91R)	3.1	1
259002 Reactor Water Level Control						1						K6.01 Loss of air (80R)	3.2	1
							1					A1.04 MGU failure (29)	3.6	1
261000 SGTS				1								K4.01 SGBT start zones intertied (31)	3.7	1
264000 EDG's										1		A4.03 Iso- Droop Swap (23)	3.2	1
K/A Category Point Totals:	**3**	**2**	**3**	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**Group Point Total:**		**28**

ES-401	BWR RO Examination Outline Plant Systems - Tier 2/Group 2											Form ES-401-2		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
201003 Control Rod and Drive Mechanism								1				A2.06 Loss of Cooling (18)	3.0	1
201006 RWM	1											K1.05 Purpose of system (21)	3.5	1
202001 Recirculation							1					A1.10 Seal flow (14)	2.6	1
204000 RWCU							1					A1.09 Filter out of service (12)	3.0	1
205000 Shutdown Cooling					1							K5.02 SDC with 1.68 psig (83R)	2.8	1
214000 RPIS														
215002 RBM									1			A3.04 RBM indication (68)	3.6	1
219000 RHR/LPCI: Torus/Pool Cooling Mode														
226001 RHR/LPCI: CTMT Spray Mode		1										K2.02 DW Spray (32)	2.9	1
230000 RHR/LPCI: Torus/Pool Spray Mode										1		A4.06 SP spray and LOCA reset (88R)	4.0	1
239001 Main and Reheat Steam				1								K4.06 Main Steam Alternate Drain (59)	3.1	1
245000 Main Turbine Gen. and Auxiliaries						1					1	K6.04 Generator Load Capability (22) G2.2.3 Turbine Head Spray (86R)	2.6 3.1	1 1
256000 Reactor Condensate										1		A4.11 CST level low (85R)	3.2	1
262001 AC Electrical Distribution	1											K1.02 Loss of DC to 11/12 Aux Brks (77R)	3.3	1
262002 UPS (AC/DC)														
263000 DC Electrical Distribution														
271000 Offgas								1				A2.06 Offgas combustion (87R)	3.5	1
272000 Radiation Monitoring			1									K3.04 Main Steam Line Rad (67)	3.7	1
286000 Fire Protection				1								K4.04 Secure CO_2 (84R)	3.6	1
290001 Secondary CTMT						1						K6.08 Loss of Air on HVAC (28)	2.7	1
290003 Control Room HVAC				1								K4.01 What toxic gas will initiate (4)	3.1	1
300000 Instrument Air														
400000 Component Cooling Water		1										K2.01 RHRSW power supply (3)	2.9	1
K/A Category Point Totals:	**2**	**2**	**1**	**3**	**1**	**2**	**2**	**2**	**1**	**2**	**1**	**Group Point Total:**		**19**

ES-401	BWR RO Examination Outline Plant Systems - Tier 2/Group 3												Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
215001 Traversing In-core Probe								1				A2.07 Shear valve (82R)	3.4	1
233000 Fuel Pool Cooling and Cleanup						1						K6.10 Cavity Seal failure (69)	2.9	1
234000 Fuel Handling Equipment					1							K5.02 Boundry Zone computer (66)	3.1	1
[redacted]														
268000 Radwaste														
288000 Plant Ventilation														
290002 Reactor Vessel Internals	1											K1.02 Carry under/Recirc Pumps (13)	3.2	1
K/A Category Point Totals:	**1**				**1**	**1**		**1**				**Group Point Total:**		**4**

RO GENERIC KNOWLEDGE AND ABILITIES OUTLINE

Facility: Limerick Generating Station	Date of Exam:3/12/99		Exam Level: RO	
Category	K/A #	Topic	Imp.	Points
Conduct of Operations	2.1.18	Short-term Relief (71)	2.9	1
	2.1.1	Operation of Equipment (72)	3.7	1
	2.1.17	Verbal Communication (93R)	3.5	1
	2.1.9	Alarm Response during Testing (94R)	2.5	1
	Total			4
Equipment Control	2.2.11	Temporary Change to Procedure (73)	2.5	1
	2.2.13	Information Tag (95R)	3.6	1
	2.2.32	Refuel Loss of Communication (96R)	3.5	1
	Total			3
Radiation Control	2.3.2	Verification of Valves in Rad Area (74)	2.5	1
	2.3.1	Dose Exposure Extensions (97R)	2.6	1
	2.3.4	Contamination Monitoring (98R)	2.5	1
	Total			3
Emergency Procedures and Plan	2.4.14	SAMP Entry (75)	3.0	1
	2.4.34	T-200 (99R)	3.8	1
	2.4.39	Floor Operators (100R)	3.3	1
	Total			3
Tier 1 Target Point Total (RO)				13

LIMERICK GENERATING STATION

1998-99 LICENSED OPERATOR EXAMINATION

Original Submitted

2/12/99

TAB

ROCATA

NO.: 126 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/14/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.30 TAXONOMY NO.: 3.9/3.4
LESSON PLANS: LOT1574.05 OM-L-7.1
:
CATEGORY: 98 RO A
SYSTEMS: OPSMAN

QUESTION :

During a Unit 1 startup, the "Turbine Building Cooling Water Head Tank Hi/Lo" annunciator is repeatedly alarming. An EO has verified that level is normal. I&C reports that LSHL-14-103 is faulty and repair work will take 4 hours, but work cannot begin for 6-8 hours.

WHAT action can be taken to prevent this annunciator from repeatedly alarming during this 6-8 hour time period prior to clearance application?

ANSWER :
Obtain SSV permission.
Initiate Equipment Status Tag (EST) for alarm.
Position annunciator mode switch to "MANUAL".

NO.: 127 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.8 TAXONOMY NO.: 3.8/3.6
LESSON PLANS: LOT1574.05 OM-L-7.1
:
CATEGORY: 98 RO A
SYSTEMS: OPSMAN

QUESTION :

REACTOR ENCLOSURE HVAC PANEL 20C205 TROUBLE annunciates.

What are the actions you require of the Equipment Operator responding to this alarm?

ANSWER :
Inform MCR of which local alarm is actuating.
Take action per local ARC's
Remain at local panel (20C205) until alarm clears

Reference: OM-L-7.1 Section 6.0

NO.: 128 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.23 TAXONOMY NO.: 3.9/4.0
LESSON PLANS: LOT1570.04 N-C-23
:
CATEGORY: 98 RO A
SYSTEMS: ADMIN

QUESTION :

During an Outage, the LOCA/LOOP Test Director provides a PEST brief prior to the start of the ST.

What items must be included in this briefing?

ANSWER :

Items in Management Briefing Checklist, Exhibit A-C-23-2

Reference: ST-1-092-114-2 page 14, notes PEST IAW A-C-23

NO.: 129 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.23 TAXONOMY NO.: 3.9/4.0
LESSON PLANS: LOT1574.17 OM-C-9.1
:
CATEGORY: 98 RO A
SYSTEMS: OPSMAN

QUESTION :
"S" procedures often contain several prerequisites. For example, when starting a Recirculation Pump per S43.1.A, sixteen (16) prerequisites are annotated.

What mechanisms, other than performance of the listed procedures, can be used to verify the "PREREQUISITES" are satisfied?

ANSWER :

Narrative Logs
Plant/system/equipment status
MCR/local indication of equipment status
Review of listed procedures

Reference: OM-C-9.1, section 4.1.3

NO.: 130 REV.: 6 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.13 TAXONOMY NO.: 3.6/3.8
LESSON PLANS: CAT P&ID M-11
:
CATEGORY: 98 RO A
SYSTEMS: CAT

QUESTION :

Repairs are required on a section of 8" ESW piping due to a leak.

Using the attached P&ID, state whether the 11-1027B or 11-1430B valve will be used as boundary points to isolate the indicated leak and describe why this valve was selected.

ANSWER :

11-1027B selected. 11-1430B is inadequate due to use in non-preferred seating direction.

Reference: Need P&ID M-11, sht 3 marked up. Cannot use valves in non-PSD direction.

NO.: 131 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.13 TAXONOMY NO.: 3.6/3.8
LESSON PLANS: CAT
:
CATEGORY: 98 RO A
SYSTEMS: CAT

QUESTION :

What requirements must be met to utilize the HV11-044 (ESW Loop B Return to ESW) as a blocking point on the attached P&ID sheet?

ANSWER :

Valve control station tagged closed
Valve tagged and Gag installed to hold closed
Air supply to valve tagged

Reference: CAT Manual page 32 requirements for POV

NO.: 132 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.10 TAXONOMY NO.: 2.9/3.3
LESSON PLANS: LOT0710.06 S27.10.A
:
CATEGORY: 98 RO A
SYSTEMS: ARM

QUESTION :
REACTOR ENCLOSURE AREA HI RADIATION alarm is in and cannot be cleared. ARM channels 30 (Steam Separator Area) and 31 (Pool Plug Laydown Area) are determined to be downscale.

WHAT actions are required to be performed?

ANSWER :

Place both ARM's in zero, have HP perform ST-0-027-640-*

Reference: S27.10.A Attachment 2 for 2 criticality ARM's not working.

NO.: 133 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.11 TAXONOMY NO.: 2.7/3.2
LESSON PLANS: LOT0705.06 S63.1.C
:
CATEGORY: 98 RO A
SYSTEMS: RW

QUESTION :

A Liquid Radwaste release is in progress on Floor Drain Sample Tank #2.

A Circ Water pump trips, resulting in blowdown flow of 11,500 gpm.

What action(s) are required to be taken?

ANSWER :

Terminate the release
Inform SSV
Inform HP Effluent Physicist

Reference: S63.1.C page 4, if blowdown exceeds 10,000 gpm then terminate release.

NO.: 134 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.43 TAXONOMY NO.: 2.8/3.5
LESSON PLANS: LEPP1000.04 ERP-120
:
CATEGORY: 98 RO A
SYSTEMS: ERP

QUESTION :

A Site Evacuation is in progress during a declared emergency.

How will maintenance personnel, without radios, working outside the Schuylkill River Pump House be alerted?

ANSWER :

ERP-120 directs river warning system activated to notify these personnel.

Reference: ERP-120, page 5

NO.: 135 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.39 TAXONOMY NO.: 3.3/3.1
LESSON PLANS: LEPP1000.04 ERP-200
:
CATEGORY: 98 RO A
SYSTEMS: ERP

QUESTION :

During a declared emergency, the TSC is activated. The event has been escalated to a General Emergency.

Who is responsible for the decision to perform a specific T-200 Series Procedure?

ANSWER :

Emergency Director

Reference: ERP-200 page 1 1.2.4

TAB

RO CAT B

TITLE: SHIFT HPCI SUCTION FROM THE CST TO THE SUPPRESSION POOL

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset the Simulator to any 100% power IC.
2. Place HPCI in full flow test at rated flow from CST-to-CST in accordance with S55.1.D.
3. Place the mode switch to shutdown.

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.04 3.7/3.7 206000

REFERENCES:

1. S55.1.D

TASK STANDARD(S):

HPCI pump suction aligned to the suppression pool.

TASK CONDITIONS:

1. The unit is being shutdown due to decreasing hotwell and CST level.
2. HPCI is operating in the full flow test mode at rated flow from CST-to-CST per S55.1.D, Section 4.4. in preparation for closing the MSIVs.

INITIATING CUES:

You are directed by Shift Supervision to swap Unit 1 HPCI suction from the CST to the Suppression Pool per section 4.4.4 of S55.1.D.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

	STEP	STANDARD	SAT/UNSAT
1.	Obtain current revision of S55.1.D	Current revision of S55.1.D obtained.	
2.	**PLACE** FIC55-*R600 in "MANUAL" **AND REDUCE** HPCI turbine speed to nominal 2,250 rpm as indicated on SI-56-*61, "Turbine Speed".	Flow controller in MANUAL and Turbine Speed at 2200-2300 rpm.	
* 3.	**OPEN** HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD).	HV-55-1F071 OPEN.	
* 4.	**CLOSE** HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN).	HV-55-1F011 CLOSED.	
5.	**IF** flow indicated on FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL), falls below 300 gpm. **THEN VERIFY** HV-55-*F012, "HPCI Min. Flow Bypass" (MIN FLOW), opens.	If Flow drops below 300, verify HV-55-1F012 indicates open.	
* 6.	**OPEN** HV-55-*F041, "HPCI Pump Suction from Suppression Pool (SUPP POOL SUCTION).	HV-55-1F041 OPEN.	
* 7.	**OPEN** HV-55-*F042, "HPCI Pump Suction from Suppression Pool (SUPP POOL SUCTION).	HV-55-1F042 OPEN.	
* 8.	**ENSURE** HV-55-*F004, "HPCI Pump Suction (COND TK SUCTION), closes.	HV-55-1F004 CLOSED.	
9.	**RAISE** HPCI Turbine flow, as required, using FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL). (Cue: You may stop here, you have met the termination criteria for this JPM	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. The unit is being shutdown due to decreasing hotwell and CST level.
2. HPCI is operating in the full flow test mode at rated flow from CST-to-CST per S55.1.D, Section 4.4. in preparation for closing the MSIVs.

INITIATING CUES:

You are directed by Shift Supervision to swap Unit 1 HPCI suction from the CST to the Suppression Pool per section 4.4.4 of S55.1.D.

NO.: 136 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 206000 5.08 TAXONOMY NO.: 3.0/3.2
LESSON PLANS: LOT0340.02
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

HPCI System Full Flow Functional Test is in progress. During the HPCI system shutdown, check valves 1F080 and 1025, "HPCI Turbine Exhaust Line Vacuum Relief Check Valves" stick CLOSED. Two (2) hours later, a reactor scram occurs and the CRS orders you to place HPCI in service to control RPV pressure.

State the concerns for a HPCI system start under these conditions.

ANSWER :

Starting the system under these conditions will cause water hammer.

Reference: M-55

NO.: 137 REV.: 6 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 206000 4.12 TAXONOMY NO.: 2.9/3.0
LESSON PLANS: LOT0340.02C
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

Describe how level is controlled in the HPCI Barometric Condenser Vacuum Tank during both standby and operating modes, including condensate flowpath(s).

ANSWER :

Normal Standby Mode - pump starts on high level, outlet valve (HV-55-*F026) opens and discharges to Radwaste. The pump stops on low level and outlet valve (HV-55-*F026) to Radwaste closes.

Normal Operating Mode - pump starts on high level and discharges to booster pump suction. The pump stops on low level.

Reference: M-56

TITLE: START A SECOND RECIRCULATION PUMP (ALT. PATH)

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC-20
2. Scram reactor
3. Reset scram
4. Trip 1A Recirc pump
   Close disch valve
   Place HV-46-115A in "CLOSE" (seal purge)

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

30 MINUTES

IMPORTANCE RATING(S):		SYSTEM NUMBER(S):
A4.01	3.7/3.7	202001
A4.01	3.3/3.1	202002
A4.07	3.3/3.2	202002

REFERENCES:

1. S43.1.A, Start Up of Recirculation System

TASK STANDARD(S):

Reactor Recirculation Pump 1A started per S43.1.A. Reactor Recirculation Pump in SHUTDOWN per ARC 111A-4.

TASK CONDITIONS:

1. A GP-2 startup is in progress.
2. Reactor Recirculation Pump 1B is in service.
3. ST-6-043-390-1 is being worked by fourth RO
4. All prerequisites are met for S43.1A.

INITIATING CUES:

Shift Supervision directs you to start Reactor Recirculation Pump 1A per S43.1.A.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of S43.1.A.	Current revision of S43.1.A obtained.	
2. If drywell accessible, (Cue: If asked say, "Drywell is not accessible.")	Ask the SSV if the drywell is accessible.	
3. Verify "A*(B) RECIRC PUMP MOTOR OIL HI/LO LEVEL" alarm is clear. (Cue: 111 Recirc window B5 is clear.)	Verify 111 Recirc window B5 is clear.	
*4. Ensure M/G Scoop Tube arm angle indicator at nominal 10 degrees. (Cue: If asked say, "M/G 1A scoop tube is at 10 degrees."	Dispatch an EO to verify M/G 1A scoop tube at 10 degrees.	
5. Ensure RPT breakers are raced into CONNECTED position AND CLOSED. (Cue: If asked say, "1A Recirc Pump RPT breakers A&B are connected and closed.")	1A Recirc Pump RPT breakers A&B observed open or dispatch an EO to verify breakers are in connected position and closed.	
6. Ensure Reactor Recirc Pump Demand Meter (DEMAND) XY5-M1-*R621A(B) indicates approximately 40%.	DEMAND meter for 1A MG indicates about 40%.	
7. Ensure Reactor Recirc Pump Speed Controller XC-M1-*R621A(B) set at 5-10%.	Output is at 5-10%.	
8. IF one loop is operating, THEN ensure Recirc Pump Suction flow less than 22,600 gpm at *0C602.	Verify FI-43-1R613 indicates less than 22,600 gpm.	
9. IF required to warm an idle loop, THEN perform the following steps: (Cue: Report as the 4th RO performing ST-6-043-390-1 that, "Warmup is not required.")	Recognize from ST that warmup is not required.	
10. At panel *11 RECIRC, verify the following annunciators are clear:		
10a. *A(B) RECIRC PUMP SEAL COOLING WATER LOW FLOW	Verify 111 Recirc Window A3 is clear.	
10b. *A/B RECIRC PUMP MOTOR HI TEMP	Verify 111 Recirc Window G3 is clear.	

STEP	STANDARD	SAT/UNSAT
11. Ensure Recirculation Pump Motor Air Cooler inlet (TP) TI-87-*51A(B) less than 50 degrees F.	Verify TI-87-151A indicates less than 50 degrees F.	
12. Ensure Recirculation Pump Motor Air Cooler inlet (TP) TI-87-*53A(B) less than 68 degrees F.	Verify TI-87-153A indicates less than 68 degrees F.	
13. Ensure Recirculation Pump Air Cooler flow (FL) FI-87-*57A(B) greater than 100 gpm.	Verify FI-87-157A indicates greater than 100 gpm.	
14. *A(B) RECIRC PUMP MOTOR WINDING COOLING WATER LO FLOW	Verify 111 Recirc Window A5 is clear.	
15. Open CRD to Recirc Pump Seal Minimum Purge Control Station inlet 46-*F142A(B). (Cue: Report "46-1F142A is open.")	Dispatch an EO to open 46-1F142A.	
16. IF idle loop warmup was not required, OR is no longer required, THEN at *0C602, ensure the following valve positions:	N/A	N/A
*16a. Recirculation Pump discharge valve (DISCHARGE) HV-43-*F031A(B) closed.	Ensure HV-43-1F031A is closed.	
16b. Recirc Pump suction valve (SUCTION) HV-43-*F023A-1(B) open. (Cue: If asked, report "2 Turbine exhaust fans are running.")	Ensure HV-43-1F023A is open.	
17. At _0C602, place Recirc Pump Seal Purge Control (SEAL PURGE) HV-46-*15A(B) in AUTO.	HV-46-115A control switch in auto.	
18. Station an operator at M/G set to perform the following activities on Recirc Pump start: (Cue: If sent say, "I am standing by for MG 1A start.")	Dispatch EO to MG 1A to observe start per S43.1.A step 4.1.12.	
19. Perform ST-6-043-390-* within 15 minutes prior to Recirc Pump start. (Cue: Give copy of ST to examinee.)	ST-6-043-390-1 verified SAT.	
20. IF Shutdown Cooling is in service, THEN secure per S51.8.B AND start Recirc pump within 15 minutes per the following step.	Recognize Shutdown Cooling is not in service.	N/A

STEP	STANDARD	SAT/UNSAT
21. Announce start of 1A Recirc Pump and MG. (Cue: None)	PA announcement of 1A Recirc Pump and MG	
*22. At *0C602, place Recirculation Pump Drive Motor Control (MOTOR) to START AND verify the following: M/G speed increases to approximately 100%. M/G Field Breaker closes approximately 13 seconds after M/G start. Generator current (AM) B32-*R627A(B) rise. Generator voltage (V) B32-*623A(B) rise. Recirculation Pump differential (delta PX) PDI-43-*R612A(B) rise. Generator speed reduces to approximately 20% of pump speed. Generator Speed Demain Meter XY5-M1-*R621A(B) reduces to approximately 20% demand. (Cue: None)	Start sequence observed.	
22a. Acknowledge 111 Recirc Window C4.	111 Recirc Window C4, A2 acknowledged.	
23. At *0C602, jog open Recirc Pump Discharge valve (DISCHARGE) HV-43-*F031A(B).	HV-43-1F013A partially opened within one minute and fully open within 3 minutes.	
DRIVER NOTE: When HV-43-1F031A is open, insert MALF-1256, "1A Recirc Pump Cooling Water Leak"		
24. Referenced ARC for 11 A-4.	ARC referenced.	
25. Ensure 1A Recirc pump is at min. speed	1A Recirc at min. speed.	
26. Trip 1A Recirc pump. (Cue: You can stop here, you have meet the termination criteria for this JPM.)	1A Recirc pump tripped.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. A GP-2 startup is in progress.
2. Reactor Recirculation Pump 1B is in service.
3. ST-6-043- 390-1 is being worked by fourth RO
4. All prerequisites are met for S43.1A.

INITIATING CUES:

Shift Supervision directs you to start Reactor Recirculation Pump 1A per S43.1.A.

NO.: 138 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 202001 1.03 TAXONOMY NO.: 3.2/3.3
LESSON PLANS: LOT0030.09
:
CATEGORY: 98 RO B
SYSTEMS: RX VSL

QUESTION :

Describe the differential temperature requirements that shall be met when starting the first and second Recirc Pump.

ANSWER :

For the first pump, differential temperature requirements are:

- 145°F difference Steam Dome to Bottom Head(via RPV pressure and steam tables)
- 50°F difference Bottom Head drain to idle loop to be started

For the second pump, differential temperature requirements are:

- 145°F difference Steam Dome to Bottom Head(via RPV pressure and steam tables)
- 50°F difference between operating and idle loops

Reference: T/S 3/4 4-1
ST-6-043-390-1

NO.: 139 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 01/27/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 202001 2.17 TAXONOMY NO.: 3.1/3.2
LESSON PLANS: LOT0030.07
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :
G-3 on 111 RECIRC (1A/1B RECIRC PUMP MOTOR HI TEMP) is alarming

1) Using the attached printout of the "1A" Recirc Pump Motor Temp" DAS screen, STATE the operator actions required.

2) If the actions above are not effective what further action is required?

ANSWER :

1) Reduce Recirc pump speed per GP-5, Power Operations, to maintain temperature less than setpoint.

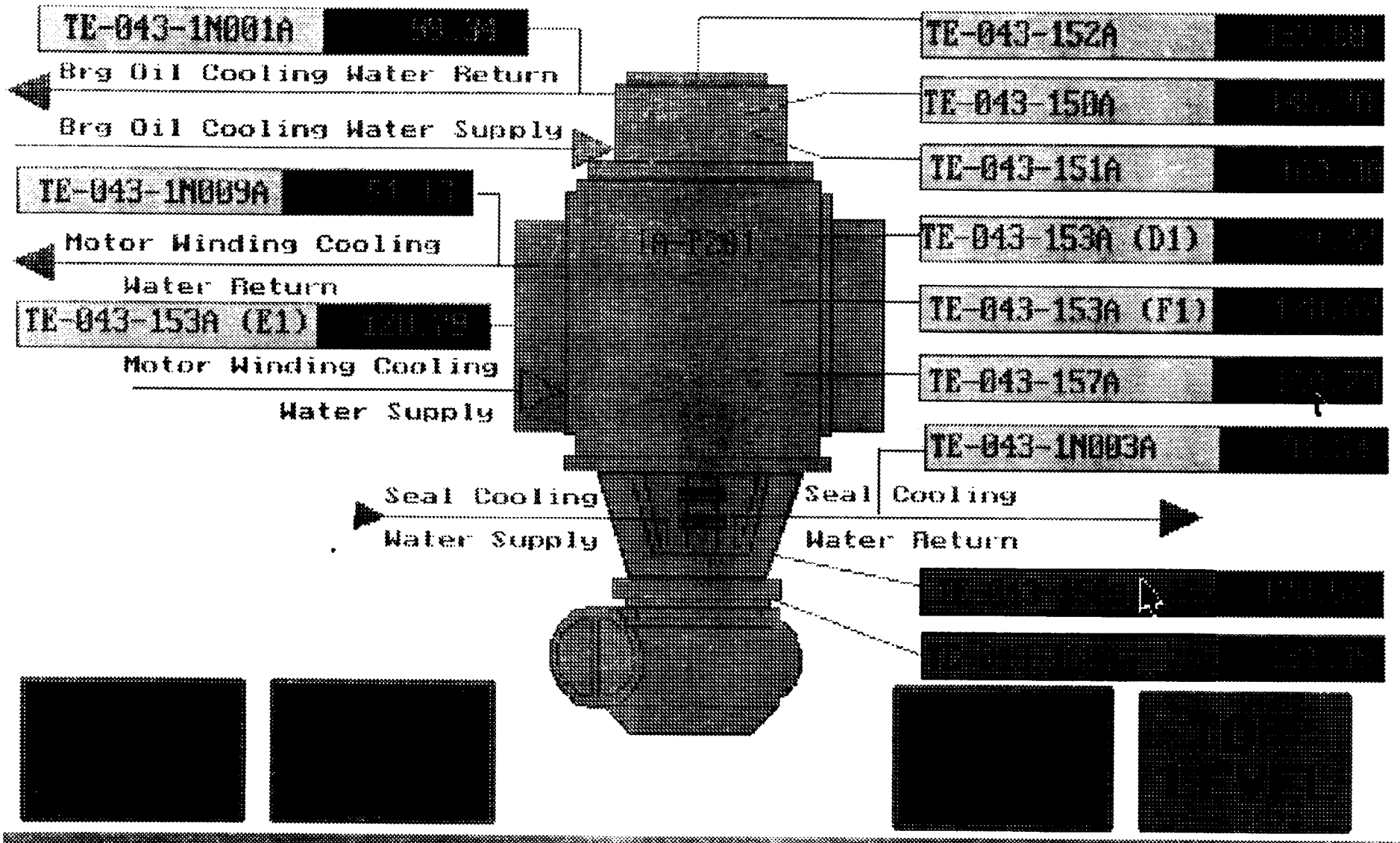
2) Operate the Recirc Pump at minimum speed and contact the System Manager for further evaluation.

Reference: S43.0.D;

Printout of DAS screen with seal temp >175°F is required to answer this question.

*** COLOR PRINTOUT REQUIRED ***

A RECIRC PUMP MOTOR TEMP



#150 1:0 2:0 [redacted] PESIMDV2 Mon 15Feb99 10:20:15

			ALARM
	[redacted]	181.45 DegF	[redacted]
	[redacted]	178.52 DegF	[redacted]
TE-043-1N003A	[redacted]	94.54 DegF	[redacted]

Normal

High Alarm

Hi Hi Alarm

[redacted]

TITLE: S32.1.A, SYNCHRONIZING THE MAIN GENERATOR TO THE GRID

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

Reset simulator to IC-14 with turbine at 1800 rpm, 2 BPVs open, 960 psig.

EVALUATION METHOD:

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

10 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.04 3.6/3.7 262001

REFERENCES:

1. S32.1.A

TASK STANDARD(S):

Main Generator synchronized with grid; both generator output breakers closed.

TASK CONDITIONS:

1. Turbine at set speed (1800 rpm).
2. Plant is in proper operating condition for Generator synchronization per GP-2, Normal Plant Startup.
3. GP-2 Appendix 3 is complete.

INITIATING CUES:

You are directed by Shift Supervision to synchronize the Unit 1 main generator to the grid per GP-2, using S32.1.A.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

	STEP	STANDARD	SAT/UNSAT
1.	Obtain current revision of S32.1.A.	Current revision of S32.1.A obtained.	
2.	Verify Prerequisites.	Verify prerequisites met.	
3.	**NOTIFY** Load Dispatcher prior to synchronizing the Main Generator to the grid. (Cue: PSD directs the Main Generator be synchronized.)	LD notified.	
4.	**VERIFY** LOAD SELECTOR in "REMOTE AUTO" at 10C653.	REMOTE AUTO pushbutton light on.	
5.	**ENSURE** 43-G103/CS "Exciter Voltage Regulator Transfer" (TRANSFER) is in "MANUAL".	Ensure transfer switch in MANUAL.	
6.	**ENSURE** manual voltage control is at low limit as indicated by green light being Lit above 70-G103/CS, "#*GenField Voltage Adjust" (MANUAL), switch.	Ensure green light above 70-G103/CS is lit.	
* 7.	**PLACE** 41-G102C/S "#*Gen.Exciter Field Breaker Control Switch" (FIELD BKR) in CLOSED.	Exciter field breaker closed.	
8.	**ENSURE** voltage responds correctly by moving 70-G103/CS, MANUAL, in RAISE **AND** LOWER directions while monitoring the following meter responses: V/F-G101, Generator Field V/G101, Generator Terminal Voltage	Ensure generator field voltage and terminal voltage increase and decrease in response to Generator field voltage adjustment	
*9.	**ADJUST** 70-G103/CS, MANUAL to obtain Generator Terminal Voltage of nominal 22Kv.	Generator terminal voltage = approx. 22 Kv	
*10.	**ADJUST** 90-G103, "Generator Voltage Adjust" (AUTO) rheostat to bring V/T-G103, "Alternator Exciter AC-DC Regulator Transfer Voltage" meter to zero (0) reading.	V/T-G103 reads approx. zero	
*11.	**PLACE** 43-G103/CS, TRANSFER switch in AUTO.	TRANSFER switch in AUTO	

STEP	STANDARD	SAT/UNSAT
12. **OBSERVE** red "Regulator Transfer" light lit, indicating automatic voltage regulation.	Check red light lit.	
13. **ENSURE** "Sync-Check Relay Key" (SYNC CK RELAY SEL) switch is in NORMAL	SYNC CK RELAY SEL switch in NORMAL	
*14. **INSERT AND TURN** Synchronization switch ON for selected Generator Output Breaker.	Synchronization switch to ON.	
15. **OBSERVE** S/UAS, System Synchroscope,(SYSTEM) rotating with synchronizing lights flashing **AND** V/1-UAS Synchroscope Incoming Voltmeter energized.	Synchroscope pointer rotating and lights flashing.	
*16. **ADJUST** 90-G103 AUTO rheostat so incoming Generator voltage is within 0 to 8 volts higher than running voltage.	Incoming voltmeter indicates higher than running voltage by 0 to 8 volts	
*17. **OPERATE** Generator Load Adjust (GENERATOR) pushbuttons 90-G101A, INCREASE, **OR** P90-G101B DECREASE, **AND ADJUST** Generator speed (frequency) so S/UAS, SYSTEM, is rotating slowly in the FAST (clockwise) direction.	Synchroscope rotating slowly in clockwise direction.	
*18. **WHEN** S/UAS SYSTEM pointer is approximately 3 degrees before vertical, **THEN CLOSE** selected Generator breaker.	Generator breaker indicates closed.	
19. **VERIFY** Generator breaker closed **AND** synchroscope pointer remains stopped at vertical position.	Synchroscope stopped at vertical position.	
*20. Immediately **DEPRESS** Generator Load Adjust (GENERATOR) push-button 90-G101A, INCREASE, until turbine bypass valves close **AND** Generator electrical load raises.	Generator load increases until Turbine Bypass Valves close.	
*21. **TURN** Generator sync switch to "OFF" for Generator Breaker just closed.	Generator Sync Switch OFF	
*22. **INSERT AND TURN** synchronization switch "ON" for the other Generator breaker.	Other Generator Sync switch ON.	

STEP	STANDARD	SAT/UNSAT
23. **VERIFY** Generator is synchronized to grid by observing S/UAS SYSTEM pointer stopped at vertical position.	Synchroscope pointer stopped at vertical.	
*24. **PLACE** Sync Check Relay Key (SYNC CK RELAY SEL) switch in BYPASS to bypass rotating synchroscope permissive.	SYNC CK RELAY SEL switch in BYPASS	
*25. **CLOSE** second Generator breaker.	Generator breaker closed.	
26. **RETURN** Sync Check Relay Key (SYNC CK RELAY SEL) switch to "NORMAL."	SYNC CK RELAY SEL keyswitch in NORM	
27. **TURN** Generator sync switch to "OFF" for Generator breaker closed.	Generator Sync switch OFF.	
28. **PLACE** LOAD SELECTOR in "MANUAL" at Panel 10C653.	LOAD SELECTOR in MANUAL.	
29. **REMOVE** Iso-Phase Bus Heater from service, AND PLACE cooler in service in accordance with S34.1.A, "Normal Operation of Iso-Phase Bus Cooling System." NOTE: Provide CUE only after candidate requests Equipment Operator perform step. (Cue: You can stop here. You have met the termination criteria for this JPM.)	Candidate requests Floor Personnel to remove Iso-Phase bus heater from service and place cooler in service per S34.1.A.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Turbine at set speed (1800 rpm).

2. Plant is in proper operating condition for Generator synchronization per GP-2, Normal Plant Startup.

3. GP-2 Appendix 3 is complete.

INITIATING CUES:

You are directed by Shift Supervision to synchronize the Unit 1 main generator to the grid per GP-2, using S32.1.A.

NO.: 140 REV.: 6 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 262001 4.05 TAXONOMY NO.: 3.4/3.6
LESSON PLANS: LOT0640.05A
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

A Unit 2 startup is in progress. The Main Turbine is at 1800 rpm and ready to be synchronized to the grid. With the SYNC scope at 60° before vertical, the first Main Generator output breaker handswitch is placed to "CLOSE".

Explain the response of the breaker and reason for this response.

ANSWER :

The breaker will not close.

The Synch check relay will not allow the Main Generator breaker to be closed if there is a gross out of sync condition between the incoming and running phase angles.

Reference: S32.1.A

NO.: 141 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/99
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 262001 2.01 TAXONOMY NO.: 3.3/3.6
LESSON PLANS: LOT0640.04
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 1 is operating at 100% power
- Unit 2 is in OPCON 4
- 10 Startup Bus is being taken out of service

What is the final lineup of the 13 KV busses for both units?

ANSWER :

Unit 1 - one 13 kV Unit Aux Bus will be aligned to the 20 Startup Bus and the other 13 kV Unit Aux Bus will be aligned to fast transfer to the 20 Startup Bus.

Unit 2 - both 13 kV Unit Aux Buses will be aligned to the 20 Startup Bus.

Reference: S91.2.A

TITLE: PERFORM A GROUP III NSSSS ISOLATION RESET

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to any 100% power IC.
2. Insert Malf 158A, 158B, RWCU INBD AND OUTBD ISOLATION SIGNALS.
3. Clear Malf 158A, 158B.

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

10 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.03 3.6 / 3.5 223002

REFERENCES:

1. GP-8
2. GP-8.3

TASK STANDARD(S):

Group III NSSSS Isolation reset

TASK CONDITIONS:

1. The Initiation signal was Reactor low level (Level 2)
2. All Group III NSSSS Isolation Signals are clear

INITIATING CUES:

You are directed by shift supervisor to reset the Unit 1 Group III isolation to allow performance of S44.7.A (RWCU fast startup)

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

	STEP	STANDARD	SAT/UNSAT
1.	Obtain current revision of GP-8.3	Current revision of GP-8.3 obtained.	
2.	Using GP-8.3, determine an R2 reset is required.	Determine R2 reset is required.	
*3.	Place HV-41-1F084, Main Steam Sample switch to close.	HV-41-1F084 switch in CLOSE position.	
*4.	Place HV-51-1F079A, RHR Hx Sample switch to close.	HV-51-1F079A switch in CLOSE position.	
*5.	Place HV-51-1F079B, RHR Hx Sample switch to close.	HV-51-1F079B switch in CLOSE position.	
*6.	Place SV-57-133, Cont Sample switch to close.	SV-57-133 switch in CLOSE position.	
*7.	Place SV-57-183, 191 Cont Sample switch to close.	SV-57-183, 191 switch in CLOSE position.	
*8.	Place SV-57-132, 134, 150, Cont Sample switch to close.	SV-57-132, 134, 150 switch in CLOSE position.	
*9.	Place SV-57-181, Cont Sample switch to close.	SV-57-181 switch in CLOSE position.	
*10.	Place HV-41-1F085, Main Steam Drain Sample Outboard switch to close.	HV -41-1F085 switch in CLOSE position.	
*11.	Place HV-51-1F080A, RHR Hx A sample switch to close.	HV-51-1F080A switch in CLOSE position.	
*12.	Place HV-51-1F080B, RHR Hx B Sample switch to close.	HV-51-1F080A switch in CLOSE position.	
*13.	Place HS-57-187, Suppression Pool Sample switch to close.	HS-57-187 switch in CLOSE position.	
*14.	Place HS-57-153 Drywell Sample switch to close.	HS-57-153 switch to CLOSE position.	
*15.	Place HV-43-1F019, Recirc Sample switch to close.	HV-43-1F019 switch in CLOSE position.	
*16.	Place HV-43-1F020, Recirc Sample switch to close.	HV-43-1F020 switch in CLOSE position.	
*17.	Depress B21-S32A and B21- S32D.	B21-S32A and B21-S32D push-buttons depressed.	

