

ADMINISTRATIVE TOPICS OUTLINE

Examination Level: SRO

Candidate's Name: _____

Facility:

Limerick 1 and 2

Week of Examination: 11/13/95

Examiner's Name: _____

(Please Print)

Administrative Topic		Brief Question Description
A.1	FUEL HANDLING	BZC Bypass Restrictions
		Reactivation of License (A-C-10)
	STAFFING REQUIREMENTS	A-C-40 working restrictions
		A-C-40 work break requirements
A.2	EQUIPMENT CONTROL	ST grace period A-C-43
		Actions taken on Unsat "I" step
A.3	RADIATION CONTROL	Portable contamination survey
		Locked High Rad areas
A.4	EMERGENCY PLAN	NRC Communicator
		EAL/PAR Determination

EXAMINER: _____

CHIEF EXAMINER: _____

A070 0/1

NO.: 2260 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.10

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Core Alterations have been halted due to a Boundary Zone Computer failure. The LSRO is requesting permission to bypass the computer. What actions are required to accomplish the bypass?

ANSWER :

On call Senior Staff Member permission

Shift Manager permission

second qualified person on bridge to monitor bridge and trolley movements

REFERENCE: S97.0.K

NO.: 2193 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.08 A-C-10
:
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You have been temporarily assigned to the FIN team for six (6) months and have been attending and passing LOR every cycle. What actions are required to reactivate your Senior Reactor Operator license after the Senior Manager of Operations performs his certification ?

ANSWER :

1. 40 hour qualification card under the direction of an active SRO
2. participate in all pre- and post-shift turnovers
3. participate in a tour of the plant

REFERENCE: A-C-10 SECTION 7.5.2

NO.: 2200 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09 A-C-40

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

As the Assistant Control Room Supervisor (ACRS) you are reviewing the daily time sheets. You note that one of your Equipment Operators (EO) will have worked 26 hours in the last 48 hours by the end of this shift. Assuming a relief can NOT be assigned, who must authorize the EO to exceed work hour restrictions?

ANSWER :

any one of the following:

1. Plant Manager
2. Sr Manager of Operations
3. Manager of Operations Services
4. Manager of Operations Support

REFERENCES: A-C-40 section 7.4

NO.: 2201 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09 A-C-40

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You are the floor supervisor on Days today. Tomorrow is your regularly scheduled day off. You are asked to cover ACRS. How much time must you have off between work periods before assuming the duties of the ACRS?

ANSWER :

8 hours between work periods including turnover

REFERENCE: A-C-10 section 7.2

NO.: 2195 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.08 A-C-43 TECH SPEC 4.0.2

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The OPCAT has just informed you that a particular surveillance test's due date is at 1200 today. Plant conditions will NOT allow performance at this time. In reviewing Tech Specs you note the ST has a surveillance frequency notation of "SA". What is the "drop dead" date for performance of this surveillance?

ANSWER :

1. "SA" performance notation is 184 days.
2. Tech Spec 4.0.2 allows a 25% "grace period"
3. $184 \times 25\% = 46$ days
4. meaning this ST can be completed within the next 46 days and still comply with Tech Specs

REFERENCE: A-C-43 4.2
TECH SPEC 4.0.2

NO.: 2194 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.10 A-C-43
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The PCIG quarterly valve test is being performed by your PRO. All asterisk steps to this point are completed satisfactory. A step marked with "I" was just completed unsatisfactory. The ST cover sheet gives NO guidance on unsatisfactory "I" steps. What actions should you take?

ANSWER :

1. stop the test
2. direct the placing of PCIG valves in a safe condition
3. inform the SSV (may include inform Shift Manager since candidate is the SSV)
4. inform ACRS

REFERENCE: A-C-43 SECTION 7.4.4

NO.: 2196 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.05 HP-C-818
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

You are monitoring an Equipment Operator (EO) performing a frisk of his hands and feet to exit a work area on the 1A RHR heat exchanger.

What instrument should he be using? At what instrument reading shall a Health Physics Technician be notified?

ANSWER :

RM-14/20

greater than or equal to 100 cpm above background

REFERENCE: HP-C-818 section 7.1.4

NO.: 2197 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.01 HP-C-202
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

Entrance to the 1C RWCU Room and 510 room is posted "CAUTION - LOCKED HIGH RADIATION AREA". What are the potential ranges of dose rates associated with this room based on the posting?

ANSWER :

* dose rates in the room can range from ≥ 1 r/h to less than 500 r/h

notes:

"CAUTION - LOCKED HIGH RADIATION AREA" posting covers two subcategories

1. Level I LHRA dose rates ≥ 1 r/h and less than 10 r/h
2. Level II LHRA dose rates ≥ 10 r/h

at 500 r/hr the posting would be changed to "GRAVE DANGER - VERY HIGH RADIATION"

answer does not account for supervisory expectation posting room early at 800 mr/hr

REFERENCE: HP-C-215 section 7.6
HP-C-202

NO.: 2199 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.01 ERP-110

CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

An "ALERT" has just been declared by the Shift Manager, you must assign an NRC Communicator. What are the restrictions on your choice of this person?

ANSWER :

Restrictions as a minimum include:

- a. should be a Licensed individual
- b. must continuously man the FTS 2000 until NRC authorizes securing line
- c. shall NOT be the degraded SRO (STA) assigned to the shift.

REFERENCE: ERP-110 section 2.2

NO.: 2198 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/07/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.S01 ERP-101
:
CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

The following conditions exist on Unit 2:

Reactor Power is currently 21%
RPV level reached -39 inches ten minutes ago
Suppression Pool Temperature is 112°F
SBLC injection or control rod insertion is not expected for 2 hours

What is the appropriate Emergency Action Level and Protective Action
Recommendation, if appropriate?

ANSWER :

- * EAL is "GENERAL EMERGENCY"
- * PAR is; "EVACUATE 2 MILE RADIUS,
AFFECTED SECTORS 2 TO 5 MILE RADIUS AND
2 ADJACENT SECTORS IN THE 2 TO 5 MILE RADIUS

REFERENCE: ERP-101 PAGE 15

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: SRO (I)

Facility: Limerick 1 and 2

Week of Examination: 11/14/95

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. SLC/0516	I	a. 295037 EA1.04/4.5/ RRCS SLC Initiation
		b. 211000 K6.03/3.2/ SLC power supply
2. RWCU/0013	II	a. 204000 A1.07/2.9/ Dump valve closure
		b. 204000 K6.06/3.5/ TE failure
3. HPCI/0020	IV	a. 217000 A1.06/3.4/ RCIC HI level response
		b. 217000 A2.13/2.9/ Unit 2 RCIC Rm Cooling
4. RHR-SPC/0018	V	a. 233000 K1.02/2.9/ FPC flowpath
		b. 203000 K4.13/3.7/ RHRSW Loop Rad Monitors
5. 13.2KV/0025	VI	a. 262001 KA.07/3.5/ Load center interlocks
		b. 245000 K6.05/2.9/ Stator Cooling Trip
6. APRM/0004	VII	a. 214000 A2.02/3.7/ Rod Indications
		b. 212000 K1.10/3.4/ MT RPS inputs
7. RPS/0001	VII	a. 263000 K3.03/3.8/ RPS Power supply
		b. 212000 KA.11/4.5/ Mode Switch T.S.
8. Rad Release/0228	IX	a. 288000 KA.11/4.1/ Fire Sys. water source
		b. 286000 A4.05/3.3/ Controls for Fire Pumps
9. RCIC/0227	IV	a. 217000 K5.06/2.7/ RCIC Trip signals
		b. 217000 K4.04/3.1/ RCIC speed limits
10. FIRE PRO/0232	VIII	a. 286000 KA.06/3.8/ Sprinkler Operability
		b. 234000 A2.01/3.7/ Refuel Bridge T.S.

EXAMINER: _____

CHIEF EXAMINER: _____



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

December 5, 1995

Mr. D. M. Smith
Senior Vice President - Nuclear
PECO Energy
Nuclear Group Headquarters
Correspondence Control Desk
P. O. Box 195
Wayne, PA 19087-0195

SUBJECT: COMBINED EXAMINATION REPORT NOS. 50-352/95-20 AND 50-353/95-20 (OL)

Dear Mr. Smith:

During the period of November 13-16, 1995, the NRC administered initial examinations to six employees of your company who had applied for licenses to operate Limerick Generating Station, Units 1 and 2. At the conclusion of the examinations, the preliminary findings were discussed with Mr. Boyce and members of your staff.

The initial licensing examination was prepared by your staff, with NRC oversight, in accordance with the pilot operator licensing initial examination process. The examination was of a high quality, requiring only minor changes by the NRC staff prior to administration. It is important to note that the examination did not require any changes following administration, again indicating that the examination was of a high quality.

The six applicants passed the initial examinations and were subsequently issued licenses. We noted a significant improvement during the operating examinations in the applicants' performances concerning the response to, and acknowledgment of, control room alarms.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions regarding this information, please contact me at (610) 337-5198.

Sincerely,

Michael C. Modes, Acting Chief
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

Docket Nos: 50-352; 50-353

Enclosure: Combined Examination Report Nos. 50-352/95-20
and 50-353/95-20 (OL) w/Attachments 1-5

030061

951213 02410 4

1 E 4-2

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: **SRO (U)**

Facility: **Limerick 1 and 2**

Week of Examination: 11/14/95

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. HPCI/0020	IV	a. 217000 A1.06/3.4/ RCIC HI Level response
		b. 217000 A2.13/2.9/ Unit 2 RCIC Rm Cooling
2. APRM/0004	VII	a. 214000 A2.02/3.7/ Rod Indications
		b. 212000 K1.10/3.4/ MT RPS Inputs
3. Rad Release/0228	IX	a. 286000 KA.11/4.1/ Fire Sys. water source
		b. 286000 A4.05/3.3/ Controls for Fire Pumps
4. RCIC/0227	IV	a. 217000 K5.06/2.7/ RCIC Trip signals
		b. 217000 K4.04/3.1/ RCIC Speed Limits
5. FIRE PRO/0232	VIII	a. 286000 KA.06/3.8/ Sprinkler Operability
		b. 234000 A2.01/3.7/ Refuel Bridge T.S.

EXAMINER: _____

CHIEF EXAMINER: _____

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Initiate SLC (Alternate Path)

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to any power IC.
2. Insert MALF-195A, RVCU Isolation Valve (HV-44-1F001) fails open.
3. Insert MALF-195B, RVCU Isolation Valve (HV-44-1F004) fails open.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

6 Minutes

Importance Rating(s):

4.2/4.2 A4.08

System Number(s):

211000

References:

S48.1.B, Standby Liquid Control System Manual Initiation

Task Standard(s):

Standby Liquid injecting into the RPV, failure of RVCU to isolate is identified.

Initiating Cues:

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

Task Conditions:

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

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S48.1.B	Most recent revision of S48.1.B obtained (Rev. 8).	
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. Red light on, green off.	
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.	

STEP	STANDARD	SAT/UNSAT
6. Ensure the following: HV-48-1F006A "SLC Injection" (outboard A), open.	HV-48-1F006A is open, red light on, green light off.	
7. Ensure the following: HV-48-1F006B "SLC Injection" (outboard B), open	HV-48-1F006B is open, red light on, green light off.	
*8. Start the following SLC injection pumps, by holding keylock switches in "RUN" for at least one second before releasing: 1AP208 "SLC INJ PUMP" 1BP208 "SLC INJ PUMP" 1CP208 "SLC INJ PUMP"	SLC Pump A, B, and C switches to RUN. Red light on, green off.	
9. 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.	
10. Acknowledge Alarms	Depress alarm acknowledge pushbutton	
11. Perform the following to ensure operation of SLC injection pumps within parameters.	N/A	N/A
12. 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.	
13. Verify LI-48-1R601, "SLC TANK LEVEL" (LV), lowering at a steady rate.	C603 indication SLC tank level decreasing.	

STEP	STANDARD	SAT/UNSAT
14. Verify lowering reactivity as observed by lowering power on nuclear instrumentation.	Available power indications show power going down.	
*15. Ensure the following at 10C602: HV-44-1F001 "RWCU INBOARD ISOLATION" (INBOARD), closed.	Recognize HV-44-1F001 failed to isolate and try to manually close valve. Notify CRS.	
*16. Ensure the following: HV-44-1F004, "RWCU OUTBOARD ISOLATION" (OUTBOARD), closed. (CUE: The evaluator should say, "You can stop here, we have met the termination criteria for this JPM.")	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

Initiating Cues:

Shift Supervision directs you to manually initiate the Unit 1 SLC System,
per S48.1.B

Task Condition(s):

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

NO.: 2302 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 295037EA1.04 TAXONOMY NO.:
LESSON PLANS: LOT0315.03
:
CATEGORY: NR1 NRC
SYSTEMS: RRCS

QUESTION :

*** SRO ONLY ***

What conditions are required on Unit 2 for the RRCS system to automatically initiate Standby Liquid Control (SLC)?

ANSWER :

High reactor pressure of 1149 psig
and
118 second time delay
and
APRMs not downscale

OR

Low reactor level of -38"
and
118 second time delay
and
APRMs not downscale

REFERENCES: LOT-0315.03 page 11
GP-18 Attachment 3

NO.: 2303 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 211000K6.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.03

CATEGORY: NRC NR1
SYSTEMS: SLC

QUESTION :

*** SRO ONLY ***

T-111 is being executed. Standby Liquid Control (SLC) was manually started at minus 20 (-20) inches. A LOCA signal has just occurred.

What are the immediate and long term effects on SLC injection?

ANSWER :

SLC pumps will trip
pumps must be manually restarted to inject into the vessel

REFERENCE: SE-10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: REACTOR WATER CLEANUP FAST STARTUP

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

- Reset simulator to any power IC.
- Shutdown RWCU by turning pumps off, close the F001.
- Reset annunciators on 112 cleanup panel.
- Remove the RWCU F/Ds from service on page CU1, remote functions 91 and 92.
- Depressurize RWCU to $\approx 800\#$ by cracking open HV44-1F034 (Dump to Cond) and HC44-1R606 (Dump) until pressure on PI44-1R600 indicates 850#, then close HV44-1F034 and HC44-1R606.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.5/3.5 Generic #9

System Number:

204000

References:

S44.7.A, Reactor Water Cleanup Fast Startup

Task Standards:

The RWCU system in service with 2 pumps running, 2 demins in service and the demin bypass closed.

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S44.7.A	S44.7.A, Rev. 15 obtained.	
2. All Group III isolation signals cleared and reset per GP-8.	N/A	N/A
3. Ensure RECW is available.	N/A	N/A
4. No portion of RWCU system suspected of being drained. CUE: If asked by operator report as the SSV that "No portion of the RWCU system is suspected of being drained."	N/A	N/A
5. Ensure the following valves closed.	N/A	N/A
a. HV-C-*F033 via HC-44-*R606	- HC-44-1R606, Dump Flow Controller Position meter red pointer at zero.	
b. HV-44-*F034	- HV-44-1F034, Dump to Condenser, green light on, red light off.	
c. HV-44-*F035	- HV-44-1F035, Dump to Drain, green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
6. If *A(B) Filter Demins Hold Pump not running or Hold Pump Discharge not open then isolate *A(B) F/D at *OC092 CUE: When asked by operator report as the Radwaste operator that "Both Unit RWCU F/D's hold pumps are running and hold pump discharge valves are open".	Direct Radwaste operator to check the hold pumps and hold pump discharge valve.	
7. If *A(B) F/D isolated then dial FRC-45-*74A(B) demand setting to zero gpm and verify controller output is full left. CUE: If asked by operator, report as the Radwaste operator that "Unit 1 RWCU F/Ds are not isolated.	Direct Radwaste operator to check if F/Ds isolated.	

STEP	STANDARD	SAT/UNSAT
8. Performing the following to place any in-service RWCU F/D in "HOLD" mode. CUE: Report as Radwaste operator that: "S44.7.A step 4.4 is complete". If the operator requests step by step verification then report as Radwaste operator the following: - Both F/D hold pumps are running and hold pump discharge valves are open. - FRC-45-1-74A and B are in AUTO. - FRC-45-1-74A and B controller red arrow for demand is set to zero, black arrow for output is full left. - HV-45-1-66A and B Vessel Outlet Valve E_A and E_B are closed. - The HOLD START buttons were depressed and the HOLD lights are on.	Direct Radwaste operator to perform section 4.4 of S44.7.A	
9. Ensure alignment of the following valves as indicated at *OC602:	N/A	N/A
a. HV-44-*F034 closed.	HV-44-1F034 Dump to Cond green light on, red light off.	
b. HV-44-*F035 closed.	HV-44-1F035 Dump to Drain green light on, red light off.	
c. HC-44-*R606 closed.	HC-44-1R606 Dump Flow Controller position meter red pointer at zero.	
d. HV-44-*F044 closed.	HV-44-1F044 Demin Bypass green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
e. HV-44-*F040 closed.	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to CLOSE, green light on, red light off.	
f. HV-44-*F039 open.	HV-44-1F039 Return Isolation green light off, red light on.	
g. HV-44-*F042 open.	HV-44-1F042 Return green light off, red light on.	
h. HV-44-*F100 open.	HV-44-1F100 Bottom Head Drain green light off, red light on.	
i. HV-44-*F105 open.	HV-44-1F105 Inlet Flow green light off, red light on.	
10. Crack open HV-44-*F040	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to "OPEN" then "PULL TO STOP". Green light on, red light on.	
*11. Slowly jog open HV-44-*F001 and HV-44-*F004 as applicable to pressurize system to Reactor pressure.	HV-44-1F001 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open indicated by green light off, red light on.	
*12. Slowly jog open HV-44-*F040.	HV-44-1F040 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open as indicated by green light off, red light on.	

STEP	STANDARD	SAT/UNSAT
13. If F/Ds are not isolated then depress Filter "START" for both RWCU F/D's as applicable and verify the following: - Red HOLD lights not lit - Red FILTER lights lit - FRC-45-*74A(B) in "AUTO" - HV-45-*66A(B) closed CUE: Report as Radwaste operator that: "After the Filter "START" button was depressed, the red "HOLD" lights went out, the red "FILTER" lights are lit. FRC-45-1-74A and B are in AUTO and HV-45-1-66A and B are closed".	Radwaste operator directed to depress filter "START" for both F/Ds, or directed to perform step 4.7.1 of S44.7.A.	
14. Inform E.O. of 1A RWCU pump start.	E.O. notified by phone/page that the 1A RWCU pump will be started.	
*15. Hold *A(B,C) P221 pump handswitch in "START" for one of the previously operating RWCU Recirc Pumps at *OC602.	Place and hold 1A RWCU pump handswitch in start position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 91 on page CUI for the next step.		
16. If *A(B) is in FILTER mode, then adjust FRC-45-*74A(B) at *OC092 to previous flow rate by dialing up demand setting red arrow to desired flow rate and maintain system flow within pump limits. CUE: If operator asks Radwaste operator what previous flow rate was, then say: "Previous flow rate was 170 gpm".	Radwaste operator direct to adjust FRC-45-1-74A to previous flow rate or directed to perform step 4.7.3 of S44.7.A.	
17. If both F/D's isolated then throttle open HV-44-*F044 as necessary to control flow within pump limits.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
18. Release *A(B,C) P221 pump handswitch.	1A RWCU pump handswitch released.	
19. Make PA announcement stating 1B RWCU pump start.	PA announcement made stating the 1B RWCU pump will be started.	
*20. When RWCU system flow has stabilized as indicated by FI-044-*R609, then start the other previously operating RWCU recirc pump by placing *A(B,C) P221 pump handswitch in "START".	Place 1B RWCU Pump handswitch momentarily in "START" position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 92 on page CUI for the next step.		
*21. If second F/D is in FILTER mode, then adjust FRC-45-*74A(B) to match operating F/D flow rate.	Radwaste operator directed to adjust FRC-45-1-74B to match operating F/D flow rate.	
22. If second F/D is isolated then throttle open HV-44-*F044 to control system flow within pump limits.	N/A	N/A
23. Maintain system flow within pump limits.	FI44-1R609 indicates less than 340 gpm.	
24. If both F/Ds remain isolated, then place RWCU in blowdown per S44.4.A.	N/A	N/A
25. If bottom head drain flow as indicated on FI-44-*R610 is 0 gpm, then refer to S44.1.J and establish bottom head drain flow.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

NO.: 2330 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 204000A1.07 TAXONOMY NO.:
LESSON PLANS: LOT0110.07

CATEGORY: NRC NR1
SYSTEMS: RWCU

QUESTION :

*** SRO ONLY ***

An operator aligns RWCU to dump to the condenser and begins opening the HV-C-44-1F033 (Dump To Cond) with the controller. The red pointer on the 0-100% scale, at the bottom of the HC-44-1R606 controller, rapidly increases to maximum and alarm 112 CLEANUP G-1, RWCU Discharge Hi/Lo Press, annunciates. RWCU Dump Flow also increases rapidly on FI-44-1R602.

Describe the response of the HV-C-44-1F033, Dump To Cond, valve.

ANSWER :
HV-C-44-1F033 will close.

P&ID M-44
ARC 112 CLEANUP

Q230013S

NO.: 2331 REV.: 4 TYPE: ES ENTERED BY: WMT DATE ENTERED: 11/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 204000K6.08 TAXONOMY NO.:
LESSON PLANS: LOT0180.02

CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

*** SRO ONLY ***

During normal operation of RWCU with two pumps and two demins in service, a DIV I STEAM LEAK DETECTION HI TEMP/TROUBLE alarm annunciates due to failure of TE-44-1N016N high.

What is the effect on the RWCU system?

ANSWER :

HV-44-1F001 will isolate (close).
RWCU pumps will trip.
Demin hold pumps will start

REFERENCES: P&ID M-25
ARC 107 F-5

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Secure Unit 1 HPCI following Full Flow Functional Test

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset Simulator to any 100% power IC.
2. Place HPCI in full flow test, CST-to-CST, with flow controller in AUTO set at 5600 gpm.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s): System Number(s):

Generic #13 4.2/4.0	206000
A4.12 4.0/3.9	206000

References:

S55.1.D, HPCI SYSTEM FULL FLOW FUNCTIONAL TEST

Task Standard(s):

HPCI shutdown and restored to the auto/standby condition.

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S55.1.D.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S55.1.D. (Cue: If asked, respond, "I want you to obtain a copy of S55.1.D".)	Copy of S55.1.D, Rev.18 obtained.	
*2. Ensure the flow controller in "Manual".	FIC-55-1R600 in manual.	
*3. When test is complete THEN lower FIC-55-*R600 until speed as indicated on SI-56-*61 is nominal 2,250 rpm.	Lower speed using FIC-55-1R600 by depressing the "CLOSE" pushbutton in MANUAL until SI-56-161 indicates 2200 to 2300 RPM.	
4. IF HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), was opened to establish flow path to Suppression Pool, THEN close HV-55-*F071, TEST OUTBOARD.	N/A	N/A
*5. Close HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL).	Momentarily rotate HV-55-1F008 control switch to close. GREEN light ON, RED light OFF.	
*6. Simultaneously depress and hold Turbine Trip (TURBINE TRIP) pushbutton,	Depress and hold Turbine Trip pushbutton.	
*6a. AND close HV-55-*F001, "HPCI Steam Supply" (INLET).	Momentarily place HV-55-1F001 control switch to close. GREEN light ON, RED light OFF.	

STEP	STANDARD	SAT/UNSAT
7. Acknowledge HPCI LOW FLOW and HPCI OUT OF SERVICE alarm at 117 HPCI alarm panel.	Acknowledge HPCI Low Flow and HPCI Out of Service alarm at 10C655.	
*8. When HV-55-*F001, INLET, is fully closed, Then RELEASE TURBINE TRIP pushbutton.	Release TURBINE TRIP pushbutton when HV-55-1F001 GREEN light ON, RED light OFF	
9. When SI-56-*61, "HPCI Turbine Speed" (S), is less than 1,200 rpm, Then verify *OP213, "Auxiliary Oil Pump" (AUX OIL PUMP) is running.	When SI-56-161 is between 0 and 1,200 rpm, 10P213 AUX OIL PUMP RED light ON, GREEN light OFF.	
10. Verify FV-56-*12, "HPCI Turbine Stop Valve" (STOP), open and monitor position while *OP213, AUX OIL PUMP, is running.	FV-56-112 (STOP), RED light ON, GREEN light OFF.	
11. Verify HV-55-*F012, "HPCI Pump Minimum Flow" MIN FLOW, closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF.	
12. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
13. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
14. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
15. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
16. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	
17. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
18. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
*19. When 15 minutes has elapsed, then stop *OP216, VACUUM PUMP. (Cue: Inform operator that "15 minutes have elapsed since the turbine was tripped.")	Momentarily place 10P216 control switch to OFF. GREEN light is ON, RED light is OFF.	
*19.a Stop *OP213, AUX OIL PUMP.	Momentarily place the 10P213 control switch to STOP and GREEN light is ON and RED light is OFF.	
*20. When FV-56-*12, STOP, closes then verify HV-56-*F059, "HPCI Lube Oil Cooling Water Valve" (COOLING WATER), closes.	HV-56-1F059 closes by ensuring GREEN light is ON, RED light is OFF.	
21. If any abnormalities observed with FV-56-*12, "Turbine Stop Valve" (STOP), or *OP213, AUX OIL PUMP, then notify Shift Supervision.	N/A	N/A
22. When Suppression Pool Cooling Mode of RHR is no longer required, then refer to S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control, and secure Suppression Pool Cooling Mode of RHR.	N/A	N/A
23. Ensure *OP213, AUX OIL PUMP, off in "AUTO."	Check 10P213 control switch aligned to the AUTO position.	

STEP	STANDARD	SAT/UNSAT
24. Ensure FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL) is set at 5600 gpm in "AUTO".	Check FIC-55-1R600 is set at 5600 gpm and M/A select switch is positioned to "A".	
25. Ensure HV-55-*F002, "HPCI Steam Line Inboard Isolation" (INBOARD), is open.	Check HV-55-1F002 open by RED light ON, GREEN light OFF.	
26. Ensure HV-55-*F003, "HPCI Steam Line Outboard Isolation" (OUTBOARD) is open.	Check HV-55-1F003 open by RED light ON, GREEN light OFF.	
27. Ensure HV-55-*F100 HPCI Steam Line Warmup Bypass" (WARMUP BYPASS) is closed.	Check HV-55-1F100 closed by GREEN light ON, RED light OFF.	
28. Ensure HV-55-*F001 "HPCI Steam Supply" (INLET) is closed.	Check HV-55-1F001 closed by GREEN light ON, RED light OFF.	
29. Ensure HV-56-*F059, "HPCI Lube Oil Cooling Water Supply" (COOLING WATER), is closed.	Check HV-55-1F059 closed by GREEN light ON, RED light OFF.	
30. Ensure HV-55-*F007, "HPCI Pump Discharge Outboard Isolation" (DISCHARGE) is open.	Check HV-55-1F007 open by RED light ON, GREEN light OFF.	
31. Ensure HV-55-*F006, "HPCI Pump Injection" (INJECTION), is closed.	Check HV-55-1F006 closed by GREEN light ON, RED light off.	
32. Ensure HV-55-*F105, HPCI Pump Injection" (TO MAIN FEED A), is closed.	Check HV-55-1F105 closed by GREEN light ON, RED light OFF.	
33. Ensure HV-55-*F012, "HPCI Pump Minimum Flow" (MIN FLOW) is closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF.	
34. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
35. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	

STZP	STANDARD	SAT/UNSAT
36. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
37. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
38. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
39. Ensure HV-55-*F072, "HPCI Turbine Exhaust" (EXHAUST), is open.	Check HV-55-1F072 open by RED light ON, GREEN light OFF.	
40. Ensure HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), is closed.	Check HV-55-1F071 closed by GREEN light ON, RED light OFF.	
41. Ensure HV-55-*F093, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (OUTBOARD), is open.	Check HV-55-1F093 open by RED light ON, GREEN light OFF.	
42. Ensure HV-55-*F095, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (INBOARD), is open.	Check HV-55-1F095 open by RED light ON, GREEN light OFF.	
43. Ensure HV-55-*F054, "HPCI Steam Line Drain Steam Trap Bypass" (TRAP BYPASS), is closed.	Check HV-55-1F054 closed by GREEN light ON, RED light OFF.	
44. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
45. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	
46. Ensure HV-56-*F025, "HPCI Barometric Condenser Drain Isolation" (INBOARD TO RADWASTE) is open.	Check HV-56-1F025 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
47. Ensure HV-56-*F026, "HPCI Barometric Condenser Drain Isolation" (DRAIN OUTBOARD), is closed.	Check HV-56-1F026 closed by GREEN light ON, RED light OFF.	
48. Ensure *OP216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP), is OFF and in "AUTO".	Check 10P216 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
49. Ensure *OP215, "Barometric Condenser Condensate Pump" (CONDENSATE PUMP), is OFF and in "AUTO".	Check 10P215 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
50. Clear all associated HPCI annunciators at *17 HPCI.	Depress annunciator reset pushbutton on panel 10C655 and verify no annunciator windows are illuminated at 117 HPCI panel.	
51. Clear all yellow HPCI System Status Lights.	Verify all HPCI system status lights are clear.	

Comments:

Note: Any rating of UNSAT requires a comment.

JPM Overall Rating: SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S.55.1.D.

NO.: 2299 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A1.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.07

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 has experienced a Group 1 Isolation. RCIC was started manually using the arm and depress pushbutton and is injecting at rated flow into the reactor vessel. No further operator action is taken and reactor level reaches +54".

What automatic actions will occur with respect to the RCIC System?

ANSWER :

The RCIC Steam Supply valve (HV50-1F045) will close. When the F045 closes, the RCIC Injection Valve (HV50-1F013) and RCIC Min Flow (HV50-1F019) close.

REFERENCES: LOT-0380 pages 12 and 13
S49.1.C section 4.0
Q250020

NO.: 2372 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A2.13 TAXONOMY NO.:
LESSON PLANS: LOT0680.05
:
CATEGORY: NRC
SYSTEMS: ESW RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 is at 87% power with RCIC pump, valve and flow test in progress.
The OC ESW Pump trips and HV11-078 (UNIT 2 SERVICE WATER RETURN) does
NOT reposition as designed. (assume NO other ESW Pumps are running).

Describe the effect on RCIC and explain why these effects occur.

ANSWER :

RCIC room temperature will increase.

Room temperature will increase since no cooling water flowpath is
provided.

The 78 valve failure will prevent return of cooling water flow to
service water.

The ESW pump trip will cause the return path to ESW system to
close.

REFERENCE: LOT0680.05 PP 10,11,12
OPAID SIM-M-0012

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: PLACE RHR LOOP A IN SUPPRESSION POOL COOLING

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Place RHRSW Loop A in service to RHR Heat Exchanger 1A

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.7/3.6 A1.08

System Number:

K/A 21900

References:

S51.8.A, Suppression Pool Cooling Operation and Level Control

Task Standards:

RHR loop 1A in Suppression Pool Cooling with-system flow of 8000-8500 gpm through the RHR Heat Exchanger.

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain S51.8.A	S51.8.A, Rev.19 obtained.	
2. RHR Service Water available.	N/A	N/A
3. RHR lined up per S51.1.A, Set up of RHR System for Automatic Operation in LPCI mode. (CUZ: If asked say, "RHR Loop A is aligned for automatic LPCI injection.	N/A	N/A
4. Sufficient capacity in Equipment Drain Collection Tank to receive inventory from Suppression Pool for lowering Suppression Pool level if necessary.	N/A	N/A
5. START selected RHR Service Water loop per S12.1.A, RHR Service Water System Startup.	N/A	N/A
6. ENSURE HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION) closed.	HV-51-1F006A, SUCTION, is closed by Green light on, red off.	
7. Ensure HV-51-*F047A(B) INLET is open.	HV-51-1F047A INLET is open Red light on, green off.	
8. Ensure HV-51-*F003A(B) OUTLET is open.	HV-51-1F003A OUTLET is open. Red light on, green off.	
9. Ensure HV-51-*F004A(B) SUCTION is open.	HV-51-1F004A SUCTION is open. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
10. Make PA announcement stating RHR Pump A(B) start.	PA announcement made stating RHR Pump A start.	
*11. START *A(B)P202, RHR Pump (PUMP).	RHR Pump A started by momentarily placing switch to START. Red light on, green off.	
12. Acknowledge annunciator.	Acknowledge annunciator 110 STEAM window B5.	
13. IF TRIP procedure requires returning to Suppression Pool Cooling during LOCA condition THEN CLOSE HV-51-*F017A(B) OUTBOARD, to satisfy valve interlocks.	N/A	N/A
*14. OPEN HV-51-*F024A(B), "RHR Pump Full Flow Test Return" (SUPP POOL CLG).	Throttle open HV-51-1F024A SUPP POOL CLG, by momentarily placing switch to OPEN. Place switch to PTS when FI-51-1R603A indicates around 8000 to 8500 gpm.	
*15. MAINTAIN flow indicated on FI-51-*R603A(B), "RHR Loop Flow" between 8000 to 8500 gpm.	FI-51-1R603A indicates between 8000 to 8500 gpm. HV-51-1F024A throttled to achieve flow rate.	
16. IF greater than 8500 gpm required to maximize cooling, THEN MINIMIZE amount of time to reduce amount of water added to Suppression Pool. (CUE: If asked say, "I do not desire suppression pool cooling to be maximized.")	N/A	N/A
*17. CLOSE HV-C-51-*F048A(B), HEAT EXCH BYPASS.	Close HV-C-51-1F048A HEAT EXCH BYPASS, by momentarily placing switch to CLOSE. Green light on, red off.	
18. MONITOR Suppression Pool temperature on SPOTMOS OR TR-56-*R605 points 15, 16, 17, 18 at *OC614, AND PERFORM the following:	Suppression Pool temperature on SPOTMOS or TR-56-1R605 indicates less than 90°F	

STEP	STANDARD	SAT/UNSAT
18a. MAINTAIN temperature below 90°F.	N/A	N/A
18b. IF Suppression Pool temperature cannot be maintained below 90°F THEN PLACE another RHR loop in service to provide additional cooling as directed by SSV.	N/A	N/A
19. IF *A(B) P202, "RHR Pump", trips AND HV-51-*F024A(B) RHR Pump Full Flow Test Return" (SUPP POOL CLG), is open THEN GO TO Step 4.3	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

NO.: 2376 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 233000K1.02 TAXONOMY NO.:
LESSON PLANS: LOT0370.05

CATEGORY: NRC
SYSTEMS: RHR FPCCU

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 5. The 1B loop of RHR is being placed in the "Fuel Pool Cooling Assist Mode".

What changes must be made to the 1B RHR Pump protective features to allow pump operation in this mode?

ANSWER :

The pump "loss of suction path trip" must be disabled to allow the pump to run with HV51-1F004, HV51-1F008 and HV51-1F009 closed.

REFERENCE: S51.8.G STEP 4.1.9
E-11-1040 SHEET 7

NOTE: SEE K25 relay (pump will now run unless the F006 is shut)

NO.: 2373 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 203000K4.13 TAXONOMY NO.:
LESSON PLANS: LOT0400.04

CATEGORY: NRC
SYSTEMS: RHRSW RHR

QUESTION :

*** SRO ONLY ***

What design features of the RHRSW System prevents radioactive leakage to the environment?

ANSWER :

- * heat exchangers will isolate on heat exchanger outlet high radiation
- * pumps will trip on return loop high radiation

REFERENCE: LOT0400.04 PP 14,20

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: TRANSFER HOUSE LOADS TO THE UNIT AUXILIARY TRANSFORMER

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to any power IC.
2. Transfer 11 & 12 busses to offsite.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.6/3.7 A4.04

System Number(s):

262001

References:

S91.6A Transferring House Loads to Unit Auxiliary Transformer, Rev. 8

Task Standard(s):

11 and 12 Unit Auxiliary Buses being supplied by the main Generator.

Initiating Cues:

You are directed by Shift Supervisor to transfer house loads for Unit 1 to the Unit Aux. Transformer.

Task Conditions:

11 and 12 Unit Auxiliary Buses powered from offsite sources.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S91.6.A.	Obtain most recent revision of S91.6.A. (Rev. 8)	
2. Main Generator load greater than or equal to 100 MWe.	N/A	N/A
3. Determine section to perform. Perform the appropriate section as follows: a. Perform Section 4.2 to transfer 11 Aux Bus b. Perform Section 4.3 to transfer 12 Aux Bus. c. Perform Section 4.4 to transfer 21 Aux. Bus. d. Perform Section 4.5 to transfer 22 Aux Bus.	N/A	N/A
*4. Place 225-10113/SS SYNCHRONIZATION SWITCH to "ON".	Insert Synch Switch handle and rotate clockwise to "ON".	
5. Verify incoming voltmeter <u>AND</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS are both approximately 110V.	
6. <u>IF</u> incoming/running voltages differ by greater than 8 volts, <u>THEN</u> adjust startup bus voltage to obtain less than 8 volts difference.	VI-UAS and V/R-UAS voltages are within 8 volts of each other.	
*7. CLOSE <u>and</u> HOLD 252-10113/CS, "AUX FEED"	Take 252-10113/CS and rotate to counterclockwise "STOP" position and hold.	

STEP	STANDARD	SAT/UNSAT
*8. When 252-10113/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10113C/CS.	252-10113C released when Aux. Feed indicates closed. Red light lit, green light out.	
9. Verify 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" OPEN	10/11 and 20/11 feed open. Indicating lights show red light off, green light on.	
10. Acknowledge Alarm 175 GEN 1 F1	Depress alarm acknowledge pushbutton.	
*11. Place 225-10113/SS Synchronization Switch to "OFF".	Rotate Synch Switch handle to counter-clockwise "OFF" position and release.	
12. Ensure 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" in "NORMAL AFTER TRIP"	Rotate 252-10102/CS and 252-10106/CS to counter-clockwise and release. Green flag is indicated.	
13. Reset Alarm 125 GEN 1 F-1	Reset Pushbutton depressed.	
14. Place 243-101/CS, "FAST TRANSFER SELECT" TO "10-11"	243-101/CS in "10-11" position.	
*15. Place 225-10213/SS synchronization switch to "ON".	Insert synch switch handle and turn clockwise to "ON" position then release.	
16. Verify incoming voltmeter <u>and</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS voltages are both approximately 110V.	
17. If incoming/running voltages differ by greater than 8 volts, <u>then</u> adjust startup bus voltage to obtain less than 8 volts difference.	V/I-UAS and V/R-UAS voltages are within 8 volts of each other.	
*18. Close <u>and</u> hold 252-10213/CS, "AUX FEED".	Rotate 252-10213/CS clockwise and hold it.	
*19. <u>WHEN</u> 252-10213/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10213/CS.	252-10213/CS released when AUX. FEED Closed.	
20. Acknowledge alarm 125 GEN 1 F-24.	Depress alarm acknowledge pushbutton.	

STEP	STANDARD	SAT/UNSAT
21. Verify 252-10202/CS, "10/12 FEED" <u>and</u> 252-10206/CS, "20/12 FEED" open.	10/12 and 20/12 feed open. Indicating lights show red lights off, green lights lit.	
22. Place 225-10213/SS Synchronization Switch to "Off".	Rotate 225-10213/SS handle counter-clockwise to "OFF" position and release.	
23. Ensure 252-10202/CS, "10/12 FEED" <u>and</u> 252-10206/CS, "20/12 FEED" in "NORMAL AFTER TRIP".	Rotate 252-10202/CS and 252-10206/CS counter-clockwise and release. Green flag is indicated.	
24. Place 243-102/CS, "FAST TRANSFER SELECT" to "20-12"	242-102/CS in "20-12" position.	
25. Reset alarms	Alarm reset pushbutton depressed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to transfer house loads for Unit 1 to the Unit Aux Transformer.

Task Condition(s):

11 and 12 Unit Auxiliary Buses powered from offsite sources.

NO.: 2334 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 262001KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0650.04

CATEGORY: NRC NR1
SYSTEMS: 480V 480VAC

QUESTION :

*** SRO ONLY ***

Describe the interlocks between a Load Center Breaker and the Load Center Cross-tie Breaker.

ANSWER :

If both supply breakers are closed, the tie breaker will not close.
If one supply and the tie breaker are closed, closing the second supply breaker will trip the tie breaker.

REFERENCES: E-157, E-158
LOT- 0650 page 13

Q290025

NO.: 2335 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 245000K6.05 TAXONOMY NO.:
LESSON PLANS: LOT0630.02

CATEGORY: NRC NR1
SYSTEMS: SCW

QUESTION :

*** SRO ONLY ***

What are the effects of both Stator Cooling Water pumps tripping during plant startup at 40% power?

ANSWER :

Stator Cooling Water Runback will be initiated.
Turbine load will be reduced to 22%.
Bypass valves will open to maintain pressure at 920#.

REFERENCES: ON-114
LOT-0630 page 16

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: POWER REDUCTION USING RMSI WITH AN APRM FAILURE AND TWO RODS SCRAMMING
(ALTERNATE PATH)

Task Performed by: _____ (RQ/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Reset the simulator to IC-17

During the powerreduction, time in the following malfunctions. These malfunctions must all come in simultaneously.

1. Malfunction 20, A at 125% APRM Failure
2. Malfunction 16, F Control Rod 06-35 Scrams
3. Malfunction 17, F Control rod 30-31 Scrams

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.8/3.8 A4.04
3.7/3.8 A1.01
3.5/3.6 A2.04

System Number:

202002
201003
201003

General References:

1. RE-201, Reactor Maneuvering Shutdown Instructions
2. ON-104, Control Rods Problems

Task Standards:

Reduce power per the Reactor Maneuvering Shutdown Instructions, recognize that two rods scrambled, and place the reactor mode switch in shutdown.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain RE-201	RMSI Notebook obtained.	
2. Review cautions on page 2	N/A	N/A
*3. Reduce core flow as required to reduce power to 90%. Ensure FLLP does not exceed 1.0 or Core Flow below 55 MLB/hr.	By depressing the CLOSE pushbutton on each Recirculation Pump M/A Station, reduce power to 90%.	
4. If Core Flow is less than 55 MLB/hr then fully insert the rods in the following core maps checked "Rods Required for Stability Rod Line." Otherwise fully insert rods as needed to reduce power and maintain a symmetric rod pattern.	N/A	N/A
*5. Select control rod 14-23	Control rod 14-23 select light lit	

STEP	STANDARD	SAT/UNSAT
*6. Fully insert control rod 14-23 NOTE: Insert malfunctions to occur in one minute	Control rod 14-23 at position 00.	
*7. Select control rod 46-23	Control rod 46-23 select light lit	
*8. Fully insert control rod 46-23	Control rod 46-23 at position 00	
NOTE: INSERT MALFUNCTIONS		
9. Acknowledge annunciators and determine 2 control rods have scrambled (Cue: If SSV informed 2 rods have scrambled say "I want you to handle the situation") NOTE: Step 10 may be marked N/A if mode switch placed to SHUTDOWN and ON-104 not referenced	Annunciators acknowledged	
10. Enter ON-104, Control Rod Problems	ON-104 entered	
*11. Place Reactor Mode Switch to SHUTDOWN (Cue: "You can stop here, we have met the termination criteria for the JPM")	Reactor Mode Switch in SHUTDOWN position	

Comments:

JPM Overall Rating: _____
SAT/UNSAT

Note: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

NO.: 2267 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 214000A2.02 TAXONOMY NO.:
LESSON PLANS: LOT0060.05

CATEGORY: NRC NR1
SYSTEMS: CRDM

QUESTION :

*** SRO ONLY ***

A reactor scram has occurred on Unit 1. Power has been lost to the Full Core Display and the Process Computer and ERFDS are not available. What additional methods are available for determining whether all control rods are fully inserted?

ANSWER :

1. Four rod display indicates 00 for selected control rods
2. Rod Drive Control Cabinet in Aux Equip Room indication LED labeled RODS NOT FULL IN is not lit.

Reference: LOT-0060, pp.10
GP-11, Appendix I, Section 3.0

Q310004

NO.: 2304 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 212000K1.10 TAXONOMY NO.:
LESSON PLANS: LOT0300.03
:
CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

*** SRO ONLY ***

Describe the Main Turbine related automatic scram signals. Include setpoints, bypasses and logic arrangements in your description.

ANSWER :

1. Turbine Scop Valve Closure - turbine stop valves $\leq$ 5% closed; 3 out of 4 logic; auto bypassed if turbine first stage pressure is $\leq$ 30%
2. Turbine Control Valve Fast Closure - as sensed by RETS Fluid pressure $\geq$ 500 psig; 1 out of 2 twice logic; auto bypassed if turbine first stage pressure is $\leq$ 30%

References: LOT-0300 pages 9 and 10
Q320004
Tech Spec Bases LSSS

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Scram Reset (Alternate Path)

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Transfer house loads
Place Reactor Mode Switch in "Shutdown"
Trip Main Turbine
Line up for startup level control
Insert malfunction 028,,B on page RP
Place simulator in freeze when level is above 12.5"

Evaluation Method (Circle One):

☐ Perform

☒ Simulate

Evaluation Location:

☐ Plant

☒ Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.8/3.8 A4.14

System Number:

212000

General References:

1. GP-11, Rev. 11
2. T-99, Rev. 7

Task Standards:

Recognize failure to scram reset and initiate reactor scram manually.

Initiating Cues:

You are directed by Shift Supervisor to perform a Unit 1 Scram reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of GP-11.	GP-11, Rev. 11 obtained.	
2. All half scram <u>AND</u> full scram signals cleared.	No unbypassed scram signal as indicated by Reactor 107, 108	
3. Reactor Mode Switch in shutdown or refuel.	Reactor Mode Switch in shutdown or refuel.	
4. <u>If</u> fuel damage is suspected, <u>THEN</u> request Health Physics to survey scram discharge volume prior to releasing fluid inventory (Ref. 4.8)	N/A	N/A
*5. Place Scram Discharge Volume High Level Bypass keylock switch on *OC603 to BYPASS.	SDV High Level Bypass Switch in Bypass position.	
6. Verify SCRAM DISC VOLUME HI LEVEL SCRAM BYPASSED alarm on *07 REACTOR (C-2).	SDV HI LEVEL SCRAM BYPASSED 107 REACTOR (C-2) illuminated.	
7. Ensure RPIS INOPERATIVE clear on *08 REACTOR (E-5).	RPIS INOPERATIVE 108 Reactor (E-5) not lit.	
8. <u>IF</u> RDOS INOPERATIVE alarm lit on *08 REACTOR (E-4), <u>THEN</u> reset RDOS per S73.0.F.	N/A	N/A
9. <u>IF</u> CRD Full Core Display <u>OR</u> Process Computer indicates <u>not</u> all control rods are fully inserted, <u>THEN</u> perform GP-11 Appendix I using Attachment I.	All rods full in.	

STEP	STANDARD	SAT/UNSAT
10. Reset Alternate Rod Insertion at *OC603: Depress ARI RESET pushbuttons (1A, 1B, 2A, 2B)	ARI Reset pushbuttons 1A, 1B, 2A, 2B depressed.	
*11. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*12. Verify the eight (8) scram group white lights are on for Scram System A <u>AND</u> Scram System B on *OC603.	1 light for RPS 'A' and 1 light for RPS 'B' did <u>not</u> light.	
13. <u>IF NOT</u> on after initial reset, <u>THEN</u> verify proper mode switch position <u>AND</u> repeat step 3.8 one time.	Mode switch in "shutdown".	N/A
*14. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*15. <u>IF NOT</u> on after second reset attempt, <u>THEN</u> insert a full scram signal via manual scram pushbuttons.	Channel CHA1 or CHA2, and CHB1 or CHB2 manual scram collars turned and pushbuttons depressed.	
16. Verify scram discharge volume vent/drain valves close	Vent: Inboard (XV47-1F010), Outboard (XV47-1F180), GREEN light ON, RED light OFF Drain: Inboard (XV47-1F011), Outboard (XV47-1F181), GREEN light ON, RED light OFF	

STEP	STANDARD	SAT/UNSAT
17. Enter T-100 <u>AND</u> exit this procedure. CUE: This task is terminated when the trainee determines that the procedure can not be accomplished and the SSV is informed. Then say, "You can stop here, you have met the termination criteria for this JPM".		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Shift Supervision directs you to perform a Unit 1 Scram Reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

NO.: 2306 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
 DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
 TASK NUMBER: SKA NO.: 212000KA.11 TAXONOMY NO.:
 LESSON PLANS: LOT0300.14
 :
 CATEGORY: NRC NR1
 SYSTEMS: RPS TS

QUESTION :

*** SRO ONLY ***

Unit 2 is at 8% power and all procedural requirements for placing the Reactor Mode Switch to RUN have been satisfied. The RO attempts to place the Reactor Mode Switch from STARTUP to RUN, but the switch will not move to the RUN position. All subsequent attempts to move the Reactor Mode Switch to RUN have failed. What actions will you take?

ANSWER :

Place one RPS trip system in the tripped condition within one hour and be in at least HOT SHUTDOWN within the next 12 hours.

REFERENCES: T.S. 3.3.1

NO.: 2307 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 263000K3.03 TAXONOMY NO.:
LESSON PLANS: LOT0690.02

CATEGORY: NR1 NRC
SYSTEMS: RPS DC

QUESTION :

*** SRO ONLY ***

What effect will a loss of Division II DC have on the RPS inverters?

ANSWER :

The normal supply to the 1B RPS UPS Static Inverter will be lost and it will automatically transfer to its primary alternate supply the TSC Inverter.

REFERENCES: LOT-0690 page 10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Response to SGTS Filter High Temperature

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.7/3.5 Generic #13

System Number(s):

26100

References:

S76.7.B "SGTS CHARCOAL FILTER HIGH TEMPERATURE RESPONSE"
ARCs 002 H4, H5 (B SGTS FILTER HI AND HI-HI TEMP)

Task Standard(s):

Affected filter isolated
Fire suppression initiated to affected filter
Fire suppression secured when fire is out

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "OB" SGTS filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTS Filters are in service. Annunciators 002 H4 and H5 have alarmed.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Refer to ARC H-4 and H-5 on 002 Vent.	Reference ARC for H-4 and H-5 on 002 Vent.	
2. Verify high temperature using TI-76-010B on 00C681. (Cue: Temperature 565°F and increasing.)	Locate TI-76-010B and determine temperature, greater than alarm setpoints.	
*3. Refer to S76.7.B "SGTS FILTER HIGH TEMP RESPONSE."	Procedure located using ARC or other means, and copy obtained of S76.7.B, Rev. 9.	
4. Immediately notify SSVN and HP of SGTS Filter Status.	Inform SSVN and HP that a possible fire exists in "B" SGTS filter and extinguishing must be initiated.	
5. Place HS-76-013A(B) unaffected SGTS Filter Isolation at 00C681 in OPEN to ensure filter flowpath. (Cue: HS-76-013A is in OPEN.)	N/A	N/A
*6. Place affected HS-76-013A(B) SGTS Filter Isolation to CLOSE to isolate affected SGTS filter train. (Cue: HS-76-013B is in CLOSE.)	Place HS-76-013B in CLOSE.	

STEP	STANDARD	SAT/UNSAT
7. Ensure HV-76-012A(B) filter outlet, and HV-76-011A(B) filter inlet, for affected SGTS train CLOSED. (Cue: Red lamps out, green lamps lit.)	HV-76-012B and HV-76-011B closed by position indication on OOC681. Red lamps out, green lamps lit.	
8. Monitor affected SGTS charcoal temp on TI-76-010A(B), at OOC681. (Cue: Use pen to indicate 575°F and slowly rising.)	Monitor TI-76-010B on OOC681.	
9. If temperature approaches 550°F, then go to section 4.3.	Proceed to section 4.3 to initiate deluge.	
10. Ensure unaffected HS-76-013A(B) SGTS filter train at OOC681 in OPEN. (Cue: HS-76-013A is in OPEN.)	N/A	N/A
11. Ensure affected HS-76-013A(B) in CLOSE to ensure filter train isolation. (Cue: HS-76-013B is in CLOSE.)	N/A	N/A
12a. When fire conditions are verified..... (Cue: Use pen to indicate 620°F and rising TI-76-010B.)	N/A NOTE-Precautions in procedure state that filter temperature above 550°F indicates ignition temperatures (600°F) being approached, and extinguishing <u>must</u> be initiated.	

STEP	STANDARD	SAT/UNSAT
12b. then obtain CRS permission (to continue) and (Cue: "This is the CRS. Initiate fire suppression to the "OB" SGTS filter".)	Communicate with CRS. Obtain permission to initiate fire suppression into charcoal bed.	
12c.Health Physics assistance for the following: (Cue: HP is standing by.)	Communicate with HP to have a HP tech in attendance.	
*13. Open 22-0129 SGTS Filter Spray Head Block Valve (625-A8-332). (Cue: Valve is unlocked. Handle is rotated such that it is aligned with the pipe.)	Obtain frangible lock key and unlock valve, or omit key and break lock. Fully open valve by rotating handwheel counter clockwise.	
14a. If OBF169 SGTS charcoal filter is affected.... (Cue: None)	N/A	N/A
*14b.then manually open 22-0113 Deluge Water Valve (624-A8-332). (Cue: Handwheel is fully counter clockwise) ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. "B" SGTS filter temperature is 200°F and dropping." ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. B SGTS filter temperature is less than 200°F." "From the Shift Supervisor; secure fire suppression to "B" SGTS filter."	Unlock valve or break lock. Fully open valve by rotating handwheel counter clockwise.	

STEP	STANDARD	SAT/UNSAT
15. When fire or threat of fire has ceased, or LSH-76-013A(B) at O*C588 SGTS plenum is full, as indicated by WATER LEVEL HIGH RED LIGHT ON, then close the following valves to prevent plenum pressurization:	N/A NOTE-0A(B)C588 are located on the wall just outside the double doors for the SGTS filter rooms. Red and green lamps are at the bottom of panels.	N/A
*15a. 22-0129 (Cue: Handle is rotated such that it is perpendicular to the pipe.)	Close valve 22-0129. Note: Critical step only if 22-0113 is left open in step 15c.	
15b. <u>0AF169 ONLY</u> 22-0112	N/A	N/A
*15c. <u>0BF169 ONLY</u> 22-0113 (Cue: Handwheel fully clockwise.)	Close valve 22-0113. Note: Critical step only if 22-0129 was left open from step 15a.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "OB" SGTS filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTS Filters are in service. Annunciators 002 H4 and H5 have alarmed.

NO.: 2265 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0733.09
:
CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 1. Unit 2 is in OPCON 5 *. The Unit 2 cooling tower is going to be drained on your shift and is expected to remain drained for two weeks.

What effect will this action have on the fire suppression system and what actions must be taken?

ANSWER :

One of the two required sources of fire water will be inoperable. Place the backup diesel driven fire pump in service per S22.1.H within 7 days.

Reference: T.S. 3.7.6.1
S22.1.H
LOT-0733 pp. 27

Q330228

NO.: 2266 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 286000A4.05 TAXONOMY NO.:
LESSON PLANS: LOT0733.05

CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

What will cause the Motor Driven and Diesel Driven fire pumps to start?

ANSWER :

Motor Driven Fire Pump automatically starts on firemain pressure 100 psig decreasing or manual start from control room or local controller.

Diesel Driven Fire Pump automatically starts on firemain pressure 95 psig decreasing or manual start from control room or local controller.

REFERENCE: ARC 005 FIRE A2, B3
LOT-0733 PP. 9, 10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Open RCIC Inboard Isolation MOV Using Emergency AC Power

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle One):

Perform

☒ Simulate

Evaluation Location:

☒ Plant

Simulator

Approximate Completion Time:

20 Minutes

Importance Rating:

3.9/3.5

Generic 9

System Number:

217000

General References:

SE-8-1, Section 2.3.9

Task Standards:

HV-49-*F007 opened using DIV 1 power.

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain SE-8-1	SE-8-1 Rev. 2 obtained.	
2. Open breaker D*34-R-E-13 (Cue: Breaker handle is OPEN)	D*34-R-E-13 OPEN	
3. NOTE: A screwdriver and LV-*00 key are required for the next step.	Screwdriver and LV-*00 key obtained.	
*4. Unlock and open terminal box *OTB49-*F007. (402-R15-253/475-R14-253) (Located next to D*34-R-E)	*OTB49-*F007 unlocked and opened.	
*5. Place 43-CB22313 "Manual Transfer Switch" (located in terminal box *OTB49-*F007) in "EMERGENCY". (Cue: Transfer switch is in EMERGENCY).	Transfer switch 43-CB22313 placed in EMERGENCY.	
*6. Unlock and close breaker D*14-R-C-31 (Cue: Breaker is unlocked. Breaker handle is in CLOSE.)	D*14-R-C-31 unlocked and closed.	

STEP	STANDARD	SAT/UNSAT
7. Place HS-49-*07-2, "RCIC Main Steam Supply Inbrd PCIV" (INBOARD) to "OPEN" at *0C201 (Cue: "This is the Reactor Operator, HS-49-*07-2 has been placed to OPEN.	Direct RO at *0C201 to place HS-49-*07-2 to OPEN.	
8. Ensure (INBOARD) HV-49-*F007 OPENS. (Cue: "This is the Reactor Operator, HV-49-*F007 indicates fully OPEN.")	Communicate with RO to verify HV-49-*F007 OPENS fully.	
9. Lock OPEN breaker D*14-R-C-31. (Cue: Breaker handle is in OPEN, breaker is LOCKED.)	Open D*14-R-C-31 lock breaker OPEN.	
10. Return 43-CB22313 "Manual Transfer Switch" to "NORMAL". (Cue: Transfer Switch is in "NORMAL")	Transfer switch 43-CB22313 placed to NORMAL	
11. (Cue: You have met the termination criteria. You may stop here.)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Insat

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

NO.: 2297 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K5.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.09

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What trip signals will result in a closure of the RCIC Turbine
Trip and Throttle Valve?

ANSWER :

- 1) Manual PushButtons (Local and MCR)
- 2) High Turbine Exhaust Pressure
- 3) RCIC Pump Low suction pressure
- 4) RCIC Isolation
- 5) Overspeed

References: LOT-0380 page 14
E51-1040, E1 through D33
Q370227

NO.: 2298 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K4.04 TAXONOMY NO.
LESSON PLANS: LOT0380.13

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What is the minimum speed at which the RCIC Turbine may be run and why is this limit imposed?

ANSWER :

Operation below 2200 RPM is prohibited. Operation at low speed may cause insufficient lube oil flow to bearings and subsequent damage.

REFERENCES: LOT-0380 page 21
S49.1.D section 3.1
Q380227

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Diesel Driven Fire Pump Manual Start per T-244

Operator: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s):

3.2/3.3

K/A A2.08

System Number(s):

286000

References:

1. T-244, Rev.7, Alternate Injection from the Fire System

Task Standard(s):

Diesel drive Fire Pump started locally.

Initiating Cues:

You are directed by Shift Supervision to perform a manual start of the Diesel Driven Fire Pump using T-244.

Task Condition(s):

1. Unit 2 reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. The motor driven Fire Pump is not available.
4. The Diesel Driven Fire Pump did not start from the Main Control Room.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of Unit 2, T-244.	Unit 2 T-244 obtained.	
2. If starting OOP511, "Diesel Driven Fire Pump", THEN DEPRESS HS-22-026-1 at OOC650 (Main Control Room) AND VERIFY pump is running.	N/A	N/A
2a. If OOP511, "Diesel Driven Fire Pump", fails to start, THEN PLACE control switch at OOC519 (Diesel Fire Pump Room) in "MANUAL A"... (Cue: Switch is in "Manual A".)	Control switch in "Manual A"	
2b. AND HOLD HS-22-026-2 in "START" at OOC519 until diesel starts. (Cue: Switch is in "START" position, the engine is not cranking.)	HS-22-026-2 in "START" position.	
*2c. If diesel fails to crank in step 4.3.2.1, THEN PLACE control switch in "MANUAL B" at OOC519... (Cue: Switch is in "MANUAL B".)	Control switch in "MANUAL B".	

STEP	STANDARD	SAT/UNSAT
*2d. AND HOLD HS-22-026-2 in "START" at 00C519 until diesel starts. (Cue: Switch is in "START" position, engine cranks, fires and is running.)	HS-22-026-2 in "START" position until engine starts.	
2e. VERIFY 00P511, "Diesel Driven Fire Pump" starts. (Cue: Engine is running.)	Diesel Driven Fire Pump is running.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to perform a manual start of the Diesel Driven Fire Pump using T-244.

Task Condition(s):

1. Unit 2 reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. The motor driven Fire Pump is not available.
4. The Diesel Driven Fire Pump did ~~not~~ start from the Main Control Room.

NO.: 2233 REV.: 4 TYPE: ES ENTERED BY: WMT DATE ENTERED: 11/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.06 TAXONOMY NO.:
LESSON PLANS: LOT0733.09

CATEGORY: NRC
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

The Motor Driven Fire Pump is inoperable and the Diesel Driven Fire Pump cannot be started automatically or manually.

What sprinkler systems must be declared inoperable?

ANSWER :

WP-75 Cable Spread Rm Units 1 and 2 (Fire Zone 22 and 23)

PR-65 Rx Unit 1 El. 201 area 11 (fire Zone 42A)

PR-98 Rx Unit 2 El. 283 area 13 (Fire Zone 70A)

REFERENCE: S22.1.H

NO.: 2234 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/19/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.07

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

During Core Alterations the LSRO reports that while raising an irradiated fuel bundle from the core the "NORMAL UP" limit switch failed to stop upward motion of the main hoist. What, if any, actions are required?

ANSWER :

1. stop Core Alterations, the Refuel Bridge is INOPERABLE per LCO 3/4.9.6.
2. place bundle in a safe condition

REFERENCES: ST-6-107-630-*
S97.0.C
TECH SPEC surveillance requirement 4.9.6.1.d

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO #1

Rev. 1

ATTACHMENTS 3 AND 4

ADMINISTERED RO/SRO EXAMINATION AND ANSWER KEYS

Simulation Facility: Limerick Unit 1

Scenario No.: 1

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The unit is at 100% power (IC-17). The 114B Load Center is cross-tied and being powered from the 124B LC in accordance with S93.7.A.

Turnover: The unit is at 100% power, MOL. The work on 114B LC transformer is complete and the crew is requested to restore the normal 11 Aux. Bus feed (124B) to the 114B load center.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew is expected to transfer the 114B load center to the 11 Aux. Bus.
2	271,A	C	114B Reactor Area Load Center Fault
3	1544	R	Cry wolf annunciator UNIT ONE ISOPHASE BUS COOLER TROUBLE ALARM (118SERVICES)
4	450	I	HPCI Inadvertent Startup
	449	C	HPCI Turbine Trip
5	020,B 125%	I	B APRM Fails to 125%
6	262,A	M	13.2 KV Unit Auxiliary Bus 11 Fault
	078,B	M	"B" Condensate Pump Trip
	457,B	I	RCIC Flow Controller Failure (R600) (Low)
	458	C	RCIC Turbine Trip
	146,B 146,C	C	"K" SRV Opens (electrical failure) and Sticks Open

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Event Description: As soon as actions are complete for the half scram, the 11 Aux Bus will deenergize coincident with a "B" Condensate Pump trip. The "K" SRV will electrically open and stick open when the reactor scrams trips resulting in inventory loss. Attempts by the crew to close the SRV will be ineffective. Condensate and feedwater will not be available, a RCIC flow control failure will occur when it gets an initiation and when the PRO starts to inject with RCIC in the manual mode, RCIC will trip and not be recovered. A HPCI trip signal will prevent use of HPCI for vessel makeup requiring the crew to emergency depressurize when level reaches the TAF.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognize and report loss of condensate and feedwater.
	CRS	Enter T-101 and direct actions as required.
	PRO	Take manual control of RCIC flow controller and attempt to inject, recognize RCIC trip and report failure of RCIC to the CRS.
	PRO	Recognize "K" SRV stuck open and report to CRS.
	CRS	Enter and execute OT-114 for stuck open SRV.
	CRS	Dispatch an EO to pull fuses to the "K" SRV per OT-114. Direct the PRO to place two loops of pool cooling in service.
	CRS	Dispatch personnel to investigate the 11 Aux. Bus and "B" Condensate pump.
	CRS	Direct PRO to cross-tie the 480 VAC load centers except for the 114B.
	PRO	Place two loops of pool cooling in service and cross-tie the 480 VAC load centers per S93.7.A.
	RO	Monitor RPV level and pressure and report values and trends to the CRS.
	CRS	Direct the performance of T-240, inject SLC for makeup and close the MSIVs to conserve inventory.
	RO	When directed, coordinate with the EO to perform T-240 and maximize CRD to the vessel. Start SLC injection to the vessel.
	PRO	When directed, close the MSIVs.
	CRS	Enter and execute T-111. Direct the PRO to inhibit Automatic ADS.
	PRO	When directed, place ADS Inhibit switches to INHIBIT.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
		NOTE: When directed the simulator operator will locally open the discharge to the "B" CRD pump and provide a local CRD discharge pressure of 1100 gpm when asked for T-240. The simulator operator will also pull fuses for the "K" SRV which will extinguish the white solenoid light at the panel but the valve will remain open.
	CRS	Direct actions appropriate for the LOCA signal. Direct the RO to perform SE-10 and to restart injection systems. The PRO should be directed to check ECCS systems.
	RO	When the LOCA signal occurs, perform SE-10 actions, restore instrument bus power, and dispatch an operator to reset shunt trips.
	RO	When the LOCA signal occurs, restart the CRD pumps and SLC pumps which tripped due to load shed.
	PRO	Check status of all low pressure ECCS after the LOCA signal and report status to the CRS.
	CRS	Enter T-102 at 95°F in the pool and direct the PRO to bypass and restore H ₂ O ₂ analyzers and restore them to service. When 135°F is exceeded in the drywell, direct the PRO to bypass and restore DWCW.
	PRO	When directed bypass and restore H ₂ O ₂ analyzers to service and restore DWCW.
	PRO	Restore RHRSW pumps to operation after the LOCA signal.
	PRO	Report drywell parameters for T-102 when asked.
	PRO	Monitor RPV level on FZ indicator when wide range is no longer accurate.
	CRS	Direct the RO to break main condenser vacuum <u>OR</u> supply steam seals with auxiliary boiler steam.
	RO	When directed, break condenser vacuum or align auxiliary boiler steam to steam seals.
	CRS	Prior to reaching the TAF, direct all LP ECCS aligned for injection.
	PRO	Remove pool cooling from service and align all LP ECCS for injection.

Event No.: 6 continued

Event Description: See page one of event.

[illegible]

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO #2

Rev. 1

Simulation Facility: Limerick Unit 1

Scenario No.: 2

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The unit is at 100% power (IC-17). Drywell pressure is 0.1 psig.

Turnover: The unit is at 100% power, MOL. Drywell pressure is 0.1 psig due to normal leakage. The crew is expected to add nitrogen to the drywell per S57.3.B, Primary Containment Pressure Control and Nitrogen Makeup. The nitrogen skid is aligned for low flow service.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew will align nitrogen makeup to the drywell.
2	016,A	C	Control Rod 30-27 Drifts in
3	96	R	Thermal limit (CMFCP) indicates > 1, the crew is expected to reduce power to 80%.
4	072,A	I	SJAE Steam Supply Valve PCV07-101A fails closed
5	410,A	C	PCIG Isolation to Drywell Fails Closed (HV59-129A)
6	413	M	Control Rods Fail To Scram (Brown's Ferry Event)
	197	M	Standby Liquid Control Squib Valves Fail to Fire
	104A	C	Turbine Control System Fails High
	099	C	Trip of Stator Cooling Pump A and B
	108, 20%	C	EHC Bypass valves fail to 20% open.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of ____

[illegible]

Page 1 of 1

[illegible]

Event Description: When the crew calls up a P-1 edit, thermal limit CMFCP will indicate a value of 1.08. The crew is expected to reduce power to 80% as a result. When power is reduced to 80%, the P-1 will indicate CMFCP = .95.

[illegible]

Page 1 of _____

[illegible]

Event Description: When actions are complete for the failure of the SJAE steam supply, the PCIG Isolation to the drywell valve HV59-129A fails closed. The 129A valve will not be able to be reopened.