STEP	STANDARD	SAT/UNSAT
18. Verify Group III isolation reset per PMS. (Cue: You have met the termination criteria for this JPM. You may stop here.)	Group III isolation signal not present on PMS screen "Containment Isol Valve Status".	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. The Initiation signal was Reactor low level (Level 2)

2. All Group III NSSSS Isolation Signals are clear

INITIATING CUES:

You are directed by shift supervisor to reset the Unit 1 Group III isolation to allow performance of S44.7.A (RWCU fast startup)

NO.: 142 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223002 1.02 TAXONOMY NO.: 3.3/3.5
LESSON PLANS: LOT0110.05 M-44 B21-1090-E
: B21-1050
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

A startup is in progress on Unit 1. The reactor is critical with an 80°/hr heatup in progress. RPV level is being maintained with RWCU in blowdown operation. RWCU differential flow switch, FDS-44-1N603D fails upscale.

STATE the effect on RPV level during the reactor startup. Explain this effect.

ANSWER :

RPV level will increase.

RWCU will isolate, causing a loss of letdown capability.

NO.: 143 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 01/29/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 204000 2.03 TAXONOMY NO.: 2.9/2.9
LESSON PLANS: LOT0110.05 S44.7.C
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

Unit 2 is operating at 90% power. RWCU was removed from service for maintenance activities. 24 hours later, the RWCU system is being returned to service. While establishing blowdown flow, the output of controller HC-44-2R606 fails high and the HV-C-44-2F033, RWCU Dump Flow Control Valve, strokes full open.

Assuming no operator action, EXPLAIN the effect this failure will have on RWCU operation.

ANSWER :

- HV-C-44-2F033 fails open
- downstream pressure rises to isolation setpoint
- air isolated to HV-C-44-2F033
- HV-C-44-2F033 closes

TITLE: SHUTDOWN "A" RHRSW PUMP

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset the Simulator to IC 17
2. Place the A RHRSW Pump in Suppression Pool Cooling operation per S12.1.A.
3. Ensure return is via 'A' Spray Header Only.
4. Start 'A' Spray Pond Pumphouse fan

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

10 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.01 3.8/3.7 219000

REFERENCES:

1. S12.2.A

TASK STANDARD(S):

RHRSW Pump "A" in normal standby lineup.

TASK CONDITIONS:

1. 'A' RHRSW pump is running to support Unit 1 Suppression Pool Cooling, which has been secured.
2. Chemical Injection is complete.

INITIATING CUES:

You are directed by Shift Supervision to shutdown the "A" RHRSW pump.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

	STEP	STANDARD	SAT/UNSAT
1.	Obtain current revision of S12.2.A	Current revision of S12.2.A obtained.	
* 2.	Simultaneously **CLOSE** HV-51-*F068A(B), HEAT EXCHANGER OUTLET, **AND STOP** 0A(B,C,D)P506, PUMP, in that loop.	HV-51-1F068A closed and RHRSW pump "A" off.	
* 3.	**CLOSE** HV-51-*F014A(B), HEAT EXCHANGER INLET.	HV-51-1F014A closed.	
	NOTE The position of HV-011-011A(B), POND/TWR RETURN, **AND** HV-01-015A(B), POND/TWR RETURN, must be known to determine the ESW return flow path back to the RHRSW spray headers.		
4a.	**IF** Spray Networks were in use, **THEN DRAIN** spray networks per S12.4.A, Draining of the RHR Service Water Spray Header.		
4b.	Verify HV-12-017A(B) TWR1-TWR2, closed.	HV-12-017A(B) closed	
4c.	Ensure HV-12-032A is open	HV-12-032A open	
4d.	Open HV-12-031A and HV-12-031C (Cue: You can stop here, you have met the termination criteria for this JPM.)	HV-12-031A and HV-12-031C are open.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

INITIATING CUES:

You are directed by Shift Supervision to shutdown the "A" RHRSW pump.

TASK CONDITIONS:

1. RHRSW pump "A"/RHRSW Loop "A" is running to support Unit 1 Suppression Pool Cooling, which has been secured.

2. Chemical injection is complete.

NO.: 144 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 400000 1.01 TAXONOMY NO.: 2.8/2.8
LESSON PLANS: LOT0680.08 M-12 S12.4.A
: ST-6-012-620-0
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 1 and 2 are in OPCON 1
- The "0A" RHRSW pump is in service to support Unit 2 Suppression Pool Cooling
- The "0C" ESW pump is in service for D23 D/G Monthly Operability Test
- All Spray Networks are aligned to Spray (HV-12-032A,B,C,D open)

State the requirements for RHRSW spray header draining when the 'C' ESW pump is removed from service.

ANSWER :

The "B" and "D" Spray Networks must be drained within 1 hour. Flow from the "A" RHRSW pump will not allow draining of the "A" or "C" Spray Networks.

NO.: 145 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 400000 2.01 TAXONOMY NO.: 2.9/3.0
LESSON PLANS: LOT0680.08 S12.1.A
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

The following conditions exist:

- The "A" ESW loop is in service with "A" and "C" pumps running and a flowrate of 3500 gpm.
- D11, D13, D22, D23 and D24 are powered from 101 Safeguard Bus.
- D12, D14, and D21 are powered from 201 Safeguard Bus.

State which "A" Loop RHRSW Pump that can be used to support Suppression Pool Cooling on Unit 2. Explain your answer.

ANSWER :

The "C" RHRSW Pump must be used. Cannot operate three RHRSW/ESW pumps on the same offsite source in the same loop with ESW flow <4000 gpm.

TITLE: SCRAM DISCHARGE VOLUME DRAINING

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

None

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

30 Minutes

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

AA.1.01 3.8/3.9 295015

REFERENCES:

1. T-217

TASK STANDARD(S):

Scram Discharge Volume Draining

TASK CONDITIONS:

1. Scram signal exists on Unit ___ and 15 Control Rods are at various withdrawn positions.
2. T-217 has been completed up to and including step 4.1.9.

INITIATING CUES:

You are directed by Shift Supervision to drain the Unit ____ Scram Discharge Volume until the SDV level switches indicate less than 62% per T-217.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
NOTE: **IF** this JPM is the ***first*** of multiple T-200 series JPMs being performed by a single candidate **THEN** steps #1 and #2 apply. **OTHERWISE** mark steps #1 and #2 as N/A **AND** provide the following to the candidate : a. INITIATING CUE(S) b. CUE: " You are now in possession of the T-217 equipment container. It contains all tools and equipment required by the procedure. You are to simulate their use during performance of the procedure." c. PROCEDURE COPY		
*1. Obtain current revision of T-217 (Cue: Provide a copy of T-217.)	Current revision of T-217 obtained	
*2. The following tools, equipment obtained from Unit * T-200 Hose Storage Cabinet (506-R16-283) (580-R17-283)(Attachment 1) BL-840 key required: (2) 10' Hoses with swagelok Fittings (1) Flashlight (Cue: You have two hoses and a flashlight.)	(2) 10' Hoses with swagelok Fittings (1) Flashlight obtained from Unit * T-200 Hose Storage Cabinet (506-R16-283) (Attachment 1) Note: only 1 flashlight needed	
*3. **PERFORM** the following for 47-*F103A, Drain Valve (402B-R16-253) (475-R18-253), **AND** 47-*F103B, Drain Valve (402A-R15-253) (475-R17-253) (Attachment 6): a. **UNLOCK AND ENSURE** closed. b. **CONNECT** approx. 10 feet of drain house to each. (Cue: 47-*F103A/B unlocked and closed. Hose connected at swagelock fitting.)	Drain valves 47-*F103A\B UNLOCKED & CLOSED. Approx. 10 feet of drain hose connected to 47-*F103A & B	

STEP	STANDARD	SAT/UNSAT
4. **DIRECT** other end of hose(s) to nearest clean radwaste cleanout with Swagelok fitting. (Attachment 6) (Cue: Hose connected to swagelock fitting for CRW.)	Other end of hoses connected to radwaste cleanout with Swagelock fittings	
*5. Slowly **OPEN** 47-*F103A **AND** 47-*F103B to establish drain flow. (Cue: Water draining through hoses.)	47-*F103A & B OPENED SLOWLY	
EVALUATOR NOTE: for step 6 Cue the operator that an EO is not available to go to the Aux. Equipment room and that he must get the readings. If he does not want to leave with the drains open cue him that the floor supervisor will watch the drains while he is gone.		
6. **WHEN** LISH-47-*N601A, B, C, D all indicate less than 62% at *0C609/*0C611 (Aux Equip Room), **THEN GO TO** Section 4.2. (Cue: Use a pen to show LISH-47-*N601A,B,C,D indicating approximately 30%.)	N/A	N/A
7. **CLOSE** 47-*F103A **AND** 47-*F103B. (Cue: You can stop here, you have met the termination criteria for this JPM.)	47-*F103A & B are closed	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Scram signal exists on Unit ___ and 15 Control Rods are at various withdrawn positions.

2. T-217 has been completed up to and including step 4.1.9.

INITIATING CUES:

You are directed by Shift Supervision to drain the Unit ____ Scram Discharge Volume until the SDV level switches indicate less than 62% per T-217.

NO.: 146 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 201001 2.02 TAXONOMY NO.: 3.6/3.7
LESSON PLANS: LOT0070.10 C71-1020-E-010
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

Unit 1 is operating at 95% power. To complete testing I&C needs to insert an INOP trip on the 'A' APRM. When I&C inserts the trip, the following unexpected alarms and indications are received in the Main Control room.

- Panel 108 window F1 - CRD Accumulator Trouble
- Panel 108 window F4 - Rod Drift
- Full Core Display has the following indicators lit for Rod 30-31
    - Accumulator
    - Full In
    - Scram
- 4 Rod Display for Rod 30-31 shows no rod position

State the cause of these unexpected conditions.

ANSWER :

The fuse for the 'B' channel RPS Scram solenoid for HCU 30-31 is blown. When the 'A' channel scram solenoid was deenergized, it caused rod 30-31 to scram.

NO.: 147 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 201001 4.01 TAXONOMY NO.: 2.5/2.6
LESSON PLANS: LOT0070.03
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

Following a scram CRD System Flow is offscale high.

What design features protect the CRD Pumps from this condition?

ANSWER :

Flow orifices are installed in the charging water header.

CRD flow control valve closes.

TITLE: INITIATE REACTOR SCRAM AND MSIV CLOSURE FROM AER USING SE-1 (ALTERNATE PATH)

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

None

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

AA1.01 3.8/3.9 295016

REFERENCES:

1. SE-1

TASK STANDARD(S):

Reactor Scram and MSIV closure initiated from the AER.

TASK CONDITIONS:

1. The MCR has been evacuated due to a fire.
2. Operators were unable to take any actions for Unit ___ prior to leaving the MCR.

INITIATING CUES:

Shift Supervision directs you to initiate a reactor scram and MSIV isolation on Unit ___ per SE-1, step 4.2.4

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of SE-1	Current revision of SE-1 obtained.	
2. Obtain fuse pullers.	Fuse pullers obtained.	
(EVALUATOR NOTE: Prior to student entering Panel *0C611 Bay B or Bay C, evaluator must cue student that panel door handle spins free and door will not open.)		
* 3. **REMOVE** fuse C71A-F14A in *0C609 Bay B. (CUE: Fuse removed.)	Fuse removed.	
* 4. **REMOVE** fuse B21H-F6A in *0C609 Bay B. (CUE: Fuse removed.)	Fuse removed.	
5. **REMOVE** fuse C71A-F14B in *0C611 Bay B. (CUE: Door handle spins free and door will not open.)	N/A	N/A
6. **REMOVE** fuse B21H-F6B in *0C611 Bay B. (CUE: Door handle spins free and door will not open.)	N/A	N/A
* 7. **REMOVE** fuse C71A-F14C in *0C609 Bay C. (CUE: Fuse removed.)	Fuse removed.	
* 8. **REMOVE** fuse B21H-F6C in *0C609 Bay C. (CUE: Fuse removed.)	Fuse removed.	
Evaluators note: Steps 3, 4, 7 and 8 are not critical if step 12 is complete.		
9. **REMOVE** fuse C71A-F14D in *0C611 Bay C. (CUE: Door handle spins free and door will not open.)	N/A	N/A
10. **REMOVE** fuse B21H-F6D in *0C611 Bay C. (CUE: Door handle spins free and door will not open.)	N/A	N/A
11. **OPEN** the following circuit breakers:	N/A	N/A

STEP	STANDARD	SAT/UNSAT
*12. **OPEN** Circuit Breaker 13, "RPS TRIP SYSTEM A VERTICAL BOARD" (*AY160) (CUE: *AY160 Circuit Breaker 13 indicates open.)	Panel *AY160 Circuit Breaker 13 switch in OPEN position.	
Evaluators note: Step 12 is not critical if steps 3, 4, 7 and 8 are complete.		
*13. **OPEN** Circuit Breaker 13 , "RPS TRIP SYSTEM A VERTICAL BOARD" (*BY160) (CUE: *BY160 Circuit Breaker 13 indicates open.)	Panel *BY160 Circuit Breaker 13 switch in OPEN position.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. The MCR has been evacuated due to a fire.

2. Operators were unable to take any actions for Unit ___ prior to leaving the MCR.

INITIATING CUES:

Shift Supervision directs you to initiate a reactor scram and MSIV isolation on Unit ___ per SE-1, step 4.2.4

NO.: 148 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 212000 1.10 TAXONOMY NO.: 3.2/3.4
LESSON PLANS: LOT0300.04
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 1 is operating at 35% power
- A failure in the EHC logic causes 4 Turbine Bypass Valves to open

State how Reactor Protection System logic is affected.
Explain your answer.

ANSWER :

TSV and TCV closure SCRAMS will be bypassed.

When the TBVs open, this will cause the TCVs to throttle closed. This will cause a load drop of ~10% which will lower turbine 1st stage pressure below the 30% arming point.

NO.: 149 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 212000 3.05 TAXONOMY NO.: 3.7/3.8
LESSON PLANS: LOT0300.05
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

A scram condition occurs. RPS "A" and "B" both trip.

Rod 34-39 scram pilot solenoid valves fail to reposition.

What mechanism will ensure that rod 34-39 scrams? (assume no Operator actions)

ANSWER :

Backup scram valves reposition to block and vent the scram air header.

TITLE: VENTING PRIMARY CONTAINMENT USING THE 6" ILRT LINE FROM THE SUPPRESSION POOL

TASK PERFORMED BY: _____ EVALUATOR: _____

EVALUATOR SIGNATURE: _____ DATE: _____

DIRECTIONS TO EVALUATOR:

None

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

25 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

AA1.05 3.1/3.4 295010

REFERENCES:

1. T-200

TASK STANDARD(S):

Spectacle flange in 6" HBD-*61 swapped, and HV-60-*11 and HV-60-*14 opened, in accordance with steps 4.7.3 through 4.7.4 of T-200.

TASK CONDITIONS:

1. Suppression pool pressure approaching "unsafe" side of curve PC/P-3
2. Suppression pool level <39 feet
3. The required steps in T-200 Attachment A have been performed
4. Operators are standing by in the MCR.
5. Section 4.7 of T-200 has been completed up to and including step 4.7.2.

INITIATING CUES:

You are directed by Shift Supervision to perform steps 4.7.3 through 4.7.4 of T-200 on UNIT__ to support venting primary containment through the 6 inch ILRT line from the suppression pool.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
NOTE: **IF** this JPM is the ***first*** of multiple T-200 series JPMs being performed by a single candidate **THEN** step #1 applies. **OTHERWISE** mark step #1 as N/A **AND** provide the following to the candidate : a. INITIATING CUE(S) b. CUE: " You are now in possession of the T-200 equipment container. It contains all tools and equipment required by the procedure. You are to simulate their use during performance of the procedure." c. PROCEDURE COPY		
*1. Obtain current revision of T-200 and the following tools/equipment from the Unit * T-200 cabinet in OSC. BL-840 key required: (2) 1¼" Wrenches (Cue: Equipment is obtained)	Current revision of T-200 obtained, and the operator has shown that he/she can obtain the following or equivalents to get the task completed: (2) 1¼" Wrenches	
* 2. **SWAP** spectacle flange in 6" HBD-*61 line downstream of HV-60-*14 (304-R11-217 Unit 1) (375-R13-217 Unit 2). (Cue: flange is repositioned as described)	Spectacle flange swapped.	
3. Manually **OPEN** the following valves.	N/A	N/A
* 3a. HV-60-*11, ILRT Pressurization To Containment Purge Lines (Cue: Hand wheel turns to the left, stem rises and then stops)	Hand wheel engaged and valve opened	
*3b. HV-60-*14, ILRT Pressurization To Containment Purge Lines (Cue: Hand wheel turns to the left, stem rises and then stops) (Cue: You have met the termination criteria for this JPM.)	Hand wheel engaged and valve opened	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Suppression pool pressure approaching "unsafe" side of curve PC/P-3
2. Suppression pool level <39 feet
3. The required steps in T-200 Attachment A have been performed
4. Operators are standing by in the MCR.
5. Section 4.7 of T-200 has been completed up to and including step 4.7.2.

INITIATING CUES:

You are directed by Shift Supervision to perform steps 4.7.3 through 4.7.4 of T-200 on UNIT__ to support venting primary containment through the 6 inch ILRT line from the suppression pool.

NO.: 150 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223001 4.05 TAXONOMY NO.: 2.9/3.1
LESSON PLANS: LOT1561.02 T-200
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

Unit 1 has experienced a LOCA. The CRS orders venting of the Primary Containment.

The following conditions exist:

- Offsite release rates are of concern
- Suppression pool pressure is 59.8 psig
- Suppression pool level is 40.2 ft

STATE the Primary Containment vent path(s) that may be used to control Containment pressure.

ANSWER :

2" Drywell Vent
24" Drywell Purge Exhaust line from Drywell

NO.: 151 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 223001 2.07 TAXONOMY NO.: 4.2/4.3
LESSON PLANS: LOT0130.06
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

A LOCA is in progress on Unit 2. The following conditions exist:

- Drywell sprays have NOT commenced
- Drywell pressure is 23 psig and rising
- Suppression pool pressure is 21 psig and rising
- Suppression pool level is 23.5 ft

Is the Containment functioning as designed? Explain your answer.

ANSWER :

No.

Failure of the Primary Containment pressure suppression function is causing higher than expected Suppression Pool pressure (lower than expected dp)

TITLE: MAIN TURBINE LOAD LIMIT LOGIC SYSTEM FUNCTIONAL TEST RT-6-031-100-1

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC-17
2. Perform EHC 10C653 lamp check, replace any burnt out bulbs

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.07 3.5/3.4 241000

REFERENCES:

1. RT-6-031-100-1

TASK STANDARD(S):

MAIN TURBINE LOAD LIMIT LOGIC SYSTEM FUNCTIONAL TEST RT-6-031-100-1 performed satisfactorily.

TASK CONDITIONS:

Unit 1 is operating at 100% power. No other testing is in progress.

INITIATING CUES:

You are directed by shift supervision to perform RT-6-031-100-1 MAIN TURBINE LOAD LIMIT LOGIC SYSTEM FUNCTIONAL TEST.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
EVALUATOR NOTE: Provide a copy of RT-6-031-100-1 to examinee.		
NOTE: EHC bench board panel 10C653 lamp check may be performed by depressing "UPPER LAMP TEST" and "LOWER LAMP TEST" pushbuttons.		
1. Lamp check shall be performed **AND** failed lights replaced at EHC benchboard panel 10C653.	Lamp check performed	
2. **No** other testing **OR** plant condition which could interfere with this test is being performed/present.	N/A	N/A
3. **IF** a procedural step can **not** be completed **OR** any other difficulty is encountered during this test, **THEN** a comment shall be entered in the Additional Action/Test Comments section.	N/A	N/A
4. Any observed abnormality shall be documented in the Additional Action/Test Comments section **AND** brought to the attention of Shift Supervision (SSVN).	N/A	N/A
5. **IF** a step marked with an (R) can **not** be successfully completed **THEN** SSVN shall be notified immediately.	N/A	N/A
6. **VERIFY** all prerequisites of Section 2 are satisfied.	Prerequisites verified	
SHIFT PERMISSION TO TEST	N/A	N/A
7. **OBTAIN** SSV permission to start test. (Cue: Report as the Shift Supervisor, "You have permission to perform the test.)	SSV permission to start test obtained.	
8. **OBTAIN** PRO/RO permission to start test. (Cue: Report as the RO, "You have permission to perform the test.)	PRO/RO permission to start test obtained.	
NOTE: Step load reduction of 30MWe is nominal		

STEP	STANDARD	SAT/UNSAT
9. **NOTIFY** the Load Dispatcher that load is to be temporarily reduced 30 MWe.	Load Dispatcher notified of 30 MWe reduction.	
NOTE: The Load Limit Potentiometer works such that the ones decimal place will always be near the center of the window.		
*10. **RECORD** "AS FOUND" setting of "LOAD LIMIT SET" potentiometer at panel 10C653.	"AS FOUND" setting of "LOAD LIMIT SET" potentiometer recorded	
NOTE: Control Valve Demand Vs. Load Limit Setting (Attachment 1) may be used to determine the APPROXIMATE setting at which BPV-1 can be expected to open.		
EVALUATOR NOTE: If examinee uses graph on Attachment 1, when computer point E1614 is requested at PMS terminal report E1614 is reading 4.		
*11. Slowly **ROTATE** "LOAD LIMIT SET" knob counter clockwise to lower load.	"LOAD LIMIT SET" knob rotated counter clockwise until Bypass Valve opens less than 80%.	
12. **WHEN** the load limit is lowered below actual turbine load, **THEN VERIFY** the LOAD LIMIT LIMITING status light is Lit.	LOAD LIMIT LIMITING status light is Lit.	
NOTE: Slight opening of BPV-1 is satisfactory for this test. Do **not** lower LOAD LIMIT SET beyond this point.		
13. **CONTINUE** to slowly lower LOAD LIMIT SET **AND VERIFY** the following at panel 10C670:	**CONTINUE** to slowly lower LOAD LIMIT potentiometer.	
14. TURBINE VALVE POSITION, CONTROL VALVE position indicator(s) **OR** XRM-2-103 point #1 on panel 10C653 show lowering percent.	TURBINE VALVE POSITION, CONTROL VALVE position indicator(s) **OR** XRM-2-103 point #1 on panel 10C653 show lowering percent.	
15. BPV-1, BYPASS VALVE POSITION, begins to open (raising percent).	BPV-1, BYPASS VALVE POSITION, begins to open (raising percent).	
*16. **RETURN** the "LOAD LIMIT SET" potentiometer to its "AS FOUND" position recorded in step 4.3.2 at panel 10C653.	"LOAD LIMIT SET" potentiometer returned to its "AS FOUND" position recorded in step **Error! Reference source not found.**.	
17. **VERIFY** the LOAD LIMIT LIMITING status light is **not** Lit.	LOAD LIMIT LIMITING status light is **not** Lit.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

Unit 1 is operating at 100% power. No other testing is in progress.

INITIATING CUES:

You are directed by shift supervision to perform RT-6-031-100-1 MAIN TURBINE LOAD LIMIT LOGIC SYSTEM FUNCTIONAL TEST.

NO.: 152 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/02/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 241000 1.02 TAXONOMY NO.: 3.9/4.1
LESSON PLANS: LOT0590.02
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

While performing RT-06-031-100-1, "Main Turbine Load Limit Logic System Functional Test", there will be a 30 MWe decrease in Main Generator output.

Explain why this decrease in generator load occurs.

ANSWER :

Decreasing the load limit setting causes the limiter to assume control of the TCV's. As load limit is decreased, TCV's will throttle closed decreasing steam flow to the Main Turbine and reducing Main Generator load.

NO.: 153 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 241000 1.05 TAXONOMY NO.: 3.5/3.6
LESSON PLANS: LOT0590.02
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

With Unit 1 operating at 100% power.

The EHC Main Steam Pressure "A" Transmitter output fails upscale.

Describe the effect this failure has on the Turbine Control Valves and Bypass Valves.

ANSWER :

TCVs will open to approximately 105% rated steam flow as limited by load set or load limit.

TBVs will open to approximately 10% rated steam flow as limited by the max combined flow setpoint (115% - 105% = 10%). This will result in several TBVs being open.

TITLE: SWAPPING OF THE CONTROL ENCLOSURE HVAC SYSTEM LOOPS AND CONTROL ENCLOSURE CHILLED WATER LOOPS

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC-17, and ensure a CE HVAC and chiller in service.
2. Remote function page CE, ensure 119 and 120 are aligned so A aux fans in service.
3. 0AP162 "A" CE Chiller Circ pump in RUN.

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S):	SYSTEM NUMBER(S):
A4.02 2.8/2.8	290003
A4.03 2.8/2.8	290003

REFERENCES:

S78.6.A, S90.1.A

TASK STANDARD(S):

"B" MCR chilled water circ. Pump, chiller, supply and exhaust fans running
"A" MCR chilled water circ. Pump, chiller, supply and exhaust fans secured

TASK CONDITIONS:

Control Enclosure HVAC is aligned to the "A" side equipment
No Control Enclosure HVAC equipment is inop
S90.1.A has been completed through step 4.7
PV-C-011-053B is 10% open and in manual

INITIATING CUES:

You are directed by shift supervision to swap control enclosure HVAC and chilled water loops from "A" loop to "B" loop. "A" loop is to be aligned to "AUTO"

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Provide a copy of S78.6.A and S90.1.A to the examinee	N/A	N/A
*2. **PLACE** 0A(B)P162, "Control Enclosure Chiller Water Circulation Pump" (CIRC PUMP), in "RUN."	0BP"Control Enclosure Chiller Water Circulation Pump" Running	
3. **VERIFY** flow greater than 550 gpm on FI-90-034A(B), "Chilled Wtr Return Flow."	Flow greater than 550 gpm on FI-90-034(B), "Chilled Wtr Return Flow."	
*4. **PLACE** 0A(B)K112, "Control Enclosure Chiller" (CHILLER), to "START" at 00C681.	0BK112"Control Enclosure Chiller" (CHILLER), to "START"	
DRIVER NOTE: When examinee calls for an EO to perform section 4.10 of S90.1.A report that you are performing step 4.10 Wait 45 seconds call the examinee and report that 4.11 through 4.14 is complete and that you are performing step 4.15. Wait one minute and report that step 4.15 is complete.		
5. **WHEN** B(A) chilled water outlet temperature reaches approximately 40-55°F as read on TI-90-025B(A) **THEN** PERFORM sections, **AND** expeditously to swap HVAC Loops.	B chilled water outlet temperature less than 55°F as read on TI-90-025B prior to continuing	
6. **HOLD** MCR door open during control room fan starts to prevent pressure transients. (Cue: When examinee requests that MCR be opened report that the PRO will open and close the door as required.)	Examinee requests that MCR door be held open	
*7. **PLACE** the in service 0A(B)V121, "Control Room Air Return Fan A(B)," to "OFF."	0AV121, "Control Room Air Return Fan A," to "OFF."	
*8. **PLACE** the in service 0A(B)V116, "Control Room Air Supply Fan A(B)," to "OFF."	0AV116, "Control Room Air Supply Fan A," to "OFF."	
*9. **PLACE** the Standby Supply Fan 0B(A)V116 to "RUN."	Standby Supply Fan 0BV116 to "RUN."	

STEP	STANDARD	SAT/UNSAT
*10. **WHEN** dual indication is observed at indicating lights for HD-78-026B(A), "Inlet Damper for Fan 0B(A)V116," **THEN PLACE** 0B(A)V121, "Control Room Air Return Fan B(A)," to "RUN," **AND PERFORM** the following:	0BV121, "Control Room Air Return Fan B," placed in "RUN"	
11. **ENSURE** HD-78-026B(A), "Inlet Damper For Supply Fan 0B(A)V116," full open.	HD-78-026B, "Inlet Damper For Supply Fan 0BV116," full open.	
12. **ENSURE** HD-78-027B(A), "Outlet Damper For Supply Fan 0B(A)V116," full open.	HD-78-027B, "Outlet Damper For Supply Fan 0BV116," full open.	
13. **ENSURE** HD-78-060B(A), "Inlet Damper For Return Fan 0B(A)V121," full open.	HD-78-060B, "Inlet Damper For Return Fan 0BV121," full open.	
14. **ENSURE** HD-78-059B(A), "outlet Damper For Return Fan 0B(A)V121," full open.	HD-78-059B, "outlet Damper For Return Fan 0BV121," full open.	
*15. **WHEN** system flows stabilize, **THEN PLACE** other 0A(B)V116, "Control Room Air Supply Fan A(B)," to "AUTO" **OR** "OFF."	0AV116, "Control Room Air Supply Fan A," placed in "AUTO"	
*16. **WHEN** system flows stabilize, **THEN PLACE** 0AV121, "Control Room Air Return Fan A," placed in "AUTO" **OR** "OFF."	OAV121, "Control Room Air Return Fan A" in AUTO	
17. **IF** handswitches in step 42.6 **OR** step 42.7 were placed in "OFF," **THEN ENSURE** a dedicated operator, in addition to the Tech Spec minimum required staffing levels for the control room, is stationed at panel 00C681 to manually start the standby fan in the event that the in-service fan trips. **CM-1**	N/A	N/A
18. EO contacted to perform steps 4.3 through 4.5	EO contacted to perform steps 4.3 through 4.5	
*DRIVER NOTE: When the EO is contacted to perform section 4.3 through 4.5, Swapping Aux room supply and return fans, Battery room and SBGT supply fans, then **toggle 119** and **120** on remote function page **CE** so that A fans are off and B fans are running. Wait one minute and report that steps 4.3 through 4.5 are complete.*		

STEP	STANDARD	SAT/UNSAT
19. **WHEN** all HVAC has been swapped to the B(A) trains **AND** operation is satisfactory, **THEN PERFORM** the following to secure the A(B) chilled water loop	N/A	N/A
20. **PLACE** HS-90-026A(B) to "STOP" **AND VERIFY** the A(B) chiller stops.	HS-90-026A(B) to "STOP"	
21. **PLACE** HS-90-019A(B) to "STOP" **AND VERIFY** the A(B) CECW Circ Pump stops. (Cue: You can stop here, you have met the termination criteria for this JPM.)	HS-90-019A(B) to "STOP"	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

Control Enclosure HVAC is aligned to the "A" side equipment.
No Control Enclosure HVAC equipment is inop
S90.1.A has been completed through step 4.7
PV-C-011-053B is 10% open and in manual

INITIATING CUES:

You are directed by shift supervision to swap control enclosure HVAC and chilled water loops from "A" loop to "B" loop. "A" loop is to be aligned to "AUTO"

NO.: 154 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 290003 1.04 TAXONOMY NO.: 3.2/3.3
LESSON PLANS: LOT0450.03 ARC-MCR-002 S78.0.B
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

EXPLAIN the operational differences between a Radiation isolation and a Chlorine isolation for the following CREFAS components:

1. CREFAS Fan start sequence
2. Outside Air Inlet Dampers to CREFAS
3. Differential pressure control

ANSWER :

Chlorine

1. CREFAS fan auto starts with a 30 sec time delay
2. HV78-020A,B,C,D outside air supply dampers to CREFAS filters close
3. MCR positive dp is not maintained

Radiation

1. CREFAS fans start immediately
2. HV78-020A,B,C,D outside air supply dampers to CREFAS filters open
3. Recirc and outside air supply dampers to CREFAS filter modulate to maintain MCR positive pressure

NO.: 155 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 290003 3.01 TAXONOMY NO.: 3.3./3.5
LESSON PLANS: LOT0450.07
:
CATEGORY: 98 RO B
SYSTEMS:

QUESTION :

All "A" Control Enclosure Ventilation trains are in service. Damper HD78-036A, "A" AER HVAC Supply Fan Inlet Damper fails closed.

STATE the effects this failure has on Control Enclosure Ventilation.

ANSWER :

- "A" AER supply fan trips on low flow
- "B" AER supply fan auto starts
- "B" Control Enclosure Chilled Water Pump auto starts
- "B" Control Enclosure Chiller auto starts

TAG

SRC CAT A

NO.: 156 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.4 TAXONOMY NO.: 2.3/3.4
LESSON PLANS: LOT1800.08 T.S. TABLE 6.2.2-11
: TRM 6.2.2
CATEGORY: 98 SRO A
SYSTEMS: T.S.

QUESTION :

Unit 1 and 2 are both in OPCON 1.

What is the required staffing for plant operations?

ANSWER :

1 SRO Shift Manager
2 SRO's
3 RO's
8 EO's
1 of the SRO's (SM/SRO) must be qualified STA

NOTE: May note additional ROs and subtract equal number of EOs

Reference: Per Tech Spec, need 1 SM, 2 SRO's, 3 ROs, and 3 EOs
Need 5 additional for the Fire Brigade (RO or EO)

NO.: 157 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.1 TAXONOMY NO.: 3.7/3.8
LESSON PLANS: LOT1574.01 OM-L-3.2:3
:
CATEGORY: 98 SRO A
SYSTEMS: OPSMAN

QUESTION :

Unit 2 is in an outage.

The CEHVAC System Manager is involved with troubleshooting the fan start logic.

WHAT are the requirements for this System Manager to operate CEHVAC fans at MCR panel 00C681?

ANSWER :

Must be part of approved procedure
Discussed with Operations shift personnel
Will not significantly change plant conditions
Individual has knowledge, experience, training to perform manipulation

Reference: OM-L-3-2:3

NO.: 158 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.30 TAXONOMY NO.: 3.9/3.4
LESSON PLANS: LOT1570.02 A-C-8
:
CATEGORY: 98 SRO A
SYSTEMS: ADMIN

QUESTION :

State two (2) conditions when Unit 1 Reactor Enclosure SGTS SLIDE GATE DAMPER (SGD-76-206-1) can be operated without initiating a locked valve log entry?

ANSWER :

If included in approved test that includes IV or DV
If included in clearance

Reference: A-C-8 general requirements

NO.: 159 REV.: 1 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.29 TAXONOMY NO.: 3.4/3.3
LESSON PLANS: LOT1574.21 OM-C-10.7
:
CATEGORY: 98 SRO A
SYSTEMS: OPSMAN

QUESTION :

Work is complete on the Unit 2 Turbine retrofit mod (turbine replacement) during an outage. A Main Steam Master Clearance was used to perform this work.

Is a check off list required to be performed on the Turbine Extraction Steam system prior to startup?

Explain your answer.

ANSWER :

Yes, due to plant mod, C.O.L. is required

Reference: OM-C-10.7:2

NO.: 160 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.17 TAXONOMY NO.: 2.3/3.5
LESSON PLANS: LOT1570.16 AG-CG-12.1 S22.8.H
:
CATEGORY: 98 SRO A
SYSTEMS: ADMIN

QUESTION :

Review the attached Fire System Impairment Evaluation.

Would you authorize this Impairment? Explain your answer.

ANSWER :

No, S22.8.H and ST-7-022-921-2 requires continuous fire watch for this damper work.

Q# 160 FIRE PROTECTION SYSTEM IMPAIRMENT EVALUATION

AR/WO ACT: E0186331 01 02 **STATUS:** REVWD

SECTION-I IMPAIRMENT INITIATION REQUEST

AFFECTED COMPONENT: LG 2 076 F MISC SYSTEM-076
WORK DESCR: SYSTEM-076 OPEN FIRE DAMPER #FPD-502-016

FIRE PROT SYSTEM/FEATURE TO BE IMPAIRED:
OPEN FIRE DAMPER #FPD-502-016

REQUESTOR: WWW2 SMITH, ROBERT **RQSTORGN:** LLL1
ASSIGNED FOREMAN: AAA1 JONES, ROBERT **ASGNORGN:** LLL1

PB LOCATION: **AREA:** 13 **ELEV:** 283 **ROOM:** 580

==========

SECTION-II COMPENSATORY ACTION REVIEW

SYSTEMS / COMPONENTS REQUIRED TO BE OPERABLE

COMMENTS:

DAMPER WIRED OPEN, REPAIR SEATING SURFACE

COMPENSATORY ACTIONS
Hourly: Y **Continuous:** **Other:** **TRM:** Y

FIREWATCH INSTRUCTIONS:
HOURLY FIREWATCH REQUIRED

SECTION-III IMPAIRMENT IMPLEMENTATION AND FIRE WATCH POSTING

Compensatory Action Reviewed: BBB3
SSV/Fire Prot Auth: BBB3 **Date:** **Time:**
Firewatch Provider Orgn:
Compensatory Actions In-Place/ System Impaired:

SECTION-IV IMPAIRMENT RESTORATION AND FIRE WATCH REMOVAL

Impairment Restoration:

Field Work Complete: **Date:** **Time:**
Fire System returned to service: **Date:** **Time:**
Firewatch Provider Notified:

FIRE PROTECTION SYSTEM IMPAIRMENT EVALUATION

FSI: E0186331 01 02

TIME OF THE PATROL

FSI NUMBER / COMPONENT	TIME INIT	TIME INIT	TIME INIT	TIME INIT	TIME INIT	TIME INIT	TIME INIT	TIME INIT

ROVING FIREWATCH PATROL INSTRUCTIONS

1. Perform Fire Watch Patrol as specified on authorized FIRE SYSTEM IMPAIRMENT.

2. Report hazards such as accumulations of combustible or equipment storage that affects fire safety to shift management.

3. Immediately report all fire conditions to shift management.

CONTINUOUS COMPENSATORY ACTION IMPLEMENTATION LOG

FSI: E0186331 01 02

LOCATION: _____

SIGNATURE	PRINTED NAME	PR NBR EMPLOYER	DATE	TIME

CONTINUOUS FIRE WATCH INSTRUCTIONS

1. The Fire Watch shall have communciations equipment available for use.

2. The Fire Watch shall report any conditions or hazards which could affect the severity of a FIRE. (e.g.: accumulations of combustibles, faulty equipment, etc.)

3. The Fire Watch shall report any fire condition immediately to shift management.

4. When backup fire suppression equipment is required the Fire Watch shall be trained in its use.

NO.: 161 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.14 TAXONOMY NO.: 2.1/3.0
LESSON PLANS: LOT1570.17 MOD-C-7
:
CATEGORY: 98 SRO A
SYSTEMS: ADMIN

QUESTION :

A TPA on Unit 1 Feedwater Heater Drains is to be removed.

What actions must be complete before the removal can begin?

ANSWER :

Shift Management and RO/PRO (Unit 1) must be informed
Shift Management and RO/PRO (Unit 1) must sign concurrance on TPA Tagging and Approval Form.

NO.: 162 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/03/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.1 TAXONOMY NO.: 2.6/3.0
LESSON PLANS: LOT1760.02 HP-C-106/108
:
CATEGORY: 98 SRO A
SYSTEMS: HP

QUESTION :

HPCI repair is required.

Estimated radiation exposure is 1200 mrem (whole body gamma)

The only qualified worker has the following exposure history:

Year: 3050 mrem
Lifetime: 7100 mrem

WHAT Radiation Exposure controls must be in place to allow this worker to perform the task?

WHAT is the worker's exposure limit?

ANSWER :

Planned Special Exposure required.
Limit is 5000 mrem.

Reference: HP-C-106/108

NO.: 163 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.4 TAXONOMY NO.: 2.5/3.1
LESSON PLANS: LOT1760.02 HP-C-106
:
CATEGORY: 98 SRO A
SYSTEMS: HP

QUESTION :

RWCU startup is required.

Estimated radiation exposure for the job is 150 mrem.

Two EOs are available for this task.

Based on the exposure history below, WHICH ONE will be selected for the task? Explain your answer.

EO	TEDE YEAR	SHALLOW DOSE YEAR
A	1600 mrem	10 Rem
B	1900 mrem	3 Rem

ANSWER :

A
B will require Admin Dose Extension to exceed 2 rem/yr.

Reference: HP-C-106

NO.: 164 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.44 TAXONOMY NO.: 2.1/4.0
LESSON PLANS: LEPP1200.09
:
CATEGORY: 98 SRO A
SYSTEMS: ERP

QUESTION :

Plant conditions are as follows:

Reactor Water Level	unknown
Drywell Pressure	23 psig
Post LOCA Radiation	3.4E + 4 R/Hr
North Stack WRAM	2.3E + 7 uCi/sec

State the Emergency Classification based on these conditions.

If appropriate, state the Protective Action Recommendations ?

ANSWER :

General Emergency
PAR is evacuate 2 mile radius, evacuate affected sector(s) and 2 adjacent sectors for 2 to 5 miles.

Reference: ERP-101

NO.: 165 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.43 TAXONOMY NO.: 2.8/3.5
LESSON PLANS: LOT1563.04 SE-12
:
CATEGORY: 98 SRO A
SYSTEMS: SE

QUESTION :

During notification of a General Emergency, the SAS operator cannot be contacted using extension 5164, Prelude extension 181, or radio due to power failures.

How can SAS be contacted?

ANSWER :

Use regular phone with 557-9860 number.

Reference: Use SE-12 Attachment 1 for Meridian phone number that is automatically transferred due to power loss.

TAB

SRU CAT B

TITLE: MANUALLY INITIATE SLC (Alternate Path)

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to any low power (<4%) IC.
2. Insert MALF-195A, RWCU Isolation Valve (HV-44-1F001) fails open.
3. Insert MALF-195B, RWCU Isolation Valve (HV-44-1F004) fails open.
4. Insert MALF-29B
5. Insert MALF-407C
6. Arm and depress the RPS scram and ARI push buttons
7. Place the mode switch in shutdown

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

10 MINUTES

IMPORTANCE RATING(S):	SYSTEM NUMBER(S):
A4.08 4.2/4.2	211000
A4.06 3.9/3.9	211000

REFERENCES:

S48.1.B

TASK STANDARD(S):

Standby Liquid injecting into the RPV, failure of RWCU to isolate is identified, and attempt made to manually isolate RWCU.

TASK CONDITIONS:

1. ATWS in progress on Unit 1.
2. SLC injection is directed by T-101.

INITIATING CUES:

You are directed by Shift Supervision to manually initiate the Unit 1 SLC System, per S48.1.B.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain a current revision of S48.1.B	Current revision of S48.1.B obtained	
2. SLC System set up per S48.1.A, Standby Liquid Control System Set Up For Normal Operation. (CUE: If asked, say, "I know of no abnormalities in SLC system alignment.")	N/A	N/A
3. SLC manual initiation is directed by T-101, RPV Control. (CUE: If asked, say "SSV directs SLC injection from T-101.")	N/A	N/A
4. **ENSURE** 48-1F036 "SLC Manual Injection Maintenance Valve" (INBOARD), open.	48-1F036 open.	
5. **VERIFY** the following SLC squib valve continuity white lights lit: XV-48-1F004A XV-48-1F004B XV-48-1F004C	Indicating lights on C603 are lit for: XV-48-1F004A XV-48-1F004B XV-48-1F004C.	
6. **ENSURE** the following:	N/A	N/A
6a. HV-48-1F006A "SLC Injection" (OUTBOARD A), open.	HV-48-1F006A is open.	
6b. HV-48-1F006B "SLC Injection" (OUTBOARD B), open	HV-48-1F006B is open.	
*7. **START** the following SLC injection pumps, by holding keylock switches in "RUN" for at least one second before releasing: 1AP208 "SLC Injection Pump" 1BP208 "SLC Injection Pump" 1CP208 "SLC Injection Pump"	SLC Pump A, B, and C switches to RUN for at least one second and release.	
8. **VERIFY** squib valves have fired by loss of the following continuity white lights: XV-48-1F004A XV-48-1F004B XV-48-1F004C	Indicating lights on C603 extinguished for: XV-48-1F004A XV-48-1F004B XV-48-1F004C.	

STEP	STANDARD	SAT/UNSAT
9. Acknowledge Alarms	Depress alarm acknowledge pushbutton	
10. **PERFORM** the following to ensure operation of SLC injection pumps within parameters.	N/A	N/A
11. **VERIFY** PI-48-1R600A,B,C "Pump Discharge Pressure" (Px), greater than reactor pressure.	Indication on C603 for pump discharge pressure is greater than reactor pressure.	
12. **VERIFY** LI-48-1R601, "SLC Tank Level" (LV), lowering at a steady rate.	C603 indication SLC tank level decreasing.	
13. **VERIFY** lowering reactivity as observed by lowering power on nuclear instrumentation.	Available power indications show power going down.	
15. **ENSURE** the following at 10C602:	N/A	N/A
EVALUATOR NOTE: If asked, respond as the CRS, "I want you to isolate RWCU."		
DRIVER NOTE: When examinee takes HS-44-1F001 to CLOSE, remove MALF-195A..		
*15a. HV-44-1F001 "RWCU Inboard Isolation" (INBOARD), closed.	Recognize HV-44-1F001 failed to isolate and try to manually close valve. Notify CRS.	
15b. HV-44-1F004, 'RWCU Outboard Isolation" (OUTBOARD), closed. (CUE: The evaluator should say, "You can stop here, You have met the termination criteria for this JPM." after either the HV-44-1F001 or HV-44-1F004 is closed.)	Recognize HV-44-1F004 failed to isolate and try to manually close valve. Notify CRS.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. ATWS in progress on Unit 1.
2. SLC injection is directed by T-101.

INITIATING CUES:

You are directed by Shift Supervision to manually initiate the Unit 1 SLC System, per S48.1.B.

NO.: 166 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 211000 4.03 TAXONOMY NO.: 3.8/3.9
LESSON PLANS: LOT0310.13 TS 3.5.1 TS 4.1.5.B.2
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 2 is in OPCON 1. The Equipment Operator informs you that the SBLC Tank temperature is 62°F. SBLC tank concentration is 13%.

What action, if any, is required for the above conditions?

Explain why it is important to control SBLC Tank temperature.

ANSWER :

Enter T/S 3.1.5, Action 2 and restore SBLC to operable status within 8 hours or be in at least Hot Shutdown within the next 12 hours

SBLC Tank temperature is controlled to maintain sodium pentaborate in solution.

NO.: 167 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/99
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 211000 4.08 TAXONOMY NO.: 4.2/4.2
LESSON PLANS: LOT0310.03 M-1-C41-1030-F- 004.7
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 1 has experienced a loss of Div II power to RRCS.

State how this loss of power affects the operation of the three (3) SLC pumps.

ANSWER :

- "B" SLC pump starts will be disabled.
- "A" and "C" SLC pumps will function normally.

TITLE: REMOVE 6A FEEDWATER HEATER FROM SERVICE

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reactor power at 90% with all rods out.
2. When the operator requests the air to be vented off the 6A FWH dump valve, the simulator instructor should insert MALF-521,E to fail this valve open.
3. Ensure FLLLP <.92

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A4.12 3.0/3.0 256000

REFERENCES:

1. S02.2.B

TASK STANDARD(S):

Feedwater Heater 6A removed from service.

TASK CONDITIONS:

1. Unit 1 is entering end of cycle coastdown and the Reactor Engineers have authorized the removal of the sixth feedwater heaters.

INITIATING CUES:

Shift Supervision directs you to remove 6A Feedwater Heater from service per S02.2.B.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of S02.2.B.	Current revision of S02.2.B obtained.	
NOTE: When the EO is directed to perform this step, the instructor should insert **MALF-521,E**, to fail the 6A FWH dump valve open.		
2. Ensure FLLLP is <.92	FLLLP is <.92.	
3. Close the air supply valve to LC-04-106A and vent off air at regulator to fail open Sixth Feedwater Heater Dump Valve. (El. 269 MG area) (Cue: Air has been isolated and vented to LC-04-106A, 6A FWH Dump Valve.	Direct an EO to isolate and vent air from LC-04-106A.	
*4. Close HV-04-*10A, 6A FWH Drain, 6 TO 5 at Panel *0C668.	HV-04-110A is closed.	
*5. Close HV02-*19A, Extraction Steam Isolation 4TH TO 6 at Panel *0C668.	HV02-119A is closed.	
6. Open HV-C-04-*18A, 6A FWH Startup Vent by reducing controller output pressure to zero psi (548-T7-269) (Cue: You have met the termination criteria for this JPM. You can stop here.	Direct an EO to open HV-C-04-118A.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Unit 1 is entering end of cycle coastdown and the Reactor Engineers have authorized the removal of the sixth feedwater heaters.

INITIATING CUES:

Shift Supervision directs you to remove 6A Feedwater Heater from service per S02.2.B.

NO.: 168 REV.: 1 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 259001 1.05 TAXONOMY NO.: 3.2/3.2
LESSON PLANS: LOT0550.06
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

The "1B" Condensate pump is out of service. "1C" Reactor Feedwater pump trips.

EXPLAIN the response of the operating Reactor Feedwater pumps and the reason for this response.

ANSWER :

The operating Reactor Feedwater pumps will both increase speed, but will be limited by the 78% speed limiter.

With one Condensate pump out of service, RFPT speed is limited to prevent RFPT trip due to low suction pressure.

NO.: 169 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 259001 1.19 TAXONOMY NO.: 3.0/3.3
LESSON PLANS: LOT0550.05 C22-1050-E C32-1020
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

An ATWS is in progress on Unit 1.
Reactor power is 40%.
Two SRVs cycled open and closed on high pressure when the Main Turbine tripped.

Explain how the Reactor Feedwater System will respond.

Explain how RFPT speed is controlled under these conditions.

ANSWER :

- The RFPT MGUs will shift to manual.
- The RFPT MGUs will runback to minimum.
- The RFPT jack will be de-energized.
- 30 seconds following the runback, manual operation of the FWLCS will be available.

TITLE: ROD WORTH MINIMIZER OPERABILITY VERIFICATION

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC 1
2. Place mode switch to startup
3. Start a CRD pump and toggle remote function 18 CR to open discharge valve
4. Adjust CRD flow to normal
5. Select rod 02-19

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

A3.02 3.5/3.4 201006

REFERENCES:

ST-6-073-320-1

TASK STANDARD(S):

ST-6-073-320-1 complete through step4.4.13

TASK CONDITIONS:

1. Unit 1 is in OPCON 2
2. All prerequisites of ST-6-073-320-1 are completed.
3. RWM computer chassis keylock switch is in "OPER" at panel 10C615 (AER)

INITIATING CUES:

You are directed by Shift Supervisor to perform ST-6-73-320-1, RWM Operability Verification.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
EVALUATOR NOTE: Provide a copy of ST-6-073-320-1. When examinee asks for a second licensed operator for double verification tell him/her that "the PRO will be available for double verification." Sign double verification steps as required without any comment as to correctness of step.		
1. **VERIFY** all prerequisites are satisfied.	Recognize from the initiating cues that all prerequisites are satisfied	
2. **OBTAIN** SSV permission to start test. (Cue: The CRS gives you permission to perform the test.)	Asks CRS for permission to start test.	
3. **OBTAIN** PRO permission to start test. (Cue: The PRO gives you permission to perform the test.)	Asks PRO for permission to start test.	
4. **RECORD** "AS FOUND" position of all switches/valves listed in Attachment 1.	"AS FOUND" position of all switches/valves listed in Attachment 1 are recorded.	
5. **ENSURE** RWM Computer Chassis keylock switch is in "OPER" at panel 10C615 (AER). (Cue: Recognize from initiating cue that switch is in OPER.)	Recognize from initiating cue that key is in OPER or send EO to Aux. Equip. Room to verify.	
6. **PERFORM** the following at panel 10C603:	N/A	N/A
7. **ENSURE** Rod Select Module keylock switch is turned clockwise to the "ON" position.	Rod Select Module keylock switch is ON.	
8. **ENSURE** RWM, Operator Display keylock switch is in "OPERATE."	RWM, Operator Display keylock switch is in "OPERATE."	
OPCON 2 - OUT OF SEQUENCE ROD SELECTION ERROR/WITHDRAW BLOCK VERIFICATION.		
9. **VERIFY** Power Field indicates **POWER: BELOW LPSP** on the RWM Operator Display, at panel 10C603.	Power Field indicates **POWER:BELOW LPSP** on the RWM Operator Display, at panel 10C603.	
10. **RECORD** test start date/time:	Test start date/time recorded	
*11. **SELECT** control rod 02-39 at Rod Select Module.	Control rod 02-39 selected.	

STEP	STANDARD	SAT/UNSAT
12. **VERIFY** the following at the RWM Operator Display at panel 10C603:	N/A	N/A
13. **MODE:OPERATE** is displayed in the Mode Field.	**MODE:OPERATE** is displayed in the Mode Field.	
14. **SR 02-39:00** is displayed in Selected Rod Field.	**SR 02-39:00** is displayed in Selected Rod Field.	
15. **SE** is **not** displayed in Select Error Field.	**SE** is **not** displayed in Select Error Field.	
16. **OK** is displayed in the Self Test Field.	**OK** is displayed in the Self Test Field.	
*17. **SELECT** control rod 02-31 at Rod Select Module,	Control rod 02-31 selected. verified at 00.	
17a. **AND VERIFY** at 00.	Rod 02-31 verified at 00.	
18. **VERIFY** Rod Select Module, WITHDRAW BLOCK indicating light Lit.	Rod Select Module, WITHDRAW BLOCK indicating light Lit.	
19. **VERIFY** the following at the RWM Operator Display:	N/A	N/A
20. **BLOCKS:WITHDRAW** is displayed in Blocks Field.	**BLOCKS:WITHDRAW** is displayed in Blocks Field.	
EVALUATOR NOTE: If examinee questions supervision about insert block for rod 02-3, report, "I have talked with the RE's about this and this insert block is expected but not required for this test."		
21. **SR 02-31:00** is displayed in Selected Rod Field.	**SR 02-31:00** is displayed in Selected Rod Field.	
22. **WB** is displayed in Blocks Status Field.	**WB** is displayed in Blocks Status Field.	
23. **SE** is displayed in Select Error Field.	**SE** is displayed in Select Error Field.	
24. **PERFORM** the following to verify latest message/reason for block:	N/A	N/A
25. **PRESS** {ETC} softkey.	{ETC} pressed on softkey	
26. **PRESS** {MESSAGES} softkey.	{MESSAGES} pressed on softkey.	
27. **VERIFY** REASON FOR BLOC **AND** LATEST MESSAGE reads **SELECTED ROD 02-31 IS NOT CONTAINED IN THE CURRENT STEP**.	REASON FOR BLOC **AND** LATEST MESSAGE reads **SELECTED ROD 02-31 IS NOT CONTAINED IN THE CURRENT STEP** displayed.	
28. **PRESS** {EXIT} softkey to return to original display.	{EXIT} pressed on softkey	
*29. **ATTEMPT** to notch withdraw 02-31 to position 02.	Withdraw button depressed with 02-31 selected	

STEP	STANDARD	SAT/UNSAT
30. **VERIFY** rod will **not** move.	Rod stays at 00.	
*31. **SELECT** control rod 02-39 at Rod Select Module.	Control rod 02-39 selected.	
32. **VERIFY** Rod Select Module, WITHDRAW BLOCK indicating light **not** Lit.	Rod Select Module, WITHDRAW BLOCK indicating light **not** Lit.	
33. **VERIFY** the following at RWM Operator Display:	N/A	N/A
34. **WITHDRAW** is **not** displayed in Blocks Field.	**WITHDRAW** is **not** displayed in Blocks Field.	
35. **SR 02-39:00** is displayed in Selected Rod Field.	**SR 02-39:00** is displayed in Selected Rod Field.	
36. **WB** is **not** displayed in Blocks Field.	**WB** is **not** displayed in Blocks Field.	
37. **SE** is **not** displayed in Select Error Field.	**SE** is **not** displayed in Select Error Field.	
38. **RECORD** date/time of initial rod withdrawal from GP-2, Appendix 1 **AND VERIFY** this time to be within 8 hours of time recorded in step 4.4.2 (Cue: You can stop here, you have met the termination criteria for this JPM.)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Unit 1 is in OPCON 2
2. All prerequisites of ST-6-073-320-1 are completed.
3. RWM computer chassis keylock switch is in "OPER" at panel 10C615 (AER)

INITIATING CUES:

You are directed by Shift Supervisor to perform ST-6-73-320-1, RWM Operability Verification.

NO.: 170 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 201006 1.02 TAXONOMY NO.: 3.4/3.4
LESSON PLANS: LOT0095.03 S73.0.J RE-C-20
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 1 is in OPCON 2 at 5% power with a startup in progress.
Rod 02-39 settles at position "48".
Prior to selecting the next rod, rod 02-39 indication changes to "99"

STATE the effect this has on operation of the Rod Worth Minimizer.

WHAT action(s) must be taken to withdraw the next in-sequence rod?

ANSWER :

RWM will apply rod blocks.

To withdraw the next in-sequence rod:

- substitute position must be entered into the RWM
  OR
- The RWM must be bypassed.

NO.: 171 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 201006 1.04 TAXONOMY NO.: 3.1/3.2
LESSON PLANS:
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

A reactor startup is in progress on Unit 2.
Reactor power is 8%.
Steam line flow transmitter FT-C32-2N003A fails upscale.

Explain the effect on the Rod Worth Minimizer.

What actions are required to continue rod withdrawal for reactor startup?

ANSWER :

RWM will no longer enforce rod blocks.

This makes the RWM inoperable per T/S 3.1.4.1.. Operation may continue provided that control rod movement is verified by a second licensed operator or technically qualified member of the unit technical staff.

TITLE: SHUTDOWN COOLING FLOW ADJUSTMENTS - (Alternate Path)

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC-5 (Flooded up into Rx Well).
2. Adjust HV-C-51-103A (1A RHR Heat Exchanger Outlet Bypass POS) to 100%.
3. Ensure HV-51-1F015A (Shutdown Cooling Return Valve) is full open.
4. Throttle HV-C-51-1F048A (Heat Exchanger Bypass) closed to obtain 9000 gpm flow.
5. Close HV-51-1F003A (Heat Exchanger Outlet).
6. Insert MALF MRM 019A A RHRSW Rad Monitor Target Value of 200 No Ramp Time.

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S):

A4.09 3.1/3.1

SYSTEM NUMBER(S):

205000

REFERENCES:

S51.8.B

TASK STANDARD(S):

1A RHR pump tripped and 1A RHR Heat Exchanger isolated.

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on XI-36-101 point 1.
2. "0A" RHRSW pump is in service providing flow to "1A" RHR Heat Exchanger.
3. Reactor level is being maintained at 494" as read on LI-42-1R605.
4. The Fuel Pool Gates are removed.
5. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to maintain reactor coolant temperature within the 75°F to 85°F band.
6. The Unit 1 Reactor Operator is performing the cooldown ST.

Initiating Cues:

The SSV has directed you to utilize S51.8.B, Shutdown Cooling Operation, to provide additional cooling to reactor coolant.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain a Current revision of S51.8.B (Cue: Provide a copy of S51.8.B	Current revision of S51.8.B, obtained.	
2. If additional cooling is required, then PERFORM the following: (Cue: Additional cooling is required. Supervision does not want the 1F048A closed any further.)	N/A	N/A
2a. OPEN HV-C-51-*F048A(B), Heat Exch Bypass.	HV-C-51-1F048A handswitch to OPEN.	
2b. OPEN HV-51-*F003A(B), OUTLET	HV-51-1F003A handswitch to OPEN.	
INSTRUCTOR NOTE: Insert MALF MRM 019A Tartget of 700 Ramp Time 4 Minutes.		
2c. CLOSE HV-C-51-*03A(B), POS.	Depress HV-C-51-103A controller "CLOSE" pushbutton to reduce meter output to 0%.	
3. Respond to alarm B-4 on 011 SERV WTR B (RHRSW HI RADIATION.) (Cue: Evaluator should say, "I am the CRS, you have just received an RHRSW HI RADIATION alarm.")	Obtain ARC B-4 on 011 SERV WTR B.	
*4. Verify the high rad condition on RR12-OR616A,B; RR12-OR615A,B. (Cue: Tell operator that "Point 1 on RR12-OR616A shows an increasing trend and indicates 350 cpm. RR12-OR615A is just beginning to show an increasing trend.")	Read radiation recorders and determine that radiation is leaking from 1A RHR Heat Exchanger into the RHRSW System.	
5. If an actual high radiation condition is suspected,	N/A	N/A
*5a. Trip associated RHR pump.	RHR Pump "1A" STOPPED.	
*5b. Isolate shell side at 1F047 or 182.	HV-51-1F047A CLOSED.	
*5c. and 1F003, 103 or 1F053 for the affected loop. (Cue: Tell Operator, "You can stop here, we have met the termination criteria for this JPM.")	HV-51-1F003A CLOSED. HVC-51-103 CLOSED.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on XI-36-101 point 1.
2. "0A" RHRSW pump is in service providing flow to "1A" RHR Heat Exchanger.
3. Reactor level is being maintained at 494" as read on LI-42-1R605.
4. The Fuel Pool Gates are removed.
5. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to maintain reactor coolant temperature within the 75°F to 85°F band.
6. The Unit 1 Reactor Operator is performing the cooldown ST.

Initiating Cues:

The SSV has directed you to utilize S51.8.B, Shutdown Cooling Operation, to provide additional cooling to reactor coolant.

NO.: 172 REV.: 5 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.18 TAXONOMY NO.: 2.3/3.6
LESSON PLANS: LOT1530.03
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 1 is in OPCON 5* with fuel movements in progress
- The "A" RHR LOOP is drained for outage related work
- The "1B" RHR pump is operating in shutdown cooling
- Reactor Engineering has determined Decay Heat rate is 8.4 MWth
- Reactor shutdown occurred 7 days ago

The "1B" RHR pump has low oil level.

What actions must be taken to provide coolant circulation and decay heat removal if the "1B" RHR pump is removed from service for maintenance?

ANSWER :

"1D" RHR pump will be used with the "1B" RHR Heat exchanger to provide coolant circulation and decay heat removal.

References: GP-6.2 and S51.8.H

NO.: 173 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 205000 1.01 TAXONOMY NO.: 3.3/3.2
LESSON PLANS: LOT0370.09 ST-6-107-640-1 S51.8.B
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 2 is in OPCON 4
- Both Recirc Loops are secured and isolated
- "2A" RHR pump is operating in shutdown cooling mode
- Heat Exchanger Outlet Bypass valve, HIC-51-203A, is 5% open
- "2A" RHR Heat Exchanger Outlet valve, HV-51-2F003A, is closed
- RWCU is operating with 1 pump and 1 filter/demin

STATE the indication that must be used to obtain reactor coolant temperature. Explain your answer.

ANSWER :

RWCU temperature on TI-44-2R607 position 5 or 6

"A" RHR SDC temperature indication cannot be used with HIC-51-203A throttled to <20% open per S51.8.B

TITLE: UTILIZATION OF COOLING TOWER OR SPRAY POND AS A HEAT SINK FOR RHRSW AND ESW

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset simulator to IC 13
2. Start "A" RHRSW pump
3. Start "B" RHRSW pump

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

AA1.01 3.3/3.4 . 295018

REFERENCES:

S12.7.B, SE-9

TASK STANDARD(S):

RHRSW/ESW suction and return aligned to cooling towers per S12.7.B

TASK CONDITIONS:

Both Units have been shutdown due to severe damage to all Spray Pond Spray headers.
Shutdown cooling is being placed in service on both units.
Sluice Gates 009-1003 and 009-2003 RHRSW/ESW supply header from Unit 1 (Unit 2) cooling tower are open

INITIATING CUES:

You are directed by shift supervision to align the cooling towers as a heat sink for RHRSW and ESW per S12.7.B

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of S12.7.B.	Current revision of S12.7.B obtained.	
*2. **IF** it is desirable to continue using Cooling Towers as heat sinks on an ESW pump start, **THEN PLACE** HSS-12-019 A(B,C,D), "Spray Pond Auto Bypass Pump Start Select Keylock Handswitches" (AUTO VLV LINEUP BYPASS), in "BYPASS." (Cue: It is desired to continue to use the cooling towers as heat sinks if ESW pumps start.)	HSS-12-019 A(B,C,D), "Spray Pond Auto Bypass Pump Start Select Keylock Handswitches" (AUTO VLV LINEUP BYPASS), in "BYPASS." Alarms acknowledged.	
3. **ENSURE** valves are aligned as follows: (Cue: EO reports that 09-1146, 09-2146,are closed and 09-1147, 09-2147 are open	Calls EO or asks SSVN for valve alignment	N/A
4. 09-1146 "Return Header Stop Valve From ESW/RHRSW Pumps" CLOSED	Called EO to ensure 09-1146 closed	
5. 09-2146"Return Header Stop Valve From ESW/RHRSW Pumps" CLOSED	Called EO to ensure 09-2146 closed	
6. 09-1147"Return Header Stop Valve From ESW/RHRSW Pumps" OPEN	Called EO to ensure 09-1147 open	
7. 09-2147"Return Header Stop Valve From ESW/RHRSW Pumps" OPEN	Called EO to ensure 09-2147open	
*8. **CLOSE** HV-12-005, "RHRSW/ESW Wetwell Intertie Gate"	HV-12-005PIT XCONN GATE closed.	
*9. Simultaneously **PLACE** HSS-12-015A-1, **AND** HSS-12-015C-1, in "COOLING TOWER."	HSS-12-015A-1, **AND** HSS-12-015C-1, simultaneously placed in "COOLING TOWER."	
*10. Simultaneously **PLACE** HSS-12-015B, **AND** HSS-12-015D, in "COOLING TOWER."	HSS-12-015B, **AND** HSS-12-015D, simultaneously placed in "COOLING TOWER."	
11. **VERIFY** valves are positioned per Attachment 3.	N/A	N/A
12. HV-12-003A,B,C,D RHR/ESW Wetwell Inlet Gates closed.	HV-12-003A,B,C,D RHR/ESW Wetwell Inlet Gates closed.	

STEP	STANDARD	SAT/UNSAT
13. HV-12-111 HV-12-113 RHR/ESW Return to Unit 1 Cooling Tower TWR 1 RETURN OPEN	HV-12-111 HV-12-113 RHR/ESW Return to Unit 1 Cooling Tower TWR 1 RETURN OPEN	
14. HV-12-112 HV-12-114 Unit 1 Cooling Tower to RHR/ESW Pump Wetwell TWR 1 TO POND OPEN	HV-12-112 HV-12-114 Unit 1 Cooling Tower to RHR/ESW Pump Wetwell TWR 1 TO POND OPEN	
15. HV-12-211 HV-12-213 RHR/ESW Return to Unit 2 Cooling Tower TWR 2 RETURN OPEN	HV-12-211 HV-12-213 RHR/ESW Return to Unit 2 Cooling Tower TWR 2 RETURN OPEN	
16. HV-12-212 HV-12-214 Unit 2 Cooling Tower to RHR/ESW Pump Wetwell TWR 2 TO POND OPEN	HV-12-212 HV-12-214 Unit 2 Cooling Tower to RHR/ESW Pump Wetwell TWR 2 TO POND OPEN	
17. HV-12-032A,B,C,D Spray Nozzles Inlet SPRAY INLET A (B,C,D) CLOSED	HV-12-032A,B,C,D Spray Nozzles Inlet SPRAY INLET A (B,C,D) CLOSED	
18. HV-12-031A ,C Winter A & C Bypass SPRAY BYPASS A/C CLOSED	HV-12-031A ,C Winter A & C Bypass SPRAY BYPASS A/C CLOSED	
19. HV-12-031B,D Winter B & D Bypass SPRAY BYPASS B/D CLOSED	HV-12-031B,D Winter B & D Bypass SPRAY BYPASS B/D CLOSED	
20. **ENSURE** the following valves are closed:	N/A	N/A
21. HV-12-017A"Cooling Tower Return Cross-Tie"(TWR 1 - TWR 2)	HV-12-017A"Cooling Tower Return Cross-Tie"(TWR 1 - TWR 2) CLOSED	
22. HV-12-017B"Cooling Tower Return Cross-Tie"(TWR 1 - TWR 2) (Cue: you can stop here, you have met the termination criteria for this JPM.)	HV-12-017B"Cooling Tower Return Cross-Tie"(TWR 1 - TWR 2) CLOSED	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

Both Units have been shutdown due to severe damage to all Spray Pond Spray headers.
Shutdown cooling is being placed in service on both units.
Sluice Gates 009-1003 and 009-2003 RHRSW/ESW supply header from Unit 1 (Unit 2) cooling tower are open

INITIATING CUES:

You are directed by shift supervision to align the cooling towers as a heat sink for RHRSW and ESW per S12.7.B

NO.: 174 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 400000 1.01 TAXONOMY NO.:
LESSON PLANS: LOT0400.06 SE-9 S12.7.B
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

SE-9, High Winds, has been entered.

Damage at the Spray Pond has resulted in the crew lining up "0B" RHRSW Loop to the Unit 2 Cooling Tower. RHRSW/ESW Wetwell Intertie Gate, HV-12-005, has failed to close.

Explain the effects of this failure on Unit 2 Cooling Tower.

ANSWER :

Unit 2 Cooling Tower inventory will letdown to the Spray Pond via the "0A" RHRSW/ESW pump wetwell inlet gates due to the elevation difference.

NO.: 175 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 400000 1.03 TAXONOMY NO.: 2.7/3.0
LESSON PLANS: LOT0400.03
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

The following conditions exist:

- Both Units in OPCON 1
- RHR is in Suppression Pool Cooling mode with "1A" RHR pump and "0A" RHRSW pump in service
- 10Y206 must be deenergized for testing

Explain the effect of deenergizing 10Y206 on Suppression Pool Cooling operation.

ANSWER :

10Y206 powers the "0A" RHRSW Rad Monitor, loss of power will cause the Rad Monitor to trip which will trip the "0A" RHRSW pump.

TITLE: ALTERNATE DC CONTROL POWER FOR ADS VALVES

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

None

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

25 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

AA1.02 3.8/4.1 295004

REFERENCES:

1. SE-8-2, Section 2.5.5

TASK STANDARD(S):

Division 1 ADS energized from Division 2 DC

TASK CONDITIONS:

1. Reactor Pressure is 990 psig and rising with the MSIVs closed.
2. A reactor scram occurred 15 minutes ago.
3. Fire has caused a loss of Division 1 and 3 DC fuse panels.

INITIATING CUES:

You are directed by Shift Supervision to perform Section 2.5.5 of SE-8-2 to energize Division 1 ADS control power from Division 2 DC on Unit __.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of SE-8-2. (Cue: Provide current revision of SE-8-2 to the candidate.)	Current revision of SE-8-2 obtained.	
2. **IF** Division 1 DC power is lost, **OR** Division 1 Battery Chargers do not function, **THEN SUPPLY** alternate DC power as follows:	N/A	N/A
*3. Obtain cable and tools from storage locker. **NOTE**: 150 feet of #10 cable is stored at El. 254' in RPS/UPS Static Inverter Room (CAT 198 KEY - Frangible Lock Key required for entry, or break lock as necessary). (Cue: Cable, screwdriver, fuse pullers have been obtained.	Open storage box. Cable lugged and plain ends identified. Fuse pullers and screwdriver located.	
*4. **OPEN** breaker *PPB1-20 on *PPB1 in RPS/UPS Static Inverter Room. (CUE: Breaker handle is in the down position.)	Breaker is open.	
5. **NOTE**: Lugged connection end of cable is required in Switchgear Room.	Examinee identifies which end of cable is being connected to respective locations. Otherwise, ask a follow up question.	
*6. **CONNECT** plain end of jumper to right side of 30A fuse for spare circuit breaker *PPB1-20 at *PPB1 with black (positive) lead connected to upper fuse **AND** white (negative) lead connected to the lower fuse. (Cue: Cable is connected.)	1. Breaker door opened 2. Connection point identified (terminal blocks). 3. Method of connection identified (loosen set-screws, insert wires into side of blocks, tighten set screws) Ask follow up question if not demonstrated.	
*7. **TIGHTEN** set screws to secure the wires.	Set screws tightened.	

STEP	STANDARD	SAT/UNSAT
8. **ROUTE** cable from *PPB1 to *PPA1 in D11/D21 4 KV Switchgear Room 435/429 **AND SECURE** doors open using doorstops.	Routing path walked from inverter room, into Cable Spreading Room, into hallway down to elev.239', out onto 239' floor, into D11/D21 4 KV Room.	
*9. **OPEN and SECURE** door #379/376 from cable spread room to inverter room/ inverter room to turbine area 239'. CUE: Door is blocked open.)	Door is opened and blocked open.	
*10. **OPEN and SECURE** door from cable spread room to hallway. (unit #1 only) (CUE: Door is blocked open.)	Door is opened and blocked open.	
*11. **OPEN and SECURE** door from hallway to turbine area elev. 239'. (unit #1 only) (CUE: Door is blocked open.)	Door is opened and blocked open.	
*12. **OPEN** door #358/361 from turbine area elev 239' to D*3 4 KV switchgear room, **AND SECURE** open.	Door is opened and blocked open.	
*13. **OPEN** door #363/366 from D*3 4 KV switchgear room D*1 4 KV switchgear room **AND SECURE** open. (Cue: Door is blocked open.)	Door is opened and blocked open.	
*14. **OPEN** breaker *PPA1-20 on *PPA1. (CUE: Breaker handle is in the down position.)	Breaker opened.	
*15. **PULL** both fuses. (CUE: Fuses are removed.)	1. Breaker door opened (may substitute adjacent spare breaker for ADS breaker) 2. Fuses removed	

STEP	• STANDARD	SAT/UNSAT
*16. ... **AND CONNECT** the lugged jumper ends to the screws holding the left side fuse clip down at *PPA1 in *PPA1-20 with the black (positive) lead connected to the upper fuse **AND** white (negative) lead connected to the lower fuse. (Cue: Cable is connected.)	NOTE: Black positive lead should be connected to upper fuse, per note above Step 9. 1. Left (line/source) side fuse clips identified. 2. Method of connection identified (REMOVE screws, insert round lug under clip base, replace screws) (NOTE: This is more easily demonstrated on the spare breaker.)	
*17. **REPLACE** the fuses.	Fuses replaced.	
*18. **CLOSE** breaker *PPB1-20 on*PPB1 (Cue: Breaker switch is to the left.)	Breaker closed. (By pushing the breaker switch to the left on *PPB1.)	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Reactor Pressure is 990 psig and rising with the MSIVs closed.
2. A reactor scram occurred 15 minutes ago.
3. Fire has caused a loss of Division 1 and 3 DC fuse panels.

INITIATING CUES:

You are directed by Shift Supervision to perform Section 2.5.5 of SE-8.2 to energize Division 1 ADS control power from Division 2 DC on Unit __.

NO.: 176 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/99
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 218000 4.01 TAXONOMY NO.: 3.7/3.9
LESSON PLANS: LOT0330.06 B21-1060-E
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 2 plant conditions are as follows:

- Reactor Level is -50" and steady
- Reactor Pressure is 900 psig
- Drywell pressure is 0.7 pisg
- D22 Safeguard Bus is deenergized
- DIV 1 DC is deenergized

A Emergency Blowdown is required due to T-103 High Radiation.