[illegible]

Event Description: When actions for the inadvertent closure of HV59-129A are complete, a loss of Stator Water Cooling will occur and the Main Turbine load set will fail to runback. The mode switch will be placed to shutdown when the second recirc pump trips but the control rods do not fully insert (due to blockage in the SDV drain lines) and Standby Liquid Control System squib valves fail to fire. When conditions stabilize and the bypass valves are controlling pressure, the bypass valves fail to a 20% open position requiring the crew to use SRVs for pressure control. Suppression pool heat up will occur and level/power control will be required.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognize trip of A and B Recirc pumps and announce to crew.
	RO	When second recirc pump is tripped, place reactor mode switch to shutdown and report failure to scram.
	CRS	Recognize ATWS condition and enter and direct actions per T-101.
	PRO	When the turbine trips, stabilize pressure between 950 and 1037 psig using SRV's as required.
	RO	Stabilize and maintain reactor level greater than -129" (group 1 isolation setpoint) using feed pumps.
	CRS	Enter and direct actions per T-117.
	RO	Recognize failure of SLC injection valves to fire and report to CRS.
	CRS	Direct T-217 to insert rods.
	RO	Coordinate performance of T-217.
	CRS	Direct PRO to inhibit automatic ADS operation.
	PRO	Place ADS Inhibit switched to INHIBIT.
	CRS	Direct isolation of HPCI until T-251 can be performed.
	PRO	When directed, isolate HPCI by depressing isolation push button.
	CRS	Direct alternate SLC injection method (T-209 or T-212).
	CRS	When suppression pool temperature exceeds 95°F, enter T-102 and direct appropriate actions.
	CRS	Direct PRO to place two loops of pool cooling in service.
	PRO	When RPV pressure is stable, place two loops of suppression pool cooling in service.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize failure of EHC to control pressure and report to CRS.
	CRS	Dispatch personnel to perform T-221 and T-251. NOTE: Simulator operator will perform T-221/251 as directed.
	RO	Bypass RWM if required and drive rods. Monitor power and level and continue to update CRS with changing parameters.
	PRO	Monitor drywell parameters and continue to update CRS with changes, particularly suppression pool temperature.
	CRS	When drywell temperature exceeds 135°F, direct PRO to bypass and restore DWCW.
	CRS	If H ₂ O ₂ analyzers isolate on low level, direct PRO to bypass and restore them to operation.
	PRO	When directed, bypass and restore H ₂ O ₂ analyzers and DWCW.
	PRO	Report suppression pool temperature of 110°F to the CRS.
	CRS	Direct the RO/PRO to terminate and prevent injection per T-270. Dispatch personnel to perform T-270 in the Auxiliary Equipment Room. NOTE: Simulator operator will perform T-270 as directed.
	RO	Terminate and prevent feedwater/condensate injection per T-270.
	PRO	Terminate and prevent ECCS and RCIC injection per T-270.
	PRO	Monitor RPV level on FZ indication and provide level reports to the CRS.
	CRS	Direct actions for the LOCA signal as appropriate.

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO #3

Rev. 1

Simulation Facility: Limerick Unit 1

Scenario No.: 3

Examiner: _____
 Examiner: _____
 Examiner: _____

Applicant: _____
 Applicant: _____
 Applicant: _____

Initial Conditions: The unit is at 88% power (IC-17 modified). Suppression pool level is 24 feet.

Turnover: The unit is at 88% power; a rod exchange has just been completed. Suppression pool level is 24 feet due to valve testing on the previous shift which caused the condensate transfer system to put water in the pool. Planned evolutions for the shift are to increase power using recirculation flow to 100% per GP-5 and to reduce suppression pool level to 23 feet.

Event No.	Malf. No.	Event Type*	Event Description
1		R	The crew is expected to raise reactor power to 100% using recirculation flow.
2		N	The PRO should line up and reduce suppression pool level using S51.8.A.
3	493,A	C	RHRSW Heat Exchanger Inlet Valve F014A fails open.
	115RC	I	1A RHRSW Heat Exchanger outlet radiation monitor fails upscale
4	451,A	I	HPCI Outboard Steam Isolation Valve (1F003) inadvertent isolation
5	547	C	CRD Pump trips on clogged suction filter
6	463	C	Failure of the Plant Process Computer
7	016,D	M	Rod 26-35 sticks full out
	017,D	M	Rod 30-35 sticks full out
	018,D	M	Rod 34-51 sticks full out
	067	M	Steam leak in the drywell, starts at 50 GPM, at 1.68 psig the leak will increase to 100 GPM. 10 minutes after the shutdown, the leak will take a step increase to 3500 gpm.
	066	M	Steam Line Rupture in the Drywell
	236F	M	All reference legs flash

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of 1

[illegible]

Page 1 of 1

[illegible]

Page 1 of _____

Event Description: As soon as the crew recognizes that the HPCI isolation is inadvertent, the running CRD pump trips on low suction pressure due to a clogged suction strainer.

[illegible]

Event Description: A small steam leak (50 gpm) in the drywell results in a shutdown. When the mode switch is placed to shutdown the steam leak grows to 100 gpm. Three rods are stuck in the full out position resulting in an ATWS. When 10 minutes have elapsed, the steam leak will step increase to 3500 gpm and one minute later the Main Steam Line will rupture in the drywell. At 100 psig in the vessel reference legs will flash resulting in a loss of indicated level.

Time	Position	Applicant's Actions or Behavior
	CRS	Enter OT-101 and direct actions in an attempt to isolate the leak.
	CRS	Direct rapid plant shutdown prior to 1.68 psig scram signal.
	RO/PRO	Conduct rapid plant shutdown in accordance with GP-4.
	CRS	Enter T-101 and execute accordingly.
	RO	Recognize all rods not full in and announce ATWS.
	CRS	Enter T-117 and T-102, direct actions accordingly.
	CRS	Direct PRO to Inhibit ADS.
	PRO	Place ADS INHIBIT switches to inhibit.
	PRO	Report that Recirc pumps are running without RECW cooling.
	CRS	Direct PRO to trip Recirc pumps.
	CRS	Direct RO/PRO to bypass isolations and restore DWCW and H ₂ O ₂ analyzers to service.
	RO/PRO	Bypass isolations of DWCW and H ₂ O ₂ analyzer and restore to operation.
	CRS	Direct PRO to shut down and isolate RWCW per OT-101.
	PRO	Shut down and isolate RWCW per OT-101.
	RO	Monitor RPV level and pressure. Control level with feedpumps in normal band.
	CRS	Dispatch personnel to perform T-218 for the 3 stuck rods.
	CRS	Direct PRO to spray the suppression pool.
	PRO	Spray the suppression pool per T-225. Use "B" Loop of RHRSW and "B" RHR loop.
	CRS	Direct RO to commence RPV depressurization to mitigate the affects of the leak.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
	RO	Operate the EHC Bypass Valve Jack to open bypass valves. Commence cooldown and implement cooldown ST, ST-6-107-640-1.
	RO	Line up for startup level control, closing the feed pump discharges (108A,B,C) and open the 138.
	CREW	Recognize prompt jump in DW pressure.
	CRS	When LOCA signal received, direct PRO to operate ECCS as necessary to prevent flood up of reactor.
	PRO	Secure all unnecessary ECCS, maintain level between 12.5" and +54".
	CRS	When on the safe side of the Drywell Spray Initiation Limit Curve, direct PRO to spray the drywell.
	PRO	Commence lineup to spray the drywell per T-225.
	CREW	Recognize and announce reference leg flash.
	CRS	Enter and direct actions per T-112.
	CRS	Direct crew to terminate and prevent injection to the RPV. Dispatch an operator to the AER to perform T-270.
	RO	Ensure feed pumps are tripped and discharge valves closed. Close startup level control valve.
	PRO	Secure all low pressure ECCS.
	CRS	Direct the PRO to place 5 ADS valve handswitches to open.
	PRO	Place 5 ADS handswitches to open position.
	CRS	Enter and direct actions per T-116. Dispatch personnel to perform AER steps of T-245.
		NOTE: Simulator operator will perform AER steps of T-270 and T-245 when requested. The simulator operator will NOT perform T-218 for the stuck rods.
	RO	Restart DWCW after the LOCA. Perform SE-10 actions.

Event No.: 7

Page 3 of 4

Event Description: See page one of event.

[illegible]

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO #4

Rev. 1

Simulation Facility: Limerick Unit 1

Scenario No.: 4

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The reactor is at 100% power (IC-17). Select rod 14-23 on the rod select matrix.

Turnover: The reactor is at 100% power. The crew is expected to complete the Extraction Steam Bleeder Trip Valve Exercising RT, RT-6-002-761-1.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew is expected to complete the Extraction Steam Bleeder Trip Valve Exercising RT, RT-6-002-761-1
2	011,B	I	"B" RBM Fails (inoperative)
3	115,M	I	Unit 1 Containment Leak Detector Radiation Monitor Fails Upscale
4	442,A	C	Recirculation Pump "A" RPT Breaker Trips
		R	Crew is expected to reduce power to 33% using rods
5	280,A	C	1A RPS and UPS 120 VAC Distribution Panel 1AY160 Fault
6	440,A	M	Unisolable 3% break in the recirculation loop
			NOTE: Event 2A OR 2B will be run depending on which position is in need of a manipulation. The same is true for events 3 and 4, only one should be run.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of ____

[illegible]

Page 1 of 1

[illegible]

Page 1 of ____

[illegible]

Event Description: When the initial actions are complete for the loss of 1AY160, an unisolable break (3% of a DBA LOCA) in the recirculation loop will occur.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize high drywell pressure scram and enter T-101 and direct appropriate actions to maintain level.
	RO	Use FW and Condensate to maintain level greater than TAF. Monitor RPV level and report trends to the CRS.
	CRS	Recognize HPCI and RCIC not required and direct PRO to secure them.
	PRO	Coordinate with the RO and isolate HPCI by depressing the isolation push button and trip RCIC.
	CRS	Enter and direct actions per T-102.
	CRS	Direct suppression pool sprays.
	PRO	When directed, lineup suppression pool sprays in accordance with T-225.
	CRS	Direct the PRO to bypass isolations and restore DWCW and Hydrogen analyzers to service.
	PRO	Bypass and restore DWCW and Hydrogen analyzers to service per GP-8.
	CRS	NOTE: This step only applies if event 4 was the loss of 1AY160. Direct the PRO to Un-Bypass RECW and IG isolations to allow isolation to be complete.
	PRO	Operate bypass switches such that RECW and IG isolations are complete.
	RO	Monitor and report trends in RPV pressure to the CRS.
	CRS	Direct MSIV closure to conserve inventory.
	PRO	Close MSIVs when directed.
	CRS	When on the safe side of the DW Spray Initiation Limit Curve, direct the PRO to spray the drywell per T-225.
	PRO	When directed, spray the drywell per T-225.
	RO	Recognize that condensate hotwell level is low and report to CRS that vessel make up capability is limited.

ADMINISTRATIVE TOPICS OUTLINE

Examination Level: RO Candidate's Name: _____

Facility: Limerick 1 and 2 Week of Examination: 11/13/95

Examiner's Name: _____
(Please Print)

Administrative Topic		Brief Question Description
A.1	PLANT PARAMETER VERIFICATION	Use of P-1 Data
		Shift Night Order Entry
	FUEL HANDLING	Core Alterations with INOP SRM
		Ops Manual Shutdown requirements for RO
A.2	EQUIPMENT CONTROL	Duration of TCFs
		Approvals of TCF's
A.3	RADIATION CONTROL	Meaning of "Hot Spot"
		Dose extension
A.4	EMERGENCY PLAN	EALS
		Notifications

EXAMINER: _____

CHIEF EXAMINER: _____

NO.: 2190 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.15 TAXONOMY NO.:
LESSON PLANS: LOT0741.08 RE-C-20
CATEGORY: NRC
SYSTEMS: P1

QUESTION :

*** RO ONLY ***

NOTE: GIVE THE CANDIDATE P1 #1920

The P1 you are being given printed out 30 seconds ago.

- A. what is the value for the three (3) thermal limits ?
- B. what does the parameter "RPDLIM" mean ?.
- C. how does the value for "RPDLIM" relate to any of the thermal limit values?

ANSWER :

- A. CMFCP = 0.837
CMFLPD = 1.032
CMAPR = 0.821
- B. RPDLIM is "rod power density limit"
- C. RPDLIM is the denominator in the CMFLPD formula. With RPDLIM less than the actual value of LHGR, CMFLPD will be greater than 1.0.

Note: (NOT required for answer)
the RPDLIM for the 4 most limiting bundles is most likely incorrect and Reactor Engineering support is required to correct RPDLIM values and run an OD 15
REFERENCE: RE-C-20 SECTION 5.10

NO.: 2203 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.06 TAXONOMY NO.:
LESSON PLANS: SNO S01-95-047

CATEGORY: NRC
SYSTEMS: GP

QUESTION :

*** RO ONLY ***

State the main condenser backpressure limits.

What is the effect on hotwell temperature and main generator electrical output, at 100% power, as a result of operating at higher backpressure values?

ANSWER :

1. $\geq 85\%$ power limit is 5.5" Hg
 $\geq 30\%$ power and less than 85% power, limit is 5.0" Hg
less than 30% power, limit is 4.0" Hg
2. hotwell temperatures will rise
electrical output will be reduced

REFERENCE: SHIFT NIGHT ORDER S01-95-047
GP-5

NO.: 2259 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 234000KA.05 TAXONOMY NO.:
LESSON PLANS: LOT0760.14

CATEGORY: NRC
SYSTEMS: REFUEL TS FH

QUESTION :

*** RO ONLY ***

You are the RO dedicated to core alterations while in OPCON 5 * (star). The PRO is about to perform the daily "source range signal to noise ratio determinations" on the "C" SRM. State the action (s) you should take in regards to core alterations.

ANSWER :

request the LSRO to stop core alterations in the "C" quadrant OR request the PRO not perform the "C" SRM testing.

(note; withdrawing the "C" SRM for SNR determination will make the detector INOP. SRMs are required in the quadrant where core alterations are being performed and the adjacent quadrant.)

REFERENCE: FH-105 PP 5
ST-6-107-591-* PP 24
T.S 3/4.9.2

NO.: 2192 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1574.01 OM-L-3.3
:
CATEGORY: NRC
SYSTEMS: OM

QUESTION :

*** RO ONLY ***

State three (3) general conditions when you as the Reactor Operator are required to SHUTDOWN the reactor.

ANSWER :

1. when safety of the reactor is in jeopardy
2. when RPS setpoints are exceeded and automatic shutdown does not occur
3. when there is doubt to whether a safe condition exists

REFERENCE: OM-L-3.3 SECTION 5.0

NO.: 2185 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.12 TAXONOMY NO.:
LESSON PLANS: LOT1570.06 A41.1

CATEGORY: NRC
SYSTEMS: A-41.1

QUESTION :

*** RO ONLY ***

You were given an approved Troubleshooting Control Form (TCF) on your last day of shift. Two (2) days later when you return to night shift, work is being performed under the same TCF.

What, if any, are your concerns?

ANSWER :

TCFs are ONLY valid for a nominal one (1) day period from the time of SSVs signature. Use of this TC is violating the requirements of A41.1

REFERENCE: A41.1 PP 7

NO.: 2184 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/18/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.12 TAXONOMY NO.:
LESSON PLANS: LOT1570.06 A-41.1
CATEGORY: NRC
SYSTEMS: A-41.1

QUESTION :

*** RO ONLY ***

You are provided with a Troubleshooting Control Form. Who is responsible to determine if a 10CFR50.59 review was required? What is the required qualification of that person per Tech Specs?

ANSWER :

* Work Group Supervisor

* Required qualification is Station Qualified Reviewer (SQR) per PORC 33

REFERENCE: A41.1 SECTION 7.2.10

NO.: 2186 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.03 HP-C-215
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** RO ONLY ***

A CRD pipe in Reactor Enclosure 253' has a "HOT SPOT" label attached.
What does this tell you concerning the contact radiation levels on this
pipe and the general area radiation conditions?

ANSWER :

- * contact dose reading is greater than or equal to 100 mr/hr
- * the contact reading is 5 times or more greater than the general area dose.

REFERENCE: HP-C-215 PAGE 8

NO.: 2187 REV.: 6 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.02 HP-C-106
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** RO ONLY ***

Previous Equipment Operator (EO) duties have resulted in a 1995 TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE) of 2200 mr. Supporting clearance activities in the Unit 2 drywell during a November mini-outage, you are expected to to work, over the course of several days, in an area that has a dose rate of 52 mr/hr. You have received the same dose to date as others in this work group.

How many total hours can you work in this drywell area until a dose extension will be required?

ANSWER :

- * THE FIRST DOSE EXTENSION IS REQUIRED FOR EXCEEDING 3000 MR
- * $(3000 - 2200) \text{MR} = 800 \text{ MR}$
- * $800 \text{ MR} / 52 \text{ MR/HR} = 15 \text{ HOURS}$
- * APPROXIMATELY 15 HOURS CAN BE WORKED BEFORE A DOSE EXTENSION IS REQUIRED

REFERENCE: HP-C-106 SECTION 7.4

NO.: 2188 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.06 ERP101

CATEGORY: NRC
SYSTEMS: ERP-101

QUESTION :

*** RO ONLY ***

What are the "Emergency Action Levels" ?

ANSWER :

Unusual Event
Alert
Site Area Emergency
General Emergency

REFERENCE: ERP 110 SECTION 6.2

NO.: 2189 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/07/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.03 ERP110
CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** RO ONLY ***

"Plume Exposure Pathway" emergency notifications are being made.
You have been assigned as the "NRC Communicator". What phone will
you use? What are your duties and responsibilities?

ANSWER :

- * "red" FTS 2000 phone
- * continuously man NRC FTS 2000 phone until the NRC disconnects or
authorizes securing the line
- * provide the required Emergency Notification Message Form data per
Appendix ERP-200-1

REFERENCE: Appendix ERP-110-1

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: RO

Facility: Limerick 1 and 2

Week of Examination: 11/14/85

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. HPCI/0019	II	a. 206000 KA.07/4.1/ HPCI Initiation signal reset
		b. 206000 K4.18/3.2/ Discharge pressure switch failure
2. RECIRC/0035	I	a. 202001 A1.09/3.3/ Seal failure
		b. 202001 KA.09/3.8/ RSP controls
3. EDG/0006	VI	a. 264000 A3.06/3.1/Spray lineup
		b. 295018 AK2.02/3.4/ LOCA signal effects
4. RPS/0031	VII	a. 212000 A2.05/3.1/ Excess flow check valve
		b. 295037 EK2.03/4.1/ RRCS trip
5. CREFAS/0024	IX	a. 290003 K2.02/3.1/ ON-115 Actions
		b. 262001 A2.02/3.6/ Loading sequence
6. NSSSS/0030	V	a. 295018 AK2.01/3.3/ RECW shutoff valve
		b. 295018 AK3.04/3.3/ TECW response to LOCA
7. SDC/0515	IV	a. 205000 A1.01/3.3/ SDC flowrate
		b. 205000 A4.07/3.1/ SDC temp indication
8. RMCS/0226	I	a. 201002 K1.01/3.2/ RDCS malfunction
		b. 201002 A3.01/3.2/ Rod Block Indication
9. SRV/0204	III	a. 295020 AK2.12/3.1/ Pneumatic Supply inside DW
		b. 223001 K1.10/3.0/ IG to SRV Isolation
10. SEC.CONT/0215	V	a. 272000 K4.02/3.7/ RE Sump HI Rad
		b. 268000 K1.12/2.5/ SP/RW level

EXAMINER: _____

CHIEF EXAMINER: _____

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: MANUALLY START HPCI

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset Simulator to any 100% power IC.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s): System Number(s):

A4.01	3.8/3.7	206000
A4.02	4.0/3.8	206000
A4.04	3.7/3.7	206000

References:

S55.1.D, Rev. 18 HPCI System Full Flow Functional Test

Task Standard(s):

Place HPCI in full flow test (CST to CST), with pump discharge pressure at least 120 psig greater than reactor pressure, using manual quick start method.

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method.

Task Conditions:

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. Reactor Enclosure Equipment Compartment Exhaust is in service.
4. Steam Leak Detection System is not known to be INOP.
5. HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal.
6. The 1A loop of RHR is in the Suppression Pool Cooling mode of operation.
7. The Vibration Monitoring System is in service.
8. No maintenance has been performed on the governor control or oil system.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S55.1.D. (Cue: If asked, respond, "I want you to obtain a copy of S55.1.D.")	Obtain a copy of S55.1.D	
2. Reactor Enclosure Equipment Compartment Exhaust in service. (Cue: REECE is in service.)	N/A	N/A
3. Suppression Pool level normal (22' to 24.25") <u>AND</u> below 95°F.	LR-55-115 (LV) indicates between 22 to 24.25 feet. Suppression Pool temperature is less than 95°F.	
4. HPCI Pump suction is lined up to the CST.	HV-55-1F004 is open. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
5. Steam Leak Detection System available. (Cue: Steam Leak Detection is available.)	N/A	N/A
6. Suppression Pool Cooling available. (RHR loop A is in Suppression Pool cooling.)	N/A	N/A
7. <u>UNIT 1 ONLY</u> HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal. (Cue: HPCI oil reservoir is filled to 3.5 inches from top of tank.)	N/A	N/A
8. <u>UNIT 2 ONLY</u> HPCI Oil Reservoir is filled between MAX/MIN lines in NORMAL OPERATING RANGE on sightglass.	N/A	N/A
9. HPCI available for auto initiation per S55.1.A, Normal HPCI Line-up for Automatic Operation. (Cue: HPCI is aligned for automatic operation.)	N/A	N/A
10. If required to limit Suppression Pool temperature anytime during this procedure, Then refer to S51.8.A.	N/A	N/A
11. If Vibration Monitoring System is available, then verify in service. (Cue: Task Condition identifies "The Vibration Monitoring system is in service.")	N/A	N/A

STEP	STANDARD	SAT/UNSAT
12. Ensure HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" is closed.	HV-55-1F071 is closed. GREEN light ON, RED light OFF	
13. Ensure HV-55-*F008, "Test Loop Shutoff" (TEST ISOL), closed.	HV-55-1F008 is closed. GREEN light ON, RED light OFF	
14. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	HV-55-1F011 is closed. GREEN light ON, RED light OFF	
15. Ensure HV-49-*F022, "RCIC Test Loop Isolation" (TEST ISOL), is closed.	HV-55-1F022 is closed. GREEN light ON, RED light OFF	
*16. Open HV-55-*F011, Condensate Return.	Place control switch for HV-55-1F011 to the open position. RED light ON, GREEN light OFF	
17. START *P0216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP).	Rotate VACUUM PUMP control switch to start. RED light ON, GREEN light OFF	
18. Monitor Suppression Pool temperature per ST-6-060-390-1, Suppression Pool Temperature Check.	NOTE: ST-6-060-390-1 is addressed in precautions and identified as being in progress in task conditions.	N/A
19. INFORM HP of changing radiological conditions due to HPCI System start.	HP notified HPCI start imminent.	
*20. Ensure FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL), in "AUTO",	FIC-55-1R600 M/A selector switch repositioned to the "A".	
*20.1 <u>AND</u> SET to 5,600 gpm.	Flow controller FIC-55-1R600 set between 5,500 and 5,700 GPM.	
21. Make Plant Announcement pertaining to HPCI startup.	Plant Announcement pertaining to HPCI startup performed.	

STEP	STANDARD	SAT/UNSAT
*22. Simultaneously open HV-55-*F001, "HPCI Steam Supply" (INLET),	Operating one switch with each hand, Momentarily place HV-50-1F001 control switch to the OPEN position <u>AND</u>	
*22.1 <u>AND</u> Start *OP213, Auxiliary Oil Pump" (AUX OIL PUMP).	Momentarily rotate 10P213 control switch to the start position. RED lights ON, GREEN lights OFF	
*23. When SI-56-*61, "Turbine Speed" (S), starts to go up, then immediately open HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL).	When SI-56-161 indicates greater than 0 RPM, rotate HV-49-1F022 to open. RED light ON, GREEN light OFF.	
24. IF HV-55-*F008 will <u>not</u> open, then place FIC-55-*R600 in "Manual and lower FIC-55-*R600 to 2200 RPM.	N/A	N/A
25. Verify FV-56-*12, "Turbine Stop Valve" (STOP) open	FV-56-112 open. RED light ON, GREEN light OFF	
26. Verify FV-56-*11, "Turbine Control Valve" (CONTROL) open.	FV-56-111 throttled open. Red light on.	
27. Verify HV-56-*F059, "HPCI Lube Oil Cooling Water Valve," open.	HV-56-1F059 open. RED light ON, GREEN light OFF	
28. Verify HV-55-*F028 "HPCI Steam Drain Line Isolation" (TRAP INBOARD) is closed.	HV-55-1F028 is closed. GREEN light ON, RED light OFF	
29. Verify HV-55-*F029 "HPCI Steam Drain Line Isolation (OUTBOARD TO COND) is closed.	HV-55-1F029 is closed. GREEN light ON, RED light OFF	
30. Verify HV-56-*F025 "HPCI Barometric Condenser Drain Isolation" (INBOARD TO RADWASTE) is closed.	HV-56-1F025 is closed. GREEN light ON, RED light OFF	

STEP	STANDARD	SAT/UNSAT
31. Verify HV-56-*F026 "HPCI Barometric Condenser Drain to Isolation" (DRAIN OUTBOARD) valve is closed.	HV-56-1F026 is closed. GREEN light ON, RED light OFF	
32. When (S) SI-56-*61, "HPCI Turbine Speed," is greater than 1,650 rpm, then verify *OP213, "Auxiliary Oil Pump" (AUX OIL PUMP), is not running.	1OP213 is not running. GREEN light ON, RED light OFF	
*33. Adjust HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL), as necessary to maintain pump discharge pressure as indicated on PI-55-1R601, "HPCI Pump Discharge Pressure" (Discharge Pressure), at least 120 psig over Reactor Pressure.	Adjust HV-55-1F008 using the Pull to Stop function until PI-55-1R601 is indicating 120 psig greater than Reactor Pressure.	
34. Acknowledge and Reset alarms associated with the 117 HPCI annunciator panel.	117 HPCI panel alarms acknowledged and reset at panel 10C602.	

Comments:

Note: Any rating of UNSAT requires a comment.

JPM Overall Rating: SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method.

Task Conditions:

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. Reactor Enclosure Equipment Compartment Exhaust is in service.
4. Steam Leak Detection System is not known to be INOP.
5. HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal.
6. The 1A loop of RHR is in the Suppression Pool Cooling mode of operation.
7. The Vibration Monitoring System is in service.
8. No maintenance has been performed on the governor control or oil system.

NO.: 2207 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 206000KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0340.02

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

An operator is directed to shutdown HPCI after a manual start. The Operator positions the HV55-2F001 (STEAM INLET) handswitch to CLOSE, and momentarily depresses the TURBINE TRIP pushbutton. He then releases the TURBINE TRIP pushbutton before the HV55-2F001 (STEAM INLET) is shut.

What are the effects of this action on the HPCI turbine?

ANSWER :

The HPCI turbine will restart and continue to run until the HV55-2F001 valve is fully shut.

(NOTES; trip pushbutton depressed, dumps oil pressure to turbine stop valve allowing spring pressure to SHUT this valve until HV-55-2F001 fully shuts.)

REFERENCE: S55.1.D
LOT0340.02 PP 14,25

NO.: 2208 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 206000K4.18 TAXONOMY NO.:
LESSON PLANS: LOT0340.04

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

Unit 1 HPCI is running for Pump, Valve and Flow Test, the Equipment Operator (EO) in the Aux Equipment Room has just reported a gross failure LOW on PIS-55-1N650, HPCI pump discharge pressure indicating switch, what effects will this have on HPCI and its support systems?

ANSWER :

1. HPCI minimum flow valve, HV-55-1F012, will NOT open automatically
2. HPCI pump discharge pressure indication on 10C647 will be failed downscale
3. HPCI room cooler fans will NOT auto start on HPCI start.

REFERENCE: LOT0340.04 PP 16
LOT0680.05 PP 13
M-55 sheet 1

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Reset Scoop Tube Lock

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Lock 1B MG scoop tube
2. Lower 1B MG M/A station output until the deviation meter is more negative than minus one.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

A4.08 3.2/3.1

System Number:

202001

General References:

1. S43.0.A, Rev. 10

Task Standards:

B Recirc. Pump scoop tube brake released with resultant pump speed deviation less than 2%.

Initiating Cues:

Shift Supervision directs you to reset the scoop tube lock on the 1B Recirc. Pump.

Tasks Conditions:

1. The scoop tube was locked as a precautionary measure while I&C testing was in progress. Testing is now complete.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain S43.0.A.	S43.0.A obtained.	
*2. Adjust XC-M1-*R621A(B), "Recirc Pp Speed Controller" (S), to introduce a positive demand/speed mismatch.	Depress XC-M1-1R621B OPEN pushbutton to obtain XY6-M1-1R621B indicating greater than zero.	
*3. Ensure XY6-M1-*R621A(B), "Recirc Pp Speed Deviation" (DEVN), is positive <u>AND</u> slowly increasing.	XY6-M1-1R621B is greater than zero and increasing.	
*4. Adjust XC-M1-*R621A(B) (S) until XY6-M1-*R621A(B) (DEVN) is positive <u>AND</u> decreasing <u>VERY SLOWLY</u> .	XC-M1-1R621B CLOSE pushbutton is depressed until XY6-M1-1R621B is decreasing.	
*5. Ensure XY6-M1-*R621A(B) (DEVN) is at approximately 0% <u>AND</u> PLACE "Scoop Tube Brake Control" (BRAKE) in "RESET" at *OC602.	BRAKE switch momentarily placed to RESET. Pump speed oscillates less than $\pm 2\%$.	
6. Acknowledge annunciator 112 CLEANUP window B4, 1B RECIRC MG OIL MIST ELIMINATOR HI Δ P.	112 CLEANUP window B4 acknowledged.	
7. Slowly ADJUST XC-M1-*R621A(B) (S) <u>AND</u> VERIFY M/G responds.	XC-M1-1R621B OPEN or CLOSE pushbutton momentarily depressed MG set speed or pump flow changes accordingly.	
8. VERIFY *A(B) RECIRC M-G FLUID DRIVE SCOOP TUBE LOCK AT *11 RECIRC (*12 CLEANUP) B-3, clears.	Annunciator 112 CLEANUP window B-3 is clear.	

STEP	STANDARD	SAT/UNSAT
9. ENSURE Recirc loop flow mismatch is within limits given in Tech. Spec. 3.4.1.3.	Flow mismatch is less than 5%.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Sat/Unsat

Initiating Cues:

Shift Supervision directs you to reset the scoop tube lock on the 1B Recirc. Pump.

Tasks Conditions:

The scoop tube was locked as a precautionary measure while I&C testing was in progress. Testing is now complete.

NO.: 2216 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 202001A1.09 TAXONOMY NO.:
LESSON PLANS: LOT0030.06

CATEGORY: NRC
SYSTEMS: RECIRC

QUESTION :

*** RO ONLY ***

Unit 1 is at 89% power. The SSV is directing actions per OT-101. The following alarms are annunciated for the "A" Recirc Pump:

SEAL STAGING HI/LO FLOW alarm
SEAL LEAKAGE HI FLOW alarm

What failure is indicated by these conditions?

What plant indications can be utilized to confirm your diagnosis?

ANSWER :

- * Failure of the "A" Recirc Pump #2 seal as indicated by the following:
 - #1 Seal Cavity indicating ~ reactor pressure (1000 psig).
 - #2 Seal Cavity indicating less than 500 psig.
- * Failure of the "A" Recirc Pump #1 and #2 seal as indicated by the following:
 - #1 Seal Cavity indicating less than reactor pressure (1000 psig).
 - #2 Seal Cavity indicating less than 500 psig.

REFERENCE: LOT0030.06 PP 28
ARC MCR 111 A-1,A-2

NO.: 2218 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 202001KA.09 TAXONOMY NO.:
LESSON PLANS: LOT0735.04

CATEGORY: NRC
SYSTEMS: RECIRC RSP

QUESTION :

*** RO ONLY ***

What Reactor Recirculation System control(s) is/are provided at the Remote Shutdown Panel? Why are these controls provided?

ANSWER :

1. control of HV43-*F023A ("A" Recirc Pump Suction) is provided
2. allows for Shutdown Cooling operations, from the RSP.

REFERENCE; LOT0735.04 PP 12
SE-1 STEPS 4.9.2, 4.9.6.10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Perform a Remote Manual Start of the D11 Diesel Generator and Load it to 2000 KW
with an ESW Pump Trip (Alternate Path)

Operator: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

1. The simulator can be set up to any IC that the plant is stable.
2. A PO is stationed locally at the diesel generator, many steps require local operation or verification of automatic functions.
3. Insert Malfunction 489A, Trip of the "A" ESW Pump.
4. Have copy of S92.1.0 and ST-6-107-590-1 ready to give to trainee.

Evaluation Method (Circle one):

Perform

Simulate

Evaluation Location (Circle one):

Plant

Simulator

Approximate Completion Time:

22 Minutes

Importance Rating(s):

3.7/3.7 A4.04

System Number(s):

K/A 264000

References:

1. S92.1.0, Local and Remote Manual Startup of a Diesel Generator, Rev. 17
2. ST-6-107-590-1, Rev. 67

Task Standard(s):

D11 running, supplying 2000 KW to the D11 Safeguard Bus.

Initiating Cues:

You are directed by Shift Supervisor to start and load D11 to 2000 KW from the control room per S92.1.0, the procedure has been performed up to and including step 4.3.4.

Task Condition(s):

1. All prerequisites have been satisfied.
2. Procedure S92.1.0 completed up to and including step 4.3.4.
3. PO stationed at D/G.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Announce start of D11 Diesel Generator.	D11 start announced.	
*2. Place selected MCR Diesel Generator Control (CONTROL) 101-A(B, C, D) G501/CS to START.	Momentarily place 101-AG501/CS to start.	
3. <u>WHEN</u> 3 minute time delay for prelube pump operation is completed, <u>THEN</u> observe diesel generator starts.	Acknowledge 120 D11 window C4.	
4. Direct a PO to perform steps 4.3.7 through 4.3.12 of S92.1.0. (Cue: If asked, wait for generator frequency to increase to 60 Hz then say, "Steps 4.3.7 through 4.3.12 of S92.1.0 are complete. D11 is now running at 900 rpm.")	PO told to perform steps 4.3.7 through 4.3.12 of S92.1.0.	
5. Verify frequency meter reads from 59 to 61 Hz.	F/AG501-2 indicates between 59 to 61 Hz.	

STEP	STANDARD	SAT/UNSAT
*6. IF ESW pump not already running, THEN verify ESW pump starts 50 to 60 seconds after diesel start.	Acknowledge panel 010 SERV WTR A Windows A1 and A3. ESW pump OA tripped. Green light on, red off.	
7. Inform SSV that ESW Pump OA tripped on overcurrent and D11 D/G is running with no cooling water. (Cue: If informed, say, "I understand ESW Pump OA has tripped. I would like for you to continue with the D11 diesel ST.")	SSV informed that ESW Pump OA has tripped and D11 D/G is running with no cooling water.	
*8. Start ESW Pump OC.	ESW Pump OC started by momentarily placing its control switch to start. Red light on, green off.	
9. Acknowledge 010 SERV WTR A Window B4.	010 SERV WTR A Window B4 acknowledged. Annunciator self clears.	
10. ARC 010 SERV WTR A window A1 referenced.	N/A	N/A
11. Dispatch an NLO to check operation of ESW Pump OC and determine cause of ESW Pump OA trip. (Cue: If asked, say, "I understand you want me to check operation of ESW Pump OC and determine cause of ESW pump OA trip.")	NLO dispatched to check operation of ESW Pump OC and determine cause of ESW Pump OA trip.	
12. Verify cooling water is available to diesel generator by observing ESW Supply PI-11- *07A(B,C,D) indicates higher pressure than ESW Return PI-11-*08A(B,C,D). (Cue: If asked say, "D11 ESW supply indicates 15 psi greater than return.")	Direct PO to perform step 4.3.15 of S92.1.0.	

STEP	STANDARD	SAT/UNSAT
13. If diesel was started locally, <u>THEN</u> return diesel control to Control Room.	N/A	N/A
14. Place *01 Safeguard Transformer Local Tap Changer Selector (SELECT) 143-A(B)X103 to MANUAL.	143-AX103 in Manual position.	
*15. Insert synchroscope switch handle into Synchroscope Switch (SYNC) for appropriate Diesel Generator <u>AND</u> place to ON.	125-11507/SS in ON position.	
16. Observe Synchroscope rotating.	S/EAS-1 rotating.	
17. <u>WHEN</u> synchroscope is at 180 degrees, <u>THEN</u> both lights are fully bright.	Both lights are fully bright when S/EAS-1 is at 180 degrees.	
18. <u>WHEN</u> synchroscope is at 0 degrees, <u>THEN</u> both lights are off.	Both lights are off when S/EAS-1 is at 0 degrees.	
19. Observe diesel generator frequency change by placing SPEED GOVERNOR 165-A(B,C,D) G501/CS to RAISE <u>AND</u> to LOWER.	Place 165-AG501/CS to RAISE. F/AG501-2 (HERTZ) increases. Place 165-AG501-CS to Lower. F/AG501-2 (HERTZ) decreases.	
20. Observe diesel generator voltage change by placing VOLTAGE REGULATOR 170-A(B,C,D) G502/CS to RAISE <u>AND</u> to LOWER.	Place 170-AG502/CS to RAISE. V/AG501-2 (A-C KILOVOLTS) increases. Place 170-AG502/CS to Lower. V/AG501-2 (AC KILOVOLTS) decreases.	
*21. Adjust engine speed using appropriate Diesel Generator Speed Governor Control (SPEED GOVERNOR) 165-A(B,C,D)G501/CS until synchroscope is rotating slowly in FAST direction (clockwise).	S/EAS-1 (SYNCHROSCOPE) rotating slowly in the fast direction using 165-AG501/CS.	

STEP	STANDARD	SAT/UNSAT
*22. Adjust diesel generator voltage using Diesel Generator Voltage Regulator (VOLTAGE REGULATOR) 170-A(B,C,D)G502/CS until Synchronizing Incoming Voltmeter (INCOMING) is slightly higher than Synchronizing Running Voltmeter (RUNNING).	V/I-EAS-1 (INCOMING) indicates between 0 to 4 volts greater than V/R-EAS-1 (RUNNING) using 170-AG502/CS.	
*23. <u>WHEN</u> Synchroscope (SYSTEM) is within 3 degrees before 12 o'clock, <u>THEN</u> close Diesel Generator Breaker (GENERATOR).	When S/EAS-1 (SYNCHROSCOPE) indicates within 3 degrees of 12 o'clock, place 152-11507/CS to close. Red light on, green off.	
24. <u>Immediately</u> raise load to between 200 to 300 KW by turning Diesel Generator Speed governor Control (SPEED GOVERNOR) 165-A(B,C,D)G501/CS to RAISE.	W/AG501-2 (AC KILOWATTS) indicates between 200 to 300 KW using 165-AG501/CS.	
25. <u>Immediately</u> load 100 KVAR by turning Diesel Generator Voltage Regulator (VOLTAGE REGULATOR) 170-A(B,C,D)G502/CS to RAISE.	VAR/AG501-2 (AC KILOVARS) indicates about 100 KVAR using 170-AG502/CS.	
26. Turn Synchroscope Switch (SYNC) to OFF.	125-11507/SS in Off position.	
27. Acknowledge 006 Fire window Diesel Gen 1 Cell A.	Diesel Gen 1 Cell A fire alarm acknowledged.	
28. Direct PO in D11 room to verify no fire exists. (Cue: If asked say, "Fire alarm is caused by smoke coming off the exhaust header.")	PO directed to look for fire in D11 room.	

STEP	STANDARD	SAT/UNSAT
*29. Gradually raise diesel generator load at a rate $\leq 350\text{KW/min.}$ to desired value.	165-AG501/CS placed to raise to slowly increase W/AG501-2 (AC KILOWATTS) to 2000 KW. 2000KW not obtained for at least 4 min. 51 sec.	
30. Direct a PO to perform step 4.6.1 and 4.6.2 of S92.1.0. (Cue: If asked, say, "I will perform step 4.6.1, running checks and 4.6.2, oil level monitoring.")	PO directed to perform step 4.6.1 and 4.6.2 of S92.1.0.	
31. IF diesel generator is r at no load <u>OR</u> loaded less than 855 KW for extended periods, <u>THEN</u> load diesel generator to between 1400 to 2800 KW for at least 1 hour for each 12 hours of continuous no-load <u>OR</u> light-load operation.	N/A	N/A
32. For each diesel start/run, make entries in appropriate Daily Surveillance Log: ST-6-107-590-* ST-6-107-591-* ST-6-107-593-* (Cue: Give trainee copy of ST-6-107-590-1.)	ST-6-107-590-1 page 87 information entered. D/G #: Date: Start Time: Reason for Start:	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervisor to start and load D11 to 2000 KW from the control room per S92.1.0, the procedure has been performed up to and including step 4.3.4.

Task Conditions:

1. All prerequisites have been satisfied.
2. Procedure S92.1.0 completed up to and including step 4.3.4.
3. PO stationed at D/G.

NO.: 2254 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/03/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 264000A3.06 TAXONOMY NO.:
 LESSON PLANS: LOT0400.06

CATEGORY: NRC
 SYSTEMS: RHRSW

QUESTION :

*** RO ONLY ***

"A" loop of Residual Heat Removal Service Water (RHRSW) is in service utilizing the Spray Network Bypass. How does starting the D23 Emergency Diesel Generator for the monthly surveillance test effect the RHRSW System flowpath with HSS12-016C (SPRAY/BYPASS SELECT) in "SPRAY"?

ANSWER :

ANSWER: * OC ESW Pump will auto start causing the following:
 The "32C" Spray Inlet will open
 The "31C" Bypass will close
 Bypass flow will be secured, and spray flow will be initiated through the "C": Spray Network.

REFERENCE: LOT0400.06 PP 18,24,25

NO.: 2255 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK2.02 TAXONOMY NO.:
LESSON PLANS: LOT0680.04

CATEGORY: NRC
SYSTEMS: ESW

QUESTION :

*** RO ONLY ***

Unit 2 RPV level is at (minus) -135" when offsite power is lost. What effect will a trip of the D23 Emergency Diesel have on the 2A RHR Pump room cooling water flowpath?

ANSWER :

Cooling water flow is maintained via the "0A" ESW Pump running and the associated Division I ESW "parallel" valves providing a cooling water flowpath

REFERENCE: LOT0680.04 PP 10,11,12

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

TITLE: SCRAM CHANNEL A1 AND A2 FUNCTIONAL TEST

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. The simulator can be reset to any IC that has RPS reset and the reactor is stable.
2. This JPM requires continuous communication with a PO stationed in the Auxiliary Equipment Room.
3. A1/A2 day selected under full core display.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location (Circle One):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating:

3.6/3.7 A4.02

System Number:

212000

References:

ST-6-071-306-1, Rev. 6, Channel A1 and A2 RPS Manual Scram Channels Functional Test

Task Standards:

Complete Scram Channel Functional Test to step 7.0 satisfactorily

Initiating Cues:

Shift supervision directs you to perform ST-6-071-306-1, Unit one Channel A1/A2 RPS Manual Scram Channel Functional Test.

Tasks Conditions:

1. Plant in OPCON 1 with no half scram signals present.
2. No rod movement anticipated.

STEP	STANDARD	SAT/UNSAT
1. Obtain ST-6-071-306-1.	ST-6-071-306-1 obtained.	
2. RPS System operable. (Cue: RPS is operable.)	N/A	
3. All scram relays are reset; no half-scrams present.	No half-scram is present.	
4. Communications established between: a. Main Control Room panel 10C603. b. Auxiliary Equipment Room panel 10C609.	Communication established with simulator operator.	
5. Reactor operation is stable <u>AND</u> no rod movement anticipated during the performance of this test. (Cue: No rod movement is anticipated.)	N/A	N/A
6. No other testing <u>OR</u> plant condition which could interfere with this test is being performed/present. (Cue: No testing is in progress which would interfere with this test.)	Ask the SSV if no other testing is in progress which could interfere with this test.	
7. Verify all prerequisites are satisfied.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
8. Obtain Shift Supervision's permission to start test. (Cue: You have permission to perform ST-6-071-306-1.)	SSV permission obtained.	
9. Obtain PRO/RO permission to start test. (Cue: You have permission to perform ST-6-071-306-1.)	RO permission obtained.	
*10. Place "CH A1" collar in "ARMED".	Collar "CH A1" on *OC603 rotated to the "ARMED" position.	
11. "MANUAL SCRAM SWITCH ARMED A, B" annunciated on "108 Reactor".	Panel 108 window D2 lit.	
*12. Depress fully and release button for "CH-A1".	"CH A1" button depressed on *OC603.	
13. At panel 108 REACTOR, verify: a. MANUAL SCRAM SYSTEM alarm annunciates. b. AUTO SCRAM CHANNEL A1 alarm annunciates.	Panel 108 windows D1 and B1 lit.	
*14. Verify at *OC603 indicating light A1, A2, A3, A4 are all OFF.	Lights for A1, A2, A3, and A4 are extinguished on *OC603.	
*15. Verify at *OC609 Reactor Auto Scram Trip Logic A1 DS1 is OFF. (Cue: DS1 on *OC609 is off.)	Report from PO in AER that DS1 on *OC609 is OFF.	
16. IF rod motion occurs, THEN notify Shift Supervision immediately, IF NOT, N/A this step.	N/A	N/A
17. Verify annunciator "MANUAL SCRAM SYSTEM A" can be cleared.	Annunciator RESET - "108 Reactor". Window D1 is clear.	
18. Place "CH A1" collar in "DISARMED".	Collar "CH A1" on "108 Reactor" rotated to the DISARMED position.	

STEP	STANDARD	SAT/UNSAT
19. Verify annunciator "MANUAL SCRAM SWITCH ARMED A, B" can be cleared.	Annunciator RESET on "108 Reactor". Window D2 is clear.	
*20. Place "SCRAM RESET" switch to "GROUP 1/4" and "GROUP 2/3."	SCRAM RESET switch turned to left (1/4) and right (2/3) on *OC603.	
21. Verify annunciator "AUTO SCRAM CHANNEL A1" can be cleared.	Annunciator RESET "108 Reactor". Window B1 is clear.	
*22. Verify at 10C603 indicating lights A1, A2, A3 and A4 are all ON.	A1, A2, A3, A4 are all ON on 10C603.	
*23. At Panel 10C609 verify REACTOR AUTO SCRAM TRIP LOGIC A1 DS1 is ON. (CUE: DS1 on 10C609 is ON.)	Report from PO in AER that DS1 on 10C609 is ON.	
*24. Place "CH A2" collar in "ARMED".	Collar CH A2 on 10C603 rotated to the ARMED position.	
25. MANUAL SCRAM SWITCH ARMED A, B annunciated on "108 REACTOR".	Panel 108 window D2 lit.	
*26. Depress fully and release button for "CH A2".	CH A2 button depressed on 10C603.	
27. At panel 108 REACTOR, verify: a. MANUAL SCRAM SYSTEM A alarm annunciates. b. AUTO SCRAM CHANNEL A2 alarm annunciates.	Annunciator reset, "108 REACTOR" window D1 and B2 are lit.	
*28. At 10C603 verify A1, A2, A3 and A4 lights are all OFF.	A1, A2, A3, A4 are all extinguished on *OC603.	
*29. Verify at 10C609 REACTOR AUTO SCRAM TRIP LOGIC A2, DS2 is OFF. (Cue: DS2 on 10C609 is OFF.)	Report from PO in AER that DS2 on 10C609 is OFF.	

STEP	STANDARD	SAT/UNSAT
*30. IF rod motion occurs, THEN notify Shift Supervision immediately, IF NOT, N/A this step.	N/A	N/A
31. Verify annunciator "MANUAL SCRAM SYSTEM A" can be cleared.	Annunciator reset "108 Reactor". Window D1 is clear.	
32. Place "CH A2" collar in "DISARMED".	Collar "CH A2" rotated to the "DISARMED" position on *OC603.	
33. Verify annunciator "MANUAL SCRAM SWITCH ARMED A, B" will clear.	Annunciator reset "108 Reactor". Window D2 is clear.	
*34. Place "SCRAM RESET" switch to "GROUP 1/4" and "GROUP 2/3".	SCRAM RESET switch turned to left (1/4) and right (2/3) on *OC603.	
35. Verify AUTO SCRAM CHANNEL A2 on 108 Reactor can be cleared.	Annunciator RESET. "108 Reactor" window B2 is clear.	
*36. At 10C603 verify A1, A2, A3, and A4 lights are ALL ON.	A1, A2, A3, A4 are all ON on *OC603.	
*37. At panel *OC609 verify REACTOR AUTO SCRAM TRIP LOGIC A2 DS2 ON. (Cue: DS2 on 10C609 is ON.)	Report from PO in AER that DS2 on 10C609 is ON.	
38. IVOR section completed. (Cue: Manual Scram Switch A1 and A2 are in the DISARMED position.)	Ask for IVOR assistance.	
39. Inform SSVN AND RO test is complete. (Cue: I understand, the Channel A1/A2 functional test is complete.)	SSV and RO informed test is complete.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Note: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

Initiating Cues:

Shift supervisor directs you to perform ST-6-071-306-1, Unit one Channel A1/A2
RPS Manual Scram Chagnel Functional Test.

Tasks Conditions:

1. Plant in OPCON 1 with no half scram signals present.
2. No rod movement anticipated.

NO.: 2305 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 212000A2.05 TAXONOMY NO.:
LESSON PLANS: LOT0300.11

CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

*** RO ONLY ***

An Equipment Operator, who was dispatched to investigate an Excess Flow Check Valve Actuated Alarm, reports that XV-1F047A has actuated with the associated local green indicating light lit and red indicating light extinguished. What specific affect will this have on the RPS System?

ANSWER :

* "A" side half scram signal will be generated.

References: P&ID M-42 Sheets 1 & 2
LOT-0300 Page 9
Q130031

NO.: 2301 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EK2.03 TAXONOMY NO.:
LESSON PLANS: LOT0315.03

CATEGORY: NR1 NRC
SYSTEMS: RRCS

QUESTION :

*** RO ONLY ***

What conditions would be necessary on Unit 1 to initiate an automatic
ATWS RPT Breaker Trip?

ANSWER :

Reactor High Pressure of 1093 psig

or

Low reactor level of -38" with a 9 second time delay

REFERENCES:

GP-18 Attachment 2
LOT-0315.03 page 8
Q140031

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Initiate a Control Room Radiation Isolation

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset the simulator to IC-17, and take out of freeze.
2. Ensure the A CREFAS fan handswitch is in AUTO, and the B CREFAS fan handswitch is in STBY.
3. Ensure the A Control Room Supply and Return fans are in RUN, and the B Control Room Supply and Return fans are in AUTO.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.2/3.2

System Number(s):

290003 A4.01

References:

S78.8.A, Manual Initiation of Control Room Radiation or Chlorine/Toxic Chemical Isolation

Task Standard(s):

The Control Room HVAC system is operating in the Radiation Isolation Mode, with a Radiation Isolation signal present on all four isolation channels, and no chlorine/Toxic Chemical Isolation signals present.

Initiating Cues:

You are directed by shift supervision to manually initiate a Control Room HVAC Radiation Isolation.

Task Conditions:

1. Control Room HVAC is in the normal operating mode.
2. The Control Room Emergency Fresh Air Supply System is lined up for automatic operation.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S78.8.A (Cue: If asked, respond, "I want you to obtain a copy of S78.8.A.")	A copy of S78.8.A, Rev. 5 is obtained.	
2. Control Room HVAC in normal operating mode per S78.1.A, <u>Placing the Control Room HVAC System into Normal Operation.</u> (Cue: If asked, respond, "Control Room HVAC is in the normal operating mode per S78.1.A.")	N/A	N/A
3. Control Room Emergency Fresh Air System lined up for automatic operation per S78.1.B, <u>Aligning the Control Room HVAC Isolation and Emergency Fresh Air Supply System for Automatic Operation.</u> (Cue: If asked, respond, "Control Room Emergency Fresh Air System is lined up for automatic operation per S78.1.B.")	N/A	N/A

STEP	STANDARD	SAT/UNSAT
*4. ENSURE keys for keylock handswitches HS-78-017A,B,C,D (RESET), are available.	Four keys for keylock handswitches HS-78-017A,B,C,D (RESFT) are obtained.	
*5. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017A (RESET A) to "RESET".	Reset Keylock switch HS-78-017A (RESET A) is placed in "RESET" at 00C681.	
*6. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to "RESET".	Reset Keylock switch HS-78-017B (RESET B) is placed in "RESET" at 00C681.	
*7. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017C (RESET C) to "RESET".	Reset Keylock switch HS-78-017C (RESET C) is placed in "RESET" at 00C681.	
*8. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to "RESET".	Reset Keylock switch HS-78-017D (RESET D) is placed in "RESET" at 00C681.	
*9. PLACE Control Room Isolation Valve Trip Switch HSS-78-017A (TRIP A) to "RAD".	Switch HSS-78-017A (TRIP A) arming collar is rotated to "RAD" at 00C681.	
*10. PLACE Control Room Isolation Valve Trip Switch HSS-78-017B (TRIP B) to "RAD".	Switch HSS-78-017B (TRIP B) arming collar is rotated to "RAD" at 00C681.	
*11. PLACE Control Room Isolation Valve Trip Switch HSS-78-017C (TRIP C) to "RAD".	Switch HSS-78-017C (TRIP C) arming collar is rotated to "RAD" at 00C681.	
*12. PLACE Control Room Isolation Valve Trip Switch HSS-78-017D (TRIP D) to "RAD".	Switch HSS-78-017D (TRIP D) arming collar is rotated to "RAD" at 00C681.	
13. Acknowledge 002 VENT window B2.	002 VENT window B2 acknowledged.	
*14. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017A (RESET A) to "AUTO".	Reset Keylock switch HS-78-017A (RESET A) is placed in "AUTO" at 00C681.	

STEP	STANDARD	SAT/UNSAT
*15. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to "AUTO".	Reset Keylock switch HS-78-017B (RESET B) is placed in "AUTO" at 00C681.	
*16. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017C (RESET C) to "AUTO".	Reset Keylock switch HS-78-017C (RESET C) is placed in "AUTO" at 00C681.	
*17. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to "AUTO".	Reset Keylock switch HS-78-017D (RESET D) is placed in "AUTO" at 00C681.	
*18. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017A (TRIP A).	Switch HSS-78-017A (TRIP A) pushbutton is depressed and released at 00C681.	
*19. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017B (TRIP B).	Switch HSS-78-017B (TRIP B) pushbutton is depressed and released at 00C681.	
*20. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017C (TRIP C).	Switch HSS-78-017C (TRIP C) pushbutton is depressed and released at 00C681.	
*21. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017D (TRIP D).	Switch HSS-78-017D (TRIP D) pushbutton is depressed and released at 00C681.	
22. RECORD CREFAS run time in appropriate log.	CREFAS start data is recorded in CREFAS run time log.	
23. ENSURE HI RAD ISLN Channel A amber light is lit.	HI RAD ISLN Channel A amber light is lit on 00C681.	
24. ENSURE HI RAD ISLN Channel B amber light is lit.	HI RAD ISLN Channel B amber light is lit on 00C681.	
25. ENSURE HI RAD ISLN Channel C amber light is lit.	HI RAD ISLN Channel C amber light is lit on 00C681.	

STEP	STANDARD	SAT/UNSAT
26. ENSURE HI RAD ISLN Channel D amber light is lit.	HI RAD ISLN Channel D amber light is lit on OOC681.	
27. VERIFY CONTROL ROOM RADIATION ISOLATION INITIATED annunciator alarmed at 002 VENT A-1.	Window A-1 on 002 VENT, CONTROL ROOM RADIATION ISOLATION INITIATED, is alarmed.	
28. VERIFY CONTROL ROOM ISOLATION NOT COMPLETE annunciator is <u>not</u> alarmed at 002 VENT A-3, after 25 seconds.	Window A-3 on 002 VENT, CONTROL ROOM ISOLATION NOT COMPLETE, is verified not alarmed at least 25 seconds after the isolation is initiated.	
29. ENSURE OA(B)V127, EMERGENCY AIR FAN A(B), is running.	OAV127, EMERGENCY AIR FAN A, is running. Indicating light (A FAN) is red on OOC681.	
30. ENSURE FI-78-015, EMERG AIR FL, is greater than 2475 cfm. (Cue: FI-78-015 indicates 2500 cfm.)	Flow indication on FI-78-015 on OOC681 is verified to be greater than 2475 cfm.	
31. ENSURE OA(B)V116, CONTROL ROOM AIR SUPPLY FAN A(B) running.	OAV116, SUPPLY FAN A, is running. Indicating light (A FAN) is red on OOC681.	
32. ENSURE OA(B)V121, CONTROL ROOM AIR RETURN FAN A(B), running.	OAV121, RETURN FAN A, is running. Indicating light (A FAN) is red on OOC681.	
33. VERIFY PDI-78-054, CONTROL ROOM AIR INSIDE/OUTSIDE ΔP_x , greater than or equal to .25 inches water.	Verify PDI-78-054 on OOC681 indicates greater than or equal to 0.25 inches of water.	
34. Ensure the device positions for RAD Isolation as per Attachment 1.	N/A	N/A
34a. Ensure HV-078-020A is OPEN. (Cue: EO reports that HV-078-020A is OPEN.)	Dispatch EO to determine position of HV-078-020A at panel OAC101 (008-304-619).	

STEP	STANDARD	SAT/UNSAT
34b. Ensure FD-C-78-011A(B) is MODULATING.	FD-C-78-011A (DAMPER A of EMERGENCY AIR FAN A) is partially or fully open on OOC681. Red light on.	
34c. Ensure HD078-002A(B) is OPEN.	HD-78-002A (FILTER INLET of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
34d. Ensure HD-78-009A(B) is OPEN.	HD-78-009A (FILTER OUTLET of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
34e. Ensure HV-78-010A(B) is OPEN.	HV-78-010A (RETURN ISLN of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
34f. Request a floor operator to ensure all components on Attachment 1 that are outside the control room, are in the proper condition for a Radiation Isolation. (Cue: All components on Attachment 1 outside the control room are in the proper condition for a radiation isolation.)	A floor operator is contacted to verify the components on Attachment 1 that are outside the control room, are in the proper condition for a radiation isolation.	
35. IF RAD isolation <u>not</u> complete, <u>THEN</u> REPEAT section 4.1.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to manually initiate a Control Room HVAC Radiation Isolation.

Task Condition(s):

1. Control Room HVAC is in the normal operating mode.
2. The Control Room Emergency Fresh Air Supply System is lined up for automatic operation.

NO.: 2262 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/08/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 290003K2.02 TAXONOMY NO.:
LESSON PLANS: LOT0450.15

CATEGORY: NRC NR1
SYSTEMS: CEHVAC ON

QUESTION :

*** RO ONLY ***

Given the following conditions, determine actions required.

Both units at 100%
Main Control Room Air Temperature is 79°F on TI-78-024A
Aux Equipment Room Temperature is 70°F on TITSH-78-065
Relative Humidity is 65% on MISL-78-028A
Outside air temperature is 72°F on TI-78-041

ANSWER :

- * OPEN MCR PANEL DOORS
- * PURGE THE MCR

NOTES:

PURGING THE AER IS NOT CORRECT WITH THESE CONDITIONS
3.0.3 SHUTDOWN IS NOT CORRECT WITH THESE CONDITIONS

REFERENCE: ON-115 STEPS 2.7 AND 2.8.6

QUESTIONS for EXAM: CATBRO

PAGE 10

11/16/95
10:29:29

NO.: 2263 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 262001A2.02 TAXONOMY NO.:
LESSON PLANS: LOT0660.05
CATEGORY: NRC NR1
SYSTEMS: 4KV

QUESTION :

*** RO ONLY ***

Assume a LOCA signal has been initiated on Unit 1 and offsite power has REMAINED in service. What is the automatic sequence of events which will occur to the D13 bus and it's loads?

ANSWER :

NOTE- t=0 is initiation of LOCA signal

t=0 sec 1C LPCI/RHR Pump starts. All other loads trip.
t=3 sec D-134 480V feeder breaker recloses
t=10 sec 1C Core Spray Pump starts
t=167 sec OA Control Room Chiller starts

REFERENCE: LOT-0660 PP. 10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: BYPASS RECW ISOLATION (Time Critical)

Task performed By: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

1. Bypass the DWGW isolation
2. Insert Malfunction 161A
3. Bypass and restore Instrument Gas

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

5 Minutes

Importance Rating(s):

3.3/3.7

System Number(s):

223002 K4.08

References:

ON-113

Task Standard(s):

RECW restored to both recirculation pumps within 10 minutes of SSV order

Initiating Cues: This Task is Time Critical.

You are directed by Shift Supervision to bypass the RECW isolation and restore RECW to the Recirc Pumps per ON-113 step 2.4.

Task Conditions:

1. RECW has been lost due to an inadvertent Group VIII A Inboard isolation and cannot be reset.
2. The plant is at power.
3. Instrument Gas is bypassed and restored.
4. DWCW is bypassed and restored.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of ON-113	Most recent revision of ON-113 obtained. (Rev.14)	
2. IF RECW is lost due to an inadvertent Group VIII A isolation <u>AND</u> isolation <u>cannot</u> be reset, <u>then</u> bypass the isolation as directed below <u>and</u> restore RECW to the Recirc Pump.	N/A	N/A
3. Place HS-13-*13 SEALS/OIL CLRS OUTBD ISOL BYPASS, to "BYPASS"	N/A	N/A
4. Open HV-13-*08 <u>AND</u> HV-13-*11 by placing HV-13-*08/*11, SUPPLY/RETURN SEAL/OIL CLR, to "OPEN".	N/A	N/A
*5. Place HS-13-*12, SEALS/OIL CLRS INBD ISOL BYPASS, to "BYPASS".	<u>Within 10 minutes of start</u> , rotate HS-13-112 keyswitch clockwise to Bypass position.	
*6. Open HV-13-*06, IN, <u>AND</u> HV-13-*07, <u>OUT</u> .	<u>Within 10 minutes of start</u> , rotate HS-13-106 and HS-13-107 clockwise to Open position and release. Red lights ON/green OFF.	
7. Acknowledge alarm F-5 on 118 services panel.	Alarm acknowledge Pushbutton depressed.	

STEP	STANDARD	SAT/UNSAT
8. Comply with Tech Spec 3.6.3 for an inoperable isolation valve.	Inform SSV that T.S. should be considered.	
9. IF it is determined associated instrumentation has failed, <u>then</u> refer to Tech Spec 3.3.2 for additional action.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues: THIS TASK IS TIME CRITICAL.

You are directed by Shift Supervision to Bypass the RECW isolation and restore RECW to the Recirc Pumps per ON-113, Step 2.4

Task Condition(s):

1. RECW has been lost due to an inadvertent Group VIII A Inboard isolation and cannot be reset.
2. The plant is at power.
3. Instrument Gas is bypassed and restored.
4. DFCW is bypassed and restored.

NO.: 2332 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK2.01 TAXONOMY NO.:
LESSON PLANS: LOT0460.04

CATEGORY: NRC NR1
SYSTEMS: RECW

QUESTION :

*** RO ONLY ***

What effects will closing the HV-13-102, Cooling Water To Reactor Building Isolation (SUPPLY ISOL), have on the plant during normal operation at 100% power?

ANSWER :

RECW will be secured to RWCU components.
The RWCU pumps will trip.

REFERENCES: P&ID M-13, M-44
LOT-0460 page 12

NOTE: answer may include RWCU isolation due to NRHX outlet high temperature and subsequent RWCU pump trip

NO.: 2333 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK3.04 TAXONOMY NO.:
LESSON PLANS: LOT0430.04

CATEGORY: NRC NR1
SYSTEMS: TECW

QUESTION :

*** RO ONLY ***

What is the response of the standby TECW pump during execution of SE-10 "LOCA" after reactor level dropped below -129"?

ANSWER :

The pump will auto start.

REFERENCES: E-565
LOT-0430 page 10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Shutdown Cooling Flow Adjustments (Alternate Path)

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

- Reset simulator to IC-5 (Flooded up into Rx Well).
- Adjust HV-C-51-103A (1A RHR Heat Exchanger Outlet Bypass POS) to 100%.
- Ensure HV-51-1F015A (Shutdown Cooling Return Valve) is full open.
- Throttle HV-C-51-1F048A (Heat Exchanger Bypass) closed to obtain 9000 gpm flow.
- Close HV-51-1F003A (Heat Exchanger Outlet).
- When HV-51-1F003A is open, insert Cry Wolf Annunciator MALF-1971, RHRSW High Radiation Alarm.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.1/3.1 A4.09

System Number:

205000

General References:

1. S51.8.B, Shutdown Cooling/Reactor Coolant Circulation Operation Start-up and Shutdown

Task Standards:

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

Initiating Cues:

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

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on TR-56-1R605 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.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S51.8.B	Copy of S51.8.B, Rev. 32 obtained.	
2. If additional cooling is required, then PERFORM the following:	N/A	N/A
2a. OPEN HV-C-51-*F048A(B), Heat Exch Bypass.	Position HV-C-51-1F048A(B) handswitch to OPEN and release. Red light on, green light off.	
2b. OPEN HV-51-*F003A(B), OUTLET	Position HV-51-1F003A handswitch to OPEN and release. Red light on, green light off.	
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.	

STEP	STANDARD	SAT/UNSAT
*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" handswitch taken to STOP.	
5b. Isolate shell side at 1F047 or 182.	HV-51-1F047A keylock switch taken to CLOSE, green light on, red light off.	
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 keylock switch taken to CLOSE, green light on, red light off.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Sat/Unsat

Initiating Cues:

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

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on TR-56-1R605 point 1.
2. "0A" EHRSW 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 65°F band.
6. The Unit 1 Reactor Operator is performing the cooldown ST.

NO.: 2245 REV.: 4 TYPE: ES ENTERED BY: WMT DATE ENTERED: 11/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 205000A1.01 TAXONOMY NO.:
LESSON PLANS: LOT0370.09

CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

*** RO ONLY ***

Unit 2 is in OPCON 5 * (star) with Shutdown Cooling in service. The HV-C-51-203A, "RHR Heat Exchanger Outlet Bypass" (POS), is being utilized to control reactor coolant temperature with the HV-C51-2F048A, HEAT EXCH BYPASS, valve throttled to 15%. An electrical malfunction causes HV-C51-2F048A to inadvertently stroke full open.

What concerns would you have with the conditions now established and why?

ANSWER :

SDC flowrate is now exceeding the limit of 6000 gpm and in-core unsupported instrument vibration will occur.

Reactor Coolant temperature will begin to increase since flow is bypassing the heat exchanger.

REFERENCE: GP6.1 SECTION 3.5.6
S51.8.B SECTION 4.3.12

NO.: 2246 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 205000A4.07 TAXONOMY NO.:
LESSON PLANS: LOT0370.13C

CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

*** RO ONLY ***

"A" loop of Shutdown Cooling is in service with cooldown rate being controlled by the OUTLET VALVE BYPASS (HV-C-51-103A). The RHR HEAT EXCHANGER SHELL SIDE OUTLET VALVE (HV-51-1F003A) is shut.

A loss of Instrument Air to the OUTLET BYPASS VALVE has resulted in closure of the valve. What effect does this have on reactor coolant temperature indication utilized for surveillance testing?

ANSWER :

Temperature indication is NOT valid since closure of HV-C-51-103A, the outlet valve bypass, concurrent with the heat exchanger outlet valve (HV-51-103A) being closed causes a loss of flow past the associated temperature element.

REFERENCES: S51.8.B NOTE ASSOCIATED WITH SECTION 4.3.14
M-51 SHEET 2

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Bypassing a Control Rod from the Reactor Manual Control System

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.4/3.1 K/A Generic #9

System Number(s):

201002

References:

S73.0.E, Rev. 7, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System

Task Standard(s):

Control Rod 18-31 bypassed from RMCS.

Initiating Cues:

Directed by Shift Supervision to bypass Control Rod 18-31 from the Unit *
RMCS.