State actions required to open five (5) ADS valves from the MCR.

ANSWER :

Manually start "2D" RHR pump
Arm and Depress DIV III ADS Initiation pushbuttons.

NO.: 177 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 218000 4.04 TAXONOMY NO.: 3.5/3.6
LESSON PLANS: LOT0330.02 M-41, SH2 M-51, SH1
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 1 is in OPCON 1 when a sustained loss of both Instrument Gas Compressors occurs.

Both Instrument Gas receiver pressures are 0 psig.

For this condition, STATE the source(s) of operating gas to the ADS SRVs.

ANSWER :

Individual ADS SRV accumulators.

Backup nitrogen bottles

Outside long-term N_2 connections

TITLE: MSIV/PCIG LOW LOW LOW LEVEL BYPASS (MSIV'S OPEN)

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

None

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

20 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

EA1.11 3.5/3.6 295037

REFERENCES:

1. T-221

TASK STANDARD(S):

Isolation bypassed in accordance with T-221, Section 4.2.

TASK CONDITIONS:

1. An ATWS is in progress
2. The MSIV's are open and Instrument Gas system is not isolated.
3. No indication of a Main Steam line break or gross fuel failure.
4. 1BY160 is not known to be inoperative.

INITIATING CUES:

You are directed by Shift Supervision to perform T-221 (MSIV's open) on unit__

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP		STANDARD	SAT/UNSAT
NOTE: **IF** this JPM is the ***first*** of multiple T-200 series JPMs being performed by a single candidate **THEN** steps #1 and #2 apply. **OTHERWISE** mark steps #1 and #2 as N/A **AND** provide the following to the candidate : a. INITIATING CUE(S) b. CUE: " You are now in possession of the T-221 equipment container. It contains all tools and equipment required by the procedure. You are to simulate their use during performance of the procedure." c. PROCEDURE COPY			
*1.	Obtain current revision of T-221	Current revision of T-221 obtained	
*2.	Obtain tools/equipment from Unit * T200 cabinet: - (1) screwdriver - (1) screwholding screwdriver - (1) roll of electrical tape - (1) flashlight - (8) jumpers (Cue: You have obtained the equipment.)	Operator obtains flashlight and jumpers from T-221 compartment of Unit * T-200 cabinet.	
3.	**PERFORM** the following at *0C611	N/A	N/A
*4.	**JUMPER** T1 at relay B21H-K13B/FL to M1 at relay B21H-K16B/FH.Unit #2 (B21H-K1B/EX Unit #1)(BAY B Attachment 1). (Cue: Jumper is installed.)	At *0C611, BAY B, jumper installed between T1 on relay B21H-K13B/FL to M1 at relay B21H-K16B/FH Unit #2 (B21H-K1B/EX Unit #1)	
*5.	**JUMPER** T1 at relay B21H-K13D/BL to M1 at relay B21H-K16D/BH (BAY D - Attachment 2). (Cue: Jumper is installed.)	At *0C611, BAY D, jumper installed between T1 on relay B21H-K13D/BL to M1 at relay B21H-K16D/BH.	

STEP	STANDARD	SAT/UNSAT
6. **IF** PCIG did **not** isolate due to high Drywell pressure, **THEN PERFORM** the following:	N/A	N/A
*7. **JUMPER** T2 to M2 at relay B21H-K105A/CK (Attachment 3), at *0C622. (Cue: Jumper is installed.)	At panel *0C622, jumper installed between T2 and M2 on relay B21H-K105A/CK.	
*8 **JUMPER** BBB4-1 to BBB4-4 at *0C622	At panel *0C622, jumper installed between BBB4-1 and BBB4-4.	
*9. **JUMPER** T2 to M2 at relay B21H-K105D/CK (Attachment 4), at *0C623. (Cue: Jumper is installed.)	At panel *0C623, jumper installed between T2 and M2 on relay B21H-K105D/CK.	
*10 **JUMPER** EEE9-1 to EEE9-3 at *0C623	At panel *0C623, jumper installed between EEE9-1 and EEE9-3.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. An ATWS is in progress
2. The MSIV's are open and Instrument Gas system is not isolated.
3. No indication of a Main Steam line break or gross fuel failure.
4. 1BY160 is not known to be inoperative.

INITIATING CUES:

You are directed by Shift Supervision to perform T-221 (MSIV's open) on unit__

NO.: 178 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223002 4.08 TAXONOMY NO.: 3.3/3.7
LESSON PLANS: LOT1561.02 T-221 M-41
: M-01
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Explain the reason the Main Turbine is reset during the performance of T-221 if the MSIVs are shut.

ANSWER :

Turbine reset closes the Main Steam valve above seat drains and allows the Main Steam lines to pressurize during equalization around the MSIVs.

NO.: 179 REV.: 1 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223001 1.01 TAXONOMY NO.: 3.8/3.9
LESSON PLANS: LOT1561.02 M-41
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

While performing T-221, MSIV ISOLATION BYPASS, HV-41-241, Bypass Leakage Barrier Vent valve has failed to close.

STATE the effect of leaving this valve open on Secondary Containment while equalizing around the MSIVs.

ANSWER :

This allows steam from the Reactor to vent directly to the Reactor Enclosure resulting in elevated rad levels and area temperatures.

TITLE: TRANSFER OF D11 4KV SAFEGUARD BUS FROM 101 SAFEGUARD FEED TO 201 SAFEGUARD FEED.

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Reset the simulator to IC 17
2. start D11 D/G per S92.1.O and sync to 101 safeguard bus
3. Load D/G to 2000 kw and 500 KVARS
4. Place 101 tap changer in manual

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S):	SYSTEM NUMBER(S):
A4.05 3.6/3.7	264000
A4.02 3.4/3.4	264000

REFERENCES:

S92.6.A

TASK STANDARD(S):

D11 safeguard bus power supply transferred from 101 to 201 safeguard bus, and D11 D/G secured.

TASK CONDITIONS:

D11 D/G has been running for 1 hour. D11 D/G is aligned to101 safeguard bus and is loaded to 2000 kw.
D11 / 101 feeder breaker is to be removed for maintenance.

INITIATING CUES:

You are directed by shift supervision to swap D11 bus supply to 201safeguaard bus and secure D11 D/G per S92.6.A.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
NOTE: Maintaining Safeguard Transformer Feeder Ammeter as close to zero as possible will minimize amount of load rejected as feeder breaker opens.		
1. Obtain current revision of S92.6.A.	Current revision of S92.6.A obtained.	
2. MAINTAIN applicable Safeguard Transformer Feeder Ammeter as close to zero as possible without tripping Diesel Generator Output breaker by adjusting engine speed using 165A(B,C,D)G501/CS, "Diesel Generator Speed Governor Control Switch" (SPEED GOVERNOR).	D11/ 101 Safeguard Transformer Feeder Ammeter reading less than 100 amps.	
*3. OPEN 101 Feeder Breaker (101 SAFEGUARDS) to appropriate 4kV Safeguard Bus.	D11/101 Feeder Breaker OPEN.	
4. PLACE 143-AX103, "101 Safeguard Transformer Load Tap Changer" (TAP CHANGER) in "AUTO."	"101 Safeguard Transformer Load Tap Changer" (TAP CHANGER) in "AUTO."	
NOTE: Placing 201 Safeguard Transformer Tap Changer in "MANUAL" will prevent tap changer movement due to possible voltage fluctuations on Safeguard Bus.		
5. PLACE 143-BX103, "201 Safeguard Transformer Tap Changer" (TAP CHANGER) in "MANUAL." (Cue: the unit 2 RO has placed the 201 tap changer in manual.)	Requests "201 Safeguard Transformer Tap Changer" (TAP CHANGER) be placed in "MANUAL."	
NOTE: WHEN synchronizing the bus to the feed, THEN synchroscope will operate in reverse. Running voltage is kV Bus Voltage AND incoming voltage is Safeguard Bus Feed Voltage.		
*6. INSERT Synchroscope Switch handle into synchroscope switch (SYNC) for appropriate 201 4kV Bus Feeder breaker AND PLACE to "ON."	Synchroscope Switch handle INSERTED into synchroscope switch (SYNC) for 201/D11 4kV Bus Feeder breaker AND PLACE to "ON."	
7. OBSERVE proper operation of appropriate synchroscope (SYSTEM) by verifying the following:	N/A	N/A
8. Synchroscope rotating.	Synchroscope rotating.	

STEP	STANDARD	SAT/UNSAT
9. WHEN synchroscope is at 180 degrees, THEN both lights are fully bright.	Synchroscope is at 180 degrees, THEN both lights are fully bright.	
10. WHEN synchroscope is at 0 degrees, THEN both lights are off.	Synchroscope is at 0 degrees, THEN both lights are off.	
*11. ADJUST engine speed using 165-A(B,C,D)G501/CS, "Diesel Generator Speed Governor Control Switch" (SPEED GOVERNOR) until synchroscope is rotating slowly in the SLOW direction (counterclockwise).	synchroscope is rotating slowly in the SLOW direction (counterclockwise).	
*12. ADJUST diesel generator voltage using 170-A(B,C,D)G502/CS, "Diesel Generator Voltage Regulator Switch" (VOLTAGE REGULATOR) until "Synchronizing Running Voltmeter," RUNNING is slightly higher than "Synchronizing Incoming voltmeter," INCOMING.	"Synchronizing Running Voltmeter," RUNNING is slightly higher (less than 8 volts) than "Synchronizing Incoming voltmeter," INCOMING.	
NOTE: The following step will parallel off-site source to 4 kV bus.		
CAUTION: KVARs need to be maintained less than 75% KW to prevent generator winding overheating AND exceeding 0.8 rated power factor.		
*13. WHEN synchroscope (SYSTEM) is within 3 degrees before 12 O'clock, THEN CLOSE 201 Feeder Breaker (201 SAFEGUARDS) to appropriate 4kV Safeguard Bus.	Breaker closes, and remains closed and bus is energized.	
14. TURN synchronizing switch to "OFF."	Synchronizing switch to "OFF."	
15. REMOVE load AND SHUTDOWN diesel generator per S92.2.N, Shutdown Of The Diesel Generators.	N/A	N/A
16. IF diesel generator has been operating at **no** load**OR** loaded less than 855 KW for greater than 30 minutes,**THEN LOAD** diesel generator to between 1400 to 2800 KW for at least 1 hour for each 12 hours of continuous no-load **OR** light-load operation.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
17. Periodically **CHECK** engine sump lubricating oil level at FULL level running mark on dipstick. a. **IF** level is below FULL level running mark, **THEN OPEN** 20-*130A(B,C,D), "Lube Oil Make Up Valve." b. **WHEN** level at FULL level running mark, **THEN CLOSE** 20-*130A(B,C,D). (Cue: Report as the EO at the D11 D/G oil level is at the full running mark.)	EO called to check oil level	
18 .**WHEN** diesel has been operating above 1400 KW for at least 1 hour, **THEN REDUCE** load to 1400 KW.	KW lowered to 1200 to 1500 KW with KVARS less than 1000.	
19. **AFTER** 5 minutes, **THEN CONTINUE** to reduce load.	Continue after 3 to 5 minutes.	N/A
20. Slowly **REDUCE** KW load by turning 165-A(B,C,D)G501/CS, "Diesel Generator Speed Governor Control Switch," to "LOWER."	KW between 50 and 450	
21. Slowly **REDUCE** KVARS load by turning 170-A(B,C,D)G502/CS, "Diesel Generator Voltage Regulator," to "LOWER."	KVARS between 50 and 450	
*22. **WHEN** KW **AND** KVAR loads are near zero (100 to 300),**THEN OPEN** appropriate Diesel Generator Breaker.	D11 D/G output breaker opened	
23. **PLACE** 143-A(B)X103, "*01 Safeguard Transformer Tap Changer Selector," in "AUTO." (Cue: report that the unit 2 RO has placed 201 tap changer in AUTO.)	Requests that 201 safeguard tap changer be placed in auto	

STEP	STANDARD	SAT/UNSAT
24. **IF** shutting down engine from local panel, **THEN PERFORM** the following: a. **PLACE** LOCAL-REMOTE switch to "LOCAL." b. **PLACE** ENGINE CONTROL CSL to "STOP" **AND VERIFY** diesel engine shuts down. c. **PLACE** LOCAL-REMOTE switch to "REMOTE."	N/A	N/A
*24. **IF** shutting down engine from Main Control Room, **THEN** turn 101-AG 501/CS "Diesel Generator Control" to "STOP" **AND VERIFY** diesel generator shuts down.	101-AG501/CS, "Diesel Generator Control," **TURNED** to "STOP"	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

D11 D/G has been running for 1 hour. D11 D/G is aligned to101 safeguard bus and is loaded to 2000 kw.
D11 / 101 feeder breaker is to be removed for maintenance.

INITIATING CUES:

You are directed by shift supervision to swap D11 bus supply to 201safeguaard bus and secure D11 D/G per S92.6.A.

NO.: 180 REV.: 4 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 262001 4.05 TAXONOMY NO.: 3.4/3.6
LESSON PLANS: LOT0670.06
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

D11 Diesel Generator is supplying D11 4 KV Safeguard bus.

State the reason for having the synchroscope rotating slowly in the SLOW direction before closing the 101-D11 feeder breaker.

ANSWER :

This ensures D11 Diesel Generator picks up some load from the 101 Safeguard bus. Otherwise, the 101 Safeguard Bus could attempt to power the D11 Diesel Generator causing a trip on reverse power.

NO.: 181 REV.: 1 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 262001 3.04 TAXONOMY NO.: 3.4/3.6
LESSON PLANS: LOT0660.05 SE-10
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

STATE the reasons for 4 KV Safeguard load sequencing during a LOCA only and during a LOCA with a LOOP.

ANSWER :
LOCA only - Ensures 4 KV Safeguard Transformer is not overloaded.

LOCA with a LOOP - Ensures D/G's are not overloaded.

TITLE: RESETTING RPS AND ARI PER T-217

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

NOTE: The cables attached to the cards in the *0C634/*0C635 panels are amphenol (threaded) type connectors. These connectors need to be unscrewed several turns before they can be removed from the receptacle on the card. Also, each card thumb screw must be loosened or the card can not be removed by lifting the white clip on the upper corner.

EVALUATION METHOD :

SIMULATE

EVALUATION LOCATION:

PLANT

APPROXIMATE COMPLETION TIME:

20 MINUTES

IMPORTANCE RATING(S): SYSTEM NUMBER(S):

EA1.03 4.1/4.1 295037

REFERENCES:

1. T-217, RPS/ARI Reset and Backup Method of Draining Scram Discharge Volume
2. T-101, RPV Control

TASK STANDARD(S):

1. RPS can be reset.
2. ARI can be reset.

TASK CONDITIONS:

1. Unit ___ is in an ATWS.
2. T-215 has NOT been performed.

INITIATING CUES:

You are directed by Shift Supervision to perform T-217 on Unit ___.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

STEP	STANDARD	SAT/UNSAT
NOTE: **IF** this JPM is the ***first*** of multiple T-200 series JPMs being performed by a single candidate **THEN** steps #1 and #2 apply. **OTHERWISE** mark steps #1 and #2 as N/A **AND** provide the following to the candidate : a. INITIATING CUE(S) b. CUE: " You are now in possession of the T-217 equipment container. It contains all tools and equipment required by the procedure. You are to simulate their use during performance of the procedure." c. PROCEDURE COPY		
*1. Obtain current revision of T-217.	Current revision of T-217 obtained.	
*2. The following tools/equipment obtained from Unit * T-200 Cabinet in OSC: • (1) LV-*00 key • (1) Insulated Screwdriver • (1) Holding Screwdriver • (4) Jumpers • (1) Flashlight (Cue: When the operator tells you what tools/equipment he/she is taking out of the T-217 box, then tell the operator "you have that equipment.")	The tools/equipment listed in T-217 are obtained by the operator. Note: Only the jumpers are critical for this step of the JPM.	
*3. **INSTALL** a jumper from load side of fuse C71A-F14A to JJJ2-3 in *0C609 Bay "B" (Aux Eq. Room) (Attachment 2) (Cue: Jumper is installed.)	Jumper installed between load side of fuse C71A-F14A to JJJ2-3 in *0C609 Bay "B".	
*4. **INSTALL** a jumper from load side of fuse C71A-F14C to FFF2-20 in *0C609 Bay "C" (Aux Eq. Room) (Attachment 3) (Cue: Jumper is installed.)	Jumper installed between load side of fuse C71A-F14C to FFF2-20 in *0C609 Bay "C".	

STEP	STANDARD	SAT/UNSAT
*5. **INSTALL** a jumper from load side of fuse C71A-F14B to DDD10-4 in *0C611 Bay "B" (Aux Eq. Room) (Attachment 4) (Cue: Jumper is installed.)	Jumper installed between load side of fuse C71A-F14B to DDD10-4 in *0C611 Bay "B".	
*6. **INSTALL** a jumper from load side of fuse C71A-F14D to CCC3-15 in *0C611 Bay "C" (Aux Eq. Room) (Attachment 5) (Cue: Jumper is installed.)	Jumper installed between load side of fuse C71A-F14D to CCC3-15 in *0C611 Bay "C".	
7. **DISCONNECT** cable from the following cards located inside the front upper **AND** middle doors of *0C634 Bay "B" (Aux Eq. Room) **AND REMOVE** cards by lifting white clips on upper corner:	N/A	N/A
*7a. B-A11-A02 (PS-X-M1-*0127) (Cue: Cable is disconnected, card is removed.)	B-A11-A02 (PS-X-M1-*0127) cable is disconnected and card is removed.	
*7b. B-A11-A03 (LS-X-M1-*0128) (Cue: Cable is disconnected, card is removed.)	B-A11-A03 (LS-X-M1-*0128) cable is disconnected and card is removed.	
*7c. B-A14-A02 (PS-X-M1-*0130) (Cue: Cable is disconnected, card is removed.)	B-A14-A02 (PS-X-M1-*0130) cable is disconnected and card is removed.	
*7d. B-A14-A03 (LS-X-M1-*0131) (Cue: Cable is disconnected, card is removed.)	B-A14-A03 (LS-X-M1-*0131) cable is disconnected and card is removed.	
8. **DISCONNECT** cables from the following cards located inside the front upper **AND** middle doors of *0C635 Bay "B" (Aux Eq. Room) **AND REMOVE** cards by lifting white clips on upper corner:	N/A	N/A
*8a. B-A11-A02 (PS-X-M1-*0133) (Cue: Cable is disconnected, card is removed.)	B-A11-A02 (PS-X-M1-*0133) cable is disconnected and card is removed.	

STEP	STANDARD	SAT/UNSAT
*8b. B-A11-A03 (LS-X-M1-*0134) (Cue: Cable is disconnected, card is removed.)	B-A11-A03 (LS-X-M1-*0134) cable is disconnected and card is removed.	
*8c. B-A14-A02 (PS-X-M1-*0136) (Cue: Cable is disconnected, card is removed.)	B-A14-A02 (PS-X-M1-*0136) cable is disconnected and card is removed.	
*8d. B-A14-A03 (LS-X-M1-*0137) (Cue: Cable is disconnected, card is removed.)	B-A14-A03 (LS-X-M1-*0137) cable is disconnected and card is removed.	
9. When the MCR is contacted to perform step 4.1.7. (Cue: You can stop here , you have met the termination criteria for this JPM.)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. Unit ___ is in an ATWS.
2. T-215 has NOT been performed.

INITIATING CUES:

You are directed by Shift Supervision to perform T-217 on Unit ___.

NO.: 182 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 212000 3.06 TAXONOMY NO.: 4.0/4.1
LESSON PLANS: LOT0080.07 S73.0.E
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Control rod 38-27 scram outlet valve, XV47-1-27, fails open.

Describe the effect of this failure on rod 38-27.

What will the Full Core Display light indications be for this rod?

ANSWER :

The rod fully inserts.

Green "full in" light on
Blue "scram" light out
Amber "accum" light out
Red "drift" light on

NO.: 183 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 212000 1.08 TAXONOMY NO.: 3.4/3.4
LESSON PLANS: LOT0070.02 M-47, SH2
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

Unit 2 has experienced an ATWS.

T-217 has been implemented.

RPS and ARI are bypassed and the scram is reset.

XV-47-1F180, Scram Discharge Volume Vent Valve, remains closed.

EXPLAIN the effect this condition will have on the completion of T-217.

ANSWER :

With XV47-1F180 closed, the SDV will not drain properly.

TITLE: CONTROL ROOM VENTILATION HIGH RADIATION ISOLATION RESET

TASK PERFORMED BY: _____ EVALUATOR: _____.

EVALUATOR SIGNATURE: _____ DATE: _____.

DIRECTIONS TO EVALUATOR:

1. Place the HS-78-017A,B,C, and D keylock switches to RESET.
2. Rotate the arming collars for HSS-78-017A,B,C, and D to RAD.
3. Place the HS-78-017A,B,C, and D keylock switches to AUTO.
4. Depress the pushbutton on HSS-78-017A,B,C, and D.
5. CAREFULLY place the arming collars for HSS-78-017A,B,C,D back to NOR. (DO **NOT** take the collar to CL2)
6. Ensure the HI RAD ISLN light lit and the CHLOR ISLN **NOT** lit for all four isolation channels.
7. Remove the four PA2235 keys from HS-78-017A,B,C,D.
8. Reset any annunciators that will reset.

EVALUATION METHOD :

PERFORM

EVALUATION LOCATION:

SIMULATOR

APPROXIMATE COMPLETION TIME:

15 MINUTES

IMPORTANCE RATING(S):

A4.01 3.2/3.2

SYSTEM NUMBER(S):

290003

REFERENCES:

S78.7.A

TASK STANDARD(S):

Control Room HVAC High Radiation isolation reset with CREFAS aligned for normal automatic operation.

TASK CONDITIONS:

1. The high radiation isolation condition is cleared.
2. The system was operating per S78.1.A before the isolation occurred.
3. The high radiation condition has been acknowledged on the RM-11 in the MCR.

INITIATING CUES:

You are directed by Shift Supervision to reset the Control Room HVAC high radiation isolation.

Critical Element(s) indicated by "*" in Performance Checklist.

PERFORMANCE CHECKLIST:

	STEP	STANDARD	SAT/UNSAT
1.	Obtain current revision of S78.7.A. (NOTE: The instructor should provide the operator with a copy of S78.7.A **AFTER** the operator determines this is the procedure to be used.)	Current revision of S78.7.A obtained.	
2.	IF required, THEN manually ACKNOWLEDGE chlorine detectors locally at detector (625-08-350).	N/A	
3.	IF required, THEN RESET toxic chemical alarms per S78.1.F, Alignment of Toxic Chemical Detection System forNormal Operation.	N/A	
4.	IF required, THEN ACKNOWLEDGE radiation condition by depressing ACK on RM-11 console, MCR.	N/A	
5.	PLACE the following Control Room Isolation Valve Reset Keylock Switches to "RESET":	N/A	
*5a.	HS-78-017C, RESET C	HS-78-017C is in RESET	
*5b.	HS-78-017A, RESET A	HS-78-017A is in RESET	
*5c.	HS-78-017B, RESET B	HS-78-017B is in RESET	
*5d.	HS-78-017D, RESET D	HS-78-017D is in RESET	
6.	ENSURE the following Control Room Isolation Valve Trip Switches to "NOR":	N/A	

STEP	STANDARD	SAT/UNSAT
*6a. HSS-78-017C, TRIP C	HSS-78-017C is in NOR	
*6b. HSS-78-017A, TRIP A	HSS-78-017A is in NOR	
*6c. HSS-78-017B, TRIP B	HSS-78-017B is in NOR	
*6d. HSS-78-017D, TRIP D	HSS-78-017D is in NOR	
7. PLACE the following Control Room Isolation Valve Reset Keylock Switches to "AUTO":	N/A	
*7a. HS-78-017C, RESET C	HS-78-017C is in AUTO	
*7b. HS-78-017A, RESET A	HS-78-017A is in AUTO	
*7c. HS-78-017B, RESET B	HS-78-017B is in AUTO	
*7d. HS-78-017D, RESET D	HS-78-017D is in AUTO	
8. VERIFY 0AV127,EMERGENCY AIR FAN A, AND 0BV127, EMERGENCY AIR FAN B, are not operating. (Cue: You can stop here. You have met the termination criteria for this JPM.)	0AV127 and 0BV127 are not running.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

TASK CONDITIONS:

1. The high radiation isolation condition is cleared.
2. The system was operating per S78.1.A before the isolation occurred.
3. The high radiation condition has been acknowledged on the RM-11 in the MCR.

INITIATING CUES:

You are directed by Shift Supervision to reset the Control Room HVAC high radiation isolation.

NO.: 184 REV.: 3 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/09/9
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 290003 6.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.15
:
CATEGORY: 98 RO B
SYSTEMS: CREFAS

QUESTION :

The following conditions exist:

- Unit 1 is in OPCON 4
- Unit 2 is in OPCON 1
- The "A" CREFAS fan, 0AV127, is blocked for maintenance
- D14 Diesel Generator is INOPERABLE

State the most limiting plant Tech Spec actions for these conditions.

ANSWER :

Restore either the "A" CREFAS fan or the D14 Diesel Generator to operable status within 72 hours OR Unit 2 must be in at least Hot Shutdown within the next 12 hours AND in Cold Shutdown within the following 24 hours.

Reference: Tech Spec 3.8.1, action e.1

NO.: 185 REV.: 2 TYPE: ES ENTERED BY: ABC DATE ENTERED: 02/08/99
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 293003 2.03 TAXONOMY NO.: A
LESSON PLANS: LOT0450.12 M-78
:
CATEGORY: 98 SRO B
SYSTEMS:

QUESTION :

During restoration of Control Room HVAC following a chlorine isolation, the normal exhaust damper, HV78-052A fails to open.

STATE the effect on the Control Room HVAC system.

ANSWER :

No control of Control Room differential pressure.

With outside air dampers open and NO exhaust flowpath, a higher than normal differential pressure will result.

TAB

WRITTEN

Limerick 3/12/98

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: I
Date:	Facility/Unit: Limerick Generating Station
License Level: RO / SRO	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results	
Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

NO.: 1 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 212000 1.06 TAXONOMY NO.: 3.5/3.6
LESSON PLANS: LOT0300.05
:
CATEGORY: 98 C W
SYSTEMS: RPS

QUESTION :

Reactor power is 32%

LT-47-*N012D SDV level transmitter fails upscale resulting in a B2 half scram.

WHICH ONE of the following describes the resulting position of the SDV vent and drain valves.

a. ALL SDV vent and drain valves open

b. ALL SDV vent and drain valves closed

c. Inboard vent and drain valves open, outboard vent and drain valves closed.

d. Outboard vent and drain valves open, inboard vent and drain valves closed.

ANSWER : A

1/2 scram only deenergizes 1 of 2 parallel solenoids to SDV vent and drains.

NO.: 2 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 211000 5.06 TAXONOMY NO.: 3.0/3.2
LESSON PLANS: LOT0310.12
:
CATEGORY: 98 C W
SYSTEMS: SBLC

QUESTION :

A total loss of Instrument Air occurs.

Plant conditions are as follows:

- All scram valves are open with reactor power at 28%
- LI-48-1R601 on 10C603 SLC tank level reads 0 inches
- "STANDBY LIQUID TANK HI/LO LEVEL" alarm annunciates
- "STANDBY LIQUID TANK LO-LO LEVEL" alarm not lit

WHICH ONE of the following describes the response of the SLC system.

a. All SLC pumps are tripped on low level and will not start

b. All SLC pumps will start 118 seconds after RRCS is initiated

c. A & B pumps will start 118 seconds after RRCS is initated.
C SLC pump is tripped on low level and will not start.

d. C SLC pump will start 118 seconds after RRCS is initiated.
A & B pumps are tripped on low level and will not start.

ANSWER : B

Reference: P&ID M-048

Inst. Air supplies bubbler level indication. This goes to MCR indication and alarm only not to pump logic.

NO.: 3 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 400000 2.01 TAXONOMY NO.: 2.9/3.0
LESSON PLANS: LOT0400.07 E-361 E-372
:
CATEGORY: 98 C W
SYSTEMS: RHRSW 4 KV . RHR

QUESTION :

Plant conditions are as follows:

- A loss of offsite power has occurred for both units
- D12, D14, and D21 busses are de-energized

WHICH ONE of the following describes the loops of RHR that can be placed in Suppression Pool Cooling?

a. 1A and 2A

b. 1A and 2B

c. 1B and 2A

d. 1B and 2B

ANSWER : B

Reference: D12 out, 1B RHR 00S(c. and d. wrong), D21 out, 2A RHR 00S (a. wrong). D14 only used for 1B RHR, which is already 00S.

NO.: 4 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 290003 4.01 TAXONOMY NO.: 3.1/3.2
LESSON PLANS: LOT0450.05
:
CATEGORY: 98 C W
SYSTEMS: CREFAS

QUESTION :

A chemical spill results in the following indications:

"A" and "C" Toxic Gas monitors tripped

"A" and "D" Control Enclosure Chlorine monitors upscale

WHICH ONE of the following describes CREFAS status?

a. will remain in standby, no CREFAS fan running

b. will automatically initiate only "A" CREFAS, with "A" CREFAS fan running

c. will automatically initiate only "B" CREFAS, with "B" CREFAS fan running

d. will automatically initiate both "A" and "B" CREFAS, both fans running

ANSWER : A

Toxic gas provides no auto isolation (2/3 to provide MCR alarm)
Cl- needs A and C or B and D to move dampers/start fans.

NO.: 5 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 218000 4.01 TAXONOMY NO.: 3.7/3.9
LESSON PLANS: LOT0330.06 CRIB DWG
:
CATEGORY: 98 C W
SYSTEMS: ADS

QUESTION :

Plant conditions are as follows:

- Reactor Level is +35"
- DIV 3 LOCA signal (-129") was initiated 10 minutes ago due to an excess flow check valve actuation
- "C" RHR pump is in full flow test for PMT

WHICH ONE of the following would result in an automatic initiation of ADS after 105 seconds?

a. RPV level drops below +12.5"

b. "A" RHR pump is started

c. RPV level drops below +12.5" and "A" RHR pump is started

d. RPV level drops below +12.5" and "B" RHR pump is started

ANSWER : D

NO.: 6 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 206000 4.11 TAXONOMY NO.: 3.4/3.5
LESSON PLANS: LOT0340.12
:
CATEGORY: 98 C W
SYSTEMS: HPCI

QUESTION :

WHICH ONE of the following identifies the parameter held constant by the HPCI Flow Controller when operating in "MANUAL" mode as reactor pressure changes?

a. discharge flow

b. control valve position

c. turbine speed

d. discharge pressure

ANSWER : C

NO.: 7 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 209001 2.02 TAXONOMY NO.: 2.5/2.7
LESSON PLANS: LOT0350.03
:
CATEGORY: 98 C W
SYSTEMS: CS

QUESTION :

Unit 1 plant conditions are as follows:

- D13 bus is locked out
- RPV level is -140"
- RPV pressure is 230 psig

WHICH ONE of the following describes the status of "A" Loop Core Spray?

a. Not injecting, A and C pumps running on min flow

b. Injecting approximately 3000 gpm

c. Not injecting, A and C pumps off

d. Injecting approximately 6000 gpm

ANSWER : B

Reference: Valves work, C pump won't

NO.: 8 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 203000 6.09 TAXONOMY NO.: 3.4/3.4
LESSON PLANS: LOT0370.16 M-1-E11-1040
:
CATEGORY: 98 C W
SYSTEMS: RHR

QUESTION :

Unit 1 plant conditions are as follows:

- Reactor Pressure 300 psig
- Reactor Level -25 inches
- Drywell Spray is in service using "1A" RHR pump
- HV51-1F017A is closed in "MANUAL OVERRIDE"

The RPV pressure input signal to 1A RHR valve logic fails to 1100 psig

WHICH ONE of the following describes the response of the 1A RHR System?

a. HV51-1F017A re-opens, "MANUAL OVERRIDE" light lit

b. HV51-1F017A re-opens, "MANUAL OVERRIDE" light out

c. HV51-1F017A remains closed, "MANUAL OVERRIDE" light lit

d. HV51-1F017A remains closed, "MANUAL OVERRIDE" light out

ANSWER : D

Reference: The override on HV51-1F017A will go away, but the valve won't re-open until within 74 psid again (which won't happen).

NO.: 9 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 217000 2.15 TAXONOMY NO.: 3.8/3.8
LESSON PLANS: LOT0380.06 ARC-MCR-116(C-1 ARC-MCR-107(G-1
:
CATEGORY: 98 C W
SYSTEMS: RCIC

QUESTION :

Unit 1 plant conditions are as follows:

- "DIV 1 STEAM LEAK DETECTION" alarm lit due to high temperature in RCIC room
- "DIV 3 STEAM LEAK DETECTION" alarm not lit
- "RCIC STEAM LINE HI FLOW" alarm lit due to steam flow greater than 300% of rated

WHICH ONE of the following describes the expected status of the RCIC Isolation Valves?

	HV49-1F007 (RCIC Steam Line Inboard Isolation)	HV49-1F008 (RCIC Steam Line Outboard Isolation)
a.	open.	open
b.	open	closed
c.	closed	open
d.	closed	closed

ANSWER : D

Reference: Both should be closed due to full isolation signal, regardless of Div 1 and 3 SLD status.

NO.: 10 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 215004 5.03 TAXONOMY NO.: 2.8/2.8
LESSON PLANS: LOT0240.07
:
CATEGORY: 98 C W
SYSTEMS: SRM

QUESTION :

The plant is in OPCON 2 performing startup

IRM's on range 4

SRM period indicates 100 seconds

The SRM's are selected and being withdrawn from the core.

WHICH ONE of the following describes reactor period indication during SRM withdrawal?

a. shortens to 10 seconds

b. shortens to 50 seconds

c. remains at 100 seconds

d. increases to -100 seconds

ANSWER : D

Removal from core, higher to lower flux region so period lengthens.

NO.: 11 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 215005 3.08 TAXONOMY NO.: 3.0/3.4
LESSON PLANS: LOT0260.09
:
CATEGORY: 98 C W
SYSTEMS: LPRM

QUESTION :

During steady state operation at 50% power, 8 LPRM's fail downscale.

WHICH ONE of the following describes the effect on core thermal power P-1 calculations?

a. will abort and not run

b. will indicate less than actual power

c. will indicate actual power

d. will indicate greater than actual power

ANSWER : C

LPRM's downscale are automatically rejected from 3D calculations.

NO.: 12 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 204000 1.09 TAXONOMY NO.: 3.0/3.2
LESSON PLANS: LOT0110.09
:
CATEGORY: 98 C W
SYSTEMS: RWCU

QUESTION :

The plant is operating at 100% power

One RWCU filter/demin is removed from service.

RWCU remains in service at the same flowrate with 2 pumps, 1 filter/ demin, and the DEMIN BYPASS (HV-44-*F044) throttled.

WHICH ONE of the following describes the trend on reactor water conductivity?

a. remain at the current value

b. drop and stabilize at a lower value

c. rise and stabilize at a higher value

d. rise continually until the second filter/demin is restored

ANSWER : C

One filter will reduce removal rate, with same concentration in FW, then overall higher conductivity when stabilized.

NO.: 13 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 290002 1.02 TAXONOMY NO.: 3.2/3.2
LESSON PLANS: LOT0010.05
:
CATEGORY: 98 C W
SYSTEMS: RX VSL & INTRNL

QUESTION :

Unit 2 is operating at 65% power during a power ascension.

RCIC is operating in Full Flow test for surveillance testing.

"2B" Reactor Feed Flow transmitter fails upscale.

WHICH ONE of the following states the concern for operating in this condition?

a. reduced recirc pump NPSH

b. unplanned RCIC shutdown

c. erosion of Main Turbine blading

d. inadequate min-flow for "2A" RFP

ANSWER : A

Feedflow trans. problem will cause low level. Carry-under is steam in downcomer, reduced subcooling, less NPSH for recirc.

NO.: 14 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 202001 1.10 TAXONOMY NO.: 2.6/2.7
LESSON PLANS: LOT0030.04
:
CATEGORY: 98 C W
SYSTEMS: RECIRC

QUESTION :

The plant is operating at 95%

A leak occurs on the "A" recirc loop.

"A" recirc pump is shutdown and isolated.

Reactor level dropped to -50" and is stabilized at +30" 5 minutes later.

WHICH ONE of the following describes the status of seal purge flow to the recirc pumps?

	A Recirc Pump	B Recirc Pump
a.	in service	in service
b.	isolated	in service
c.	in service	isolated
d.	isolated	isolated

ANSWER : D

Seal purge auto closed if suction closed or breakers open (both breakers open on -38")

NO.: 15 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 202002 3.03 TAXONOMY NO.: 3.1/3.0
LESSON PLANS: LOT-0040.10
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :
Unit 1 was operating at 59% power when total feed flow drops to 15%.

Plant conditions are as follows:

- Reactor Power: 43%
- Recirc Speed: 28%
- Recirc Speed Demand 51%
- Feedwater restored with level stabilized at +35"
- Recirc deviation meter pegged upscale

WHICH ONE of the following describes the status of the recirc flow control system?

a. scoop tube is locked

b. runback signal is still present

c. manual controller has failed upscale

d. scoop tube positioner has failed to minimum

ANSWER : B

Feedflow <18. 8% is 28% runback, seals in until manually reset.

NO.: 16 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 206000 1.08 TAXONOMY NO.: 4.1/4.0
LESSON PLANS: LOT0340.07
:
CATEGORY: 98 C W
SYSTEMS: HPCI

QUESTION :

The following sequence of events have occurred on Unit 2:

- A GP-4 (Rapid Plant Shutdown) was performed
- RPV water level initially dropped to -48" and has been restored to +38" and rising
- RPV pressure is 960 psig
- Drywell pressure is 0.4 psig

WHICH ONE of the following will prevent a HPCI High Level trip while maintaining HPCI automatic injection capability?

a. Depress Manual Isolation pushbutton

b. Close Steam Line Inboard Isolation valve (HV55-2F002)

c. Depress Turbine Trip while closing Steam Supply (HV55-2F001)

d. Place Flow Controller in "MANUAL" and reduce speed to 2000 rpm

ANSWER : C

Reference: No initiation signal present
Will restart and inject at rates if initiation signal is received.

NO.: 17 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 216000 2.4.3 TAXONOMY NO.: 3.5/3.8
LESSON PLANS: LOT0050.16
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

WHICH ONE of the following describes the significance of the yellow stripe on selected MCR instrumentation?

a. required by Appendix R

b. powered by Safeguard DC

c. operates in harsh environments

d. redundent indication at RSP

ANSWER : C

NO.: 18 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 201003 2.06 TAXONOMY NO.: 3.0/3.1
LESSON PLANS: LOT0060.06 GE SIL173 ECR 93-02855
:
CATEGORY: 98 C W
SYSTEMS: CRDM

QUESTION :

WHICH ONE of the following describes the effect of a complete loss of cooling water to a control rod drive mechanism during power operation?

a. Index tube bowing

b. RPIS reed switch failures

c. Reduced life of the graphitar seals

d. Expansion of internal components causing binding

ANSWER : C

NO.: 19 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 201001 4.03 TAXONOMY NO.: 2.9/2.8
LESSON PLANS: LOT0070.09
:
CATEGORY: 98 C W
SYSTEMS: CRDH

QUESTION :

The CRD Flow Controller (FV46-1F002B) fails open during power operation.

WHICH ONE of the following illustrates the expected change in CRDH system parameters?

	System Flow	Drive Water dp	Cooling Water dp
a.	higher	lower	higher
b.	higher	higher	higher
c.	lower	higher	lower
d.	lower	lower	lower

ANSWER : B

NO.: 20 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 201002 2.01 TAXONOMY NO.: 2.7/2.8
LESSON PLANS: LOT0080.04
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

A Rod Sequence timer malfunction has occurred.

All insert signal times are increased by 8 seconds.

Rod 06-39 is at position 30.

WHICH ONE of the following describes rod 06-39 position after a single notch withdraw signal?

a. "00"

b. "02" to "28"

c. "30

d. "32" to "48"

ANSWER : B

NO.: 21 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 201006 1.05 TAXONOMY NO.: 3.5/3.8
LESSON PLANS: LOT0095.01
:
CATEGORY: 98 C W
SYSTEMS: RWM

QUESTION :

WHICH ONE of the following describes the purpose of the Rod Worth Minimizer?

a. reduce consequences of rod drop accident at low power

b. prevent damage from abnormal operating transients at high power

c. ensure adequate shutdown margin maintained at low power

d. maintain peak clad temperature within limits at high power

ANSWER : A

RWM purpose is limit rod worth and rod drop at low lower (<10%)

NO.: 22 REV.: 7 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 245000 6.04 TAXONOMY NO.: 2.6/2.7
LESSON PLANS: LOT0600.10 GP-5, ATTACHMT
:
CATEGORY: 98 C W
SYSTEMS: MN GEN

QUESTION :

** REFER TO THE ATTACHED REFERENCE **

Plant conditions are as follows:

- Generator load 1175 MWe
- Generator reactive load 225 MVAR (lagging)
- Generator H_2 Gas pressure 75 psig

The PSD requests generator load be maintained at 1175 MWe.

WHICH ONE of the following states the additional MVAR (lagging) capacity available?

a. 220

b. 275

c. 370

d. 455

ANSWER : A

NO.: 23 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 264000 4.03 TAXONOMY NO.: 3.2/3.4
LESSON PLANS: LOT0670.08
:
CATEGORY: 98 C W
SYSTEMS: DG

QUESTION :

D11 Diesel is running loaded to 2850 KW for its monthly operability ST.

Unit 1 Reactor Level drops to -150".

WHICH ONE of the following describes the status of D11 Diesel and the Diesel Output breaker?

	D11 Diesel	Diesel Output Breaker
a.	Isochronous	Closed
b.	Isochronous	Open
c.	Droop	Open
d.	Droop	Closed

ANSWER : B .

Reference: LOCA signal at -129" cause emergency start of EDG, breaker trip.

NO.: 24 REV.: 11 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 239002 4.03 TAXONOMY NO.: 3.8/3.9
LESSON PLANS: LOT0120.09
:
CATEGORY: 98 C W
SYSTEMS: ADS

QUESTION :

Unit 2 ADS/SRV indication is as follows on 20C626 panel:

ADS/SRV	Red OPEN Light	Green CLOSED Light	Amber HAS LIFTED Light	White Light
"2A"	ON	OFF	ON	OFF
"2H"	OFF	ON	ON	ON
"2K"	OFF	ON	OFF	OFF
"2S"	ON	OFF	ON	ON

WHICH ONE of the choices below states the ADS/SRV that is currently automatically open due to high reactor pressure?

a. "2A'

b. "2H"

c. "2K"

d. "2S"

ANSWER : A

NO.: 25 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 209001 2.02 TAXONOMY NO.: 3.2/3.2
LESSON PLANS: LOT0350.09 T-270
:
CATEGORY: 98 C W
SYSTEMS: CS

QUESTION :

Unit 1 plant conditions are as follows:

- ATWS in progress
- T-270 "Terminate and Prevent" is complete
- RPV level is -190" and dropping
- Emergency blowdown is in progress
- RPV pressure is 210 psig and dropping

WHICH ONE of the following actions will initiate Core Spray injection to the reactor?

a. Open Inboard (HV52-1F005) and Outboard (HV52-1F004A) valves

b. Start "1A" Core Spray pump, open Outboard (HV52-1F004A) valve

c. Close Inboard (HV52-1F005) valve, open Outboard (HV52-1F004A), reopen Inboard (HV52-1F005) valves

d. Start "1A" Core Spray pump, close Outboard (HV52-1F004A) valve, open Inboard (HV52-1F005), reopen Outboard (HV52-1F004A) valves

ANSWER : D

Reference: E21-1040E, Sht 5 and 9

NO.: 26 REV.: 7 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223001 1.01 TAXONOMY NO.: 3.7/3.9
LESSON PLANS: LOT0160.03
:
CATEGORY: 98 C W
SYSTEMS: CAC

QUESTION :

The Drywell N_2 Purge Supply (HV-57-*21) is currently administratively blocked closed.

WHICH ONE of statements below describes the bases for this configuration?

a. nitrogen vaporizer trip due to high flow

b. pressure suppression bypass during plant fires

c. inability of valves to close against nitrogen flow during purge

d. excessive SGTS drawdown time if other unit containment isolates

ANSWER : B

Both purge supply valves cable in same tray, fire could cause both to hot short open. · Current Tagged on both units.

NO.: 27 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 223002 3.18 TAXONOMY NO.: 3.0/3.1
LESSON PLANS: LOT0180.06
:
CATEGORY: 98 C W
SYSTEMS: NSSSS

QUESTION :

The plant is operating at 75% power when the "B" Reactor Enclosure Vent Exhaust Duct Radiation Monitor fails downscale.

WHICH ONE of the following describes the status of Reactor Enclosure Ventilation and SGTS systems?

	RE Vent	SGTS
a.	operating	standby
b.	isolated	standby
c.	operating	initiated
d.	isolated	initiated

ANSWER : A

Single channel trip due to downscale, no isolation with single channel.

NO.: 28 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 290001 6.08 TAXONOMY NO.: 2.7/2.8
LESSON PLANS: LOT0200.05
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

Unit 2 is in OPCON 5*.

The air supply to Refuel Floor Supply to SGTS damper (HV76-019) is lost.

WHICH ONE of the following describes the status of Refuel Floor Secondary Containment?

a. will be maintained by the operating RF ventilation fans

b. cannot be maintained following RF ventilation fan trip

c. will be maintained by SGTS initiation

d. cannot be maintained following SGTS flowpath closure

ANSWER : C

Loss of air will cause HV76-019 to fail open. HV76-019 opening will initiate SGTS, isolated RF ventilation.

NO.: 29 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 259002 1.04 TAXONOMY NO.: 3.6/3.6
LESSON PLANS: LOT0550.07
:
CATEGORY: 98 C W
SYSTEMS: FWLC

QUESTION :

Unit 2 is operating at 80% power with Feedwater Level Control in Automatic, 3-element control.

The "2A" RFP MGU output fails upscale.

WHICH ONE of the following describes the expected plant response?

a. Reactor level decreases, reactor scrams on low level

b. Reactor level increases, all turbines trip on high level

c. "2B" & "2C" RFP speed decreases, level stabilizes at 35"

d. "2B" & "2C" RFP speed remains constant, level stabilizes at 40"

ANSWER : C

NO.: 30 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 241000 3.11 TAXONOMY NO.: 3.3/3.1
LESSON PLANS: LOT0590.03
:
CATEGORY: 98 C W
SYSTEMS: EHC

QUESTION :

Unit 1 is operating at 25% power when a load reject occurs.

WHICH ONE of the following states the valves that close to prevent a turbine overspeed trip?

a. Control and Intercept

b. Bleeder Trip and Bypass

c. Main Stop and Intermediate Stop

d. #2 Main Stop and Moisture Separator Dump

ANSWER : A

NO.: 31 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 261000 4.01 TAXONOMY NO.: 3.7/3.8
LESSON PLANS: LOT0200.06
:
CATEGORY: 98 C W
SYSTEMS: SGTS

QUESTION :

Unit 1 is in OPCON 3

Zone 1 and 3 are inter-tied for shield block removal

Unit 2 Drywell pressure increases to 2.1 psig

WHICH ONE of the choices below states the zones aligned to SGTS?

a. Zone 1 only

b. Zone 2 only

c. Zones 2 and 3 only

d. Zones 1, 2, and 3

ANSWER : B

Unit 2 signal provides isolation of Unit 2 RE HVAC.

NO.: 32 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 226001 2.02 TAXONOMY NO.: 2.9/2.9
LESSON PLANS: LOT0370.02 T-225
:
CATEGORY: 98 C W
SYSTEMS: RHR

QUESTION :

Unit 2 plant conditions are as follows:

- The reactor has been shutdown due to a leak in the Drywell
- Drywell Spray is required
- D21 Safeguard Bus is de-energized

WHICH ONE of the following can be used to Spray the Drywell without locally operating components?

a. "2A" RHR pump

b. "2B" RHR pump

c. Fire Water System

d. RHR Service Water System

ANSWER : B

Reference: A, C, and D are all wrong because HV51-2F021A and HV51-2F016A have no power. B is unaffected.

NO.: 33 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295006 2.04 TAXONOMY NO.: 3.6/3.7
LESSON PLANS: LOT0300.03 GP-3
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

Unit 1 Turbine is being removed from service due to an EHC leak. The reactor is to remain critical.

Plant conditions are as follows:

- Reactor Power is 25%
- An "A" side half scram is present
- An EO in the Aux Equipment Room reports that PIS-01-1N652D, First Stage Turbine Pressure, is in the tripped condition

WHICH ONE of the following will prevent an automatic reactor scram when the Main Turbine is tripped?

a. Ensure "TURBINE CONTROL/STOP VALVE SCRAM BYPASSED" alarm is lit

b. Reduce Generator reactive load until PIS-01-1N652D resets

c. Insert control rods until PIS-01-1N652D resets

d. Transfer House loads to Offsite sources

ANSWER : C

NO.: 34 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295010 2.02 TAXONOMY NO.: 3.3/3.5
LESSON PLANS: LOT0130.06
:
CATEGORY: 98 C W
SYSTEMS: PRI CONT

QUESTION :

Plant conditions are as follows:

- Two in-series downcomer vacuum breakers are open
- A LOCA occurs in the Drywell
- Drywell pressure stabilizes at 23 psig
- Suppression Pool level is 23.5 ft

WHICH ONE of the following indicates final Suppression Pool pressure?

a. 12 psig

b. 18 psig

c. 23 psig

d. 28 psig

ANSWER : C

Reference: With two in-series vac.breakers open, pressure will equalize between the drywell and suppression pool.

NO.: 35 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 295015 3.01 TAXONOMY NO.: 3.4/3.7
LESSON PLANS: LOT1560.05 LOT0095
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

Plant conditions are as follows:

- Main Turbine tripped from 100% power
- 40 control rods failed to fully scram due to hydraulic lock
- Reactor Power is 5%
- Reactor Mode Switch is in "SHUTDOWN"
- CRD drive water pressure is 260 psid

WHICH ONE of the following describes why the RO cannot manually insert control rods?

a. RWM rod block

b. APRM rod block

c. Low CRD drive water pressure

d. Full Scram Discharge Volume

ANSWER : A

NO.: 36 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295018 1.01 TAXONOMY NO.: 3.3/3.4
LESSON PLANS: LOT0680.08
:
CATEGORY: 98 C W
SYSTEMS: ESW

QUESTION :

Both Units are in OPCON 2

A loss of Offsite power occurs

WHICH ONE of the following describes the cooling water alignment for the Diesel Generators?

	Source	Return
a.	Cooling Tower	Cooling Tower
b.	Spray Pond	Cooling Tower
c.	Cooling Tower	Spray Pond
d.	Spray Pond	Spray Pond

ANSWER : D .

Loop starts EDG's, realign cooling water to spray pond.

NO.: 37 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295003 1.03 TAXONOMY NO.: 4.4/4.4
LESSON PLANS: LOT1566.02 E-1
:
CATEGORY: 98 C W
SYSTEMS: E

QUESTION :

A loss of all AC power occurs

E-1 directs Natural Ventilation to be established for HPCI and RCIC

WHICH ONE of the following describes why this action must be taken?

a. Service Water flow lost

b. Reactor Enclosure Ventilation fans off

c. HPCI and RCIC room unit coolers de-energized

d. Steam Leak Detection differential temperature isolations

ANSWER : C

Reference: E-1 is loss of all AC, no power to room coolers

NO.: 38 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/14/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G 2.4.49 SKA NO.: 295007 TAXONOMY NO.: 4.0/4.0
LESSON PLANS: LOT1540.02
:
CATEGORY: 98 C W
SYSTEMS: OT

QUESTION :

WHICH ONE of the following is adjusted to perform Immediate Operator Actions for reactor high pressure?

a. Load set

b. Load limit

c. Pressure set

d. Maximum combined flow

ANSWER : C

OT-102 actions.

NO.: 39 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295009 1.02 TAXONOMY NO.: 4.0/4.0
LESSON PLANS: LLOT0550.11
:
CATEGORY: 98 C W
SYSTEMS: FWC

QUESTION :

Unit 2 is operating at 100% power.

A Feedwater Level transmitter failure causes reactor level to drop to -5" for several seconds.

Reactor Power is 37%.

WHICH ONE of the following will allow control of RPV level using the Feedwater Master Controller?

a. "AUTO" mode with thumbwheel setpoint

b. "AUTO" mode with "OPEN" and "CLOSE" pushbuttons

c. "MANUAL" mode with thumbwheel setpoint

d. "MANUAL" mode with "OPEN" and "CLOSE" pushbuttons

ANSWER : D

<12.5" setpoint setdown, master controller control with buttons in manual only.

NO.: 40 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/10/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295013 1.01 TAXONOMY NO.: 3.9/3.9
LESSON PLANS: LOT0370.08 M-1-E11-1040-E
:
CATEGORY: 98 C W
SYSTEMS: RHR SPC

QUESTION :

Unit 1 is in OPCON 5

- Suppression Pool Cooling is in service using the cross-tie and the "1C" RHR pump
- DIV 3 LOCA signal occurs

WHICH ONE of the following describes the resulting valve alignment for HV51-1F048A (Heat Exchanger Bypass) and HV51-1F017C ("C" LPCI Injection) valves?

	HV51-1F048A	HV51-1F017C
a.	open	open
b.	open	close
c.	close	close
d.	close	open

ANSWER : D

Reference: HV51-1F048A will not see a Div 3 LOCA signal, only a Div 1 LOCA signal and OPCON 5 RPV pressure allows HV51-1F017C to open.

NO.: 41 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295014 3.01 TAXONOMY NO.: 4.1/4.1
LESSON PLANS: LOT1540.05
:
CATEGORY: 98 C W
SYSTEMS: OT

QUESTION :

Unit 2 is at 90% power

- "LOSS OF SQUIB VALVE CONTINUITY" alarm annunciates
- Reactor power is lowering
- RWCU isolates

WHICH ONE of the following states required action and bases?

a. Scram the reactor due to uncontrolled reactivity insertion

b. Scram the reactor due to possible thermal limit violations

c. Secure SLC pumps due to RPV level control problems

d. Secure SLC pumps due to possible orifice clogging

ANSWER : A

OT-104 action based on plant event.

NO.: 42 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295016 3.03 TAXONOMY NO.: 3.5/3.7
LESSON PLANS: LOT0735.03
:
CATEGORY: 98 C W
SYSTEMS: RSP

QUESTION :

All Remote Transfer Switches are placed to "REMOTE" at the Unit 1 Remote Shutdown Panel.

WHICH ONE of the following describes the status of "RCIC STEAM LINE OUTBOARD ISOLATION" (HV-49-1F008) valve?

	MCR Control	Component Interlocks	Control Power
a.	Enabled	Active	Normal
b.	Disabled	Bypassed	Alternate
c.	Enabled	Bypassed	Alternate
d.	Disabled	Active	Normal

ANSWER : B

RSP switches provide separate, alternately controlled, bypassed control.

NO.: 43 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295017G2.4.1 TAXONOMY NO.: 4.3/4.6
LESSON PLANS: LOT1560.02
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-104

QUESTION :

Plant conditions are as follows:

- Unit 1 is in OPCON 5
- Reactor cavity is flooded with spent fuel pool gates removed
- Both Reactor Well Top and Bottom seals, #3 and #4, have failed
- A Site Area Emergency has been declared due to offsite release

WHICH ONE of the following actions is required?

a. Enter and execute T-101

b. Enter and execute T-102

c. Enter and execute T-103

d. Enter and execute T-104

ANSWER : D

Reference: T-104 entry is required if offsite release is above ALERT level per ERP-101.

NO.: 44 REV.: 8 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295023 2.05 TAXONOMY NO.: 3.5/3.7
LESSON PLANS: LOT1550.02
:
CATEGORY: 98 C W
SYSTEMS: ON

QUESTION :

Unit 1 is in OPCON 5*

Unit 2 is in OPCON 1 with Drywell N_2 makeup in progress

A fuel bundle drops in the Unit 1 Spent Fuel Pool

Refuel Floor Exhaust Radiation levels increase to 5 mr/hr

WHICH ONE of the following states plant response?

	Unit 2 N_2 Makeup	RF Ventilation	SGTS
a.	aligned	in service	in standby
b.	isolated	in service	running
c.	aligned	isolated	in standby
d.	isolated	isolated	running

ANSWER : D

Greater than 2 mr/hr is RF isolation, N_2 makeup isolation, and SGTS start.

NO.: 45 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295029 2.05 TAXONOMY NO.: 3.1/3.3
LESSON PLANS: LOT1560.05
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102 .

QUESTION :

Plant conditions are as follows:

- Drywell Pressure: 24 psig
- Drywell Temperature: 250°F
- Suppression Pool level: 39.2 ft

WHICH ONE of the following bases states why Drywell Spray is prohibited?

a. excessive stress on SRV tailpipes

b. excessive Suppression Pool wall loading

c. excessive Suppression Pool to Drywell differential pressure

d. excessive pressure drop due to evaporative cooling

ANSWER : C

T-102 Bases, page 103 of 120, vacuum breakers are covered at 38.7 ft suppression pool level.

NO.: 46 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295030 2.02 TAXONOMY NO.: 3.9/3.9
LESSON PLANS: LOT1560.05
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102

QUESTION :

Plant conditions are as follows:

- Reactor is shutdown
- Suppression Pool level is 16.9 ft
- RCIC is injecting to the RPV, suction temp 106°F
- A RHR is in Suppression Pool Cooling, suction temp 115°F
- B RHR is secured, suction temp 97°F
- SPOTMOS indicated temp 128°F
- CST level is 33.5 ft.

WHICH ONE of the following describes the valid Suppression Pool temperature?

a. 97°F

b. 106°F

c. 115°F

d. 128°F

ANSWER : C

Reference: T-102, Sheet 1

SPOTMOS is uncovered below 17.8' SP level. T-102, note #2 states RHR suction temp with RHR operating is valid SP temp.

NO.: 47 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295026 1.01 TAXONOMY NO.: 3.0/3.4
LESSON PLANS: LOT1560.03
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102

QUESTION :

Plant conditions are as follows:

- Drywell temperature: 200°F
- Drywell Pressure: 23 psig
- Suppression Pool Pressure: 22.5 psig
- Suppression Pool Level: 13.1 ft
- Suppression Pool Water Temperature: 98°F

WHICH ONE of the following actions will allow use of RHR for Suppression Pool Spray?

a. vent the Drywell

b. vent the Suppression Pool

c. raise Suppression Pool level

d. reduce Suppression Pool temperature

ANSWER : C

Reference: T-102, T-102 Bases

NPSH/Vortex limits met only if suppression pool level above 13.5 ft

NO.: 48 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295031 3.04 TAXONOMY NO.: 4.0/4.3
LESSON PLANS: LOT1560.05
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-111

QUESTION :

Steam cooling is in progress per T-111, with the following conditions:

- RPV level is -196"
- No injection into the RPV

WHICH ONE of the following describes the status of the fuel?

	Adequate Core Cooling	Expected Peak Clad Temp
a.	yes	1800°F
b.	yes	2200°F
c.	no	1800°F
d.	no	2200°F

ANSWER : A

Reference: In steam cooling, PCT is ≤1800°F down to -201, adequate core cooling is maintained.

NO.: 49 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295037 2.05 TAXONOMY NO.: 4.2/4.3
LESSON PLANS: LOT0060.05 GP-11, APP.1
:
CATEGORY: 98 C W
SYSTEMS: CRDM

QUESTION :

Plant conditions are as follows:

- An ATWS is in progress
- Plant Monitoring System (PMS) is inoperable

WHICH ONE of the following can be used to confirm that a control rod is fully inserted?

a. Green "IN" light is lit on the Full Core Display

b. Blue "SCRAM" light is lit on the Full Core Display

c. "- -" (two dashed lines) on the Four Rod Display

d. "X X" (two X's) on the Four Rod Display

ANSWER : A

Reference: Blue SCRAM light only indicates scram inlet/outlet valves open; two dashed lines on four rod display indicates an odd reed switch, not that the rod is full in.

NO.: 50 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295038 2.04 TAXONOMY NO.: 4.1/4.5
LESSON PLANS: LOT0200.04 P&ID M-75 P&ID M-76
:
CATEGORY: 98 C W
SYSTEMS: RE HVAC

QUESTION :

Plant conditions are as follows:

- A South Vent Stack radiation release is in progress
- Unit 1 Containment Purge with air is in progress
- SGD-206-3 (Refuel Floor to SGTS connecting damper) is closed

WHICH ONE of the following describes the source of the rad release?

a. Unit 1 TEECE

b. Unit 1 REECE

c. Off-gas System

d. Unit 1 Containment Purge

ANSWER : B

Reference: Of the four choices, only REECE exhausts to the South Stack

NO.: 51 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 500000 2.03 TAXONOMY NO.: 3.3/3.8
LESSON PLANS: LOT1560.06 T-102, SHT 2
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102 .

QUESTION :

Plant conditions are as follows:

- A LOCA is in progress
- Drywell H_2 - 3%
- Drywell O_2 - 8%
- Suppression Pool H_2 - 7%
- Suppression Pool O_2 - 4%

WHICH ONE of the following describes the T-102 Sheet 2 sections required to be performed?

a. DW/G-3 and SP/G-1

b. DW/G-2 and SP/G-2

c. DW/G-3 and SP/G-3

d. DW/G-2 and SP/G-1

ANSWER : A

Reference: See Tables PC/G-1 and PC/G-2 on T-102, Sheet 2.

NO.: 52 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295005 1.05 TAXONOMY NO.: AA
LESSON PLANS: LOT0590.02
:
CATEGORY: 98 C W
SYSTEMS: EHC

QUESTION :

Unit 2 is operating at 75% power

The "2B" steam pressure transmitter for EHC fails upscale

Reactor Mode Switch is placed in "SHUTDOWN"

Reactor pressure is 850 psig and lowering

WHICH ONE of the actions below will terminate this plant transient?

a. raise PRESSURE SET

b. lower BYPASS JACK

c. raise LOAD LIMIT

d. lower MAXIMUM COMBINED FLOW

ANSWER : D

Steam transmitter high, high value gate, bypass ramp open. Max Comb flow pot will close.

NO.: 53 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295014 1.06 TAXONOMY NO.: 3.8/3.9
LESSON PLANS: LOT1540.05
:
CATEGORY: 98 C W
SYSTEMS: OT

QUESTION :

Unit 1 is operating at 60% power

The "1C" RFP trips while being placed in service

The "1C" Low Pressure Heater string isolates

FLLLP is 1.104 and slowly rising

WHICH ONE of the following describes the effect on Thermal Power and reason for this trend?

a. rising due to rising Reactor Pressure

b. dropping due to lowering Reactor Level

c. rising due to loss of feedwater heating

d. dropping due to loss of feedwater flow

ANSWER : C

FLLLP increasing with recirc constant is power increase, loss of FW heating since at 60% only 2 RFPs required.

NO.: 54 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 600000 3.04 TAXONOMY NO.: 2.8/3.4
LESSON PLANS: LOT1563.03 SE-1
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

Unit 2 Remote Shutdown Panel is manned due to a fire in the MCR.

- Drywell Pressure: 2.5 psig
- DIV 3 DC power lost

WHICH ONE of the following states available pressure control?

a. "2A", "2C", or "2N" SRV

b. "2S", "2M", or "2K" SRV

c. "2A", "2C", or "2N" SRV only after Instrument Air backup

d. "2S", "2M", or "2K" SRV only after Instrument Air backup

ANSWER : C
C, A, N have no accumulators and must be backed up by Instrument Air. Div 3 powers AER ADS/SRV's.

NO.: 55 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295002 3.02 TAXONOMY NO.: 3.4/3.4
LESSON PLANS: LOT1540.05
:
CATEGORY: 98 C W
SYSTEMS: OT

QUESTION :

** REFER TO THE ATTACHED REFERENCE **

Unit 1 plant conditions are as follows:

- Reactor Power: 70%
- LP Turbine Inlet Pressure: 84 psig
- Condenser Vacuum: 23.9" Hg

WHICH ONE of the following states action required?

a. raise recirc flow

b. raise "PRESSURE SET"

c. place the standby SJAE in service

d. trip the turbine within 5 minutes

ANSWER : D

Reference: In limited operation area, trip within 5 minutes since backpressure steady.

*** NEED OT-116 ATTACHMENT 1 AS REFERENCE ***

NO.: 56 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295004 2.03 TAXONOMY NO.: 3.3/3.3
LESSON PLANS: LOT1566.02 LOT0450
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

Unit 1 DIV IV DC is deenergized.

E-1FD directs initiation of a Manual MCR Chlorine Isolation.

WHICH ONE of the following describes why the manual isolation is initiated?

a. minimizes heat load on CEHVAC System

b. ensures outside air is isolated to the MCR

c. prevents excessive positive MCR pressure

d. places MCR on recirc to ensure panel cooling

ANSWER : B

Reference:

Loss of Div IV DC will result in partial CE HVAC isolation. Since some of the HV57-020A,B,C,D dampers may still be open, outside air may still be admitted to the CREFAS filters. Therefore, a manual isolation is inserted to ensure a complete isolation.

NO.: 57 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 295008 2.02 TAXONOMY NO.: 3.6/3.8
LESSON PLANS: LOT0540.04
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

The following conditions exist:

- Unit 1 is at 100% power
- "1D" Narrow Range Level Transmitter is upscale

"1C" Feedwater Narrow Range Level Transmitter fails upscale.

WHICH ONE of the following states the status of the Reactor Feedpump Turbines and the Main Turbine?

	RFP Turbines	Main Turbine
a.	operating	operating
b.	tripped	tripped
c.	tripped	operating
d.	operating	tripped

ANSWER : A

Reference: To trip the RFPTs and Main Turbine takes 'A' or 'B' and 'C' or 'D'.

NO.: 58 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295019 2.02 TAXONOMY NO.: 2.9/3.0
LESSON PLANS: LOT1550.02
:
CATEGORY: 98 C W
SYSTEMS: RECIRC

QUESTION :

Reactor Recirc pumps are required to be tripped during a loss of Instrument Air.

WHICH ONE of the following states the basis for this action?

a. loss of Recirc M-G set winding cooling

b. loss of Recirc M-G set oil cooling

c. loss of Recirc pump seal cooling

d. loss of Recirc pump oil cooling

ANSWER : A

Reference: Loss of air causes shutdown of TE vent, no cooling air to M-G set.

NO.: 59 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 239001 4.06 TAXONOMY NO.: 3.1/3.2
LESSON PLANS: LOT0120.03 SE-10
:
CATEGORY: 98 C W
SYSTEMS: MS

QUESTION :

WHICH ONE of the following describes the function of the MSIV Leakage Alternate Drain Pathway?

a. directs stem leakage to the Main Condenser

b. directs seat leakage to the Main Condenser

c. directs stem leakage to the Reactor Enclosure sump

d. directs seat leakage to the Reactor Enclosure sump

ANSWER : B

Reference: Only directed by SE-10 LOCA, send seat leakage to main condenser.

NO.: 60 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295021 2.04 TAXONOMY NO.: 3.6/3.5
LESSON PLANS: LOT0370.10
:
CATEGORY: 98 C W
SYSTEMS: SDC

QUESTION :

Unit 2 plant conditions are as follows:

- "2B" RHR operating in Shutdown Cooling in OPCON 4
- "2B" Reactor Recirc Pump SUCTION and DISCHARGE valves (HV43-2F023 and 2F031) are OPEN.
- Reactor Pressure: 25 psig
- "2B" RHR Suction Temperature: 120°F
- "2B" RHR Flow: 6200 gpm
- Reactor Level: +54"

WHICH ONE of the following reflects plant status?

	Shutdown Cooling Flow	Reactor Water Temperature
a.	thru core	120°F
b.	bypassing core	greater than 120°F
c.	thru core	greater than 120°F
d.	bypassing core	120°F

ANSWER : B

Reference: Less than 60" with recirc valves open, SDC flow bypassing core, boiling core at 25 psig.

NO.: 61 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295028 1.01 TAXONOMY NO.: 3.5/3.7
LESSON PLANS: LOT1560.04 T-102 BASES
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102

QUESTION :

Plant conditions are as follows:

- RPV Pressure: 50 psig
- Drywell Pressure: 30 psig
- Drywell Temperature: 350°F
- Suppression pool level: 20.6 ft

Reactor Level indications:

- Wide Range: -70"
- Shutdown Range: +80"
- Upset Range: +60"
- Narrow Range: +10"
- Fuel Zone: Upscale

WHICH ONE of the following describes Reactor water level?

a. unknown

b. -60" to -80"

c. +0" to +20"

d. +70" to +90"

ANSWER : A

Reference: 350°F drywell temp and 50 psig RPV pressure is on unsafe side of curve DW/T-1.

NO.: 62 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK G2.4.18 SKA NO.: 295029 TAXONOMY NO.: 2.7/3.6
LESSON PLANS: LOT1560.04 T-102 BASES DRAWING C-279
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-102

QUESTION :

WHICH ONE of the following describes the basis for maximum Containment water level of 115.8 ft?

a. Drywell pressure tap becomes covered with water

b. Drywell Purge Exhaust line fills with water

c. Drywell Spray headers become covered with water

d. Drywell equipment hatch seal failure

ANSWER : B

Reference: Bottom of DW purge exhaust line is at elev 297.7 ft (115.8 ft above SP floor elev. of 181.9 ft)

NO.: 63 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295033 2.03 TAXONOMY NO.: 3.7/4.2
LESSON PLANS: LOT0710.06
:
CATEGORY: 98 C W
SYSTEMS: ARM

QUESTION :

Unit 1 is operating at 35%

TIP operations are in progress

Reactor water level drops to -75".

"REACTOR ENCLOSURE AREA HI RADIATION" Annunciates.

An EO reports "NEUTRON MONITORING SYSTEM AREA" ARM is alarming.

WHICH ONE of the following describes the status and cause of this MCR alarm?

a. expected, due to TIP insertion

b. expected, due to TIP withdrawal

c. not expected, due to TIP insertion

d. not expected, due to TIP withdrawal

ANSWER : B

Reference: TIP isolation at -38", withdraw to shield, alarm once at shield, expected due to irradiated TIP detector.

NO.: 64 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295034 1.03 TAXONOMY NO.: 4.0/3.9
LESSON PLANS: LOT1560.05
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-103

QUESTION :

Plant conditions are as follows:

- RWCU resin spill has occurred in the Reactor Enclosure
- Reactor Enclosure HVAC Exhaust rad level is 8.7 mr/hr
- Access to the Reactor Enclosure is required

WHICH ONE of the following actions is required?

a. isolate Refuel Floor HVAC

b. restore RE normal ventilation

c. ensure Standby Gas Treatment System in service

d. perform an Emergency Blowdown per T-112

ANSWER : C

Reference: T-103, step SCC-3.

NO.: 65 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 295001 TAXONOMY NO.: 4.0/4.0
LESSON PLANS: LOT1540.02 OT-112
:
CATEGORY: 98 C W
SYSTEMS: RECIRC

QUESTION :

Unit 2 Reactor Power is 3%

"2A" Recirc Pump trips

WHICH ONE of the choices below states required Immediate Operator Action(s)?

a. SCRAM the Reactor and PLACE mode switch in "SHUTDOWN"

b. Drive rods to exit the Restricted Area of Power/Flow Map

c. Close "DISCHARGE" Valve (HV43-2F031A) for tripped Recirc Pump

d. MONITOR and CONTROL Reactor Level until normal level restored

ANSWER : D

Reference: While in startup, single recirc trip requires OT-112 entry, only action is monitor and control level.

NO.: 66 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 234000 5.02 TAXONOMY NO.: 3.1/3.7
LESSON PLANS: LOT0760.10
:
CATEGORY: 98 C W
SYSTEMS: REFUEL

QUESTION :
Refueling activities are in progress on Unit 1.

All control rods are fully inserted.

WHICH ONE of the following conditions is required if the Refuel Bridge is to enter the fuel transfer/cattle chute area at normal speed?

a. Auxiliary Hoists are not loaded

b. Boundary Zone Computer bypassed

c. Reactor Mode Switch in "Refuel"

d. grapple at the normal full up position

ANSWER : D

NO.: 67 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 272000 3.04 TAXONOMY NO.: 3.7/3.8
LESSON PLANS: LOT0720.05
:
CATEGORY: 98 C W
SYSTEMS: PRM

QUESTION :

Plant conditions are as follows:

- Unit 1 is at 3% power
- Mechanical Vacuum Pump operating
- All MSIVs and Main Steam Line Drain valves open
- "1A" and "1B" Main Steam Line Radiation Monitors trip (>3xNFPB)

WHICH ONE of the following describes plant status?

	MSIVs	Steam Line Drains	Mechanical Vacuum Pump
a.	open	open	tripped
b.	isolated	open	running
c.	open	isolated	running
d.	isolated	isolated	tripped

ANSWER : A

Reference: A & B tripped is Mech Vac Pump trip, MSIVs remain open.

NO.: 68 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 215002 3.04 TAXONOMY NO.: 3.6/3.5
LESSON PLANS: LOT0280.08
:
CATEGORY: 98 C W
SYSTEMS: RBM

QUESTION :

Reactor power is 20%

Control Rod 28-29 is selected

WHICH ONE of the following describes Rod Block Monitor (RBM) status?

a. bypassed, will not enforce a rod block

b. bypassed, will enforce a rod block at 107%

c. enforcing, will enforce a rod block at 112%

d. enforcing, will enforce a rod block at 117%

ANSWER : A

Reference: RBM bypassed less than 30% power.

NO.: 69 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 233000 6.10 TAXONOMY NO.: 2.9/3.3
LESSON PLANS: LOT0750.08
:
CATEGORY: 98 C W
SYSTEMS: FPCC REFUEL

QUESTION :

Plant conditions are as follows:

- In OPCON 5
- Reactor Cavity is flooded
- Spent Fuel Pool gates are removed
- Reactor Cavity Water Level begins to drop
- Spent Fuel Pool makeup cannot stabilize Reactor Cavity Water Level

WHICH ONE of the following describes the long term effects?