Task Conditions:

1. Control Rod 18-31 is declared inoperable.
2. RDCS is tripped inop due to the fault on rod 18-31.

Performance Check List:

STEP	STANDARDS	SAT/UNSAT
*1. Obtain copy of S73.0.E. (Cue: none)	S73.0.E, Rev. 7 obtained.	
2. Reactor Manual Control System in Operation. (Cue: If asked say: "RMCS is operable.")	Ask the SSV or RO if RMCS is operable.	N/A
3. Permission to bypass rod obtained from Shift Supervision. (Cue: If asked say: "You have permission to bypass control rod 18-31.")	Ask SSV for permission to bypass control rod 18-31.	N/A
4. Refer to Attachment 1 and determine binary coordinates of control rod to be bypassed. (Cue: none)	Determine binary coordinates referring to Attachment 1: X=00110 Y=01001	

STEP	STANDARDS	SAT/UNSAT
*5. Place Bypassed Rod Identity Switches in position corresponding to binary coordinates of the control rod to be bypassed at *OC616. (Cue: Switches X2, X1, Y3 and Y0 are in the up position.)	Switches aligned X4, down X3, down X2, up X1, up X0, down Y4, down Y3, up Y2, down Y1, down Y0, up	
*6. Place Bypassed Switch in up position at *OC616. (Cue: Bypassed switch is in the up position.)	Bypassed switch in the up position at *OC616.	
*7a. <u>IF</u> RDCS is INOPERABLE, as indicated by INOP LED Lit, at *OC616... (Cue: The INOP LED is Lit.)	Look at the INOP LED and determine if it is Lit at *OC616.	
*7b. <u>THEN</u> depress "RESET" pushbutton located in RDCS STATUS section of analyzer card for several seconds at *OC616 <u>AND</u> RELEASE. (Cue: The "RESET" pushbutton depressed <u>AND</u> released.)	Depress the "RESET" pushbutton located in RDCS STATUS section of analyzer card for several seconds at *OC616 <u>AND</u> release.	

STEP	STANDARDS	SAT/UNSAT
8a. VERIFY ROD BYPASS light lit on the RDCS STATUS section of the ROD SELECT MODULE at *0C603, "Reactor Control Console"... (Cue: The RO reports, "The ROD BYPASS light is Lit on the *0C603 "Reactor Control Console.")	Ask the RO if the ROD BYPASS light is Lit on the RDCS STATUS section of the ROD SELECT MODULE at *0C603, <u>or</u> verify in the MCR.	
8b. <u>AND</u> verify RDCS INOPERATIVE annunciator clear on the *08 REACTOR (E-4). (Cue: The RO reports, "The RDCS INOPERATIVE annunciator is clear on *08 REACTOR (E-4)".	Ask the RO if the RDCS INOP annunciator is clear on *08 REACTOR, window E-4, <u>or</u> verify in the MCR.	
9. Document bypassed rod in Unified Narrative Log. (Cue: If asked say: "I understand you want me to note, control rod 18-31 bypassed.")	Notify CRS to make log entry saying control rod 18-31 is bypassed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Directed by the Shift Supervisor to bypass control rod 18-31 from the Unit *
Reactor Manual Control System.

Task Condition(s):

1. Control Rod 18-31 is declared inoperable.
2. RDCS is tripped INOP due to the fault on rod 18-31.

NO.: 2204 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002K1.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.03

CATEGORY: NRC
SYSTEMS: RMCS

QUESTION :

*** RO ONLY ***

An electronics problem results in a loss of the "scan mode" of the Rod Drive Control System. What information displayed on the Full Core Display is NOT being updated on a continuous basis?

ANSWER :

1. Accumulator status (HCU water level and HCU N2 pressure).
2. Scram inlet and outlet valve position.
3. Rod identification white light will not illuminate.

REFERENCE: LOT0080.03
S73.0.E STEP 4.1.5 NOTE

NO.: 2205 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002A3.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.06

CATEGORY: NRC
SYSTEMS: RMCS

QUESTION :

*** RO ONLY ***

Unit 2 is at 92% power with a yellow "WITHDRAW BLOCK" status light and a ROD OUT BLOCK annunciator. The Equipment Operator (EO) reports from the Aux Equipment Room that he has channels A and D SRM HI trip lights lit and two LEDs, F(I) and H(W), lit on the Activity Controls panel. What has caused your annunciator?

ANSWER :

* H(w) is scram discharge volume rod block level at 13 gallons.

notes; F(I) is normal indication with all rods NOT full in.
SRM Hi and Hi-Hi trips lights are normal at this power but have no effect with mode switch in RUN. Operator should have received annunciator E-2 due to scram discharge not drained)

REFERENCE: S73.0.B

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Inadvertent Opening of a Relief Valve

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

N/A

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

A2.03 4.1/4.2

System Number(s):

239002

References:

OT-114, Rev. 8 Inadvertent Opening of a Relief Valve

Task Standard(s):

Appropriate Fuses are pulled in accordance with OT-114.

Initiating Cues: -

You are directed by Shift Supervision to pull fuses for PSV-41-1F013K in accordance with OT-114.

Task Conditions:

1. LGS Unit 1 is in OPCON 3.
2. PSV-41-1F013K has indicated open for two minutes.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of OT-114. (Cue: If asked, respond, "I want you to obtain a copy of OT-114.")	Copy of OT-114, Rev. 8 obtained.	
*2. Obtain Fuse Pullers.	Fuse pullers in hand.	
*3. Pull Fuse AA-F4 B21C-F3K at panel *OC628. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F4 B21C-F3K at panel 10C628 removed.	
*4. Pull Fuse AA-F5 B21C-F4K at panel *OC628. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F5 B21C-F4K at panel 10C628 removed.	
*5. Pull Fuse AA-F3 B21C-F7K at panel *OC631. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F3 B21C-F7K at panel 10C631 removed.	
*6. Pull Fuse AA-F4 B21C-F8K at panel *OC631. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F4 B21C-F8K at panel 10C631 removed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to pull fuses for PSV-41-1F013K in accordance with OT-114.

Task Conditions:

1. LGS Unit 1 is in OPCON 3.
2. PSV-41-1F013K has indicated open for two minutes.

NO.: 1635 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295020AK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0730.08

CATEGORY: NRC
SYSTEMS: AIR PCIG NSSSS

QUESTION :

*** RO ONLY ***

What primary or secondary containment conditions will cause you to lose
BACKUP pneumatics to operate Recirc Pump Drywell Chilled Water
supply valves or the SRVs?

ANSWER :

a loss of backup capabilities of PCIG when :

1. RPV level drops below -129"
2. DW pressure exceeds 1.68#
3. Rx Enclosure Ventilation Exhaust radiation exceeds 1.35 mr/hr

REFERENCE: LOT0730.08 pp 20
GP-8.1

NO.: 2213 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 223001K1.10 TAXONOMY NO.:
LESSON PLANS: LOT0730.11 LOT0730.13E
CATEGORY: NRC
SYSTEMS: AIR PCIG

QUESTION :

*** RO ONLY ***

During your panel walkdown you notice containment isolation valve HV59-151A, ("Instrument Gas Supply Inlet A") is SHUT.

What protective action would cause this condition?

What drywell pneumatic load(s) would no longer have redundant sources?

ANSWER :

1. Instrument Gas pressure is less than 2# above drywell pressure
2. S, H, M ADS SRVs

NOTE; under non-emergency plant conditions this isolation would only occur due to PCIG gas problems or failure of PDS59-106A instrument

REFERENCE; LOT0730.11 PP 20
S59.1.B NOTE for 4.8
M-59 sheet 1 and 2

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Transferring Reactor Enclosure Floor Drain Sump to Suppression Pool Via
Core Spray System

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.9/3.8 K/A Generic #6

System Number(s):

295038

References:

Unit 1 T-236, Rev. 8, Transferring Reactor Enclosure Floor Drain Sump To
Suppression Pool Via Core Spray System

Task Standard(s):

Unit 1 RE floor drain sump pump discharge aligned to the Suppression Pool

Task Condition(s):

1. A LOCA with significant fuel damage has occurred on Unit 1.
2. All Post-LOCA Rad Monitors have HI-HI RAD trips sealed-in.
3. The "1C" RHR pump suction valve is leaking sufficiently to cause a flooding condition in the "A & C" RHR Pump Room.

Initiating Cues:

Shift Supervision directs you to align Unit 1 RE floor drain sump to the suppression pool in accordance with T-236.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. TRIP procedures must direct use of this procedure. (Cue: If asked, T-103 directs the use of T-236.)	Recognize SSVN has directed the use of T-236 per T-103.	N/A
*2. The following key obtained from Unit 1 T-200 cabinet in OSC BL-840 key required - 1424A key	Obtain a 1424A key.	
3. <u>If</u> either Reactor Enclosure Floor Drain Sump Pump is operable, <u>THEN</u> : (Cue: If asked, "The RE Floor Drain Sump Pumps are <u>not</u> known to be inoperable.")	Determine that at least one RE Floor Drain Sump Pump is operable.	
*a. Open Reactor Enclosure Floor Drain Sump Pump Discharge to Suppression Pool 61-1052 (162-A8-180). (Cue: Handwheel for 61-1052 rotates until it is full open.)	Rotate handwheel for 61-1052 counter-clockwise until valve is fully open.	

STEP	STANDARD	SAT/UNSAT
NOTE: The Floor Drain Sample Collection Tank Room is "RWP required for entry". Have the operator describe how to close 63-0138. *b. Close Unit 1 Drywell/Reactor Enclosure DRW Sumps to Floor Drain Collection Tank 63-0138 (134-W22*162.) (Cue: Handwheel for 63-0138 rotates until it is full closed.)	Rotate handwheel for 63-0138 clockwise until valve is fully closed.	
*4. INSERT/ROTATE 1424A key <u>AND</u> POSITION HSS-61-104, "Floor Drain," at 10C452 (15E-A8-180) (Attachment 1) to "Hi-Hi" to defeat Sump Pump high radiation trip interlock (from Post-LOCA Monitors RIX-26-191A,B,C,D).	Place HSS-61-104 to the Hi-Hi position.	

Comments:

Note: Any grade of UNSAT requires a comment.

NOTE: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to align Unit 1 RE floor drain sump to the Suppression Pool in accordance with T-236.

Task Condition(s):

1. A LOCA with significant fuel damage has occurred.
2. All Post-LOCA Rad Monitors have HI-HI RAD trips sealed-in.
3. The "1C" RHR pump suction valve is leaking sufficiently to cause a flooding condition in the "A & C" RHR Pump Room.

NO.: 2221 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 272000K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0762.05

CATEGORY: NRC
SYSTEMS: RMMS

QUESTION :

*** RO ONLY ***

Why do TRIPS direct the performance of T-236?

ANSWER :

to transfer highly radioactive water to the primary containment vice
Radwaste Enclosure during an accident

REFERENCE: T-236
T-103 BASES STEP SCC/L-4

QUESTIONS for EXAM: CATBRO

PAGE 20

11/16/95

10:29:41

NO.: 2222 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 268000K1.12 TAXONOMY NO.:
LESSON PLANS: LOT0705.03

CATEGORY: NRC
SYSTEMS: RADWASTE

QUESTION :

*** RO ONLY ***

Suppression pool cooling AND letdown in are in progress using the "A" loop of RHR. The radwaste Equipment Operator (EO) reports he has enough room for approximately 8000 gallons of water in the Collection Tank. How much can you lower suppression pool level ?

ANSWER :

This will allow conservatively 2 more inches of pool letdown.

REFERENCE: S52.1.B
S51.8.A
M-62

NOTE: Suppression Pool capacity is approximately 3500 gallons per inch

ATTACHMENT 5

SIMULATION FACILITY REPORT

Facility License: NPF-39

Facility Docket No: 50-352

Operating Test Preparation and Administration: November 13-14, 1995

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed:

<u>ITEM</u>	<u>DESCRIPTION</u>
-------------	--------------------

NONE	
------	--

ADMINISTRATIVE TOPICS OUTLINE

Examination Level: SRO

Candidate's Name: _____

Facility:

Limerick 1 and 2

Week of Examination: 11/13/95

Examiner's Name: _____

(Please Print)

Administrative Topic		Brief Question Description
A.1	FUEL HANDLING	BZC Bypass Restrictions
		Reactivation of License (A-C-10)
	STAFFING REQUIREMENTS	A-C-40 working restrictions
		A-C-40 work break requirements
A.2	EQUIPMENT CONTROL	ST grace period A-C-43
		Actions taken on Unsat "I" step
A.3	RADIATION CONTROL	Portable contamination survey
		Locked High Rad areas
A.4	EMERGENCY PLAN	NRC Communicator
		EAL/PAR Determination

EXAMINER: _____

CHIEF EXAMINER: _____

NO.: 2260 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.10

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Core Alterations have been halted due to a Boundary Zone Computer failure. The LSRO is requesting permission to bypass the computer. What actions are required to accomplish the bypass?

ANSWER :

On call Senior Staff Member permission

Shift Manager permission

second qualified person on bridge to monitor bridge and trolley movements

REFERENCE: S97.0.K

NO.: 2193 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.08 A-C-10

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You have been temporarily assigned to the PIN team for six (6) months and have been attending and passing LOR every cycle. What actions are required to reactivate your Senior Reactor Operator license after the Senior Manager of Operations performs his certification ?

ANSWER :

1. 40 hour qualification card under the direction of an active SRO
2. participate in all pre- and post-shift turnovers
3. participate in a tour of the plant

REFERENCE: A-C-10 SECTION 7.5.2

NO.: 2200 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09 A-C-40

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

As the Assistant Control Room Supervisor (ACRS) you are reviewing the daily time sheets. You note that one of your Equipment Operators (EO) will have worked 26 hours in the last 48 hours by the end of this shift. Assuming a relief can NOT be assigned, who must authorize the EO to exceed work hour restrictions?

ANSWER :

any one of the following:

1. Plant Manager
2. Sr Manager of Operations
3. Manager of Operations Services
4. Manager of Operations Support

REFERENCES: A-C-40 section 7.4

NO.: 2201 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
 LESSON PLANS: LOT1570.09 A-C-40

CATEGORY: NRC
 SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You are the floor supervisor on Days today. Tomorrow is your regularly scheduled day off. You are asked to cover ACRS. How much time must you have off between work periods before assuming the duties of the ACRS?

ANSWER :

8 hours between work periods including turnover

REFERENCE: A-C-10 section 7.2

NO.: 2195 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.08 A-C-43 TECH SPEC 4.0.2
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The OPCAT has just informed you that a particular surveillance test's due date is at 1200 today. Plant conditions will NOT allow performance at this time. In reviewing Tech Specs you note the ST has a surveillance frequency notation of "SA". What is the "drop dead" date for performance of this surveillance?

ANSWER :

1. "SA" performance notation is 184 days.
2. Tech Spec 4.0.2 allows a 25% "grace period"
3. $184 \times 25\% = 46$ days
4. meaning this ST can be completed within the next 46 days and still comply with Tech Specs

REFERENCE: A-C-43 4.2
TECH SPEC 4.0.2

NO.: 2194 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.10 A-C-43

CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The PCIG quarterly valve test is being performed by your PRO. All asterisk steps to this point are completed satisfactory. A step marked with "I" was just completed unsatisfactory. The ST cover sheet gives NO guidance on unsatisfactory "I" steps. What actions should you take?

ANSWER :

1. stop the test
2. direct the placing of PCIG valves in a safe condition
3. inform the SSV (may include inform Shift Manager since candidate is the SSV)
4. inform ACRS

REFERENCE: A-C-43 SECTION 7.4.4

NO.: 2196 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.05 HP-C-818

CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

You are monitoring an Equipment Operator (EO) performing a frisk of his hands and feet to exit a work area on the 1A RHR heat exchanger.

What instrument should he be using? At what instrument reading shall a Health Physics Technician be notified?

ANSWER :

RM-14/20

greater than or equal to 100 cpm above background

REFERENCE: HP-C-818 section 7.1.4

NO.: 2197 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.01 HP-C-202

CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

Entrance to the 1C RWCU Room and 510 room is posted "CAUTION - LOCKED HIGH RADIATION AREA". What are the potential ranges of dose rates associated with this room based on the posting?

ANSWER :

* dose rates in the room can range from ≥ 1 r/h to less than 500 r/h

notes:

"CAUTION - LOCKED HIGH RADIATION AREA" posting covers two subcategories

1. Level I LHRA dose rates ≥ 1 r/h and less than 10 r/h
2. Level II LHRA dose rates ≥ 10 r/h

at 500 r/hr the posting would be changed to "GRAVE DANGER - VERY HIGH RADIATION"

answer does not account for supervisory expectation posting room early at 800 mr/hr

REFERENCE: HP-C-215 section 7.6
HP-C-202

NO.: 2199 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.01 ERP-110

CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

An "ALERT" has just been declared by the Shift Manager, you must assign an NRC Communicator. What are the restrictions on your choice of this person?

ANSWER :

Restrictions as a minimum include:

- a. should be a Licensed individual
- b. must continuously man the FTS 2000 until NRC authorizes securing line
- c. shall NOT be the degreed SRO (STA) assigned to the shift.

REFERENCE: ERP-110 section 2.2

NO.: 2198 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/07/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.S01 ERP-101
:
CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

The following conditions exist on Unit 2:

Reactor Power is currently 21%
RPV level reached -39 inches ten minutes ago
Suppression Pool Temperature is 112°F
SBLC injection or control rod insertion is not expected for 2 hours

What is the appropriate Emergency Action Level and Protective Action Recommendation, if appropriate?

ANSWER :

- * EAL is "GENERAL EMERGENCY"
- * PAR is; "EVACUATE 2 MILE RADIUS,
AFFECTED SECTORS 2 TO 5 MILE RADIUS AND
2 ADJACENT SECTORS IN THE 2 TO 5 MILE RADIUS

REFERENCE: ERP-101 PAGE 15

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: **BRO (I)**

Facility: **Limerick 1 and 2**

Week of Examination: 11/14/95

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. SLC/0516	I	a. 295037 EA1.04/4.5/ RRCSS SLC Initiation
		b. 211000 K6.03/3.2/ SLC power supply
2. RWCU/0013	II	a. 204000 A1.07/2.9/ Dump valve closure
		b. 204000 K6.06/3.5/ TE failure
3. HPCI/0020	IV	a. 217000 A1.06/3.4/ RCIC HI level response
		b. 217000 A2.13/2.9/ Unit 2 RCIC Rm Cooling
4. RHR-SPC/0018	V	a. 233000 K1.02/2.9/ FPC flowpath
		b. 203000 K4.13/3.7/ RHRSW Loop Rad Monitors
5. 13.2KV/0025	VI	a. 262001 KA.07/3.5/ Load center interlocks
		b. 245000 K6.05/2.9/ Stator Cooling Trip
6. APRM/0004	VII	a. 214000 A2.02/3.7/ Rod Indications
		b. 212000 K1.10/3.4/ MT RPS inputs
7. RPS/0001	VII	a. 263000 K3.03/3.8/ RPS Power supply
		b. 212000 KA.11/4.5/ Mode Switch T.S.
8. Rad Release/0228	IX	a. 298000 KA.11/4.1/ Fire Sys. water source
		b. 298000 A4.05/3.3/ Controls for Fire Pumps
9. RCIC/0227	IV	a. 217000 K5.06/2.7/ RCIC Trip signals
		b. 217000 K4.04/3.1/ RCIC speed limits
10. FIRE PRO/0232	VIII	a. 298000 KA.06/3.8/ Sprinkler Operability
		b. 234000 A2.01/3.7/ Refuel Bridge T.S.

EXAMINER: _____

CHIEF EXAMINER: _____

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: **SRO (U)**

Facility: **Limerick 1 and 2**

Week of Examination: 11/14/95

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
1. HPCI/0020	IV	a. 217000 A1.06/3.4/ RCIC HI Level response
		b. 217000 A2.13/2.9/ Unit 2 RCIC Rm Cooling
2. APRM/0004	VII	a. 214000 A2.02/3.7/ Rod Indications
		b. 212000 K1.10/3.4/ MT RPS Inputs
3. Rad Release/0228	IX	a. 286000 KA.11/4.1/ Fire Sys. water source
		b. 286000 A4.05/3.3/ Controls for Fire Pumps
4. RCIC/0227	IV	a. 217000 K5.06/2.7/ RCIC Trip signals
		b. 217000 K4.04/3.1/ RCIC Speed Limits
5. FIRE PRO/0232	VIII	a. 286000 KA.06/3.8/ Sprinkler Operability
		b. 234000 A2.01/3.7/ Refuel Bridge T.S.

EXAMINER: _____

CHIEF EXAMINER: _____

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Initiate SLC (Alternate Path)

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to any power 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.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

6 Minutes

Importance Rating(s):

4.2/4.2 A4.08

System Number(s):

211000

References:

S48.1.B, Standby Liquid Control System Manual Initiation

Task Standard(s):

Standby Liquid injecting into the RPV, failure of RWCU to isolate is identified.

Initiating Cues:

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

Task Conditions:

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

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S48.1.B	Most recent revision of S48.1.B obtained (Rev. 8).	
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. Red light on, green off.	
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.	

STEP	STANDARD	SAT/UNSAT
6. Ensure the following: HV-48-1F006A "SLC Injection" (outboard A), open.	HV-48-1F006A is open, red light on, green light off.	
7. Ensure the following: HV-48-1F006B "SLC Injection" (outboard B), open	HV-48-1F006B is open, red light on, green light off.	
*8. Start the following SLC injection pumps, by holding keylock switches in "RUN" for at least one second before releasing: 1AP208 "SLC INJ PUMP" 1BP208 "SLC INJ PUMP" 1CP208 "SLC INJ PUMP"	SLC Pump A, B, and C switches to RUN. Red light on, green off.	
9. 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.	
10. Acknowledge Alarms	Depress alarm acknowledge pushbutton	
11. Perform the following to ensure operation of SLC injection pumps within parameters.	N/A	N/A
12. 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.	
13. Verify LI-48-1R601, "SLC TANK LEVEL" (LV), lowering at a steady rate.	C603 indication SLC tank level decreasing.	

STEP	STANDARD	SAT/UNSAT
14. Verify lowering reactivity as observed by lowering power on nuclear instrumentation.	Available power indications show power going down.	
*15. Ensure the following at 10C602: HV-44-1F001 "RWCU INBOARD ISOLATION" (INBOARD), closed.	Recognize HV-44-1F001 failed to isolate and try to manually close valve. Notify CRS.	
*16. Ensure the following: HV-44-1F004, "RWCU OUTBOARD ISOLATION" (OUTBOARD), closed. (CUE: The evaluator should say, "You can stop here, we have met the termination criteria for this JPM.")	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

Initiating Cues:

Shift Supervision directs you to manually initiate the Unit 1 SLC System,
per S48.1.B

Task Condition(s):

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

NO.: 2302 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 295037EA1.04 TAXONOMY NO.:
LESSON PLANS: LOT0315.03
:
CATEGORY: NR1 NRC
SYSTEMS: RRCS

QUESTION :

*** SRO ONLY ***

What conditions are required on Unit 2 for the RRCS system to automatically initiate Standby Liquid Control (SLC)?

ANSWER :

High reactor pressure of 1149 psig
and
118 second time delay
and
APRMs not downscale

OR

Low reactor level of -30"
and
118 second time delay
and
APRMs not downscale

REFERENCES: LOT-0315.03 page 11
GP-18 Attachment 3

NO.: 2303 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 211000K6.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.03

CATEGORY: NRC NR1
SYSTEMS: SLC

QUESTION :

*** SRO ONLY ***

T-111 is being executed. Standby Liquid Control (SLC) was manually started at minus 20 (-20) inches. A LOCA signal has just occurred.

What are the immediate and long term effects on SLC injection?

ANSWER :

SLC pumps will trip
pumps must be manually restarted to inject into the vessel

REFERENCE: SE-10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: REACTOR WATER CLEANUP FAST STARTUP

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

- Reset simulator to any power IC.
- Shutdown RWCU by turning pumps off, close the F001.
- Reset annunciators on 112 cleanup panel.
- Remove the RWCU F/Ds from service on page CU1, remote functions 91 and 92.
- Depressurize RWCU to $\approx 800\#$ by cracking open HV44-1F034 (Dump to Cond) and HC44-1R606 (Dump) until pressure on PI44-1R600 indicates 850#, then close HV44-1F034 and HC44-1R606.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.5/3.5 Generic #9

System Number:

204000

References:

S44.7.A, Reactor Water Cleanup Fast Startup

Task Standards:

The RWCU system in service with 2 pumps running, 2 demins in service and the demin bypass closed.

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S44.7.A	S44.7.A, Rev. 15 obtained.	
2. All Group III isolation signals cleared and reset per GP-8.	N/A	N/A
3. Ensure RECW is available.	N/A	N/A
4. No portion of RWCU system suspected of being drained. CUE: If asked by operator report as the SSV that "No portion of the RWCU system is suspected of being drained."	N/A	N/A
5. Ensure the following valves closed.	N/A	N/A
a. HV-C-*F033 via HC-44-*R606	- HC-44-1R606, Dump Flow Controller Position meter red pointer at zero.	
b. HV-44-*F034	- HV-44-1F034, Dump to Condenser, green light on, red light off.	
c. HV-44-*F035	- HV-44-1F035, Dump to Drain, green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
6. If *A(B) Filter Demins Hold Pump not running or Hold Pump Discharge not open then isolate *A(B) F/D at *OC092 CUE: When asked by operator report as the Radwaste operator that "Both Unit RWCU F/D's hold pumps are running and hold pump discharge valves are open".	Direct Radwaste operator to check the hold pumps and hold pump discharge valve.	
7. If *A(B) F/D isolated then dial FRC-45-*74A(B) demand setting to zero gpm and verify controller output is full left. CUE: If asked by operator, report as the Radwaste operator that "Unit 1 RWCU F/Ds are not isolated.	Direct Radwaste operator to check if F/Ds isolated.	

STEP	STANDARD	SAT/UNSAT
8. Performing the following to place any in-service RWCU F/D in "HOLD" mode. CUE: Report as Radwaste operator that: "S44.7.A step 4.4 is complete". If the operator requests step by step verification then report as Radwaste operator the following: - Both F/D hold pumps are running and hold pump discharge valves are open. - FRC-45-1-74A and B are in AUTO. - FRC-45-1-74A and B controller red arrow for demand is set to zero, black arrow for output is full left. - HV-45-1-66A and B Vessel Outlet Valve E_A and E_B are closed. - The HOLD START buttons were depressed and the HOLD lights are on.	Direct Radwaste operator to perform section 4.4 of S44.7.A	
9. Ensure alignment of the following valves as indicated at *OC602:	N/A	N/A
a. HV-44-*F034 closed.	HV-44-1F034 Dump to Cond green light on, red light off.	
b. HV-44-*F035 closed.	HV-44-1F035 Dump to Drain green light on, red light off.	
c. HC-44-*R606 closed.	HC-44-1R606 Dump Flow Controller position meter red pointer at zero.	
d. HV-44-*F044 closed.	HV-44-1F044 Demin Bypass green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
e. HV-44-*F040 closed.	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to CLOSE, green light on, red light off.	
f. HV-44-*F039 open.	HV-44-1F039 Return Isolation green light off, red light on.	
g. HV-44-*F042 open.	HV-44-1F042 Return green light off, red light on.	
h. HV-44-*F100 open.	HV-44-1F100 Bottom Head Drain green light off, red light on.	
i. HV-44-*F105 open.	HV-44-1F105 Inlet Flow green light off, red light on.	
10. Crack open HV-44-*F040	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to "OPEN" then "PULL TO STOP". Green light on, red light on.	
*11. Slowly jog open HV-44-*F001 and HV-44-*F004 as applicable to pressurize system to Reactor pressure.	HV-44-1F001 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open indicated by green light off, red light on.	
*12. Slowly jog open HV-44-*F040.	HV-44-1F040 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open as indicated by green light off, red light on.	

STEP	STANDARD	SAT/UNSAT
13. If F/Ds are not isolated then depress Filter "START" for both RWCU F/D's as applicable and verify the following: - Red HOLD lights not lit - Red FILTER lights lit - FRC-45-*74A(B) in "AUTO" - HV-45-*66A(B) closed CUE: Report as Radwaste operator that: "After the Filter "START" button was depressed, the red "HOLD" lights went out, the red "FILTER" lights are lit. FRC-45-1-74A and B are in AUTO and HV-45-1-66A and B are closed".	Radwaste operator directed to depress filter "START" for both F/Ds, or directed to perform step 4.7.1 of S44.7.A.	
14. Inform E.O. of 1A RWCU pump start.	E.O notified by phone/page that the 1A RWCU pump will be started.	
*15. Hold *A(B,C) P221 pump hand-switch in "START" for one of the previously operating RWCU Recirc Pumps at *0C602.	Place and hold 1A RWCU pump handswitch in start position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 91 on page CUI for the next step.		
16. If *A(B) is in FILTER mode, then adjust FRC-45-*74A(B) at *0C092 to previous flow rate by dialing up demand setting red arrow to desired flow rate and maintain system flow within pump limits. CUE: If operator asks Radwaste operator what previous flow rate was, then say: "Previous flow rate was 170 gpm".	Radwaste operator direct to adjust FRC-45-1-74A to previous flow rate or directed to perform step 4.7.3 of S44.7.A.	
17. If both F/D's isolated then throttle open HV-44-*F044 as necessary to control flow within pump limits.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
18. Release *A(B,C) P221 pump handswitch.	1A RWCU pump handswitch released.	
19. Make PA announcement stating 1B RWCU pump start.	PA announcement made stating the 1B RWCU pump will be started.	
*20. When RWCU system flow has stabilized as indicated by FI-044-*R609, then start the other previously operating RWCU recirc pump by placing *A(B,C) P221 pump handswitch in "START".	Place 1B RWCU Pump handswitch momentarily in "START" position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 92 on page CUI for the next step.		
*21. If second F/D is in FILTER mode, then adjust FRC-45-*74A(B) to match operating F/D flow rate.	Radwaste operator directed to adjust FRC-45-1-74B to match operating F/D flow rate.	
22. If second F/D is isolated then throttle open HV-44-*F044 to control system flow within pump limits.	N/A	N/A
23. Maintain system flow within pump limits.	FI44-1R609 indicates less than 340 gpm.	
24. If both F/Ds remain isolated, then place RWCU in blowdown per S44.4.A.	N/A	N/A
25. If bottom head drain flow as indicated on FI-44-*R610 is 0 gpm, then refer to S44.1.J and establish bottom head drain flow.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

NO.: 2330 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 204000A1.07 TAXONOMY NO.:
LESSON PLANS: LOT0110.07

CATEGORY: NRC NR1
SYSTEMS: RWCU

QUESTION :

*** SRO ONLY ***

An operator aligns RWCU to dump to the condenser and begins opening the HV-C-44-1F033 (Dump To Cond) with the controller. The red pointer on the 0-100% scale, at the bottom of the HC-44-1R606 controller, rapidly increases to maximum and alarm 112 CLEANUP G-1, RWCU Discharge Hi/Lo Press, annunciates. RWCU Dump Flow also increases rapidly on FI-44-1R602.

Describe the response of the HV-C-44-1F033, Dump To Cond, valve.

ANSWER :
HV-C-44-1F033 will close.

P&ID M-44
ARC 112 CLEANUP

Q230013S

NO.: 2331 REV.: 4 TYPE: ES ENTERED BY: WMT DATE ENTERED: 11/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 204000K6.08 TAXONOMY NO.:
LESSON PLANS: LOT0180.02

CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

*** SRO ONLY ***

During normal operation of RWCU with two pumps and two demins in service, a DIV I STEAM LEAK DETECTION HI TEMP/TROUBLE alarm annunciates due to failure of TE-44-1N016N high.

What is the effect on the RWCU system?

ANSWER :

HV-44-1F001 will isolate (close).
RWCU pumps will trip.
Demin hold pumps will start

REFERENCES: P&ID M-25
ARC 107 F-5

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Secure Unit 1 HPCI following Full Flow Functional Test

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset Simulator to any 100% power IC.
2. Place HPCI in full flow test, CST-to-CST, with flow controller in AUTO set at 5600 gpm.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s): System Number(s):

Generic #13	4.2/4.0	206000
A4.12	4.0/3.9	206000

References:

S55.1.D, HPCI SYSTEM FULL FLOW FUNCTIONAL TEST

Task Standard(s):

HPCI shutdown and restored to the auto/standby condition.

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S55.1.D.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S55.1.D. (Cue: If asked, respond, "I want you to obtain a copy of S55.1.D".)	Copy of S55.1.D, Rev.18 obtained.	
*2. Ensure the flow controller in "Manual".	FIC-55-1R600 in manual.	
*3. When test is complete THEN lower FIC-55-*R600 until speed as indicated on SI-56-*61 is nominal 2,250 rpm.	Lower speed using FIC-55-1R600 by depressing the "CLOSE" pushbutton in MANUAL until SI-56-161 indicates 2200 to 2300 RPM.	
4. IF HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), was opened to establish flow path to Suppression Pool, THEN close HV-55-*F071, TEST OUTBOARD.	N/A	N/A
*5. Close HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL).	Momentarily rotate HV-55-1F008 control switch to close. GREEN light ON, RED light OFF.	
*6. Simultaneously depress and hold Turbine Trip (TURBINE TRIP) pushbutton,	Depress and hold Turbine Trip pushbutton.	
*6a. AND close HV-55-*F001, "HPCI Steam Supply" (INLET).	Momentarily place HV-55-1F001 control switch to close. GREEN light ON, RED light OFF.	

STEP	STANDARD	SAT/UNSAT
7. Acknowledge HPCI LOW FLOW and HPCI OUT OF SERVICE alarm at 117 HPCI alarm panel.	Acknowledge HPCI Low Flow and HPCI Out of Service alarm at 10C655.	
*8. When HV-55-*F001, INLET, is fully closed, Then RELEASE TURBINE TRIP pushbutton.	Release TURBINE TRIP pushbutton when HV-55-1F001 GREEN light ON, RED light OFF	
9. When SI-56-*61, "HPCI Turbine Speed" (S), is less than 1,200 rpm, Then verify *OP213, "Auxiliary Oil Pump" (AUX OIL PUMP) is running.	When SI-56-161 is between 0 and 1,200 rpm, 10P213 AUX OIL PUMP RED light ON, GREEN light OFF.	
10. Verify FV-56-*12, "HPCI Turbine Stop Valve" (STOP), open and monitor position while *OP213, AUX OIL PUMP, is running.	FV-56-112 (STOP), RED light ON, GREEN light OFF.	
11. Verify HV-55-*F012, "HPCI Pump Minimum Flow" MIN FLOW, closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF.	
12. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
13. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
14. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
15. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
16. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	
17. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
18. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
*19. When 15 minutes has elapsed, then stop *OP216, VACUUM PUMP. (Cue: Inform operator that "15 minutes have elapsed since the turbine was tripped.")	Momentarily place 10P216 control switch to OFF. GREEN light is ON, RED light is OFF.	
*19.a Stop *OP213, AUX OIL PUMP.	Momentarily place the 10P213 control switch to STOP and GREEN light is ON and RED light is OFF.	
*20. When FV-56-*12, STOP, closes then verify HV-56-*F059, "HPCI Lube Oil Cooling Water Valve" (COOLING WATER), closes.	HV-56-1F059 closes by ensuring GREEN light is ON, RED light is OFF.	
21. If any abnormalities observed with FV-56-*12, "Turbine Stop Valve" (STOP), or *OP213, AUX OIL PUMP, then notify Shift Supervision.	N/A	N/A
22. When Suppression Pool Cooling Mode of RHR is no longer required, then refer to S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control, and secure Suppression Pool Cooling Mode of RHR.	N/A	N/A
23. Ensure *OP213, AUX OIL PUMP, off in "AUTO."	Check 10P213 control switch aligned to the AUTO position.	

STEP	STANDARD	SAT/UNSAT
24. Ensure FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL) is set at 5600 gpm in "AUTO".	Check FIC-55-1R600 is set at 5600 gpm and M/A select switch is positioned to "A".	
25. Ensure HV-55-*F002, "HPCI Steam Line Inboard Isolation" (INBOARD), is open.	Check HV-55-1F002 open by RED light ON, GREEN light OFF.	
26. Ensure HV-55-*F003, "HPCI Steam Line Outboard Isolation" (OUTBOARD) is open.	Check HV-55-1F003 open by RED light ON, GREEN light OFF.	
27. Ensure HV-55-*F100 HPCI Steam Line Warmup Bypass" (WARMUP BYPASS) is closed.	Check HV-55-1F100 closed by GREEN light ON, RED light OFF.	
28. Ensure HV-55-*F001 "HPCI Steam Supply" (INLET) is closed.	Check HV-55-1F001 closed by GREEN light ON, RED light OFF.	
29. Ensure HV-56-*F059, "HPCI Lube Oil Cooling Water Supply" (COOLING WATER), is closed.	Check HV-55-1F059 closed by GREEN light ON, RED light OFF.	
30. Ensure HV-55-*F007, "HPCI Pump Discharge Outboard Isolation" (DISCHARGE) is open.	Check HV-55-1F007 open by RED light ON, GREEN light OFF.	
31. Ensure HV-55-*F006, "HPCI Pump Injection" (INJECTION), is closed.	Check HV-55-1F006 closed by GREEN light ON, RED light off.	
32. Ensure HV-55-*F105, HPCI Pump Injection" (TO MAIN FEED A), is closed.	Check HV-55-1F105 closed by GREEN light ON, RED light OFF.	
33. Ensure HV-55-*F012, "HPCI Pump Minimum Flow" (MIN FLOW) is closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF	
34. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
35. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	

STEP	STANDARD	SAT/UNSAT
36. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
37. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
38. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
39. Ensure HV-55-*F072, "HPCI Turbine Exhaust" (EXHAUST), is open.	Check HV-55-1F072 open by RED light ON, GREEN light OFF.	
40. Ensure HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), is closed.	Check HV-55-1F071 closed by GREEN light ON, RED light OFF.	
41. Ensure HV-55-*F093, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (OUTBOARD), is open.	Check HV-55-1F093 open by RED light ON, GREEN light OFF.	
42. Ensure HV-55-*F095, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (INBOARD), is open.	Check HV-55-1F095 open by RED light ON, GREEN light OFF.	
43. Ensure HV-55-*F054, "HPCI Steam Line Drain Steam Trap Bypass" (TRAP BYPASS), is closed.	Check HV-55-1F054 closed by GREEN light ON, RED light OFF.	
44. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
45. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	
46. Ensure HV-56-*F025, "HPCI Barometric Condenser Drain Isolation" (INBOARD TO RADWASTE) is open.	Check HV-56-1F025 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
47. Ensure HV-56-*F026, "HPCI Barometric Condenser Drain Isolation" (DRAIN OUTBOARD), is closed.	Check HV-56-1F026 closed by GREEN light ON, RED light OFF.	
48. Ensure *OP216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP), is OFF and in "AUTO".	Check 1OP216 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
49. Ensure *OP215, "Barometric Condenser Condensate Pump" (CONDENSATE PUMP), is OFF and in "AUTO".	Check 1OP215 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
50. Clear all associated HPCI annunciators at *17 HPCI.	Depress annunciator reset pushbutton on panel 10C655 and verify no annunciator windows are illuminated at 117 HPCI panel.	
51. Clear all yellow HPCI System Status Lights.	Verify all HPCI system status lights are clear.	

Comments:

Note: Any rating of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S.55.1.D.

NO.: 2299 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A1.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.07

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 has experienced a Group 1 Isolation. RCIC was started manually using the arm and depress pushbutton and is injecting at rated flow into the reactor vessel. No further operator action is taken and reactor level reaches +54".

What automatic actions will occur with respect to the RCIC System?

ANSWER :

The RCIC Steam Supply valve (HV50-1F045) will close. When the F045 closes, the RCIC Injection Valve (HV50-1F013) and RCIC Min Flow (HV50-1F019) close.

REFERENCES: LOT-0380 pages 12 and 13
S49.1.C section 4.0
Q250020

NO.: 2372 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A2.13 TAXONOMY NO.:
LESSON PLANS: LOT0680.05

CATEGORY: NRC
SYSTEMS: ESW RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 is at 87% power with RCIC pump, valve and flow test in progress. The OC ESW Pump trips and HV11-078 (UNIT 2 SERVICE WATER RETURN) does NOT reposition as designed. (assume NO other ESW Pumps are running).

Describe the effect on RCIC and explain why these effects occur.

ANSWER :

RCIC room temperature will increase.

Room temperature will increase since no cooling water flowpath is provided.

The 78 valve failure will prevent return of cooling water flow to service water.

The ESW pump trip will cause the return path to ESW system to close.

REFERENCE: LOT0680.05 PP 10,11,12
OPAID SIM-M-0012

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: PLACE RHR LOOP A IN SUPPRESSION POOL COOLING

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Place RHRSW Loop A in service to RHR Heat Exchanger 1A

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.7/3.6 A1.08

System Number:

K/A 219000

References:

S51.8.A, Suppression Pool Cooling Operation and Level Control

Task Standards:

RHR Loop 1A in Suppression Pool Cooling with-system flow of 8000-8500 gpm through the RHR Heat Exchanger.

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain S51.8.A	S51.8.A, Rev.19 obtained.	
2. RHR Service Water available.	N/A	N/A
3. RHR lined up per S51.1.A, Set up of RHR System for Automatic Operation in LPCI mode. (CUE: If asked say, "RHR Loop A is aligned for automatic LPCI injection.	N/A	N/A
4. Sufficient capacity in Equipment Drain Collection Tank to receive inventory from Suppression Pool for lowering Suppression Pool level if necessary.	N/A	N/A
5. START selected RHR Service Water loop per S12.1.A, RHR Service Water System Startup.	N/A	N/A
6. ENSURE HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION) closed.	HV-51-1F006A, SUCTION, is closed by Green light on, red off.	
7. Ensure HV-51-*F047A(B) INLET is open.	HV-51-1F047A INLET is open Red light on, green off.	
8. Ensure HV-51-*F003A(B) OUTLET is open.	HV-51-1F003A OUTLET is open. Red light on, green off.	
9. Ensure HV-51-*F004A(B) SUCTION is open.	HV-51-1F004A SUCTION is open. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
10. Make PA announcement stating RHR Pump A(B) start.	PA announcement made stating RHR Pump A start.	
*11. START *A(B)P202, RHR Pump (PUMP).	RHR Pump A started by momentarily placing switch to START. Red light on, green off.	
12. Acknowledge annunciator.	Acknowledge annunciator 110 STEAM window B5.	
13. IF TRIP procedure requires returning to Suppression Pool Cooling during LOCA condition THEN CLOSE HV-51-*F017A(B) OUTBOARD, to satisfy valve interlocks.	N/A	N/A
*14. OPEN HV-51-*F024A(B), "RHR Pump Full Flow Test Return" (SUPP POOL CLG).	Throttle open HV-51-1F024A SUPP POOL CLG, by momentarily placing switch to OPEN. Place switch to PTS when FI-51-1R603A indicates around 8000 to 8500 gpm.	
*15. MAINTAIN flow indicated on FI-51-*R603A(B), "RHR Loop Flow" between 8000 to 8500 gpm.	FI-51-1R603A indicates between 8000 to 8500 gpm. HV-51-1F024A throttled to achieve flow rate.	
16. IF greater than 8500 gpm required to maximize cooling, THEN MINIMIZE amount of time to reduce amount of water added to Suppression Pool. (CUE: If asked say, "I do not desire suppression pool cooling to be maximized.")	N/A	N/A
*17. CLOSE HV-C-51-*F048A(B), HEAT EXCH BYPASS.	Close HV-C-51-1F048A HEAT EXCH BYPASS, by momentarily placing switch to CLOSE. Green light on, red off.	
18. MONITOR Suppression Pool temperature on SPOTMOS OR TR-56-*R605 points 15, 16, 17, 18 at *OC614, AND PERFORM the following:	Suppression Pool temperature on SPOTMOS or TR-56-1R605 indicates less than 90°F	

STEP	STANDARD	SAT/UNSAT
18a. MAINTAIN temperature below 90°F.	N/A	N/A
18b. IF Suppression Pool temperature cannot be maintained below 90°F THEN PLACE another RHR loop in service to provide additional cooling as directed by SSV.	N/A	N/A
19. IF *A(B) P202, "RHR Pump", trips AND HV-51-*F024A(B) RHR Pump Full Flow Test Return" (SUPP POOL CLG), is open THEN GO TO Step 4.3	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

NO.: 2376 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
 DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
 TASK NUMBER: SKA NO.: 233000K1.02 TAXONOMY NO.:
 LESSON PLANS: LOT0370.05

CATEGORY: NRC
 SYSTEMS: RHR FPCCU

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 5. The 1B loop of RHR is being placed in the "Fuel Pool Cooling Assist Mode".

What changes must be made to the 1B RHR Pump protective features to allow pump operation in this mode?

ANSWER :

The pump "loss of suction path trip" must be disabled to allow the pump to run with HV51-1F004, HV51-1F008 and HV51-1F009 closed.

REFERENCE: S51.8.G STEP 4.1.9
 E-11-1040 SHEET 7

NOTE: SEE K25 relay (pump will now run unless the F006 is shut)

NO.: 2373 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 203000K4.13 TAXONOMY NO.:
LESSON PLANS: LOT0400.04

CATEGORY: NRC
SYSTEMS: RHRSW RHR

QUESTION :

*** SRO ONLY ***

What design features of the RHRSW System prevents radioactive leakage to the environment?

ANSWER :

- * heat exchangers will isolate on heat exchanger outlet high radiation
- * pumps will trip on return loop high radiation

REFERENCE: LOT0400.04 PP 14,20

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: TRANSFER HOUSE LOADS TO THE UNIT AUXILIARY TRANSFORMER

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to any power IC.
2. Transfer 11 & 12 busses to offsite.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.6/3.7 A4.04

System Number(s):

262001

References:

S91.6A Transferring House Loads to Unit Auxiliary Transformer, Rev. 8

Task Standard(s):

11 and 12 Unit Auxiliary Buses being supplied by the main Generator.

Initiating Cues:

You are directed by Shift Supervisor to transfer house loads for Unit 1 to the Unit Aux. Transformer.

Task Conditions:

11 and 12 Unit Auxiliary Buses powered from offsite sources.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S91.6.A.	Obtain most recent revision of S91.6.A. (Rev. 8)	
2. Main Generator load greater than or equal to 100 MWe.	N/A	N/A
3. Determine section to perform. Perform the appropriate section as follows: a. Perform Section 4.2 to transfer 11 Aux Bus b. Perform Section 4.3 to transfer 12 Aux Bus. c. Perform Section 4.4 to transfer 21 Aux. Bus. d. Perform Section 4.5 to transfer 22 Aux Bus.	N/A	N/A
*4. Place 225-10113/SS SYNCHRONIZATION SWITCH to "ON".	Insert Synch Switch handle and rotate clockwise to "ON".	
5. Verify incoming voltmeter <u>AND</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS are both approximately 110V.	
6. <u>IF</u> incoming/running voltages differ by greater than 8 volts, <u>THEN</u> adjust startup bus voltage to obtain less than 8 volts difference.	VI-UAS and V/R-UAS voltages are within 8 volts of each other.	
*7. CLOSE <u>and</u> HOLD 252-10113/CS, "AUX FEED"	Take 252-10113/CS and rotate to counterclockwise "STOP" position and hold.	

STEP	STANDARD	SAT/UNSAT
*8. When 252-10113/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10113C/CS.	252-10113C released when Aux. Feed indicates closed. Red light lit, green light out.	
9. Verify 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" OPEN	10/11 and 20/11 feed open. Indicating lights show red light off, green light on.	
10. Acknowledge Alarm 175 GEN 1 F1	Depress alarm acknowledge pushbutton.	
*11. Place 225-10113/SS Synchronization Switch to "OFF".	Rotate Synch Switch handle to counter-clockwise "OFF" position and release.	
12. Ensure 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" in "NORMAL AFTER TRIP"	Rotate 252-10102/CS and 252-10106/CS to counter-clockwise and release. Green flag is indicated.	
13. Reset Alarm 125 GEN 1 F-1	Reset Pushbutton depressed.	
14. Place 243-101/CS, "FAST TRANSFER SELECT" TO "10-11"	243-101/CS in "10-11" position.	
*15. Place 225 10213/SS synchronization switch to "ON".	Insert synch switch handle and turn clockwise to "ON" position then release.	
16. Verify incoming voltmeter <u>and</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS voltages are both approximately 110V.	
17. If incoming/running voltages differ by greater than 8 volts, <u>then</u> adjust startup bus voltage to obtain less than 8 volts difference.	V/I-UAS and V/R-UAS voltages are within 8 volts of each other.	
*18. Close <u>and</u> hold 252-10213/CS, "AUX FEED".	Rotate 252-10213/CS clockwise and hold it.	
*19. <u>WHEN</u> 252-10213/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10213/CS.	252-10213/CS released when AUX. FEED Closed.	
20. Acknowledge alarm 125 GEN 1 F-24.	Depress alarm acknowledge pushbutton.	

STEP	STANDARD	SAT/UNSAT
21. Verify 252-10202/CS, "10/12 FEED" and 252-10206/CS, "20/12 FEED" open.	10/12 and 20/12 feed open. Indicating lights show red lights off, green lights lit.	
22. Place 225-10213/SS Synchronization Switch to "Off".	Rotate 225-10213/SS handle counter-clockwise to "OFF" position and release.	
23. Ensure 252-10202/CS, "10/12 FEED" and 252-10206/CS, "20/12 FEED" in "NORMAL AFTER TRIP".	Rotate 252-10202/CS and 252-10206/CS counter-clockwise and release. Green flag is indicated.	
24. Place 243-102/CS, "FAST TRANSFER SELECT" to "20-12"	242-102/CS in "20-12" position.	
25. Reset alarms	Alarm reset pushbutton depressed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to transfer house loads for Unit 1 to the Unit Aux Transformer.

Task Condition(s):

11 and 12 Unit Auxiliary Buses powered from offsite sources.

NO.: 2334 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 262001KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0650.04
CATEGORY: NRC NR1
SYSTEMS: 480V 480VAC

QUESTION :

*** SRO ONLY ***

Describe the interlocks between a Load Center Breaker and the Load Center Cross-tie Breaker.

ANSWER :

If both supply breakers are closed, the tie breaker will not close.
If one supply and the tie breaker are closed, closing the second supply breaker will trip the tie breaker.

REFERENCES: E-157, E-158
LOT- 0650 page 13

Q290025

NO.: 2335 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 245000K6.05 TAXONOMY NO.:
LESSON PLANS: LOT0630.02

CATEGORY: NRC NR1
SYSTEMS: SCW

QUESTION :

*** SRO ONLY ***

What are the effects of both Stator Cooling Water pumps tripping during plant startup at 40% power?

ANSWER :

Stator Cooling Water Runback will be initiated.
Turbine load will be reduced to 22%.
Bypass valves will open to maintain pressure at 920#.

REFERENCES: ON-114
LOT-0630 page 16

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: POWER REDUCTION USING RMSI WITH AN APRM FAILURE AND TWO RODS SCRAMMING
(ALTERNATE PATH)

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Reset the simulator to IC-17

During the power reduction, time in the following malfunctions. These malfunctions must all come in simultaneously.

1. Malfunction 20, A at 125% APRM Failure
2. Malfunction 16, F Control Rod 06-35 Scrams
3. Malfunction 17, F Control rod 30-31 Scrams

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.8/3.8 A4.04
3.7/3.8 A1.01
3.5/3.6 A2.04

System Number:

202002
201003
201003

General References:

1. RE-201, Reactor Maneuvering Shutdown Instructions
2. ON-104, Control Rods Problems

Task Standards:

Reduce power per the Reactor Maneuvering Shutdown Instructions, recognize that two rods scrambled, and place the reactor mode switch in shutdown.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain RE-201	RMSI Notebook obtained.	
2. Review cautions on page 2	N/A	N/A
*3. Reduce core flow as required to reduce power to 90%. Ensure FLILP does not exceed 1.0 or Core Flow below 55 MLB/hr.	By depressing the CLOSE pushbutton on each Recirculation Pump M/A Station, reduce power to 90%.	
4. If Core Flow is less than 55 MLB/hr then fully insert the rods in the following core maps checked "Rods Required for Stability Rod Line." Otherwise fully insert rods as needed to reduce power and maintain a symmetric rod pattern.	N/A	N/A
*5. Select control rod 14-23	Control rod 14-23 select light lit	

STEP	STANDARD	SAT/UNSAT
*6. Fully insert control rod 14-23 NOTE: Insert malfunctions to occur in one minute	Control rod 14-23 at position 00.	
*7. Select control rod 46-23	Control rod 46-23 select light lit	
*8. Fully insert control rod 46-23	Control rod 46-23 at position 00	
NOTE: INSERT MALFUNCTIONS		
9. Acknowledge annunciators and determine 2 control rods have scrambled (Cue: If SSV informed 2 rods have scrambled say "I want you to handle the situation") NOTE: Step 10 may be marked N/A if mode switch placed to SHUTDOWN and ON-104 not referenced	Annunciators acknowledged	
10. Enter ON-104, Control Rod Problems	ON-104 entered	
*11. Place Reactor Mode Switch to SHUTDOWN (Cue: "You can stop here, we have met the termination criteria for the JPM")	Reactor Mode Switch in SHUTDOWN position	

Comments:

JPM Overall Rating: _____
SAT/UNSAT

Note: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

NO.: 2267 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 214000A2.02 TAXONOMY NO.:
LESSON PLANS: LOT0060.05

CATEGORY: NRC NR1
SYSTEMS: CRDM

QUESTION :

*** SRO ONLY ***

A reactor scram has occurred on Unit 1. Power has been lost to the Full Core Display and the Process Computer and ERFDS are not available. What additional methods are available for determining whether all control rods are fully inserted?

ANSWER :

1. Four rod display indicates 00 for selected control rods
2. Rod Drive Control Cabinet in Aux Equip Room indication LED labeled RODS NOT FULL IN is not lit.

Reference: LOT-0060, pp.10
GP-11, Appendix I, Section 3.0

Q310004

NO.: 2304 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 212000K1.10 TAXONOMY NO.:
LESSON PLANS: LOT0300.03
CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

*** SRO ONLY ***

Describe the Main Turbine related automatic scram signals. Include setpoints, bypasses and logic arrangements in your description.

ANSWER :

1. Turbine Stop Valve Closure - turbine stop valves $\leq$ 5% closed; 3 out of 4 logic; auto bypassed if turbine first stage pressure is $\leq$ 30%
2. Turbine Control Valve Fast Closure - as sensed by RETS Fluid pressure $\geq$ 500 psig; 1 out of 2 twice logic; auto bypassed if turbine first stage pressure is $\leq$ 30%

References: LOT-0300 pages 9 and 10
Q320004
Tech Spec Bases LSSS

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Scram Reset (Alternate Path)

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Transfer house loads
Place Reactor Mode Switch in "Shutdown"
Trip Main Turbine
Line up for startup level control
Insert malfunction 028,,B on page RP
Place simulator in freeze when level is above 12.5"

Evaluation Method (Circle One):

☒ Perform

☐ Simulate

Evaluation Location:

☐ Plant

☒ Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.8/3.8 A4.14

System Number:

212000

General References:

1. GP-11, Rev. 11
2. T-99, Rev. 7

Task Standards:

Recognize failure to scram reset and initiate reactor scram manually.

Initiating Cues:

You are directed by Shift Supervisor to perform a Unit 1 Scram reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of GP-11.	GP-11, Rev. 11 obtained.	
2. All half scram <u>AND</u> full scram signals cleared.	No unbypassed scram signal as indicated by Reactor 107, 108	
3. Reactor Mode Switch in shutdown or refuel.	Reactor Mode Switch in shutdown or refuel.	
4. <u>If</u> fuel damage is suspected, <u>THEN</u> request Health Physics to survey scram discharge volume prior to releasing fluid inventory (Ref. 4.8)	N/A	N/A
*5. Place Scram Discharge Volume High Level Bypass keylock switch on *OC603 to BYPASS.	SDV High Level Bypass Switch in Bypass position.	
6. Verify SCRAM DISC VOLUME HI LEVEL SCRAM BYPASSED alarm on *07 REACTOR (C-2).	SDV HI LEVEL SCRAM BYPASSED 107 REACTOR (C-2) illuminated.	
7. Ensure RPIS INOPERATIVE clear on *08 REACTOR (E-5).	RPIS INOPERATIVE 108 Reactor (E-5) not lit.	
8. <u>IF</u> RDCS INOPERATIVE alarm lit on *08 REACTOR (E-4), <u>THEN</u> reset RDCS per S73.0.F.	N/A	N/A
9. <u>IF</u> CRD Full Core Display <u>OR</u> Process Computer indicates <u>not</u> all control rods are fully inserted, <u>THEN</u> perform GP-11 Appendix I using Attachment I.	All rods full in.	

STEP	STANDARD	SAT/UNSAT
10. Reset Alternate Rod Insertion at *JC603: Depress ARI RESET pushbuttons (1A, 1B, 2A, 2B)	ARI Reset pushbuttons 1A, 1B, 2A, 2B depressed.	
*11. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*12. Verify the eight (8) scram group white lights are on for Scram System A <u>AND</u> Scram System B on *OC603.	1 light for RPS 'A' and 1 light for RPS 'B' did <u>not</u> light.	
13. <u>IF NOT</u> on after initial reset, <u>THEN</u> verify proper mode switch position <u>AND</u> repeat step 3.8 one time.	Mode switch in "shutdown".	N/A
14. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*15. <u>IF NOT</u> on after second reset attempt, <u>THEN</u> insert a full scram signal via manual scram pushbuttons.	Channel CHA1 or CHA2, and CHB1 or CHB2 manual scram collars turned and pushbuttons depressed.	
16. Verify scram discharge volume vent/drain valves close	Vent: Inboard (XV47-1F010), Outboard (XV47-1F180), GREEN light ON, RED light OFF Drain: Inboard (XV47-1F011), Outboard (XV47-1F181), GREEN light ON, RED light OFF	

STEP	STANDARD	SAT/UNSAT
17. Enter T-100 <u>AND</u> exit this procedure. CUE: This task is terminated when the trainee determines that the procedure can not be accomplished and the SSV is informed. Then say, "You can stop here, you have met the termination criteria for this JPM".		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Shift Supervision directs you to perform a Unit 1 Scram Reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

NO.: 2306 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 212000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0300.14

CATEGORY: NRC NR1
SYSTEMS: RPS TS

QUESTION :

*** SRO ONLY ***

Unit 2 is at 8% power and all procedural requirements for placing the Reactor Mode Switch to RUN have been satisfied. The RO attempts to place the Reactor Mode Switch from STARTUP to RUN, but the switch will not move to the RUN position. All subsequent attempts to move the Reactor Mode Switch to RUN have failed. What actions will you take?

ANSWER :

Place one RPS trip system in the tripped condition within one hour and be in at least HOT SHUTDOWN within the next 12 hours.

REFERENCES: T.S. 3.3.1

NO.: 2307 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 263000K3.03 TAXONOMY NO.:
LESSON PLANS: LOT0690.02
CATEGORY: NR1 NRC
SYSTEMS: RPS DC

QUESTION :

*** SRO ONLY ***

What effect will a loss of Division II DC have on the RPS inverters?

ANSWER :

The normal supply to the 1B RPS UPS Static Inverter will be lost and it will automatically transfer to its primary alternate supply the TSC Inverter.

REFERENCES: LOT-0690 page 10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Response to SGTS Filter High Temperature

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.7/3.5 Generic #13

System Number(s):

26100

References:

S76.7.B "SGTS CHARCOAL FILTER HIGH TEMPERATURE RESPONSE"
ARCS 002 H4, H5 (B SGTS FILTER HI AND HI-HI TEMP)

Task Standard(s):

Affected filter isolated
Fire suppression initiated to affected filter
Fire suppression secured when fire is out

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "OB" SGTS filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTS Filters are in service. Annunciators 002 H4 and H5 have alarmed.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Refer to ARC H-4 and H-5 on 002 Vent.	Reference ARC for H-4 and H-5 on 002 Vent.	
2. Verify high temperature using TI-76-010B on 00C681. (Cue: Temperature 565°F and increasing.)	Locate TI-76-010B and determine temperature, greater than alarm setpoints.	
*3. Refer to S76.7.B "SGTS FILTER HIGH TEMP RESPONSE."	Procedure located using ARC or other means, and copy obtained of S76.7.B, Rev. 9.	
4. Immediately notify SSVN and HP of SGTS Filter Status.	Inform SSVN and HP that a possible fire exists in "B" SGTS filter and extinguishing must be initiated.	
5. Place HS-76-013A(B) unaffected SGTS Filter Isolation at 00C681 in OPEN to ensure filter flowpath. (Cue: HS-76-013A is in OPEN.)	N/A	N/A
*6. Place affected HS-76-013A(B) SGTS Filter Isolation to CLOSE to isolate affected SGTS filter train. (Cue: HS-76-013B is in CLOSE.)	Place HS-76-013B in CLOSE.	

STEP	STANDARD	SAT/UNSAT
7. Ensure HV-76-012A(B) filter outlet, and HV-76-011A(B) filter inlet, for affected SGTs train CLOSED. (Cue: Red lamps out, green lamps lit.)	HV-76-012B and HV-76-011B closed by position indication on OOC681. Red lamps out, green lamps lit.	
8. Monitor affected SGTs charcoal temp on TI-76-010A(B), at OOC681. (Cue: Use pen to indicate 575°F and slowly rising.)	Monitor TI-76-010B on OOC681.	
9. If temperature approaches 550°F, then go to section 4.3.	Proceed to section 4.3 to initiate deluge.	
10. Ensure unaffected HS-76-013A(B) SGTs filter train at OOC681 in OPEN. (Cue: HS-76-013A is in OPEN.)	N/A	N/A
11. Ensure affected HS-76-013A(B) in CLOSE to ensure filter train isolation. (Cue: HS-76-013B is in CLOSE.)	N/A	N/A
12a. When fire conditions are verified..... (Cue: Use pen to indicate 620°F and rising TI-76-010B.)	N/A NOTE-Precautions in procedure state that filter temperature above 550°F indicates ignition temperatures (600°F) being approached, and extinguishing <u>must</u> be initiated.	

STEP	STANDARD	SAT/UNSAT
12b.then obtain CRS permission (to continue) and (Cue: "This is the CRS. Initiate fire suppression to the "OB" SGTS filter".)	Communicate with CRS. Obtain permission to initiate fire suppression into charcoal bed.	
12c.Health Physics assistance for the following: (Cue: HP is standing by.)	Communicate with HP to have a HP tech in attendance.	
*13. Open 22-0129 SGTS Filter Spray Head Block Valve (625-A8-332). (Cue: Valve is unlocked. Handle is rotated such that it is aligned with the pipe.)	Obtain frangible lock key and unlock valve, or omit key and break lock. Fully open valve by rotating handwheel counter clockwise.	
14a. If OBF169 SGTS charcoal filter is affected.... (Cue: None)	N/A	N/A
*14b.then manually open 22-0113 Deluge Water Valve (624-A8-332). (Cue: Handwheel is fully counter clockwise) ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. "B" SGTS filter temperature is 200°F and dropping." ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. B SGTS filter temperature is less than 200°F." "From the Shift Supervisor; secure fire suppression to "B" SGTS filter."	Unlock valve or break lock. Fully open valve by rotating handwheel counter clockwise.	

STEP	STANDARD	SAT/UNSAT
15. When fire or threat of fire has ceased, or LSH-76-013A(B) at O*C588 SGTs plenum is full, as indicated by WATER LEVEL HIGH RED LIGHT ON, then close the following valves to prevent plenum pressurization:	N/A NOTE-OA(B)C588 are located on the wall just outside the double doors for the SGTs filter rooms. Red and green lamps are at the bottom of panels.	N/A
*15a. 22-0129 (Cue: Handle is rotated such that it is perpendicular to the pipe.)	Close valve 22-0129. Note: Critical step only if 22-0113 is left open in step 15c.	
15b. <u>OAF169 ONLY</u> 22-0112	N/A	N/A
*15c. <u>QBF169 ONLY</u> 22-0113 (Cue: Handwheel fully clockwise.)	Close valve 22-0113. Note: Critical step only if 22-0129 was left open from step 15a.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "OB" SGTs filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTs Filters are in service. Annunciators 002 H4 and H5 have alarmed.

NO.: 2265 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0733.09
CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 1. Unit 2 is in OPCON 5 *. The Unit 2 cooling tower is going to be drained on your shift and is expected to remain drained for two weeks.

What effect will this action have on the fire suppression system and what actions must be taken?

ANSWER :

One of the two required sources of fire water will be inoperable. Place the backup diesel driven fire pump in service per S22.1.H within 7 days.

Reference: T.S. 3.7.6.1
S22.1.H
LOT-0733 pp. 27

Q330228

NO.: 2266 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 286000A4.05 TAXONOMY NO.:
LESSON PLANS: LOT0733.05

CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

What will cause the Motor Driven and Diesel Driven fire pumps to start?

ANSWER :

Motor Driven Fire Pump automatically starts on firemain pressure 100
psig decreasing or manual start from control room or local controller.

Diesel Driven Fire Pump automatically starts on firemain pressure 95
psig decreasing or manual start from control room or local controller.

REFERENCE: ARC 005 FIRE A2, B3
LOT-0733 PP. 9, 10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Open RCIC Inboard Isolation MOV Using Emergency AC Power

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle One):

Perform

☒ Simulate

Evaluation Location:

☒ Plant

Simulator

Approximate Completion Time:

20 Minutes

Importance Rating:

3.9/3.5

Generic 9

System Number:

217000

General References:

SE-8-1, Section 2.3.9

Task Standards:

HV-49-*F007 opened using DIV 1 power.

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain SE-8-1	SE-8-1 Rev. 2 obtained.	
2. Open breaker D*34-R-E-13 (Cue: Breaker handle is OPEN)	D*34-R-E-13 OPEN	
3. NOTE: A screwdriver and LV-*00 key are required for the next step.	Screwdriver and LV-*00 key obtained.	
*4. Unlock and open terminal box *OTB49-*F007. (402-R15-253/475-R14-253) (Located next to D*34-R-E)	*OTB49-*F007 unlocked and opened.	
*5. Place 43-CB22313 "Manual Transfer Switch" (located in terminal box *OTB49-*F007) in "EMERGENCY". (Cue: Transfer switch is in EMERGENCY).	Transfer switch 43-CB22313 placed in EMERGENCY.	
*6. Unlock and close breaker D*14-R-C-31 (Cue: Breaker is unlocked. Breaker handle is in CLOSE.)	D*14-R-C-31 unlocked and closed.	

STEP	STANDARD	SAT/UNSAT
7. Place HS-49-*07-2, "RCIC Main Steam Supply Inbrd PCIV" (INBOARD) to "OPEN" at *OC201 (Cue: "This is the Reactor Operator, HS-49-*07-2 has been placed to OPEN.	Direct RO at *OC201 to place HS-49-*07-2 to OPEN.	
8. Ensure (INBOARD) HV-49-*F007 OPENS. (Cue: "This is the Reactor Operator, HV-49-*F007 indicates fully OPEN.")	Communicate with RO to verify HV-49-*F007 OPENS fully.	
9. Lock OPEN breaker D*14-R-C-31. (Cue: Breaker handle is in OPEN, breaker is LOCKED.)	Open D*14-R-C-31 lock breaker OPEN.	
10. Return 43-CB22313 "Manual Transfer Switch" to "NORMAL". (Cue: Transfer Switch is in "NORMAL")	Transfer switch 43-CB22313 placed to NORMAL	
11. (Cue: You have met the termination criteria. You may stop here.)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Insat

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

NO.: 2297 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K5.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.09

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What trip signals will result in a closure of the RCIC Turbine Trip and Throttle Valve?

ANSWER :

- 1) Manual Pushbuttons (Local and MCR)
- 2) High Turbine Exhaust Pressure
- 3) RCIC Pump Low suction pressure
- 4) RCIC Isolation
- 5) Overspeed

References: LOT-0380 page 14
E51-1040, E1 through D33
Q370227

NO.: 2298 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0380.13

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What is the minimum speed at which the RCIC Turbine may be run and why is this limit imposed?

ANSWER :

Operation below 2200 RPM is prohibited. Operation at low speed may cause insufficient lube oil flow to bearings and subsequent damage.

REFERENCES: LOT-0380 page 21
S49.1.D section 3.1
Q380227

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Diesel Driven Fire Pump Manual Start per T-244

Operator: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s):

3.2/3.3 K/A A2.08

System Number(s):

286000

References:

1. T-244, Rev.7, Alternate Injection from the Fire System

Task Standard(s):

Diesel drive Fire Pump started locally.

Initiating Cues:

You are directed by Shift Supervision to perform a manual start of the Diesel Driven Fire Pump using T-244.