	Fuel Pool Cooling Pumps	Fuel In Spent Fuel Pool
a.	tripped	uncovered
b.	running	uncovered
c.	tripped	covered
d.	running	covered

ANSWER : C

Reference: FPC pumps will trip on low skimmer surge tank level, water will drain to RPV flange (about 10" above spent fuel).

NO.: 70 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295032 1.04 TAXONOMY NO.: 3.1/3.6
LESSON PLANS: LOT1560.05 T-103 BASES
:
CATEGORY: 98 C W
SYSTEMS: TRIP T-103

QUESTION :

The following parameters are reported for Unit 1:

- HPCI Pump Room: 160°F
- RCIC Pump Room: 100°F
- "1A" & "1C" RHR Pump Room: 150°F
- HPCI Room Water Level: 8"
- All other T-290, "Instrumentation Available For T-103", parameters are normal

WHICH ONE of the following systems are no longer assured to be available for safe shutdown of the plant?

a. HPCI

b. RCIC

c. HPCI and RCIC

d. "1A" & "1C" RHR pumps

ANSWER : D

Reference: Definition of MSO

NO.: 71 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.18 TAXONOMY NO.: 2.9/3.0
LESSON PLANS: LOT1574.08
:
CATEGORY: 98 C W
SYSTEMS: OPSMAN

QUESTION :

The Unit 2 RO is requested to support a PMT which requires data collection from the Containment Hydrogen Recombiner panel 2AC696.

The data will take 20 minutes to obtain.

WHICH ONE of the following describes the necessary steps for the RO to obtain the data?

a. notify the PRO, short term relief is not required

b. obtain CRS authorization, short term relief is not required

c. short term relief is required, no log entry is required

d. short term relief is required, log entry is required

ANSWER : D

Reference: Short term relief less than 1 hour, must be documented in narrative log.

NO.: 72 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.1 TAXONOMY NO.: 3.7/3.8
LESSON PLANS: LOT1574.04
:
CATEGORY: 98 C W
SYSTEMS: OPSMAN

QUESTION :

The Unit is in OPCON 1

Manual Scoop Tube operation is required at the M-G set

The Floor Supervisor is standing by at the M-G set to provide needed support

WHICH ONE of the individuals below is permitted to manipulate the Scoop Tube?

a. Duty Reactor Engineer

b. Turbine Enclosure EO (nonlicensed)

c. Engineer in current SRO Certification class

d. EO in current RO licensing class

ANSWER : D

Reference: Reactivity controls only if trainee in license class and under instruction of licensed operator.

NO.: 73 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.11 TAXONOMY NO.: 2.5/3.4
LESSON PLANS: LOT1570.03
:
CATEGORY: 98 C W
SYSTEMS:

QUESTION :

ST-6-092-364-1, D14 DIESEL GENERATOR OPERABILITY VERIFICATION, is in progress.

The EO working locally at the EDG reports that the procedure directs operation of LOCAL-REMOTE SELECTOR SWITCH "43-DG207".

The EO verifies that this switch number should be "43-DG501".

WHICH ONE of the following describes the actions necessary to complete this ST?

a. stop, submit a TC for the change and then continue

b. stop, submit a PPIS for the change and then continue

c. complete the ST, then submit a TC for the change

d. complete the ST, then submit a PPIS for the change

ANSWER : A

Reference:

component identifiers must be TC'd

NO.: 74 REV.: 6 TYPE: MC ENTERED BY: \AB DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.2 TAXONOMY NO.: 2.5/2.9
LESSON PLANS: LOT1574.22
:
CATEGORY: 98 C W
SYSTEMS: OPSMAN

QUESTION :

Clearance removal is being evaluated for Independent and Double Verification requirements?

Verification of several steps in the clearance will require exposure of 12 to 15 mR.

WHICH ONE of the following reflects verification requirements?

	Independent Verifications	Double Verifications
a.	can be waived	can not be waived
b.	can not be waived	can be waived
c.	can not be waived	can not be waived
d.	can be waived	can be waived

ANSWER : D

Reference: Waived for specific verifications if estimated exposure 10mR or greater.

NO.: 75 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.14 TAXONOMY NO.: 3.0/3.9
LESSON PLANS: LOT1562.04 TRIP SAMP BASES
:
CATEGORY: 98 C W
SYSTEMS: SAMP TRIP .

QUESTION :

Plant conditions are as follows:

- An ATWS is in progress
- T-101, RPV CONTROL, and T-117, POWER/LEVEL CONTROL, are being implemented
- SAMP procedure entry is now required

WHICH ONE of the following states the procedures which are required to be implemented?

a. SAMPs only

b. SAMPs and T-101

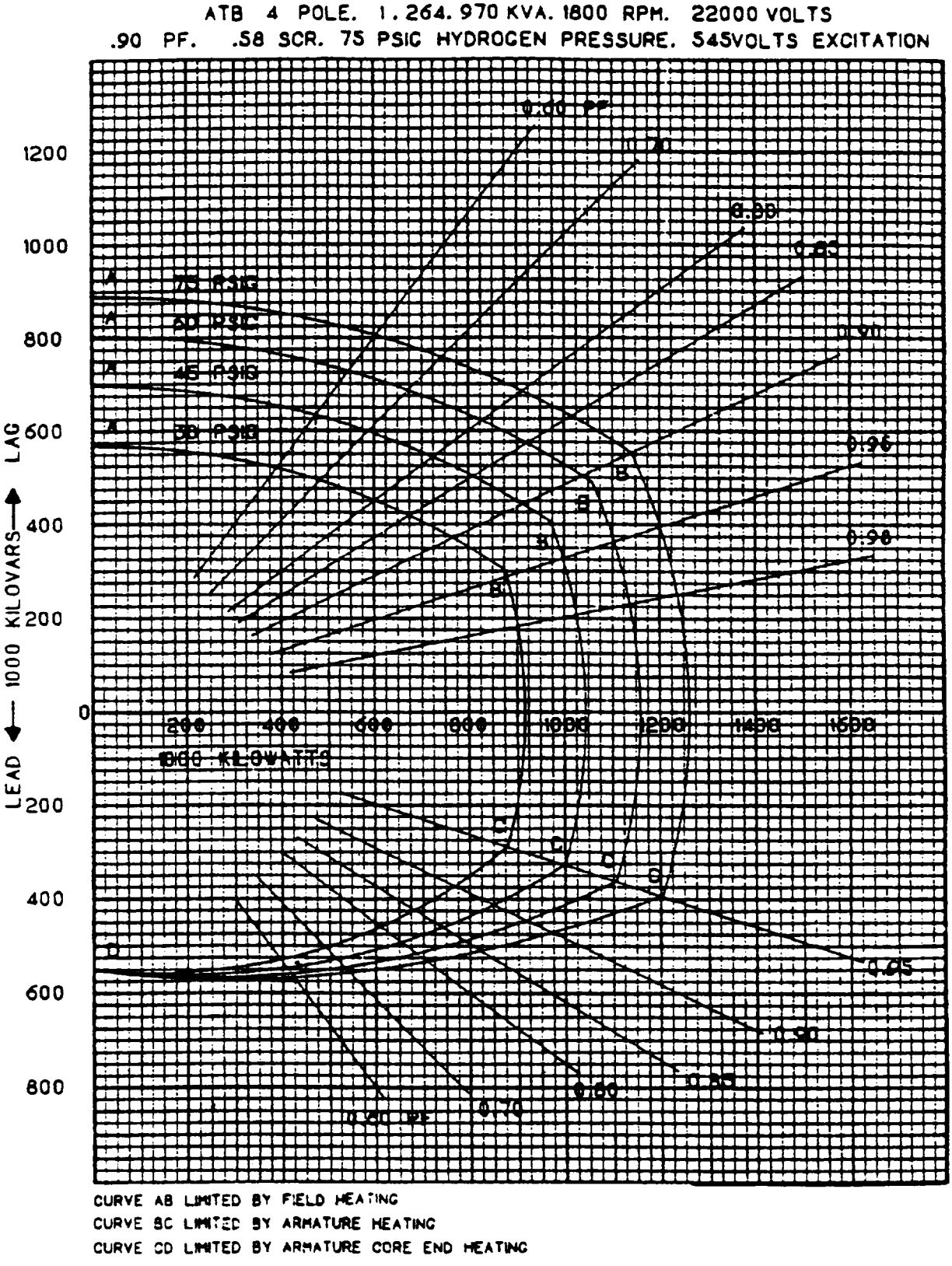
c. SAMPs and T-117

d. SAMPs, T-101 and T-117

ANSWER : A

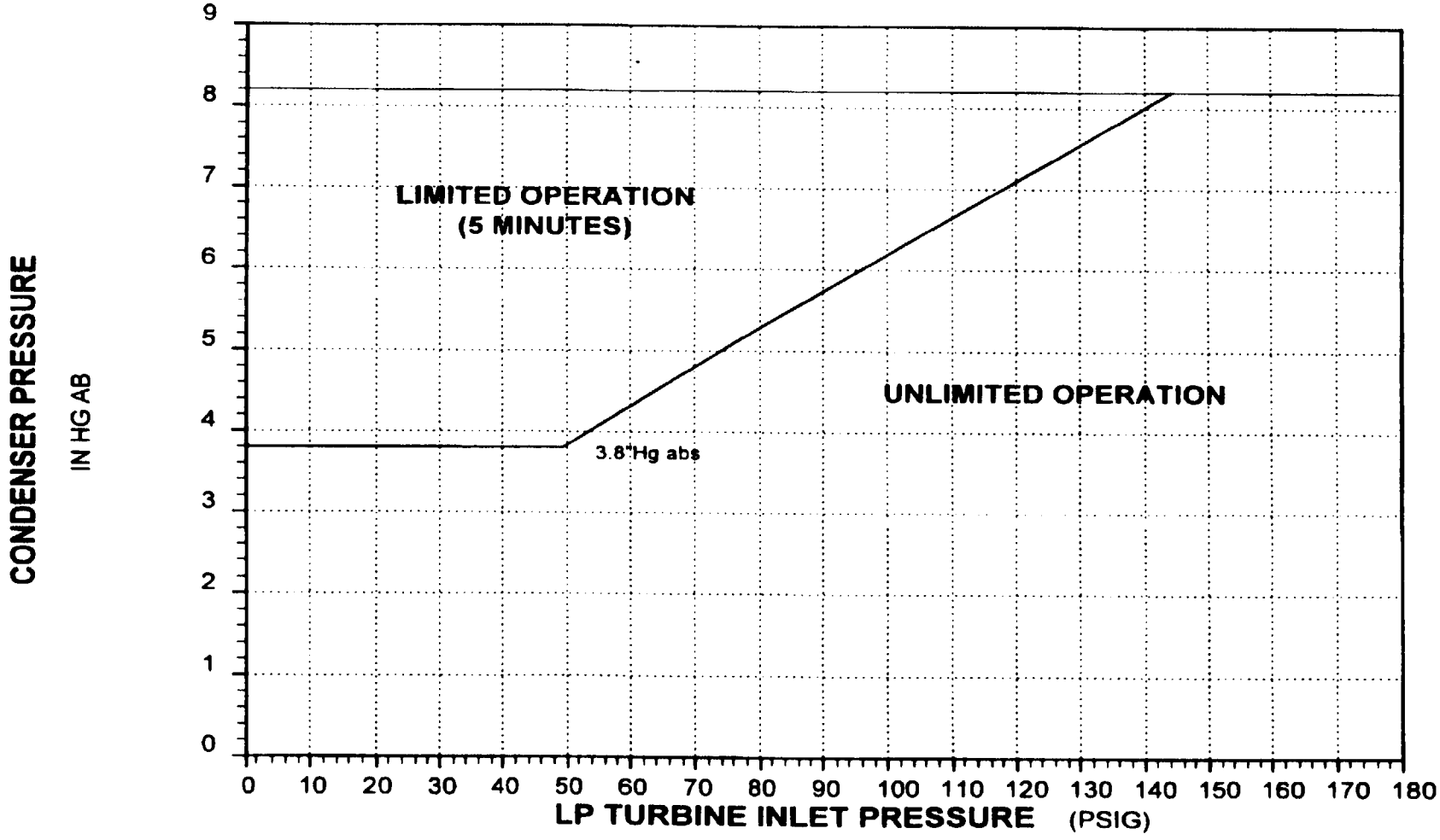
Reference: When SAMPs are entered, all TRIP procedures are exited.

ESTIMATED GENERATOR CAPABILITY CURVES AT VARIOUS HYDROGEN GAS PRESSURE



CURVE AB LIMITED BY FIELD HEATING
CURVE BC LIMITED BY ARMATURE HEATING
CURVE CD LIMITED BY ARMATURE CORE END HEATING

TURBINE BACKPRESSURE OPERATION LIMITS

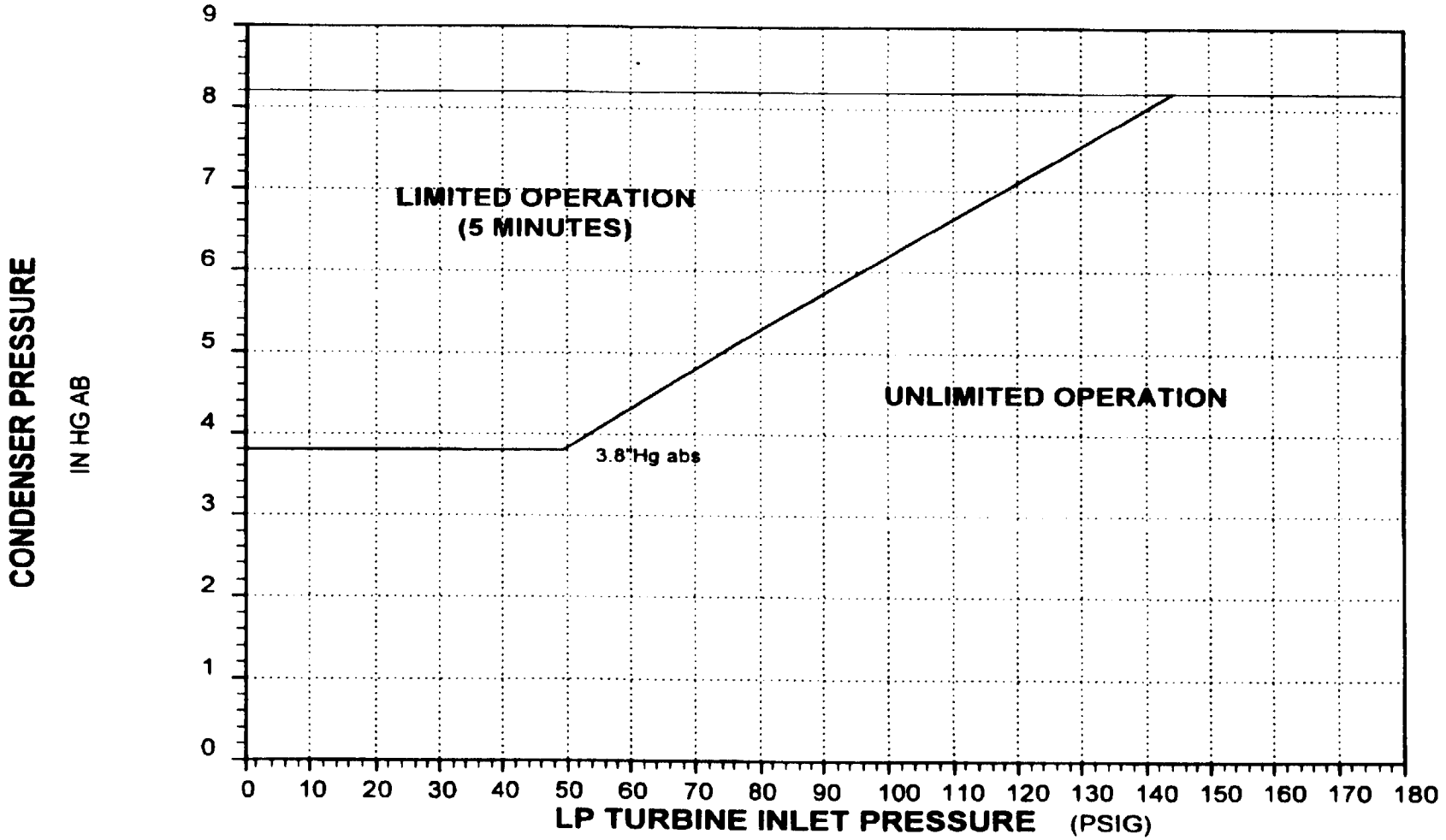


NOTE: Backpressure upper limit of 8.2"Hg abs selected based on the Main Turbine Low Vacuum Trip of 21.5" @ barometric pressure of 29.7"Hg

(see page two for x and y coordinate data points)

CC #55

TURBINE BACKPRESSURE OPERATION LIMITS



Q #55

NOTE: Backpressure upper limit of 8.2"Hg abs selected based on the Main Turbine Low Vacuum Trip of 21.5" @ barometric pressure of 29.7"Hg

(see page two for x and y coordinate data points)

TAB

WRITTEN RO ONLY

NO.: 76 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 215003 3.01 TAXONOMY NO.: 3.9/4.0
LESSON PLANS: LOT0250.08 C71-1020
:
CATEGORY: 98
SYSTEMS:

QUESTION :

Plant conditions are as follows:

- Reactor power is 7%
- Mode Switch is in "RUN"
- All IRMs are fully inserted
- "E" APRM is downscale reading 2%
- "B" APRM is INOP
- "G" IRM is INOP

WHICH ONE of the following describes how RPS will respond?

a. full scram

b. remains energized

c. only "A" side half scram

d. only "B" side half scram

ANSWER : A

NO.: 77 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 262001 1.02 TAXONOMY NO.: 3.3/3.6
LESSON PLANS: LOT0640.07
:
CATEGORY: 98 RO W
SYSTEMS: 13.2KV DC

QUESTION :

All Non-Safeguard DC power is lost.

WHICH ONE of the following describes the operation of the 13.2 kV Aux Buses?

a. auto transfers to offsite source when main turbine trips

b. can be manually transferred to offsite source from MCR

c. auto transfers when 13.2 kV bus voltage drops to 90%

d. bus voltage drops to zero as the turbine slows

ANSWER : D

Reference: No DC control power, 13 KV breakers cannot be operated remotely.

NO.: 78 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295025 TAXONOMY NO.: 2.7/3.6
LESSON PLANS: LOT1560.05 T-101 BASES
:
CATEGORY: 98 RO W
SYSTEMS: TRIP T-101 .

QUESTION :

SRVs are automatically cycling open and closed due to high Reactor pressure.

WHICH ONE of the following describes the reason SRVs should be opened manually to reduce Reactor pressure to 990 psig?

a. prevents excessive inventory loss

b. minimizes the potential of an SRV sticking open

c. minimizes SRV accumulator inventory loss

d. minimizes potential for a stuck open Downcomer Vacuum Breaker

ANSWER : B

NO.: 79 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/14/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AA SKA NO.: 295020 2.06 TAXONOMY NO.: 3.4/3.8
LESSON PLANS: LOT1530.03
:
CATEGORY: 98 RO W
SYSTEMS: CASS GP-8

QUESTION :

Plant conditions are as follows:

- Drywell Pressure: 2.5 psig
- Reactor Pressure: 600 psig
- H_2O_2 Analyzers are bypassed and returned to service
- Reactor level subsequently drops to -135"

WHICH ONE of the following describes why the H_2O_2 Analyzer sample valves have re-closed?

a. bypass logic malfunction

b. second isolation signal received

c. loss of Instrument Air pressure

d. loss of power to the valve logic

ANSWER : D

Reference: LOCA signal results in short power loss, valve bypass logic drops out, valves close when power restored.

NO.: 80 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 259002 6.01 TAXONOMY NO.: 3.2/3.2
LESSON PLANS: LOT0550.10
:
CATEGORY: 98 RO W
SYSTEMS:

QUESTION :

Plant conditions are as follows:

- Unit 1 is in OPCON 2
- Reactor Pressure: 300 psig
- Feedwater is aligned for Startup Level Control, RFP Discharge Valves are closed
- A loss of Instrument Air occurs, both headers indicate 0 psig

WHICH ONE of the following describes Feedwater makeup capability?

a. not available

b. available with "1A" RFP

c. available with LIC-06-138 (STARTUP BYPASS)

d. available with LIC-06-120 (RFP BYPASS CONTROLLER)

ANSWER : A

Reference: Loss of air causes 120/138 to fail closed, RFP min flow to fail open preventing reactor flow.

NO.: 81 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295036 1.04 TAXONOMY NO.: 3.1/3.4
LESSON PLANS: LOT0720.04
:
CATEGORY: 98 RO W
SYSTEMS: PRM

QUESTION :

All four (4) POST LOCA RAD MONITORS trip.

WHICH ONE of the choices below reflects the status of Reactor Enclosure sumps?

	Floor Drain	Equipment Drain
a.	aligned to Radwaste	aligned to Radwaste
b.	pumps tripped	aligned to Radwaste
c.	aligned to Radwaste	pumps tripped
d.	pumps tripped	pumps tripped

ANSWER : D

Reference: Post LOCA high rad cause floor and equipment drains pumps to trip.

NO.: 82 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 215001 2.07 TAXONOMY NO.: 3.4/3.7
LESSON PLANS: LOT0290.07 S74.0.A
:
CATEGORY: 98 RO W
SYSTEMS: TIPS

QUESTION :

A TIP is stuck in the core during an accident.

WHICH ONE of the following will isolate the TIP penetration?

a. place Drive Control Unit power switch to "OFF"

b. place Explosive Shear Valve keylock to "FIRE"

c. remove control power fuse from front of Drive Control Unit

d. place Drive Control Unit Ball Valve control switch to "CLOSED"

ANSWER : B

Reference: With TIP stuck, only shear valve will cut cable and isolate line.

NO.: 83 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 205000 5.02 TAXONOMY NO.: 2.8
LESSON PLANS: LOT0370.12 S51.8.B
:
CATEGORY: 98 RO W
SYSTEMS:

QUESTION :

Unit 2 is in OPCON 4.

"2B" RHR Loop in Shutdown Cooling.

A Div II High Drywell Pressure signal is initiated.

WHICH ONE of the following describes the status of "2B" RHR Loop?

	LPCI Injection Valve (2F017B)	Shutdown Cooling Return Valve (2F015B)
a.	open	closed
b.	closed	closed
c.	open	open
d.	closed	open

ANSWER : C

Reference: The F017B will auto open. F015B stays open.

NO.: 84 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 286000 4.04 TAXONOMY NO.: 3.6/3.7
LESSON PLANS: LOT0733.05
:
CATEGORY: 98 RO W
SYSTEMS: FP

QUESTION :

CARDOX has been manually initiated for CABLE SPREAD ROOM

Workers are still in the Inverter Room

WHICH ONE of the following describes the action required to terminate CARDOX operation?

a. set pneumatic discharge timer to zero

b. isolate CO_2 line in Cable Spread Room

c. select "ABORT" on panel outside Cable Spread Room

d. isolate CO_2 tank located on Turbine Enclosure 217'elevation

ANSWER : C

Reference: Abort switch will stop CO_2 discharge.

NO.: 85 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 256000 4.11 TAXONOMY NO.: 3.2/3.4
LESSON PLANS: LOT0520.05
:
CATEGORY: 98 RO W
SYSTEMS: COND

QUESTION :

Plant conditions are as follows:

- Unit 1 is in OPCON 1
- Hotwell Level: 45"
- CST Level: 28.5'

WHICH ONE of the following adjustments to the Hotwell Level Controllers will add inventory to the CST?

a. select "MANUAL" and adjust output to "REJECT"

b. select "MANUAL" and adjust output to zero

c. select "MANUAL" and adjust output to "MAKEUP"

d. select "AUTO" and adjust setpoint ribbon to 50"

ANSWER : A .

Reference: Both controllers to reject in manual will direct water to CST from hotwell.

NO.: 86 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 245000 2.2.3 TAXONOMY NO.: 3.1/3.3
LESSON PLANS: LOT0560.03 P&ID M-001
:
CATEGORY: 98 RO W
SYSTEMS:

QUESTION :

Plant conditions are as follows:

- Both units are at 8% power
- Both turbines are at 1800 rpm

WHICH ONE of the following describes the results of Turbine Exhaust Hood Temperature reaching 230°F on both Units?

	Unit 1 Turbine	Unit 2 Turbine
a.	Tripped	Tripped
b.	On-line	On-line
c.	Tripped	On-line
d.	On-line	Tripped

ANSWER : D

NO.: 87 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 271000 2.06 TAXONOMY NO.: 3.5/3.9
LESSON PLANS: LOT1550.02
:
CATEGORY: 98 RO W
SYSTEMS: OFFGAS

QUESTION :

Unit 2 has sustained combustion in the Offgas System.

HWC System is in operation.

WHICH ONE of the following will immediately terminate O2 Injection Flow?

a. manually closing SJAE first stage steam valves

b. manually closing SJAE second stage steam valves

c. depressing HWC SHUTDOWN SWITCH for 2 seconds

d. depressing HWC SHUTDOWN SWITCH for 17 seconds

ANSWER : D

Reference: Depressing shutdown switch for greater than 15 seconds will immediatley stop H2 and O2 flow.

NO.: 88 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: A SKA NO.: 230000 4.06 TAXONOMY NO.: 4.0/3.9
LESSON PLANS: LOT0370.09
:
CATEGORY: 98 RO W
SYSTEMS: RHR

QUESTION :

Unit 1 plant conditions are as follows:

- A LOCA signal is present
- "1A" RHR is in Suppression Pool Spray
- Drywell Pressure has been lowered to 1.2 psig

The LOCA signal is reset

WHICH ONE of the following describes the status of a "1A" RHR?

	Full Flow Test HV51-1F024A	Pool Spray HV51-1F027A
a.	Closed	Closed
b.	Open	Closed
c.	Closed	Open
d.	Open	Open

ANSWER : D

Reference: Resetting LOCA signal will not reposition 1F024A or 1F027.

NO.: 89 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 211000 2.01 TAXONOMY NO.: 2.9/3.1
LESSON PLANS: LOT0310.03
:
CATEGORY: 98 RO W
SYSTEMS: SLC

QUESTION :

Plant conditions are as follows:

- Unit 2 experienced a loss of offsite power 10 minutes ago
- D22 and D24 diesels failed to start
- Reactor Power: 9%
- Reactor Pressure: 1160 psig

WHICH ONE of the following describes the status of Unit 2 SLC System?

	SLC Pumps	SLC Squib Valves
a.	not running	not fired
b.	A and B running	A and B fired
c.	A and C running	A and C fired
d.	A,B, and C running	A,B,and C fired

ANSWER : C

Reference: D22 power to B pump and valve, greater than 4% and above 1149 after 2 minutes, auto SLC start.

NO.: 90 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 217000 6.04 TAXONOMY NO.: 3.5/3.5
LESSON PLANS: LOT0380.12
:
CATEGORY: 98
SYSTEMS:

QUESTION :

Plant conditions are as follows:

- RCIC is running aligned to the CST
- Suppression Pool Level is 17 feet and lowering

CST level is dropping.

WHICH ONE of the following describes RCIC suction alignment?

a. cannot be aligned to Suppression Pool

b. must be manually aligned to Suppression Pool

c. automatically aligns to Suppression Pool at 29 feet in CST

d. automatically aligns to Suppression Pool at 2.3 feet in CST

ANSWER : D

NO.: 91 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 259001 1.20 TAXONOMY NO.: 3.1/3.2
LESSON PLANS: LOT0540.08
:
CATEGORY: 98 RO W
SYSTEMS: FW

QUESTION :

Unit 1 is at 40% power

- "1A" and "1B" RFP's in service
- "1C" RFP is secured
- Reactor Level Control is in automatic, 3-element control.

The "1B" RFP Low Pressure Main Stop Valve fails closed.

WHICH ONE of the following describes plant status five (5) minutes later?

	1B RFP	Reactor Water Level
a.	feeding	lowering
b.	feeding	normal
c.	not feeding	lowering
d.	not feeding	normal

ANSWER : B

Reference: LP valve closed will stop extraction steam, Hp will provide steam. Level will be maintained.

NO.: 92 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 212000 TAXONOMY NO.: 4.0/4.0
LESSON PLANS: LOT0300.08 OT-117
:
CATEGORY: 98 RO W
SYSTEMS: RPS OT

QUESTION :

The plant is in OPCON 2 with the following IRM indications:

IRM	RANGE	READING
A	6	79
B	6	83
C	6	123
D	6	Bypassed
E	6	97
F	6	122
G	6	81
H	6	103

WHICH ONE of the following actions are required?

a. Bypass C IRM

b. Perform a GP-4 shutdown

c. Immediately scram the reactor

d. Position all IRMs to range 7

ANSWER : C

Reference: OT-117 Immediate Action to scram on validated scram signal with no scram.

NO.: 93 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.17 TAXONOMY NO.: 3.5
LESSON PLANS: LOT1574.07 OM-C-4.1
:
CATEGORY: 98 RO W
SYSTEMS: OPSMAN

QUESTION :

WHICH ONE of the following types of verbal communication require receiver repeat back?

a. Briefings

b. Operating directives

c. Scram actions report out

d. Routine conversations

ANSWER : B

NO.: 94 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.9 TAXONOMY NO.: 2.5/4.0
LESSON PLANS: LOT1574.09
:
CATEGORY: 98 RO W
SYSTEMS: OPSMAN

QUESTION :

I&C testing is being performed

Main Steam Line Flow High channel B calibration functional (ST-2-041-425-2) is in progress.

Expected alarm "MAIN STEAM LINE HI FLOW" annunciates.

WHICH ONE of the following describes required MCR alarm response to this testing?

a. only the unit RO is permitted to acknowledge this alarm

b. only the PRO is permitted to acknowledge this alarm

c. I&C is permitted to acknowledge this alarm with RO concurrence

d. I&C is permitted to acknowledge this alarm without RO concurrence.

ANSWER : C

Reference: Must receive concurrence from RO for alarms during test.

NO.: 95 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.13 TAXONOMY NO.: 3.6/3.8
LESSON PLANS: CAT
:
CATEGORY: 98 RO W
SYSTEMS: CAT

QUESTION :

WHICH ONE of the following describes appropriate use of an Information Tag?

a. HPCI Aux Steam manual supply valve

b. Service Water motor operated valve feed

c. CRD HCU manual valve that is to be replaced

d. Feedwater Heater Level Controller Drain valve in "MANUAL"

ANSWER : C

Reference: Info tag used within boundary of clearance.

NO.: 96 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.32 TAXONOMY NO.: 3.5
LESSON PLANS: LOR9802B.05 FH-105
:
CATEGORY: 98 RO W
SYSTEMS:

QUESTION :

Unit 1 is in OPCON 5 with Core Alterations in progress.

The Refuel Bridge has lost communication with the RO while removing a bundle from the core.

WHICH ONE of the following describes the status of core alterations?

a. may continue at the discretion of the Fuel Handling Director

b. must be suspended after the bundle is placed in a safe location

c. may continue if the RO monitors fuel movements via the Refuel Floor video equipment

d. must be suspended immediately and the bundle must not be raised or lowered.

ANSWER : B

NO.: 97 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.1 TAXONOMY NO.: 2.6/3.0
LESSON PLANS: LOT1760.02
:
CATEGORY: 98 RO W
SYSTEMS: HP

QUESTION :

An individual has 3200 mR TEDE annual exposure.

This worker is required to perform an evolution with an exposure estimate of 400 mR.

WHICH ONE of the following describes the appropriate dose controls?

a. no Dose Extension is required

b. Admin Dose Extension is required

c. Planned Special Exposure is required

d. no further exposure is permitted

ANSWER : B

Reference: Greater than 2R, Admin Dose extensions every 500 mR up to 4R.

NO.: 98 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.4 TAXONOMY NO.: 2.5/3.1
LESSON PLANS: LOT1760.05
:
CATEGORY: 98 RO W
SYSTEMS: HP

QUESTION :

After exiting a posted Contaminated Area, you perform a whole body frisk.

- Background Readings are 350 cpm
- Highest reading during whole frisk 470 cpm

WHICH ONE of the following describes action to be taken?

a. continue with assigned work

b. reperform frisk, if readings are unchanged, contact HP

c. change scrubs, reperform frisk, if readings remain unchanged continue work

d. move to an area of lower background, taking measures to contain any contamination, reperform frisk

ANSWER : D

Reference: Greater than 300 cpm, frisk hands and feet, move to area of lower background then perform whole body frisk.

Reference: HP-C-818

NO.: 99 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/11/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.34 TAXONOMY NO.: 3.8/3.6
LESSON PLANS: LOT1561.02 T-200
:
CATEGORY: 98 RO W
SYSTEMS: T-200

QUESTION :

T-200, Primary Containment Emergency Vent Procedure, requires closing Steam Flooding Dampers when preparing to vent through the 24" Suppression Pool Purge Supply Line.

WHICH ONE of the following describes the method and reason for accomplishing this?

a. place steam flooding damper keylock switches to test; prevents duct work rupture

b. initiate a reactor enclosure HVAC isolation from the MCR; prevents duct work rupture

c. place steam flooding damper keylock switches to test; minimizes steam flooding in critical areas

d. initiate a reactor enclosure HVAC isolation from the MCR; minimizes steam flooding in critical areas

ANSWER : C

NO.: 100 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.39 TAXONOMY NO.: 3.3/3.1
LESSON PLANS: LEPP
:
CATEGORY: 98 RO W
SYSTEMS: ERP

QUESTION :

A Site Area Emergency has been declared.

All required Emergency Response Facilities have been activated.

WHICH ONE of the following describes where Equipment Operators will assemble?

a. OSC

b. FOF

c. EFDC

d. TSC

ANSWER : A

Reference: OSC activated at Alert for EO response/assistance

TAB

WRITTEN SRO ONLY

NO.: 101 REV.: 11 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G2.2.12 SKA NO.: 262001 TAXONOMY NO.: 4.0
LESSON PLANS: LOT0640.12 T.S.
:
CATEGORY: 98 SRO W
SYSTEMS: T.S.

QUESTION :

Plant conditions are as follows:

- Unit 2 is in OPCON 1
- Unit 1 is in OPCON 5, Refueling operations are in progress.
- D11 D/G is INOP
- D13 D/G is INOP

It is discovered that D14 D/G undervoltage relay 127-11X will not trip.

101 Safeguard Bus was removed from service two hours ago.

WHICH ONE of the following describes the required actions?

	Unit 1	Unit 2
a.	Restore at least one D/G within 12 hours or suspend core alts.	Restore off site source in 70 hr or shutdown.
b.	Core alts may continue indefinitely	Restore D13 or D14 to operable within 70 hours or shutdown
c.	Suspend core alts	Restore offsite source in 7 days or shutdown.
d.	Suspend core alts	Restore offsite source in 70 hours or shutdown

ANSWER : D
Reference:

NO.: 102 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 263000 1.02 TAXONOMY NO.: 3.2/3.3
LESSON PLANS: LOT0690.02 E-92
:
CATEGORY: 98 SRO W
SYSTEMS:

QUESTION :

Breaker D224-R-G-12, Unit 2 Div II 250 Volt Battery Charger 2BCB1, trips open.

WHICH ONE of the following describes the status of Unit 2 Div II 250 VDC Bus?

a. will immediately drop to 0 volts

b. will immediately drop to 125 volts

c. will remain at 250 volts indefinitely

d. will slowly discharge to between 125 and 250 volts

ANSWER : D
Reference: One charger will be lost, remaining charger will maintain bus at 125 to 250 volts as battery slowly discharges.

NO.: 103 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 205000 TAXONOMY NO.: 2.9/4.0
LESSON PLANS: LOT0370.24 TECH SPEC
:
CATEGORY: 98 SRO W
SYSTEMS:

QUESTION :

Plant conditions as follows:

- Unit 1 in OPCON 5
- Reactor Level is 217"
- "1A" RHR is in Shutdown Cooling
- HV-51-1F008, SHUTDOWN COOLING SUCTION OUTBOARD, fails closed and cannot be reopened.

WHICH ONE of the following describes actions that must be completed within 1 hour?

a. place "1B" RHR in Shutdown Cooling

b. place "1A" Recirc pump in service

c. raise Reactor Level to 490"

d. initiate SGTS aligned to Refuel Floor

ANSWER : B
Reference: With low level in OPCON 5, must have circulation within 1 hour, S/D cooling must be available, not in service. T.S. 3.9.11.2

NO.: 104 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: K SKA NO.: 295025 1.05 TAXONOMY NO.: 4.7
LESSON PLANS: LOT1800.04 TECH SPEC
:
CATEGORY: 98
SYSTEMS:

QUESTION :

Reactor Pressure reaches 1338 psig.

WHICH ONE of the following states the required actions?

	Notified	Future Critical Operations
a.	NRC within 1 hour	approved by NRC
b.	Plant Manager within 1 hour	approved by NRC
c.	NRC within 1 hour	approved by NRB
d.	Plant Manager within 1 hour	approved by NRB

ANSWER : A

Reference: Tech Spec 6.7.1

NO.: 105 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G 2.1.12 SKA NO.: 295020 TAXONOMY NO.: 2.9/4.0
LESSON PLANS: LOT0180.10
:
CATEGORY: 98
SYSTEMS:

QUESTION :

Unit 1 is operating at 20% power.

Drywell Chilled Water Inboard and Outboard Isolation valves are bypassed.

WHICH ONE of the following describes the required Tech Spec action?

a. STARTUP in 12 hours, HOT SHUTDOWN within the following 24 hours

b. HOT SHUTDOWN within 12 hours, COLD SHUTDOWN within the following 24 hours

c. isolate Inboard valves within 12 hours, HOT SHUTDOWN within the following 12 hours

d. isolate Outboard valves within 12 hours, HOT SHUTDOWN within the following 24 hours

ANSWER : B

NO.: 106 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EA SKA NO.: 295031 1.08 TAXONOMY NO.: 3.8/3.9
LESSON PLANS: LOT1561.04 T-101 T-245
:
CATEGORY: 98 SRO W
SYSTEMS: TRIP T-101 T-200

QUESTION :

Unit 1 plant conditions are as follows:

- Reactor is Shutdown
- Reactor Level: -60" and slowly lowering
- CST Level: 26 ft
- HV-51-1F017A (LPCI INJECTION) valve is stuck closed
- "1B" RHR pump is injecting at 10,000 gpm

WHICH ONE of the following methods can be used to increase injection to the RPV?

a. T-240, Maximizing CRD flow

b. T-243, Alternate Injection from RHRSW

c. T-244, Alternate Injection from Fire Water

d. T-245, RPV Injection from RHR Shutdown Cooling

ANSWER : D

Reference: T-240 cannot be used due to no water to CRD pumps, T-243 and T-244 could be implemented but B RHR would have to be secure, and injection rate would drop. T-245 can be used through A loop to increase injection.

NO.: 107 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295022 1.01 TAXONOMY NO.: 3.3/3.4
LESSON PLANS: LOT1550.02 ON-107
:
CATEGORY: 98 SRO W
SYSTEMS: CRDH

QUESTION :

Unit 2 is at 37% power.

Both CRD pumps are tripped and cannot be started.

15 minutes later, 23 HCU Accumulator Trouble annunciators are alarming.

A GP-4 Shutdown is performed.

WHICH ONE of the following describes expected plant response?

a. 23 rods will not insert

b. all rods will insert with normal scram times

c. all rods will insert with significantly longer scram times

d. all rods will insert, only 23 rods will have significantly longer scram times

ANSWER : B

NO.: 108 REV.: 5 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK SKA NO.: 295035 2.4.6 TAXONOMY NO.: 3.1/4.0
LESSON PLANS: LOT1560.06 T-103
:
CATEGORY: 98 SRO W
SYSTEMS: TRIP T-103

QUESTION :

Unit 2 plant conditions are as follows:

- Reactor Power: 100%
- A/C RHR Pump Room Level: 20" and rising slowly

The source of the water leaking into the A/C RHR pump room has been determined to be the "2C" LPCI injection line (water is leaking past HV51-2F017C and through RHR Heat Exchanger inlet flange).

WHICH ONE of the following actions is required?

a. scram the Reactor, enter T-101

b. perform a GP-3, Normal Plant Shutdown

c. enter Tech Spec 3.5.1 for "2C" RHR pump INOP

d. perform Emergency Depressurization per T-112

ANSWER : A

Reference: RHR leakage is from Primary System, therefore, step SCC/L-8 and SCC/L-9 are performed.

NO.: 109 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295016 3.03 TAXONOMY NO.: 3.5/3.7
LESSON PLANS: LOT0735.03
:
CATEGORY: 98 SRO W
SYSTEMS: RSP

QUESTION :

The Main Control Room is abandoned.

Control has been established at the Remote Shutdown Panel per SE-1.

101 Safeguard Bus trips.

WHICH ONE of the following describes 4KV status?

	D22 Diesel Generator	D22 Safeguard Bus
a.	not running	deenergized
b.	running	energized from D22 Diesel
c.	not running	energized from 201 Bus
d.	running	energized from 201 Bus

ANSWER : D

Reference: From RSP, loss of 101 will cause diesel start, auto swap to 201 Bus.

NO.: 110 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK 2.4.8 SKA NO.: 500000 G TAXONOMY NO.: 3.0/3.7
LESSON PLANS: LOT1561.02 T-228
:
CATEGORY: 98 SRO W
SYSTEMS: T-200

QUESTION :

Purging the Drywell with air per T-228 can only be performed if Drywell pressure is less than 0.75 psig.

WHICH ONE of the following describes the reason for this limitation?

a. prevents exceeding 1.68 psig Drywell pressure

b. prevents subjecting Post-LOCA Recombiner Blower to excessive suction pressure

c. allows Reactor Enclosure Supply fans to discharge air into the Drywell

d. ensures Drywell pressure remains within the operating range of the Downcomer Vacuum Breakers

ANSWER : C

NO.: 111 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295023 3.02 TAXONOMY NO.: 3.4/3.8
LESSON PLANS: LOT0760.10 ON-120
:
CATEGORY: 98 SRO W
SYSTEMS: REFUEL ON

QUESTION :

The Refuel Platform Aux Hoist grapple is out of the water, and cannot be re-submerged due to Aux Hoist motor overload.

The West wall Fuel Floor ARM is alarming.

WHICH ONE of the following actions is required?

a. immediately evacuate the Fuel Floor

b. lower Aux Hoist grapple using the handcrank

c. place the alarming ARM mode switch to ZERO

d. reset the motor overload, then lower the Aux Hoist

ANSWER : A

NO.: 112 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: AK SKA NO.: 295010 1.03 TAXONOMY NO.: 3.2/3.4
LESSON PLANS: LOT1540.05
:
CATEGORY: 98 SRO W
SYSTEMS: OT

QUESTION :

Plant conditions are as follows:

	09:00AM	10:30AM
Reactor Power:	25%	31%
Drywell Pressure:	0.3 psig	0.1 psig
Drywell Temperature:	120°F	120°F
Drywell Oxygen:	2.0%	2.0%
Drywell Hydrogen:	0.1%	0.1%
Containment Leak Detector:	95 cpm	97 cpm

Instrument Air is backing up the "1B" Instrument Gas Header.

WHICH ONE of the following describes status of the plant?

a. Instrument Air leak at "1C" ADS valve

b. Instrument Gas leak at TIP Drive Mechanism

c. Reactor coolant leak at "1A" Inboard MSIV (HV41-1F022A)

d. Reactor coolant leak at RWCU bottom head drain (HV44-1F100)

ANSWER : B

Reference: Instrument Gas leak outside primary containment will drop DW pressure.

NO.: 113 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: EK G2.4.6 SKA NO.: 295026 TAXONOMY NO.: 3.1/4.0
LESSON PLANS: LOT1560.06
:
CATEGORY: 98 SRO W
SYSTEMS: TRIP T-102 .

QUESTION :

Plant conditions are as follows:

- An ATWS is in progress
- Reactor Power: 30%
- Reactor Pressure: 930 psig
- Suppression Pool Level: 23 ft
- Suppression Pool Temperature: 170°F

WHICH ONE of the following actions is required?

a. stabilize Reactor Pressure at 930 psig

b. raise Suppression Pool level to 26 ft

c. perform Emergency Depressurization per T-112

d. reduce Reactor Pressure to between 850 and 900 psig

ANSWER : C

Reference: Already on unsafe side of curve, blowdown required (regardless of ATWS).

NO.: 114 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.26 TAXONOMY NO.: 2.6
LESSON PLANS: LOT1574.10 OM-C-7.2
:
CATEGORY: 98 SRO W
SYSTEMS: OPSMAN

QUESTION :

WHICH ONE of the following protective devices may be reset, if the cause of the trip is thought to be known, without further investigation?

a. Control Rod Drive Pump Breaker magnetics

b. Core Spray Pump Breaker Relay Target

c. RHR Suppression Pool Cooling MOV Thermals

d. Drywell Chiller Breaker Auxiliary Relay Target

ANSWER : C

NO.: 115 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.1.20 TAXONOMY NO.: 4.2
LESSON PLANS: LOT1570.11 A-C-79
:
CATEGORY: 98 SRO W
SYSTEMS:

QUESTION :

An EO is performing ST-6-041-241-1, Reactor Vessel Valve Test, which requires Drywell entry.

WHICH ONE of the following states procedural requirements for completing steps in the Drywell?

	PROCEDURE IN HAND	PROCEDURE
a.	required	original required
b.	required	copy permitted
c.	not required	original required
d.	not required	copy permitted

ANSWER : B

Reference: A-C-79, Section 7.10

NO.: 116 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.14 TAXONOMY NO.: 3.0
LESSON PLANS: LOT1574.14 OM-C-7.5
:
CATEGORY: 98 SRO W
SYSTEMS: OPSMAN

QUESTION :

WHICH ONE of the following describes the tracking mechanism required for a non-safety related, motor-operated valve, backseated while hot to limit a bonnet pressure seal leak?

a. Equipment Status Tag the MOV handswitch and valve operator

b. apply an Equipment Trouble Tag to the MOV handswitch

c. apply an Administrative Clearance with activities to repair valve

d. enter a Regulatory Action Log entry in the Unified Control Room Log

ANSWER : A
Reference: Non safety related, EST only.

NO.: 117 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.13 TAXONOMY NO.: 3.6/3.8
LESSON PLANS: CAT CAT MANUAL
:
CATEGORY: 98 SRO W
SYSTEMS: CAT

QUESTION :

WHICH ONE of the following describes appropriate use of a Special Condition Tag (SCT)?

a. manual valve with an existing SCT applied

b. air operator to a valve danger tagged "OPEN and GAGGED"

c. Y-panel feed tagged out in an energized state

d. motor feed with a green "SUSPENSION" label applied

ANSWER : C

Reference: SCT can be applied in energized or deenergized state.

NO.: 118 REV.: 8 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.26 TAXONOMY NO.: 2.5/3.7
LESSON PLANS: LOT0760.14 FH-105
:
CATEGORY: 98 SRO W
SYSTEMS: FH REFUEL

QUESTION :

** REFER TO THE ATTACHED REFERENCE **

Plant conditions are as follows:

- Unit 2 is in OPCON 5*
- Step #17 of the attached CCTAS is in progress
- LSRO reports the bundle is about 3 feet from being seated in location 45-48 NW

WHICH ONE of the following describes the Outage Shift Supervisor's direction to the Refuel Bridge?

a. seat the bundle, perform a pen and ink change to the CCTAS per RE-C-40, continue with Step #18

b. stop fuel moves until corrective actions are evaluated and appropriate management is informed

c. raise the bundle above the top guide, re-orient the bundle and inform Reactor Engineering for Shuffleworks update

d. complete the step, contact Reactor Engineering for Shutdown Margin determination, if satisfactory continue with step #18

ANSWER : B

Reference: Bundle orientation is incorrect. Fuel moves must stop until corrective actions for failure of DV are complete.

NO.: 119 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.2.12 TAXONOMY NO.: 3.0/3.4
LESSON PLANS: LOT1570.10
:
CATEGORY: 98 SRO W
SYSTEMS:

QUESTION :

WHICH ONE of the following must be done to use portions of ST-6-051-205-1 for a PMT on HV-051-1F017B?

a. mark Test Frequency as "N/A" and have SQR sign Test Results

b. write "PARTIAL" on the front page and have signed by an SQR prior to use

c. mark Test Results "PARTIAL" and annotate reason in Test Comments Section

d. write "N/A" on Acceptance Criteria and have signed by PRO/RO prior to use

ANSWER : B

NO.: 120 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.10 TAXONOMY NO.: 2.9/3.3
LESSON PLANS: LOT1760.01 HP-C-202
:
CATEGORY: 98 SRO W
SYSTEMS: HP

QUESTION :

Entry is required to a Level II Locked High Radiation Area.

WHICH ONE of the statements below describes requirements for entry to this area?

	HP Technician	Document Key Issue
a.	required	before entry
b.	required	after entry
c.	not required	before entry
d.	not required	after entry

ANSWER : B

Reference: Level II Rad, HP must be present and key issue not rquired to be documented until after entry complete.

NO.: 121 REV.: 4 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.1 TAXONOMY NO.: 2.6/3.0
LESSON PLANS: LOT1760.02
:
CATEGORY: 98 SRO W
SYSTEMS: HP

QUESTION :

An Operator has declared pregnancy.

WHICH ONE of the following tasks can she perform without a Special Exception?

a. apply block in Safeguard Room 309 posted as a Contaminated Area

b. restore Y-panel power in Radwaste MCC Room 145 posted as an Airborne Area

c. perform a C.O.L. on HCU's inside posted Radiation Area

d. complete an IV on HPCI valves in Feedwater Pipe Chase Room 407 posted as a High Radiation Area

ANSWER : C

Reference: Declared pregnant can enter Radiation Area without special exception from Rad Prot. Mgr

NO.: 122 REV.: 2 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.3.4 TAXONOMY NO.: 2.5/3.1
LESSON PLANS: LOT1760.03
:
CATEGORY: 98 SRO W
SYSTEMS: HP

QUESTION :

An area on the Refuel Floor has been surveyed with the following results:

- 2 mrem/hr general area
- 2,000 dpm/100 cm^2 beta loose surface
- 10,000 cpm fixed on several Refuel Floor tools

WHICH ONE of the choices below describes the required posting for this area?

a. Radiation Area

b. Contaminated Area only

c. Red Zone only

d. Both Contaminated Area and Red Zone

ANSWER : B

Reference: Greater than 1000 dpm contaminated area must be greater than 50,000 cpm for Red Zone.

NO.: 123 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/15/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.43 TAXONOMY NO.: 2.8/3.5
LESSON PLANS: LEPP1200.06 ERP-110
:
CATEGORY: 98 SRO W
SYSTEMS: ERP

QUESTION :

You have declared an Alert.

During the initial 15 minute notifications, conditions change and you escalate to a Site Area Emergency.

WHICH ONE of the following describes the requirements for the initial 15 minute notification?

a. complete Alert notification, then perform for Site

b. continue Alert notification noting escalation to Site

c. stop Alert notification, perform Site without noting escalation

d. stop Alert notification, perform Site noting the escalation

ANSWER : D

Reference: If conditions change prior to 15 min, then restart and report both earlier and new classification.

NO.: 124 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.11 TAXONOMY NO.: 3.6
LESSON PLANS: LOT1563.03 SE-11
:
CATEGORY: 98 SRO W
SYSTEMS:

QUESTION :

An injured man has been reported on RE Elevation 217'.

WHICH ONE of the following will respond as a member of the Medical Team?

a. Shift Manager

b. Shift Technical Advisor

c. Medical Review Officer

d. Health Physics Technician

ANSWER : D

Reference: SE-11 states that the floor supervisor, shift EMT's and HP makeup the Medical Team.

NO.: 125 REV.: 3 TYPE: MC ENTERED BY: ABC DATE ENTERED: 02/12/9
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: G SKA NO.: 2.4.6 TAXONOMY NO.: 3.1/4.0
LESSON PLANS: LOT1562.06 SAMP-1,SHT1 TABLE RPC/F-1
:
CATEGORY: 98 SRO W
SYSTEMS: SAMP

QUESTION :

Plant conditions are as follows:

- SAMP procedures have been entered
- Reactor Level is unknown
- A reactor scram occurred 30 minutes ago; all rods fully inserted
- RPV Injection Flow: 700 gpm and stable
- Reactor Pressure: 280 psig and stable
- Suppression Pool Pressure: 20 psig
- Suppression Pool Level: 42 ft
- Drywell Pressure: 33 psig and stable

WHICH ONE of the following SAMP-1 sheets must be implemented?

a. Sheet 4

b. Sheet 5

c. Sheet 6

d. Sheet 7

ANSWER : B

Reference: Sheet 4 wrong due to level unknown. Sheets 6 & 7 wrong because MDRIR is maintained, therefore we go to Sheet 5.

1M32-3A - VERIFIED

Written By: J. B. GILBERT, II

Unit LIMERICK GENERATING STATION Date 12/01/1998 Reviewed By: A. D. GIANCATARINO

Title 3A -RELOAD 27 FME INSPECTED BUNDLES Authorized By: G. F. Ruppert

STEP NO.	COMPONENT SERIAL NO.	MOVE FROM	ORIENT	MOVE TO	ORIENT	FMD	RPO	CRO	SRM COUNTRATE A	C	B	D	DATE	TIME
(16)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
16	YJD104	L1SPENT JJ-65	NW	L1CORE 51-38	NW									
(17)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
17	YJD088	L1SPENT MM-65	SE	L1CORE 45-48	SE									
(18)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
18	YJD060	L1SPENT JJ-66	SE	L1CORE 33-44	SE									
(19)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
19	YJD160	L1SPENT MM-66	NW	L1CORE 35-42	NW									
(20)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
(20)	ORIENT SBQ SUCH THAT CHANNEL SPARERS ARE ADJACENT TO THE CONTROL ROD													
20	SNG B/G	L1CORE 39-48	None	L1CORE 39-40	None									

Q #93

1M32-3A - VERIFIED

Written By: J. B. GILBERT, II

Unit LIMERICK GENERATING STATION Date 12/01/1998 Reviewed By: A. D. GIANCATARINO

Title 3A -RELOAD 27 FME INSPECTED BUNDLES Authorized By: G. F. Ruppert

STEP NO.	COMPONENT SERIAL NO.	MOVE FROM	ORIENT	MOVE TO	ORIENT	FHD	RPO	CRO	SRM COUNTRATE A	C	B	D	DATE	TIME
(16)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
16	YJD104	L1SPENT JJ-65	NW	L1CORE 51-38	NW									
(17)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
17	YJD088	L1SPENT MN-65	SE	L1CORE 45-48	SE									
(18)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
18	YJD060	L1SPENT JJ-66	SE	L1CORE 33-44	SE									
(19)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
19	YJD160	L1SPENT MN-66	NW	L1CORE 35-42	NW									
(20)	VERIFY WITH RE THAT FME,FS PIECE INSPECTIONS COMPLETE PRIOR TO PERFORMING NEXT STEP													
(20)	ORIENT SBG SUCH THAT CHANNEL SPARERS ARE ADJACENT TO THE CONTROL ROD													
20	SRG B/G	L1CORE 39-48	None	L1CORE 39-40	None									

Q #93

TAB

CAT C

Facility: LGS Unit 1 Scenario No.: A1(2) Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Execute GP-5 (Power Operations), ST-6-047-200-1 (SDV Valve Test), Tech Specs, OT-105 (Scram Discharge Volume High Level), ON-122 (Loss of MCR Annunciators), OT-117 (RPS Failures), OT-101 (High Drywell Pressure), T-101 (RPV Control), T-102 (Primary Containment Control), SE-10 (LOCA), T-112 (Emergency Blowdown), T-116 (RPV Flooding)

Initial Conditions: 92%, OPCON 1, "1D" RHR Pump is blocked for maintenance, "1C" APRM is bypassed due to failing upscale.

Turnover: Power System Director has requested Max Emergency Generation due to an approaching winter storm, perform Scram Discharge Volume Vent and Drain Valve Test.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R(PRO)	Power increase to 100%
2	N/A	N(PRO)	Perform SDV Valve Exercise Test
	414, D	C(PRO)	SDV Drain Valve XV-47-1F011 fails closed
	1143		"Scram Discharge Volume Not Drained" alarm
3	284, D	C(RO)	Loss of DC to selected annunciator panels
4	N/A	I(RO)	RPS fails to scram (SDV high level)
5	441, 200	M(ALL)	Coolant leakage in Drywell (200 gpm)
	447, A	I(PRO)	HPCI Aux Oil Pump fails to auto start
	440, A, 1		Recirc Loop "A" rupture (1%)
	440, A, 3		Recirc Loop "A" rupture (3%)
6	237, F	I(ALL)	All RPV level reference legs flash causing level to become unknown
	560, B 562, B	C(PRO)	A/B RHR Loop reduced flow

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Perform OTM 7.1 Checklist
	■ Reset Simulator to IC-17
	■ Reduce reactor power to 92% with RMSI
	■ Insert MALF-447, A, HPCI Aux Oil Pump fails to AUTO Start
	■ Simulate removing the "1D" RHR pump from service by: 1) Toggle RF-281, on page RH1 2) At 10C601 panel place normal/INOP switch for "1D" RHR pump to INOP. 3) Close HV51-1F004D with keylock switch and remove green indicating light bulb 4) Hang Information Tags on pump control switch and suction valve with the following information: PERMIT NO. 98000A1(2) EQUIP NAME/NUMBER: "1D" RHR Pump CS (HV51-1F004D) REASON: Motor Replacement SIGN & DATE: Today's Date
	■ Insert MALF-174, D, "D" RHR LPCI injection valve (1F017D) fails closed
	■ Insert MALF-04, 20, C, 125, APRM Channel C Failure (upscale)
	■ Place "1C" APRM joystick in bypass and hang EST with the following information: REASON/DISPOSITION: "1C" APRM failed upscale POSITION/CONDITION: Bypass
	■ Reset 'A' RPS 1/2 Scram
	■ Insert MALF-562, B, RHR Pump B reduced flow
	■ Insert MALF-560, B, RHR Pump A reduced flow
	■ Ensure two yellow copies of ST-6-047-200-1, SDV Valve Test are available in simulator

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Ensure two, in cal, stopwatches are available in simulator
	■ Ensure PCRAT is <0.92 on P-1
	■ Reset any alarms that should not be present.

B. INSTRUCTIONS FOR SIMULATOR OPERATOR

1. EVENT 1: POWER INCREASE TO 100%

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If contacted, Report - The Reactor Engineering Manager has determined that there are NO PCIMOR constraints for power increase to 100% and unless PCRAT is ≥0.92, no PCIMOR monitoring is required.

2. EVENT 2: SCRAM DISCHARGE VOLUME VALVE EXERCISE TEST, DRAIN VALVE FAILURE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When pushbutton HS-47-109B is depressed, Insert MALF-414, D (SDV Drain Valve XV-47-1F011 fails closed)
	■ 5 minutes after directed to investigate, Report - The instrument air supply line to XV-47-1F011 is split at the pressure regulator
	■ 1 minute after Tech specs are referenced, Insert MALF-1143, "SDV not drained" alarm

3. EVENT 3

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 2 minutes after OT-105 is entered, Insert MALF-284, D, Loss of Selected MCR Annunciators

4. EVENT 4: RPS FAILS TO SCRAM ON SDV HIGH LEVEL

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 5 minutes after dispatched to AER Report T-290 readings are below MNO Report ALL scram discharge volume level indicators are reading 75% and rising slowly, (LISH-47-1N601A(B,C,D)
	■ 5 minutes after above report and only if directed to restore annunciator power Remove MALF-284, D to restore MCR annunciators
	■ Driver Note: If Rx not scrammed and annunciators returned: Insert MALF-1087, SDV Hi Level Trip Alarm Insert MALF-1152, Rod Out Block Alarm

5. EVENT 5: COOLANT LEAKAGE IN DRYWELL

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When RPV level and pressure are stable following scram, Insert MALF-441, 200, Coolant Leak in Drywell (200 gpm)
	■ When the PRO starts A or B RHR pump for SP cooling, Remove the other Loop RHR reduced flow malfunction MALF-560, B, A loop MALF-562, B, B Loop
	■ When SP spray has been established or 10 minutes after leak started Insert MALF-440, A, 1, Recirc Loop A rupture (1%)
	■ 5 minutes later, Insert MALF-440, A, 3, Recirc Loop A rupture (3%)
	■ 10 minutes after directed to reset shunt trips per SE-10-1, Toggle RF-104 thru 403 on page E4 Report - Shunt trips are reset per SE-10-1

6. EVENT 6: LEVEL UNKNOWN

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When RPV pressure drops to 150 psig, Insert MALF-236, F, All RPV level instruments reference legs flash.

Op-Test No. _____ Scenario No. A1(2) Event No.: 1

Event Description:

Power increase from 92% to 100% using flow per GP-5 (Power Operations)

Time	Position	Applicant's Actions or Behavior
	CRS	Reference GP-5
	CRS	Conduct Pre-Evolution brief
	CRS	Request a P-1 and verify all thermal limits less than 0.99
	RO	Verify APRM scram margin is greater than 9%
	CREW	Verify CMWT, MWe and MT first stage pressure are consistent indicators of reactor power
	PRO	Raise reactor recirc pump(s) speed in increments of ≤ 50 MWe
	RO	Monitor RPV level and Feedwater flow
	CRS	Request a P-1 and verify all thermal limits are less than 0.99
	PRO	At 95%, raise recirc pump(s) speed in increments of ≤ 10 MWe until 100% power target is reached
	CRS	Verify power is ≤ 3458 MWth
	RO	Maintain RFP oil temperatures 110°F to 120°F
	RO	Maintain M-G set oil temperatures 110°F to 130°F

Op-Test No. _____ Scenario No. A1(2) Event No.: 2

Event Description:

Perform ST-6-047-200-1, Scram Discharge Volume Valve Exercise Test. Reference and determine Tech Spec action for failed SDV drain valve. Investigate valve failure. Execute OT-105, Scram Discharge Volume High Level..

Time	Position	Applicant's Actions or Behavior
	CRS	Conduct a pre-job brief of test.
	PRO	Verify Prerequisites: 1) Ensure no other testing is in progress 2) Verify no half scram signals present 3) Obtain two, in cal, stopwatches
	PRO	Record stopwatch information
	PRO	Complete "as found" position section of Attachment 2
	PRO	Obtain SSV permission to START test
	PRO	Recognize XV-47-1F011 valve failed to open
	PRO	Notify SSVN of valve failure immediately
	CRS	Declare drain valve inoperable but in its safety function position
	PRO	Document valve failure in additional action/test comments section
	CRS	Reference Tech Specs 3.6.3, Primary Containment Isolation Valves and 3.1.3.1 Control Rods
	CRS	Determine LCO action 3.1.3.1.C requires plant in Hot Shutdown within 12 hours
	CRS	Investigate drain valve failure
	RO	Acknowledge and report SDV not drained alarm
	PRO	Reference ARC for SDV not drained alarm
	CRS	Dispatch operator to determine SDV level from Aux Equip Room
	CRS	Enter OT-105, SDV High Level
	CRS	Direct a controlled plant shutdown per GP-3

Op-Test No. _____ Scenario No. A1(2) Event No.: 3

Event Description:

Recognize Loss of MCR annunciators and take action per ON-122

Time	Position	Applicant's Actions or Behavior
	RO	Recognize and report loss of alarm(s)
	CREW	Test all annunciator panels to determine extent of failure
	CRS	Enter ON-122
	CRS	Enter T-103 at SCC-4
	CRS	Direct T-290
	PRO	Dispatch operator to monitor AER panel instrumentation affected by lost annunciators
	RO	Monitor MCR instrumentation and PMS
	CRS	Dispatch operator to 1PP02, ckt 2 to determine cause of loss of power
	CRS	Direct personnel to restore power to lost annunciator panels

Op-Test No. _____ Scenario No. A1(2) Event No.: 4

Event Description:

RPS Failure to Scram, take action per OT-117, Manually scram, Enter T-101 (RPV Control).

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize RPS failure to scram
	RO	Manually Scram the reactor
	RO	Place mode switch in "Shutdown"
	RO	Insert SRMs/IRMs
	RO	Restore and maintain RPV level between +12.5 and +54"
	PRO	Trip Main Turbine
	PRO	Verify Generator lockout
	CRS	Enter and execute T-101 when RPV level drops below +12.5"
	RO	Perform post-scram FWCL
	CRS	Direct RPV depressurization within 100°F/hr using cooldown ST
	PRO	Begin cooldown ST-6-107-640-1 initial data collection
	CREW	Recognize successful restoration of lost MCR annunciators

Op-Test No. _____ Scenario No. A1(2) Event No.: 5

Event Description:

Coolant Leak in Drywell, execute OT-101 (High Drywell Pressure), T-102 (Primary Containment Control), T-112 (Emergency Blowdown)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize increasing DW pressure
	CRS	Enter OT-101
	PRO	Verify DW cooling is maximized
	PRO	Check for abnormal indications of Recirc pump seals
	PRO	Check RR-26-0R600, Containment Leak Detector for indication of leak
	PRO	Ensure isolated Main Steam Line sample valves
	PRO	Stop RWCU and close the inboard, outboard bottom head drain and inlet flow isolation valves
	PRO	Ensure Main Steam Line drain valves are closed
	PRO	Recognize HPCI failed to start
	CRS	Re-enter T-101 on 1.68 psig in Drywell
	CRS	Enter T-102
	CRS	Direct Suppression Pool Spray per T-225
	PRO	Perform T-225 to spray the Suppression Pool
	PRO	Recognize and report RHR loop reduced flow
	PRO	Spray SP with other available RHR loop per T-225
	CRS	Re-enter T-102 on 135°F DW temperature
	Pro	Bypass and restore DWCW to DW per GP-8
	CREW	Read TR57-122 only for DW temp
	PRO	Bypass and restore H_2/O_2 analyzers
	PRO	Verify isolations complete
	PRO	Start HPCI Aux Oil Pump manually

Op-Test No. _____ Scenario No. A1(2) Event No.: 5

Event Description:

Coolant Leak in Drywell, execute OT-101 (High Drywell Pressure), T-102 (Primary Containment Control), T-112 (Emergency Blowdown)

Time	Position	Applicant's Actions or Behavior
	CREW	Maintain RPV level +12.5" to +54" with HPCI, RCIC, Feedwater
	CRS	Direct Drywell Spray on safe side of PC/P-2 curve
	PRO	Spray the Drywell per T-225
	RO	Start 2 loops of RHRSW cooling
	CRS	Enter and execute T-112 when on unsafe side of PC/P-3 curve
	PRO	Open all 5 ADS valves
	PRO	Reset instrument buses following LOCA signal
	CREW	Perform SE-10, LOCA in MCR
	CRS	Direct SE-10-1, Shunt trip resets
	CREW	Restore and maintain RPV level to +12.5" and +54" with Condensate and Low Pressure ECCS systems

Op-Test No. _____ Scenario No. A1(2) Event No.: 6

Event Description:

RPV Level becomes unknown, execute T-116 RPV Flooding, Establish conditions for adequate core cooling.

Time	Position	Applicant's Actions or Behavior
	CREW	Determine RPV level is unknown
	CRS	Enter T-116, RPV Flooding
	RO	Line up and inject all available Condensate
	PRO	Re-align and inject with all Low Pressure ECCS systems
	CREW	Establish 5 SRV's open, RPV pressure not going down, and RPV pressure ≥50 psig above suppression pool pressure
	CRS	Direct I&C to fill RPV reference legs per T-255
	CRS	Direct additional injection from systems listed in RF-28 as required

CRITICAL TASKS

1. Maintain RPV level above -161".
2. Perform emergency blowdown.
3. Inject with all available sources and establish conditions for adequate core cooling.

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. 5 ADS SRV's open
2. RPV pressure not going down
3. RPV pressure ≥50 psig above Suppression Pool pressure

Facility: LGS Unit 1 Scenario No.: B1(2) Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Execute GP-5 (Power Operations), Reactor Maneuvering Shutdown Instructions, D13 ARC (Secure EDG), Tech Specs, S11.1.A (ESW STARTUP), OT-104 (Reactivity Insertion), OT-110 (Reactor High Level), T-103 (Secondary Containment Control), T-290 (Instrumentation for T-103), SE-8 (Fire), T-101 (RPV Control), T-117 (Level/Power Control), T-112 (Emergency Blowdown)

Initial Conditions: 100%, OPCON 1, D13 EDG Monthly Operability Test run is in progress, RCIC is blocked to fix oil leak, Equipment Operator reports increasing "0C" ESW pump packing leakage.

Turnover: Start an additional pump and shutdown "0C" ESW pump to complete D13 Test run, reduce power to 60% and remove "1A" RFP from service due to an unsat lube oil analysis.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(PRO)	Start "0A" ESW pump
2	N/A	R(PRO)	Power reduction to 60% for RFP shutdown
3	1691	I(PRO)	D13 generator neutral overcurrent
4	450	I(PRO)	HPCI inadvertent start-up
	453		HPCI Pump Discharge to FW (1F005) valve fails closed
	03,A,20		Core Power Oscillations, in phase, at 20%
	446, A 446, B	C(PRO)	HPCI Steam Isolation valves fail to close automatically or manually
5	555, 3	C(RO)	Three (3) control rods fail to scram
	24	I(RO)	Rod Drive Control System fault
6	445, 1	M(ALL)	HPCI Steam Line break inside pump room at 1%
	445, 5		HPCI Steam Line rupture in pump room escalates to 5%
	125	C(PRO)	Motor Driven Fire Pump fails to start automatically
7	445, 15		HPCI Steam Supply Line rupture escalates to 15%, steam leak spreads to Safeguard Pipeway area

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Perform OTM 7.1 checklist
	■ Reset simulator to IC-17
	■ Start D13 per ST-6-092-313-1, D13 Diesel Generator slow start operability test run
	■ Complete ST-6-092-313-1, yellow copy, up to, but not including step 4.10.18
	■ Remove indicating lights and ensure the following valves are closed: - RCIC Outboard Steam Supply Valve HV49-1F008 R - RCIC Steam Line Warm-up Bypass Valve HV49-1F076 - RCIC Turbine Steam Supply Isolation Valve HV49-1F045 - RCIC Trip Throttle Valve HV50-112
	■ Place INFO Tags on the above RCIC valves with the following: Permit: 98000B1(2) Equip Name/Number: (Appropriate valve number) Reason: Repair oil leak Signature/Date: Sign/Today's Date
	■ Insert MALF-446,A, HPCI Steam Isolation Valve (1F002) fails as is
	■ Insert MALF-446,B, HPCI Turbine Steam Isolation Valve (1F003) fails as is
	■ Insert MALF-555,3, Three control rods fail to scram
	■ Insert MALF-453, HPCI Pump Discharge to FW (1F005) valve fails closed
	■ Toggle RF-125, Motor Driven Fire Pump Control switch to stop, on page FP
	■ Toggle RF-396, ESW Loop 'A' Service Water isolated to yes, on page SW3
	■ Ensure A Loop ESW, SW valve position operator aid shows A loop valves closed

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Ensure Spray/Bypass select switch, HSS-12-016A-1 (B, C-1, D) are positioned to Bypass
	■ Reset any alarm that should NOT be present
	■ Ensure white copy of ST-6-012-620-0, RHR spray network draining available in simulator

B. INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1 START "0A" ESW PUMP

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If requested, (from Spray Pond Pump House) report - "0A" ESW pump pre-start checkout is sat
	■ If requested, after "0C" ESW S/D, report - "0C" ESW pump packing leakage has been reduced to normal running leakage. An ETT has been generated

EVENT 2 POWER REDUCTION PER RMSI

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 2 minutes after "0A" ESW pump has been started report - (to the CRS) this is the shift manager, you are directed to remove "1A" RFP from service. Test results on the latest lube oil sample are unsat
	■ Plant management has been informed and concur with the decision to remove "1A" RFP from service
	■ Respond by acknowledging crew callouts to: - Chemistry - PSD - RE
	■ If RE's contacted report - There are no Reactor Maneuvering Special Instructions at this time. RMSI is up to date
	■ If contacted as RFP System Manager Report - Perform power reduction directed by GP-3

EVENT 3 D13, GENERATOR NEUTRAL OVERCURRENT

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When PRO has completed power reduction to 90%, Insert MALF-1691, Crywolf D13 Gen Neutral overcurrent alarm
	■ Respond as appropriate to crew requests for support

EVENT 4 HPCI INADVERTENT INJECTION

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 4 minutes after D13 has been secured, Insert MALF-450, HPCI Inadvertent Start Insert MALF-03,A,20, Core Power Oscillations, in phase at 20% Remove MALF-03,A,20 after reactor scram
	■ Respond as appropriate to crew requests for support

EVENT 5 3 ROD ATWS, RDCS FAULT

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When RO begins driving 1st rod, Insert MALF-24, RDCS fault
	■ 5 minutes after directed to reset RDCS in AER. Remove MALF-22, RDCS fault Report - RDCS has been reset per S73.0.F

EVENT 6 HPCI STEAM LINE BREAK INSIDE PUMP ROOM PROGRESSES OVER TIME

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When all rods are in, Insert MALF-445, 1, HPCI Steam Line Break inside pump room at 1%
	■ 5 minutes later, Insert MALF-445, 5, HPCI Steam Line Break inside pump room at 5%
	■ Fire alarms Report - Fire Brigade is assembled and responding to the fire alarm code
	■ 4 minutes after dispatched to 1BC208 Report - HPCI Pump Room temperatures are ___ °F and both unit coolers are running. (160°F is top of scale)
	■ 5 minutes after directed to perform T-290 Report - HPCI Pump Room temperatures are ____ and rising. All other area temps are below MNO.
	■ 8 minutes after Fire Brigade is dispatched Report - No indication of fire in HPCI Pump room but door is hot and sounds like a steam leak inside.

EVENT 7 SECOND AREA ABOVE MSO, EMERGENCY BLOWDOWN

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When HPCI/RCIC pipeway, Room 309, Temp is 120°F Report - HPCI/RCIC pipeway, Room 309, temperature is now 120° and rising HPCI Pump Room temperature is ____°F All other T-290 room temperatures are below MNO
	■ 7 minutes later, Insert MALF-445, 15, HPCI Steam Line Break inside pump room at 15%
	■ T-290 updates (as requested) Report - Live time temperatures from RE Temps/Pressure display

Op-Test No. _____ Scenario No. B1(2) Event No.: 1

Event Description:

Start "0A" ESW Pump per S11.1.A.