Task Condition(s):

1. Unit 2 reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. The motor driven Fire Pump is not available.
4. The Diesel Driven Fire Pump did not start from the Main Control Room.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of Unit 2, T-244.	Unit 2 T-244 obtained.	
2. If starting OOP511, "Diesel Driven Fire Pump", THEN DEPRESS HS-22-026-1 at OOC650 (Main Control Room) AND VERIFY pump is running.	N/A	N/A
2a. If OOP511, "Diesel Driven Fire Pump", fails to start, THEN PLACE control switch at OOC519 (Diesel Fire Pump Room) in "MANUAL A"... (Cue: Switch is in "Manual A".)	Control switch in "Manual A"	
2b. AND HOLD HS-22-026-2 in "START" at OOC519 until diesel starts. (Cue: Switch is in "START" position, the engine is not cranking.)	HS-22-026-2 in "START" position.	
*2c. If diesel fails to crank in step 4.3.2.1, THEN PLACE control switch in "MANUAL B" at OOC519... (Cue: Switch is in "MANUAL B".)	Control switch in "MANUAL B".	

STEP	STANDARD	SAT/UNSAT
*2d. AND HOLD HS-22-026-2 in "START" at OOC519 until diesel starts. (Cue: Switch is in "START" position, engine cranks, fires and is running.	HS-22-026-2 in "START" position until engine starts.	
2e. VERIFY OOP511, "Diesel Driven Fire Pump" starts. (Cue: Engine is running.)	Diesel Driven Fire Pump is running.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to perform a manual start of the Diesel Driven Fire Pump using T-244.

Task Condition(s):

1. Unit 2 reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. The motor driven Fire Pump is not available.
4. The Diesel Driven Fire Pump did not start from the Main Control Room.

NO.: 2233 REV.: 4 TYPE: ES ENTERED BY: WMT DATE ENTERED: 11/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.06 TAXONOMY NO.:
LESSON PLANS: LOT0733.09

CATEGORY: NRC
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

The Motor Driven Fire Pump is inoperable and the Diesel Driven Fire Pump cannot be started automatically or manually.

What sprinkler systems must be declared inoperable?

ANSWER :

WP-75 Cable Spread Rm Units 1 and 2 (Fire Zone 22 and 23)

PR-65 Rx Unit 1 El. 201 area 11 (fire Zone 42A)

PR-98 Rx Unit 2 El. 283 area 13 (Fire Zone 70A)

REFERENCE: S22.1.H

NO.: 2234 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/19/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.07

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

During Core Alterations the LSRO reports that while raising an irradiated fuel bundle from the core the "NORMAL UP" limit switch failed to stop upward motion of the main hoist. What, if any, actions are required?

ANSWER :

1. stop Core Alterations, the Refuel Bridge is INOPERABLE per LCO 3/4.9.6.
2. place bundle in a safe condition

REFERENCES: ST-6-107-630-*
S97.0.C
TECH SPEC surveillance requirement 4.9.6.1.d

1995 LGS COURSE "B"
OPERATING EXAMINATION
NRC INITIAL EXAM

CAT A - Administrative Tasks

Topic	Reference	K&A	A.1		A.2		A.3		A.4	
			RO	SRO	RO	SRO	RO	SRO	RO	SRO
A-41.1		294001 A1.12 (3.5)			X					
A-41.1		294001 A1.12 (3.5)			X					
HP-C-215		294001 K1.03 (3.3)					B(10)			
HP-C-106		294001 K1.03 (3.3)					B(9)			
ERP		294001 A1.16 (2.9)							B(11)	
ERP		294001 A1.16 (2.9)							X	
SNO ENTRY		294001 A1.13 (4.5)	X							
P1		294001 A1.15 (3.2)	X							
OM-L-3.3		294001 A1.03 (2.7)	B(12)							
OM-L-3.3		294001 A1.03 (2.7)	X							
SNO ENTRY		294001 A1.13 (4.3)		X						
A-C-10		294001 A1.03 (3.7)		X						
A-C-43		294001 A1.02 (3.7)				X				
A-C-43		294001 A1.02 (3.7)				X				
HP-C-215		294001 K1.03 (3.8)								
HP-C-215		294001 K1.03 (3.8)					B(9)			
ERP 850		294001 A1.16 (4.7)					B(10)			
ERP 110		294001 A1.16 (4.7)							B(11)	
A-C-40		294001 A1.03 (3.7)		B(12)					X	
A-C-40		294001 A1.03 (3.7)		X						

FOOTNOTES

B. Coverage of 10CFR55.45(a) (9), (10), (11), (12) items

1995 LGS COURSE "B"
OPERATING EXAMINATION
NRC INITIAL EXAM

CAT B - Control Rm Sys / Walkthrough - JPMs

Topic	Reference	K&A	B.1		B.2		FOOTNOTES
			RO	SRO	RO	SRO	
RMCS	SF1	201002 A2.04 (3.2)			0226		1A
HPCI	SF2	206000 A1.01 (4.3)	0019				2A
SRV	SF3	239002 A2.03 (4.1)			0204		G, 3A
RECIRC	SF1	202001 A2.09 (3.2)	0035				4A, B(8)
SEC CONT	SF5	295038 EK3.04 (3.4)			0215		F, 5A
EDG	SF6	264000 A4.04 (3.7)	0006				D, 6A, B(3)
RPS	SF7	212000 A3.04 (3.9)	0031				7A, B(4)
CREFAS	SF9	290003 A4.01 (3.2)	0024				9A, B(9)
NSSSS	SF5	223002 A4.03 (3.6)	0030				
SDC	SF4	205000 A4.09 (3.1)	NRC1				E, H, B(7)
SLC	SF1	211000 A4.08 (4.2)		0014			1A
RWCU	SF2	204000 A4.01 (3.0)		0013			2A
RCIC	SF4	217000 A2.02 (3.7)		0017			4A, J, B(7)
RHR-SPC	SF5	219000 A1.01 (4.0)		0018			5A
13.2 KV	SF6	262001 A4.04 (3.6)		0025			6A
APRM	SF7	215005 A2.03 (3.8)		0004			7A, D, J, B(3), B(4)
RAD RELEASE	SF9	261000 A2.03 (3.2)				0228	9A, F, J, B(8), B(9)
RPS	SF7	212000 A4.14 (3.8)		0001			E, D, B(3)
RCIC	SF4	217000 A2.03 (3.4)				0227	G, J, F
REFUEL	SF8	234000 A3.02 (3.7)				NRC2	J, H

FOOTNOTES

A - 7 Different SF Systems

B - Coverage of 10CFR55.45 (a) (3), (4), (7), (8), (9) items

C - SRO Candidates in Package 1

- RO Candidates in Package 2

D - Alternate Path Requirement

E - Low Power/Shutdown Requirement

F - Escort to RCA Requirement

G - E/A Requirement

H - New JPM

J - Administer to SRO (U)

1995 LGS COURSE "B"
OPERATING EXAMINATION
NRC INITIAL EXAM

CAT B - Control Rm Sys / Walkthrough - RO Questions

Topic	Reference	K&A	B.1		B.2	
			RO	SRO	RO	SRC
RMCS	LOT0080.03	201002 K1.01 (3.2)			Q10226	
RMCS	LOT0080.06	201002 A3.01 (3.2)			Q20226	
HPCI	LOT0340.02	206000 KA.07 (4.1)	Q30019			
HPCI	LOT0340.04	206000 K4.18 (3.2)	Q40019			
PCIG	LOT0730.13	223001 A4.11 (3.1)			Q50204	
PCIG	LOT0730.11	223001 K1.10 (3.0)			Q60204	
TEHVAC-RR	LOT0030.07	202001 A4.07 (2.7)	Q70035			
RSP	LOT0735.04	202001 KA.09 (3.8)	Q80035			
RMMS	LOT0762.05	272000 K4.02 (3.7)			Q90215	
RADWASTE	LOT0705.03	268000 K1.12 (2.5)			Q100215	
RHRSW	LOT0400.06	264000 A3.06 (3.1)	Q110006			
ESW	LOT0680.04	295018 AK2.02 (3.4)	Q120006			
RPS	LOT0300.11	212000 A2.05 (3.1)	Q130031			
RRCS	LOT0315.03	295037 EK2.03 (4.1)	Q140031			
CE VENT	LOT0450.11	290003 K4.01 (3.1)	Q150024			
4 KV	LOT0660.05	262001 A2.02 (3.6)	Q160024			
RECW	LOT0460.04	295018 AK2.01 (3.3)	Q170030			
TECW	LOT0430.04	295018 AK3.04 (3.3)	Q180030			
SDC	LOT0370.09	205000 A4.09 (3.1)	Q19NRC1			
SDC	LOT0370.13	205000 A4.07 (3.7)	Q20NRC1			

1995 LGS COURSE "B"
OPERATING EXAMINATION
NRC INITIAL EXAM

CAT B - Control Rm Sys / Walkthrough - SRO Questions

Topic	Reference	K&A	B.1		B.2	
			RO	SRO	RO	SRO
RRCS	LOT0315.03	295037 EA1.04 (4.5)		Q210014		
SLC	LOT0310.03	211000 K6.03 (3.2)		Q220014		
RWCU	LOT0110.07	204000 A1.07 (2.9)		Q230013		
NSSSS	LOT0180.02	204000 A2.13 (3.4)		Q240013		
RCIC	LOT0380.07	217000 A1.08 (3.4)		Q250017		
ESW	LOT0680.05	217000 A2.13 (2.9)		Q260017		
RHR	LOT0370.05	233000 K1.02 (2.9)		Q270018		
RHRSW	LOT0400.04	203000 K4.13 (3.7)		Q280018		
480V	LOT0650.04	262001 KA.07 (3.4)		Q290025		
SCW	LOT0630.02	245000 K8.05 (2.9)		Q300025		
CRDM	LOT0060.05	214000 A2.02 (3.7)		Q310004		
RPS	LOT0300.03	212000 K1.11 (3.5)		Q320004		
FP	LOT0733.09	286000 KA.11 (4.1)				Q330228
FP	LOT0733.05	286000 A4.05 (3.3)				Q340228
DC DIST	LOT0690.02	263000 K3.03 (3.8)		Q350001		
RPS	LOT0300.14	212000 KA.11 (4.5)		Q360001		
RCIC	LOT0380.09	217000 K5.06 (2.7)				Q370227
RCIC	LOT0380.13	217000 K4.04 (3.1)				Q380227
REFUEL	LOT0760.14	234000 KA.11 (3.9)				Q39NRC2
REFUEL	LOT0760.07	234000 A2.01 (3.7)				Q40NRC2

1995 LGS COURSE "B"
OPERATING EXAMINATION
NRC INITIAL EXAM

CAT C - Integrated Plant Ops.

Applicant Type			Scenario Number		
	Type	Req	1	2	3
RO	Reactivity	1	X	X	-
	Normal	1	X	X	-
	Instrument	2	XX	XX	-
	Component	2	XX	XX	-
	Major	1	T111	T117	-

As RO	Reactivity	1	-	X	X
	Normal		-	-	-
	Instrument	1	-	X	X
	Component	1	-	X	X
	Major	1	-	X	T116
SRO-I					
As SRO	Reactivity		-	-	-
	Normal	1	X	X	X
	Instrument	1	X	X	X
	Component	1	X	X	X
	Major	1	X	X	X

SRO-U	Reactivity		-	-	-
	Normal	1	-	X	X
	Instrument	1	-	X	X
	Component	1	-	X	X
	Major	1	-	X	X

SES
GROUP

76	67	65
3A/1B	2A/2B	1A/3B

1995 LGS COURSE "B"
WRITTEN EXAMINATION
NRC INITIAL EXAM

						Plant Generics		Plant Systems						Emergency/Abnormal Evolutions																
Q#	Topic	Reference	K&A	(3.5)	(3.9)	(3.3)	(3.7)	(3.3)	(4.5)	(3.4)	(3.5)	(4.2)	(3.6)	(4.2)	(4.4)	(4.5)	(4.4)	(3.8)	(3.1)	(3.9)	(2.8)	(3.6)	(2.7)	(2.6)	(3.5)	(4.4)	(3.5)	(3.3)	(3.8)	(3.3)
1	FIRE BGD	LOT1850.02	294001 K1.16																											
2	CLR	LOT1860.06	294001 K1.02																											
3	ALARA	LOT1760.02	294001 K1.04																											
4	VLV LU	LOT1570.02	294001 K1.01																											
5	ELEC SFT	LOT1574.07	294001 K1.01																											
6	ARI	LOT0070.05	201001 K2.05																											
7	RMCS	LOT0060.04	201002 K3.01																											
8	RECIRC FC	LOT0040.04	202002 K6.04																											
9	LPCI	LOT0370.06	203000 K4.01																											
10	HPCI	LOT0340.14	206000 K6.11																											
11	DW SPRY	LOT0370.09	295024 EK2.11																											
12	SL	LOT1820.03	295025 EK1.05																											
13	NSSSS	LOT0180.02	295031 EK2.12																											
14	SLC	LOT0310.10	295037 EK2.04																											
15	OT 104	LOT1540.04	295014 AK1.06																											
16 RO	RWCU	LOT0110.06	204000 K1.15																											
16 SRO	RWCU/TS	LOT0110.11	204000 KA.11																											
17	MN STM	LOT0120.12	239001 K5.06																											
18	SDC	LOT0370.09	200500 K1.14																											
19	COND	LOT0520.04	256000 K4.04																											
20	OG	LOT0510.02	271000 K1.09																											
21 RO	HPCI	LOT0340.08	295008 AK3.05																											
21 SRO	HPCI/TS	LOT0340.17	206000 KA.11																											
22	OT 112	LOT1540.02	295001 AA2.01																											
23	OT 116	LOT1540.03	295002 AK3.03																											
24	EI	LOT1566.02	295003 AK1.06																											
25	IFC	LOT1566.03	295004 AK2.03																											

1995 LGS COURSE "B"
WRITTEN EXAMINATION
NRC INITIAL EXAM

Plant Generics

Plant Systems

Emergency/Abnormal Evolutions

Q#	Topic	Reference	K&A	13% 17%		Group 1		Group 2		Group 3		Group 1		Group 2		Group 3	
				RO	SRO	28%	23%	19%	13%	4%	4%	13%	26%	19%	17%	4%	
						RO	SRO	RO	SRO	RO	SRO	RO	SRO	RO	SRO	RO	
26	A-C-79	LOT1570.11	294001 A1.01 (2.9)	X	X												
27	PRT RDG	LOT2002.07	294001 A1.07 (3.0)	X	X												
28	A-C-40	LOT1570.09	294001 A1.03 (2.7)	X	X												
29	ON 116	LOT1550.01	294001 A1.14 (2.9)	X	X												
30	HP	LOT1760.01	294001 K1.03 (3.3)	X	X												
31	REHVAC	LOT0200.07	288000 K5.02 (3.2)							X	X						
32 RO	TIPS	LOT0290.06	215001 K4.01 (3.4)							X							
32 SRO	REFUEL/TS	LOT0760.14	234000 KA.11 (3.9)								X						
33	FPCCU	LOT0750.08	233000 K6.10 (2.9)							X	X						
34	REFUEL	LOT0760.08	234000 K6.04 (2.9)							X	X						
35	T103	LOT1560.02	295032 KA.11 (4.1)														
36 RO	ON121	LOT1550.02	295021 AA.2.01 (3.5)													X	
36 SRO	PRT RDG	LOT2002.08	294001 A1.07 (3.0)		X											X	
37 RO	REFUEL	LOT0760.07	295023 AK3.02 (3.4)														
37 SRO	GP5	LOT1530.07	294001 A1.08 (3.1)		X											X	
38 RO	ON120	LOT1550.02	295023 AK1.03 (3.7)													X	
38 SRO	OPS MAN	LOT1574.12	294001 A1.12 (3.5)		X												
39 RO	CLR	LOT1860.03	294001 K1.02 (3.9)	X	X												
39 SRO	OPS MAN	LOT1574.15	294001 A1.06 (3.4)		X												
40	CLR	LOT1860.03	294001 K1.02 (3.9)	X	X												
41	SFTY	LOT1860.14	294001 K1.09 (3.4)	X	X												
42	SRM	LOT0240.07	215004 K4.06 (3.2)			X	X										
43	IRM	LOT0250.09	215003 K3.02 (3.6)			X	X										
44	APRM	LOT0270.07	215005 K4.02 (4.1)			X	X										
45 RO	LPRM	LOT0260.11	215005 K3.07 (3.2)			X											
45 SRO	LPRM/TS	LOT0260.13	215005 KA.11 (4.1)				X										
46	SLC	LOT0310.08	211000 K5.03 (3.2)			X	X										
47	CREFAS	LOT0450.09	290003 K4.01 (3.1)					X	X								
48	SPC	LOT0370.09	219000 K4.03 (3.8)					X	X								
49	GEN AUX	LOT0570.04	245000 K6.10 (2.8)					X	X								
50	RBM	LOT0280.09	215002 K6.04 (2.8)					X	X								

1995 LGS COURSE "B"
WRITTEN EXAMINATION
NRC INITIAL EXAM

Plant Generics

Plant Systems

Emergency/Abnormal Evolutions

Q#	Topic	Reference	K&A
51	AUX PWR	LOT0640.04	262001 K3.05 (3.2)
52	T100	LOT1560.06	295005 KA.12 (3.5)
53	T101	LOT1560.06	295006 AA1.01 (4.2)
54	OT102	LOT1540.05	295007 AK3.06 (3.7)
55	OT100	LOT1540.05	295009 AA1.02 (4.0)
56	OT101	LOT1540.05	295010 AK3.01 (3.8)
57	HPCI	LOT0340.13	206000 K6.05 (3.5)
58	CS	LOT0350.09	209000 K4.08 (3.8)
59	RPS	LOT0300.04	212000 K4.12 (3.9)
60	INST	LOT0050.10	216000 K6.01 (3.1)
61	RCIC	LOT0380.06	217000 K1.07 (3.1)
62	T102	LOT1560.06	295011 KA.11 (4.1)
63	T102	LOT1560.06	295012 AK1.04 (2.9)
64	SE1	LOT1563.05	295013 AK2.01 (4.4)
65	T104	LOT1560.06	295017 AK2.10 (3.1)
66	ON113	LOT1550.02	295018 AK3.07 (3.1)
67 RO	ADS	LOT0330.06	218000 K5.01 (3.8)
67 SRO	ADS	LOT0330.06	218000 K5.01 (3.8)
68 RO	PRI CONT	LOT0130.08	223001 K1.07 (2.5)
68 SRO	PRI CONT/TS	LOT0160.10	223001 KA.05 (4.1)
69	NSSSS	LOT0180.02	223001 A1.02 (3.7)
70	FW	LOT0540.14	259001 K6.13 (3.0)
71 RO	FWLCS	LOT0550.07	259002 K6.03 (3.1)
71 SRO	FW/TS	LOT0540.16	259002 KA.06 (3.5)
72	OT104	LOT1540.05	295014 AA1.07 (4.0)
73	OT105	LOT1540.05	295015 AA1.02 (4.0)
74	OT117	LOT1540.05	295037 EA1.01 (4.6)
75	SP SRY	LOT0370.21	230000 A1.01 (3.8)

[illegible]

Group 1		Group 2		Group 3	
28%	23%	19%	13%	4%	4%
RO	SRO	RO	SRO	RO	SRO
		X	X		
X	X				
X	X				
X	X				
X	X				
X	X				
X					
	X				
X					
	X				
X	X				
X	X				
X	X				
	X				
		X	X		

[illegible]

1995 LGS COURSE "B"
WRITTEN EXAMINATION
NRC INITIAL EXAM

Plant Generics

Plant Systems

Emergency/Abnormal Evolutions

Q#	Topic	Reference	K&A
76 RO	RAD MON	LOT0710.07	272J00 KA.07 (3.5)
76 SRO	RHRSW	LOT0400.05	295026 EK3.02 (4.0)
77	FIRE PRO	LOT0733.05	286000 KA.09 (3.9)
78 RO	RECIRC	LOT0030.07	202001 K1.07 (3.1)
78 SRO	4KV	LOT0660.05	295003 AK3.03 (3.6)
79	CRDM	LOT0060.04	201003 KA.07 (3.6)
80	ON 119	LOT1550.02	295019 KA.05 (3.4)
81	PCIG	LOT0730.13	295020 AK2.18 (3.5)
82	ON107	LOT1550.02	295022 KA.07 (3.1)
83	T102	LOT1560.06	295029 EK1.01 (3.4)
84	OT114	LOT1540.05	295026 AA1.02 (3.9)
85	EHC	LOT0590.11	241000 K3.02 (4.2)
86 RO	SBGT	LOT0190.06	261000 K3.01 (3.3)
86 SRO	ESW/TS	LOT0680.11	264000 KA.06 (3.9)
87	EDG	LOT0670.05	264000 K4.01 (3.5)
88 RO	RCIC	LOT0380.02	217000 KA.07 (3.6)
88 SRO	RRCS	LOT0315.04	295037 EK3.08 (3.9)
89 RO	HPCI	LOT0340.11	206000 K4.08 (4.2)
89 SRO	REFUEL	LOT0760.07	295023 AK3.02 (3.8)
90 RO	OT110	LOT1540.05	295008 AA1.03 (3.1)
90 SRO	T112	LOT1562.02	295030 EK3.01 (4.1)

13% 17%
RO SRO

Group 1 Group 2 Group 3
28% 23% 19% 13% 4% 4%
RO SRO RO SRO RO SRO

Group 1 Group 2 Group 3
13% 26% 19% 17% 4%
RO SRO RO SRO RO

1995 LGS COURSE "B"
WRITTEN EXAMINATION
NRC INITIAL EXAM

Plant Generics

Q#	Topic	Reference	K&A
91 RO	T104	LOT1560.06	295038 EA2.01 (3.3)
91 SRO	T118	LOT1562.02	295031 EK3.02 (4.7)
92	T102	LOT1560.06	295030 EK1.03 (3.8)
93	E10/20	LOT1566.02	295003 AA1.01 (3.7)
94 RO	CS	LOT0350.04	209000 K1.05 (3.7)
94 SRO	T116	LOT1562.02	295037 EA.02 (4.2)
95 RC	RPS	LOT0300.09	212000 K6.01 (3.6)
95 SRO	T102	LOT1560.06	295024 KA.12 (4.5)
96 RO	DCWS	LOT0150.06	223001 A4.12 (3.5)
96 SRO	T111	LOT1562.03	295009 KA.12 (4.4)
97 RO	RWM	LOT0095.03	201006 A3.01 (3.2)
97 SRO	SE2	LOT1563.02	295016 KA.10 (3.6)
98 RO	DC DIST	LOT0690.02	263000 K2.01 (3.1)
98 SRO	T117	LOT1562.02	295015 KA.12 (4.4)
99 RO	DW SPRAY	LOT0370.09	226001 KA.09 (3.7)
99 SRO	SE6	LOT1563.03	295016 KA.12 (4.4)
100 RO	ON111	LOT1550.01	290001 A4.01 (3.3)
100 SRO	T102	LOT1560.04	295010 AA2.02 (3.9)

13%	17%
RO	SRO

Plant Systems

Group 1		Group 2		Group 3	
28%	23%	19%	13%	4%	4%
RO	SRO	RO	SRO	RO	SRO
X					
X					
X					
		X			
		X			
		X			
		X			
		X			

Emergency/Abnormal Evolutions

Group 1		Group 2		Group 3
13%	26%	19%	17%	4%
RO	SRO	RO	SRO	RO
		X		
	X			
		X	X	
		X	X	
	X			
	X			
	X			
	X			
	X			
	X			

1995 LGS EXAM

INITIAL SUBMITTAL

NO.: 2280 REV.: 4 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.16 TAXONOMY NO.:
LESSON PLANS: LOT1850.02
:
CATEGORY: NRC NR1
SYSTEMS: OM TS

QUESTION :

Assuming all required fire brigade training is complete and up to date, all of the following Shift members can be designated as fire brigade leader EXCEPT?

- a. A Turbine Enclosure Equipment Operator
- b. The Floor Supervisor designated SLO/STA
- c. The Assistant Control Room Supervisor
- d. The Fourth Plant Reactor Operator

ANSWER : B

Reference: OM-L-3.2 Section 5.3
TS 6.2.2.e
LOT-1850 pp.6

01 RO/SRO

NO.: 2256 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS: LOT1860.06
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

A Clearance is being removed from valves in a contaminated area of the 309 room. Which ONE of the following describes a Clearance and Tagging Manual requirement?

- a. tags shall be removed without the clearance in-hand.
- b. a copy of the Clearance shall be used in the area.
- c. tags shall be removed and wrapped in yellow polybags.
- d. the original Clearance shall be used in the area.

ANSWER : B

REFERENCE: LOT1860.06 PP 6,9

NO.: 2261 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 RAWING:
TASK NUMBER: SKA NO.: 294001K1.04 TAXONOMY NO.:
LESSON PLANS: LOT1760.02
:
CATEGORY: NRC NR1
SYSTEMS: HP

QUESTION :

An on shift Equipment Operator, performing a routine inspection, requires a dose extension to allow up to 3500 mRem TEDE. Complete the following:

According to HP-C-106, the dose extension is initiated by the _____ and is approved by the _____.

- a. Health Physics Supervisor, Plant Manager
- b. Control Room Supervisor, Radiation Protection Manager
- c. Shift Manager, Plant Manager
- d. Health Physics Supervisor, Radiation Protection Manager

ANSWER : B

REFERENCE: HP-C-106, Section 7.5
LOT-1760 pp. 3

3 RO/SRO

NO.: 2317 REV.: 3 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.01 TAXONOMY NO.:
LESSON PLANS: LOT1570.02
:
CATEGORY: NR1 NRC
SYSTEMS: A-8

QUESTION :

Which ONE of the following describes the requirement for Locked Valve Log entries during surveillance tests (ST) and clearance application?

- a. If an IVOR is required, no entry is required.
- b. Manipulations per a Clearance application require entries.
- c. Only persons performing a manipulation shall make the entry.
- d. All manipulations per an ST require entries

ANSWER : A

References: A-8 section 7.0
Question # 4

NO.: 2350 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.07 TAXONOMY NO.:
LESSON PLANS: LOT1574.07
:
CATEGORY: NRC NR1
SYSTEMS: ELECSFT OPSMAN

QUESTION :

All of the following actions shall be performed when restoring power to a bus or panel that has unexpectedly de-energized EXCEPT?

- a. Determine the cause of the trip.
- b. Remove interlock control power fuses for associated loads.
- c. Strip the bus of all loads.
- d. Coordinate a controlled restoration of the associated loads.

ANSWER : B

REFERENCES: OM-C-7.2 page 3
Lot-1574 page

NO.: 2320 REV.: 3 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/05/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 201001K2.05 TAXONOMY NO.:
LESSON PLANS: LOT0070.05
:
CATEGORY: NR1 NRC
SYSTEMS: ARI

QUESTION :

A Group I isolation occurs at 100% power. The "A" RPS logic fails to initiate. Which ONE of the following describes the operation of the Redundant Reactivity Control System during the transient?

- a. Four (4) ARI valves de-energize to open on a reactor power signal.
- b. Four (4) ARI valves energize to close due to "B" RPS still energized.
- c. Eight (8) ARI valves energize to open on a reactor pressure signal.
- d. Eight (8) ARI valves deenergize to close on a reactor level signal.

ANSWER : C

References: LOT-0070 page 31
Question #6

NO.: 2206 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002K3.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.04
:
CATEGORY: NRC
SYSTEMS: RMCS GP-11

QUESTION :

After a Unit 2 scram, the RO resets the scram. Control rod 34-23 indicates " " (blank-blank) on the Four Rod Display. Which ONE of the following confirms that the rod is fully inserted?

- A. an OD-7 printout indicates "X-X"
- B. F(I), "ALL RODS NOT FULL IN" LED is out on A.E.R. panel 20C616
- C. Process Computer Control Rod Display indicates "***"
- D. Full Core Display red light is out

ANSWER : B

REFERENCE: GP-11 SECTION 3.3
LOT0080.04 PP17

NO.: 2219 REV.: 3 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 202002K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0040.04

CATEGORY: NRC
SYSTEMS: RECIRC

QUESTION :

With the unit operating at 88% power, a FWLCS failure caused a reduction in total feedwater flow to 14%. "A" and "B" Recirculation Pumps are operating at 80% speed following the transient. Which ONE of the following describes the concern with this Recirculation Pump condition?

- a. Runout of the pumps may occur
- b. Air binding of the pumps may occur
- c. Excessive pump suction subcooling
- d. Cavitation of the pumps may occur

ANSWER : D

REFERENCE: LOT0040.04 PP 6

NO.: 2273 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 203000K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0370.06

CATEGORY: NRC NR1
SYSTEMS: RHR LPCI

QUESTION :

Unit 1 is in OPCON 3 with RPV pressure 40 psig. The 1A RHR Pump breaker is removed. While performing testing, the Division 1 LPCI MAN INIT pushbutton is armed and depressed.

Which ONE of the following describes the response of HV51-1F017A (RHR LPCI INJECTION)?

HV51-1F017A will:

- a. remain closed
- b. open if the 1C RHR Pump is started
- c. open when D114-R-G is reenergized
- d. immediately open and inject condensate transfer

ANSWER : D

Reference: E11-1040 (RHR) Sh 5
LOT-0370 pp. 14, 17

9 RO/SRO

NO.: 2209 REV.: 8 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 206000K6.11 TAXONOMY NO.:
LESSON PLANS: LOT0340.14H

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

With Unit 1 at 22% power, valve 42-1F042B, the Division 2 Reference Leg Manual Isolation valve, is shut.

Which ONE of the following statements, describes HPCI response?

"HPCI would:

- a. start, and run on minimum flow ONLY"
- b. start and inject to the RPV"
- c. fail to start on low RPV level due to INDICATED high RPV level but would start on high drywell pressure"
- d. trip and not start on high drywell pressure or low RPV level due to INDICATED high RPV level"

ANSWER : B

REFERENCE: LOT0340.14H PP 22,36

NO.: 2274 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295024EK2.11 TAXONOMY NO.:
LESSON PLANS: LOT0370.09
:
CATEGORY: NRC NR1
SYSTEMS: RHR

QUESTION :

A steam leak has occurred in the Unit 2 drywell.

- drywell pressure is 22 psig
- RPV pressure is 800 psig
- NO LOCA signal exists

Which ONE of the following describes the ability to open the RHR System inboard and outboard drywell spray valves?

- a. Either the inboard or the outboard spray valve can be opened, but not both at the same time.
- b. Both the inboard and outboard spray valves can be opened at the same time and in any order.
- c. The inboard spray valve can be opened provided the outboard spray valve is closed; then the outboard spray valve can be opened.
- d. Neither the inboard nor the outboard spray valve will open at this time.

ANSWER : A

Reference: T-225 section 4.3
E-11-1040 (RHR) sh 15
LOT-0370 pp. 15

11 RO/SRO

NO.: 2290 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295025FK1.05 TAXONOMY NO.:
LESSON PLANS: LOT1820.03
:
CATEGORY: NRC NR1
SYSTEMS: TS

QUESTION :

Which ONE of the following Unit 1 transients has resulted in exceeding a Technical Specification Safety Limit?

- a. A main turbine trip with a failure of the turbine bypass valves resulted in a peak RPV dome pressure of 1340 psig.
- b. A malfunction of EHC resulted in a depressurization of the RPV. The MSIVs close and the reactor scrams at 88% power/ 830 psig.
- c. While in single loop operation, a MSIV isolation results in a MCPR of 1.08.
- d. During two loop operation, a loss of feedwater heating results in a MFLCPR of 1.12.

ANSWER : A

Reference: T.S. 2.1
LOT-1820, pp. 3

12 RO/SRO

NO.: 2357 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295031EK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0180.02
:
CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

Level dropped to -45" on Unit 1 during a feedwater transient and is now restored to normal. Which ONE of the following describes the response of the "Bypass Leakage Barrier Blocks and Vents".

- a. Instrument Gas Block Valves are closed and the Vents are open.
- b. Recirc pump seal purge Block Valves are closed and the Vents are open.
- c. Main steam line drain Barrier Block Valves are closed and the Vents are open.
- d. N2 supply Block Valves are closed and the Vents are open.

ANSWER : D

REFERENCES: GP-8.1
LOT-0180 page 24

NO.: 2312 REV.: 4 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295037EK2.04 TAXONOMY NO.:
LESSON PLANS: LOT0310.10
:
CATEGORY: NR1 NRC
SYSTEMS: SLC

QUESTION :

The Unit 2 Main Turbine trips resulting in a scram signal. Reactor pressure peaks at 1119 psig. Reactor power following the scram signal is steady at 11%.

Which ONE of the following conditions will result in the FIRST automatic Standby Liquid Control System initiation signal?

- a. Low reactor water level (-38") and 118 second timer expired
- b. 118 second timer expired
- c. Low reactor water level (-129") and 9 second timer expired
- d. 30 second timer expired

ANSWER : A

REFERENCES: LOT-0310 page 16

NO.: 2250 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295014AK1.06 TAXONOMY NO.:
LESSON PLANS: LOT1540.04
:
CATEGORY: NRC
SYSTEMS: OT

QUESTION :

OT-104 provides a "CAUTION" on thermal hydraulic instability. The Basis for that caution emphasizes a characteristic of thermal hydraulic instability used to distinguish it from other causes of power oscillations.

This characteristic is the:

- a. magnitude of APRM changes
- b. magnitude of LPRM changes
- c. frequency of reactor pressure changes
- d. frequency of the power changes

ANSWER : D

REFERENCE: OT-104 BASES PP 4

NO.: 2356 REV.: 2 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 204000K1.15 TAXONOMY NO.:
LESSON PLANS: LOT0110.06

CATEGORY: NRC NR1
SYSTEMS: RWCU

QUESTION :

*** RO ONLY ***

Which ONE the following conditions will cause a Unit 1 RWCU isolation?

- a. One of the two "A" RWCU pump room temperature elements fails high.
- b. Dump flow of 60 gpm for 50 seconds with the dump orifice bypass valve full open
- c. A steam flooding damper failure that causes Non-regen heat exchanger room temperature to increase to 115°F when outside temperature is 90°F.
- d. A steam flooding damper failure that causes "C" RWCU pump room temperature to increase to 128°F when outside temperature is 98°F.

ANSWER : A

REFERENCES: GP-8.1
T.S. Table 3.3.2-2
LOT-0110 page 15

NO.: 2319 REV.: 1 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 239001K5.06 TAXONOMY NO.:
LESSON PLANS: LOT0120.12
:
CATEGORY: NR1 NRC
SYSTEMS: MSIV MS IA

QUESTION :

Unit 1 is operating at 100% power. A fire results in the loss of power from 1BD102 (Division II DC).

Which ONE of the following describes the response of the MSIVs if 1BY160 is inadvertently deenergized?

- a. The outboard MSIVs will remain open for several hours and drift closed when the associated pneumatic accumulators bleed down.
- b. The inboard MSIVs will close within 5 seconds.
- c. The outboard MSIVs will close within 5 seconds.
- d. The inboard MSIVs will remain open for several hours and drift closed when the associated pneumatic accumulators bleed down.

ANSWER : C

References: LOT-0120 page 23
Question # 17

NO.: 2247 REV.: 8 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 205000KA.10 TAXONOMY NO.:
LESSON PLANS: LOT0370.10
:
CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

Unit 1 is in OPCON 5 (*) with the following conditions:

- Suppression Pool Level 18 feet
- Reactor Coolant Temperature 82°F
- RPV level 491 inches on Upset instrument
- "1A loop of Shutdown Cooling (SDC) in service at 1100 gpm
- "C" Source Range Monitor inoperable, All others operable

Which ONE of the following actions are required?

- a. Stop Core Alterations in the "B" quadrant
- b. Raise SDC flowrate to 6000 gpm
- c. Align all Core Spray Pumps to the CST
- d. Reduce reactor coolant temperature to less than 75°F

ANSWER : B

REFERENCE: GP-6.1 SECTION 3.5
S51.8.B PRECAUTIONS 3.8, 3.11
TECH SPEC DEFINITIONS TABLE 1.2, PORC POS 2
TECH SPEC DEFINITIONS SDM
LOT0370.10 PP 24,39

NO.: 2368 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/25/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 256000K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0520.04
:
CATEGORY: NRC NR1
SYSTEMS: COND

QUESTION :

A Feedwater Level Control transient results in a RFP speed increase. Differential pressure from the Condensate Pump discharge to the Reactor Feedwater Pump suction rises to 53 psid for 35 seconds.

Complete the following statement.

Feedwater conductivity will _____ since the condensate filter demins _____ bypassed and the condensate deep beds _____ bypassed.

- a. not change, are not, are not
- b. increase, are, are not
- c. not change, are, are not
- d. increase, are, are

ANSWER : A

REFERENCES: P&ID M-16
LOT-0520 page 9

NO.: 2281 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 271000K1.09 TAXONOMY NO.:
LESSON PLANS: LOT0510.02
;
CATEGORY: NRC NR1
SYSTEMS: OG

QUESTION :

Which ONE of the following would result from a loss of service water flow to Offgas System components?

- a. increased moisture entering the charcoal filters and decreased iodine removal.
- b. increased hydrogen in the holdup pipe and increased temperature of gases entering the holdup pipe.
- c. decreased recombination and decreased moisture entering the charcoal filters.
- d. decreased noble gas exiting the North Stack and increased offgas flow.

ANSWER : A

Reference: LOT-0510, pp. 7, 8

20 RO/SRO

NO.: 2211 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295008AK3.05 TAXONOMY NO.:
LESSON PLANS: LOT0340.08 LOT1540.05

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

Condensate injected to the vessel. Current RPV level is 88".

Which ONE of the following describes the effect on HPCI ?

- a. HPCI tripped. HPCI should be isolated at 100".
- b. HPCI tripped. HPCI isolation is necessary only if the turbine stop valve fails to shut.
- c. HPCI steam supply valve, F001, will shut. HPCI isolated on high level.
- d. HPCI steam supply valve, F001, will shut. HPCI isolation is required at 100".

ANSWER : A

REFERENCE: OT-110 BASES 3.7.3
LOT0340.08 PP26

NO.: 2220 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295001AA2.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.02
:
CATEGORY: NRC
SYSTEMS: OT-112

QUESTION :

Trip of the 22 Auxilary Bus results in the following conditions.

- Rx power 46%
- Rx level 40 inches
- Rx press 935 psig
- Core Flow 38%

Which ONE of the following describes the required actions?

- a. increase core flow.
- b. manually scram the reactor
- c. insert control rods per RMSI
- d. reduce recirc flow to restore RPV level to normal

ANSWER : C

REFERENCE: OT-112

NOTE TO EXAMINER; PROVIDE TRAINEE WITH COPY OF N-F MAP FOR UNIT 2

NO.: 2251 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295002AK3.03 TAXONOMY NO.:
LESSON PLANS: LOT1540.03
:
CATEGORY: NRC
SYSTEMS: OT

QUESTION :

Unit 2 is in OPCIION 2. A condenser air leak is causing main condenser vacuum to drop. Which ONE of the following summarizes plant response to a loss of condenser vacuum?

- a. Event 1 feedpump trip
Event 2 reactor scram
Event 3 group I isolation
- b. Event 1 reactor scram
Event 2 feedpump trip
Event 3 bypass valve closure
- c. Event 1 bypass valve closure
Event 2 group I isolation
Event 3 reactor scram
- d. Event 1 SRV actuation
Event 2 feedpump trip
Event 3 bypass valve closure

ANSWER : A

REFERENCE: OT-116 BASES SECTION 4

NO.: 2349 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295003AK1.06 TAXONOMY NO.:
LESSON PLANS: LOT1566.02
:
CATEGORY: NRC NR1
SYSTEMS: E-1

QUESTION :

E-1, Station Blackout procedure is being executed with RPV level at -158". Which ONE of the following describes the RPV level instrument being utilized?

- a. Fuel Zone Indicator (LI42-1R610) on 10C601 ECCS A
- b. Wide Range Indicator (LI42-1R604) on 10C603
- c. B PAM (XR42-1R623B) on 10C601 ECCS B
- d. Narrow Range Indicator (LI42-1R606C) on 10C603

ANSWER : B

REFERENCES: E-1 Section 3.8-3.15
Lot-1566 page 4

NO.: 2348 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295004AK2.03 TAXONOMY NO.:
LESSON PLANS: LOT1566.03
:
CATEGORY: NRC NR1
SYSTEMS: E-1FC 1FC

QUESTION :

In E-1FC, Loss of Division III Safeguard DC, the operator is directed:

"If MSIV's are open then verify no "B" Channel or "D" Channel Group I Isolation Signal exists before restoring power to Bus 1FC."

Which ONE of the following describes why this action must be taken.

"Restoring 1FC could cause a:

- a. steam flooding damper actuation resulting in high main steam line temperatures."
- b. NUMAC Leak Detection Monitor trip resulting in a Group I channel trip on main steam line temperatures."
- c. spurious, unregulated HPCI start resulting in high main steam line flows."
- d. NUMAC Radiation Monitor trip resulting in a Group I channel trip on main steam line High Radiation."

ANSWER : B

REFERENCES: E-1FC Section 3.8
E-33 sheet 1
LOT-1566 page 21

NO.: 2318 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.01 TAXONOMY NO.:
LESSON PLANS: LOT1570.11
:
CATEGORY: NR1 NRC
SYSTEMS: A-C-79

QUESTION :

T-225 is being executed to spray the drywell. The PRO has directed an Equipment Operator (EO) to install jumpers in the Aux Equipment Room.

Which ONE of the following describes procedure adherence and use per A-C-79?

- a. PRO performs with procedure "in hand", EO need not have procedure "in hand".
- b. Both the PRO and EO performs with procedure "in hand".
- c. PRO need not have procedure "in hand", EO performs with procedure "in hand".
- d. Both the PRO and EO performs the procedure from memory.

ANSWER : B

References: A-C-79 section 7.10
Question #26

NO.: 2270 REV.: 5 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 5 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.07 TAXONOMY NO.:
LESSON PLANS: LOT2002.07
:
CATEGORY: NRC NR1
SYSTEMS: PRINTS

QUESTION :

HV49-1F022, RCIC TEST BYPASS TO CST is malfunctioning with the following symptoms:

- When opening, the Operator must hold one handswitch to OPEN. The valve stops moving as soon as the handswitch is released.
- The closing function of the valve is operating properly.
- No yellow system status lamps or trouble annunciators are lit.

Which ONE of the following will cause the given symptoms?
(Refer to the attached schematic diagram Figure 2.)

- a. Wire 11F has come loose from terminal 6 located in the MCC.
- b. Limit switch 5 (LS5) is stuck open.
- c. The thermal overload (49) device has actuated.
- d. Torque switch 2 (TS2) is set low and the switch is opening.

ANSWER : A .

Reference: E51-1040 (RCIC) Sheet 1A Figure 2 TYPICAL DC MOV and MCC
(provide copy)
LOT-2002, Attachment 3

NO.: 2316 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/25/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09
:
CATEGORY: NR1 NRC
SYSTEMS: A

QUESTION :

The following is a schedule of hours worked by Licensed Operators "A", "B", "C" and "D".

OPERATOR	MON	TUES	WED	THURS	FRI	SAT
Operator A	06-18	06-18	06-18	06-18	06-22	06-18
Operator B	06-14	06-14	06-14	06-18	06-14	06-14
Operator C	06-14	24-08	OFF	OFF	06-22	06-14
Operator D	18-06	18-06	18-06	18-06	18-06	18-06

Which ONE of the Operators have exceeded the working hour restriction per A-C-40?

- a. Operator A
- b. Operator B
- c. Operator C
- d. Operator D

ANSWER : A

References: A-C-40 section 7.2.1
Question #28

NO.: 2353 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.14 TAXONOMY NO.:
LESSON PLANS: LOT1550.01
:
CATEGORY: NRC NR1
SYSTEMS: ON-116 ON

QUESTION :

Which ONE of the following conditions require entry to ON-116, High Reactor Water Conductivity?

- a. A Chemistry report of reactor water pH at 4.8.
- b. RWCU demin inlet conductivity greater than 1.0 umho/cm.
- c. A Chemistry report of reactor water chlorides at 0.25 ppm
- d. RWCU demin outlet conductivity greater than 1.0 umho/cm.

ANSWER : B

REFERENCES: ON-116 Section 1.1
ARC 112 Cleanup G-4
Lot-1550 page

NO.: 2367 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.01
:
CATEGORY: NRC NR1
SYSTEMS: HP

QUESTION :

Complete the statement below concerning Level II LOCKED HIGH RADIATION Keys.

Level II Keys _____ require an ANSI technician to be present during use, and documentation _____ required to be complete prior to use of the key.

- a. do, is
- b. do, is not
- c. do not, is
- d. do not, is not

ANSWER : B

REFERENCES: HP-C-202 Section 7.4 page 5
LOT-1760 page 3

NO.: 2223 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 288000K5.02 TAXONOMY NO.:
LESSON PLANS: LOT0200.07

CATEGORY: NRC
SYSTEMS: REHVAC

QUESTION :

Your crew is experiencing difficulty in maintaining Reactor Enclosure D/P. Auxiliary Steam is NOT available with outside air temperature at 58°F. Reactor Enclosure Exhaust Fan blades are at maximum pitch.

Complete the following:

Reactor Enclosure isolation will occur on low D/P in _____.
Excessive _____ caused by lack of heating steam is a possible cause of this event.

- a. 50 minutes; face damper closing
- b. 100 seconds; bypass damper closing
- c. 50 minutes; face damper opening
- d. 100 seconds; bypass damper opening

ANSWER : C

REFERENCE: LOT0200.07 PP 9,33

NO.: 2284 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215001K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0290.06
:
CATEGORY: NRC NR1
SYSTEMS: TIP

QUESTION :

*** RO ONLY ***

An OD-2 scan is being performed on Unit 1 using the "B" TIP Drive in the MANUAL mode. With the detector advancing and midway through the core region, a TIP isolation signal occurs. Which ONE of the following describes the expected response?

"The probe will:

- a. stop advancing but will not retract because the drive is in MANUAL. The TIP N2 purge valve will remain open because the detector is still outside the shield."
- b. continue advancing because the drive is in MANUAL. The ball valve will not close. The shear valve will close after a 50 second time delay."
- c. reverse and retract until clear of the indexer. The ball valve will close and the detector must be manually retracted into the shield."
- d. reverse and retract into the shield. The N2 purge valve will close. The ball valve will close when the detector is in the shield."

ANSWER : D

Reference: S74.0.B
LOT-0290 pp. 16

NO.: 2249 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/11/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 233000K6.10 TAXONOMY NO.:
LESSON PLANS: LOT0750.08
:
CATEGORY: NRC
SYSTEMS: FPCCU

QUESTION :

Which ONE of the following states the effect of a failure of #3 and/or #4 Reactor Cavity Seals ?

- a. loss of either seal during Refuel will cause the cavity to drain to the drywell
- b. loss of both seals during Refuel will cause flooding of the upper levels of the drywell
- c. loss both seals prior to cavity floodup in OPCIION 5 will cause a loss of Refuel Floor Secondary Containment
- d. loss of either seal while in OPCIION 2 will cause a loss of Primary Containment Integrity

ANSWER : C

REFERENCE: LOT0750.08 PP 14,23,24,8

NO.: 2242 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/22/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 234000K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0760.08
:
CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

Core alterations are in progress with a fuel bundle grappled and suspended just above the top guide. A fire on the refuel bridge results in a loss of electrical power and the bridge air system being completely ruptured.

Which ONE of the following describes the status of the main hoist grapple?

- a. the grapple attempts to fail open but the mechanical design of the grapple prevents opening.
- b. when bundle weight is removed the grapple will fail open
- c. the grapple will remain engaged, but the Boundary Zone Computer will not enforce, allowing the grapple to open over the core
- d. when bundle weight is removed the grapple will remain engaged

ANSWER : D

REFERENCE: LOT0760.08 PP 12

NO.: 2225 REV.: 3 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295032KA.11 TAXONOMY NO.:
LESSON PLANS: LOT1560.02
:
CATEGORY: NRC
SYSTEMS: T-103

QUESTION :

*** RO ONLY ***

All of the following alarms are entry conditions to T-103 EXCEPT :

- a. REACTOR ENCLOSURE LOW D/P / LOSS OF POWER/ INOP alarm
- b. REACTOR ENCLOSURE FLOOR DRAIN SUMP PUMP HI-HI WATER LEVEL alarm
- c. DIV 2 STEAM LEAK DETECTION SYSTEM HI TEMP / TROUBLE alarm
- d. SAFEGUARDS SYSTEM ACCESS AREA (ROOM 304) FLOODING alarm

ANSWER : A

REFERENCE: T-103

NO.: 2248 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295021AA2.01 TAXONOMY NO.:
LESSON PLANS: LOT1550.02

CATEGORY: NRC
SYSTEMS: ON SDC

QUESTION :

*** RO ONLY ***

Unit 2 is operating with the "A" loop of shutdown cooling in service.
All of the following are entry conditions to ON-121, LOSS OF SHUTDOWN
COOLING EXCEPT:

- a. the running RHRSW Pump trips on a loop rad monitor inop signal
- b. a logic fault causes closure of HV-51-2F009, RHR
SHUTDOWN CLG INBOARD PCIV.
- c. sustained loss of power to 2AY160 while operating in OPCON 4
- d. sustained loss of power to 2BY160 while operating in OPCON 5
with RPV level at 205"

ANSWER : A

REFERENCE: ON-121 BASES FOR STEP 1.1

NO.: 2232 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295023AK3.02 TAXONOMY NO.:
LESSON PLANS: LOT0760.07
:
CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** RO ONLY ***

Core Alterations are in progress during 1R06, a bundle is above the core and ready to be inserted. The LSRO reports that ROD BLOCK INTERLOCK #1 and ROD BLOCK INTERLOCK #2 are NOT lit. Which ONE of the following is a potential cause of this indication?

- a. A reed switch problem is causing rod 34-59 to indicate position "02"
- b. A main hoist load cell problem is providing a weight indication of 455 psig
- c. Both refuel platform track switches are actuated indicating "over the core"
- d. The boundary zone computer does NOT recognize the refuel bridge as "over the core"

ANSWER : B

REFERENCE: LOT0760.07 pp 15,16

NO.: 2244 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295023AK1.03 TAXONOMY NO.:
LESSON PLANS: LOT1550.02
:
CATEGORY: NRC
SYSTEMS: ON REFUEL

QUESTION :

*** RO ONLY ***

The control rod blade (CRB) for cell 30-31 was replaced during the outage. The blade is fully withdrawn with Rod Position Indication System (RPIS) properly restored.

Which ONE of the following will occur when new fuel loading from the spent fuel pool to the core begins (shuffle phase II)? "Fuel can:

- a. be positioned over any core location and lowered
- b. NOT be positioned over the core
- c. be positioned and lower into any core location except 30-31
- d. be positioned over the core but NOT lowered.

ANSWER : B

REFERENCE: ON-120 BASES STEP 2.1 BASES
LOT0760.07

NO.: 2374 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS: LOT1860.03
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

*** RO ONLY ***

An NMD Job Leader calls the PRO to request authorization to operate SCT tagged components. Which ONE of the following describes actions to be taken by the PRO?

- a. authorize the Job Leader to operate the equipment
- b. have the Foreman contact you, give authorization ONLY to him
- c. direct the Job Leader to contact the CRS to authorize equipment operation
- d. have the Foreman contact the ACRS, authorization can ONLY be given to the Foreman

ANSWER : C

REFERENCE: LOT1860.03 PP 4

NO.: 2375 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS: LOT1860.03
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

The 5.3 valve (68-0035, STORM WATER DIVERSION VALVE), normally has
_____ tag applied as part of _____ to govern
it's CLOSED status aligning storm drains to the Holding Pond

Which One of the following fills in the blanks above?

- a. a red danger; a clearance suspension
- b. an orange and white SCT ; a FIN Team Hold
- c. a white info ; an Administrative tagout
- d. a yellow caution ; a clearance

ANSWER : C

REFERENCE: LOT1860.03 PP 4,5

NO.: 2378 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/17/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 294001K1.09 TAXONOMY NO.:
 LESSON PLANS: LOT1860.14
 :
 CATEGORY: NRC
 SYSTEMS: CT

QUESTION :

Work must be done on the seat of HV44-1F040 (RWCU SUCTION VALVE) with the Unit at power. RWCU return to feedwater, valves HV44-1F039 and HV44-1F042, have been closed.

Which ONE of the following describes mechanical safety standards that must be applied?

- a. shut HV44-1F001 (INBOARD ISOLATION), open vent valves upstream of HV44-1F040 and use portable temperature monitoring instruments to warn workers of rising pipe temperatures
- b. shut HV44-1F001 (INBOARD ISOLATION), and HV44-1F004 (OUTBOARD ISOLATION) and open vent valves upstream and downstream of HV44-1F040
- c. shut HV44-1F100 (BOTTOM HEAD DRAIN) and HV44-1F105 (LOOP DRAIN) and open vent valves upstream of HV44-1F040
- d. shut HV44-1F004 (OUTBOARD ISOLATION), backseat HV44-1F040 and open vent valves upstream and downstream of HV44-1F040

ANSWER : B

REFERENCE: LOT1860.14 PP 18,19

NOTE: high pressure/temperature system $\geq 200^{\circ}\text{F}$ and 500 psig requires TWO valve protection

NO.: 2285 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 215004K4.06 TAXONOMY NO.:
LESSON PLANS: LOT0240.07

CATEGORY: NRC NR1
SYSTEMS: SRM

QUESTION :

A startup of Unit 2 is in progress. The Neutron Monitoring Overlap surveillance is complete and SRMs are being retracted with the following conditions:

<u>IRM</u>	<u>IRM RANGE</u>
A	3
B	3
C	2
D	BYPASSED
E	3
F	4
G	3
H	5

While being retracted, the reading from the A SRM drops to 80 CPS. Which ONE of the following describes the expected subsequent conditions?

- a. SRM RETRACTED WHEN NOT PERMITTED alarm and rod block.
- b. SRM RETRACTED WHEN NOT PERMITTED alarm and no rod block
- c. SRM DOWNSCALE alarm and no rod block.
- d. No alarm and no rod block

ANSWER : A

Reference: ARC 107 I-4
LOT-0240, pp. 9

NO.: 2286 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215003K3.02 TAXONOMY NO.:
LESSON PLANS: LOT0250.09
:
CATEGORY: NRC NR1
SYSTEMS: IRM

QUESTION :

A startup is in progress with reactor pressure at 300 psig. A rod block (due to the neutron monitoring system) is currently preventing rod motion. With the IRMs fully inserted, which ONE of the following is the cause of the rod block?

- a. IRM A indicates 2 on range 1
- b. IRM C indicates 25 on range 1
- c. IRM D indicates 3 on range 2
- d. IRM H indicates 10 on range 2

ANSWER : C

Reference: LOT-0250 pp. 11

NO.: 2287 REV.: 4 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215005K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0270.07
:
CATEGORY: NRC NR1
SYSTEMS: APRM

QUESTION :

Which ONE of the following describes the operation of the recirculation loop flow units. (flow units used by the neutron monitoring system)?

- a. An UPSCALE trip and rod block will be initiated if any flow unit reads 105%
- b. The BYPASS joystick will remove the flow biasing inputs to the APRM
- c. A COMPARATOR trip and rod block will occur if actual "A" and "B" recirc loop flows differ by more than 10%.
- d. The BYPASS joystick will remove the UPSCALE flow rod block and COMPARATOR rod block

ANSWER : D

Reference: LOT-0270, pp. 9, 13

NO.: 2288 REV.: 0 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215005K3.07 TAXONOMY NO.:
LESSON PLANS: LOT0260.10
:
CATEGORY: NRC NR1
SYSTEMS: LPRM

QUESTION :

*** RO ONLY ***

A central Local Power Range Monitor detector at "C" elevation is providing signals to an Average Power Range Monitor (APRM) and a Rod Block Monitor (RBM). The LPRM has just failed downscale with an adjacent rod selected. Which ONE of the following describes the effect of the failure on the associated APRM and RBM channels?

The LPRM input:

- a. will be automatically bypassed and removed from both the APRM and RBM. The APRM and RBM readings will not be affected.
- b. will be automatically bypassed and removed from the APRM only. The APRM reading will not be affected and the RBM reading will be lower than actual.
- c. will be automatically bypassed and removed from the RBM only. The APRM and the RBM readings will be lower than actual.
- d. will NOT be automatically bypassed to the APRM or the RBM. The APRM and RBM readings will be lower than actual.

ANSWER : C

Reference: LOT-0260, pp. 8

NO.: 2313 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 211000K5.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.08
:
CATEGORY: NR1 NRC
SYSTEMS: SLC

QUESTION :

Complete the following statement:

The Standby Liquid Control System is designed to add enough negative reactivity to _____.

- a. overcome the 11% reactivity added when the fuel cools from normal operating temperature to 60°F.
- b. maintain the reactor in a hot shutdown condition for a maximum of 24 hours.
- c. provide a shutdown margin of at least 3% reactivity over the most reactive time in core life.
- d. overcome the 17% reactivity added when the xenon burns out from an equilibrium state.

ANSWER : C

References: LOT-0310 page 5

Question #46

NO.: 2268 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 290003K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.09
:
CATEGORY: NRC NR1
SYSTEMS: CEHVAC

QUESTION :

The 0A Control Enclosure Chiller is running and the 0B Control Enclosure Chiller is in AUTO and not running.

Which ONE of the following describes the response of the chillers to a subsequent Unit 1 LOCA signal?

"The 0A Chiller will trip and:

- a. restart 167 seconds later. The 0B Chiller will not start."
- b. the 0B chiller will start 51 seconds later."
- c. restart 51 seconds later. The 0B Chiller will not start."
- d. both the 0A and the 0B Chillers will start 167 seconds later."

ANSWER : D

Reference: E-463, E-164
LOT0450 pp. 49

NO.: 2275 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 219000K4.03 TAXONOMY NO.:
LESSON PLANS: LOT0370.09

CATEGORY: NRC NR1
SYSTEMS: RHR SPC

QUESTION :

A LOCA has just occurred on Unit 1 with the 1B RHR Pump initially in service for Suppression Pool Cooling. Plant conditions are as follows:

-RPV Water Level -140 inches;
-RPV Pressure 600 psig;
-Drywell Pressure 18 psig;

No operator actions have been taken. Which ONE of the following describes the status of HV51-1F017A (RHR LPCI INJECTION), HV51-1F024A (FULL FLOW TEST RETURN), and HV-C-51-1F048A (HEAT EXCH BYPASS)?

- a. F017A OPEN
F024A OPEN
F048A OPEN
- b. F017A CLOSED
F024A OPEN
F048A CLOSED
- c. F017A CLOSED
F024A CLOSED
F048A OPEN
- d. F017A CLOSED
F024A CLOSED
F048A CLOSED

ANSWER : C

Reference: E11-1040
LCT-0370 pp. 8, 14, 15

NO.: 2347 REV.: 1 TYPE: MC ENTERED BY: WMT DATE ENTERED: 09/28/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 245000K6.10 TAXONOMY NO.:
LESSON PLANS: LOT0570.04
:
CATEGORY: NRC NR1
SYSTEMS: MNGEN GENAUX

QUESTION :

Unit 2 is at 100% power. A leak on the Main Turbine Lube Oil header has caused the Main Shaft Oil Pump Discharge pressure to drop to 200 psig and bearing header pressure to drop to 8 psig. Which ONE of the following Main Turbine Lube Oil Pumps should be running?

- a. Motor Suction Pump (MSP)
- b. Emergency Bearing Oil Pump (EBOP)
- c. Turning Gear Oil Pump (TGOP)
- d. Turbine Lift Pumps

ANSWER : C

REFERENCES: ARC 105 Main Turb G-4
LOT-0570 page 13

NO.: 2293 REV.: 0 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/03/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 215002K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0280.09
:
CATEGORY: NRC NR1
SYSTEMS: RBM

QUESTION :

While withdrawing a central control rod at 90% power, the D APRM fails downscale. Which ONE of the following describes the effect on the B Rod Block Monitor?

- a. The upscale trip setpoint will be increased and the F APRM will be automatically engaged as the reference APRM.
- b. The upscale trip setpoint will be decreased and the D APRM will remain engaged as the reference APRM.
- c. The RBM will be automatically bypassed and the F APRM will automatically be engaged as the reference APRM.
- d. The RBM will be automatically bypassed and the D APRM will remain engaged as the reference APRM.

ANSWER : D

Reference: ARC 108 C-4
LOT-0280, pp.10, 13

50 RO/SRO

NO.: 2346 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 262001K3.05 TAXONOMY NO.:
LESSON PLANS: LOT0640.04
:
CATEGORY: NRC NR1
SYSTEMS: 13 KV AUXPWR

QUESTION :

Complete the following:

While at 100% power on Unit 1, a "loss of coolant accident" (LOCA) coincident with a "loss of offsite power" (LOOP) occurs. When the main turbine trips, the 11 Aux Bus Breaker will _____ and the 10-11 Bus Breaker will _____.

- a. remain closed due to loss of control power /remain open due to loss of control power
- b. remain closed due to loss of control power /close with safeguards control power
- c. open/remain open
- d. open/close

ANSWER : C

REFERENCES: E-150, E-151
LOT-0640 page 20

NO.: 2362 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
 DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 295005KA.12 TAXONOMY NO.:
 LESSON PLANS: LOT1560.06

CATEGORY: NRC NR1
 SYSTEMS: T100 T-100

QUESTION :

Unit 1 is at 95% power when one MSIV drifts closed causing a neutron monitoring system trip and scram. Plant conditions are as follows:

Reactor Pressure 918 psig and stable.
 Reactor Level +24" and stable.
 Generator Load is 300 Mwe and dropping.

The PRO attempted to transfer house loads, but the Sync Check Relay for the 12 Bus malfunctioned and 20-12 Bus Breaker did not close on the 12 Bus. The 12 Bus remains powered via the Main Generator.

Which ONE of the following describes the required actions.

- a. Trip the turbine at about 50 Mwe.
- b. Do not trip the turbine manually.
- c. Cross-tie the 114 load centers immediately.
- d. Open 12 Unit Aux. Bus breaker immediately.

ANSWER : A

REFERENCES: T-100
 LOT-1560 page 20

NO.: 2360 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295006AA1.01 TAXONOMY NO.:
LESSON PLANS: LOT1560.06

CATEGORY: NRC NR1
SYSTEMS: T101 T-101

QUESTION :

A Unit 2 startup is in progress with the reactor mode switch in RUN, when a Drywell leak occurs. With Drywell pressure at 1.4 psig and rising, the Control Room Supervisor has directed a rapid plant shutdown. The Mode Switch is stuck in RUN and will not move. Which ONE of the actions below should you take to promptly scram the reactor?

- a. Insert SRM's and IRM's and range the IRM's to "1" to cause a RPS scram signal.
- b. Arm and depress the A1 and B2 RPS Manual Initiation pushbuttons only.
- c. Arm and depress the 1A and 2A RRCS Manual Initiation pushbuttons only.
- d. Locally start all three SLC pumps from the 283' elevation.

ANSWER : B

REFERENCES: T-101
T-101 Bases page 3
LOT-1560 page 21

NO.: 2324 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295007AK3.06 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT OT-102

QUESTION :

While operating at power on Unit 1, an EHC malfunction occurs and you are directed to reduce reactor power to maintain reactor pressure less than 1020 psig. Which ONE of the following completes the statement below?

The 1020 psig value is based on _.

- a. Assuring a 300 psig margin to the Tech Spec safety limit for dome pressure
- b. The Tech Spec LCO which is based on SRV sizing analysis
- c. Reducing the DP across the MSIV's thereby minimizing valve seat damage
- d. Preventing exceeding the bypass valve capacity in the event of a turbine trip

ANSWER : B

References: OT-102 Bases
Question #54

NO.: 2315 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295009AA1.02 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-100

QUESTION :

Unit 2 was operating at 100% power when a REACTOR HI/LO LEVEL alarm annunciated. Reactor Recirculation pumps both runback to 42% speed.

Which ONE of the following describes a possible cause for the Recirculation Pump runback?

- a. The selected narrow range level indicator failed upscale causing total feedwater flow to decrease to 18%.
- b. The 2A Condensate Pump trips on a phase overcurrent condition.
- c. One recirculation pump discharge valve indicates less than 95% open.
- d. One steam flow transmitter failed downscale causing total feedwater water flow to decrease to 18%.

ANSWER : B

References: OT-100 Bases
Question #55

NO.: 2325 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295010AK3.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-101 OT

QUESTION :

OT-101 High Drywell Pressure, directs you to vent the drywell if no leak exists, drywell pressure is < 1.68 psig and drywell pressure needs to be lowered. Which one of the following completes the statement below?

Proper adherence to the procedure ensures drywell venting will be terminated:

- a. when the minimum mass of drywell nitrogen is reached.
- b. when the mass of non-condensibles in the suppression chamber and drywell are equal.
- c. Prior to a North Stack High Radiation alarm condition.
- d. Prior to reaching a South Stack High Radiation Isolation setpoint.

ANSWER : A

References: OT-101 Bases
question #56

NO.: 2210 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 206000K6.05 TAXONOMY NO.:
LESSON PLANS: LOT0340.13C

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

HPCI suppression pool suction valve HV-55-1F041 is SHUT, HV-55-1F042 is SHUT and the electrical feed OPEN when the associated suppression pool level transmitters fail HIGH. Which ONE of the following describes the HPCI CST suction valve (HV55-1F004) interlock feature?

- a. 1F004 SHUTS when 1F041 comes FULL open
- b. 1F004 SHUTS when 1F041 STARTS to stroke open
- c. 1F004 will NOT receive an automatic SHUT signal
- d. 1F004 will SHUT directly from the high pool level signal

ANSWER : C

REFERENCE: LOT0340.13C PP 15

NO.: 2278 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 209001K4.08 TAXONOMY NO.:
LESSON PLANS: LOT0350.09

CATEGORY: NRC NR1
SYSTEMS: CS

QUESTION :

The 1D Core Spray Pump is operating in full flow test when a loss of coolant accident (LOCA) signal results in a core spray initiation with RPV pressure at 900 psig. Which ONE of the following describes the expected response of the system?

The 1D Core Spray Pump will:

- a. trip then restart and operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can NOT be reopened.
- b. trip then restart. HV52-1F015B (TEST RETURN) will remain open.
- c. continue running and will operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can NOT be reopened.
- c. continue running and will operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can be reopened.

ANSWER : A

Reference: E21-1040 Sh 10
LOT0350 pp.6,7

NO.: 2314 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 212000K4.12 TAXONCMY NO.:
LESSON PLANS: LOT0300.04
:
CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

The SCRAM DISCHARGE VOLUME HI LEVEL SCRAM BYPASSED annunciator is lit.
Which ONE of the following would cause this alarm?

- a. Any time the Scram Discharge Volume High Level Bypass Switch is in the BYPASS.
- b. Scram Discharge Volume High Level Bypass Switch is in the BYPASS position and the Reactor Mode Switch is in STARTUP.
- c. Any time the reactor mode switch is in either the SHUTDOWN or REFUEL position.
- d. Scram Discharge Volume High Level Bypass Switch is in the BYPASS position and the Reactor Mode Switch is in SHUTDOWN.

ANSWER : D

References: LOT-0300 page 10
Question #59

NO.: 2354 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 216000K6.01 TAXONOMY NO.:
LESSON PLANS: LOT0050.10
:
CATEGORY: NRC NR1
SYSTEMS: INST

QUESTION :

A loss of coolant accident (LOCA) has occurred on Unit 2. RPV level is being maintained at -135". Which ONE of the following describes the indication provided by the Fuel Zone Meter (LI42-2R610) on loss of D21 Safeguard Bus?

The meter will:

- a. respond to actual RPV level change
- b. fail as-is
- c. fail upscale
- d. fail downscale

ANSWER : A

REFERENCES: M-42 sheet 2
E11-1040-E Sheet 12,13 (RHR Elem)
Lot-0050 page 38

NO.: 2310 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K1.07 TAXONOMY NO.:
LESSON PLANS: LOT0380.06

CATEGORY: NR1 NRC
SYSTEMS: RCIC NS4

QUESTION :

Unit 1 is in the process of a controlled shutdown due to a complete loss of Division I DC. A small steam leak occurs in the RCIC room. The Operator dispatched to monitor temperatures in RCIC reports that the RCIC Room temperature is 150°F and rising. Which ONE of the following statements predicts the response of the RCIC System when room temperature reaches 205°F?

- a. The RCIC System will not have isolated
- b. The RCIC Inboard Isolation Valve (HV49-1F007) will be closed
- c. The RCIC Outboard Isolation Valve (HV49-1F008) will be closed
- d. The RCIC Inboard (HV49-1F007) and Outboard (HV49-1F008) Valves will be closed

ANSWER : B

REFERENCES: LOT-0380 pages 16 & 17
S49.1.B Section 2.0
Question 61

NO.: 2361 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295012KA.11 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T102 T-102

QUESTION :

Select the ONE condition below that requires entry into T-102,
Primary Containment Control.

- a. Suppression Pool Level 24' 2".
- b. Suppression Pool pressure 1.85 psig.
- c. Suppression Pool Air Space temperature 135°F.
- d. Suppression Pool H2 concentration of 5%.

ANSWER : D

REFERENCES: T-102

LOT-1560 page 10

NO.: 2365 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295013AK1.04 TAXONOMY NO.:
LESSON PLANS: LOT1560.05
:
CATEGORY: NRC NR1
SYSTEMS: T102 T-102

QUESTION :

Curve SP/T-1, Heat Capacity Temperature Limit, in T-102, Primary Containment Control, allows higher Suppression Pool water temperatures at lower reactor pressures because:

- a. Suppression Pool cooling will remove more heat at increased differential temperature.
- b. Energy deposition into the Suppression Pool will occur at a slower rate due to reduced driving head.
- c. N₂ displaced from the Drywell will preclude Suppression Pool boiling.
- d. The total energy available from the reactor is reduced.

ANSWER : D

REFERENCES: EPG Supplement A page A-12
LOT-1560 page 17

NO.: 2308 REV.: 4 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295016AK2.01 TAXONOMY NO.:
LESSON PLANS: LOT1563.05
:
CATEGORY: NR1 NRC
SYSTEMS: SE-1 SE RCIC

QUESTION :

A fire on the Unit 1 side of the Main Control Room has necessitated a shutdown and cooldown to be performed from the Remote Shutdown Panel (RSP). All immediate operator actions are complete. The following conditions exist:

- RPV injection is from RCIC ONLY, with the RCIC M/A flow control station in AUTO and set at 500 GPM.
- RPV pressure is being maintained at 950 psig using SRV's.
- RPV water level is +60" and rising.

Which ONE of the following describes the cause of the level condition?

- a. RSP operation of RCIC bypasses the flow controller setpoint to provide maximum flow, regardless of the setting.
- b. RSP level indication is failed due to the fire.
- c. RSP operation of RCIC bypasses the RCIC Steam Supply Valve (HV49-1F045) closure on high RPV water level.
- d. All Emergency Transfer Switches on the RSP have not been taken to EMERGENCY and RCIC cannot be controlled

ANSWER : C

REFERENCES: SE-1 Attachment 1
SE-8 Section 2.3
Question #64

NO.: 2282 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/12/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295017AK2.10 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: TRIP T-104

QUESTION :

T-104 "RADIOACTIVITY RELEASE CONTROL" directs the performance of ST-6-104-880-0 "GASEOUS EFFLUENT DOSE RATE DETERMINATION" which monitors the north and south stacks. Which ONE of the following types of plant releases will NOT be detected by instrumentation used in the surveillance?

- a. Offgas
- b. Standby Gas Treatment.
- c. Radwaste waste tank exhaust
- d. 309 room blowout panel

ANSWER : D

Reference: T-104 Note 13, Bases page 1
LOT-1560, pp.17

NO.: 2352 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK3.07 TAXONOMY NO.:
LESSON PLANS: LOT1550.02
:
CATEGORY: NRC NR1
SYSTEMS: ON-113 ON113

QUESTION :

ON-113, Loss of RECW, directs the operator to pressurize the Instrument Gas System with Instrument Air. Which ONE of the following describes why this must be performed?

- a. The Instrument Gas Isolation Valves (HV59-129A & B) will drift shut.
- b. Equipment inside Primary Containment loses pneumatics.
- c. Recirc Pumps will trip after 10 minutes without Drywell Chilled Water cooling.
- d. Drywell pressure will decrease to a negative value.

ANSWER : B

REFERENCES: ON-113 Section 2.14
Lot-1550 page

NO.: 2291 REV.: 1 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 218000K5.01 TAXONOMY NO.:
LESSON PLANS: LOT0330.06

CATEGORY: NRC NR1
SYSTEMS: ADS

QUESTION :

*** RO ONLY ***

A Loss of Coolant Accident has occurred on Unit 1. Plant conditions are as follows:

-RPV Water Level	-130 inches and slowly lowering
-RPV Pressure	800 psig and slowly lowering
-Drywell Pressure	15 psig and rising
-RHR Pumps	"D" running, A, B, and C tripped
-CS Pumps	"A" and "B" running, "C" and "D" tripped

Which ONE of the following describes the expected automatic response of Automatic Depressurization System (ADS) Division 1 and Division 3?

- Division 1 will initiate in 105 seconds. Division 3 will initiate in 105 seconds.
- Division 1 will initiate in 420 seconds. Division 3 will not initiate.
- Division 1 will not initiate. Division 3 will initiate in 105 seconds.
- Division 1 will not initiate. Division 3 will initiate in 420 seconds.

ANSWER : C

Reference: B21-1060 (ADS) sh 3
LOT-0330, pp. 9

NO.: 2359 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 223001A3.01 TAXONOMY NO.:
LESSON PLANS: LOT0130.08

CATEGORY: NRC NR1
SYSTEMS: PRICONT PC

QUESTION :

*** RO ONLY ***

Suppression Pool Cleanup is in operation with flowrates set to 150 gpm to improve chemistry on the Unit 2 Suppression Pool. The MCR operator reports that in the last hour the Unit 2 CST has increased 1.5 feet while the Unit 2 Suppression Pool has dropped 2".

Which ONE of the following describes the reason for the Suppression Pool level decrease.

The decrease is:

- a. expected and coincides with Suppression Pool Cleanup flowrate.
- b. expected and coincides with the Condensate Transfer flowrate
- c. abnormal and due to a failure of the FV-C-52-229, (SUPPRESSION POOL CLEANUP PUMP DISCHARGE VALVE), closing.
- d. abnormal and due to a failure of the FV-C-52-230, (CONDENSATE TRANSFER SYSTEM TO SUPPRESSION POOL VALVE), closing.

ANSWER : D

REFERENCES: P&ID M-52
S52.1.B Section 4.2
LOT-0130 page 14

NO.: 2351 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 223001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT0180.02

CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

Which ONE of the following will result in a Drywell temperature increase?

- a. Manually initiating a Reactor Enclosure Isolation from the MCR
- b. Reactor Enclosure exhaust radiation indication of 1.35 mr/hr
- c. Manually arming and depressing B21H-S28A, A Cont Isol Manual Pushbutton.
- d. RPV water level lowers to -45" on a FWLCS failure

ANSWER : C

REFERENCES: GP-8.2
Lot-0180 page

NO.: 2371 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 259001K6.13 TAXONOMY NO.:
LESSON PLANS: LOT0540.14

CATEGORY: NRC NR1
SYSTEMS: RRCS FWLC 120VAC

QUESTION :

Unit 2 is at 100% power when 20Y201 circuit 11 (120 VAC control power supply to "C" RFP) is opened. Which ONE of the following describes the reactor feedwater pump response to an RRCS feedwater runback signal?

- a. "A" and "B" RFPs will runback to 2000 RPM and "C" RFP will remain at 4000 RPM
- b. All 3 RFPs will runback to 2000 RPM
- c. "A" and "B" RFPs will runback to 0 RPM and "C" will remain at 4000 RPM
- d. All 3 RFPs will runback to 0 RPMs

ANSWER : B

References: LOT-0540 page 31
S06.8.F section 4.2
Question # 70

NO.: 2370 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 259002K6.03 TAXONOMY NO.:
LESSON PLANS: LOT0550.07

CATEGORY: NRC
SYSTEMS: FWLC

QUESTION :

*** RO ONLY ***

A startup is in progress and the unit is operating at 12% power.
RPV water level is being controlled by "C" reactor feedpump in AUTO, in
single element control, when steam flow detector "C" fails upscale.

If no operator actions are taken, which ONE of the following
describes the response of the Feedwater Level Control System?

- a. RPV level rises until the feedpump trips on high level.
- b. RPV level lowers until the reactor scrams on low level.
- c. RPV level will not change.
- d. RPV level rises but does not reach the high level trip setpoint.

ANSWER : C

References: LOT-0550 page 21

Question # 71RO

NO.: 2326 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295014AA1.07 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-104

QUESTION :

The unit experienced a significant loss of feedwater heating and you have been directed to reduce power using RMSI until you are within the operating region of the Analyzed Range of Feedwater Inlet curve found in OT-104. Which ONE of the following describes the bases for the required power reduction?

- a. Prevent the occurrence of thermal hydraulic instabilities
- b. Minimize thermal shocking of the feedwater nozzles
- c. Minimize the shift in core power shape
- d. Maintain thermal limit margins thereby preventing fuel damage

ANSWER : D

References: OT-104 Bases
Question #72

NO.: 2327 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295015AA1.02 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: CRD OT-105

QUESTION :

During performance of an APRM channel check a half scram was received and control rod 30-37 scrambled. Which ONE describes the effect of this event on the scram discharge volume (SDV)?

The SDV will:

- a. fill and cause a rod block
- b. fill and cause a rod block and reactor scram
- c. drain to the Equipment Drain Collection Tank
- d. drain to the Reactor Enclosure Equipment Drain Sump

ANSWER : C

References: P&ID M-47
OT-105
Question #73

NO.: 2322 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EA1.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT OT-117

QUESTION :

With Unit 1 at 100% power, the "A" inboard MSIV closes. A half scram is received from "C" APRM. Reactor power is 107%. Reactor pressure has stabilized at 1055 psig. Which ONE of the following describes the actions required?

- a. Reduce power per RMSI to prevent a scram
- b. Reduce power per RMSI to reduce pressure to less than 1053 psig
- c. Immediately place the reactor mode switch to SHUTDOWN.
- d. Commence a rapid plant shutdown per GP-4.

ANSWER : C

References: OT-117
Question #74

NO.: 2276 REV.: 5 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
 DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 230000A1.01 TAXONOMY NO.:
 LESSON PLANS: LOT0370.21
 :
 CATEGORY: NRC NR1
 SYSTEMS: RHR

QUESTION :

A LOCA coincident with a LOOP has occurred on Unit 2. The following conditions exist:

-Drywell Pressure	10 psig and rising
-Suppression Pool Pressure	4.8 psig and rising
-Suppression Pool Air Space Temperature	105°F
-Suppression Pool Level	24 Feet

The PRO has initiated suppression pool spray and notes suppression pool pressure is still rising. RHR Service Water is not in service.

Complete the following:

The rising suppression pool pressure:

- is unexpected because level is below the spray header.
- is unexpected because evaporative cooling is occurring in the suppression pool air space.
- is expected because RHR Service Water is not in service.
- is expected because no steam exists in the suppression pool air space.

ANSWER : D

Reference: T-102 Bases Step PC/P-4
 LOT-0370 pp. 19

NO.: 2226 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 272000KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0710.07

CATEGORY: NRC
SYSTEMS: RAD MON

QUESTION :

*** RO ONLY ***

Which ONE of the following describes Particulate, Iodine, Nobel Gas (PING) Monitors?

- a. provide local alarms, MCR annunciator and Aux Equipment Room indication
- b. indicate an equipment malfunction by a yellow rotating beacon and audible alarm
- c. indication is unaffected by high background radiation, a blue rotating beacon alerts personnel of rad level changes
- d. high airborne conditions cause a red rotating beacon and audible alarm to initiate

ANSWER : D

REFERENCE: LOT0710.07 PP 3,10

NO.: 2272 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/12/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.09 TAXONOMY NO.:
LESSON PLANS: LOT0733.05

CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

Which ONE of the following describes the operation of the diesel driven fire pump from the main control room?

- a. Can be started and stopped from the control room.
- b. Can be started but not stopped from the control room.
- c. Can be stopped but not started from the control room.
- d. Can neither be started nor stopped from the control room.

ANSWER : B

Reference: LOT 0733 pp.10

77 RO/SRO

NO.: 2217 REV.: 3 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 202001K1.07 TAXONOMY NO.:
LESSON PLANS: LOT0030.07
:
CATEGORY: NRC
SYSTEMS: RECIRC

QUESTION :

*** RO ONLY ***

The 1B Reactor Recirculation Pump has tripped. Which ONE of the following identifies the cause of the trip?

- a. RECW isolated for 12 minutes
- b. CRD seal purge vents are open
- c. "A" abd "B" TE HVAC Exhaust fans are running
- d. Service Water is valved out to the MG Set lube oil cooler

ANSWER : D

REFERENCE; LOT0030.07 PP 13,31,32

NO.: 2294 REV.: 0 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201003KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0060.04
:
CATEGORY: NRC NR1
SYSTEMS: CRDM

QUESTION :

Which ONE of the following describes the available method(s) for uncoupling a control rod blade from the drive mechanism?

- a. From above the RPV using the unlocking handle and from below the RPV using the uncoupling rod.
- b. From below the RPV using the unlocking handle and from above the RPV using the uncoupling rod.
- c. From above the RPV using the uncoupling rod only.
- d. From above the RPV using the unlocking handle only.

ANSWER : A

Reference: LOT-0060, pp.15

79 RO/SRO

NO.: 2215 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295019KA.05 TAXONOMY NO.:
LESSON PLANS: LOT1550.02

CATEGORY: NRC

SYSTEMS: ON ON-119 AIR

QUESTION :

ON-119 step 2.2 has you monitor the "A" Instrument Air Header Pressure from two (2) different points (PI15-220A on 20C655 and computer point G500).

Which ONE of the following is the bases for monitoring the header at these different points?

- a. validate the exact value of the MCR 20C655 panel with a computer point value
- b. provide troubleshooting data to determine if the 2A dryer malfunction is the cause of the loss of air pressure
- c. allow determination as to whether the "A" and "B" air headers are crosstied
- d. provide intermediate and final stage pressures on the 2A Instrument Air compressor to determine if its operating properly

ANSWER : F

REFERENCE: LOT1550.02 PP 6
ON-119 BASES PP 2

NO.: 2214 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295020AK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0730.08

CATEGORY: NRC
SYSTEMS: PCIG

QUESTION :

A blown fuse causes valve HV59-129A, (Instrument Gas Supply to Drywell A) to SHUT.

Which ONE of the following predicts plant response for this event?

- a. Pneumatics to all ADS SRVs will be supplied only by the emergency bottles
- b. The inboard MSIVs will eventually drift shut due to loss of pneumatics
- c. Recirc Pump Motor cooling is lost with the Chilled Water Loop Selector switches selected to "LOOP A"
- d. Instrument Air backs up loads by opening HS59-128A "Instrument Air to Instrument Gas" solenoid valve

ANSWER : C

REFERENCE: LOT0730.08 PP 18,20

NO.: 2295 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295022KA.07 TAXONOMY NO.:
LESSON PLANS: LOT1550.07

CATEGORY: NRC NR1
SYSTEMS: ON ON-107

QUESTION :

ON-107 "CONTROL ROD DRIVE SYSTEM PROBLEMS" directs the operator to place the reactor mode switch in SHUTDOWN if RPV pressure is below 900 psig with no control rod drive pump operating. Which ONE of the following describes the reason for this action?

- a. Reactor pressure is the only motive force for rod insertion
- b. Flow used to drive the rods is being diverted to charging the accumulators
- c. Reactor water will leak past backseated CRD ball check valves
- d. Reactor pressure is inadequate to scram rods without accumulators

ANSWER : D

Reference: ON-107 Bases, pp. 5

82 RO/SRO

NO.: 2366 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295029EK1.01 TAXONOMY NO.:
LESSON PLANS: LOT1560.05
:
CATEGORY: NRC NR1
SYSTEMS: T102 T-102

QUESTION :

Which ONE of the following completes the statement below?

All injection into the RPV must be terminated when approaching the Unsafe side of Curve SP/L-3, Max PC Water Level Limit, in T-102, Primary Containment Control, to maintain:

- a. containment integrity.
- b. availability of Drywell Vent Paths.
- c. Availability of ADS/SRV's.
- d. pressure suppression capabilities of the containment.

ANSWER : A

REFERENCES: EPG Supplement A page A-20
LOT-1560 page 18

NO.: 2328 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295013AA1.02 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-114

QUESTION :

The unit is operating at 100% power with confirmed indication of an SRV being open. Turbine inlet pressure is being reduced to 900 psig. Which ONE of the following describes why the turbine inlet pressure indicator is used for this pressure reduction?

- a. Turbine first stage pressure is inaccurate due to the pressure drop across the turbine control valves
- b. Steam dome pressure reduced to 900 psig will result in a Group I isolation
- c. Turbine inlet pressure is a convenient indication when operating EHC pressure set on panel *0C653.
- d. Steam dome pressure indication is less accurate because of its proximity to the open SRV.

ANSWER : B

References: OT-114 Bases

Question #84

NO.: 2296 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 241000K3.02 TAXONOMY NO.:
LESSON PLANS: LOT0590.11
:
CATEGORY: NRC NR1
SYSTEMS: EHCLOGIC

QUESTION :

Unit 1 is operating with the following plant conditions:

- Reactor Power 90%
- EHC Load Set 105%
- Max Combined Flow 115%

The output of PT01-101A (A EHC MAIN STEAM PRESSURE) briefly fails to 1000 psig. Which ONE of the following describes the system response?

- a. Control Valves will close, Bypass Valves will remain closed.
- b. Control valves will open, Bypass Valves will open.
- c. Control valves will close, Bypass Valves will open.
- d. Control valves will open, Bypass Valves will remain closed.

ANSWER : B

Reference: LOT-0590, pp. 9, 10

NO.: 2227 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 261000A2.11 TAXONOMY NO.:
LESSON PLANS: LOT0190.08 LOT0160.05

CATEGORY: NRC
SYSTEMS: SBT CAC

QUESTION :

*** RO ONLY ***

Procedure S57.5.A "DE-INERTING AND PURGING PRIMARY CONTAINMENT" cautions you to ISOLATE and apply an Admin Clearance to the backup SBT Train. Which ONE of the following is the bases for isolating this train of SBT?

- a. protects one filter train
- b. limits North Stack flowrates
- c. protects the SBT ventilation duct
- d. limits N2 flowrate from the drywell

ANSWER : A

REFERENCE: S57.5.A SECTION 4.4.2 CAUTION
LOT0160.05 PP 34, 17

NO.: 2258 REV.: 7 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/05/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 264000K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0670.05 LOT0680.08
:
CATEGORY: NRC
SYSTEMS: DG ESW

QUESTION :

Unit 1 is in OPCON 5 AND Unit 2 is in OPCON 1 at 25% power with the following conditions;

D23 is aligned to the "A" ESW Loop

D23 EDG running for monthly operability Surveillance Test
(ST-6-092-313-2) loaded to 2850 KW.

OC ESW Pump is INOPERABLE with its discharge valve (11-0002C)
shut for 2 days

Unit 1 experiences a loss of all Division 1 AC (D11 bus
deenergized)

Which ONE of the following summarizes the effect on the D23 Diesel ?

- The diesel will remain paralleled with the offsite bus, rapidly transferring load to 0 KW and trip on overspeed
- The diesel output breaker will trip, the diesel will continue to run unloaded
- D23 DG TROUBLE alarm will annunciate, the diesel will trip and diesel output breaker will trip
- D23 DG TROUBLE alarm will annunciate, the diesel will transfer to isochronous and remain paralleled with the offsite bus

ANSWER : C

REFERENCE: S92.7.N
LOT0670.05 PP 24
LOT0680.08 PP 29,32,33

NO.: 2309 REV.: 0 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 217000KA07 TAXONOMY NO.:
LESSON PLANS: LOT0380.02

:
CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

The RCIC Barometric Condenser collects and condenses small amounts of steam from all of the following EXCEPT:

- a. RCIC Turbine gland seal leakoff
- b. RCIC Turbine Stop Valve drain
- c. RCIC Outboard Steam Isolation Valve (HV50-1F008) packing leakoff
- d. RCIC Exhaust Line Drain Pot

ANSWER : C

REFERENCES: LOT-0380 Pages 8 & 9

88RO

NO.: 2212 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 206000K4.08 TAXONOMY NO.:
LESSON PLANS: LOT0340.11
:
CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

A "manual quick start" of HPCI requires that the "HPCI Steam Supply Valve" (HV55-2F001), be OPENED simultaneously with a start of the "Auxiliary Oil Pump". Which ONE fills in the blanks to describe the reason for these simultaneous actions?

The HPCI ramp generator starts when the _____ starts opening, if a delay occurs in _____ HPCI may overspeed.

- a. F001 ; opening the turbine stop valve
- b. F001 ; starting the Aux Oil Pump
- c. turbine stop valve ; opening the F001 valve
- d. turbine stop valve ; starting the Aux Oil Pump

ANSWER : C

REFERENCE: LOT0340.11 PP 23,32
S55.1.D

NO.: 2329 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295008AA1.03 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: MS OT-110

QUESTION :

*** RO ONLY ***

A feedwater level control system failure results in a reactor shutdown and subsequent level swell to 140 inches. The MSIV's are closed and the PRO has been instructed to cycle open the B,C, OR J SRV to reduce and keep reactor pressure below 700 psig. Which ONE of the following describes the bases of this order?

The steam lines are:

- a. not flooded and B,C, or J SRV are used to prevent localized heatup of the suppression pool.
- b. flooded and use of the B, C or J SRV will limit possible higher than normal loads to a single SRV.
- c. flooded and B,C, or J SRV are used because all three have straight tailpipes.
- d. not yet flooded and B, C, and J SRV's are 1,2,and 3 in the prescribed opening sequence.

ANSWER : C

References: OT-110 Bases
Question 90R

NO.: 2283 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295038EA2.01 TAXONOMY NO.:
LESSON PLANS: LOT1560.06

CATEGORY: NRC NR1
SYSTEMS: TRIP T-104

QUESTION :

Which ONE of the following monitors can give an indication of an untreated offsite radioactivity release path?

- a. Steam Jet Air Ejector discharge monitors
- b. Reactor Enclosure and Refuel Floor Exhaust monitors
- c. Radwaste Enclosure Equipment Compartment Exhaust monitors
- d. Mechanical Vacuum Pump Exhaust Monitor

ANSWER : B

Reference: LOT-1560 pp. 17
LOT-0720 pp.10
P&ID M-26

NO.: 2340 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295030EK1.03 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T-102

QUESTION :

Based on the following Unit 2 plant conditions, select the ONE statement that describes the action to be taken.

- Reactor Pressure 900#
 - Reactor Level -85"
 - Suppression Pool Level 16'
 - Suppression Pool Temperature 147°F
- a. Reduce HPCI flow to less than 5000gpm.
- b. Secure HPCI.
- c. Line up ECCS suction from sources external to primary containment.
- d. Secure HPCI and RCIC

ANSWER : B

REFERENCES: T-102 SP/L leg
LOT-1560 page 17

NO.: 2344 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 295003AA1.01 TAXONOMY NO.:
LESSON PLANS: LOT1566.02
:
CATEGORY: NRC NR1
SYSTEMS: E-10/20

QUESTION :

E-10/20, Loss of Offsite Power, directs the operator to verify that each spray network flow rate (ESW and RHRSW combined) is 9000 gpm or greater. Which ONE of the following states the bases for this action.

- a. Minimize erosion of the spray nozzles.
- b. Ensure design cooling during a LOCA/LOOP.
- c. Prevent column separation in the RHRSW supply header.
- d. Preclude RHRHX tube fretting.

ANSWER : B

REFERENCES: E-10/20 Attachment 2 and 3
LOT-1566

NO.: 2279 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 209001K1.05 TAXONOMY NO.:
LESSON PLANS: LOT0350.04

CATEGORY: NRC NR1
SYSTEMS: CS ADS

QUESTION :

*** RO ONLY ***

Which ONE of the following describes the means by which the Automatic Depressurization System senses a Core Spray Pump is available for injection?

- a. Pump motor breaker position and pump differential pressure
- b. Pump discharge pressure only
- c. Pump discharge pressure and injection valve position
- d. Pump motor breaker position only

ANSWER : B

Reference: B21-1060 (ADS) sh 3A
LOT-0350 pp.13

94RO

NO.: 2321 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/05/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 212000K6.01 TAXONOMY NO.:
LESSON PLANS: LOT0300.09

CATEGORY: NR1 NRC
SYSTEMS: RPS UPS

QUESTION :

*** RO ONLY ***

Which ONE completes the statement below?

A loss of Division I DC has occurred on Unit 1. The 1A RPS UPS Static Inverter will:

- a. automatically transfer to MCC 144A-G-F.
- b. not be affected by a loss of Division I DC.
- c. automatically transfer to MCC 124A-G-F.
- d. automatically transfer to the TSC Inverter.

ANSWER : D

References: LOT-0300 Page 5
E-32 Sheet 1
Question #95R

NO.: 2380 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 223001A4.12 TAXONOMY NO.:
LESSON PLANS: LOT0150.06

CATEGORY: NRC
SYSTEMS: DCWS

QUESTION :

*** RO ONLY ***

Station Aux Feed, the 205 breaker, trips and Unit 1 scrams due to a line fault. The 10-11 breaker fails to close.

Which ONE of the following describes the effect on the Drywell Chilled Water System (DWCWS)?

" Drywell Chiller will:

- a. run, chilled water pumps will trip"
- b. trip, chilled water pumps will trip"
- c. run, standby chilled water pump will start and run"
- d. trip, standby chilled water pump will start and run"

ANSWER : B

REFERENCE: LOT0150.06 PPs 10,14

NO.: 2379 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/23/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 201006A3.01 TAXONOMY NO.:
LESSON PLANS: LOT0095.03

CATEGORY: NRC
SYSTEMS: RWM

QUESTION :

*** RO ONLY ***

Use the attached Unit 2 RWM window sketch to determine the status of reactivity controls.

- a. control rod 34-19 is backlighted on the rod select matrix
- b. three (3) INSERT ERRORS and one (1) WITHDRAWAL ERROR have occurred after total steam flow has been reduced to 15%.
- c. control rod 26-15, if selected, will result in a SELECT ERROR
- d. four (4) rods were out of position before total steam flow was reduced to 15%

ANSWER : D

REFERENCE: LOT0095.03 PP 9

NO.: 2343 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 263000K2.01 TAXONOMY NO.:
LESSON PLANS: LOT0690.02

CATEGORY: NRC NR1
SYSTEMS: DC DCDIST

QUESTION :

*** RO ONLY ***

Which of the alarms below is indicative of a loss of Division II
Safeguard DC power?

- a. RCIC Out of Service
- b. HPCI Out of Service
- c. Div I ADS Out of Service
- d. EHC Electrical Malfunction

ANSWER : B

REFERENCES: ARC 117 HPCI A-1
LOT-0690 Page 8

NO.: 2277 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
 TASK NUMBER: SKA NO.: 226001KA.09 TAXONOMY NO.:
 LESSON PLANS: LOT0370.09

CATEGORY: NRC NR1
 SYSTEMS: RHR

QUESTION :

*** RO ONLY ***

A loss of coolant accident (LOCA) coincident with a Loss of Offsite Power (LOOP) has occurred on Unit 1.

Which ONE of the following describes how to establish drywell sprays with the conditions provided?

- RPV level is being maintained with Core Spray
- 1A and 1B RHR Pumps are tripped and will not restart
- drywell sprays are required

Drywell sprays are supplied by the:

- a. motor driven fire pump ONLY to the 1A RHR Loop.
- b. motor driven and diesel driven fire pumps to the 1B RHR loop.
- c. diesel driven and motor driven fire pumps to the 1A RHR loop.
- d. diesel driven fire pump ONLY to the 1B RHR loop.

ANSWER : D

Reference: P&ID M51 Sh 5
 T-225 Unit 1 Section 4.4
 LOT-0370 pp. 19

NOTE- Motor driven pump powered from non-safeguard 224D

99 RO

NO.: 2228 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 290001A4.01 TAXONOMY NO.:
LESSON PLANS: LOT1550.01

CATEGORY: NRC
SYSTEMS: ON-111

QUESTION :

*** RO ONLY ***

All of the following are entry conditions to ON-111 "Loss of Secondary Containment" EXCEPT:

- FPC Heat Exchanger drain valves OPEN that allow communication between the Reactor Enclosure and Refuel Floor
- "UNIT 1 REAC ENCL EL 313 FAN RM AIRLOCK SEAL BROKEN" alarm, Floor Supvr reports workers have jammed open airlock doors
- SBGT flowrate is 1225 SCFM while drawing down Zone 1. Drawdown time is 100 seconds with a wind speed of 8 mph.
- routine HP surveys discover blowout panel in Condenser Bay 239' where Main Steam piping penetrates is severely damaged

ANSWER : C

REFERENCES: Tech Spec 3/4.6.5
Tech Spec Basis B3/4.6.5
S53.3.G

NO.: 2280 REV.: 4 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.16 TAXONOMY NO.:
LESSON PLANS: LOT 1850.02
:
CATEGORY: NRC NR1
SYSTEMS: OM TS

QUESTION :

Assuming all required fire brigade training is complete and up to date, all of the following Shift members can be designated as fire brigade leader EXCEPT?

- a. A Turbine Enclosure Equipment Operator
- b. The Floor Supervisor designated SLO/STA
- c. The Assistant Control Room Supervisor
- d. The Fourth Plant Reactor Operator

ANSWER : B

Reference: OM-L-3.2 Section 5.3
TS 6.2.2.e
LOT-1850 pp.6

01 RO/SRO

NO.: 2256 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS: LOT1860.06
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

A Clearance is being removed from valves in a contaminated area of the 309 room. Which ONE of the following describes a Clearance and Tagging Manual requirement?

- a. tags shall be removed without the clearance in-hand.
- b. a copy of the Clearance shall be used in the area.
- c. tags shall be removed and wrapped in yellow polybags.
- d. the original Clearance shall be used in the area.

ANSWER : B

REFERENCE: LOT1860.06 PP 6,9

NO.: 2261 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.04 TAXONOMY NO.:
LESSON PLANS: LOT1760.02
:
CATEGORY: NRC NR1
SYSTEMS: HP

QUESTION :

An on shift Equipment Operator, performing a routine inspection, requires a dose extension to allow up to 3500 mRem TEDE. Complete the following:

According to HP-C-106, the dose extension is initiated by the _____ and is approved by the _____.

- a. Health Physics Supervisor, Plant Manager
- b. Control Room Supervisor, Radiation Protection Manager
- c. Shift Manager, Plant Manager
- d. Health Physics Supervisor, Radiation Protection Manager

ANSWER : B

REFERENCE: HP-C-106, Section 7.5
LOT-1760 pp. 3

3 RO/SRO

NO.: 2317 REV.: 3 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.01 TAXONOMY NO.:
LESSON PLANS: LOT1570.02
:
CATEGORY: NR1 NRC
SYSTEMS: A-8

QUESTION :

Which ONE of the following describes the requirement for Locked Valve Log entries during surveillance tests (ST) and clearance application?

- a. If an IVOR is required, no entry is required.
- b. Manipulations per a Clearance application require entries.
- c. Only persons performing a manipulation shall make the entry.
- d. All manipulations per an ST require entries

ANSWER : A

References: A-8 section 7.0
Question # 4

NO.: 2350 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.07 TAXONOMY NO.:
LESSON PLANS: LOT1574.07
:
CATEGORY: NRC NR1
SYSTEMS: ELECSFT OPSMAN

QUESTION :

All of the following actions shall be performed when restoring power to a bus or panel that has unexpectedly de-energized EXCEPT?

- a. Determine the cause of the trip.
- b. Remove interlock control power fuses for associated loads.
- c. Strip the bus of all loads.
- d. Coordinate a controlled restoration of the associated loads.

ANSWER : B

REFERENCES: OM-C-7.2 page 3
Lot-1574 page

NO.: 2320 REV.: 3 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/05/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 201001K2.05 TAXONOMY NO.:
LESSON PLANS: LOT0070.05
:
CATEGORY: NR1 NRC
SYSTEMS: ARI

QUESTION :

A Group I isolation occurs at 100% power. The "A" RPS logic fails to initiate. Which ONE of the following describes the operation of the Redundant Reactivity Control System during the transient?

- a. Four (4) ARI valves de-energize to open on a reactor power signal.
- b. Four (4) ARI valves energize to close due to "B" RPS still energized.
- c. Eight (8) ARI valves energize to open on a reactor pressure signal.
- d. Eight (8) ARI valves deenergize to close on a reactor level signal.

ANSWER : C

References: LOT-0070 page 31
Question #6

NO.: 2206 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002K3.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.04
:
CATEGORY: NRC
SYSTEMS: RMCS GP-11

QUESTION :

After a Unit 2 scram, the RO resets the scram. Control rod 34-23 indicates " " (blank-blank) on the Four Rod Display. Which ONE of the following confirms that the rod is fully inserted?

- A. an OD-7 printout indicates "X-X"
- B. F(I), "ALL RODS NOT FULL IN" LED is out on A.E.R. panel 20C616
- C. Process Computer Control Rod Display indicates "***"
- D. Full Core Display red light is out

ANSWER : B

REFERENCE: GP-11 SECTION 3.3
LOT0080.04 PP17

NO.: 2219 REV.: 3 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 202002K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0040.04

CATEGORY: NRC
SYSTEMS: RECIRC

QUESTION :

With the unit operating at 88% power, a FWLCS failure caused a reduction in total feedwater flow to 14%. "A" and "B" Recirculation Pumps are operating at 80% speed following the transient. Which ONE of the following describes the concern with this Recirculation Pump condition?

- a. Runout of the pumps may occur
- b. Air binding of the pumps may occur
- c. Excessive pump suction subcooling
- d. Cavitation of the pumps may occur

ANSWER : D

REFERENCE: LOT0040.04 PP 6

NO.: 2273 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 203000K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0370.06
:
CATEGORY: NRC NR1
SYSTEMS: RHR LPCI

QUESTION :

Unit 1 is in OPCON 3 with RPV pressure 40 psig. The 1A RHR Pump breaker is removed. While performing testing, the Division 1 LPCI MAN INIT pushbutton is armed and depressed.

Which ONE of the following describes the response of HV51-1F017A (RHR LPCI INJECTION)?

HV51-1F017A will:

- a. remain closed
- b. open if the 1C RHR Pump is started
- c. open when D114-R-G is reenergized
- d. immediately open and inject condensate transfer

ANSWER : D

Reference: E11-1040 (RHR) Sh 5
LOT-0370 pp. 14, 17

9 RO/SRO

NO.: 2209 REV.: 8 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 206000K6.11 TAXONOMY NO.:
LESSON PLANS: LOT0340.14H
:
CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

With Unit 1 at 22% power, valve 42-1F042B, the Division 2 Reference Leg Manual Isolation valve, is shut.

Which ONE of the following statements, describes HPCI response?

"HPCI would:

- a. start, and run on minimum flow ONLY"
- b. start and inject to the RPV"
- c. fail to start on low RPV level due to INDICATED high RPV level but would start on high drywell pressure"
- d. trip and not start on high drywell pressure or low RPV level due to INDICATED high RPV level"

ANSWER : B

REFERENCE: LOT0340.14H PP 22,36

NO.: 2274 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295024EK2.11 TAXONOMY NO.:
LESSON PLANS: LOT0370.09
:
CATEGORY: NRC NR1
SYSTEMS: RHR

QUESTION :

A steam leak has occurred in the Unit 2 drywell.

- drywell pressure is 22 psig
- RPV pressure is 800 psig
- NO LOCA signal exists

Which ONE of the following describes the ability to open the RHR System inboard and outboard drywell spray valves?

- a. Either the inboard or the outboard spray valve can be opened, but not both at the same time.
- b. Both the inboard and outboard spray valves can be opened at the same time and in any order.
- c. The inboard spray valve can be opened provided the outboard spray valve is closed; then the outboard spray valve can be opened.
- d. Neither the inboard nor the outboard spray valve will open at this time.

ANSWER : A

Reference: T-225 section 4.3
E-11-1040 (RHR) sh 15
LOT-0370 pp. 15

NO.: 2290 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295025EK1.05 TAXONOMY NO.:
LESSON PLANS: LOT1820.03

CATEGORY: NRC NR1
SYSTEMS: TS

QUESTION :

Which ONE of the following Unit 1 transients has resulted in exceeding a Technical Specification Safety Limit?

- a. A main turbine trip with a failure of the turbine bypass valves resulted in a peak RPV dome pressure of 1340 psig.
- b. A malfunction of EHC resulted in a depressurization of the RPV. The MSIVs close and the reactor scrams at 88% power/ 830 psig.
- c. While in single loop operation, a MSIV isolation results in a MCPR of 1.08.
- d. During two loop operation, a loss of feedwater heating results in a MFLCPR of 1.12.

ANSWER : A

Reference: T.S. 2.1
LOT-1820, pp. 3

12 RO/SRO

NO.: 2357 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295031EK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0180.02
:
CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

Level dropped to -45" on Unit 1 during a feedwater transient and is now restored to normal. Which ONE of the following describes the response of the "Bypass Leakage Barrier Blocks and Vents".

- a. Instrument Gas Block Valves are closed and the Vents are open.
- b. Recirc pump seal purge Block Valves are closed and the Vents are open.
- c. Main steam line drain Barrier Block Valves are closed and the Vents are open.
- d. N2 supply Block Valves are closed and the Vents are open.

ANSWER : D

REFERENCES: GP-8.1
LOT-0180 page 24

NO.: 2312 REV.: 4 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295037EK2.04 TAXONOMY NO.:
LESSON PLANS: LOT0310.10
:
CATEGORY: NR1 NRC
SYSTEMS: SLC

QUESTION :

The Unit 2 Main Turbine trips resulting in a scram signal. Reactor pressure peaks at 1119 psig. Reactor power following the scram signal is steady at 11%.

Which ONE of the following conditions will result in the FIRST automatic Standby Liquid Control System initiation signal?

- a. Low reactor water level (-38") and 118 second timer expired
- b. 118 second timer expired
- c. Low reactor water level (-129") and 9 second timer expired
- d. 30 second timer expired

ANSWER : A

REFERENCES: LOT-0310 page 16

NO.: 2250 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295014AK1.06 TAXONOMY NO.:
LESSON PLANS: LOT1540.04
:
CATEGORY: NRC
SYSTEMS: OT

QUESTION :

OT-104 provides a "CAUTION" on thermal hydraulic instability. The Basis for that caution emphasizes a characteristic of thermal hydraulic instability used to distinguish it from other causes of power oscillations.

This characteristic is the:

- a. magnitude of APRM changes
- b. magnitude of LPRM changes
- c. frequency of reactor pressure changes
- d. frequency of the power changes

ANSWER : D

REFERENCE: OT-104 BASES PP 4

NO.: 2355 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 204000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0110.11

CATEGORY: NRC NR1
SYSTEMS: RWCU TS

QUESTION :

*** SRO ONLY ***

During testing, it is determined that the RWCU Outboard Valve (HV-44-1F004), will not close as a result of a Standby Liquid Control Initiation signal. Which ONE of the following actions are required?

- a. Restore the isolation capability of HV-44-1F004 within 6 hours.
- b. Close HV-44-1F004 within 1 hour.
- c. Place inoperable channel in a tripped condition within 24 hours.
- d. Close HV-44-1F004 within 12 hours.

ANSWER : A

REFERENCES: T.S. 3.3.2
LOT-0110 page 37

NO.: 2319 REV.: 1 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 239001K5.06 TAXONOMY NO.:
LESSON PLANS: LOT0120.12

CATEGORY: NR1 NRC
SYSTEMS: MSIV MS 1A

QUESTION :

Unit 1 is operating at 100% power. A fire results in the loss of power from 1BD102 (Division II DC).

Which ONE of the following describes the response of the MSIVs if 1BY160 is inadvertently deenergized?

- a. The outboard MSIVs will remain open for several hours and drift closed when the associated pneumatic accumulators bleed down.
- b. The inboard MSIVs will close within 5 seconds.
- c. The outboard MSIVs will close within 5 seconds.
- d. The inboard MSIVs will remain open for several hours and drift closed when the associated pneumatic accumulators bleed down.

ANSWER : C

References: LOT-0120 page 23
Question # 17

NO.: 2247 REV.: 8 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 205000KA.10 TAXONOMY NO.:
LESSON PLANS: LOT0370.10

CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

Unit 1 is in OPCON 5 (*) with the following conditions:

- Suppression Pool Level 18 feet
- Reactor Coolant Temperature 82°F
- RPV level 491 inches on Upset instrument
- "1A loop of Shutdown Cooling (SDC) in service at 1100 gpm
- "C" Source Range Monitor inoperable, All others operable

Which ONE of the following actions are required?

- a. Stop Core Alterations in the "B" quadrant
- b. Raise SDC flowrate to 6000 gpm
- c. Align all Core Spray Pumps to the CST
- d. Reduce reactor coolant temperature to less than 75°F

ANSWER : B

REFERENCE: GP-6.1 SECTION 3.5
S51.8.B PRECAUTIONS 3.8, 3.11
TECH SPEC DEFINITIONS TABLE 1.2, PORC POS 2
TECH SPEC DEFINITIONS SDM
LOT0370.10 PP 24,39

NO.: 2368 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/25/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 256000K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0520.04
:
CATEGORY: NRC NR1
SYSTEMS: COND

QUESTION :

A Feedwater Level Control transient results in a RFP speed increase. Differential pressure from the Condensate Pump discharge to the Reactor Feedwater Pump suction rises to 53 psid for 35 seconds.

Complete the following statement.

Feedwater conductivity will _____ since the condensate filter demins _____ bypassed and the condensate deep beds _____ bypassed.

- a. not change, are not, are not
- b. increase, are, are not
- c. not change, are, are not
- d. increase, are, are

ANSWER : A

REFERENCES: P&ID M-16
LOT-0520 page 9

NO.: 2281 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 271000K1.09 TAXONOMY NO.:
LESSON PLANS: LOT0510.02
:
CATEGORY: NRC NR1
SYSTEMS: OG

QUESTION :

Which ONE of the following would result from a loss of service water flow to Offgas System components?

- a. increased moisture entering the charcoal filters and decreased iodine removal.
- b. increased hydrogen in the holdup pipe and increased temperature of gases entering the holdup pipe.
- c. decreased recombination and decreased moisture entering the charcoal filters.
- d. decreased noble gas exiting the North Stack and increased offgas flow.

ANSWER : A

Reference: LOT-0510, pp. 7, 8

20 RO/SRO

NO.: 1530 REV.: 9 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 206000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0340.17

CATEGORY: NRC
SYSTEMS: HPCI TS

QUESTION :

*** SRO ONLY ***

During Unit 2 operation at 100% power, an Equipment Operator (EO) discovers trip unit B21-2N693B to be tripped high (HPCI level 8 trip).

Which ONE of the following gives the status of HPCI operability?

- a. HPCI is tripped and therefore inoperable.
- b. HPCI will not start on a low level signal and therefore inoperable
- c. HPCI is operable, operation with inoperable trip unit can continue indefinitely with the trip unit in a tripped condition
- d. HPCI is operable, the inoperable trip unit must be repaired within 24 hours or HPCI declared inoperable

ANSWER : D

REFERENCE: LOT0340.17
Tech Spec 3.3.3.b

NO.: 2220 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295001AA2.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.02
:
CATEGORY: NRC
SYSTEMS: OT-112

QUESTION :

Trip of the 22 Auxilary Bus results in the following conditions.

- Rx power 46%
- Rx level 40 inches
- Rx press 935 psig
- Core Flow 38%

Which ONE of the following describes the required actions?

- a. increase core flow.
- b. manually scram the reactor
- c. insert control rods per RMSI
- d. reduce recirc flow to restore RPV level to normal

ANSWER : C

REFERENCE: OT-112

NOTE TO EXAMINER; PROVIDE TRAINEE WITH COPY OF N-F MAP FOR UNIT 2

NO.: 2251 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295002AK3.03 TAXONOMY NO.:
LESSON PLANS: LOT1540.03

CATEGORY: NRC
SYSTEMS: OT

QUESTION :

Unit 2 is in OPCIION 2. A condenser air leak is causing main condenser vacuum to drop. Which ONE of the following summarizes plant response to a loss of condenser vacuum?

- a. Event 1 feedpump trip
Event 2 reactor scram
Event 3 group I isolation
- b. Event 1 reactor scram
Event 2 feedpump trip
Event 3 bypass valve closure
- c. Event 1 bypass valve closure
Event 2 group I isolation
Event 3 reactor scram
- d. Event 1 SRV actuation
Event 2 feedpump trip
Event 3 bypass valve closure

ANSWER : A

REFERENCE: OT-116 BASES SECTION 4

NO.: 2349 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295003AK1.06 TAXONOMY NO.:
LESSON PLANS: LOT1566.02
:
CATEGORY: NRC NR1
SYSTEMS: E-1

QUESTION :

E-1, Station Blackout procedure is being executed with RPV level at -158". Which ONE of the following describes the RPV level instrument being utilized?

- a. Fuel Zone Indicator (LI42-1R610) on 10C601 ECCS A
- b. Wide Range Indicator (LI42-1R604) on 10C603
- c. B PAM (XR42-1R623B) on 10C601 ECCS B
- d. Narrow Range Indicator (LI42-1R606C) on 10C603

ANSWER : B

REFERENCES: E-1 Section 3.8-3.15
Lot-1566 page 4

NO.: 2348 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295004AK2.03 TAXONOMY NO.:
LESSON PLANS: LOT1566.03

CATEGORY: NRC NR1
SYSTEMS: E-1FC 1FC

QUESTION :

In E-1FC, Loss of Division III Safeguard DC, the operator is directed:

"If MSIV's are open then verify no "B" Channel or "D" Channel Group I Isolation Signal exists before restoring power to Bus 1FC."

Which ONE of the following describes why this action must be taken.

"Restoring 1FC could cause a:

- a. steam flooding damper actuation resulting in high main steam line temperatures."
- b. NUMAC Leak Detection Monitor trip resulting in a Group I channel trip on main steam line temperatures."
- c. spurious, unregulated HPCI start resulting in high main steam line flows."
- d. NUMAC Radiation Monitor trip resulting in a Group I channel trip on main steam line High Radiation."

ANSWER : B

REFERENCES: E-1FC Section 3.8
E-33 sheet 1
LOT-1566 page 21

NO.: 2318 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.01 TAXONOMY NO.:
LESSON PLANS: LOT1570.11
:
CATEGORY: NR1 NRC
SYSTEMS: A-C-79

QUESTION :

T-225 is being executed to spray the drywell. The PRO has directed an Equipment Operator (EO) to install jumpers in the Aux Equipment Room.

Which ONE of the following describes procedure adherence and use per A-C-79?

- a. PRO performs with procedure "in hand", EO need not have procedure "in hand".
- b. Both the PRO and EO performs with procedure "in hand".
- c. PRO need not have procedure "in hand", EO performs with procedure "in hand".
- d. Both the PRO and EO performs the procedure from memory.

ANSWER : B

References: A-C-79 section 7.10
Question #26

NO.: 2270 REV.: 5 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 5 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.07 TAXONOMY NO.:
LESSON PLANS: LOT2002.07
:
CATEGORY: NRC NR1
SYSTEMS: PRINTS

QUESTION :

HV49-1F022, RCIC TEST BYPASS TO CST is malfunctioning with the following symptoms:

- When opening, the Operator must hold the handswitch to OPEN. The valve stops moving as soon as the handswitch is released.
- The closing function of the valve is operating properly.
- No yellow system status lamps or trouble annunciators are lit.

Which ONE of the following will cause the given symptoms?
(Refer to the attached schematic diagram Figure 2.)

- a. Wire 11F has come loose from terminal 6 located in the MCC.
- b. Limit switch 5 (LS5) is stuck open.
- c. The thermal overload (49) device has actuated.
- d. Torque switch 2 (TS2) is set low and the switch is opening.

ANSWER : A

Reference: E51-1040 (RCIC) Sheet 1A Figure 2 TYPICAL DC MOV and MCC
(provide copy)
LOT-2002, Attachment 3

NO.: 2316 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/25/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09

CATEGORY: NR1 NRC
SYSTEMS: A

QUESTION :

The following is a schedule of hours worked by Licensed Operators "A", "B", "C" and "D".

OPERATOR	MON	TUES	WED	THURS	FRI	SAT
Operator A	06-18	06-18	06-18	06-18	06-22	06-18
Operator B	06-14	06-14	06-14	06-18	06-14	06-14
Operator C	06-14	24-08	OFF	OFF	06-22	06-14
Operator D	18-06	18-06	18-06	18-06	18-06	18-06

Which ONE of the Operators have exceeded the working hour restriction per A-C-40?

- a. Operator A
- b. Operator B
- c. Operator C
- d. Operator D

ANSWER : A

References: A-C-40 section 7.2.1
Question #28

NO.: 2353 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 294001A1.14 TAXONOMY NO.:
 LESSON PLANS: LOT1550.01
 :
 CATEGORY: NRC NR1
 SYSTEMS: ON-116 ON

QUESTION :

Which ONE of the following conditions require entry to ON-116, High Reactor Water Conductivity?

- a. A Chemistry report of reactor water pH at 4.8.
- b. RWCU demin inlet conductivity greater than 1.0 umho/cm.
- c. A Chemistry report of reactor water chlorides at 0.25 ppm
- d. RWCU demin outlet conductivity greater than 1.0 umho/cm.

ANSWER : B

REFERENCES: ON-116 Section 1.1
 ARC 112 Cleanup G-4
 Lot-1550 page

NO.: 2367 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/24/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.01

CATEGORY: NRC NR1
SYSTEMS: HP

QUESTION :

Complete the statement below concerning Level II LOCKED HIGH RADIATION Keys.

Level II Keys _____ require an ANSI technician to be present during use, and documentation _____ required to be complete prior to use of the key.

- a. do, is
- b. do, is not
- c. do not, is
- d. do not, is not

ANSWER : B

REFERENCES: HP-C-202 Section 7.4 page 5
LOT-1760 page 3

NO.: 2223 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 288000K5.02 TAXONOMY NO.:
LESSON PLANS: LOT0200.07

CATEGORY: NRC
SYSTEMS: REHVAC

QUESTION :

Your crew is experiencing difficulty in maintaining Reactor Enclosure D/P. Auxiliary Steam is NOT available with outside air temperature at 58°F. Reactor Enclosure Exhaust Fan blades are at maximum pitch.

Complete the following:

Reactor Enclosure isolation will occur on low D/P in _____.
Excessive _____ caused by lack of heating steam is a possible cause of this event.

- a. 50 minutes; face damper closing
- b. 100 seconds; bypass damper closing
- c. 50 minutes; face damper opening
- d. 100 seconds; bypass damper opening

ANSWER : C

REFERENCE: LOT0200.07 PP 9,33

NO.: 2243 REV.: 9 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/04/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 234000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0760.14
:
CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCI 5 with control rod blade (CRB) shuffle in progress between the vessel and fuel pool. The following conditions exist:

- CRB 30-31 and its Fuel Support Piece are suspended above the Top Guide
- FUEL POOL COOLING & CLEANUP SYSTEM TROUBLE alarm annunciated
- FUEL POOL COOLING PUMPS TROUBLE alarm annunciated
- Rx Vessel Water Level (as reported from Rx Encl 313") is 254 inches

Which ONE of the following actions are permitted?

- a. CRB is returned to its core location. Stop use of the overhead crane for moving hoses over the Dryer/Separator Pool.
- b. Enter ON-120. Place the CRB in the fuel pool blade rack.
- c. CRB swaps may continue, CORE ALTERATIONS are prohibited
- d. Enter ON-120, Do NOT move the CRB from its present location.

ANSWER : B

REFERENCE: LOT0760.14 PP 23
TECH SPEC 3/4.9.8
ON-120 BASES PP 7
ST-6-107-591-1 PP 14

NO.: 2249 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/11/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 233000K6.10 TAXONOMY NO.:
LESSON PLANS: LOT0750.08

CATEGORY: NRC
SYSTEMS: FPCCU

QUESTION :

Which ONE of the following states the effect of a failure of #3 and/or #4 Reactor Cavity Seals ?

- a. loss of either seal during Refuel will cause the cavity to drain to the drywell
- b. loss of both seals during Refuel will cause flooding of the upper levels of the drywell
- c. loss both seals prior to cavity floodup in OPGON 5 will cause a loss of Refuel Floor Secondary Containment
- d. loss of either seal while in OPGON 2 will cause a loss of Primary Containment Integrity

ANSWER : C

REFERENCE: LOT0750.08 PP 14,23,24,8

NO.: 2242 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/22/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 234000K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0760.08

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

Core alterations are in progress with a fuel bundle grappled and suspended just above the top guide. A fire on the refuel bridge results in a loss of electrical power and the bridge air system being completely ruptured.

Which ONE of the following describes the status of the main hoist grapple?

- a. the grapple attempts to fail open but the mechanical design of the grapple prevents opening.
- b. when bundle weight is removed the grapple will fail open
- c. the grapple will remain engaged, but the Boundary Zone Computer will not enforce, allowing the grapple to open over the core
- d. when bundle weight is removed the grapple will remain engaged

ANSWER : D

REFERENCE: LOT0760.08 PP 12

NO.: 2381 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/23/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.01 TAXONOMY NO.:
LESSON PLANS: LOT1570.02

CATEGORY: NRC
SYSTEMS: OM A

QUESTION :

*** SRO ONLY ***

An Equipment Operator is performing a HPCI surveillance test (ST) that requires the use of an LV-100 Key.

Which ONE of the following describes Locked Valve Key Control in accordance with the Operations Manual?

- a. Shift Operating Assistant issues this key
- b. key control tag is not required due to ST usage
- c. PRO approves issue of key per telephone/radio
- d. EO self issues the key due to ST usage

ANSWER : A

REFERENCE: OM-7-4 PP 3,4

NO.: 2271 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.07 TAXONOMY NO.:
LESSON PLANS: LOT2002.07
:
CATEGORY: NRC NR1
SYSTEMS: PRINTS

QUESTION :

*** SRO ONLY ***

Refer to the attached copy of P&ID M-59, Instrument Gas System.
The following conditions exist:

- SV59-150A indicates open
- SV59-152A indicates closed
- LONG TERM ADS GAS SUPPLY HI/LO DIV III alarm lit in MCR
- Local gage PI-59-152A indicates 60 psig

Which ONE of the following caused these conditions?

- a. PSV-59-153A is lifting
- b. HV-59-129B is Closed
- c. The Instrument Gas bottle regulator is failed open
- d. HV-59-151A has a packing leak

ANSWER : A

Reference: P&ID M-59 (provide copy)
LOT-2002 pp. 4

NO.: 2252 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.08 TAXONOMY NO.:
LESSON PLANS: LOT1530.07

:
CATEGORY: NRC
SYSTEMS: GP

QUESTION :

*** SRO ONLY ***

Unit 1 was operating at 100% power when HPCI injects to the vessel.
Conditions are as follows:

- Reactor Power = 104% and going up
- Reactor Level = +38" and stable
- Reactor Pressure = 1000 psig and stable

Select the ONE Immediate Action from the list below.

- a. Drive rods as necessary to prevent a scram.
- b. Reduce recirc flow as necessary to prevent a scram.
- c. Perform a Rapid Plant Shutdown per GP-4.
- d. Take manual control of feedwater and restore level.

ANSWER : B

REFERENCE: OT-104

NO.: 2363 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.12 TAXONOMY NO.:
LESSON PLANS: LOT1574.12

CATEGORY: NRC NR1
SYSTEMS: OPSMAN OPS MAN

QUESTION :

*** SRO ONLY ***

All of the following situations require an Independent Verification
EXCEPT:

- a. A Temporary Plant Alteration removal from RCIC.
- b. Locked Valve manipulations on RHRSW.
- c. Aux. Boiler Lineups following a tube replacement outage.
- d. Clearance removal and restoration on PCIG isolation valves.

ANSWER : C

REFERENCES: OM-C-11.1
OM-L-10.4-1
LOT-1574 page 5

NO.: 2364 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.06 TAXONOMY NO.:
LESSON PLANS: LOT1574.15

CATEGORY: NRC NR1
SYSTEMS: OPSMAN OPS MAN

QUESTION :

*** SRO ONLY ***

For each of the systems below, a surveillance test is to be performed that will cause the system to be inoperable for a short period of time. In all cases, the system will be returned to operable status before shift turnover.

All of the systems below require an LCO entry EXCEPT:

- a. HPCI
- b. RCIC
- c. RPS
- d. D12 Diesel Generator

ANSWER : B

REFERENCES: OM-1-12.1 Section 4.4 page 3
LOT-1574 page 5

NO.: 2375 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS: LOT1860.03
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

The 5.3 valve (68-0035, STORM WATER DIVERSION VALVE), normally has
_____ tag applied as part of _____ to govern
it's CLOSED status aligning storm drains to the Holding Pond

Which One of the following fills in the blanks above?

- a. a red danger; a clearance suspension
- b. an orange and white SCT ; a FIN Team Hold
- c. a white info ; an Administrative tagout
- d. a yellow caution ; a clearance

ANSWER : C

REFERENCE: LOT1860.03 PP 4,5

NO.: 2378 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.09 TAXONOMY NO.:
LESSON PLANS: LOT1860.14
:
CATEGORY: NRC
SYSTEMS: CT

QUESTION :

Work must be done on the seat of HV44-1F040 (RWCU SUCTION VALVE) with the Unit at power. RWCU return to feedwater, valves HV44-1F039 and HV44-1F042, have been closed.

Which ONE of the following describes mechanical safety standards that must be applied?

- a. shut HV44-1F001 (INBOARD ISOLATION), open vent valves upstream of HV44-1F040 and use portable temperature monitoring instruments to warn workers of rising pipe temperatures
- b. shut HV44-1F001 (INBOARD ISOLATION), and HV44-1F004 (OUTBOARD ISOLATION) and open vent valves upstream and downstream of HV44-1F040
- c. shut HV44-1F100 (BOTTOM HEAD DRAIN) and HV44-1F105 (LOOP DRAIN) and open vent valves upstream of HV44-1F040
- d. shut HV44-1F004 (OUTBOARD ISOLATION), backseat HV44-1F040 and open vent valves upstream and downstream of HV44-1F040

ANSWER : B

REFERENCE: LOT1860.14 PP 18,19

NOTE: high pressure/temperature system $\geq 200^{\circ}\text{F}$ and 500 psig requires TWO valve protection

NO.: 2285 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 215004K4.06 TAXONOMY NO.:
LESSON PLANS: LOT0240.07
:
CATEGORY: NRC NR1
SYSTEMS: SRM

QUESTION :

A startup of Unit 2 is in progress. The Neutron Monitoring Overlap surveillance is complete and SRMs are being retracted with the following conditions:

<u>IRM</u>	<u>IRM RANGE</u>
A	3
B	3
C	2
D	BYPASSED
E	3
F	4
G	3
H	5

While being retracted, the reading from the A SRM drops to 80 CPS. Which ONE of the following describes the expected subsequent conditions?

- a. SRM RETRACTED WHEN NOT PERMITTED alarm and rod block.
- b. SRM RETRACTED WHEN NOT PERMITTED alarm and no rod block
- c. SRM DOWNSCALE alarm and no rod block.
- d. No alarm and no rod block

ANSWER : A

Reference: ARC 107 I-4
LOT-0240, pp. 9

NO.: 2286 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215003K3.02 TAXONOMY NO.:
LESSON PLANS: LOT0250.09
:
CATEGORY: NRC NR1
SYSTEMS: IRM

QUESTION :

A startup is in progress with reactor pressure at 300 psig. A rod block (due to the neutron monitoring system) is currently preventing rod motion. With the IRMs fully inserted, which ONE of the following is the cause of the rod block?

- a. IRM A indicates 2 on range 1
- b. IRM C indicates 25 on range 1
- c. IRM D indicates 3 on range 2
- d. IRM H indicates 10 on range 2

ANSWER : C

Reference: LOT-0250 pp. 11

NO.: 2287 REV.: 4 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 215005K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0270.07
:
CATEGORY: NRC NR1
SYSTEMS: APRM

QUESTION :

Which ONE of the following describes the operation of the recirculation loop flow units. (flow units used by the neutron monitoring system)?

- a. An UPSCALE trip and rod block will be initiated if any flow unit reads 105%
- b. The BYPASS joystick will remove the flow biasing inputs to the APRM
- c. A COMPARATOR trip and rod block will occur if actual "A" and "B" recirc loop flows differ by more than 10%.
- d. The BYPASS joystick will remove the UPSCALE flow rod block and COMPARATOR rod block

ANSWER : D

Reference: LOT-0270, pp. 9, 13

44 RO/SRO

NO.: 2289 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 215005KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0260.13

CATEGORY: NRC NR1
SYSTEMS: LPRM TS

QUESTION :

*** SRO ONLY ***

Which ONE of the following combinations of LPRM inputs represent an INOPERABLE APRM channel?

REMAINING INPUTS FOR EACH LPRM LEVEL

- | | | | | |
|----|------|------|------|------|
| a. | A(4) | B(5) | C(5) | D(6) |
| b. | A(2) | B(3) | C(5) | D(3) |
| c. | A(2) | B(4) | C(4) | D(4) |
| d. | A(3) | B(3) | C(6) | D(2) |

ANSWER : B

Reference: T.S. Table 3.3.1-1
LOT-0260, pp. 8

NO.: 2313 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 211000K5.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.08
:
CATEGORY: NR1 NRC
SYSTEMS: SLC

QUESTION :

Complete the following statement:

The Standby Liquid Control System is designed to add enough negative reactivity to _____.

- a. overcome the 11% reactivity added when the fuel cools from normal operating temperature to 60°F.
- b. maintain the reactor in a hot shutdown condition for a maximum of 24 hours.
- c. provide a shutdown margin of at least 3% reactivity over the most reactive time in core life.
- d. overcome the 17% reactivity added when the xenon burns out from an equilibrium state.

ANSWER : C

References: LOT-0310 page 5

Question #46

NO.: 2268 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 290003K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.09
:
CATEGORY: NRC NR1
SYSTEMS: CEHVAC

QUESTION :

The 0A Control Enclosure Chiller is running and the 0B Control Enclosure Chiller is in AUTO and not running.

Which ONE of the following describes the response of the chillers to a subsequent Unit 1 LOCA signal?

"The 0A Chiller will trip and:

- a. restart 167 seconds later. The 0B Chiller will not start."
- b. the 0B chiller will start 51 seconds later."
- c. restart 51 seconds later. The 0B Chiller will not start."
- d. both the 0A and the 0B Chillers will start 167 seconds later."

ANSWER : D

Reference: E-463, E-164
LOT0450 pp. 49

47 RO/SRO

NO.: 2275 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 219000K4.03 TAXONOMY NO.:
LESSON PLANS: LOT0370.09

CATEGORY: NRC NR1
SYSTEMS: RHR SPC

QUESTION :

A LOCA has just occurred on Unit 1 with the 1B RHR Pump initially in service for Suppression Pool Cooling. Plant conditions are as follows:

-RPV Water Level -140 inches;
-RPV Pressure 600 psig;
-Drywell Pressure 18 psig;

No operator actions have been taken. Which ONE of the following describes the status of HV51-1F017A (RHR LPCI INJECTION), HV51-1F024A (FULL FLOW TEST RETURN), and HV-C-51-1F048A (HEAT EXCH BYPASS)?

- a. F017A OPEN
F024A OPEN
F048A OPEN
- b. F017A CLOSED
F024A OPEN
F048A CLOSED
- c. F017A CLOSED
F024A CLOSED
F048A OPEN
- d. F017A CLOSED
F024A CLOSED
F048A CLOSED

ANSWER : C

Reference: E11-1040
LOT-0370 pp. 8, 14, 15

NO.: 2347 REV.: 1 TYPE: MC ENTERED BY: WMT DATE ENTERED: 09/28/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 245000K6.10 TAXONOMY NO.:
LESSON PLANS: LOT0570.04

CATEGORY: NRC NR1
SYSTEMS: MNGEN GENAUX

QUESTION :

Unit 2 is at 100% power. A leak on the Main Turbine Lube Oil header has caused the Main Shaft Oil Pump Discharge pressure to drop to 200 psig and bearing header pressure to drop to 8 psig. Which ONE of the following Main Turbine Lube Oil Pumps should be running?

- a. Motor Suction Pump (MSP)
- b. Emergency Bearing Oil Pump (EBOP)
- c. Turning Gear Oil Pump (TGOP)
- d. Turbine Lift Pumps

ANSWER : C

REFERENCES: ARC 105 Main Turb G-4
LOT-0570 page 13

NO.: 2293 REV.: 0 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/03/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 215002K6.04 TAXONOMY NO.:
LESSON PLANS: LOT0280.09
:
CATEGORY: NRC NR1
SYSTEMS: RBM

QUESTION :

While withdrawing a central control rod at 90% power, the D APRM fails downscale. Which ONE of the following describes the effect on the B Rod Block Monitor?

- a. The upscale trip setpoint will be increased and the F APRM will be automatically engaged as the reference APRM.
- b. The upscale trip setpoint will be decreased and the D APRM will remain engaged as the reference APRM.
- c. The RBM will be automatically bypassed and the F APRM will automatically be engaged as the reference APRM.
- d. The RBM will be automatically bypassed and the D APRM will remain engaged as the reference APRM.

ANSWER : D

Reference: ARC 108 C-4
LOT-0280, pp.10, 13

NO.: 2346 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 262001K3.05 TAXONOMY NO.:
LESSON PLANS: LOT0640.04
:
CATEGORY: NRC NR1
SYSTEMS: 13 KV AUXPWR

QUESTION :

Complete the following:

While at 100% power on Unit 1, a "loss of coolant accident" (LOCA) coincident with a "loss of offsite power" (LOOP) occurs. When the main turbine trips, the 11 Aux Bus Breaker will _____ and the 10-11 Bus Breaker will _____.

- a. remain closed due to loss of control power /remain open due to loss of control power
- b. remain closed due to loss of control power /close with safeguards control power
- c. open/remain open
- d. open/close

ANSWER : C

REFERENCES: E-150, E-151
LOT-0640 page 20

NO.: 2362 REV.: 4 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295005KA.12 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T100 T-100

QUESTION :

Unit 1 is at 95% power when one MSIV drifts closed causing a neutron monitoring system trip and scram. Plant conditions are as follows:

Reactor Pressure 918 psig and stable.
Reactor Level +24" and stable.
Generator Load is 300 Mwe and dropping.

The PRO attempted to transfer house loads, but the Sync Check Relay for the 12 Bus malfunctioned and 20-12 Bus Breaker did not close on the 12 Bus. The 12 Bus remains powered via the Main Generator.

Which ONE of the following describes the required actions.

- a. Trip the turbine at about 50 Mwe.
- b. Do not trip the turbine manually.
- c. Cross-tie the 114 load centers immediately.
- d. Open 12 Unit Aux. Bus breaker immediately.

ANSWER : A

REFERENCES: T-100
LOT-1560 page 20

NO.: 2360 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295006AA1.01 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T101 T-101

QUESTION :

A Unit 2 startup is in progress with the reactor mode switch in RUN, when a Drywell leak occurs. With Drywell pressure at 1.4 psig and rising, the Control Room Supervisor has directed a rapid plant shutdown. The Mode Switch is stuck in RUN and will not move. Which ONE of the actions below should you take to promptly scram the reactor?

- a. Insert SRM's and IRM's and range the IRM's to "1" to cause a RPS scram signal.
- b. Arm and depress the A1 and B2 RPS Manual Initiation pushbuttons only.
- c. Arm and depress the 1A and 2A RRCS Manual Initiation pushbuttons only.
- d. Locally start all three SLC pumps from the 283' elevation.

ANSWER : B

REFERENCES: T-101
T-101 Bases page 3
LOT-1560 page 21

NO.: 2324 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295007AK3.06 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT OT-102

QUESTION :

While operating at power on Unit 1, an EHC malfunction occurs and you are directed to reduce reactor power to maintain reactor pressure less than 1020 psig. Which ONE of the following completes the statement below?

The 1020 psig value is based on _.

- a. Assuring a 300 psig margin to the Tech Spec safety limit for dome pressure
- b. The Tech Spec LCO which is based on SRV sizing analysis
- c. Reducing the DP across the MSIV's thereby minimizing valve seat damage
- d. Preventing exceeding the bypass valve capacity in the event of a turbine trip

ANSWER : B

References: OT-102 Bases
Question #54

NO.: 2315 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
 DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 295009AA1.02 TAXONOMY NO.:
 LESSON PLANS: LOT1540.05
 ;
 CATEGORY: NR1 NRC
 SYSTEMS: OT-100

QUESTION :

Unit 2 was operating at 100% power when a REACTOR HI/LO LEVEL alarm annunciated. Reactor Recirculation pumps both runback to 42% speed.

Which ONE of the following describes a possible cause for the Recirculation Pump runback?

- a. The selected narrow range level indicator failed upscale causing total feedwater flow to decrease to 18%.
- b. The 2A Condensate Pump trips on a phase overcurrent condition.
- c. One recirculation pump discharge valve indicates less than 95% open.
- d. One steam flow transmitter failed downscale causing total feedwater water flow to decrease to 18%.