Time	Position	Applicant's Actions or Behavior
	CRS	Direct start of "0A" ESW pump
	PRO	Direct spray pond operator to perform pre-start checkout of "0A" ESW pump
	PRO	Make plant announcement prior to pump start
	PRO	Place 0AP548, ESW (pump) handswitch in start
	PRO	Obtain copy and initiate ST-6-012-620-0, RHRSW spray network draining
	PRO	Verify Service Water valves, 11-1010, 11-2010, and 11-0034A are closed
	PRO	Ensure ESW valve positions per step 4.2.6 table

Op-Test No. _____ Scenario No. B1(2) Event No.: 2

Event Description:

Power Reduction to Remove "1A" RFP from service.

Time	Position	Applicant's Actions or Behavior
	CRS	Conduct pre-evolution brief
	CRS	Reference GP-3 for guidance on BOP equipment
	CRS	Direct power reduction per RMSI, App 5, RE-C-01, to 60%
	CRS	Reference GP-5 for intentional drop in power
	RO	Reference ARCs for rod out block/RBM downscale
	CRS	Notify Chemistry personnel of power change
	CRS	Notify PSD of plans to reduce power
	PRO	Reduce Reactor Recirc pump(s) speed in small, equal increments until 90% power is reached
	PRO	Ensure FLLLP ≤1.0
	PRO	Ensure RPV core flow ≥55 Mlb/hr
	RO	Monitor RPV power, level and pressure during core flow reduction
	RO	Cross check PRO performing power reduction with core flow

Op-Test No. _____ Scenario No. B1(2) Event No.: 3

Event Description:

Shutdown D13 EDG due to Generator neutral overcurrent alarm, reference Tech Spec.

Time	Position	Applicant's Actions or Behavior
	PRO	Acknowledge D13 alarm
	PRO	Reference alarm ARC
	CRS	Recognize D13 Diesel is not required for supplying D13 Bus
	CRS	Direct D13 rapid shutdown per S92.2.N
	PRO	Place D13 Diesel Generator Breaker to "Trip" and "Pull To Lock"
	PRO	Place 101-CG501/CS, D13 Diesel Generator control to "Stop" and "Pull To Lock"
	CRS	Direct personnel to investigate cause of alarm

Op-Test No. _____ Scenario No. B1(2) Event No.: 4

Event Description:

HPCI Inadvertent Startup and Injection with failure to isolate, Reactor Scram enter T-101 (RPV Control)

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize HPCI start
	PRO	Recognize HPCI Pump Discharge to FW (1F005) valve failed to open
	RO	Recognize High Reactor level
	RO	Control RPV level between +12.5 and +54"
	CRS	Recognize positive reactivity addition, enter OT-104
	RO	Reduce reactor power with Recirc flow
	RO	Manually scram reactor
	CRS	Direct reactor scram
	RO	Place mode switch in shutdown
	RO	Insert SRMs and IRMs
	CRS	Determine HPCI not required for adequate core cooing and direct HPCI tripped per S55.2.A
	PRO	Attempt to isolate HPCI with manual isolation pushbutton
	PRO	Recognize and report failure of HPCI steam supply to isolate
	PRO	Verify HPCI Turbine tripped
	CRS	Direct HPCI isolation valves be closed locally

Op-Test No. _____ Scenario No. B1(2) Event No.: 5

Event Description:

Three Control Rods fail to Scram, ATWS, T-117 (Level/Power Control), Rod Drive Control System failure/reset

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize all rods not in
	RO	Manually insert rods with RMCS
	CRS	Verify isolations
	CRS	Direct Trip of Main Turbine
	PRO	Trip Main Turbine and report Generator lockout
	CRS	Ensure Turbine Trip and Generator lockout
	RO	Manually adjust CRD Drive water flow
	RO	Bypass RWM
	CRS	Direct T-218 for rods still out
	CRS	Exit RC/L only and enter T-117
	PRO	Inhibt Auto ADS
	RO	Reference ARC for RDCS Inoperative Alarm
	RO	Direct RDCS reset per S73.0.F
	RO	Complete inserting all control rods when RDCS is reset
	CRS	When no ATWS, exit T-117 and enter T-101 at step RC/L-1
	RO	Restore and maintain RPV level between +12.5" and +54" using Feedwater

Op-Test No. _____ Scenario No. B1(2) Event No.: 6

Event Description:

HPCI Steam Line Break Inside Pump Room progresses over time, T-103 (Secondary Containment Control)

Time	Position	Applicant's Actions or Behavior
	PRO	Acknowledge HPCI area fire alarm
	PRO	Make plant announcement dispatching Fire Brigade
	CRS	Enter and execute SE-8 (Fire)
	PRO	Reference ARC for 1BC208 HVAC panel Trouble Alarm
	PRO	Dispatch operator to 1BC208 panel
	CRS	Enter and execute T-103
	CRS	Recognize 2nd entry condition for T-103 when Div 2 Steam Leak detection alarm received
	PRO	Reference ARC for Div 2 Steam Leak detection
	CRS	Direct crew to read RPV pressure and level from PAMS, FZ, EQ PMS ONLY
	CRS	Direct performance of T-290
	CRS	Direct T-291
	CRS	Recognize HPCI pump room temperature above MNO
	PRO	Attempt to isolate HPCI per T-250
	PRO	Evacuate affected areas of Reactor Enclosure per ERP-120
	PRO	Recognize Motor Driven Fire Pump failed to start automatically and attempt to start
	CRS	Re-enter T-103 on RE Hi-Hi floor drain sump alarm condition
	CRS	Re-enter T-103 on HPCI Pump Room Flood Alarm

Op-Test No. _____ Scenario No. B1(2) Event No.: 7

Event Description:

HPCI Steam Leak Progresses to 2nd Area, T-103 (Secondary Containment Control), T-112 (Emergency Blowdown)

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize from report, second area is now at MNO and rising.
	CRS	Track HPCI/RCIC pipeway, Room 309, temperature toward MSO
	CRS	Re-enter T-103 for subsequent steam leak detection alarms
	PRO	Perform T-291 for second area
	CRS	Recognize blowdown imminent per T-101, RC/P-6 and direct opening all turbine BPV.
	PRO	Use manual jack and open all turbine BPV
	CRS	Determine 2nd area temperature is above MSO
	CRS	Enter T-112
	PRO	Open 5 ADS/SRVs
	PRO	Control condensate injection to restore and maintain RPV level +12.5 to +54".

CRITICAL TASKS

1. Shutdown D13 Diesel Generator
2. Insert all control rods to or beyond 02 position
3. Open 5 ADS/SRVs when the second area in Table SCC-2 temperature exceeds MSO value

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. All rods inserted to or beyond 02 position
2. 5 ADS/SRVs open
3. RPV level +12.5 to +54"

Facility: LGS Unit 1 Scenario No.: C1(2) Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Execute GP-5 (Power Operations), S07.6.A (Swap SJAE), Tech Specs, OT-112 (Recirculation Pump Trip), GP-5.1 (Single Loop Ops), OT-101 (High Drywell Pressure), T-101 (RPV Control), T-102 (Primary Containment Control), T-117 (Level/Power Control), T-270 (Terminate and Prevent Injection)

Initial Conditions: 65%, OPCON 1, "1B" Instrument Air compressor is blocked, Service Air is backing up "1B" I/A header, Auxiliary Steam System outage.

Turnover: Reduce Reactor Power to 60% in order to place alternate Steam Jet Air Ejector in service for planned maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R(RO)	Power reduction to 60%
2	N/A	N(PRO)	Place "B" SJAE train in service
3	442, A	C(RO)	"1A" Recirc Pump RPT breaker trip
	433, A 434, A		"1A" Recirc Pump Seals #1 and #2 fail
	441, 40		Coolant leakage in Drywell (40 gpm)
4	413	M(ALL)	ATWS, hydraulic lock
	559	C(RO)	Standby Liquid Control line ruptures inside Drywell
	251, A	I(RO)	Feedwater S/U Level Control valve fails open
	195, A 195, B	I(PRO)	RWCU Isolation valves fail to close (1F001, 1F004)
5	104, B	I(PRO)	Turbine Control System fails low (load set runs to zero)
	108, 25		EHC Bypass valves fail to 25% open
	148, D	C(PRO)	"M" ADS/SRV fails to open

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Perform OTM 7.1 Checklist
	■ Reset Simulator to IC-17
	■ Reduce reactor power to 65% per RMSI
	■ Ensure "A" SJAE in service with stable Cond. vacuum
	■ Place "1B" I/A compressor control switch in "OFF"
	■ Remove indicating lights and place INFO Tag on HS with the following information: Permit No.: 98000C1(2) Equip Name/Number "1B" I/A Compressor/1BK101 Reason: Motor replacement Signature/Date: Sign/Today's Date
	■ Toggle RF-201, B/U Service Air Compressor "ON", on page IA
	■ Toggle RF-202, S/A to "A" I/A cross-tie (15-1009A) closed, on page IA
	■ Toggle RF-203, S/A to "1B" I/A cross-tie (15-1009B) open, on page IA
	■ Toggle RF-5, Aux Steam available to NO on page MS1
	■ Insert MALF-424,B, "1B" I/A Compressor Trip
	■ Insert MALF-413, Control Rods fail to scram (Brown's Ferry Event)
	■ Insert MALF-559, SBLC Line Ruptures inside Drywell
	■ Insert MALF-195,A, RWCU Isolation Valve HV44-1F001, fails as is
	■ Insert MALF-195,B, RWCU Isolation Valve HV44-1F004, fails as is
	■ Insert MALF-148,D, "M" ADS/SRV fails to open
	■ Ensure APRM AGAFS on P-1 are .98-1.02
	■ Verify scram margin >9%

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Ensure plant conditions are stable
	■ Reset any alarms that should not be preset.
	■ Ensure Off Gas preheater in service per S69.1.D

B. INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1 POWER REDUCTION TO 60%

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When contacted, respond as appropriate to crew communications such as: Chemistry - GEZIP adjustment PSD - Load Drop Reactor Engineer - Support

EVENT 2 PLACE ALTERNATE SJAE IN SERVICE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When contacted as HP Report - HP Dept is aware of changing radiological conditions in Steam Jet Air Ejector rooms.
	■ 3 minutes after contacted to enable. "B" Train Steam to SJAE Cond Lo Press Alarm (immediately if pre-staged) Toggle RF-257, Select in service SJAE HSS07-165 to "B" on page MC Report HSS-007-165 on 10C680 panel in AER is now in position "B"

EVENT 3 REACTOR RECIRC PUMP TRIP, SEAL FAILURE, HIGH DRYWELL PRESSURE, GP-4

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 1 minute after SJAE alarm swapped, Insert MALF-442,A, "1A" Recirc Pump RPT Breaker Trip Insert MALF-433,A, "1A" RRP Seal #1 Fails
	■ 5 minutes after contacted to investigate, Report "1A" Recirc Pump RPT Breaker CB3A has tripped for unknown reasons. A TRT is being developed to troubleshoot the breaker.
	■ When contacted, respond as appropriate to crew communciations.
	■ 7 minutes later, Insert MALF-434,A, "1A" RRP Seal #2 fails Insert MALF-441, 40, Coolant Leakage in drywell (40 gpm)

EVENT 4 ATWS (HYDRAULIC LOCK)

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 1 minute after reactor scram, Insert MALF-251,A, FW Startup Level Control Valve fails open Remove MALF-441, 40, Coolant Leakage in Drywell
	■ Respond as appropriate to the following T-200 procedure callouts at the time indicated T-217 - (17 minutes), RF-192 and RF-303 on page T200 Report - SDV draining complete, levels below 62% T-209 - (45 minutes) Report - T-209 line up will take 45 minutes to complete T-221 - (11 minutes), RF-51 on pg T200 Report - T-221 (MSIVs OPEN) is complete T-270 - (7 minutes) RF-220 thru RF-227 on pg T202 Report - T-270 is complete in AER.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If requested to investigate SLC, Report - NO sign of leakage on 253' or 283' elev at SLC skid
	■ T-251 - (6 minutes) RF-309 on page T201 Report - T-251, HPCI to FW only is complete.

EVENT 5 TURBINE TRIP, EHC BPV FAIL, T-270

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 5 Minutes after level is stabilized below -50", Insert MALF-104,B, EHC Load Set Runs to zero Insert MALF-108, 25, EHC BPVs fail to 25% open
	■ SE-10-1 - (10 minutes), RF-104 thru 403 on page E4 Report - Shunt Trip resets are complete per SE-10-1

Op-Test No. _____ Scenario No. C1(2) Event No.: 1

Event Description:

Intentional Power Reduction to 60% per GP-5 (Power Operations) and Reactor Maneuvering Shutdown Instructions

Time	Position	Applicant's Actions or Behavior
	CRS	Reference GP-5
	CRS	Conduct pre-evolution brief
	PRO	Notify PSD of power change
	CRS	Demand P-1 edit and verify APRM AGAF valves 0.98 to 1.02
	CRS	Verify Scram margin greater than 9.0%
	CRS	Direct power reduction to 60% using reactor maneuvering shutdown instructions
	RO	Insert control rods with RMCS as directed by RMSI
	PRO	Double verify all rod movements
	RO	Monitor power level and pressure throughout the evolution
	CRS	Monitor thermal limit/FLLLP values to verify less than 0.980 during power reduction

Op-Test No. _____ Scenario No. C1(2) Event No.: 2

Event Description:

Place "B" SJAE train in service (S07.6.A) and secure "A" SJAE train

Time	Position	Applicant's Actions or Behavior
	CRS	Conduct pre-evolution brief
	CRS	Direct swap of SJAE trains
	PRO	Review procedure
	PRO	Verify prerequisites
	PRO	Place "B" SJAE in service and shutdown "A" SJAE while maintaining condenser vacuum above 22.2" Hg. Vac.
	RO	Monitor reactor parameters

Op-Test No. _____ Scenario No. C1(2) Event No.: 3

Event Description:.

"1A' Recirc Pump Trip, OT-112 (Recirculation Pump Trip), RMSI, OT-101 (High Drywell Pressure), GP-4 (Rapid Plant Shutdown), T-101 (RPV Control), T-102 (Primary Containment Control)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize Recirc Pump trip
	CRS	Enter OT-112
	RO	Control RPV Level and restore to normal band, +12.5 to +54"
	RO	Drive rods per RMSI to reduce power to 33% RTP
	PRO	Reference appropriate ARC for Recirc Pump trip
	CRS	Determine location on Power/Flow map
	RO	Monitor for core thermal hydraulic instabilities
	PRO	DV rod movements
	CRS	Reference Tech Spec Figure 3.4.1.1-1
	CRS	Direct suction or discharge valve of tripped Recirc Pump be closed for 5 minutes.
	PRO	Close and approximately 5 minutes later, Open the "1A" Recirc Pump suction or discharge valve
	PRO	Verify "1B' Recirc Pump is operating at <90% speed
	CRS	Investigate cause of Recirc Pump Trip
	PRO	Perform S43.2.A for "1A" Recirc Pump
	CRS	Review GP-5 for power reduction
	PRO	Recognize seal failures
	PRO	Reference appropriate ARC for RRP seal failures
	CREW	Identify increasing drywell pressure
	CRS	Enter and execute OT-101
	PRO	Verify drywell cooling is maximized
	PRO	Close HV-43-1F031A, Discharge, valve for "1A" RRP

Op-Test No. _____ Scenario No. C1(2) Event No.: 3

Event Description:.

"1A' Recirc Pump Trip, OT-112 (Recirculation Pump Trip), RMSI, OT-101 (High Drywell Pressure), GP-4 (Rapid Plant Shutdown), T-101 (RPV Control), T-102 (Primary Containment Control)

Time	Position	Applicant's Actions or Behavior
	PRO	Close HV-43-1F023A, SUCTION, valve for "1A" RRP
	PRO	Close HV-46-115A, SEAL PURGE, valve
	CRS	Direct rapid plant shutdown per GP-4 before 1.68 psig in drywell
	PRO	Check Containment Leak detector, RR-26-OR600
	PRO	Check DW unit coolers condensate drain flow indicator, air cooler flow
	PRO	Transfer house loads
	RO	Manually scram reactor
	RO	Place mode switch in shutdown
	RO	Insert SRMs/IRMs
	PRO	Take manual control of HPCI
	CRS	Enter and execute T-101
	CRS	Enter and execute T-102
	PRO	Bypass and restore DW cooling per GP-8 when DW temperature exceeds 135°F
	PRO	Verify isolations

Op-Test No. _____ Scenario No. C1(2) Event No.: 4

Event Description:

ATWS (Hydraulic Lock), T-101 (RPV Control), T-117 (Level/Power Control

Time	Position	Applicant's Actions or Behavior
	CRS	Exit RC/L only and enter T-117
	RO	Manually initiate RRCS
	PRO	Runback "1B" RRP to minimum
	PRO	Trip "1B" RRP
	RO	Take manual control and open CRDH flow controller
	RO	Insert rods manually with RWM bypassed
	CRS	Direct T-217
	CRS	Direct SLC injection before SP temperature exceeds 110°F
	RO	Start all three SLC pumps
	RO	Recognize SLC pumps low discharge pressure
	RO	Secure SLC pumps to conserve SLC solution
	PRO	Recognize RWCU failed to isolate
	PRO	Isolate RWCU by closing the HV-44-1F040 valve
	PRO	Inhibit auto ADS
	CRS	Direct T-209 (SLC to RCIC)
	CRS	Direct T-221 (MSIVs open)
	CRS	Direct RPV level lowered to between -50" and -186" per T-270
	RO	Terminate FW injection until RPV level is below -50" then re-establish injection to maintain level between -50' and -129"
	CRS	Direct T-270 performed in Aux Equipment Room
	PRO	Manually isolate HPCI
	RO	Recognize LIC-06-138, Startup Bypass, is failed to 100%
	RO	Close HV-06-138A, RFP Bypass Valve

Op-Test No. _____ Scenario No. C1(2) Event No.: 5

Event Description:

Turbine Trip, T-101 (RPV Control), Control Pressure with SRVs adding heat to the Suppression Pool, "M" ADS/SRV fails to open.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize EHC load set running back
	PRO	Recognize BPVs are not controlled reactor pressure
	CRS	Direct RPV pressure control with SRVs
	PRO	Recognize "M" SRV failed to open and open another SRV in the opening sequence
	PRO	Stabilize RPV pressure between 1096 and 900 psig
	PRO	Start RHR suppression pool cooling
	RO	Start two loops of RHRSW
	CRS	Re-enter T-102 when suppression pool temperature exceeds 95°F
	PRO	Bypass H_2/O_2 analyzers isolation logic per GP-8
	CRS	Direct T-270 when suppression pool temperature exceeds 110°F
	RO	Terminate FW and condensate injection into the RPV per T-270
	CREW	Perform SE-10 (LOCA)
	PRO	Direct SE-10-1, Shunt Trip Resets
	RO	Restart CRD pump
	PRO	Restart DWCW to drywell
	PRO	Restore H_2/O_2 analyzers
	PRO	Verify main steam line rad monitors alarms due to down scales
	PRO	Reset RHRSW rad monitors
	PRO	Restart RHRSW pumps
	RO	Stop lowering level when reactor power is below 4% or -161"
	RO	Maintain RPV level between -186 and level to which it was lowered when reactor power went below 4%.

CRITICAL TASKS

1. Manually insert control rods to exit restricted region of power/flow map
2. Inhibit auto ADS
3. RPV level lowered and maintained between -186" and the level when reactor power dropped below 4%.

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. Reactor power is less than 4%
2. RPV level being maintained between -50" and -186"

Facility: LGS Unit 1 Scenario No.: D1(2) Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Execute OT-102 (Reactor High Pressure), OT-104 (Reactivity Insertion), GP-5 (Power Operations), Tech Specs, OT-116 (Loss of Condenser Vacuum), T-101 (RPV Control), SE-10 (LOCA), T-111 (Level Restoration), T-112 (Emergency Blowdown)

Initial Conditions: 90%, OPCON 1, D14 EDG blocked for engine repairs

Turnover: Perform Main Turbine Bypass Valve Exercising (ST-6-001-761-1), raise Reactor Power to 100%

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(PRO)	Main Turbine Bypass Valve Exercising
	108, 89	C(PRO)	BPV #3 fails to open
2	20, C, 90	I(RO)	"1C" APRM Channel fails to 90%
	N/A	R(RO)	Power reduction per OT-116
	69	I(PRO)	Turbine Gland Seal Regulator fails closed
	MMC074 100% in 30 min		HP Condenser air leakage
	244, B	C(RO)	"1A" RFP High Pressure Control valve fails closed
3	252, A	M(ALL)	"A" Feedwater Line rupture inside Primary Containment
	440, A, 8		Recirc Loop "A" rupture (1%)
	456	I(PRO)	RCIC fails to auto start
	440, A, 8		Recirc Loop "A" rupture (8%)
	174, A		"1A" RHR LPCI injection valve (1F017A) fails closed
	183, B	C(PRO)	Core Spray pump "B" fails to auto start

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Perform OTM 7.1 Checklist
	■ Reset Simulator to IC-17
	■ Reduce Reactor Power to 90% with Recirc Flow
	■ Insert MALF-418, D, D14 Diesel Generator Trip
	■ Place D14 Inop Keylock Switch to "INOP"
	■ Remove indicating lights and hang Info Tags on D14 EDG Control and Output Breaker switches with the following: PERMIT NO.: 98000D1(2) EQUIP NAME/NUMBER: D14 Control Switch (Output Breaker Switch) REASON: Engine repairs SIGNATURE/DATE: Sign/Today's Date
	■ Ensure two (yellow) copies of ST-6-001-761-1, Main Turbine Bypass Valve Exercising, are available in simulator
	■ Insert MALF-244, B, "1A" RFP High Pressure Control Valve fails closed
	■ Insert MALF-456, RCIC fails to auto start
	■ Insert MALF-174, A, "1A" RHR LPCI injection valve (1F017A) fails closed
	■ Insert MALF-183, B, "1B" Core Spray pump fails to auto start
	■ Insert MALF-20, C, 90, "1C" APRM channel fails to 90%
	■ Reset any annunciators that should not be present

B. INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: MAIN TURBINE BYPASS VALVE EXERCISE TEST

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When PRO releases test PB for BPV-2, Insert MALF-108, 89, Bypass valves fail to 89% open
	■ When BPV-4 is selected, Remove MALF-108, 89, Bypass valves fail to 89% open
	■ Respond as requested to calls for support

EVENT 2: MT GLAND SEAL REGULATOR FAILS CLOSED, LOSS OF CONDENSER VACUUM, RX SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ After Tech Specs have been referenced, Insert MALF-69, Turbine Gland Seal Regulator fails closed
	■ If requested, after 5 minutes, Report - "1C" APRM is reading 90% in AER with no status lights lit on cabinet.
	■ When Seal Steam pressure is restored, Insert MALF-MMC074, 100% severity with a 30 minute ramp rate

EVENT 3: LOSS OF HP FEED, EMERGENCY BLOWDOWN, RPV FLOODING

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 5 minutes after scram, Insert MALF-252, A, "A" FW Line rupture inside Primary Containment
	■ 8 minutes later or "A" FW Line is isolated, Insert MALF-440, A, 1, Recirc Loop "A" rupture at 1%
	■ 10 minutes later, Insert MALF-440, A, 8, Recirc Loop "A" rupture at 8%
	■ T-240, (8 minutes), open CRD pump discharge check valves as directed
	■ SE-10-1, (10 minutes) reset shunt trips using RF-111 through 403 on pg E4 Report - Shunt trips have been reset per SE-10-1
	■ 5 minutes after requested to open 1F017A locally, Report - 1F017A MCC contactor will not stay picked up in the open direction

Op-Test No. _____ Scenario No. D1(2) Event No.: 1

Event Description:

Perform Main Turbine Bypass Valve Exercising (ST-6-001-761-1), recognize BPV failed to open, reference Tech Specs.

Time	Position	Applicant's Actions or Behavior
	CRS	Conduct pre-evolution brief
	PRO	Verify all prerequisites are satisfied
	PRO	Notify PSD of possible transients during testing
	PRO	Obtain permission to start test
	PRO	Complete "As Found" section of Attachment 1
	PRO	Sequentially test each BPV by completing one cycle of full travel
	PRO	Recognize BPV-3 failed to open
	PRO	Notify CRS immediately
	PRO	Enter a comment in the Additional Action/Test Comment section
	PRO	Complete testing BPV-4 through BPV-9
	CRS	Reference Tech Specs 3.7.8
	CRS	Reference Core Operating Limits Report (COLR), Table 4
	RO	Monitor reactor parameters during resultant reactivity transients
	CRS	Request WWM support to troubleshoot and correct BPV problem

Op-Test No. _____ Scenario No. D1(2) Event No.: 2

Event Description:

Main Turbine Sealing Steam pressure regulator fails closed, OT-116 (Loss of Condenser Vacuum), RMSI, Tech Specs, GP-4 (Rapid Plant Shutdown)

Time	Position	Applicant's Actions or Behavior
	PRO	Reference appropriate ARC's
	PRO	Monitor Main Condenser vacuum
	CRS	Enter and execute OT-116
	RO	Continue power reduction per RMSI
	PRO	DV rod movements
	CRS	Reference GP-5 for intentional drop in power
	CRS	Contact Chemistry to consider GEZIP adjustment
	CRS	Contact PSD and inform of power drop
	RO	Recognize "1C" APRM channel not responding to power decrease
	CRS	Reference Tech Specs for failed APRM channel
	RO	Bypass "1C" APRM channel
	PRO	Dispatch operator to verify "1C" APRM reading in AER
	CRS	Contact personnel to troubleshoot "1C" APRM
	CRS	Monitor Turbine back pressure limits
	PRO	Bypass MT sealing steam pressure regulator
	CRS	Recognize dropping vacuum can not be eliminated and direct a rapid plant shutdown per GP-4 or manually scram Reactor before Main Turbine trip
	PRO	Transfer House loads
	PRO	Reduce Recirc flow to minimum
	RO	Manually scram the Reactor
	RO	Place Mode switch in shutdown
	CRS	Enter T-101
	RO	Insert SRM's/IRM's

Op-Test No. _____ Scenario No. D1(2) Event No.: 2

Event Description:

Main Turbine Sealing Steam pressure regulator fails closed, OT-116 (Loss of Condenser Vacuum), RMSI, Tech Specs, GP-4 (Rapid Plant Shutdown)

Time	Position	Applicant's Actions or Behavior
	PRO	Trip the Main Turbine
	PRO	Ensure Generator lockout
	PRO	Verify isolations
	RO	Recognize 'A' RFP tripped on loss of HP steam
	RO	Restore and maintain RPV level +12.5 to 54" with 'B' and/or 'C' RFP's

Op-Test No. _____ Scenario No. D1(2) Event No.: 3

Event Description:

Loss of High Pressure Feed, T-111 (Level Restoration), T-112 (Emergency Blowdown), T-102, (Primary Containment Control)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize indications of "A" FW line break
	RO	Isolate "A" FW line break
	PRO	Recognize increasing DW pressure
	CRS	Enter and execute T-102
	PRO	Isolate HPCI
	PRO	Manually start RCIC
	CRS	Direct T-240
	RO	Perform T-240
	RO	Start SLC per S48.1.B
	CRS	Enter and Execute T-111
	PRO	Inhibit auto ADS
	CREW	Perform SE-10
	CRS	Enter and execute T-112
	PRO	Open 5 ADS/SRV's
	PRO	Manually start "1B" Core Spray pump
	PRO	Recognize "1A" RHR LPCI valve failed to open
	CREW	Maximize RPV injection using all available systems
	PRO	Restore and maintain RPV level above -161"
	CRS	Exit T-111 and enter T-101 when RPV level is restored above TAF

CRITICAL TASKS

1. Manually start RCIC
2. Manually start "1B" Core Spray pump
3. Open 5 ADS/SRV's when RPV level drops below -161"
4. Inject with all available sources to restore and maintain RPV level above -161"

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. 5 ADS/SRV's are open
2. RPV level is being maintained above -161" with LP ECCS systems

Facility: LGS (Unit 1) Scenario No.: E1(2) Op-Test No.:

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Execute GP-2 (Startup), S51.8.A, T-103 (Secondary Containment Control), SE-4 (Flooding), GP-3 (Shutdown), ON-104 (Control Rod Problems), T-100 (Scram), T-101 (RPV Control), T-117 (Level/Pressure Control)

Initial Conditions: 5%, OPCON 2, GP-2 Startup in progress

Turnover: Continue with Startup, secure RHR Suppression Pool Cooling

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(PRO)	Secure Suppression Pool Cooling
2	MSW515 A 100		"1A" RHR Heat Exchanger service water inlet pipe break
	493, A	C(PRO)	RHRSW valve HV51-1F014A fails to close
	PRE005 OPEN		A/C RHR Pump Room to B/D RHR Pump Room interconnecting door seal fails
	16, 10-51, A	C(RO)	Control Rod 10-51 drifts in
3	555, 18	M(ALL)	ATWS/18 Control rods fail to scram
	23	I(RO)	4 - Rod position display fails
4	MRT001 B 1048.22	C(PRO)	Fuel Pin cladding failure

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Perform OTM 7.1 Checklist
	■ Reset simulator to IC-07
	■ Provide crew with the following procedures complete through the steps indicated: GP-2, 3.3.25.3 ST-6-107-640-1, Current Time/Temp/Pressure 1GP-2, Appendix 3, 3.2.11 GP-2, Appendix A09D, 324 (Startup Sequence), pgs 107-112 GP-2, Appendix A09D, 277 (Shutdown Sequence) pgs 88-100
	■ Place "1A" RHR in Suppression Pool cooling with "0A" RHRSW pump in service (Bypass)
	■ Ensure "1A" RFP in service, feeding the vessel through "A" FW startup level controller, LIC-06-138, "1B" RFP in standby, "1C" RFP on turning gear
	■ Ensure "1A" and "1D" Circ Water pumps in service
	■ Place three Condensate filters and three Deep Bed demins in service
	■ Verify thermal limits with P-1
	■ Verify DW pressure is approximately 0.3 psig
	■ Insert MALF-493,A, RHRSW valve HV51-1F014A fails As-Is
	■ Insert MALF-555,18, ATWS/18 control rods fail to scram
	■ Ensure all alarms can be explained or are understood
	■ Reset any alarms which should not be present

B. INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1 SECURE RHR SUPPRESSION POOL COOLING

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ 5 minutes after requested to perform S51.5.A, Report - "1A" RHR heat exchanger tube flush is in progress
	■ When contacted as Chemistry, Report - Biocide treatment of "1A" RHRSW was performed 2 days ago

EVENT 2 RHR PUMP ROOM FLOODING, ROD DRIFTS IN, RX SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When "0A" RHRSW pump is stopped Insert MALF-MSW515A at 100% severity, "1A" RHRSW heat exchanger SW inlet pipe break
	■ 4 minutes later, Insert MALF-RRE005 (OPEN), RE Door #14 A/C RHR to B/D RHR interconnecting door open
	■ 5 minutes after requested to check A/C RHR room, Report - There is approximately 2 feet of water on the floor and level is rising. The leak appears to be from the RHRSW system between heat exchanger and 1F014A valve
	■ 6 minutes after request to check feed for HV51-1F014A, Report - Thermals are tripped on HV51-1F014A feeder breaker
	■ If requested to reset HV51-1F014A Remove MALF-493,A Report - Thermals have been reset for 1F014A valve
	■ 2 minutes after request to check B/D RHR room, Report - There is approximately 6 inches on the floor and level is rising slowly. The water is coming from connecting door #14

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When 1F014A is closed, Report - The leak has stopped in A/C room, level is about 3.5 feet. B/D room level is 2 feet and still rising slowly.
	■ If contacted as Radwaste, Report - RE sumps are running and Radwaste can handle the influent for now

EVENT 3 ATWS, 18 RODS FAIL TO SCRAM, 4-ROD DISPLAY FAILURE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If contacted to troubleshoot 4-rod display, Report - Cause is unknown, a TRT is being developed
	■ T-218, if asked for status, Report - Equipment has been located, which rod should we start with?
	■ T-290 (5 minutes), Report - All T-290 values are below MNO

EVENT 4 FUEL PIN CLADDING FAILURE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When 8 rods remain out, Insert MALF-MRT001B (1048.22), Fuel Pin Cladding Failure of 1048.22 Rods
	■ If directed to perform T-290, Report - All areas are below MNO temperature

Op-Test No. _____ Scenario No. E1(2) Event No.: 1

Event Description:

Secure Suppression Pool Cooling per S51.8.A and Shutdown RHRSW per S12.2.A

Time	Position	Applicant's Actions or Behavior
	CRS	Conduct pre-evolution brief
	RO	Peer cross-check
	PRO	Close HV51-1F024A (Supp Pool Clg)
	PRO	Secure "1A" RHR pump when FI-51-1R603A indicates 0 gpm
	PRO	Ensure open HV-51-1F007A (min flow)
	PRO	Open HV-C-51-1F048A (heat exch bypass)
	PRO	Verify RHR "A" loop setup for automatic operating in LPCI mode
	PRO	Shutdown RHRSW per S12.2.A
	PRO	Direct S51.5.A, Flushing "1A" RHR Heat Exchanger Tube Side
	PRO	Contact Chemistry to determine if "1A" heat exchanger has been chemically treated within past 7 days

Op-Test No. _____ Scenario No. E1(2) Event No.: 2

Event Description:

RHR Pump Room flooding from RHRSW, SE-4 (Flood), GP-3 (Shutdown, ON-104 (Control Rod Problems), T-100 (Scram), T-101 (RPV Control).

Time	Position	Applicant's Actions or Behavior
	PRO	Simultaneously close HV-51-1F068A (outlet) and stop 0AP506 (pump)
	PRO	Attempt to close HV-51-1F014A (inlet), report failure to respond
	PRO	Stop corresponding Spray Pond Pump House fan
	CRO	Investigate valve failure
	RO	Reference flooding ARC
	CRS	Enter and execute SE-4-1 (RE Flooding)
	CRS	Dispatch operator to determine source of flooding not from floor drains
	CRS	Enter and execute T-103 (Secondary Containment Control)
	PRO	Direct HV-51-1F014A, thermals reset and close valve
	CRS	Ensure all doors on elev. 177' are closed
	RO	Monitor instrumentation to aid in identifying source of flooding, (SP, RPV, CST level)
	PRO	Notify Radwaste of RHRSW influent to RE sump
	CRS	Recognize 2nd area affected by flooding through connecting door
	CRS	Re-enter T-103 on B/D RHR room flood alarm
	CREW	Track water level in both RHR pump rooms toward MSO valves
	CRS	Direct GP-3, Normal Plant Shutdown when B/D room level exceeds 18"
	RO	Reference rod drift alarm ARC
	RO	Determine control rod 10-51 drifting in and notify CRS
	CRS	Enter and execute ON-104
	RO	Apply continuous control rod insert signal to 10-51

Op-Test No. _____ Scenario No. E1(2) Event No.: 2

Event Description:

RHR Pump Room flooding from RHRSW, SE-4 (Flood), GP-3 (Shutdown, ON-104 (Control Rod Problems), T-100 (Scram), T-101 (RPV Control).

Time	Position	Applicant's Actions or Behavior
	CRS	Reference Tech Spec 3.1.3.1
	RO	Manually scram reactor
	RO	Place mode switch in Shutdown
	RO	Insert SRM's/IRM's
	CRS	Enter and execute T-100
	PRO	Verify isolations
	RO	Maintain RPV level above +12.5" or enter T-101
	PRO	Stabilize RPV pressure/secure steam users to mitigate depressurization

Op-Test No. _____ Scenario No. E1(2) Event No.: 3

Event Description:

ATWS, 18 control rods fail to scram, T-100 (Scram), Rod Position Display fails

Time	Position	Applicant's Actions or Behavior
	RO	Recognize all rods not to or beyond 02
	RO	Manually initiate RRCS
	RO	Bypass rod worth minimizer
	RO	Insert all control rods manually with RMCS
	CRS	Direct T-218 for rods not fully inserted
	RO	Recognize 4-rod position indicator has failed and notify CRS
	RO	Determine rod to select and position from PMS/Full Core Display
	CRS	Direct normal plant cooldown not to exceed 100°F/hr

Op-Test No. _____ Scenario No. E1(2) Event No.: 4

Event Description:

Fuel pin cladding failure, T-103 (Secondary Containment Control), T-117 (Level/Power Control), T-101 (RPV Control)

Time	Position	Applicant's Actions or Behavior
	PRO	Reference Main Steam Line High Radiation alarm ARC
	CRS	Re-enter and execute T-103
	CRS	Direct T-290
	CRS	When MSL rad level reaches 3 X NFPB, close MSIV's
	CRS	Enter T-101
	PRO	Manually start RCIC for level control
	CRS	Enter T-117
	CRS	Evaluate if reactor is shutdown, and if not, discontinue cooldown
	CRS	Exit T-117 when all rods to or below 02 position

CRITICAL TASKS

1. Determine and take action to isolate flooding
2. Manually scram the reactor following the rod drift in
3. Insert all control rods to or beyond 02 position with RMCS
4. Close MSIV's when MSL rad levels exceed 3 X NFPB

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. All rods to or beyond 02
2. MSIV's shut
3. RPV level maintained between +12.5" and +54"

TAB

CHARTS / GRAPHS