ANSWER : B

References: OT-100 Bases
Question #55

NO.: 2325 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295010AK3.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.05

CATEGORY: NR1 NRC
SYSTEMS: OT-101 OT

QUESTION :

OT-101 High Drywell Pressure, directs you to vent the drywell if no leak exists, drywell pressure is < 1.68 psig and drywell pressure needs to be lowered. Which one of the following completes the statement below?

Proper adherence to the procedure ensures drywell venting will be terminated:

- a. when the minimum mass of drywell nitrogen is reached.
- b. when the mass of non-condensibles in the suppression chamber and drywell are equal.
- c. Prior to a North Stack High Radiation alarm condition.
- d. Prior to reaching a South Stack High Radiation Isolation setpoint.

ANSWER : A

References: OT-101 Bases
question #56

NO.: 2210 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 206000K6.05 TAXONOMY NO.:
LESSON PLANS: LOT0340.13C
:
CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

HPCI suppression pool suction valve HV-55-1F041 is SHUT, HV-55-1F042 is SHUT and the electrical feed OPEN when the associated suppression pool level transmitters fail HIGH. Which ONE of the following describes the HPCI CST suction valve (HV55-1F004) interlock feature?

- a. 1F004 SHUTS when 1F041 comes FULL open
- b. 1F004 SHUTS when 1F041 STARTS to stroke open
- c. 1F004 will NOT receive an automatic SHUT signal
- d. 1F004 will SHUT directly from the high pool level signal

ANSWER : C

REFERENCE: LOT0340.13C PP 15

NO.: 2278 REV.: 2 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 209001K4.08 TAXONOMY NO.:
LESSON PLANS: LOT0350.09
:
CATEGORY: NRC NR1
SYSTEMS: CS

QUESTION :

The 1D Core Spray Pump is operating in full flow test when a loss of coolant accident (LOCA) signal results in a core spray initiation with RPV pressure at 900 psig. Which ONE of the following describes the expected response of the system?

The 1D Core Spray Pump will:

- a. trip then restart and operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can NOT be reopened.
- b. trip then restart. HV52-1F015B (TEST RETURN) will remain open.
- c. continue running and will operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can NOT be reopened.
- c. continue running and will operate on minimum flow. HV52-1F015B (TEST RETURN) will close and can be reopened.

ANSWER : A

Reference: E21-1040 Sh 10
LOT0350 pp.6,7

NO.: 2314 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 212000K4.12 TAXONOMY NO.:
LESSON PLANS: LOT0300.04

CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

The SCRAM DISCHARGE VOLUME HI LEVEL SCRAM BYPASSED annunciator is lit.
Which ONE of the following would cause this alarm?

- a. Any time the Scram Discharge Volume High Level Bypass Switch is in the BYPASS.
- b. Scram Discharge Volume High Level Bypass Switch is in the BYPASS position and the Reactor Mode Switch is in STARTUP.
- c. Any time the reactor mode switch is in either the SHUTDOWN or REFUEL position.
- d. Scram Discharge Volume High Level Bypass Switch is in the BYPASS position and the Reactor Mode Switch is in SHUTDOWN.

ANSWER : D

References: LOT-0300 page 10
Question #59

NO.: 2354 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 216000K6.01 TAXONOMY NO.:
LESSON PLANS: LOT0050.10
:
CATEGORY: NRC NR1
SYSTEMS: INST

QUESTION :

A loss of coolant accident (LOCA) has occurred on Unit 2. RPV level is being maintained at -135". Which ONE of the following describes the indication provided by the Fuel Zone Meter (LI42-2R610) on loss of D21 Safeguard Bus?

The meter will:

- a. respond to actual RPV level change
- b. fail as-is
- c. fail upscale
- d. fail downscale

ANSWER : A

REFERENCES: M-42 sheet 2
E11-1040-E Sheet 12,13 (RHR Elem)
Lot-0050 page 38

NO.: 2310 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K1.07 TAXONOMY NO.:
LESSON PLANS: LOT0380.06
:
CATEGORY: NR1 NRC
SYSTEMS: RCIC NS4

QUESTION :

Unit 1 is in the process of a controlled shutdown due to a complete loss of Division I DC. A small steam leak occurs in the RCIC room. The Operator dispatched to monitor temperatures in RCIC reports that the RCIC Room temperature is 150°F and rising. Which ONE of the following statements predicts the response of the RCIC System when room temperature reaches 205°F?

- a. The RCIC System will not have isolated
- b. The RCIC Inboard Isolation Valve (HV49-1F007) will be closed
- c. The RCIC Outboard Isolation Valve (HV49-1F008) will be closed
- d. The RCIC Inboard (HV49-1F007) and Outboard (HV49-1F008) Valves will be closed

ANSWER : B

REFERENCES: LOT-0380 pages 16 & 17
S49.1.B Section 2.0
Question 61

NO.: 2361 REV.: 3 TYPE: MC ENTERED BY: WMT DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295012KA.11 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T102 T-102

QUESTION :

Select the ONE condition below that requires entry into T-102,
Primary Containment Control.

- a. Suppression Pool Level 24' 2".
- b. Suppression Pool pressure 1.85 psig.
- c. Suppression Pool Air Space temperature 135°F.
- d. Suppression Pool H2 concentration of 5%.

ANSWER : D

REFERENCES: T-102

LOT-1560 page 10

NO.: 2365 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295013AK1.04 TAXONOMY NO.:
LESSON PLANS: LOT1560.05
:
CATEGORY: NR1 NR1
SYSTEMS: T102 T-102

QUESTION :

Curve SP/T-1, Heat Capacity Temperature Limit, in T-102, Primary Containment Control, allows higher Suppression Pool water temperatures at lower reactor pressures because:

- a. Suppression Pool cooling will remove more heat at increased differential temperature.
- b. Energy deposition into the Suppression Pool will occur at a slower rate due to reduced driving head.
- c. N₂ displaced from the Drywell will preclude Suppression Pool boiling.
- d. The total energy available from the reactor is reduced.

ANSWER : D

REFERENCES: EPG Supplement A page A-12
LOT-1560 page 17

NO.: 2308 REV.: 4 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295016AK2.01 TAXONOMY NO.:
LESSON PLANS: LOT1563.05
:
CATEGORY: NR1 NRC
SYSTEMS: SE-1 SE RCIC

QUESTION :

A fire on the Unit 1 side of the Main Control Room has necessitated a shutdown and cooldown to be performed from the Remote Shutdown Panel (RSP). All immediate operator actions are complete. The following conditions exist:

- RPV injection is from RCIC ONLY, with the RCIC M/A flow control station in AUTO and set at 500 GPM.
- RPV pressure is being maintained at 950 psig using SRV's.
- RPV water level is +60" and rising.

Which ONE of the following describes the cause of the level condition?

- a. RSP operation of RCIC bypasses the flow controller setpoint to provide maximum flow, regardless of the setting.
- b. RSP level indication is failed due to the fire.
- c. RSP operation of RCIC bypasses the RCIC Steam Supply Valve (HV49-1F045) closure on high RPV water level.
- d. All Emergency Transfer Switches on the RSP have not been taken to EMERGENCY and RCIC cannot be controlled

ANSWER : C

REFERENCES: SE-1 Attachment 1
SE-8 Section 2.3
Question #64

NO.: 2282 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/12/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295017AK2.10 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: TRIP T-104

QUESTION :

T-104 "RADIOACTIVITY RELEASE CONTROL" directs the performance of ST-6-104-880-0 "GASEOUS EFFLUENT DOSE RATE DETERMINATION" which monitors the north and south stacks. Which ONE of the following types of plant releases will NOT be detected by instrumentation used in the surveillance?

- a. Offgas
- b. Standby Gas Treatment
- c. Radwaste waste tank exhaust
- d. 309 room blowout panel

ANSWER : D

Reference: T-104 Note 13, Bases page 1
LOT-1560, pp.17

NO.: 2352 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK3.07 TAXONOMY NO.:
LESSON PLANS: LOT1550.02
:
CATEGORY: NRC NR1
SYSTEMS: ON-113 ON113

QUESTION :

ON-113, Loss of RECW, directs the operator to pressurize the Instrument Gas System with Instrument Air. Which ONE of the following describes why this must be performed?

- a. The Instrument Gas Isolation Valves (HV59-129A & B) will drift shut.
- b. Equipment inside Primary Containment loses pneumatics.
- c. Recirc Pumps will trip after 10 minutes without Drywell Chilled Water cooling.
- d. Drywell pressure will decrease to a negative value.

ANSWER : B

REFERENCES: ON-113 Section 2.14
Lot-1550 page

NO.: 2292 REV.: 3 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 218000K5.01 TAXONOMY NO.:
LESSON PLANS: LOT0330.06
:
CATEGORY: NRC NR1
SYSTEMS: ADS

QUESTION :

*** SRO ONLY ***

A complete scram and loss of RPV injection systems coincident with a loss of Division 1 Safeguard DC has occurred on Unit 1. Five (5) SRVs must be opened.

Which ONE of the following describes the method for opening the SRVs?

- a. Manually open five ADS SRVs using control room hand switches
- b. Manually open five non ADS SRVs from the control room
- c. Arm and depress the ADS CHANNEL A and CHANNEL E MAN INIT pushbuttons.
- d. Arm and depress the ADS CHANNEL C and CHANNEL G MAN INIT pushbuttons

ANSWER : D

REFERENCE: B21-1060 (ADS) sh 3
LOT-0330, pp. 12

NO.: 2358 REV.: 7 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 223001KA.05 TAXONOMY NO.:
LESSON PLANS: LOT0160.10

CATEGORY: NRC NR1
SYSTEMS: PC TS

QUESTION :

*** SRO ONLY ***

The 10-S205 Containment H2O2 Analyzer sample selector handswitch has failed and a flowpath cannot be aligned to sample the Drywell or Suppression Pool for hydrogen. Unit 1 is starting up with reactor pressure at 500 psig.

Which ONE of the following describes the required actions?

- a. Restore the Drywell H2 sample points to operable within 7 days.
- b. Restore the Drywell and the Suppression Pool H2 sample points to operable within 7 days.
- c. Restore the Drywell H2 sample points to operable within 8 hours.
- d. Restore the Drywell and the Suppression Pool H2 sample points to operable within 8 hours.

ANSWER : A

REFERENCES: T.S. 3.3.7.5
Table 3.3.7.5-1
LOT-0160 page 43

NO.: 2351 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 223001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT0180.02
:
CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

Which ONE of the following will result in a Drywell temperature increase?

- a. Manually initiating a Reactor Enclosure Isolation from the MCR
- b. Reactor Enclosure exhaust radiation indication of 1.35 mr/hr
- c. Manually arming and depressing B21H-S28A, A Cont Isol Manual Pushbutton.
- d. RPV water level lowers to -45" on a FWLCS failure

ANSWER : C

REFERENCES: GP-8.2
Lot-0180 page

NO.: 2371 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/09/95
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 259001K6.13 TAXONOMY NO.:
LESSON PLANS: LOT0540.14

CATEGORY: NRC NR1
SYSTEMS: RRCS FWLC 120VAC

QUESTION :

Unit 2 is at 100% power when 20Y201 circuit 11 (120 VAC control power supply to "C" RFP) is opened. Which ONE of the following describes the reactor feedwater pump response to an RRCS feedwater runback signal?

- a. "A" and "B" RFPs will runback to 2000 RPM and "C" RFP will remain at 4000 RPM
- b. All 3 RFPs will runback to 2000 RPM
- c. "A" and "B" RFPs will runback to 0 RPM and "C" will remain at 4000 RPM
- d. All 3 RFPs will runback to 0 RPMs

ANSWER : B

References: LOT-0540 page 31
S06.8.F section 4.2
Question # 70

NO.: 2369 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 259002KA06 TAXONOMY NO.:
LESSON PLANS: LOT0540.16

CATEGORY: NRC

SYSTEMS: FW TS

QUESTION :

*** SRO ONLY ***

A functional test on the Unit 1 Main/Feedwater Turbine Trip System Actuation Instrumentation identifies that the "C" and "D" high level trip channels actuate at 63". A startup is in progress and power is currently 17%. Which ONE of the following describes the actions required?

- a. Continue reactor startup, restore the "C" OR "D" channel to OPERABLE within 72 hours or be in at least STARTUP within the next 6 hours.
- b. Stabilize reactor power below 25% until both instruments are returned to OPERABLE.
- c. Restore the "C" AND "D" channel to OPERABLE within 7 days.
- d. Continue reactor startup, restore either instrument to OPERABLE in 7 days.

ANSWER : B

References: Tech Spec. 3/4.3.9 and 3.0.4
Question # 71SRO

NO.: 2326 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295014AA1.07 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-104

QUESTION :

The unit experienced a significant loss of feedwater heating and you have been directed to reduce power using RMSI until you are within the operating region of the Analyzed Range of Feedwater Inlet curve found in OT-104. Which ONE of the following describes the bases for the required power reduction?

- a. Prevent the occurrence of thermal hydraulic instabilities
- b. Minimize thermal shocking of the feedwater nozzles
- c. Minimize the shift in core power shape
- d. Maintain thermal limit margins thereby preventing fuel damage

ANSWER : D

References: OT-104 Bases
Question #72

NO.: 2327 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295015AA1.02 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: CRD OT-105

QUESTION :

During performance of an APRM channel check a half scram was received and control rod 30-37 scrambled. Which ONE describes the effect of this event on the scram discharge volume (SDV)?

The SDV will:

- a. fill and cause a rod block
- b. fill and cause a rod block and reactor scram
- c. drain to the Equipment Drain Collection Tank
- d. drain to the Reactor Enclosure Equipment Drain Sump

ANSWER : C

References: P&ID M-47
OT-105
Question #73

NO.: 2322 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EA1.01 TAXONOMY NO.:
LESSON PLANS: LOT1540.05

CATEGORY: NR1 NRC
SYSTEMS: OT OT-117

QUESTION :

With Unit 1 at 100% power, the "A" inboard MSIV closes. A half scram is received from "C" APRM. Reactor power is 107%. Reactor pressure has stabilized at 1055 psig. Which ONE of the following describes the actions required?

- a. Reduce power per RMSI to prevent a scram
- b. Reduce power per RMSI to reduce pressure to less than 1053 psig
- c. Immediately place the reactor mode switch to SHUTDOWN.
- d. Commence a rapid plant shutdown per GP-4.

ANSWER : C

References: OT-117
Question #74

NO.: 2276 REV.: 5 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 230000A1.01 TAXONOMY NO.:
LESSON PLANS: LOT0370.21

CATEGORY: NRC NR1
SYSTEMS: RHR

QUESTION :

A LOCA coincident with a LOOP has occurred on Unit 2. The following conditions exist:

-Drywell Pressure	10 psig and rising
-Suppression Pool Pressure	4.8 psig and rising
-Suppression Pool Air Space Temperature	105°F
-Suppression Pool Level	24 Feet

The PRO has initiated suppression pool spray and notes suppression pool pressure is still rising. RHR Service Water is not in service.

Complete the following:

The rising suppression pool pressure:

- is unexpected because level is below the spray header.
- is unexpected because evaporative cooling is occurring in the suppression pool air space.
- is expected because RHR Service Water is not in service.
- is expected because no steam exists in the suppression pool air space.

ANSWER : D

Reference: T-102 Bases Step PC/P-4
LOT-0370 pp. 19

NO.: 2253 REV.: 4 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295026EK3.02 TAXONOMY NO.:
LESSON PLANS: LOT0400.05
:
CATEGORY: NRC
SYSTEMS: RHRSW RSP

QUESTION :

*** SRO ONLY ***

Suppression pool cooling is placed in service following a Main Control Room evacuation per SE-1. Which ONE of the following describes the effect of a tube rupture in the 2A RHR Heat Exchanger?

- a. Spray Pond contamination will continue until RHRSW flow is manually secured.
- b. RHRSW to the heat exchanger will isolate and operating RHRSW pump(s) will trip.
- c. Spray Pond contamination will continue until Shutdown Cooling (SDC) is placed in service.
- d. RHRSW to the heat exchanger will isolate, "0A" RHRSW and "0A" ESW Pump will trip.

ANSWER : A

REFERENCE: LOT0400.05 1P 14,15,22,31

NO.: 2272 REV.: 0 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/12/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.09 TAXONOMY NO.:
LESSON PLANS: LOT0733.05
:
CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

Which ONE of the following describes the operation of the diesel driven fire pump from the main control room?

- a. Can be started and stopped from the control room.
- b. Can be started but not stopped from the control room.
- c. Can be stopped but not started from the control room.
- d. Can neither be started nor stopped from the control room.

ANSWER : B

Reference: LOT 0733 pp.10

77 RO/SRO

NO.: 2345 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295003AK3.03 TAXONOMY NO.:
LESSON PLANS: LOT0660.05
:
CATEGORY: NRC NR1
SYSTEMS: 4KV

QUESTION :

*** SRO ONLY ***

Which ONE of the following completes the statement below?

4KV Safeguard Loads are load shed to prevent _____term overloading of the diesel, while 4kv Non-Safeguard loads are load shed to prevent _____term voltage degradation of the 4KV bus. (Short term is < 1 minute)

- a. short/short
- b. short/long
- c. long/long
- d. long/short

ANSWER : B

REFERENCES: SE-10 page 4
LOT-0660 page 11

NO.: 2294 REV.: 0 TYPE: MC ENTERED BY: JMS DATE ENTERED: 10/04/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201003KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0060.04
:
CATEGORY: NRC NR1
SYSTEMS: CRDM

QUESTION :

Which ONE of the following describes the available method(s) for uncoupling a control rod blade from the drive mechanism?

- a. From above the RPV using the unlocking handle and from below the RPV using the uncoupling rod.
- b. From below the RPV using the unlocking handle and from above the RPV using the uncoupling rod.
- c. From above the RPV using the uncoupling rod only.
- d. From above the RPV using the unlocking handle only.

ANSWER : A

Reference: LOT-0060, pp.15

79 RO/SRO

NO.: 2215 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295019KA.05 TAXONOMY NO.:
LESSON PLANS: LOT1550.02
:
CATEGORY: NRC
SYSTEMS: ON ON-119 AIR

QUESTION :

ON-119 step 2.2 has you monitor the "A" Instrument Air Header Pressure from two (2) different points (PI15-220A on 20C655 and computer point G500).

Which ONE of the following is the bases for monitoring the header at these different points?

- a. validate the exact value of the MCR 20C655 panel with a computer point value
- b. provide troubleshooting data to determine if the 2A dryer malfunction is the cause of the loss of air pressure
- c. allow determination as to whether the "A" and "B" air headers are crosstied
- d. provide intermediate and final stage pressures on the 2A Instrument Air compressor to determine if its operating properly

ANSWER : B

REFERENCE: LOT1550.02 PP 6
ON-119 BASES PP 2

NO.: 2214 REV.: 6 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295020AK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0730.08
:
CATEGORY: NRC
SYSTEMS: PCIG

QUESTION :

A blown fuse causes valve HV59-129A, (Instrument Gas Supply to Drywell A) to SHUT.

Which ONE of the following predicts plant response for this event?

- a. Pneumatics to all ADS SRVs will be supplied only by the emergency bottles
- b. The inboard MSIVs will eventually drift shut due to loss of pneumatics
- c. Recirc Pump Motor cooling is lost with the Chilled Water Loop Selector switches selected to "LOOP A"
- d. Instrument Air backs up loads by opening HS59-128A "Instrument Air to Instrument Gas" solenoid valve

ANSWER : C

REFERENCE: LOT0730.08 PP 18,20

NO.: 2295 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295022KA.07 TAXONOMY NO.:
LESSON PLANS: LOT1550.07

CATEGORY: NRC NR1
SYSTEMS: ON ON-107

QUESTION :

ON-107 "CONTROL ROD DRIVE SYSTEM PROBLEMS" directs the operator to place the reactor mode switch in SHUTDOWN if RPV pressure is below 900 psig with no control rod drive pump operating. Which ONE of the following describes the reason for this action?

- a. Reactor pressure is the only motive force for rod insertion
- b. Flow used to drive the rods is being diverted to charging the accumulators
- c. Reactor water will leak past backseated CRD ball check valves
- d. Reactor pressure is inadequate to scram rods without accumulators

ANSWER : D

Reference: ON-107 Bases, pp. 5

82 RO/SRO

NO.: 2366 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295029EK1.01 TAXONOMY NO.:
LESSON PLANS: LOT1560.05
:
CATEGORY: NRC NR1
SYSTEMS: T102 T-102

QUESTION :

Which ONE of the following completes the statement below?

All injection into the RPV must be terminated when approaching the Unsafe side of Curve SP/L-3, Max PC Water Level Limit, in T-102, Primary Containment Control, to maintain:

- a. containment integrity.
- b. availability of Drywell Vent Paths.
- c. Availability of ADS/SRV's.
- d. pressure suppression capabilities of the containment.

ANSWER : A

REFERENCES: EPG Supplement A page A-20
LOT-1560 page 18

NO.: 2328 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295013AA1.02 TAXONOMY NO.:
LESSON PLANS: LOT1540.05
:
CATEGORY: NR1 NRC
SYSTEMS: OT-114

QUESTION :

The unit is operating at 100% power with confirmed indication of an SRV being open. Turbine inlet pressure is being reduced to 900 psig. Which ONE of the following describes why the turbine inlet pressure indicator is used for this pressure reduction?

- a. Turbine first stage pressure is inaccurate due to the pressure drop across the turbine control valves
- b. Steam dome pressure reduced to 900 psig will result in a Group I isolation
- c. Turbine inlet pressure is a convenient indication when operating EHC pressure set on panel *0C653.
- d. Steam dome pressure indication is less accurate because of its proximity to the open SRV.

ANSWER : B

References: OT-114 Bases

Question #84

NO.: 2296 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 241000K3.02 TAXONOMY NO.:
LESSON PLANS: LOT0590.11
:
CATEGORY: NRC NR1
SYSTEMS: EHCLOGIC

QUESTION :

Unit 1 is operating with the following plant conditions:

- Reactor Power 90%
- EHC Load Set 105%
- Max Combined Flow 115%

The output of PT01-101A (A EHC MAIN STEAM PRESSURE) briefly fails to 1000 psig. Which ONE of the following describes the system response?

- a. Control Valves will close, Bypass Valves will remain closed.
- b. Control valves will open, Bypass Valves will open.
- c. Control valves will close, Bypass Valves will open.
- d. Control valves will open, Bypass Valves will remain closed.

ANSWER : B

Reference: LOT-0590, pp. 9, 10

85 RO/SRO

NO.: 2377 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 264000KA.06 TAXONOMY NO.:
LESSON PLANS: LOT0680.11

CATEGORY: NRC
SYSTEMS: ESW TS

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 5 with the following OPERABLE:

D12 Diesel Generator
D14 Diesel Generator
1B RHR (in service for Shutdown Cooling)
1D RHR (operable for ECCS)
1B loop of Core Spray (operable for ECCS)

Unit 2 is in OPCON 1 with the following Unit 2 or Common components
INOPERABLE:

D24 Diesel Generator
0C ESW Pump

What actions are required?

- a. restore D11 to OPERABLE within 72 hours
- b. restore 0C ESW Pump to OPERABLE within 45 days
- c. restore D24 to OPERABLE within 2 hours
- d. restore 1A RHR Pump to OPERABLE within 7 days

ANSWER : A

REFERENCE: Tech Spec 3.7.2 action a.4

NOTE: 3 ESW/EDG pairs are INOPERABLE, can restore to 2 inoperable pairs
by restoring the D11 EDG

NO.: 2258 REV.: 7 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/05/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 264000K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0670.05 LOT0680.08
:
CATEGORY: NRC
SYSTEMS: DG ESW

QUESTION :

Unit 1 is in OPCON 5 AND Unit 2 is in OPCON 1 at 25% power with the following conditions;

D23 is aligned to the "A" ESW Loop

D23 EDG running for monthly operability Surveillance Test
(ST-6-092-313-2) loaded to 2850 KW.

OC ESW Pump is INOPERABLE with its discharge valve (11-0002C)
shut for 2 days

Unit 1 experiences a loss of all Division 1 AC (D11 bus
deenergized)

Which ONE of the following summarizes the effect on the D23 Diesel ?

- a. The diesel will remain paralleled with the offsite bus, rapidly transferring load to 0 KW and trip on overspeed
- b. The diesel output breaker will trip, the diesel will continue to run unloaded
- c. D23 DG TROUBLE alarm will annunciate, the diesel will trip and diesel output breaker will trip
- d. D23 DG TROUBLE alarm will annunciate, the diesel will transfer to isochronous and remain paralleled with the offsite bus

ANSWER : C

REFERENCE: S92.7.N
LOT0670.05 PP 24
LOT0680.08 PP 29,32,33

NO.: 2311 REV.: 2 TYPE: MC ENTERED BY: RTR DATE ENTERED: 10/04/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EK3.08 TAXONOMY NO.:
LESSON PLANS: LOT0315.04

CATEGORY: NR1 NRC
SYSTEMS: RRCS FW FWLC

QUESTION :

*** SRO ONLY ***

Which ONE of the following describes the response of the feedwater control system during an RRCS Feedwater runback?
(Motor Speed Changer is "MSC" and Motor Gear Unit is "MGU")

- a. MSC runs back to minimum in fast speed
and
Hydraulic jack is disabled
and
Speed increases are inhibited for 30 seconds
- b. MGU runs back to minimum and swaps to the manual mode
and
MSC runs back to minimum
and
Hydraulic jack is disabled
- c. MGU runs back to minimum and swaps to the manual mode
and
Hydraulic jack is reenergized after 30 seconds
and
Speed increases can only be accomplished with the MSC after 30 seconds
- d. MGU runs back to minimum and swaps to the manual mode
and
Hydraulic jack is disabled for 30 seconds
and
Manual speed increases can be made with the MGU in manual after the 30 second time delay

ANSWER : D

REFERENCES: LOT-0315.04 page 10
C32-1020-E2-5 & C22-1050-E100-133
GP-18 Attachment 3

Question 88S

NO.: 2241 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 09/21/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295023AK3.02 TAXONOMY NO.:
LESSON PLANS: LOT0760.07
:
CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Refuel Bridge motion has stopped while transferring a bundle from the spent fuel pool to core peripheral location 01-30. The LSRO reports the following conditions:

ROD BLOCK #1
ROD BLOCK #2
REVERSE STOP #1
FUEL HOIST INTERLOCK
HOIST LOADED
GRAPPLE NORMAL UP

Which ONE of the following gives the reason for the refuel bridge status?

- a. bundle is close to the shroud
- b. indications are normal for bridge entering the cattle chute, the bridge is INOPERABLE.
- c. all rods are not indicating full in
- d. indications are normal for peripheral core locations with no control rods

ANSWER : C

REFERENCE: LOT0760.07 PF 15

NO.: 2342 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295030EK301 TAXONOMY NO.:
LESSON PLANS: LOT1562.02
:
CATEGORY: NRC NR1
SYSTEMS: T-112

QUESTION :

*** SRO ONLY ***

T-102, Primary Containment Control, directs:

"If Safe Side of Curve SP/L-1 cannot Be Maintained, THEN Enter T-112 AND Execute Concurrently."

The reason the emergency blowdown is conducted is to prevent:

- a. Suppression Pool wall failure when SRV's are opened.
- b. HPCI turbine exhaust from being uncovered.
- c. Suppression Pool water temperature from exceeding 110°F.
- d. exceeding the heat capacity of the Suppression Pool.

ANSWER : D

REFERENCES: T-102 Bases page 8
LOT-1562 page 4

NO.: 2341 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295031EK3.02 TAXONOMY NO.:
LESSON PLANS: LOT1562.02
:
CATEGORY: NRC NR1
SYSTEMS: T-118

QUESTION :

*** SRO ONLY ***

While performing T-118, Primary Containment Flooding, the operating crew is maintaining primary containment water level between 115 ft. and 115 ft. 9 in.

This level band is chosen to ensure:

- a. vent paths are covered minimizing release rates.
- b. RPV level is maintained above -161 inches.
- c. two large vent paths remain available to vent containment.
- d. adequate flow through SRV's for core cooling.

ANSWER : B

REFERENCES: T-118 Bases page 4
LOT-1562 page 6

NO.: 2340 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295030EK1.03 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T-102

QUESTION :

Based on the following Unit 2 plant conditions, select the ONE statement that describes the action to be taken.

- Reactor Pressure 900#
 - Reactor Level -85"
 - Suppression Pool Level 16'
 - Suppression Pool Temperature 147°F
- a. Reduce HPCI flow to less than 5000gpm.
- b. Secure HPCI.
- c. Line up ECCS suction from sources external to primary containment.
- d. Secure HPCI and RCIC

ANSWER : B

REFERENCES: T-102 SP/L leg
LOT-1560 page 17

NO.: 2344 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
 DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
 TASK NUMBER: SKA NO.: 295003AA1.01 TAXONOMY NO.:
 LESSON PLANS: LOT1566.02
 :
 CATEGORY: NRC NR1
 SYSTEMS: E-10/20

QUESTION :

E-10/20, Loss of Offsite Power, directs the operator to verify that each spray network flow rate (ESW and RHRSW combined) is 9000 gpm or greater. Which ONE of the following states the bases for this action.

- a. Minimize erosion of the spray nozzles.
- b. Ensure design cooling during a LOCA/LOOP.
- c. Prevent column separation in the RHRSW supply header.
- d. Preclude RHRHX tube fretting.

ANSWER : B

REFERENCES: E-10/20 Attachment 2 and 3
 LOT-1566

NO.: 2337 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EA2.02 TAXONOMY NO.:
LESSON PLANS: LOT1562.02

CATEGORY: NRC NR1
SYSTEMS: T-116

QUESTION :

*** SRO ONLY ***

An ATWS has occurred on Unit 2 and level cannot be determined from MCR instrumentation. Step RF-9 of T-116, RPV Flooding, states:

"Slowly increase injection into RPV with: Condensate and/or CRD until 1 or more SRV's open AND RPV pressure is above Table RF-1 OR System flow is maximized AND no SRV is open."

- Five SRV's are open and reactor pressure is 280#.
- Table RF-1 requires Five SRV's and 215#.

Complete the following statement concerning reactor water level at this time.

Actual reactor water level is:

- a. is greater than -161 inches.
- b. is -161 inches.
- c. is less than -161 inches.
- d. unknown.

ANSWER : D

REFERENCES: T-116 Bases page 6
LOT-1562 page 5

NO.: 2339 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 295024KA.12 TAXONOMY NO.:
LESSON PLANS: LOT1560.06
:
CATEGORY: NRC NR1
SYSTEMS: T-102

QUESTION :

*** SRO ONLY ***

After a LOCA on Unit 1, the H2O2 analyzers have been restored to service with the following indication.

Drywell H2: 4%
Drywell O2: 7%
Suppression Pool H2: Meter swinging between 1% and 14%
Suppression Pool O2: 4%
The Offsite Dose calculation is in progress
The Drywell Fans are secured and Post LOCA Recombiners have not been started.

Based on this information, the one proper action would be to ...

- a. ensure the Post LOCA Recombiners and Drywell fans are not started.
- b. start the Post LOCA Recombiners, Drywell fans, vent and purge per T-228.
- c. enter T-112 and start the Post LOCA Recombiners and Drywell fans.
- d. enter T-112 and vent and purge per T-228.

ANSWER : B

REFERENCES: T-102 PC/H leg
LOT-1560 page 21

NO.: 2336 REV.: 2 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295009KA.12 TAXONOMY NO.:
LESSON PLANS: LOT1562.03
:
CATEGORY: NRC NR1
SYSTEMS: T-111

QUESTION :

*** SRO ONLY ***

A LOCA/LOOP has occurred on Unit 1. T-111 Level Restoration/Steam Cooling is being executed. Which ONE of the following describes a method of "adequate core cooling" provided by this procedure?

- a. no system, subsystem or alternate subsystem lined up to inject with RPV level at -185 inches
- b. 52 rods not inserted, RPV level at -175 inches and condensate injecting to the RPV
- c. RPV level unknown, 5 SRVs open and RPV pressure at 220 psig
- d. RPV level unknown, 4 SRVs open and RPV pressure at 50 psig

ANSWER : A

REFERENCES: T-111 flowchart
LOT-1562 page 4

NO.: 2269 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295016KA.10 TAXONOMY NO.:
LESSON PLANS: LOT1563.02
:
CATEGORY: NRC NR1
SYSTEMS: SE

QUESTION :

*** SRO ONLY ***

The HIGH TOXIC CHEMICAL CONC alarm has been received on 002 VENT.
Complete the following:

In response to the alarm, operators are required to _____ within
_____ minutes.

- a. don self contained breathing apparatus, 2
- b. don self contained breathing apparatus, 5
- c. initiate control room purge, 2
- d. initiate control room purge, 5

ANSWER : A

Reference: SE-2 Section 3
LOT 1563 pp 3

NO.: 2323 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295015KA.12 TAXONOMY NO.:
LESSON PLANS: LOT1562.02
:
CATEGORY: NR1 NRC
SYSTEMS: T-117

QUESTION :

*** SRO ONLY ***

Given the following conditions, which ONE below identifies TRIPs that should be executed?

- All MSIV's isolated on low level
- Reactor Power = 28%
- Reactor Pressure = 1000 psig
- RCIC is injecting
- Reactor Level = -139"
- Suppression Pool Level = 22'
- Suppression Pool Temperature = 116°F
- Drywell Pressure = 1.9 psig
- All SRV's are closed

- a. T-101, T-116
- b. T-101, T-225
- c. T-102, T-221
- d. T-102, T-234

ANSWER : C

References: T-102, T-101, T-117

Question #98S

NO.: 2257 REV.: 5 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295016KA.12 TAXONOMY NO.:
LESSON PLANS: LOT1563.03

:
CATEGORY: NRC
SYSTEMS: SE RSP SDC

QUESTION :

*** SRO ONLY ***

Choose the ONE statement that describes a situation when "ALTERNATE SHUTDOWN COOLING", per SE-6, would be used AND its flowpath.

- a. Shutdown Cooling outboard PCIV (HV-51-*F008) can not be opened; "B" Core Spray is aligned to the CST and injected into the vessel via its normal path.
- b. Recirc Pump suction valve (HV-043-*F023A) will not shut; RHR aligned to the suppression pool injecting via the "A" Shutdown Cooling Injection PCIV (HV-051-15A).
- c. Shutdown Cooling inboard PCIV (HV-051-*F009) will not open; "B" RHR Pump is aligned to take suction from the suppression pool, inject via LPCI flowpath and return via two open SRVs.
- d. "A" RHR is not operable; "C" RHR aligned to the suppression pool, returns via the cross-tie valve HV-051-182A to the "A" Shutdown Cooling Injection PCIV (HV-051-15A)

ANSWER : C

REFERENCE: SE-6 PP 17 NOTE

NO.: 2338 REV.: 1 TYPE: MC ENTERED BY: PMO DATE ENTERED: 10/26/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295010AA2.02 TAXONOMY NO.:
LESSON PLANS: LOT1560.04
:
CATEGORY: NRC NR1
SYSTEMS: T-102

QUESTION :

*** SRO ONLY ***

Complete the following:

"On T-102, Primary Containment Control, Curve PC/P-3, Primary Containment Pressure Limit, the Suppression Pool pressure limit increases between approximately 50 feet and 115 feet because the:

- a. Suppression Pool is no longer subjected to the Steam and non-condensable pressures in the Drywell."
- b. Drywell vent paths are capable of releasing a higher volume of steam and non-condensables."
- c. Suppression Pool pressure indicator is subjected to the hydrodynamic head of water in the Drywell."
- d. Drywell hatch is rated at a higher failure pressure than the Suppression Pool hatch."

ANSWER : C

REFERENCES: T-102 page 20
LOT-1560 page 17

100S

NO.: 2190 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 5 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.15 TAXONOMY NO.:
LESSON PLANS: LOT0741.08 RE-C-20
CATEGORY: NRC
SYSTEMS: P1

QUESTION :

*** RO ONLY ***

NOTE: GIVE THE CANDIDATE P1 #1920

The P1 you are being given printed out 30 seconds ago.

- A. what is the value for the three (3) thermal limits ?
- B. what does the parameter "RPDLIM" mean ?
- C. how does the value for "RPDLIM" relate to any of the thermal limit values?

ANSWER :

- A. CMFCP = 0.867
CMFLPD = 1.032
CMAPR = 0.821
- B. RPDLIM is "rod power density limit"
- C. RPDLIM is the denominator in the CMFLPD formula. With RPDLIM less than the actual value of LHGR, CMFLPD will be greater than 1.0.

Note: (NOT required for answer)
the RPDLIM for the 4 most limiting bundles is most likely incorrect and Reactor Engineering support is required to correct RPDLIM values and run an OD 15
REFERENCE: RE-C-20 SECTION 5.10

NO.: 2203 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.06 TAXONOMY NO.:
LESSON PLANS: SNO S01-95-047

CATEGORY: NRC
SYSTEMS: GP

QUESTION :

*** RO ONLY ***

State the main condenser backpressure limits.

What is the effect on hotwell temperature and main generator electrical output, at 100% power, as a result of operating at higher backpressure values?

ANSWER :

1. $\geq 85\%$ power limit is 5.5"Hg
 $\geq 30\%$ power and less than 85% power, limit is 5.0" Hg
less than 30% power, limit is 4.0" Hg
2. hotwell temperatures will rise
electrical output will be reduced

REFERENCE: SHIFT NIGHT ORDER S01-95-047
GP-5

NO.: 2259 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 234000KA.05 TAXONOMY NO.:
LESSON PLANS: LOT0760.14

CATEGORY: NRC
SYSTEMS: REFUEL TS FH

QUESTION :

*** RO ONLY ***

You are the RO dedicated to core alterations while in OPCON 5 * (star).
The PRO is about to perform the daily "source range signal to noise
ratio determinations" on the "C" SRM. State the action (s) you should
take in regards to core alterations.

ANSWER :

request the LSRO to stop core alterations in the "C" quadrant OR request
the PRO not perform the "C" SRM testing.

(note; withdrawing the "C" SRM for SNR determination will make the
detector INOP. SRMs are required in the quadrant where core alterations
are being performed and the adjacent quadrant.)

REFERENCE: FH-105 PP 5
ST-6-107-591-* PP 24
T.S 3/4.9.2

NO.: 2192 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1574.01 OM-L-3.3
:
CATEGORY: NRC
SYSTEMS: OM

QUESTION :

*** RO ONLY ***

State three (3) general conditions when you as the Reactor Operator are required to SHUTDOWN the reactor.

ANSWER :

1. when safety of the reactor is in jeopardy
2. when RPS setpoints are exceeded and automatic shutdown does not occur
3. when there is doubt to whether a safe condition exists

REFERENCE: OM-L-3.3 SECTION 5.0

NO.: 2185 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.12 TAXONOMY NO.:
LESSON PLANS: LOT1570.06 A41.1
:
CATEGORY: NRC
SYSTEMS: A-41.1

QUESTION :

*** RO ONLY ***

You were given an approved Troubleshooting Control Form (TCF) on your last day of shift. Two (2) days later when you return to night shift, work is being performed under the same TCF.

What, if any, are your concerns?

ANSWER :

TCFs are ONLY valid for a nominal one (1) day period from the time of SSVs signature. Use of this TC is violating the requirements of A41.1

REFERENCE: A41.1 PP 7

NO.: 2184 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/18/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.12 TAXONOMY NO.:
LESSON PLANS: LOT1570.06 A-41.1
:
CATEGORY: NRC
SYSTEMS: A-41.1

QUESTION :

*** RO ONLY ***

You are provided with a Troubleshooting Control Form. Who is responsible to determine if a 10CFR50.59 review was required? What is the required qualification of that person per Tech Specs?

ANSWER :

- * Work Group Supervisor
- * Required qualification is Station Qualified Reviewer (SQR) per PORC 33

REFERENCE: A41.1

NO.: 2186 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.03 HP-C-215
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** RO ONLY ***

A CRD pipe in Reactor Enclosure 253' has a "HOT SPOT" label attached.
What does this tell you concerning the contact radiation levels on this
pipe and the general area radiation conditions?

ANSWER :

- * contact dose reading is greater than or equal to 100 mr/hr
- * the contact reading is 5 times or more greater than the general area dose.

REFERENCE: HP-C-215 PAGE 8

NO.: 2187 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.02 HP-C-106
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** RO ONLY ***

Previous Equipment Operator (EO) duties have resulted in a 1995 TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE) of 2200 mr. Supporting clearance activities in the Unit 2 drywell during a November mini-outage, you are expected to receive 525 mr total dose. You have received the same dose to date as other in this work group.

What are your concerns regarding this exposure and any required actions?

ANSWER :

concerns should include as a minimum:

- 1 annual dose is not exceeding a PECO admin limit
- 2 Control Dose Extension received prior to exceeding 3000mr

REFERENCE: HP-C-106 SECTION 7.4

NO.: 2188 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.06 ERP101
:
CATEGORY: NRC
SYSTEMS: ERP-101

QUESTION :

*** RO ONLY ***

What are the "Emergency Action Levels" ?

ANSWER :

Unusual Event
Alert
Site Area Emergency
General Emergency

REFERENCE: ERP 110 SECTION 6.2

NO.: 2189 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 1 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.03 ERP110

CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** RO ONLY ***

A "Plume Exposure Pathway" emergency notification is made to what organizations outside of PECO?

ANSWER :

NRC Operations Center
PEMA
Montgomery County
Chester County
Berks County
.....for an ALERT or higher
INPO Duty Officer
American Nuclear Insurers

REFERENCE:
Appendix ERP-110-1

NO.: 2260 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/06/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.10
:
CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Core Alterations have been halted due to a Boundary Zone Computer failure. The LSRO is requesting permission to bypass the computer. What actions are required to accomplish the bypass?

ANSWER :
On call Senior Staff Member permission

Shift Manager permission

second qualified person on bridge to monitor bridge and trolley movements

REFERENCE: S97.0.K

NO.: 2193 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
 DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
 TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
 LESSON PLANS: LOT1570.08 A-C-10
 ;
 CATEGORY: NRC
 SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You have been temporarily assigned to the FIN team for six (6) months and have been attending and passing LOR every cycle. What actions are required to reactivate your Senior Reactor Operator license after the Senior Manager of Operations performs his certification ?

ANSWER :

1. 40 hour qualification card under the direction of an active RO
2. participate in all pre- and post-shift turnovers
3. participate in a tour of the plant

REFERENCE: A-C-10 SECTION 7.5.2

NO.: 2200 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
LESSON PLANS: LOT1570.09 A-C-40
:
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

As the Assistant Control Room Supervisor (ACRS) you are reviewing the daily time sheets. You note that one of your Equipment Operators (EO) will have worked 26 hours in the last 48 hours by the end of this shift. Assuming a relief can NOT be assigned, who must authorize the EO to exceed work hour restrictions?

ANSWER :

any one of the following:

1. Plant Manager
2. Sr Manager of Operations
3. Manager of Operations Services
4. Manager of Operations Support

REFERENCES: A-C-40 section 7.4

NO.: 2201 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 294001A1.03 TAXONOMY NO.:
 LESSON PLANS: LOT1570.09 A-C-40

CATEGORY: NRC
 SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You are the floor supervisor on Days today. Tommorrow is your regularly scheduled day off. You are asked to cover ACRS. How much time must you have off between work periods before assuming the duties of the ACRS?

ANSWER :

8 hours between work periods including turnover

REFERENCE: A-C-10 section 7.2

NO.: 2195 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.08 A-C-43 TECH SPEC 4.0.2
:
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The OPCAT has just informed you that a particular surveillance test's due date is at 1200 today. Plant conditions will NOT allow performance at this time. In reviewing Tech Specs you note the ST has a surveillance frequency notation of "SA". What is the "drop dead" date for performance of this surveillance?

ANSWER :

1. "SA" performance notation is 184 days.
2. Tech Spec 4.0.2 allows a 25% "grace period"
3. $184 \times 25\% = 46$ days
4. meaning this ST can be completed within the next 46 days and still comply with Tech Specs

REFERENCE: A-C-43 4.2
TECH SPEC 4.0.2

NO.: 2194 REV.: 4 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/08/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.02 TAXONOMY NO.:
LESSON PLANS: LOT1570.10 A-C-43
:
CATEGORY: NRC
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

The PCIG quarterly valve test is being performed by your PRO. All asterisk steps to this point are completed satisfactory. A step marked with "I" was just completed unsatisfactory. The ST cover sheet gives NO guidance on unsatisfactory "I" steps. What actions should you take?

ANSWER :

1. stop the test
2. direct the placing of PCIG valves in a safe condition
3. inform the SSV (may include inform Shift Manager since candidate is the SSV)
4. inform ACRS

REFERENCE: A-C-43 SECTION 7.4.4

NO.: 2196 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.05 HP-C-818
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

You are monitoring an Equipment Operator (EO) performing a frisk of his hands and feet to exit a work area on the 1A RHR heat exchanger.

What instrument should he be using? At what instrument reading shall a Health Physics Technician be notified?

ANSWER :

RM-14/20

greater than or equal to 100 cpm above background

REFERENCE: HP-C-818 section 7.1.4

NO.: 2197 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS: LOT1760.01 HP-C-202
:
CATEGORY: NRC
SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

Entrance to the 1C RWCU Room and 510 room is posted "CAUTION - LOCKED HIGH RADIATION AREA". What are the potential ranges of dose rates associated with this room based on the posting?

ANSWER :

* dose rates in the room can range from ≥ 1 r/h to less than 500 r/h

notes:

"CAUTION - LOCKED HIGH RADIATION AREA" posting covers two subcategories
1. Level I LHRA dose rates ≥ 1 r/h and less than 10 r/h
2. Level II LHRA dose rates ≥ 10 r/h

at 500 r/hr the posting would be changed to "GRAVE DANGER - VERY HIGH RADIATION"

answer does not account for supervisory expectation posting room early at 800 mr/hr

REFERENCE: HP-C-215 section 7.6
HP-C-202

NO.: 2199 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.01 ERP-110
:
CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

An "ALERT" has just been declared by the Shift Manager, you must assign an NRC Communicator. What are the restrictions on your choice of this person?

ANSWER :

Restrictions as a minimum include:

- a. should be a Licensed individual
- b. must continuously man the FTS 2000 until NRC authorizes securing line
- c. shall NOT be the degreed SRO (STA) assigned to the shift.

REFERENCE: ERP-110 section 2.2

NO.: 2198 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/11/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS: LOT1521.05 ERP-120
CATEGORY: NRC
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

As the Shift Supervisor, what specific conditions require you to direct a "partial plant" evacuation ?

ANSWER :

1. two (2) or more areas affected by:

- a. increase in ARMs $\geq$ alarm setpoint
- b. rad levels $\geq$ 100 mr/hr when norm is $\leq$ 10 mr/hr
- c. airborne activity greater than the limits
- d. toxic reagent release causes area to be uninhabitable
- e. other hazards such as flood, fire, etc

REFERENCE: ERP-120 appendix 1

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: MANUALLY START HPCI

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset Simulator to any 100% power IC.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s):

System Number(s):

A4.01	3.8/3.7	206000
A4.02	4.0/3.8	206000
A4.04	3.7/3.7	206000

References:

S55.1.D, Rev. 18 HPCI System Full Flow Functional Test

Task Standard(s):

Place HPCI in full flow test (CST to CST), with pump discharge pressure at least 120 psig greater than reactor pressure, using manual quick start method.

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method.

Task Conditions:

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. Reactor Enclosure Equipment Compartment Exhaust is in service.
4. Steam Leak Detection System is not known to be INOP.
5. HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal.
6. The 1A loop of RHR is in the Suppression Pool Cooling mode of operation.
7. The Vibration Monitoring System is in service.
8. No maintenance has been performed on the governor control or oil system.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S55.1.D. (Cue: If asked, respond, "I want you to obtain a copy of S55.1.D.")	Obtain a copy of S55.1.D	
2. Reactor Enclosure Equipment Compartment Exhaust in service. (Cue: REECE is in service.)	N/A	N/A
3. Suppression Pool level normal (22' to 24.25") <u>AND</u> below 95°F.	LR-55-115 (LV) indicates between 22 to 24.25 feet. Suppression Pool temperature is less than 95°F.	
4. HPCI Pump suction is lined up to the CST.	HV-55-1F004 is open. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
5. Steam Leak Detection System available. (Cue: Steam Leak Detection is available.)	N/A	N/A
6. Suppression Pool Cooling available. (RHR loop A is in Suppression Pool cooling.)	N/A	N/A
7. <u>UNIT 1 ONLY</u> HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal. (Cue: HPCI oil reservoir is filled to 3.5 inches from top of tank.)	N/A	N/A
8. <u>UNIT 2 ONLY</u> HPCI Oil Reservoir is filled between MAX/MIN lines in NORMAL OPERATING RANGE on sightglass.	N/A	N/A
9. HPCI available for auto initiation per S55.1.A, Normal HPCI Line-up for Automatic Operation. (Cue: HPCI is aligned for automatic operation.)	N/A	N/A
10. If required to limit Suppression Pool temperature anytime during this procedure, Then refer to S51.8.A.	N/A	N/A
11. If Vibration Monitoring System is available, then verify in service. (Cue: Task Condition identifies "The Vibration Monitoring system is in service.")	N/A	N/A

STEP	STANDARD	SAT/UNSAT
12. Ensure HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" is closed.	HV-55-1F071 is closed. GREEN light ON, RED light OFF	
13. Ensure HV-55-*F008, "Test Loop Shutoff" (TEST ISOL), closed.	HV-55-1F008 is closed. GREEN light ON, RED light OFF	
14. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	HV-55-1F011 is closed. GREEN light ON, RED light OFF	
15. Ensure HV-49-*F022, "RCIC Test Loop Isolation" (TEST ISOL), is closed.	HV-55-1F022 is closed. GREEN light ON, RED light OFF	
*16. Open HV-55-*F011, Condensate Return.	Place control switch for HV-55-1F011 to the open position. RED light ON, GREEN light OFF	
17. START *P0216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP).	Rotate VACUUM PUMP control switch to start. RED light ON, GREEN light OFF	
18. Monitor Suppression Pool temperature per ST-6-060-390-1, Suppression Pool Temperature Check.	NOTE: ST-6-060-390-1 is addressed in precautions and identified as being in progress in task conditions.	N/A
19. INFORM HP of changing radiological conditions due to HPCI System start.	HP notified HPCI start imminent.	
*20. Ensure FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL), in "AUTO",	FIC-55-1R600 M/A selector switch repositioned to the "A"	
*20.1 <u>AND</u> SET to 5,600 gpm.	Flow controller FIC-55-1R600 set between 5,500 and 5,700 GPM.	
21. Make Plant Announcement pertaining to HPCI startup.	Plant Announcement pertaining to HPCI startup performed.	

STEP	STANDARD	SAT/UNSAT
*22. Simultaneously open HV-55-*F001, "HPCI Steam Supply" (INLET),	Operating one switch with each hand, Momentarily place HV-50-1F001 control switch to the OPEN position <u>AND</u>	
*22.1 <u>AND</u> Start *OP213, Auxiliary Oil Pump" (AUX OIL PUMP).	Momentarily rotate 10P213 control switch to the start position. RED lights ON, GREEN lights OFF	
*23. When SI-56-*61, "Turbine Speed" (S), starts to go up, then immediately open HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL).	When SI-56-161 indicates greater than 0 RPM, rotate HV-49-1F022 to open. RED light ON, GREEN light OFF.	
24. <u>IF</u> HV-55-*F008 will <u>not</u> open, then place FIC-55-*R600 in "Manual and lower FIC-55-*R600 to 2200 RPM.	N/A	N/A
25. Verify FV-56-*12, "Turbine Stop Valve" (STOP) open	FV-56-112 open. RED light ON, GREEN light OFF	
26. Verify FV-56-*11, "Turbine Control Valve" (CONTROL) open.	FV-56-111 throttled open. Red light on.	
27. Verify HV-56-*F059, "HPCI Lube Oil Cooling Water Valve," open.	HV-56-1F059 open. RED light ON, GREEN light OFF	
28. Verify HV-55-*F028 "HPCI Steam Drain Line Isolation" (TRAP INBOARD) is closed.	HV-55-1F028 is closed. GREEN light ON, RED light OFF	
29. Verify HV-55-*F029 "HPCI Steam Drain Line Isolation (OUTBOARD TO COND) is closed.	HV-55-1F029 is closed. GREEN light ON, RED light OFF	
30. Verify HV-56-*F025 "HPCI Barometric Condenser Drain Isolation" (INBOARD TO RADWASTE) is closed.	HV-56-1F025 is closed. GREEN light ON, RED light OFF	

STEP	STANDARD	SAT/UNSAT
31. Verify HV-56-*F026 "HPCI Barometric Condenser Drain to Isolation" (DRAIN OUTBOARD) valve is closed.	HV-56-1F026 is closed. GREEN light ON, RED light OFF	
32. When (S) SI-56-*61, "HPCI Turbine Speed," is greater than 1,650 rpm, then verify *OP213, "Auxiliary Oil Pump" (AUX OIL PUMP), is not running.	1OP213 is not running. GREEN light ON, RED light OFF	
*33. Adjust HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL), as necessary to maintain pump discharge pressure as indicated on PI-55-1R601, "HPCI Pump Discharge Pressure" (Discharge Pressure), at least 120 psig over Reactor Pressure.	Adjust HV-55-1F008 using the Pull to Stop function until PI-55-1R601 is indicating 120 psig greater than Reactor Pressure.	
34. Acknowledge and Reset alarms associated with the 117 HPCI annunciator panel.	117 HPCI panel alarms acknowledged and reset at panel 10C602.	

Comments:

Note: Any rating of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method.

Task Conditions:

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. Reactor Enclosure Equipment Compartment Exhaust is in service.
4. Steam Leak Detection System is not known to be INOP.
5. HPCI Oil Reservoir is filled to 3 1/2 inches from tank top nominal.
6. The 1A loop of RHR is in the Suppression Pool Cooling mode of operation.
7. The Vibration Monitoring System is in service.
8. No maintenance has been performed on the governor control or oil system.

QUESTIONS for JPM Questions

10/17/95
21:09:02

7E 1

NO.: 2207 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 206000KA.07 TAXONOMY NO.:
LESSON PLANS: LOT0340.02
:
CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

The Operator momentarily depresses the TURBINE TRIP pushbutton and then releases it before the HV55-2F001 (STEAM INLET) is shut.

What are the effects of this action on the HPCI turbine?

ANSWER :
the HPCI turbine will restart

(NOTES; trip pushbutton depressed, dumps oil pressure to turbine stop valve allowing spring pressure to SHUT this valve until HV-55-2F001 fully shuts.)

REFERENCE: S55.1.D
LOT0340.02 PP 14,25

QUESTIONS for JPM Questions

10/17/95
21:09:05

PAGE 1

NO.: 2208 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 206000K4.18 TAXONOMY NO.:
LESSON PLANS: LOT0340.04

CATEGORY: NRC
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

Unit 1 HPCI is running for Pump, Valve and Flow Test, the Equipment Operator (EO) in the Aux Equipment Room has just reported a gross failure LOW on PIS-55-1N650, HPCI pump discharge pressure indicating switch, what effects will this have on HPCI and its support systems?

7 VER :

1. HPCI minimum flow valve, HV-55-1F012, will NOT open automatically
2. HPCI pump discharge pressure indication on 10C647 will be failed downscale
3. HPCI room cooler fans will NOT auto start on HPCI start.

REFERENCE: LOT0340.04 PP 16
LOT0680.05 PP 13
M-55 sheet 1

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:13

NO.: 2216 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 202001A1.09 TAXONOMY NO.:
LESSON PLANS: LOT0030.06

CATEGORY: NRC
SYSTEMS: RECIRC

QUESTION :

*** RO ONLY ***

Unit 1 is at 89% power. The SSV is directing actions per OT-101. The following alarms are annunciated for the "A" Recirc Pump:

SEAL STAGING HI/LO FLOW alarm
SEAL LEAKAGE HI FLOW alarm

seal cavity pressures are:

#1 seal cavity 990 psig
#2 seal cavity 320 psig

What failure is indicated by these conditions?

ANSWER :

* failure of the "A" Recirc Pump #2 seal

REFERENCE: LOT0030.06 PP 28
ARC MCR 111 A-1,A-2

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:16

NO.: 2218 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 202001KA.09 TAXONOMY NO.:
LESSON PLANS: LOT0735.04

CATEGORY: NRC
SYSTEMS: RECIRC RSP

QUESTION :

*** RO ONLY ***

What Reactor Recirculation System control(s) is/are provided at the Remote Shutdown Panel? Why are these controls provided?

ANSWER :

1. control of HV43-*F023A ("A" Recirc Pump Suction) is provided
2. allows for Shutdown Cooling operations, from the RSP.

REFERENCE; LOT0735.04 PP 12
SE-1 STEPS 4.9.2, 4.9.6.10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Reset Scoop Tube Lock

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Lock 1B MG scoop tube
2. Lower 1B MG M/A station output until the deviation meter is more negative than minus one.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

A4.08 3.2/3.1

System Number:

202001

General References:

1. S43.0.A, Rev. 10

Task Standards:

B Recirc. Pump scoop tube brake released with resultant pump speed deviation less than 2%.

Initiating Cues:

Shift Supervision directs you to reset the scoop tube lock on Recirc. Pump 1B.

Tasks Conditions:

1. The scoop tube was locked as a precautionary measure while I&C testing was in progress. Testing is now complete.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain S43.0.A.	S43.0.A obtained.	
*2. Adjust XC-M1-*R621A(B), "Recirc Pp Speed Controller" (S), to introduce a positive demand/speed mismatch.	Depress XC-M1-1R621B OPEN pushbutton to obtain XY6-M1-1R621B indicating greater than zero.	
*3. Ensure XY6-M1-*R621A(B), "Recirc Pp Speed Deviation" (DEVN), is positive <u>AND</u> slowly increasing.	XY6-M1-1R621B is greater than zero and increasing.	
*4. Adjust XC-M1-*R621A(B) (S) until XY6-M1-*R621A(B) (DEVN) is positive <u>AND</u> decreasing <u>VERY SLOWLY</u> .	XC-M1-1R621B CLOSE pushbutton is depressed until XY6-M1-1R621B is decreasing.	
*5. Ensure XY6-M1-*R621A(B) (DEVN) is at approximately 0% <u>AND</u> PLACE "Scoop Tube Brake Control" (BRAKE) in "RESET" at *0C602.	BRAKE switch momentarily placed to RESET. Pump speed oscillates less than $\pm 2\%$.	
6. Acknowledge annunciator 112 CLEANUP window B4, 1B RECIRC MG OIL MIST ELIMINATOR HI Δ P.	112 CLEANUP window B4 acknowledged.	
7. Slowly ADJUST XC-M1-*R621A(B) (S) <u>AND</u> VERIFY M/G responds.	XC-M1-1R621B OPEN or CLOSE pushbutton momentarily depressed MG set speed or pump flow changes accordingly.	
8. VERIFY *A(B) RECIRC M-G FLUID DRIVE SCOOP TUBE LOCK AT *11 RECIRC (*12 CLEANUP) B-3, clears.	Annunciator 112 CLEANUP window B-3 is clear.	

STEP	STANDARD	SAT/UNSAT
9. ENSURE Recirc loop flow mismatch is within limits given in Tech. Spec. 3.4.1.3.	Flow mismatch is less than 5%.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

Shift Supervision directs you to reset the scoop tube lock on Recirc. Pump 1B.

Tasks Conditions:

1. The scoop tube was locked as a precautionary measure while I&C testing was in progress. Testing is now complete.

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Perform a Remote Manual Start of the D11 Diesel Generator and Load it to 2000 KW
with an ESW Pump Trip (Alternate Path)

Operator: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

1. The simulator can be set up to any IC that the plant is stable.
2. A PO is stationed locally at the diesel generator, many steps require local operation or verification of automatic functions.
3. Insert Malfunction 489A, Trip of the "A" ESW Pump.
4. Have copy of S92.1.0 and ST-6-107-590-1 ready to give to trainee.

Evaluation Method (Circle one):

Perform

Simulate

Evaluation Location (Circle one):

Plant

Simulator

Approximate Completion Time:

22 Minutes

Importance Rating(s):

3.7/3.7 A4.04

System Number(s):

K/A 264000

References:

1. S92.1.0, Local and Remote Manual Startup of a Diesel Generator, Rev. 17
2. ST-6-107-590-1, Rev. 67

Task Standard(s):

D11 running, supplying 2000 KW to the D11 Safeguard Bus.

Initiating Cues:

You are directed by Shift Supervisor to start and load D11 to 2000 KW from the control room per S92.1.0, the procedure has been performed up to and including step 4.3.4.

Task Condition(s):

1. All prerequisites have been satisfied.
2. Procedure S92.1.0 completed up to and including step 4.3.4.
3. PO stationed at D/G.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Announce start of D11 Diesel Generator.	D11 start announced.	
*2. Place selected MCR Diesel Generator Control (CONTROL) 101-A(B, C, D) G501/CS to START.	Momentarily place 101-AG501/CS to start.	
3. <u>WHEN</u> 3 minute time delay for prelube pump operation is completed, <u>THEN</u> observe diesel generator starts.	Acknowledge 120 D11 window C4.	
4. Direct a PO to perform steps 4.3.7 through 4.3.12 of S92.1.0. (Cue: If asked, wait for generator frequency to increase to 60 Hz then say, "Steps 4.3.7 through 4.3.12 of S92.1.0 are complete. D11 is now running at 900 rpm.")	PO told to perform steps 4.3.7 through 4.3.12 of S92.1.0.	
5. Verify frequency meter reads from 59 to 61 Hz.	F/AG501-2 indicates between 59 to 61 Hz.	

STEP	STANDARD	SAT/UNSAT
*6. IF ESW pump not already running, THEN verify ESW pump starts 50 to 60 seconds after diesel start.	Acknowledge panel 010 SERV WTR A Windows A1 and A3. ESW pump OA tripped. Green light on, red off.	
7. Inform SSV that ESW Pump OA tripped on overcurrent and D11 D/G is running with no cooling water. (Cue: If informed, say, "I understand ESW Pump OA has tripped. I would like for you to continue with the D11 diesel ST.")	SSV informed that ESW Pump OA has tripped and D11 D/G is running with no cooling water.	
*8. Start ESW Pump OC.	ESW Pump OC started by momentarily placing its control switch to start. Red light on, green off.	
9. Acknowledge 010 SERV WTR A Window B4.	010 SERV WTR A Window B4 acknowledged. Annunciator self clears.	
10. ARC 010 SERV WTR A window A1 referenced.	N/A	N/A
11. Dispatch an NLO to check operation of ESW Pump OC and determine cause of ESW Pump OA trip. (Cue: If asked, say, "I understand you want me to check operation of ESW Pump OC and determine cause of ESW pump OA trip.")	NLO dispatched to check operation of ESW Pump OC and determine cause of ESW Pump OA trip.	
12. Verify cooling water is available to diesel generator by observing ESW Supply PI-11- *07A(B,C,D) indicates higher pressure than ESW Return PI-11-*08A(B,C,D). (Cue: If asked say, "D11 ESW supply indicates 15 psi greater than return.")	Direct PO to perform step 4.3.15 of S92.1.0.	

STEP	STANDARD	SAT/UNSAT
13. If diesel was started locally, <u>THEN</u> return diesel control to Control Room.	N/A	N/A
14. Place *01 Safeguard Transformer Local Tap Changer Selector (SELECT) 143-A(B)X103 to MANUAL.	143-AX103 in Manual position.	
*15. Insert synchroscope switch handle into Synchroscope Switch (SYNC) for appropriate Diesel Generator <u>AND</u> place to ON.	125-11507/SS in ON position.	
16. Observe Synchroscope rotating.	S/EAS-1 rotating.	
17. <u>WHEN</u> synchroscope is at 180 degrees, <u>THEN</u> both lights are fully bright.	Both lights are fully bright when S/EAS-1 is at 180 degrees.	
18. <u>WHEN</u> synchroscope is at 0 degrees, <u>THEN</u> both lights are off.	Both lights are off when S/EAS-1 is at 0 degrees.	
19. Observe diesel generator frequency change by placing SPEED GOVERNOR 165-A(B,C,D) G501/CS to RAISE <u>AND</u> to LOWER.	Place 165-AG501/CS to RAISE. F/AG501-2 (HERTZ) increases. Place 165-AG501-CS to Lower. F/AG501-2 (HERTZ) decreases.	
20. Observe diesel generator voltage change by placing VOLTAGE REGULATOR 170-A(B,C,D) G502/CS to RAISE <u>AND</u> to LOWER.	Place 170-AG502/CS to RAISE. V/AG501-2 (A-C KILOVOLTS) increases. Place 170-AG502/CS to Lower. V/AG501-2 (AC KILOVOLTS) decreases.	
*21. Adjust engine speed using appropriate Diesel Generator Speed Governor Control (SPEED GOVERNOR) 165-A(B,C,D)G501/CS until synchroscope is rotating slowly in FAST direction (clockwise).	S/EAS-1 (SYNCHROSCOPE) rotating slowly in the fast direction using 165-AG501/CS.	

STEP	STANDARD	SAT/UNSAT
*22. Adjust diesel generator voltage using Diesel Generator Voltage Regulator (VOLTAGE REGULATOR) 170-A(B,C,D)G502/CS until Synchronizing Incoming Voltmeter (INCOMING) is slightly higher than Synchronizing Running Voltmeter (RUNNING).	V/I-EAS-1 (INCOMING) indicates between 0 to 4 volts greater than V/R-EAS-1 (RUNNING) using 170-AG502/CS.	
*23. <u>WHEN</u> Synchroscope (SYSTEM) is within 3 degrees before 12 o'clock, <u>THEN</u> close Diesel Generator Breaker (GENERATOR).	When S/EAS-1 (SYNCHROSCOPE) indicates within 3 degrees of 12 o'clock, place 152-11507/CS to close. Red light on, green off.	
24. <u>Immediately</u> raise load to between 200 to 300 KW by turning Diesel Generator Speed governor Control (SPEED GOVERNOR) 165-A(B,C,D)G501/CS to RAISE.	W/AG501-2 (AC KILOWATTS) indicates between 200 to 300 KW using 165-AG501/CS.	
25. <u>Immediately</u> load 100 KVAR by turning Diesel Generator Voltage Regulator (VOLTAGE REGULATOR) 170-A(B,C,D)G502/CS to RAISE.	VAR/AG501-2 (AC KILOVAR) indicates about 100 KVAR using 170-AG502/CS.	
26. Turn Synchroscope Switch (SYNC) to OFF.	125-11507/SS in Off position.	
27. Acknowledge 006 Fire window Diesel Gen 1 Cell A.	Diesel Gen 1 Cell A fire alarm acknowledged.	
28. Direct PO in D11 room to verify no fire exists. (Cue: If asked say, "Fire alarm is caused by smoke coming off the exhaust header.")	PO directed to look for fire in D11 room.	

STEP	STANDARD	SAT/UNSAT
*29. Gradually raise diesel generator load at a rate $\leq 350\text{KW/min.}$ to desired value.	165-AG501/CS placed to raise to slowly increase W/AG501-2 (AC KILOWATTS) to 2000 KW. 2000KW not obtained for at least 4 min. 51 sec.	
30. Direct a PO to perform step 4.6.1 and 4.6.2 of S92.1.0. (Cue: If asked, say, "I will perform step 4.6.1, running checks and 4.6.2, oil level monitoring.")	PO directed to perform step 4.6.1 and 4.6.2 of S92.1.0.	
31. <u>IF</u> diesel generator is run at no load <u>OR</u> loaded less than 855 KW for extended periods, <u>THEN</u> load diesel generator to between 1400 to 2800 KW for at least 1 hour for each 12 hours of continuous no-load <u>OR</u> light-load operation.	N/A	N/A
32. For each diesel start/run, make entries in appropriate Daily Surveillance Log: ST-6-107-590-* ST-6-107-591-* ST-6-107-593-* (Cue: Give trainee copy of ST-6-107-590-1.)	ST-6-107-590-1 page 87 information entered. D/G #: Date: Start Time: Reason for Start:	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervisor to start and load D11 to 2000 KW from the control room per S92.1.0, the procedure has been performed up to and including step 4.3.4.

Task Conditions:

1. All prerequisites have been satisfied.
2. Procedure S92.1.0 completed up to and including step 4.3.4.
3. PO stationed at D/G.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:24

NO.: 2254 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 264000A3.06 TAXONOMY NO.:
LESSON PLANS: LOT0400.06

CATEGORY: NRC
SYSTEMS: RHRSW

QUESTION :

*** RO ONLY ***

"A" loop of Residual Heat Removal Service Water (RHRSW) is in service utilizing the "A" Spray Network. How does starting the D23 Emergency Diesel Generator for the monthly surveillance test effect the RHRSW System flowpath with HSS12-016C (SPRAY/BYPASS SELECT) in "BYPASS"?

ANSWER :

ANSWER: * OC ESW Pump will auto start
* Sprays will continue utilizing the "A" Spray Network

REFERENCE: LOT0400.06 PP 18,24,25

QUESTIONS for JPM Questions

GE 1

10/17/95
21:09:27

NO.: 2255 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/03/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK2.02 TAXONOMY NO.:
LESSON PLANS: LOT0680.04

CATEGORY: NRC
SYSTEMS: ESW

QUESTION :

*** RO ONLY ***

Unit 2 RPV level is at (minus) -135" when offsite power is lost. What effect will a trip of the D23 Emergency Diesel have on the 2A RHR Pump room cooling water flowpath?

ANSWER :

Cooling water flow is maintained via the "OA" ESW Pump running and the associated Division I ESW "parallel" valves providing a cooling water flowpath

REFERENCE: LOT0680.04 PF 10,11,12

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

TITLE: SCRAM CHANNEL A1 AND A2 FUNCTIONAL TEST

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. The simulator can be reset to any IC that has RPS reset and the reactor is stable.
2. This JPM requires continuous communication with a PO stationed in the Auxiliary Equipment Room.
3. A1/A2 day selected under full core display.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location (Circle One):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating:

3.6/3.7 A4.02

System Number:

212000

References:

ST-6-071-306-1, Rev. 6, Channel A1 and A2 RPS Manual Scram Channels Functional Test

Task Standards:

Complete Scram Channel Functional Test to step 7.0 satisfactorily

Initiating Cues:

Shift supervision directs you to perform ST-6-071-306-1, Unit one Channel A1/A2 RPS Manual Scram Channel Functional Test.

Tasks Conditions:

1. Plant in OPCON 1 with no half scram signals present.
2. No rod movement anticipated.

STEP	STANDARD	SAT/UNSAT
1. Obtain ST-6-071-306-1.	ST-6-071-306-1 obtained.	
2. RPS System operable. (Cue: RPS is operable.)	N/A	
3. All scram relays are reset; no half-scrams present.	No half-scram is present.	
4. Communications established between: a. Main Control Room panel 10C603. b. Auxiliary Equipment Room panel 10C609.	Communication established with simulator operator.	
5. Reactor operation is stable <u>AND</u> no rod movement anticipated during the performance of this test. (Cue: No rod movement is anticipated.)	N/A	N/A
6. No other testing <u>OR</u> plant condition which could interfere with this test is being performed/present. (Cue: No testing is in progress which would interfere with this test.)	Ask the SSV if no other testing is in progress which could interfere with this test.	
7. Verify all prerequisites are satisfied.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
8. Obtain Shift Supervision's permission to start test. (Cue: You have permission to perform ST-6-071-306-1.)	SSV permission obtained.	
9. Obtain PRO/RO permission to start test. (Cue: You have permission to perform ST-6-071-306-1.)	RO permission obtained.	
*10. Place "CH A1" collar in "ARMED".	Collar "CH A1" on *OC603 rotated to the "ARMED" position.	
11. "MANUAL SCRAM SWITCH ARMED A, B" annunciated on "108 Reactor".	Panel 108 window D2 lit.	
*12. Depress fully and release button for "CH-A1".	"CH A1" button depressed on *OC603.	
13. At panel 108 REACTOR, verify: a. MANUAL SCRAM SYSTEM alarm annunciates. b. AUTO SCRAM CHANNEL A1 alarm annunciates.	Panel 108 windows D1 and B1 lit.	
*14. Verify at *OC603 indicating light A1, A2, A3, A4 are all OFF.	Lights for A1, A2, A3, and A4 are extinguished on *OC603.	
*15. Verify at *OC609 Reactor Auto Scram Trip Logic A1 DS1 is OFF. (Cue: DS1 on *OC609 is off.)	Report from PO in AER that DS1 on *OC609 is OFF.	
16. IF rod motion occurs, THEN notify Shift Supervision <u>immediately</u> . IF NOT, N/A this step.	N/A	N/A
17. Verify annunciator "MANUAL SCRAM SYSTEM A" can be cleared.	Annunciator RESET - "108 Reactor". Window D1 is clear.	
18. Place "CH A1" collar in "DISARMED".	Collar "CH A1" on "108 Reactor" rotated to the DISARMED position.	

STEP	STANDARD	SAT/UNSAT
19. Verify annunciator "MANUAL SCRAM SWITCH ARMED A, B" can be cleared.	Annunciator RESET on "108 Reactor". Window D2 is clear.	
*20. Place "SCRAM RESET" switch to "GROUP 1/4" and "GROUP 2/3."	SCRAM RESET switch turned to left (1/4) and right (2/3) on *OC603.	
21. Verify annunciator "AUTO SCRAM CHANNEL A1" can be cleared.	Annunciator RESET "108 Reactor". Window B1 is clear.	
*22. Verify at 10C603 indicating lights A1, A2, A3 and A4 are all ON.	A1, A2, A3, A4 are all ON on 10C603.	
*23. At Panel 10C609 verify REACTOR AUTO SCRAM TRIP LOGIC A1 DS1 is ON. (CUE: DS1 on 10C609 is ON.)	Report from PO in AER that DS1 on 10C609 is ON.	
*24. Place "CH A2" collar in "ARMED".	Collar CH A2 on 10C603 rotated to the ARMED position.	
25. MANUAL SCRAM SWITCH ARMED A, B annunciated on "108 REACTOR".	Panel 108 window D2 lit.	
*26. Depress fully and release button for "CH A2".	CH A2 button depressed on 10C603.	
27. At panel 108 REACTOR, verify: a. MANUAL SCRAM SYSTEM A alarm annunciates. b. AUTO SCRAM CHANNEL A2 alarm annunciates.	Annunciator reset, "108 REACTOR" window D1 and B2 are lit.	
*28. At 10C603 verify A1, A2, A3 and A4 lights are all OFF.	A1, A2, A3, A4 are all extinguished on *OC603.	
*29. Verify at 10C609 REACTOR AUTO SCRAM TRIP LOGIC A2, DS2 is OFF. (Cue: DS2 on 10C609 is OFF.)	Report from PO in AER that DS2 on 10C609 is OFF.	

STEP	STANDARD	SAT/UNSAT
*30. IF rod motion occurs, THEN notify Shift Supervision <u>immediately</u> . IF NOT, N/A this step.	N/A	N/A
31. Verify annunciator "MANUAL SCRAM SYSTEM A" can be cleared.	Annunciator reset "108 Reactor". Window D1 is clear.	
32. Place "CH A2" collar in "DISARMED".	Collar "CH A2" rotated to the "DISARMED" position on *OC603.	
33. Verify annunciator "MANUAL SCRAM SWITCH ARMED A, B" will clear.	Annunciator reset "108 Reactor". Window D2 is clear.	
*34. Place "SCRAM RESET" switch to "GROUP 1/4" and "GROUP 2/3".	SCRAM RESET switch turned to left (1/4) and right (2/3) on *OC603.	
35. Verify AUTO SCRAM CHANNEL A2 on 108 Reactor can be cleared.	Annunciator RESET. "108 Reactor" window B2 is clear.	
*36. At 10C603 verify A1, A2, A3, and A4 lights are ALL ON.	A1, A2, A3, A4 are all ON on *OC603.	
*37. At panel *OC609 verify REACTOR AUTO SCRAM TRIP LOGIC A2 DS2 ON. (Cue: DS2 on 10C609 is ON.)	Report from PO in AER that DS2 on 10C609 is ON.	
38. IVOR section completed. (Cue: Manual Scram Switch A1 and A2 are in the DISARMED position.)	Ask for IVOR assistance.	
39. Inform SSVN <u>AND</u> RO test is complete. (Cue: I understand, the Channel A1/A2 functional test is complete.)	SSV and RO informed test is complete.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Note: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

Initiating Cues:

Shift supervisor directs you to perform ST-6-071-306-1, Unit one Channel A1/A2 RPS Manual Scram Channel Functional Test.

Tasks Conditions:

1. Plant in OPCON 1 with no half scram signals present.
2. No rod movement anticipated.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:30

NO.: 2305 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 212000A2.05 TAXONOMY NO.:
LESSON PLANS: LOT0300.11

CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

*** RO ONLY ***

An Equipment Operator, who was dispatched to investigate an Excess Flow Check Valve Actuated Alarm, reports that XV-1F047A has actuated with the associated local green indicating light lit and red indicating light extinguished. What specific affect will this have on the RPS System?

ANSWER :

* A" side half scram signal will be generated.

References: P&ID M-42 Sheets 1 & 2
LOT-0300 Page 9
Q130031

QUESTIONS for JPM Questions

10/17/95
21:09:32

PAGE 1

NO.: 2301 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295037EK2.03 TAXONOMY NO.:
LESSON PLANS: LOT0315.03

CATEGORY: NR1 NRC
SYSTEMS: RRCS

QUESTION :

*** RO ONLY ***

What conditions would be necessary on Unit 1 to initiate an automatic
ATWS RPT Breaker Trip?

ANSWER :

Factor High Pressure of 1093 psig

Low reactor level of -38" with a 9 second time delay

REFERENCES:

GP-18 Attachment 2
LOT-0315.03 page 8
Q140031

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Initiate a Control Room Radiation Isolation

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset the simulator to IC-17, and take out of freeze.
2. Ensure the A CREFAS fan handswitch is in AUTO, and the B CREFAS fan handswitch is in STBY.
3. Ensure the A Control Room Supply and Return fans are in RUN, and the B Control Room Supply and Return fans are in AUTO.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.2/3.2

System Number(s):

290003 A4.01

References:

S78.8.A, Manual Initiation of Control Room Radiation or Chlorine/Toxic Chemical Isolation

Task Standard(s):

The Control Room HVAC system is operating in the Radiation Isolation Mode, with a Radiation Isolation signal present on all four isolation channels, and no chlorine/Toxic Chemical Isolation signals present.

Initiating Cues:

You are directed by shift supervision to manually initiate a Control Room HVAC Radiation Isolation.

Task Conditions:

1. Control Room HVAC is in the normal operating mode.
2. The Control Room Emergency Fresh Air Supply System is lined up for automatic operation.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S78.8.A (Cue: If asked, respond, "I want you to obtain a copy of S78.8.A.")	A copy of S78.8.A, Rev. 5 is obtained.	
2. Control Room HVAC in normal operating mode per S78.1.A, <u>Placing the Control Room HVAC System into Normal Operation.</u> (Cue: If asked, respond, "Control Room HVAC is in the normal operating mode per S78.1.A.")	N/A	N/A
3. Control Room Emergency Fresh Air System lined up for automatic operation per S78.1.B, <u>Aligning the Control Room HVAC Isolation and Emergency Fresh Air Supply System for Automatic Operation.</u> (Cue: If asked, respond, "Control Room Emergency Fresh Air System is lined up for automatic operation per S78.1.B.")	N/A	N/A

STEP	STANDARD	SAT/UNSAT
*4. ENSURE keys for keylock handswitches HS-78-017A,B,C,D (RESET), are available.	Four keys for keylock handswitches HS-78-017A,B,C,D (RESET) are obtained.	
*5. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017A (RESET A) to "RESET".	Reset Keylock switch HS-78-017A (RESET A) is placed in "RESET" at 00C681.	
*6. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to "RESET".	Reset Keylock switch HS-78-017B (RESET B) is placed in "RESET" at 00C681.	
*7. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017C (RESET C) to "RESET".	Reset Keylock switch HS-78-017C (RESET C) is placed in "RESET" at 00C681.	
*8. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to "RESET".	Reset Keylock switch HS-78-017D (RESET D) is placed in "RESET" at 00C681.	
*9. PLACE Control Room Isolation Valve Trip Switch HSS-78-017A (TRIP A) to "RAD".	Switch HSS-78-017A (TRIP A) arming collar is rotated to "RAD" at 00C681.	
*10. PLACE Control Room Isolation Valve Trip Switch HSS-78-017B (TRIP B) to "RAD".	Switch HSS-78-017B (TRIP B) arming collar is rotated to "RAD" at 00C681.	
*11. PLACE Control Room Isolation Valve Trip Switch HSS-78-017C (TRIP C) to "RAD".	Switch HSS-78-017C (TRIP C) arming collar is rotated to "RAD" at 00C681.	
*12. PLACE Control Room Isolation Valve Trip Switch HSS-78-017D (TRIP D) to "RAD".	Switch HSS-78-017D (TRIP D) arming collar is rotated to "RAD" at 00C681.	
13. Acknowledge 002 VENT window B2.	002 VENT window B2 acknowledged.	
*14. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017A (RESET A) to "AUTO".	Reset Keylock switch HS-78-017A (RESET A) is placed in "AUTO" at 00C681.	

STEP	STANDARD	SAT/UNSAT
*15. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to "AUTO".	Reset Keylock switch HS-78-017B (RESET B) is placed in "AUTO" at 00C681.	
*16. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017C (RESET C) to "AUTO".	Reset Keylock switch HS-78-017C (RESET C) is placed in "AUTO" at 00C681.	
*17. PLACE Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to "AUTO".	Reset Keylock switch HS-78-017D (RESET D) is placed in "AUTO" at 00C681.	
*18. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017A (TRIP A).	Switch HSS-78-017A (TRIP A) pushbutton is depressed and released at 00C681.	
*19. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017B (TRIP B).	Switch HSS-78-017B (TRIP B) pushbutton is depressed and released at 00C681.	
*20. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017C (TRIP C).	Switch HSS-78-017C (TRIP C) pushbutton is depressed and released at 00C681.	
*21. DEPRESS <u>AND</u> RELEASE pushbutton portion of Trip switch HSS-78-017D (TRIP D).	Switch HSS-78-017D (TRIP D) pushbutton is depressed and released at 00C681.	
22. RECORD CREFAS run time in appropriate log.	CREFAS start data is recorded in CREFAS run time log.	
23. ENSURE HI RAD ISLN Channel A amber light is lit.	HI RAD ISLN Channel A amber light is lit on 00C681.	
24. ENSURE HI RAD ISLN Channel B amber light is lit.	HI RAD ISLN Channel B amber light is lit on 00C681.	
25. ENSURE HI RAD ISLN Channel C amber light is lit.	HI RAD ISLN Channel C amber light is lit on 00C681.	

STEP	STANDARD	SAT/UNSAT
26. ENSURE HI RAD ISLN Channel D amber light is lit.	HI RAD ISLN Channel D amber light is lit on OOC681.	
27. VERIFY CONTROL ROOM RADIATION ISOLATION INITIATED annunciator alarmed at 002 VENT A-1.	Window A-1 on 002 VENT, CONTROL ROOM RADIATION ISOLATION INITIATED, is alarmed.	
28. VERIFY CONTROL ROOM ISOLATION NOT COMPLETE annunciator is <u>not</u> alarmed at 002 VENT A-3, after 25 seconds.	Window A-3 on 002 VENT, CONTROL ROOM ISOLATION NOT COMPLETE, is verified not alarmed at least 25 seconds after the isolation is initiated.	
29. ENSURE OA(B)V127, EMERGENCY AIR FAN A(B), is running.	OAV127, EMERGENCY AIR FAN A, is running. Indicating light (A FAN) is red on OOC681.	
30. ENSURE FI-78-015, EMERG AIR FL, is greater than 2475 cfm. (Cue: FI-78-015 indicates 2500 cfm.)	Flow indication on FI-78-015 on OOC681 is verified to be greater than 2475 cfm.	
31. ENSURE OA(B)V116, CONTROL ROOM AIR SUPPLY FAN A(B) running.	OAV116, SUPPLY FAN A, is running. Indicating light (A FAN) is red on OOC681.	
32. ENSURE OA(B)V121, CONTROL ROOM AIR RETURN FAN A(B), running.	OAV121, RETURN FAN A, is running. Indicating light (A FAN) is red on OOC681.	
33. VERIFY PDI-78-054, CONTROL ROOM AIR INSIDE/OUTSIDE ΔP_x , greater than or equal to .25 inches water.	Verify PDI-78-054 on OOC681 indicates greater than or equal to 0.25 inches of water.	
34. Ensure the device positions for RAD Isolation as per Attachment 1.	N/A	N/A
a. Ensure FD-C-78-011A(B) is MODULATING.	FD-C-78-011A (DAMPER A of EMERGENCY AIR FAN A) is partially or fully open on OOC681. Red light on.	

STEP	STANDARD	SAT/UNSAT
b. Ensure HD078-002A(B) is OPEN.	HD-78-002A (FILTER INLET of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
c. Ensure HD-78-009A(B) is OPEN.	HD-78-009A (FILTER OUTLET of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
d. Ensure HV-78-010A(B) is OPEN.	HV-78-010A (RETURN ISLN of EMERGENCY AIR FAN A) is open on OOC681. Red light on.	
e. Request a floor operator to ensure all components on Attachment 1 that are outside the control room, are in the proper condition for a Radiation Isolation. (Cue: All components on Attachment 1 outside the control room are in the proper condition for a radiation isolation.)	A floor operator is contacted to verify the components on Attachment 1 that are outside the control room, are in the proper condition for a radiation isolation.	
35. IF RAD isolation <u>not</u> complete, <u>THEN</u> REPEAT section 4.1.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to manually initiate a Control Room HVAC Radiation Isolation.

Task Condition(s):

1. Control Room HVAC is in the normal operating mode.
2. The Control Room Emergency Fresh Air Supply System is lined up for automatic operation.

QUESTIONS for JPM Questions

GE 1

10/17/95
21:09:35

NO.: 2262 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 290003K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.11

CATEGORY: NRC NR1
SYSTEMS: CEHVAC

QUESTION :

*** RO ONLY ***

With a LOCA signal present, what conditions will cause an automatic trip of the Auxiliary Equipment Room Air Supply Fans?

ANSWER :

- 1. Low fan flow for 20 seconds.
- 2. High supply air temperature

REFERENCE: LOT0450 PP. 30

QUESTIONS for JPM Questions

10/17/95
21:09:38

PAGE 1

NO.: 2263 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 262001A2.02 TAXONOMY NO.:
LESSON PLANS: LOT0660.05

CATEGORY: NRC NR1
SYSTEMS: 4KV

QUESTION :

*** RO ONLY ***

Assume a LOCA signal has been initiated on Unit 1 and offsite power has REMAINED in service. What is the automatic sequence of events which will occur to the D13 bus and it's loads?

ANSWER :

NOTE- t=0 is initiation of LOCA signal

t sec 1C LPCI/RHR Pump starts. All other loads trip.
t sec D-134 480V feeder breaker recloses
t=10 sec 1C Core Spray Pump starts
t=167 sec 0A Control Room Chiller starts

REFERENCE: LOT-0660 PP. 10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: BYPASS RECW ISOLATION (Time Critical)

Task performed By: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

1. Bypass the DWCW isolation
2. Insert Malfunction 161A
3. Bypass and restore Instrument Gas

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

5 Minutes

Importance Rating(s):

3.3/3.7

System Number(s):

223002 K4.08

References:

ON-113

Task Standard(s):

RECW restored to both recirculation pumps within 10 minutes of SSV order

Initiating Cues: This Task is Time Critical.

You are directed by Shift Supervision to bypass the RECW isolation and restore RECW to the Recirc Pumps per ON-113 step 2.4.

Task Conditions:

1. RECW has been lost due to an inadvertent Group VIII A Inboard isolation and cannot be reset.
2. The plant is at power.
3. Instrument Gas is bypassed and restored.
4. DWCW is bypassed and restored.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of ON-113	Most recent revision of ON-113 obtained. (Rev.14)	
2. IF RECW is lost due to an inadvertent Group VIII A isolation <u>AND</u> isolation <u>cannot</u> be reset, <u>then</u> bypass the isolation as directed below <u>and</u> restore RECW to the Recirc Pump.	N/A	N/A
3. Place HS-13-*13 SEALS/OIL CLRS OUTBD ISOL BYPASS, to "BYPASS"	N/A	N/A
4. Open HV-13-*08 <u>AND</u> HV-13-*11 by placing HV-13-*08/*11, SUPPLY/RETURN SEAL/OIL CLR, to "OPEN".	N/A	N/A
*5. Place HS-13-*12, SEALS/OIL CLRS INBD ISOL BYPASS, to "BYPASS".	<u>Within 10 minutes of start</u> , rotate HS-13-112 keyswitch clockwise to Bypass position.	
*6. Open HV-13-*06, IN, <u>AND</u> HV-13-*07, <u>OUT</u> .	<u>Within 10 minutes of start</u> , rotate HS-13-106 and HS-13-107 clockwise to Open position and release. Red lights ON/green OFF.	
7. Acknowledge alarm F-5 on 118 services panel.	Alarm acknowledge Pushbutton depressed.	

STEP	STANDARD	SAT/UNSAT
8. Comply with Tech Spec 3.6.3 for an inoperable isolation valve.	Inform SSV that T.S. should be considered.	
9. IF it is determined associated instrumentation has failed, <u>then</u> refer to Tech Spec 3.3.2 for additional action.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues: THIS TASK IS TIME CRITICAL.

You are directed by Shift Supervision to Bypass the RECW isolation and restore RECW to the Recirc Pumps per ON-113, Step 2.4

Task Condition(s):

1. RECW has been lost due to an inadvertent Group VIII A Inboard isolation and cannot be reset.
2. The plant is at power.
3. Instrument Gas is bypassed and restored.
4. DWCW is bypassed and restored.

QUESTIONS for JPM Questions

10/17/95
21:09:41

7E 1

NO.: 2332 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK2.01 TAXONOMY NO.:
LESSON PLANS: LOT0460.04
:
CATEGORY: NRC NR1
SYSTEMS: RECW

QUESTION :

*** RO ONLY ***

What effects will closing the HV-13-102, RECW Emergency Operation
Shutoff Valve, have on the plant during normal operation at 100% power?

ANSWER :

RECW will be secured to RWCU components.
The RWCU pumps will trip.

REFERENCES: P&ID M-13, M-44
LOT-0460 page 12

NOTE: answer may include RWCU isolation due to NRHX outlet high
temperature and subsequent RWCU pump trip

QUESTIONS for JPM Questions

10/17/95
21:09:44

7E 1

NO.: 2333 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 295018AK3.04 TAXONOMY NO.:
LESSON PLANS: LOT0430.04

CATEGORY: NRC NR1
SYSTEMS: TECW

QUESTION :

*** RO ONLY ***

What is the response of the standby TECW pump on a LOCA signal?

ANSWER :
The pump will auto start.

REFERENCES: E-565
LOT-0430 page 10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Shutdown Cooling Flow Adjustments

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

- Reset simulator to IC-5 (Flooded up into Rx Well).
- Adjust HV-C-51-103A (1A RHR Heat Exchanger Outlet Bypass POS) to 100%.
- Ensure HV-51-1F015A (Shutdown Cooling Return Valve) is full open.
- Throttle HV-C-51-1F048A (Heat Exchanger Bypass) closed to obtain 9000 gpm flow.
- Close HV51-1F003A (Heat Exchanger Outlet).

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.1/3.1 A4.09

System Number:

205000

General References:

1. S51.8.B, Shutdown Cooling/Reactor Coolant Circulation Operation Start-up and Shutdown

Task Standards:

1A RHR flow $\geq$ 9000 gpm with HV-51-1F015A full open and HV-C-51-103A closed utilizing the HV-51-1F003A and HV-C-51-1F048A to control reactor coolant temperature.

Initiating Cues:

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

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on TR-56-1R605 point 1.
2. "OA" 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.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S51.8.B	Copy of S51.8.B, Rev. 32 obtained.	
2. If additional cooling is required, then PERFORM the following:	N/A	N/A
*2a. OPEN HV-C-51-*F048A(B), Heat Exch Bypass.	Position HV-C-51-1F048A(B) handswitch to OPEN and release. Red light on, green light off.	
*2b. OPEN HV-51-*F003A(B), OUTLET	Position HV-51-1F003A handswitch to OPEN and release. Red light on, green light off.	
*2c. CLOSE HV-C-51-*F03A(B), POS.	Depress HV-C-51-103A controller "CLOSE" pushbutton to reduce meter output to 0%.	
3. If additional cooling is required, THEN throttle CLOSED HV-C-51-*F048A(B). (CUE: Tell operator "You have met the termination criteria for this JPM. You can stop here.")	N/A	N/A

Initiating Cues:

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

Tasks Conditions:

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 85°F as read on TR-56-1R605 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.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:47

NO.: 2245 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 205000A4.09 TAXONOMY NO.:
LESSON PLANS: LOT0370.09
:
CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

*** RO ONLY ***

Unit 2 is in OPCON 5 * (star) with Shutdown Cooling in service. An electrical malfunction causes HV-C51-2F048A to inadvertently stroke OPEN.

What concerns would you have with the conditions now established and why?

ANSWER :

SDC flowrate is now exceeding the limit of 6000 gpm
in-core unsupported instrument vibration will occur

REFERENCE: GP6.1 SECTION 3.5.6
S51.8.B SECTION 4.3.12

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:50

NO.: 2246 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/25/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 205000A4.07 TAXONOMY NO.:
LESSON PLANS: LOT0370.13C

CATEGORY: NRC
SYSTEMS: SDC

QUESTION :

*** RO ONLY ***

"A" loop of Shutdown Cooling is in service with cooldown rate being controlled by the OUTLET VALVE BYPASS (HV-C-51-103A). The RHR HEAT EXCHANGER SHELL SIDE OUTLET VALVE (HV-51-1F003A) is shut.

A loss of Instrument Air to the OUTLET BYPASS VALVE has resulted in closure of the valve. What effect does this have on temperature indication?

ANSWER :

Temperature indication is NOT valid since closure of HV-C-51-103A, the outlet valve bypass, concurrent with the heat exchanger outlet valve (HV-51-103A) being closed causes a loss of flow past the associated temperature element.

REFERENCES: S51.8.B NOTE ASSOCIATED WITH SECTION 4.3.14
M-51 SHEET 2

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Bypassing a Control Rod from the Reactor Manual Control System

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.4/3.1 K/A Generic #9

System Number(s):

201002

References:

S73.0.E, Rev. 6, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System

Task Standard(s):

Control Rod 18-31 bypassed from RMCS.

Initiating Cues:

Directed by Shift Supervision to bypass Control Rod 18-31 from the Unit RMCS.

Task Conditions:

1. A reactor startup is in progress.
2. Control Rod 18-31 is declared inoperable.
3. RDCS is tripped inop due to the fault on rod 18-31.

Performance Check List:

STEP	STANDARDS	SAT/UNSAT
*1. Obtain copy of S73.0.E. (Cue: none)	S73.0.E, Rev. 6 obtained.	
2. Reactor Manual Control System in Operation. (Cue: If asked say: "RMCS is operable.")	Ask the SSV or RO if RMCS is operable.	
3. Permission to bypass rod obtained from Shift Supervision. (Cue: If asked say: "You have permission to bypass control rod 18-31.")	Ask SSV for permission to bypass control rod 18-31.	
4. Refer to Attachment 1 and determine binary coordinates of control rod to be bypassed. (Cue: none)	Determine binary coordinates referring to Attachment 1: X-00110 Y-01001	

STEP	STANDARDS	SAT/UNSAT
*5. Place Bypassed Rod Identity Switches in position corresponding to binary coordinates of the control rod to be bypassed at *OC616. (Cue: Switches X2, X1, Y3 and Y0 are in the up position.)	Switches aligned X4, down X3, down X2, up X1, up X0, down Y4, down Y3, up Y2, down Y1, down Y0, up	
*6. Place Bypassed Switch in up position at *OC616. (Cue: Bypassed switch is in the up position.)	Bypassed switch in the up position at *OC616.	
*7a. <u>IF</u> RDCS is INOPERABLE, as indicated by INOP LED Lit, at *OC616... (Cue: The INOP LED is Lit.)	Look at the INOP LED and determine if it is Lit at *OC616.	
*7b. <u>THEN</u> depress "RESET" pushbutton located in RDCS STATUS section of analyzer card for several seconds at *OC616 <u>AND</u> RELEASE. (Cue: The "RESET" pushbutton depressed <u>AND</u> released.)	Depress the "RESET" pushbutton located in RDCS STATUS section of analyzer card for several seconds at *OC616 <u>AND</u> release.	

STEP	STANDARDS	SAT/UNSAT
8a. VERIFY ROD BYPASS light lit on the RDCS STATUS section of the ROD SELECT MODULE at *OC603, "Reactor Control Console"... (Cue: The RO reports, "The ROD BYPASS light is Lit on the *OC603 "Reactor Control Console.")	Ask the RO if the ROD BYPASS light is Lit on the RDCS STATUS section of the ROD SELECT MODULE at *OC603, <u>or</u> verify in the MCR.	
8b. <u>AND</u> verify RDCS INOPERATIVE annunciator clear on the *08 REACTOR (E-4). (Cue: The RO reports, "The RDCS INOPERATIVE annunciator is clear on *08 REACTOR (E-4)".	Ask the RO if the RDCS INOP annunciator is clear on *08 REACTOR, window E-4, <u>or</u> verify in the MCR.	
9. Document bypassed rod in Shift Supervision's logbook. (Cue: If asked say: "I understand you want me to note, control rod 18-31 bypassed.")	Notify SSV to make log entry saying control rod 18-31 is bypassed.	
10. Document bypassed in rod in Reactor Operator's log. (Cue: If asked say: "I understand you want me to note, control rod 18-31 bypassed.")	Notify RO to make log entry saying control rod 18-31 is bypassed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Directed by the Shift Supervisor to bypass control rod 18-31 from the Unit *
Reactor Manual Control System.

Task Condition(s):

1. A reactor startup is in progress.
2. Control Rod 18-31 is declared inoperable.
3. RDCS is tripped INOP due to the fault on rod 18-31.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:08:55

NO.: 2204 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002K1.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.03

CATEGORY: NRC
SYSTEMS: RMCS

QUESTION :

*** RO ONLY ***

An electronics problem results in a loss of the "scan mode" of the Rod Drive Control System. What information is NOT being updated on a continuous basis?

ANSWER :

1. HCU water level
2. HCU N2 pressure
3. scram inlet and outlet valve position

REFERENCE: LOT0080.03
S73.0.E STEP 4.1.5 NOTE

QUESTIONS for JPM Questions

GE 1

10/17/95
21:08:57

NO.: 2205 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/12/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 201002A3.01 TAXONOMY NO.:
LESSON PLANS: LOT0080.06

CATEGORY: NRC
SYSTEMS: RMCS

QUESTION :

*** RO ONLY ***

Unit 2 is at 92% power with a yellow "WITHDRAW BLOCK" status light and a ROD OUT BLOCK annunciator. The Equipment Operator (EO) reports from the Aux Equipment Room that he has channels A and D SRM HI trip lights lit and two LEDs, F(I) and H(W), lit on the Activity Controls panel. What has caused your annunciator?

ANSWER :

* H(w) is scram discharge volume rod block level at 13 gallons.

notes; F(I) is normal indication with all rods NOT full in.
SRM Hi and Hi-Hi trips lights are normal at this power but have no effect with mode switch in RUN. Operator should have received annunciator E-2 due to scram discharge not drained)

REFERENCE: S73.0.B

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Inadvertent Opening of a Relief Valve

Task performed By: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

N/A

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

System Number(s):

A2.03 4.1/4.2

239002

References:

OT-114, Inadvertent Opening of a Relief Valve

Task Standard(s):

Appropriate Fuses are pulled in accordance with OT-114.

Initiating Cues:

You are directed by Shift Supervision to pull fuses for PSV-41-1F013K in accordance with OT-114.

Task Conditions:

1. LGS Unit 1 is in OPCON 3.
2. PSV-41-1F013K has indicated open for two minutes.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of OT-114. (Cue: If asked, respond, "I want you to obtain a copy of OT-114.")	Copy of OT-114, Rev. 8 obtained.	
*2. Obtain Fuse Pullers. NOTE: The operator can obtain fuse puller from a variety of locations. Most likely location is the MCR PRO's desk. (Cue: Once operator demonstrates ability to obtain fuse pullers, say "You have obtained fuse pullers.")	Fuse pullers in hand.	
*3. Pull Fuse AA-F4 B21C-F3K at panel *OC628. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F4 B21C-F3K at panel 10C628 removed.	
*4. Pull Fuse AA-F5 B21C-F4K at panel *OC628. (Cue: After operator simulates removing a fuse, state "a fuse has been removed".)	Fuse AA-F5 B21C-F4K at panel 10C628 removed.	

STEP	STANDARD	SAT/UNSAT
*5. Pull Fuse AA-F3 B21C-F7K at panel *0C631. (Cue: After operator simulates removing a fuse, state "a fuse has been removed.")	Fuse AA-F3 B21C-F7K at panel 10C631 removed.	
*6. Pull Fuse AA-F4 B21C-F8K at panel *0C631. (Cue: After operator simulates removing a fuse, state "a fuse has been removed.") After all four fuse have been removed, tell operator "You have met the termination criteria for this JPM. You can stop here."	Fuse AA-F4 B21C-F8K at panel 10C631 removed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to pull fuses for PSV-41-1F013K in accordance with OT-114.

Task Conditions:

1. LGS Unit 1 is in OPCON 3.
2. PSV-41-1F013K has indicated open for two minutes.

QUESTIONS for JPM Questions

10/17/95
21:09:08

PAGE 1

NO.: 1635 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 295020AK2.12 TAXONOMY NO.:
LESSON PLANS: LOT0730.08

CATEGORY: NRC
SYSTEMS: AIR PCIG NSSSS

QUESTION :

*** RO ONLY ***

What primary or secondary containment conditions will cause you to lose
BACKUP pneumatics to operate Recirc Pump Drywell Chilled Water
supply valves or the SRVs?

ANSWER :

a loss of backup capabilities of PCIG when :

1. RPV level drops below -129"
2. DW pressure exceeds 1.68#
3. Rx Enclosure Ventilation Exhaust radiation exceeds 1.35 mr/hr

REFERENCE: LOT0730.08 pp 20
GP-8.1

QUESTIONS for JPM Questions

10/17/95
21:09:11

PAGE 1

NO.: 2213 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/13/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 223001K1.10 TAXONOMY NO.:
LESSON PLANS: LOT0730.11 LOT0730.13E
:
CATEGORY: NRC
SYSTEMS: AIR PCIG

QUESTION :

*** RO ONLY ***

During your panel walkdown you notice containment isolation valve
HV59-151A, ("Instrument Gas Supply Inlet A") is SHUT.

What protective action would cause this condition?

What drywell pneumatic load(s) would no longer have redundant sources?

ANSWER :

1. Instrument Gas pressure is less than 2# above drywell pressure
2. S, H, M ADS SRVs

NOTE; under non-emergency plant conditions this isolation would only
occur due to PCIG gas problems or failure of PDS59-106A instrument

REFERENCE; LOT0730.11 PP 20
S59.1.B NOTE for 4.8
M-59 sheet 1 and 2

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Transferring Reactor Enclosure Floor Drain Sump to Suppression Pool Via
Core Spray System

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

3.9/3.8 K/A Generic #6

System Number(s):

295038

References:

Unit 1 T-236, Rev. 8, Transferring Reactor Enclosure Floor Drain Sump To
Suppression Pool Via Core Spray System

Task Standard(s):

Unit 1 RE floor drain sump pump discharge aligned to the Suppression Pool

Task Condition(s):

1. A LOCA with significant fuel damage has occurred on Unit 1.
2. All Post-LOCA Rad Monitors have HI-HI RAD trips sealed-in.
3. The "1C" RHR pump suction valve is leaking sufficiently to cause a flooding condition in the "A & C" RHR Pump Room.

Initiating Cues:

Shift Supervision directs you to align Unit 1 RE floor drain sump to the suppression pool in accordance with T-236.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. TRIP procedures must direct use of this procedure. (Cue: If asked, T-103 directs the use of T-236.)	Recognize SSVN has directed the use of T-236 per T-103.	N/A
*2. The following key obtained from Unit 1 T-200 cabinet in OSC BL-840 key required - 1424A key	Obtain a 1424A key.	
3. <u>If</u> either Reactor Enclosure Floor Drain Sump Pump is operable, <u>THEN</u> : (Cue: If asked, "The RE Floor Drain Sump Pumps are <u>not</u> known to be inoperable.")	Determine that at least one RE Floor Drain Sump Pump is operable.	
*a. Open Reactor Enclosure Floor Drain Sump Pump Discharge to Suppression Pool 61-1052 (162-A8-180). (Cue: Handwheel for 61-1052 rotates until it is full open.)	Rotate handwheel for 61-1052 counter-clockwise until valve is fully open.	

STEP	STANDARD	SAT/UNSAT
NOTE: The Floor Drain Sample Collection Tank Room is "RWP required for entry". Have the operator describe how to close 63-0138. *b. Close Unit 1 Drywell/Reactor Enclosure DRW Sumps to Floor Drain Collection Tank 63-0138 (134-W22*162.) (Cue: Handwheel for 63-0138 rotates until it is full closed.)	Rotate handwheel for 63-0138 clockwise until valve is fully closed.	
*4. INSERT/ROTATE 1424A key <u>AND</u> POSITION HSS-61-104, "Floor Drain," at 10C452 (158-A8-180) (Attachment 1) to "Hi-Hi" to defeat Sump Pump high radiation trip interlock (from Post-LOCA Monitors RIX-26-191A,B,C,D).	Place HSS-61-104 to the Hi-Hi position.	

Comments:

Note: Any grade of UNSAT requires a comment.

NOTE: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to align Unit 1 RE floor drain sump to the Suppression Pool in accordance with T-236.

Task Condition(s):

1. A LOCA with significant fuel damage has occurred.
2. All Post-LOCA Rad Monitors have HI-HI RAD trips sealed-in.
3. The "1C" RHR pump suction valve is leaking sufficiently to cause a flooding condition in the "A & C" RHR Pump Room.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:19

NO.: 2221 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 272000K4.02 TAXONOMY NO.:
LESSON PLANS: LOT0762.05

CATEGORY: NRC
SYSTEMS: RMMS

QUESTION :

*** RO ONLY ***

Why do TRIPS direct the performance of T-236?

ANSWER :

to transfer highly radioactive water to the primary containment vice
Radwaste Enclosure during an accident

REFERENCE: T-236
T-103 BASES STEP SCC/L-4

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:09:21

NO.: 2222 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/14/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 268000K1.12 TAXONOMY NO.:
LESSON PLANS: LOT0705.03

CATEGORY: NRC
SYSTEMS: RADWASTE

QUESTION :

*** RO ONLY ***

Suppression pool cooling AND letdown in are in progress using the "A" loop of RHR. The radwaste Equipment Operator (EO) reports he has enough room for approximately 8000 gallons of water in the Collection Tank. How much can you lower suppression pool level ?

ANSWER :

is will allow conservatively 2 more inches of pool letdown.

REFERENCE: S52.1.B
S51.8.A
M-62

NOTE: Suppression Pool capacity is approximately 3500 gallons per inch

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: MANUALLY INITIATE SLC

Task performed By: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to the Simulator Operator:

None

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

6 Minutes

Importance Rating(s):

4.2/4.2 A4.08

System Number(s):

211000

References:

S48.1.B, Standby Liquid Control System Manual Initiation

Task Standard(s):

Standby Liquid injecting into the RPV

Initiating Cues:

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

Task Conditions:

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

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S48.1.B	Most recent revision of S48.1.B obtained (Rev. 8).	
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. Red light on, green off.	
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.	

STEP	STANDARD	SAT/UNSAT
6. Ensure the following: HV-48-1F006A "SLC Injection" (outboard A), open.	HV-48-1F006A is open, red light on, green light off.	
7. Ensure the following: HV-48-1F006B "SLC Injection" (outboard B), open	HV-48-1F006B is open, red light on, green light off.	
*8. Start the following SLC injection pumps, by holding keylock switches in "RUN" for at least one second before releasing: 1AP208 "SLC INJ PUMP" 1BP208 "SLC INJ PUMP" 1CP208 "SLC INJ PUMP"	SLC Pump A, B, and C switches to RUN. Red light on, green off.	
9. 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.	
10. Acknowledge Alarms	Depress alarm acknowledge pushbutton	
11. Perform the following to ensure operation of SLC injection pumps within parameters.	N/A	N/A
12. 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.	
13. Verify LI-48-1R601, "SLC TANK LEVEL" (LV), lowering at a steady rate.	C603 indication SLC tank level decreasing.	

STEP	STANDARD	SAT/UNSAT
14. Verify lowering reactivity as observed by lowering power on nuclear instrumentation.	Available power indications show power going down.	
15. Ensure the following at 10C602: HV-44-1F001 "RWCU INBOARD ISOLATION" (INBOARD), closed.	HV-44-1F001 closed. Red light off, green light on.	
16. Ensure the following: HV-44-1F004, 'RWCU OUTBOARD ISOLATION" (OUTBOARD), closed	HV-44-1F004 closed. Red light off, green light on.	
17. Observe LI-48-1R601, "SLC Tank Level" (LV) lowering.	C603 indication for SLC tank level going down.	
18. Inform SSV that SLC is injecting.	SSV notified that SLC is injecting.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to manually initiate the Unit 1 SLC System, per S48.1.B

Task Condition(s):

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

QUESTIONS for JPM Questions

10/17/95

21:34:04

PAGE 1

NO.: 2302 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 295037EA1.04 TAXONOMY NO.:
LESSON PLANS: LOT0315.03

CATEGORY: NR1 NRC
SYSTEMS: RRCS

QUESTION :

*** SRO ONLY ***

What conditions are required on Unit 2 for the RRCS system to automatically initiate Standby Liquid Control (SLC)?

ANSWER :

High reactor pressure of 1149 psig
and
118 second time delay
and
A is not downscale

OR

Low reactor level of -38"
and
118 second time delay
and
APRMs not downscale

REFERENCES: LOT-0315.03 page 11
GP-18 Attachment 3

NO.: 2303 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 211000K6.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.03

CATEGORY: NRC NR1
SYSTEMS: SLC

QUESTION :

*** SRO ONLY ***

T-111 is being executed. Standby Liquid Control (SLC) was manually started at minus 20 (-20) inches. A LOCA signal has just occurred.

What are the immediate and long term effects on SLC injection?

ANSWER :

8 pumps will trip
pumps must be manually restarted to inject into the vessel

REFERENCE: SE-10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: REACTOR WATER CLEANUP FAST STARTUP

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

- Reset simulator to any power IC.
- Shutdown RWCU by turning pumps off, close the F001.
- Reset annunciators on 112 cleanup panel.
- Remove the RWCU F/Ds from service on page CU1, remote functions 91 and 92.
- Depressurize RWCU to $\approx 800\#$ by cracking open HV44-1F034 (Dump to Cond) and HC44-1R606 (Dump) until pressure on PI44-1R600 indicates 850#, then close HV44-1F034 and HC44-1R606.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.5/3.5 Generic #9

System Number:

204000

References:

S44.7.A, Reactor Water Cleanup Fast Startup

Task Standards:

The RWCU system in service with 2 pumps running, 2 demins in service and the demin bypass closed.

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S44.7.A	S44.7.A, Rev. 15 obtained.	
2. All Group III isolation signals cleared and reset per GP-8.	N/A	N/A
3. Ensure RECW is available.	N/A	N/A
4. No portion of RWCU system suspected of being drained. CUE: If asked by operator report as the SSV that "No portion of the RWCU system is suspected of being drained."	N/A	N/A
5. Ensure the following valves closed.	N/A	N/A
a. HV-C-*F033 via HC-44-*R606	- HC-44-1R606, Dump Flow Controller Position meter red pointer at zero.	
b. HV-44-*F034	- HV-44-1F034, Dump to Condenser, green light on, red light off.	
c. HV-44-*F035	- HV-44-1F035, Dump to Drain, green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
6. If *A(B) Filter Demins Hold Pump not running or Hold Pump Discharge not open then isolate *A(B) F/D at *OC092 CUE: When asked by operator report as the Radwaste operator that "Both Unit RWCU F/D's hold pumps are running and hold pump discharge valves are open".	Direct Radwaste operator to check the hold pumps and hold pump discharge valve.	
7. If *A(B) F/D isolated then dial FRC-45-*74A(B) demand setting to zero gpm and verify controller output is full left. CUE: If asked by operator, report as the Radwaste operator that "Unit 1 RWCU F/Ds are not isolated.	Direct Radwaste operator to check if F/Ds isolated.	

STEP	STANDARD	SAT/UNSAT
8. Performing the following to place any in-service RWCU F/D in "HOLD" mode. CUE: Report as Radwaste operator that: "S44.7.A step 4.4 is complete". If the operator requests step by step verification then report as Radwaste operator the following: - Both F/D hold pumps are running and hold pump discharge valves are open. - FRC-45-1-74A and B are in AUTO. - FRC-45-1-74A and B controller red arrow for demand is set to zero, black arrow for output is full left. - HV-45-1-66A and B Vessel Outlet Valve E_A and E_B are closed. - The HOLD START buttons were depressed and the HOLD lights are on.	Direct Radwaste operator to perform section 4.4 of S44.7.A	
9. Ensure alignment of the following valves as indicated at *0C602:	N/A	N/A
a. HV-44-*F034 closed.	HV-44-1F034 Dump to Cond green light on, red light off.	
b. HV-44-*F035 closed.	HV-44-1F035 Dump to Drain green light on, red light off.	
c. HC-44-*R606 closed.	HC-44-1R606 Dump Flow Controller position meter red pointer at zero.	
d. HV-44-*F044 closed.	HV-44-1F044 Demin Bypass green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
e. HV-44-*F040 closed.	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to CLOSE, green light on, red light off.	
f. HV-44-*F039 open.	HV-44-1F039 Return Isolation green light off, red light on.	
g. HV-44-*F042 open.	HV-44-1F042 Return green light off, red light on.	
h. HV-44-*F100 open.	HV-44-1F100 Bottom Head Drain green light off, red light on.	
i. HV-44-*F105 open.	HV-44-1F105 Inlet Flow green light off, red light on.	
10. Crack open HV-44-*F040	HV-44-1F040 Cleanup Inlet Handswitch momentarily placed to "OPEN" then "PULL TO STOP". Green light on, red light on.	
*11. Slowly jog open HV-44-*F001 and HV-44-*F004 as applicable to pressurize system to Reactor pressure.	HV-44-1F001 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open indicated by green light off, red light on.	
*12. Slowly jog open HV-44-*F040.	HV-44-1F040 Cleanup Inlet handswitch momentarily placed to "OPEN" then "PULL TO STOP". Repeat this sequence until the valve is open as indicated by green light off, red light on.	

STEP	STANDARD	SAT/UNSAT
13. If F/Ds are not isolated then depress Filter "START" for both RWCU F/D's as applicable and verify the following: - Red HOLD lights not lit - Red FILTER lights lit - FRC-45-*74A(B) in "AUTO" - HV-45-*66A(B) closed CUE: Report as Radwaste operator that: "After the Filter "START" button was depressed, the red "HOLD" lights went out, the red "FILTER" lights are lit. FRC-45-1-74A and B are in AUTO and HV-45-1-66A and B are closed".	Radwaste operator directed to depress filter "START" for both F/Ds, or directed to perform step 4.7.1 of S44.7.A.	
14. Inform E.O. of 1A RWCU pump start.	E.O notified by phone/page that the 1A RWCU pump will be started.	
*15. Hold *A(B,C) P221 pump hand-switch in "START" for one of the previously operating RWCU Recirc Pumps at *OC602.	Place and hold 1A RWCU pump handswitch in start position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 91 on page CUI for the next step.		
16. If *A(B) is in FILTER mode, then adjust FRC-45-*74A(B) at *OC092 to previous flow rate by dialing up demand setting red arrow to desired flow rate and maintain system flow within pump limits. CUE: If operator asks Radwaste operator what previous flow rate was, then say: "Previous flow rate was 170 gpm".	Radwaste operator direct to adjust FRC-45-1-74A to previous flow rate or directed to perform step 4.7.3 of S44.7.A.	
17. If both F/D's isolated then throttle open HV-44-*F044 as necessary to control flow within pump limits.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
18. Release *A(B,C) P221 pump handswitch.	1A RWCU pump handswitch released.	
19. Make PA announcement stating 1B RWCU pump start.	PA announcement made stating the 1B RWCU pump will be started.	
*20. When RWCU system flow has stabilized as indicated by FI-044-*R609, then start the other previously operating RWCU recirc pump by placing *A(B,C) P221 pump handswitch in "START".	Place 1B RWCU Pump handswitch momentarily in "START" position, green light off, red light on.	
NOTE: Simulator Instructor will have to place F/D in service using remote function 92 on page CUI for the next step.		
*21. If second F/D is in FILTER mode, then adjust FRC-45-*74A(B) to match operating F/D flow rate.	Radwaste operator directed to adjust FRC-45-1-74B to match operating F/D flow rate.	
22. If second F/D is isolated then throttle open HV-44-*F044 to control system flow within pump limits.	N/A	N/A
23. Maintain system flow within pump limits.	FI44-1R609 indicates less than 340 gpm.	
24. If both F/Ds remain isolated, then place RWCU in blowdown per S44.4.A.	N/A	N/A
25. If bottom head drain flow as indicated on FI-44-*R610 is 0 gpm, then refer to S44.1.J and establish bottom head drain flow.	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

The SSV has directed you to restart Unit 1 RWCU with 2 pumps in service.

Tasks Conditions:

1. RWCU isolated 20 minutes ago.
2. 1A and 1B RWCU pumps were in service.
3. A Group III isolation occurred due to a temporary loss of 1AY160. Power has been restored and the Group III isolation is reset.

QUESTIONS for JPM Questions

10/17/95
21:34:10

PAGE 1

NO.: 2330 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 6 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 204000A1.07 TAXONOMY NO.:
LESSON PLANS: LOT0110.07

CATEGORY: NRC NR1
SYSTEMS: RWCU

QUESTION :

*** SRO ONLY ***

An operator aligns RWCU to dump to the condenser and begins opening the HV-C-44-1F033 (Dump To Cond) with the controller. The red pointer on the 0-100% scale, at the bottom of the HC-44-1R606 controller, rapidly increases to maximum and alarm 112 CLEANUP G-1, RWCU Discharge Hi/Lo Press, annunciates. RWCU Dump Flow also increases rapidly on FI-44-1R602.

Describe the response of the HV-C-44-1F033, Dump To Cond, valve.

ANSWER :
HV-C-44-1F033 will close.

P&ID M-44
ARC 112 CLEANUP

Q230013S

NO.: 2331 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING
TASK NUMBER: SKA NO.: 204000A2.13 TAXONOMY NO.:
LESSON PLANS: LOT0180.02
:
CATEGORY: NRC NR1
SYSTEMS: NSSSS

QUESTION :

*** SRO ONLY ***

During normal operation of RWCU with two pumps and two demins in service, a DIV I STEAM LEAK DETECTION HI TEMP/TROUBLE alarm annunciates due to failure of TE-44-1N023A.

What is the effect on the RWCU system?

ANSWER :

1. 4-1F001 will isolate (close).
RWCU pumps will trip.
Demin hold pumps will start

REFERENCES: P&ID M-25
ARC 107 F-5

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Secure Unit 1 HPCI following Full Flow Functional Test

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset Simulator to any 100% power IC.
2. Place HPCI in full flow test, CST-to-CST, with flow controller in AUTO set at 5600 gpm.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating(s): System Number(s):

Generic #13	4.2/4.0	206000
A4.12	4.0/3.9	206000

References:

S55.1.D, HPCI SYSTEM FULL FLOW FUNCTIONAL TEST

Task Standard(s):

HPCI shutdown and restored to the auto/standby condition.

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S55.1.D.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S55.1.D. (Cue: If asked, respond, "I want you to obtain a copy of S55.1.D".)	Copy of S55.1.D, Rev.18 obtained.	
*2. Ensure the flow controller in "Manual".	FIC-55-1R600 in manual.	
*3. When test is complete THEN lower FIC-55-*R600 until speed as indicated on SI-56-*61 is nominal 2,250 rpm.	Lower speed using FIC-55-1R600 by depressing the "CLOSE" pushbutton in MANUAL until SI-56-161 indicates 2200 to 2300 RPM.	
4. IF HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), was opened to establish flow path to Suppression Pool, THEN close HV-55-*F071, TEST OUTBOARD.	N/A	N/A
*5. Close HV-55-*F008, "HPCI Test Loop Shutoff" (TEST ISOL).	Momentarily rotate HV-55-1F008 control switch to close. GREEN light ON, RED light OFF.	
*6. Simultaneously depress and hold Turbine Trip (TURBINE TRIP) pushbutton,	Depress and hold Turbine Trip pushbutton.	
*6a. <u>AND</u> close HV-55-*F001, "HPCI Steam Supply" (INLET).	Momentarily place HV-55-1F001 control switch to close. GREEN light ON, RED light OFF.	

STEP	STANDARD	SAT/UNSAT
7. Acknowledge HPCI LOW FLOW and HPCI OUT OF SERVICE alarm at 117 HPCI alarm panel.	Acknowledge HPCI Low Flow and HPCI Out of Service alarm at 10C655.	
*8. When HV-55-*F001, INLET, is fully closed, Then RELEASE TURBINE TRIP pushbuttton.	Release TURBINE TRIP pushbutton when HV-55-1F001 GREEN light ON, RED light OFF	
9. When SI-56-*61, "HPCI Turbine Speed" (S), is less than 1,200 rpm, Then verify *OP213, "Auxiliary Oil Pump" (AUX OIL PUMP) is running.	When SI-56-161 is between 0 and 1,200 rpm, 10P213 AUX OIL PUMP RED light ON, GREEN light OFF.	
10. Verify FV-56-*12, "HPCI Turbine Stop Valve" (STOP), open and monitor position while *OP213, AUX OIL PUMP, is running.	FV-56-112 (STOP), RED light ON, GREEN light OFF.	
11. Verify HV-55-*F012, "HPCI Pump Minimum Flow" MIN FLOW, closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF.	
12. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
13. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
14. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
15. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
16. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	
17. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
18. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
*19. When 15 minutes has elapsed, then stop *OP216, VACUUM PUMP. (Cue: Inform operator that "15 minutes have elapsed since the turbine was tripped.")	Momentarily place 10P216 control switch to OFF. GREEN light is ON, RED light is OFF.	
*19.a Stop *OP213, AUX OIL PUMP.	Momentarily place the 10P213 control switch to STOP and GREEN light is ON and RED light is OFF.	
*20. When FV-56-*12, STOP, closes then verify HV-56-*F059, "HPCI Lube Oil Cooling Water Valve" (COOLING WATER), closes.	HV-56-1F059 closes by ensuring GREEN light is ON, RED light is OFF.	
21. If any abnormalities observed with FV-56-*12, "Turbine Stop Valve" (STOP), or *OP213, AUX OIL PUMP, then notify Shift Supervision.	N/A	N/A
22. When Suppression Pool Cooling Mode of RHR is no longer required, then refer to S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control, and secure Suppression Pool Cooling Mode of RHR.	N/A	N/A
23. Ensure *OP213, AUX OIL PUMP, off in "AUTO."	Check 10P213 control switch aligned to the AUTO position.	

STEP	STANDARD	SAT/UNSAT
24. Ensure FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL) is set at 5600 gpm in "AUTO".	Check FIC-55-1R600 is set at 5600 gpm and M/A select switch is positioned to "A".	
25. Ensure HV-55-*F002, "HPCI Steam Line Inboard Isolation" (INBOARD), is open.	Check HV-55-1F002 open by RED light ON, GREEN light OFF.	
26. Ensure HV-55-*F003, "HPCI Steam Line Outboard Isolation" (OUTBOARD) is open.	Check HV-55-1F003 open by RED light ON, GREEN light OFF.	
27. Ensure HV-55-*F100 HPCI Steam Line Warmup Bypass" (WARMUP BYPASS) is closed.	Check HV-55-1F100 closed by GREEN light ON, RED light OFF.	
28. Ensure HV-55-*F001 "HPCI Steam Supply" (INLET) is closed.	Check HV-55-1F001 closed by GREEN light ON, RED light OFF.	
29. Ensure HV-56-*F059, "HPCI Lube Oil Cooling Water Supply" (COOLING WATER), is closed.	Check HV-55-1F059 closed by GREEN light ON, RED light OFF.	
30. Ensure HV-55-*F007, "HPCI Pump Discharge Outboard Isolation" (DISCHARGE) is open.	Check HV-55-1F007 open by RED light ON, GREEN light OFF.	
31. Ensure HV-55-*F006, "HPCI Pump Injection" (INJECTION), is closed.	Check HV-55-1F006 closed by GREEN light ON, RED light off.	
32. Ensure HV-55-*F105, HPCI Pump Injection" (TO MAIN FEED A), is closed.	Check HV-55-1F105 closed by GREEN light ON, RED light OFF.	
33. Ensure HV-55-*F012, "HPCI Pump Minimum Flow" (MIN FLOW) is closed.	Check HV-55-1F012 closed by GREEN light ON, RED light OFF	
34. Ensure HV-55-*F008, "HPCI TEST Loop Shutoff (TEST ISOL), is closed.	Check HV-55-1F008 closed by GREEN light ON, RED light OFF.	
35. Ensure HV-55-*F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN), is closed.	Check HV-55-1F011 closed by GREEN light ON, RED light OFF.	

STEP	STANDARD	SAT/UNSAT
36. Ensure HV-55-*F041, "HPCI Pump Suction from Suppression Pool" (SUPP POOL SUCTION) is closed.	Check HV-55-1F041 closed by GREEN light ON, RED light OFF.	
37. Ensure HV-55-*F042 "HPCI Pump Suction from Suppression Pool" (SUPP POOL) is closed.	Check HV-55-1F042 closed by GREEN light ON, RED light OFF.	
38. Ensure HV-55-*F004, "HPCI Pump Suction from CST" (COND TK SUCTION) is open.	Check HV-55-1F004 open by verifying RED light ON, GREEN light OFF.	
39. Ensure HV-55-*F072, "HPCI Turbine Exhaust" (EXHAUST), is open.	Check HV-55-1F072 open by RED light ON, GREEN light OFF.	
40. Ensure HV-55-*F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD), is closed.	Check HV-55-1F071 closed by GREEN light ON, RED light OFF.	
41. Ensure HV-55-*F093, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (OUTBOARD), is open.	Check HV-55-1F093 open by RED light ON, GREEN light OFF.	
42. Ensure HV-55-*F095, "HPCI Turbine Exhaust Line Vacuum Breaker Isolation" (INBOARD), is open.	Check HV-55-1F095 open by RED light ON, GREEN light OFF.	
43. Ensure HV-55-*F054, "HPCI Steam Line Drain Steam Trap Bypass" (TRAP BYPASS), is closed.	Check HV-55-1F054 closed by GREEN light ON, RED light OFF.	
44. Ensure HV-55-*F028, "HPCI Steam Drain Line Isolation Valve to Main Cond" (TRAP INBOARD), is open.	Check HV-55-1F028 open by RED light ON, GREEN light OFF.	
45. Ensure HV-55-*F029, "HPCI Steam Drain Line Isolation" (OUTBOARD TO COND), to open.	Check HV-55-1F029 open by RED light ON, GREEN light OFF.	
46. Ensure HV-56-*F025, "HPCI Barometric Condenser Drain Isolation" (INBOARD TO RADWASTE) is open.	Check HV-56-1F025 open by RED light ON, GREEN light OFF.	

STEP	STANDARD	SAT/UNSAT
47. Ensure HV-56-*F026, "HPCI Barometric Condenser Drain Isolation" (DRAIN OUTBOARD), is closed.	Check HV-56-1F026 closed by GREEN light ON, RED light OFF.	
48. Ensure *OP216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP), is OFF and in "AUTO".	Check 10P216 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
49. Ensure *OP215, "Barometric Condenser Condensate Pump" (CONDENSATE PUMP), is OFF and in "AUTO".	Check 10P215 is off by GREEN light ON, RED light OFF and control switch is aligned to the AUTO position.	
50. Clear all associated HPCI annunciators at *17 HPCI.	Depress annunciator reset pushbutton on panel 10C655 and verify no annunciator windows are illuminated at 117 HPCI panel.	
51. Clear all yellow HPCI System Status Lights.	Verify all HPCI system status lights are clear.	

Comments:

Note: Any rating of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to shutdown Unit 1 HPCI and lineup for automatic operation.

Task Conditions:

1. U/1 is at 100% power
2. HPCI is operating in full flow test per S.55.1.D.

QUESTIONS for JPM Questions

10/17/95
21:34:24

PAGE 1

NO.: 2372 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A2.13 TAXONOMY NO.:
LESSON PLANS: LOT0680.05

CATEGORY: NRC
SYSTEMS: ESW RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 is at 87% power with RCIC pump, valve and flow test in progress. Describe the effect on RCIC room cooling water if the OC ESW Pump trips and HV11-078 (UNIT 2 SERVICE WATER RETURN) does NOT reposition as designed. (assume NO other ESW Pumps are running)?

ANSWER :

RCIC room cooling is lost due to no return path

REFERENCE: LOT0680.05 PP 10,11,12
OPAID SIM-M-0012

NO.: 2299 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000A1.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.07

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

Unit 2 has experienced a Group 1 Isolation. RCIC was started manually using the arm and depress pushbutton and is injecting at rated flow into the reactor vessel. No further operator action is taken and reactor level reaches +54".

What automatic actions will occur with respect to the RCIC System?

ANSWER :

The RCIC Steam Supply valve (HV50-1F045) will close. When the F045 closes, the RCIC Injection Valve (HV50-1F013) and RCIC Min Flow (HV50-1F019) close.

REFERENCES: LOT-0380 pages 12 and 13
S49.1.C section 4.0
Q250020

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: PLACE RHR LOOP A IN SUPPRESSION POOL COOLING

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Place RHRSW Loop A in service to RHR Heat Exchanger 1A

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.7/3.6 A1.08

System Number:

K/A 219000

References:

S51.8.A, Suppression Pool Cooling Operation and Level Control

Task Standards:

RHR Loop 1A in Suppression Pool Cooling with system flow of 8000-8500 gpm through the RHR Heat Exchanger.

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain S51.8.A	S51.8.A, Rev.19 obtained.	
2. RHR Service Water available.	N/A	N/A
3. RHR lined up per S51.1.A, Set up of RHR System for Automatic Operation in LPCI mode. (CUE: If asked say, "RHR Loop A is aligned for automatic LPCI injection.	N/A	N/A
4. Sufficient capacity in Equipment Drain Collection Tank to receive inventory from Suppression Pool for lowering Suppression Pool level if necessary.	N/A	N/A
5. START selected RHR Service Water loop per S12.1.A, RHR Service Water System Startup.	N/A	N/A
6. ENSURE HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION) closed.	HV-51-1F006A, SUCTION, is closed by Green light on, red off.	
7. Ensure HV-51-*F047A(B) INLET is open.	HV-51-1F047A INLET is open Red light on, green off.	
8. Ensure HV-51-*F003A(B) OUTLET is open.	HV-51-1F003A OUTLET is open. Red light on, green off.	
9. Ensure HV-51-*F004A(B) SUCTION is open.	HV-51-1F004A SUCTION is open. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
10. Make PA announcement stating RHR Pump A(B) start.	PA announcement made stating RHR Pump A start.	
*11. START *A(B)P202, RHR Pump (PUMP).	RHR Pump A started by momentarily placing switch to START. Red light on, green off.	
12. Acknowledge annunciator.	Acknowledge annunciator 110 STEAM window B5.	
13. IF TRIP procedure requires returning to Suppression Pool Cooling during LOCA condition <u>THEN</u> CLOSE HV-51-*F017A(B) OUTBOARD, to satisfy valve interlocks.	N/A	N/A
*14. OPEN HV-51-*F024A(B), "RHR Pump Full Flow Test Return" (SUPP POOL CLG).	Throttle open HV-51-1F024A SUPP POOL CLG, by momentarily placing switch to OPEN. Place switch to PTS when FI-51-1R603A indicates around 8000 to 8500 gpm.	
*15. MAINTAIN flow indicated on FI-51-*R603A(B), "RHR Loop Flow" between 8000 to 8500 gpm.	FI-51-1R603A indicates between 8000 to 8500 gpm. HV-51-1F024A throttled to achieve flow rate.	
16. IF greater than 8500 gpm required to maximize cooling, <u>THEN</u> MINIMIZE amount of time to reduce amount of water added to Suppression Pool. (CUE: If asked say, "I do not desire suppression pool cooling to be maximized.")	N/A	N/A
*17. CLOSE HV-C-51-*F048A(B), HEAT EXCH BYPASS.	Close HV-C-51-1F048A HEAT EXCH BYPASS, by momentarily placing switch to CLOSE. Green light on, red off.	
18. MONITOR Suppression Pool temperature on SPOTMOS <u>OR</u> TR-56-*R605 points 15, 16, 17, 18 at *OC614, <u>AND</u> PERFORM the following:	Suppression Pool temperature on SPOTMOS or TR-56-1R605 indicates less than 90°F	

STEP	STANDARD	SAT/UNSAT
18a. MAINTAIN temperature below 90°F.	N/A	N/A
18b. <u>IF</u> Suppression Pool temperature cannot be maintained below 90°F <u>THEN</u> PLACE another RHR loop in service to provide additional cooling as directed by SSV.	N/A	N/A
19. <u>IF</u> *A(B) P202, "RHR Pump", trips <u>AND</u> HV-51-*F024A(B) RHR Pump Full Flow Test Return" (SUPP POOL CLG), is open <u>THEN</u> GO TO Step 4.3	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Directed by Shift Supervisor to place Unit 1 RHR Loop 1A in Suppression Pool Cooling.

Tasks Conditions:

1. All low pressure ECCS is operable.
2. RHR Service Water loop A in service per S12.1.A

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:30

NO.: 2373 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/16/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 203000K4.13 TAXONOMY NO.:
LESSON PLANS: LOT0400.04

CATEGORY: NRC
SYSTEMS: RHRSW RHR

QUESTION :

*** SRO ONLY ***

What design features of the RHRSW System prevents radioactive leakage to the environment?

ANSWER :

- * neat exchangers will isolate on heat exchanger outlet high radiation
- * pumps will trip on return loop high radiation

REFERENCE: LOT0400.04 PP 14,20

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:26

NO.: 2376 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 4 DRAWING:
TASK NUMBER: SKA NO.: 233000K1.02 TAXONOMY NO.:
LESSON PLANS: LOT0370.05

CATEGORY: NRC
SYSTEMS: RHR FPCCU

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCIION 5. The 1B loop of RHR is being placed in the "Fuel Pool Cooling Assist Mode".

What changes must be made to the 1B RHR Pump protective features to allow pump operation in this mode?

VER :

The pump "loss of suction path trip" must be disabled to allow the pump to run with HV51-1F004, HV51-1F008 and HV51-1F009 closed.

REFERENCE: S51.8.G STEP 4.1.9
E-11-1040 SHEET 7

NOTE: SEE K25 relay (pump will now run unless the F006 is shut)

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: TRANSFER HOUSE LOADS TO THE UNIT AUXILIARY TRANSFORMER

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to any power IC.
2. Transfer 11 & 12 busses to offsite.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.6/3.7 A4.04

System Number(s):

262001

References:

S91.6A Transferring House Loads to Unit Auxiliary Transformer, Rev. 8

Task Standard(s):

11 and 12 Unit Auxiliary Buses being supplied by the main Generator.

Initiating Cues:

You are directed by Shift Supervisor to transfer house loads for Unit 1 to the Unit Aux. Transformer.

Task Conditions:

11 and 12 Unit Auxiliary Buses powered from offsite sources.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S91.6.A.	Obtain most recent revision of S91.6.A. (Rev. 8)	
2. Main Generator load greater than or equal to 100 MWe.	N/A	N/A
3. Determine section to perform. Perform the appropriate section as follows: a. Perform Section 4.2 to transfer 11 Aux Bus b. Perform Section 4.3 to transfer 12 Aux Bus. c. Perform Section 4.4 to transfer 21 Aux. Bus. d. Perform Section 4.5 to transfer 22 Aux Bus.	N/A	N/A
*4. Place 225-10113/SS SYNCHRONIZATION SWITCH to "ON".	Insert Synch Switch handle and rotate clockwise to "ON".	
5. Verify incoming voltmeter <u>AND</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS are both approximately 110V.	
6. <u>IF</u> incoming/running voltages differ by greater than 8 volts, <u>THEN</u> adjust startup bus voltage to obtain less than 8 volts difference.	VI-UAS and V/R-UAS voltages are within 8 volts of each other.	
*7. CLOSE <u>and</u> HOLD 252-10113/CS, "AUX FEED"	Take 252-10113/CS and rotate to counterclockwise "STOP" position and hold.	

STEP	STANDARD	SAT/UNSAT
*8. When 252-10113/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10113C/CS.	252-10113C released when Aux. Feed indicates closed. Red light lit, green light out.	
9. Verify 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" OPEN	10/11 and 20/11 feed open. Indicating lights show red light off, green light on.	
10. Acknowledge Alarm 175 GEN 1 F1	Depress alarm acknowledge pushbutton.	
*11. Place 225-10113/SS Synchronization Switch to "OFF".	Rotate Synch Switch handle to counter-clockwise "OFF" position and release.	
12. Ensure 252-10102/CS, "10/11 FEED" <u>AND</u> 252-10106/CS, "20/11 FEED" in "NORMAL AFTER TRIP"	Rotate 252-10102/CS and 252-10106/CS to counter-clockwise and release. Green flag is indicated.	
13. Reset Alarm 125 GEN 1 F-1	Reset Pushbutton depressed.	
14. Place 243-101/CS, "FAST TRANSFER SELECT" TO "10-11"	243-101/CS in "10-11" position.	
*15. Place 225-10213/SS synchronization switch to "ON".	Insert synch switch handle and turn clockwise to "ON" position then release.	
16. Verify incoming voltmeter <u>and</u> running voltmeter read approximately 110V.	V/I-UAS and V/R-UAS voltages are both approximately 110V.	
17. If incoming/running voltages differ by greater than 8 volts, <u>then</u> adjust startup bus voltage to obtain less than 8 volts difference.	V/I-UAS and V/R-UAS voltages are within 8 volts of each other.	
*18. Close <u>and</u> hold 252-10213/CS, "AUX FEED".	Rotate 252-10213/CS clockwise and hold it.	
*19. <u>WHEN</u> 252-10213/CS, "AUX FEED" indicates closed, <u>then</u> release 252-10213/CS.	252-10213/CS released when AUX. FEED Closed.	
20. Acknowledge alarm 125 GEN 1 F-24.	Depress alarm acknowledge pushbutton.	

STEP	STANDARD	SAT/UNSAT
21. Verify 252-10202/CS, "10/12 FEED" <u>and</u> 252-10206/CS, "20/12 FEED" open.	10/12 and 20/12 feed open. Indicating lights show red lights off, green lights lit.	
22. Place 225-10213/SS Synchronization Switch to "Off".	Rotate 225-10213/SS handle counter-clockwise to "OFF" position and release.	
23. Ensure 252-10202/CS, "10/12 FEED" <u>and</u> 252-10206/CS, "20/12 FEED" in "NORMAL AFTER TRIP".	Rotate 252-10202/CS and 252-10206/CS counter-clockwise and release. Green flag is indicated.	
24. Place 243-102/CS, "FAST TRANSFER SELECT" to "20-12"	242-102/CS in "20-12" position.	
25. Reset alarms	Alarm reset pushbutton depressed.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to transfer house loads for Unit 1 to the Unit Aux Transformer.

Task Condition(s):

11 and 12 Unit Auxiliary Buses powered from offsite sources.

NO.: 2334 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
 DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
 TASK NUMBER: SKA NO.: 262001KA.07 TAXONOMY NO.:
 LESSON PLANS: LOT0650.04

CATEGORY: NRC NR1
 SYSTEMS: 480V 480VAC

QUESTION :

*** SRO ONLY ***

Describe the interlocks between a Load Center Breaker and the Load Center Cross-tie Breaker.

ANSWER :

If both supply breakers are closed, the tie breaker will not close.
 If one supply and the tie breaker are closed, closing the second supply breaker will trip the tie breaker.

REFERENCES: E-157, E-158
 LOT- 0650 page 13

Q290025

QUESTIONS for JPM Questions

10/17/95
21:34:35

PAGE 1

NO.: 2335 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 245000K6.05 TAXONOMY NO.:
LESSON PLANS: LOT0630.02

CATEGORY: NRC NR1
SYSTEMS: SCW

QUESTION :

*** SRO ONLY ***

What are the effects of both Stator Cooling Water pumps tripping during plant startup at 40% power?

ANSWER :

Stator Cooling Water Runback will be initiated.
Turbine load will be reduced to 22%.
Pressure valves will open to maintain pressure at 920#.

REFERENCES: ON-114
LOT-0630 page 16

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: POWER REDUCTION USING RMSI WITH AN APRM FAILURE AND TWO RODS SCRAMMING
(ALTERNATE PATH)

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Reset the simulator to IC-17
During the powerreduction, time in the following malfunctions. These
malfunctions must all come in simultaneously.

1. Malfunction 20, A at 125% APRM Failure
2. Malfunction 16, F Control Rod 06-35 Scrams
3. Malfunction 17, F Control rod 30-31 Scrams

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.8/3.8 A4.04
3.7/3.8 A1.01
3.5/3.6 A2.04

System Number:

202002
201003
201003

General References:

1. RE-201, Reactor Maneuvering Shutdown Instructions
2. ON-104, Control Rods Problems

Task Standards:

Reduce power per the Reactor Maneuvering Shutdown Instructions, recognize that two rods scrambled, and place the reactor mode switch in shutdown.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain RE-201	RMSI Notebook obtained.	
2. Review cautions on page 2	N/A	N/A
*3. Reduce core flow as required to reduce power to 90%. Ensure FLLLP does not exceed 1.0 or Core Flow below 55 MLB/hr.	By depressing the CLOSE pushbutton on each Recirculation Pump M/A Station, reduce power to 90%.	
4. If Core Flow is less than 55 MLB/hr then fully insert the rods in the following core maps checked "Rods Required for Stability Rod Line." Otherwise fully insert rods as needed to reduce power and maintain a symmetric rod pattern.	N/A	N/A
*5. Select control rod 14-23	Control rod 14-23 select light lit	

STEP	STANDARD	SAT/UNSAT
*6. Fully insert control rod 14-23 NOTE: Insert malfunctions to occur in one minute	Control rod 14-23 at position 00.	
*7. Select control rod 46-23	Control rod 46-23 select light lit	
*8. Fully insert control rod 46-23	Control rod 46-23 at position 00	
NOTE: INSERT MALFUNCTIONS		
9. Acknowledge annunciators and determine 2 control rods have scrambled (Cue: If SSV informed 2 rods have scrambled say "I want you to handle the situation") NOTE: Step 10 may be marked N/A if mode switch placed to SHUTDOWN and ON-104 not referenced	Annunciators acknowledged	
10. Enter ON-104, Control Rod Problems	ON-104 entered	
*11. Place Reactor Mode Switch to SHUTDOWN (Cue: "You can stop here, we have met the termination criteria for the JPM")	Reactor Mode Switch in SHUTDOWN position	

Comments:

JPM Overall Rating: _____
SAT/UNSAT

Note: A JPM overall rating of UNSAT shall be given if any critical element is graded as UNSAT.

Initiating Cues:

You are directed by Shift Supervision to reduce reactor power to 80%, using the Reactor Maneuvering Shutdown Instructions.

Tasks Conditions:

1. The reactor is at 100% power, with all equipment operable.
2. Reactor Engineering has requested a power reduction to 80% using the Reactor Maneuvering Shutdown Instructions.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:37

NO.: 2267 REV.: 1 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 214000A2.04 TAXONOMY NO.:
LESSON PLANS: LOT0060.05
:
CATEGORY: NRC NR1
SYSTEMS: CRDM

QUESTION :

*** SRO ONLY ***

A reactor scram has occurred on Unit 1. Power has been lost to the full core display. What additional methods are available for determining whether all control rods are fully inserted?

ANSWER :

1. Four rod display indicates 00 for selected control rods
2. Process computer indicates green highlighting on all rods and 00 on OD-7 Option 2 printout.
3. Rod Drive Control Cabinet in Aux Equip Room indication LED labeled RODS NOT FULL IN is not lit.
4. ERFDS CRITICAL PLANT VARIABLES screen indicates SCRAM- RODS IN

Reference: LOT-0060, pp.10
GP-11, Appendix I, Section 3.0

Q310004

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:40

NO.: 2304 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 212000K1.10 TAXONOMY NO.:
LESSON PLANS: LOT0300.03
CATEGORY: NR1 NRC
SYSTEMS: RPS

QUESTION :

*** SRO ONLY ***

Describe the Main Turbine related automatic scram signals. Include setpoints, bypasses and logic arrangements in your description.

ANSWER :

1. Turbine Stop Valve Closure - turbine stop valves $\leq$ 5% closed; 3 out of 4 logic; auto bypassed if turbine first stage pressure is $\leq$ 30%
2. Turbine Control Valve Fast Closure - as sensed by RETS Fluid pressure $\geq$ 500 psig; 1 out of 2 twice logic; auto bypassed if turbine first stage pressure is $\leq$ 30%

References: LOT-0300 pages 9 and 10
Q320004
Tech Spec Bases LSSS

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: SCRAM RESET (Alternate Path)

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Transfer house loads
Place Reactor Mode Switch in "Shutdown"
Trip Main Turbine
Line up for startup level control
Insert malfunction 028,,B on page RP
Place simulator in freeze when level is above 12.5"

Evaluation Method (Circle One):

☒ Perform

☐ Simulate

Evaluation Location:

☐ Plant

☒ Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.8/3.8 A4.14

System Number:

212000

General References:

1. GP-11, Rev. 11
2. T-99, Rev. 7

Task Standards:

Recognize failure to scram reset and initiate reactor scram manually.

Initiating Cues:

You are directed by Shift Supervisor to perform a Unit 1 Scram reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of GP-11.	GP-11, Rev. 11 obtained.	
2. All half scram <u>AND</u> full scram signals cleared.	No unbypassed scram signal as indicated by Reactor 107, 108	
3. Reactor Mode Switch in shutdown or refuel.	Reactor Mode Switch in shutdown or refuel.	
4. <u>If</u> fuel damage is suspected, <u>THEN</u> request Health Physics to survey scram discharge volume prior to releasing fluid inventory (Ref. 4.8)	N/A	N/A
*5. Place Scram Discharge Volume High Level Bypass keylock switch on *OC603 to BYPASS.	SDV High Level Bypass Switch in Bypass position.	
6. Verify SCRAM DISC VOLUME HI LEVEL SCRAM BYPASSED alarm on *07 REACTOR (C-2).	SDV HI LEVEL SCRAM BYPASSED 107 REACTOR (C-2) illuminated.	
7. Ensure RPIS INOPERATIVE clear on *08 REACTOR (E-5).	RPIS INOPERATIVE 108 Reactor (E-5) not lit.	
8. <u>IF</u> RDCS INOPERATIVE alarm lit on *08 REACTOR (E-4), <u>THEN</u> reset RDCS per S73.0.F.	N/A	N/A
9. <u>IF</u> CRD Full Core Display <u>OR</u> Process Computer indicates <u>not</u> all control rods are fully inserted, <u>THEN</u> perform GP-11 Appendix I using Attachment I.	All rods full in.	

STEP	STANDARD	SAT/UNSAT
10. Reset Alternate Rod Insertion at *OC603: Depress ARI RESET pushbuttons (1A, 1B, 2A, 2B)	ARI Reset pushbuttons 1A, 1B, 2A, 2B depressed.	
*11. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*12. Verify the eight (8) scram group white lights are on for Scram System A <u>AND</u> Scram System B on *OC603.	4 lights for Scram System A did not illuminate.	
13. <u>IF NOT</u> on after initial reset, <u>THEN</u> verify proper mode switch position <u>AND</u> repeat step 3.8 one time.	Mode switch in "shutdown".	N/A
14. Reset Reactor Protection System at *OC603 Place Scram Reset switch to GP 1/4. Place Scram Reset switch to GP 2/3.	RPS Reset switch taken to GP 1/4 and 2/3 positions.	
*15. <u>IF NOT</u> on after second reset attempt, <u>THEN</u> insert a full scram signal via manual scram pushbuttons.	Channel CHA1 or CHA2, and CHB1 or CHB2 manual scram collars turned and pushbuttons depressed.	
16. Verify scram discharge volume vent/drain valves close	Vent: Inboard (XV47-1F010), Outboard (XV47-1F180), GREEN light ON, RED light OFF Drain: Inboard (XV47-1F011), Outboard (XV47-1F111), GREEN light ON, RED light OFF	

STEP	STANDARD	SAT/UNSAT
17. Enter T-100 <u>AND</u> exit this procedure. CUE: This task is terminated when the trainee determines that the procedure can not be accomplished and the SSV is informed. Then say, "You can stop here, you have met the termination criteria for this JPM".		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Shift Supervision directs you to perform a Unit 1 Scram Reset.

Tasks Conditions:

1. RPS deenergized
2. Plant stabilized in OPCon 3 with RPV level between 12.5 - 54", T-99 is in progress.
3. All scram valves open, SDV vent and drain valves closed.
4. No indications of fuel damage
5. Normal electrical distribution.

QUESTIONS for JPM Questions

10/17/95
21:34:50

PAGE 1

NO.: 2306 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 4 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 212000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0300.14

CATEGORY: NRC NR1
SYSTEMS: RPS TS

QUESTION :

*** SRO ONLY ***

Unit 2 is at 8% power and all procedural requirements for placing the Reactor Mode Switch to RUN have been satisfied. The RO attempts to place the Reactor Mode Switch in RUN but the switch will not move from the STARTUP position. All subsequent attempts to move the Reactor Mode Switch fail. What actions will you take?

ANSWER :

1. Trip one RPS trip system in the tripped condition within one hour and be in at least HOT SHUTDOWN within the next 12 hours.

REFERENCES: T.S. 3.3.1

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:48

NO.: 2307 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 263000K3.03 TAXONOMY NO.:
LESSON PLANS: LOT0690.02

CATEGORY: NR1 NRC
SYSTEMS: RPS DC

QUESTION :

*** SRO ONLY ***

What effect will a loss of Division II DC have on the RPS inverters?

ANSWER :

The normal supply to the 1B RPS UPS Static Inverter will be lost and it will automatically transfer to its primary alternate supply the TSC Inverter.

REFERENCES: LOT-0690 page 10

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Response to SGTS Filter High Temperature

Task performed By: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

System Number(s):

3.7/3.5 Generic #13

26100

References:

S76.7.B "SGTS CHARCOAL FILTER HIGH TEMPERATURE RESPONSE"
ARCs 002 H4, H5 (B SGTS FILTER HI AND HI-HI TEMP)

Task Standard(s):

Affected filter isolated
Fire suppression initiated to affected filter
Fire suppression secured when fire is out

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "B" SGTS filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTS Filters are in service. Annunciators 002 H4 and H5 have alarmed.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain procedure S76.7.B "SGTS FILTER HIGH TEMP RESPONSE." (Cue: If asked say, "SBGT B temperature is 550°F and rising slowly".)	Procedure located using ARC or other means, and copy obtained of S76.7.B, Rev. 9	
2. Notify SSVN and HP of SGTS Filter Status immediately.	* Inform SSVN and HP that a possible fire exists in "B" SGTS filter.	
3. At OOC681 place unaffected SGTS Filter Isolation HS-76-013A(B) in OPEN to ensure filter flowpath. (Cue: HS-76-013A is in OPEN)	N/A	N/A
*4. Place affected SGTS Filter Isolation HS-76- 013A(B) to CLOSE to isolate filter train. (Cue: HS-76-013B is in CLOSE)	Place HS-76-013B in CLOSE.	
5. Verify affected SGTS filter train is isolated by ensuring HV-76-012A(B) and HV- 76-011A(B) CLOSED. (Cue: Red lamps out, green lamps lit.)	HV-76-012B and HV-76-011B closed by position indication on OOC681. Red lamps out, green lamps lit.	

STEP	STANDARD	SAT/UNSAT
6. Monitor affected SGTS charcoal temp on TI-76-010A(B) (Cue: Use pen to indicate 575°F and slowly rising)	Monitor TI-76-010B on 00C681	
7. If temperature approaches 550°F, then go to section 8.3.	Proceed to section 8.3 to initiate deluge.	
8. At 00C681 ensure unaffected SGTS filter train HS-76-013A(B) in OPEN. (Cue: HS-76-013A is in OPEN)	N/A	N/A
9. Ensure affected filter train HS-76-013A(B) IN CLOSE. (Cue: HS-76-013B is in CLOSE)	N/A	N/A
10a. When fire conditions are verified..... (Cue: Use pen to indicate 620°F and rising TI-76-010B)	N/A NOTE-Precautions in procedure state that filter temperature above 550°F indicates ignition temperatures (600°F) being approached, and extinguishing <u>must</u> be initiated.	
b.then obtain SSV permission (to continue) and (Cue: "This is the SSV. Initiate fire suppression to the "B" SGTS filter")	Communicate with SSV. Obtain permission to initiate fire suppression into charcoal bed.	
c.have HP in attendance to assist. (Cue: HP is standing by)	Communicate with HP to have a HP tech in attendance.	

STEP	STANDARD	SAT/UNSAT
*11. Open manual SGTS Filter Spray Head Block Valve 22-0129. (Cue: Valve is unlocked. Handle is rotated such that it is aligned with the pipe.)	Obtain frangible lock key and unlock valve, or omit key and break lock. Fully open valve by rotating handwheel counter clockwise.	
12a. If SGTS charcoal filter OBF169 is affected.... (Cue: None)	N/A	N/A
*b.then manually open Deluge Water Valve 22-0113. (Cue: Handwheel if fully counter clockwise) ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. "B" SGTS filter temperature is 200°F and dropping." ---WAIT 15 SECONDS--- (Cue: "This is the Chief Operator. B SGTS filter temperature is less than 200°F." "From the Shift Supervisor; secure fire suppression to "B" SGTS filter."	Unlock valve or break lock. Fully open valve by rotating handwheel counter clockwise.	
13. When fire or threat of fire has ceased, or LSH-76-013A(B) at 0*C588 SGTS plenum is full, as indicated by WATER LEVEL HIGH RED LIGHT ON, then close the following valves to prevent plenum pressurization:	N/A NOTE: 0A(B)C588 are located on the wall just outside the double doors for the SGTS filter rooms. Red and green lamps are at the bottom of panels.	N/A

STEP	STANDARD	SAT/UNSAT
*13a. 22-0129 (Cue: Handle is rotated such that it is perpendicular to the pipe.)	Close valve 22-0129 Note: Critical step only if 22-0113 is left open in step 13c.	
13b. <u>OAF169 ONLY</u> 22-0112	N/A	N/A
13c. <u>OBF169 ONLY</u> 22-0113 (Cue: Handwheel fully clockwise.)	Close valve 22-0113 Note: Critical step only if 22-0129 was left open from step 13.a	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
 SAT/UNSAT

Initiating Cues:

Shift Supervision has directed you to investigate the High and High-High temperature alarms on "B" SGTS filter.

Task Conditions:

A Reactor Enclosure isolation occurred. Both SGTS Filters are in service. Annunciators 002 H4 and H5 have alarmed.

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:43

NO.: 2265 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 3 DRAWING:
TASK NUMBER: SKA NO.: 286000KA.11 TAXONOMY NO.:
LESSON PLANS: LOT0733.09

CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPGON 1. Unit 2 is in OPGON 5 *. The Unit 2 cooling tower is going to be drained on your shift and is expected to remain drained for two weeks.

What effect will this action have on the fire suppression system and what actions must be taken?

ANSWER :

One of the two required sources of fire water will be inoperable. Place the backup diesel driven fire pump in service per S22.1.H within 7 days.

Reference: T.S. 3.7.6.1
S22.1.H
LOT-0733 pp. 27

Q330228

QUESTIONS for JPM Questions

PAGE 1

10/17/95
21:34:45

NO.: 2266 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 286000A4.05 TAXONOMY NO.:
LESSON PLANS: LOT0733.05

CATEGORY: NRC NR1
SYSTEMS: FP

QUESTION :

*** SRO ONLY ***

What will cause the Motor Driven and Diesel Driven fire pumps to start?

ANSWER :

Motor Driven Fire Pump automatically starts on firemain pressure 100
psig decreasing or manual start from control room or local controller.

Diesel Driven Fire Pump automatically starts on firemain pressure 95
psig decreasing or manual start from control room or local controller.

REFERENCE: ARC 005 FIRE A2, B3
LOT-0733 PP. 9, 10

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Open RCIC Inboard Isolation MOV Using Emergency AC Power

Task Performed by: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle One):

Perform

☒ Simulate

Evaluation Location:

☒ Plant

Simulator

Approximate Completion Time:

20 Minutes

Importance Rating:

3.9/3.5

Generic 9

System Number:

217000

General References:

SE-8-1, Section 2.3.9

Task Standards:

HV-49-*F007 opened using DIV 1 power.

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain SE-8-1	SE-8-1 Rev. 1 obtained.	
2. Open breaker D*34-R-E-13 (Cue: Breaker handle is OPEN)	D*34-R-E-13 OPEN	
3. NOTE: A screwdriver and LV-*00 key are required for the next step.	Screwdriver and LV-*00 key obtained.	
*4. Unlock and open terminal box *OTB49-*F007. (402-R15-253/475-R14-253) (Located next to D*34-R-E)	*OTB49-*F007 unlocked and opened.	
*5. Place 43-CB22313 "Manual Transfer Switch" (located in terminal box *OTB49-*F007) in "EMERGENCY". (Cue: Transfer switch is in EMERGENCY).	Transfer switch 43-CB22313 placed in EMERGENCY.	
*6. Unlock and close breaker D*14-R-C-31 (Cue: Breaker is unlocked. Breaker handle is in CLOSE.)	D*14-R-C-31 unlocked and closed.	

STEP	STANDARD	SAT/UNSAT
7. Place HS-49-*07-2, "RCIC Main Steam Supply Inbrd PCIV" (INBOARD) to "OPEN" at *OC201 (Cue: "This is the Reactor Operator, HS-49-*07-2 has been placed to OPEN."	Direct RO at *OC201 to place HS-49-*07-2 to OPEN.	
8. Ensure (INBOARD) HV-49-*F007 OPENS. (Cue: "This is the Reactor Operator, HV-49-*F007 indicates fully OPEN.")	Communicate with RO to verify HV-49-*F007 OPENS fully.	
9. Lock OPEN breaker D*14-R-C-31. (Cue: Breaker handle is in OPEN, breaker is LOCKED.)	Open D*14-R-C-31 lock breaker OPEN.	
10. Return 43-CB22313 "Manual Transfer Switch" to "NORMAL". (Cue: Transfer Switch is in "NORMAL")	Transfer switch 43-CB22313 placed to NORMAL	
11. (Cue: You have met the termination criteria. You may stop here.)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

Shift Supervision has directed you to coordinate with the Reactor Operator to open HV-49-__F007 using Division 1 AC, per SE-8-1, Section 2.3.9.

Tasks Conditions:

1. The Control Room has been evacuated due to a fire
2. DIV 3 power has been lost.
3. RCIC has failed to start in auto or manual.
4. HV-49-__F007 is suspected to be closed, but position indication is lost.

QUESTIONS for JPM Questions

PAGE 1

10/17/95

21:34:52

NO.: 2297 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K5.06 TAXONOMY NO.:
LESSON PLANS: LOT0380.09

CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What trip signals will result in a closure of the RCIC Turbine
Trip and Throttle Valve?

ANSWER :

- 1) Manual Pushbuttons (Local and MCR)
- 2) High Turbine Exhaust Pressure
- 3) RCIC Pump Low suction pressure
- 4) RCIC Isolation
- 5) Overspeed

References: LOT-0380 page 14
E51-1040, E1 through D33
Q370227

QUESTIONS for JPM Questions

10/17/95
21:34:55

PAGE 1

NO.: 2298 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 10/17/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 2 DRAWING:
TASK NUMBER: SKA NO.: 217000K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0380.13
CATEGORY: NR1 NRC
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

What is the minimum speed at which the RCIC Turbine may be run and why is this limit imposed?

ANSWER :

Operation below 2200 RPM is prohibited. Operation at low speed may cause insufficient lube oil flow to bearings and subsequent damage.

REFERENCES: LOT-0380 page 21
S49.1.D section 3.1
Q380227

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: INSTALL ROD POSITION TEST BOX

Task Performed by: _____ (RO/SRO)

Evaluator: _____

Evaluator Signature: _____

Date: _____

Directions to Simulator Operator:

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating:

3.7 A4.02

System Number:

234000

General References:

1. ST-6-107-630-1, Rev. 23

Task Standards:

Rod Position test box simulated installed at correct location.

Initiating Cues:

The Fuel Handling Director directs you to perform steps 4.5.3 and 4.5.4 of ST-6-107-630-1.

Tasks Conditions:

1. LSRO stationed on the refuel bridge.
2. ST-6-107-630-1 is in progress and has been completed through step 4.5.2.
3. One-rod-out test box is already staged in Aux. Equipment Room.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Request RO to select rod 38-59. (Cue: "Control Rod 38-59 selected.")	Ask Unit 1 RO to select rod 38-59.	
*2. At panel 10C615 (Bay B), Module 3, disconnect four rod group J38-63. (Cue: "Four rod group cannon plug J38-63 is removed.")	Module 3 four rod group J38-63 disconnected.	
3. Place all switches on test box in "DOWN" position. (Cue: End of toggle switches face down.)	Places switches that toggle face downward.	
4. Connect test box cables to connector J38-63 at panel 10C615 (Bay B), Module 3.	Plug aligned with female connector at J38-63.	
5. Position test box switches as follows: a. <u>Rod</u> <u>Cable End</u> <u>Box Switch</u> --- 1, 1 Position Up --- -- (Cue: Cable end 1,1 all switches down.)	Places switches that toggle face downward.	
b. <u>Rod</u> <u>Cable End</u> <u>Box Switch</u> --- 0, 1 Position Up --- -- (Cue: Cable end 0,1 all switches down.)	Places switches that toggle face downward.	

STEP	STANDARD	SAT/UNSAT
c. <u>Rod</u> <u>Cable End</u> <u>Box Switch</u> 38-59 1, 0 Position Up 00 (Cue: Cable end 1,0 switch 00 up, all others down.)	Places Switch 00 <u>UP</u>, all other switches face downward.	
d. <u>Rod</u> <u>Cable End</u> <u>Box Switch</u> 34-59 0, 0 Position Up 00 (Cue: Cable end 0,0 switch 00 up, all others down.)	Places Switch 00 <u>UP</u>, all other switches face downward.	
6. Request R0 to verify on the 4 rod display that indicated position of rods 38-59 and 34-59 is 00. (Cue: Rods 38-59 and 34-59 indicate 00 on 4 rod display.)	Verified rod status with R0.	
7. At panel 10C616 Activity Control No.'s 1 <u>AND</u> 2, verify the following: a. Rods Not Full In, Box F₁ LEDs OFF. (Cue: Activity Control #1 and #2 F₁ LEDs are off.)	At correct panel, verifies #1 Rod Not Full In, Box F₁ LEDs OFF and #2 Rods Not Full In Box F₁ LEDs OFF.	
b. Grapple Load, Box P_G LEDs OFF. (Cue: "Activity Control #1 and #2 P_G LEDs are off.")	At correct panel, verifies #1 Grapple Load Box P_G LED is OFF and #2 Grapple Load Box P_G LED is OFF.	
c. Overcore, Box P_C LEDs are OFF. (Cue: "Activity Control #1 and #2 P_C LEDs are off.")	At correct panel, verifies #1 Overcore Box P_C LED is OFF and #2 Overcore Box P_C LED is OFF.	
NOTE: When FHD notified that the LEDs are OFF, say, "You can stop here, we have met the termination criteria for the JPM."		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

The Fuel Handling Director directs you to perform steps 4.5.3 and 4.5.4 of ST-6-107-630-1.

Tasks Conditions:

1. LSRO stationed on the refuel bridge.
2. ST-6-107-630-1 is in progress and has been completed through step 4.5.2.
3. One-rod-out test box is already staged in Aux. Equipment Room.

NO.: 2233 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/19/95
DIFFICULTY: 2 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000KA.06 TAXONOMY NO.:
LESSON PLANS: LOT0760.14

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Spent fuel pool to reactor cavity gates are improperly removed, causing fuel pool level to drop to 19 feet above the fuel racks. The LSRO recommends restoration of level to a minimum of 22 feet above the racks.

Why did the LSRO recommend this level?

ANSWER :

22 feet is the Tech Spec limit that ensures sufficient water depth to remove 99% of Iodine released from a rupture of an irradiated fuel assembly.

REFERENCE: BASES 3/4.9.9 PP B3/4 9-2

NO.: 2234 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 09/19/95
DIFFICULTY: 3 POINT VALUE: 1.0 RESPONSE TIME: 1 DRAWING:
TASK NUMBER: SKA NO.: 234000A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.07

CATEGORY: NRC
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

During Core Alterations the LSRO reports that while raising an irradiated fuel bundle from the core the "NORMAL UP" limit switch failed to stop upward motion of the main hoist. What, if any, actions are required?

ANSWER :

1. stop Core Alterations, the Refuel Bridge is INOPERABLE per LCO 3/4.9.6.
2. place bundle in a safe condition

REFERENCES: ST-6-107-630-*
S97.0.C
TECH SPEC surveillance requirement 4.9.6.1.d

CATEGORY "C"

INTEGRATED PLANT OPERATIONS

SIMULATOR SCENARIO #1

TRANSIENT AND EVENT CHECKLIST

SCENARIO SET NO.:

Applicant Type	Evolution Type	Number Reqr'd	Scenario Number			
			1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO SRO-I As SRO	Reactivity	1				
	Normal					
	Instrument	1				
	Component	1				
	Major	1				
	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

NOTE: Enter the scenario set number and event numbers for each evolution type.

Simulation Facility: Limerick Unit 1

Scenario No.: 1

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The unit is at 100% power (IC-17). The 114B Load Center is cross-tied and being powered from the 124B LC in accordance with S93.7.A.

Turnover: The unit is at 100% power, MOL. The work on 114B LC transformer is complete and the crew is requested to restore the normal 11 Aux. Bus feed (124B) to the 114B load center.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew is expected to transfer the 114B load center to the 11 Aux. Bus.
2	271,A	C	114B Reactor Area Load Center Fault
3	1544	R	Cry wolf annunciator UNIT ONE ISOPHASE BUS COOLER TROUBLE ALARM (118SERVICES)
4	450	I	HPCI Inadvertent Startup
	449	C	HPCI Turbine Trip
5	020,B 125%	I	B APRM Fails to 125%
6	262,A	M	13.2 KV Unit Auxiliary Bus 11 Fault
	078,B	M	"B" Condensate Pump Trip
	457,B	I	RCIC Flow Controller Failure (R600) (Low)
	458	C	RCIC Turbine Trip
	146,B 146,C	C	"K" SRV Opens (electrical failure) and Sticks Open

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of _____

[illegible]

Event Description: In conjunction with the loss of power to the 114B load center a failure of the iso-phase cooler standby fan to start will occur resulting in the need for the crew to reduce power to maintain bus duct temperatures less than 100°C.

[illegible]

Event Description: When reactor power has been reduced to approximately 90%, HPCI will inadvertently start and inject to the vessel due to a relay failure. The simulator instructor will also place a HPCI turbine trip malfunction in when the PRO isolates HPCI. This malfunction is inserted to prevent HPCI use later, but at the same time allowing the crew to pursue restoring the system for use.

[illegible]

Event Description: As soon as actions are complete for the half scram, the 11 Aux Bus will deenergize coincident with a "B" Condensate Pump trip. The "K" SRV will inadvertently open and stick open when the turbine trips resulting in inventory loss. Attempts by the crew to close the SRV will be ineffective. Condensate and feedwater will not be available, a RCIC flow control failure will occur when it gets an initiation and when the PRO starts to inject with RCIC in the manual mode, RCIC will trip and not be recovered. A HPCI trip signal will prevent use of HPCI for vessel makeup requiring the crew to emergency depressurize when level reaches the TAF.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognize and report loss of condensate and feedwater.
	CRS	Enter T-101 and direct actions as required.
	PRO	Take manual control of RCIC flow controller and attempt to inject, recognize RCIC trip and report failure of RCIC to the CRS.
	PRO	Recognize "K" SRV stuck open and report to CRS.
	CRS	Enter and execute OT-114 for stuck open SRV.
	CRS	Dispatch an EO to pull fuses to the "K" SRV per OT-114. Direct the PRO to place two loops of pool cooling in service.
	CRS	Dispatch personnel to investigate the 11 Aux. Bus and "B" Condensate pump.
	CRS	Direct PRO to cross-tie the 480 VAC load centers except for the 114B.
	PRO	Place two loops of pool cooling in service and cross-tie the 480 VAC load centers per S93.7.A.
	RO	Monitor RPV level and pressure and report values and trends to the CRS.
	CRS	Direct the performance of T-240, inject SLC for makeup and close the MSIVs to conserve inventory.
	RO	When directed, coordinate with the EO to perform T-240 and maximize CRD to the vessel. Start SLC injection to the vessel.
	PRO	When directed, close the MSIVs.
	CRS	Enter and execute T-111. Direct the PRO to inhibit Automatic ADS.
	PRO	When directed, place ADS Inhibit switches to INHIBIT.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
		NOTE: When directed the simulator operator will locally open the discharge to the "B" CRD pump and provide a local CRD discharge pressure of 1100 gpm when asked for T-240. The simulator operator will also pull fuses for the "K" SRV which will extinguish the white solenoid light at the panel but the valve will remain open.
	CRS	Direct actions appropriate for the LOCA signal. Direct the RO to perform SE-10 and to restart injection systems. The PRO should be directed to check ECCS systems.
	RO	When the LOCA signal occurs, perform SE-10 actions, restore instrument bus power, and dispatch an operator to reset shunt trips.
	RO	When the LOCA signal occurs, restart the CRD pumps and SLC pumps which tripped due to load shed.
	PRO	Check status of all low pressure ECCS after the LOCA signal and report status to the CRS.
	CRS	Enter T-102 at 95°F in the pool and direct the PRO to bypass and restore H ₂ O ₂ analyzers and restore them to service. When 135°F is exceeded in the drywell, direct the PRO to bypass and restore DWCW.
	PRO	When directed bypass and restore H ₂ O ₂ analyzers to service and restore DWCW.
	PRO	Restore RHRSW pumps to operation after the LOCA signal.
	PRO	Report drywell parameters for T-102 when asked.
	PRO	Monitor RPV level on FZ indicator when wide range is no longer accurate.
	CRS	Direct the RO to break main condenser vacuum <u>OR</u> supply steam seals with auxiliary boiler steam.
	RO	When directed, break condenser vacuum or align auxiliary boiler steam to steam seals.
	CRS	Prior to reaching the TAF, direct all LP ECCS aligned for injection.
	PRO	Remove pool cooling from service and align all LP ECCS for injection.

Page 3 of _____

[illegible]

Scenario No.: 1 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

© 2016 Pearson Education, Inc. or its affiliate(s). All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher.

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 101–108

[illegible]

Scenario No.: 1 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

© 2011 Pearson Education, Inc. All rights reserved. This publication is protected by copyright. Any unauthorized distribution or reproduction of this work is prohibited. All rights reserved.

For the purpose of this study, a total of 1000 questionnaires were distributed to the respondents. The response rate was 85%. The data were analyzed using SPSS 20.0 for Windows. The results are presented in the form of tables and figures.

[illegible]

Event No.: _____

Page ____ of ____

Event Description: _____

[illegible]

Event No.: _____

Page ____ of ____

[illegible]

Page ____ of ____

Event Description: _____

[illegible]

Page ____ of ____

[illegible]

DESCRIPTION: 114B REACTOR AREA LOAD CENTER 440V FAULT

CAUSE: SHORT TO GROUND CAUSING AN OVERCURRENT MAGNETIC TRIP OF
THE NORMAL SUPPLY BREAKER 52-10322

EFFECTS:

A phase overcurrent of 114B reactor area load center causes the normal supply breaker (52-10322) to open. Indication of current and watts supplied to 11 unit aux bus will decrease by the amount being supplied to bus 114B (Panel 10C654). The following annunciator will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
125 GEN 1	G-2	114B Reactor Area Load Center Trouble

Refer to the Limerick Load Analysis for a complete list of all loads lost due to this malfunction.

If the operator closes the bus tie breaker (52-10342), it will result in a loss of bus 124B. Bus 124B supply breaker (52-10462) will trip open.

If Drywell Chiller A was running prior to activation of this malfunction, then a loss of Drywell Chill water will occur, since this malfunction results in a trip of Drywell Chiller A.

Removal of this malfunction will restore bus 114B to normal and allow the operator to close the breaker manually.

REFERENCES:

E-1
E-17
E-40 sheet 1
E-41 sheet 1
E-157
LGS Load Analysis

DESCRIPTION: HPCI INADVERTANT STARTUP

CAUSE: Failure of relay K71 contacts (T1-M1) such that they short.

EFFECTS:

This malfunction will cause the HPCI system to start up. The HPCI pump discharge pressure and flow will start increasing, which will inject water into the vessel. Vessel level will start increasing. This will also add cold water to the vessel which will cause the neutron flux level to increase, although not high enough to cause a SCRAM. The initiation of HPCI will not directly result in a Reactor SCRAM. The HPCI pump turbine can be stopped by tripping it; but as soon as the trip button is released, HPCI will again restart. When and if reactor vessel level reaches a high trip setpoint, the HPCI pump turbine will trip.

NOTE: If this malfunction is activated with a high level trip of the HPCI turbine sealed in, the High Level trip, even though water level has been reduced below +54 inches, will NOT be reset by the Malfunction.

MALFUNCTION REMOVAL:

Removal of this malfunction will allow the operator to stop the HPCI pump.

REFERENCES:

Elem Diag E41-1040 Sheet 5

DESCRIPTION: HPCI TURBINE TRIP

CAUSE: Failure of relay K13 contacts (T1-M1) such that they short.

EFFECTS:

This malfunction causes the HPCI pump turbine to trip. The HPCI turbine and pump will coast down and reduce HPCI system flow according to system head/flow characteristics. If vessel water level was being increased via the HPCI pump, then the rate of level increase will be reduced or stopped depending upon the status of other plant equipment. Reactor vessel pressure may begin to increase due to reactor decay heat as a result of losing steam flow to the HPCI pump turbine. The following alarms will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
117 HPCI	A-1	HPCI out of service
117 HPCI	B-3	HPCI pump lo flow

Amber status lamp DS37 will light: "HPCI Turbine Trip Solenoid Energized"

Removal of this malfunction will restore the HPCI turbine to normal once the turbine has been reset.

REFERENCES:

E41-1040. SH. 5

DESCRIPTION: APRM CHANNEL (A-F) FAILS TO SELECTED VALUE
(0-125%)

CAUSE: SELECTED APRM CHANNEL AVERAGING CIRCUIT OUTPUT FAILS
TO SELECTED VALUE.

EFFECTS:

When this malfunction is activated, the selected APRM Channel will move from its present indication, to the value entered in on the Malfunction Entry Tableau of the Instructor Station Console.

The affected APRM value will be displayed on the appropriate APRM recorder on Panel 10C603, as well as Process Computer displays and printouts and ERFDS formats.

All appropriate alarms and automatic actions will occur, if the output of the affected APRM exceeds any setpoints. All RPS trips will occur as appropriate.

REACTOR MODE SWITCH IN STARTUP, REFUEL OR SHUTDOWN

If the affected APRM power level exceeds 12%, an APRM UPS-
CALE alarm will occur.

If the affected APRM power level exceeds 15%, the UPSCALE
TRIP / INOP alarm will occur.

REACTOR MODE SWITCH IN RUN

If the affected APRM power level exceeds $.66W + 59\%$ (clamped
at 108%), an APRM UPSCALE alarm will occur.

If the affected APRM power level exceeds $.66W + 66\%$ (clamped
at 115%), an APRM UPSCALE TRIP / INOP alarm will occur.

Where $W = (\text{Recirc Loop A flow} + \text{Recirc Loop B flow}) / 84,000$

REACTOR MODE SWITCH ANY POSITION

If the affected APRM power level decreases below 4%, an APRM
DOWNSCALE alarm will occur.

(CONTINUED ON NEXT PAGE)

The following annunciators will actuate as appropriate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
108 REACTOR	A-1	Neutron Monitoring System Trip
108 REACTOR	A-3	APRM Upscale Trip / Inop
108 REACTOR	B-3	APRM Upscale
108 REACTOR	C-3	APRM Downscale

Removal of this malfunction will allow the affected APRM channel to indicate the actuate neutronic power level.

REFERENCES:

ELEM. DIAG. C51-1080
MDCP-6090-1, ARTS/MELLA Mod

DESCRIPTION: 13.2KV UNIT AUXILIARY BUS 11 FAULT

CAUSE: Short to ground on the bus causes an overcurrent trip of the closed supply breaker and locks out the backup supply breakers.

EFFECTS:

THIS MALFUNCTION WILL RESULT IN A LOW LEVEL REACTOR SCRAM DUE TO LOSS OF POWER TO LOAD CENTER 114C, WHICH SUPPLIES 120 VAC PANEL 10Y109, WHICH SUPPLIES POWER TO THE FEEDWATER MASTER CONTROLLER.

A phase overcurrent of #11 Unit auxiliary switchgear bus causes the closed supply breaker to trip open and lockout.

If supply breaker 252-10113 was closed, it will trip open and breakers 252-10102 and 252-10106 will be prevented from closing.

If supply breaker 252-10102 was closed, it will trip open and breakers 252-10113 and 252-10106 will be prevented from closing.

If supply breaker 252-10106 was closed, it will trip open and breakers 252-10113 and 252-10102 will be prevented from closing.

Indication of current and power through the supply breaker will decrease to zero. Bus voltage will decrease to zero. Current indication to the 440 volt load centers (10C654) will decrease to zero.

The following major components will trip as a result of the loss of this bus:

1. Trip of 1A Reactor Recirc M-G Set
2. Trip of 1A Condensate Pump
3. Trip of 1C Condensate Pump
4. Trip of 1A Circ Water Pump
5. Trip of 1C Circ Water Pump

The following annunciators will actuate as a direct result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
126 AUX BUS 1	B-1	11 Unit Aux Bus Undervoltage
126 AUX BUS 1	A-1	11 Unit Aux Bus Neg 0 Sequence
125 GEN 1	F-1	11 Bus Breaker Trip

The following buses will also de-energize as a result of the loss of this bus:

1. Generator Area Load Center 114A
2. Reactor Area Load Center 114B
3. Turbine Area Load Center 114C (includes 120 VAC Panel 10Y109)
4. Plant Services Load Center 114D

Refer to the Limerick Load Analysis or LGS Simulator Electrical Bus Load Table 4.001 for a list of affected loads.

MALFUNCTION REMOVAL:

Removal of this malfunction will remove the Bus 11 short and allow the operator to close the breaker manually or, if lined up in auto, the alternate breaker will automatically close. When the malfunction is removed, lockouts 286-10113, 286-10102, 286-10106 will reset if tripped.

REFERENCES:

E-12
E-74
E-150

MALFUNCTION: 078A-C

REV: 3
7/31/95

DESCRIPTION: CONDENSATE PUMP TRIPS (A,B,C)

CAUSE: OVERCURRENT RELAY 250/251 ACTUATES CAUSING THE SELECTED PUMP BREAKER TO OPEN.

EFFECTS:

This malfunction will cause the selected condensate pump(s) to trip. The discharge pressure and flow of the affected condensate pump will decrease in accordance with pump coastdown characteristics.

The following annunciators will actuate as appropriate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
104 COND	E-1/F-1/G-1	1A/B/C Condensate Pump Motor Overcurrent
104 COND	E-2/F-2/G-2	1A/B/C Condensate Pump Breaker Trip
104 COND	D-4	Condensate Pumps Discharge Header Lo Pressure

If total feedwater flow is greater than 85%, then a recirc pump runback to 60% speed will occur.

If an insufficient number of condensate pumps are running to supply the required condensate flow, the condensate header pressure will decrease causing the reactor feed pumps to trip on low suction pressure.

MALFUNCTION REMOVAL:

Removal of this malfunction will allow the condensate pump to be restarted.

REFERENCES:

E-260

DESCRIPTION: RCIC FLOW CONTROLLER (R600) FAILURE. (LOW)

CAUSE: Failure of the turbine flow controller (R600) output
signal to minimum in auto only.

EFFECTS:

If the turbine is in operation, the turbine speed will decrease to the low speed limit. RCIC pump discharge pressure will decrease and indicated pump flow will decrease to 0 gpm (assuming normal reactor pressure). If the turbine was started after activation of this malfunction, turbine speed will not increase greater than the low speed limit. In either case, speed cannot be controlled in automatic. The operator can place the flow controller in the manual mode and manually adjust turbine speed.

Reactor vessel level will respond to this loss of flow.

Removal of this malfunction will restore the RCIC flow controller output to normal. RCIC turbine speed will now change to the value demanded by the RCIC flow controller.

REFERENCES:

ELEM. DIAG. E51-1040 SH. 6

DESCRIPTION: RCIC TURBINE TRIP

CAUSE: Failure of relay (K28) contacts (T1-M1) such that they short.

EFFECTS:

This malfunction causes the RCIC turbine to trip. The RCIC turbine and pump will coast down and reduce RCIC system flow according to system head/flow characteristics. If reactor vessel water level was being increased via the RCIC pump, then the rate of level increase will be reduced or stopped depending upon the status of other plant equipment. Reactor vessel pressure may begin to increase due to reactor decay heat as a result of losing the RCIC turbine. The following alarms will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
116 RCIC	B-3	RCIC pump low flow
116 RCIC	A-1	RCIC out of service

Amber status lamp DS20 will light: "RCIC Turbine Trip".

Removal of this malfunction will restore the RCIC turbine to normal once the turbine has been reset.

REFERENCES:

ELEM. DIAG. E51-1040, SH. 3,9

MALFUNCTION: 137B thru 150B

REV: 2

DESCRIPTION: ADS/SAFETY RELIEF VALVES (F013A thru F013S) FAIL
(STUCK)

CAUSE: ADS SAFETY RELIEF VALVES (F013A thru F013S) mechanically
binds much that the valve is prevented from going closed
and will stay in the position of greatest percent open.

EFFECTS:

This malfunction will allow ADS/SAFETY RELIEF VALVES (F013A
thru F013S) to open in either auto or manual mode but will
prevent this valve from closing. This malfunction will be
similar to malfunction #137c thru 150c.

Refer to Malfunction #137c thru 150c.

REFERENCES:

Elem Diag B21-1060, SH. 1

DESCRIPTION: ADS/SAFETY RELIEF VALVES (F013A thru F013S) FAIL
OPEN (ELECTRICAL)

CAUSE: Selected ADS/SRV control switch contacts (3-4) short,
causing pilot solenoid to energize.

EFFECTS:

When this malfunction is inserted, the white "solenoid pilot valve energized" lamp on 10C626 will illuminate for the affected SRV. The red "acoustic monitor" lamp will also illuminate if reactor pressure is sufficient to open the valve.

If reactor pressure is being maintained via the turbine bypass valves, the effect will be a closure of some or all turbine bypass valves as they attempt to maintain a constant pressure at the turbine throttle. If the turbine is operating with some load, the effect will be a loss of generator load as the turbine control valves close to maintain turbine throttle pressure constant.

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
110 STEAM	B-1	SRV/HEAD VENT VALVE LEAKING (When tailpipe temp is greater than 280 DEG F and recorder point for SRV is printing)
110 STEAM	B-2	SAFETY RELIEF VALVE OPEN

With this malfunction active, the failed valve will not reseal unless reactor pressure decreases below 50 psig.

The open safety relief valve will divert a portion of main steam to the suppression pool. Suppression pool level and temperature will increase at a rate that is dependent upon the steam flow through the failed valve and main steam temperature.

Removal of this malfunction will restore the failed switch contacts to normal and allow the valve to reclose.

REFERENCES:

Elem Diag B21-1060, Sheet 6

CATEGORY "C"

INTEGRATED PLANT OPERATIONS

SIMULATOR SCENARIO #2

TRANSIENT AND EVENT CHECKLIST

SCENARIO SET NO.:

Applicant Type	Evolution Type	Number Req'd	Scenario Number			
			1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				

As RO	Reactivity	1				
	Normal					
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

SRO-U	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

NOTE: Enter the scenario set number and event numbers for each evolution type.

Simulation Facility: Limerick Unit 1

Scenario No.: 2

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The unit is at 100% power (IC-17). Drywell pressure is 0.1 psig.

Turnover: The unit is at 100% power, MOL. Drywell pressure is 0.1 psig due to normal leakage. The crew is expected to add nitrogen to the drywell per §57 3.B, Primary Containment Pressure Control and Nitrogen Makeup. The nitrogen skid is aligned for low flow service.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew will align nitrogen makeup to the drywell.
2	016,A	C	Control Rod 30-27 Drifts in
3	96	R	Thermal limit (CMFCP) indicates > 1, the crew is expected to reduce power to 80%.
4	072,A	I	SJAE Steam Supply Valve PCV07-101A fails closed
5	410,A	C	PCIG Isolation to Drywell Fails Closed (HV59-129A)
6	044,C	I	Feedwater Pump "C" Controller Output Fails High
7	110	M	Main Turbine - Generator Trip
	413	M	Control Rods Fail To Scram (Brown's Ferry Event)
	197	M	Standby Liquid Control Squib Valves Fail to Fire
	108, 20%	C	EHC Bypass valves fail to 20% open.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Event Description: Add Nitrogen to the drywell per S57.3.B.

[illegible]

Event Description: When the PRO is lining up to add nitrogen to the drywell, control rod 30-26 drifts in.

[illegible]

Event Description: When the crew calls up a P-1 edit, thermal limit CMFCP will indicate a value of 1.08. The crew is expected to reduce power to 80% as a result. When power is reduced to 80%, the P-1 will indicate CMFCP = .95.

[illegible]

Page 1 of

[illegible]

Event Description: When actions are complete for the failure of the SJAE steam supply, the PCIG Isolation to the drywell valve HV59-129A fails closed. The 129A valve will not be able to be reopened.

[illegible]

Event Description: When the RO has completed the power reduction to 80%, the "C" Feedwater Pump controller output fails high.

[illegible]

Event Description: When actions for the failed "C" RFP controller are complete, the master turbine trip relay fails resulting in a turbine trip. A scram signal is generated but the control rods do not fully insert (due to blockage in the SDV drain lines) and Standby Liquid Control System squib valves fail to fire. When conditions stabilize and the bypass valves are controlling pressure, the bypass valves fail to a 20% open position requiring the crew to use SRVs for pressure control. Suppression pool heat up will occur and level/power control will be required.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize ATWS condition and enter and direct actions per T-101.
	PRO	Stabilize pressure between 950 and 1037 psig using SRV's as required.
	RO	Stabilize and maintain reactor level greater than -129" (group 1 isolation setpoint) using feed pumps.
	CRS	Enter and direct actions per T-117.
	RO	Recognize failure of SLC injection valves to fire and report to CRS.
	CRS	Direct T-217 to insert rods.
	RO	Coordinate performance of T-217.
	CRS	Direct PRO to inhibit automatic ADS operation.
	PRO	Place ADS Inhibit switched to INHIBIT.
	CRS	Direct isolation of HPCI until T-251 can be performed.
	PRO	When directed, isolate HPCI by depressing isolation push button.
	CRS	Direct alternate SLC injection method (T-209 or T-212).
	CRS	When suppression pool temperature exceeds 95°F, enter T-102 and direct appropriate actions.
	CRS	Direct PRO to place two loops of pool cooling in service.
	PRO	When RPV pressure is stable, place two loops of suppression pool cooling in service.
	PRO	Recognize failure of EHC to control pressure and report to CRS.
	CRS	Dispatch personnel to perform T-221 and T-251. NOTE: Simulator operator will perform T-221/251 as directed.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
	RO	Bypass RWM if required and drive rods. Monitor power and level and continue to update CRS with changing parameters.
	PRO	Monitor drywell parameters and continue to update CRS with changes, particularly suppression pool temperature.
	CRS	When drywell temperature exceeds 135°F, direct PRO to bypass and restore DWCW.
	CRS	If H ₂ O ₂ analyzers isolate on low level, direct PRO to bypass and restore them to operation.
	PRO	When directed, bypass and restore H ₂ O ₂ analyzers and DWCW.
	PRO	Report suppression pool temperature of 110°F to the CRS.
	CRS	Direct the RO/PRO to terminate and prevent injection per T-270. Dispatch personnel to perform T-270 in the Auxiliary Equipment Room. NOTE: Simulator operator will perform T-270 as directed.
	RO	Terminate and prevent feedwater/condensate injection per T-270.
	PRO	Terminate and prevent ECCS and RCIC injection per T-270.
	PRO	Monitor RPV level on FZ indication and provide level reports to the CRS.
	CRS	Direct actions for the LOCA signal as appropriate.
	RO	After the LOCA signal, restore a CRD pump and continue control rod insertion.
	PRO	After the LOCA signal, restore power to the instrument busses, dispatch personnel to reset shunt trips and ensure no ECCS injection.
	CRS	At -161" (TAF), direct the RO to restore FW to the vessel to maintain level between -161" and -185".
	PRO	Continue to monitor FZ level indication and report level trends to the RO.

Page ____ of ____

Event Description: _____

[illegible]

Scenario No.: 2

Event No.: _____

Page ____ of ____

Event Description:

[illegible]

Scenario No.: 2 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

[illegible]

DESCRIPTION: CONTROL ROD (XX-YY) FAILURE (DRIFT IN)

CAUSE: SLIGHT LEAKAGE OF THE SELECTED CONTROL ROD SCRAM DISCHARGE VALVE XV-1-27. THIS WILL CAUSE A SUFFICIENT DIFFERENTIAL PRESSURE ACROSS THE CRD PISTON TO CAUSE IT TO DRIFT IN AT 1/4 NORMAL SPEED.

NOTE: Malfunction 016 can be used ONLY ONCE. IF it is desired to fail more than one control rod, THEN use Malfunctions 017 through 019.

NOTE: Activate this malfunction on the Malfunction Summary Tableau, Page CC, as follows:

Line No,16,activation time,XX-YY,A RETURN

or, to have the malfunction go active immediately:

Line no,16,,XX-YY,A

where XX-YY is the control rod number.

EFFECTS:

The rod drift light within the core vertical display and the common rod drift annunciator will actuate. When the rod drift reset button is depressed, the drift indication will be reset. When the drift reset button is released, the rod drift light will reactuate. If or when the control rod is selected, the rod position information system will indicate the control rod drifting in at 1/4 normal speed.

The control rod will respond to normal in or out motion when actuated by the operator, however, the control rod will continue to drift in upon completion of the "rod settle" sequence. Any rod blocks actuated during this malfunction will have no effect on the drifting rod. The control rod can drift to the fully inserted position and if fully inserted, will go to the "overtravel in" position.

(CONTINUED ON NEXT PAGE)

MALFUNCTION: 016A (Continued)

If the RWM is enforcing, its response will be affected.

Reactor power level in the local area of the control rod and on a whole core basis will respond to reactivity changes resulting from drifting rod movement.

The following annunciator will actuate as a direct result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
108 REACTOR	F-4	Rod Drift

MALFUNCTION REMOVAL:

Removal of this malfunction will allow the control rod to settle at the next available "even" notch.

DIRECTIONS TO ENTER VALUES INTO P1 PRINTOUT:
- (for CMFCP, CMFLPD, CMAPR and FLLLP)

1. Go to instructor station PACE terminal (only works there).
2. Go to CONTROL ROD DISPLAY screen. (You must be on a PPC screen at the terminal.)
3. Hit LOG SERVICES key to bring up the input fields.
4. In the 1st input field, enter the number 96, 97, 98, or 99 for the value you want to change. In the 2nd field, enter the value itself (must be between 0.100 and 1.500).

CMFCP -- put 96 in 1st field, the new value in 2nd field
CMFLPD - 97
CMAPR -- 98
FLLLP -- 99
5. Then hit the LOG SERVICES key again to enter in the value. Watch for the returned "REQUEST ACCEPTED" or an error message. If you get an error, reenter the fields and hit LOG SERVICES key again.
6. To make sure the value was accepted, hit the SIM OP LIMITS key and go to that display to check.
7. The newly entered value will now appear on all subsequent P1 printouts.

NOTES:

- a. When the simulator is reset, the values will default back to their normally calculated values (or a constant value of 0.900 for FLLLP). As long as no value is entered, each variable will continue to be calculated normally.
- b. After a value is entered in one time, it will never change back to the calculated value until the simulator is reset. To make it change to another value, a new value must again be reentered.
- c. Each variable can be changed independently of the others (i.e. you can enter in a value for CMFLPD only, with CMFCP and CMAPR calculated normally).

DESCRIPTION: SJAE STEAM SUPPLY VALVE PCV07-101A(B) FAILS CLOSED

CAUSE: FAILURE OF PRESSURE TRANSMITTER PT07-101A(B) SUCH THAT IT'S OUTPUT SIGNAL GOES TO MAXIMUM. THIS WILL CAUSE THE OUTPUT OF CONTROLLER PIC07-101A(B) TO GO TO MINIMUM AND CAUSE PCV07-101A(B) TO CLOSE. THIS FAILURE OCCURS ONLY FOR THE AUTO MODE.

EFFECTS:

This malfunction will cause a closure of the SJAE steam pressure regulating valve PCV07-101A(B). SJAE steam supply pressure will decrease to 0 psig, as will SJAE condenser outlet gas pressure and offgas recombiner inlet gas pressure. Offgas recombiner inlet gas flow decreases to 0 cfm.

The following annunciators will actuate as a direct result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
104 COND	B-3	Steam to 1A SJAE condenser hi/lo pressure
104 COND	C-3	Steam to 1B SJAE condenser hi/lo pressure
127 OFFGAS	I-4	SJAE Disch to Recombiner Lo FLOW

Since the SJAE is no longer removing the non-condensable gases from the condenser, these gases will begin to buildup resulting in a gradual decrease of condenser vacuum. The rate of condenser vacuum decrease will be a function of reactor power level, as a large portion of the non-condensable gases consist of hydrogen and oxygen from the radiolytic decomposition of water.

The operator can place controller PIC07-101A(B) in MANUAL and regulate SJAE steam supply pressure or, place the back-up SJAE in service which will restore condenser vacuum.

For the additional effects of a loss of condenser vacuum see the description of Malfunction 074 Main Condenser Air Leakage.

Removal of this malfunction will restore the SJAE steam pressure regulating valve to normal operation. The condenser vacuum may or may not recover depending upon how far condenser vacuum has decreased before this malfunction was removed.

REFERENCES:

M-07

DESCRIPTION: CIG ISOLATION TO DRYWELL FAILS CLOSED, HV59-129A(B)
(BOTH)

CAUSE: Break in air supply line causes valve to fail close.

EFFECTS:

When this malfunction is activated the selected CIG supply valve HV59-129A(B) will go to the closed position, regardless of the position called for by the control switch.

HV59-129A

If this valve is failed closed, Instrument Gas to the following valves will be lost, causing them to fail closed:

Panel 10C681:

Drywell Chilled Water Valves:

HV87-151A, DW CHW Loop A Supply to Rec Pump A Motor Cooler
HV87-158A, DW CHW Loop A Return from Rec Pump A Motor Cooler
HV87-151B, DW CHW Loop A Supply to Rec Pump B Motor Cooler
HV87-158B, DW CHW Loop A Return from Rec Pump B Motor Cooler
HV87-140A, DW CHW Loop A Supply to DW Equip Drain Sump
HV87-142A, DW CHW Loop A Return from DW Equip Drain Sump

Panel 10C601:

RHR Testable Check Valve Equalizers:

HV51-142A	HV51-142C
HV51-142B	HV51-142D

Core Spray Testable Check Valve Equalizers:

HV52-1F039A	HV52-1F039B
-------------	-------------

CONTINUED ON NEXT PAGE

HV59-129B

If this valve is failed closed, Instrument Gas to the following valves will be lost, causing them to fail closed:

Panel 10C681:

Drywell Chilled Water Valves:

HV87-150A, DW CHW Loop B Supply to Rec Pump A Motor Cooler
HV87-159A, DW CHW Loop B Return from Rec Pump A Motor Cooler
HV87-150B, DW CHW Loop B Supply to Rec Pump B Motor Cooler
HV87-159B, DW CHW Loop B Return from Rec Pump B Motor Cooler
HV87-140B, DW CHW Loop B Supply to DW Equip Drain Sump
HV87-142B, DW CHW Loop B Return from DW Equip Drain Sump

Panel 10C601:

RHR Testable Check Valve Equalizers:

HV51-151A HV51-151B

HV59-129A and HV59-129B

In addition to the above listed valves, if both HV59-129A and 129B are failed closed, Instrument Gas will be lost to the following valves, causing them to fail closed:

Panel 10C626:

Main Steam Safety Relief Valves (No accumulators):

PSV41-1F013A	PSV41-1F013G
PSV41-1F013B	PSV41-1F013J
PSV41-1F013C	PSV41-1F013L
PSV41-1F013D	PSV41-1F013N
PSV41-1F013F	

Panel 10C601:

Main Steam Sample Valve:

HV41-1F084

CONTINUED ON NEXT PAGE

MALFUNCTION: 410 (Continued)

RHR Testable Check Valve:

HV51-1F041A HV51-1F050A
HV51-1F041B HV51-1F050B
HV51-1F041C
HV51-1F041D

Core Spray Testable Check Valve:

HV52-1F006A HV52-1F006B

Panel 10C602:

Recirculation Sample Valve:

HV43-1F019

All systems will respond appropriately to valves failing closed on loss of Containment Instrument Gas.

MALFUNCTION REMOVAL:

Removal of this malfunction will allow valves HV59-129A/B to be reopened.

REFERENCES:

M-59, SH. 1

DESCRIPTION: FEEDWATER PUMP C CONTROLLER OUTPUT FAILS HIGH

CAUSE: Feedwater pump C controller (R601C) output signal goes to maximum in the auto mode.

EFFECTS:

This malfunction will cause feedwater pump C controller output signal to go to the maximum limit. RFPT C speed will increase to its upper limit. Feedwater flow from pump C will increase which will cause reactor vessel level to increase. The increase in feedwater flow and vessel level will cause the remaining operating feed pumps to decrease in speed. If the non-affected operating feed pumps are unable to reduce flow enough to offset the increased flow, then reactor vessel level will continue to increase until a high level trip occurs. The main turbine and feed pumps will trip.

Removal of this malfunction will restore the output signal of the individual speed controller to normal. The operator will be able to take control of RFP turbine speed using the individual speed controller if he desires.

REFERENCES:

FWC IED C32-1010

DESCRIPTION: MAIN TURBINE - GENERATOR TRIP

CAUSE: SPURIOUS ELECTRICAL MAIN TURBINE TRIP DUE TO FAILURE OF
THE MASTER TRIP RELAY (XKT 1000)

EFFECTS:

In both of the following conditions, the Main Turbine trips and the Main Generator lockout relays actuate. This will trip the main generator synchronizing breaker, exciter field breaker, both recirculation M-G set breakers, and initiate automatic fast transfer of the Unit Aux Buses to the 10 and 20 Station Aux Buses. The Voltage Regulator will automatically transfer from Auto to Manual and the 535 and 635 breakers will trip open.

LOW POWER CONDITION

The generator load breaker will open. As the turbine stop valves shut, the turbine bypass valves will open to control pressure. The transition to the bypass valves will cause a transient in reactor pressure, power, water level, steam flow, and feedwater flow. This will NOT cause a reactor trip. When the generator trips, the phase, current, megawatts, etc. will drop to zero.

The following annunciators will actuate as appropriate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
125 GEN 1	C-1	1 Exciter Field Bkr Trip
125 GEN 1	E-1	1 Unit Protection Relays Energized
105 MAIN TURB	B-1	Overspeed Trip
106 MAIN STEAM	B-1	Trip Relay Low Voltage or 386 Prot Relay Tripped

Reactor power will slowly increase as feedwater temperature decreases as a result of a decrease in extraction steam to the feedwater heaters.

DESCRIPTION: CONTROL RODS FAILURE TO SCRAM (BROWN'S FERRY EVENT)

CAUSE: BLOCKAGE OF SDV ALLOWS THE SDV TO FILL WITHOUT DRAINING
TO THE SCRAM INSTRUMENT VOLUME

EFFECTS:

This malfunction causes the scram discharge volume to become filled and pressurized immediately following a scram. This prevents the control rods from being able to completely scram due to a hydraulic lock being placed on the CRD's.

This malfunction prevents water from draining into the instrument volume. Therefore, the SDV high level alarm, rod block, and scram signal will not be received.

With this malfunction active and a scram signal present, the RPS System will respond normally and all scram valves will open. The plant control rods will move in randomly generated distances and then stop. Reactor power level will decrease to between 80% and 90%. Any subsequent scrams will have no effect on rod movement.

While this malfunction is active and the hydraulic lock exist on the SDV, the operator will be able to select and drive rods inward and outward if the scram is reset.

Removal of this malfunction will remove the blockage from the scram discharge volume and allow all water to be drained. The water will drain into the instrument volume, causing an immediate SDV hi level reactor scram.

REFERENCES:

M-47

DESCRIPTION: EHC Bypass Valves Fail to Selected Value (0-100%)

CAUSE: Failure within the Bypass Valve Positioning Unit Servo-amp-
lifier prevents bypass valves from opening to control
pressure beyond the inserted malfunction severity.

EFFECTS:

When this malfunction is activated at a given severity, the
bypass valves will open to control pressure, only to the given
value allowed by the malfunction severity, as listed in the
following table:

<u>Bypass Valve Full Open</u>	<u>Severity Needed to Open Fully</u>
No. 1	11-12%
No. 2	22-23%
No. 3	33-34%
No. 4	44-45%
No. 5	56-57%
No. 6	67-68%
No. 7	78-79%
No. 8	89-90%
No. 9	100%

Turbine bypass valves above the inserted severity will be
prevented from opening. All bypass valves below the inserted
severity will respond to EHC pressure control signals.

The following annunciator will actuate if Bypass Valve No. 1
opens greater than 13%:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
106 MAIN STEAM	D-4	Bypass Valve Open

MALFUNCTION REMOVAL:

Removal of this malfunction will correct the Bypass Valve
Positioning unit fault and allow ALL Turbine Bypass Valves to
respond to the Bypass Valve Demand.

REFERENCES:

DESCRIPTION: STANDBY LIQUID CONTROL SQUIB VALVES FAIL TO FIRE

CAUSE: THE RELAY COILS FOR RELAYS K5A, K5B, K5C OPEN, CAUSING
ALL THREE RELAYS TO FAIL TO ENERGIZE

EFFECTS:

When this malfunction is activated, no effects will be seen until an SLC initiation occurs, whether manual or automatic (RRCS).

If this malfunction is activated and an SLC initiation occurs, the following effects will occur:

1. The SLC pumps start.
2. Reactor Water Cleanup isolates.
3. The white "squib valve ready" lamps remain lit.
4. The annunciator "Standby Liquid Squib Valve Loss of Continuity" remains clear.
5. The squib valves do not fire.
6. Boron is not injected into the vessel.

If SLC Pumps are manually started while this malfunction is active, they will remain running only as long as the control switch is held in the START position. If the control switch is released from the START position, the pumps will stop.

MALFUNCTION REMOVAL:

Removal of this malfunction will restore relays K5A, K5B, K5C to normal. If an SLC initiation occurs, the squib valves will fire.

REFERENCES:

Elem. Diag. C41-1040

CATEGORY "C"

INTEGRATED PLANT OPERATIONS

SIMULATOR SCENARIO #3

TRANSIENT AND EVENT CHECKLIST

SCENARIO SET NO.:

Applicant Type	Evolution Type	Number Reqr'd	Scenario Number			
			1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				

As RO	Reactivity	1				
	Normal					
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

SRO-U	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

NOTE: Enter the scenario set number and event numbers for each evolution type.

Simulation Facility: Limerick Unit 1

Scenario No.: 3

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The unit is at 88% power (IC-17 modified). Suppression pool level is 24 feet.

Turnover: The unit is at 88% power; a rod exchange has just been completed. Suppression pool level is 24 feet due to valve testing on the previous shift which caused the condensate transfer system to put water in the pool. Planned evolutions for the shift are to increase power using recirculation flow to 100% per GP-5 and to reduce suppression pool level to 23 feet.

Event No.	Malf. No.	Event Type*	Event Description
1		R	The crew is expected to raise reactor power to 100% using recirculation flow.
2		N	The PRO should line up and reduce suppression pool level using S51.8.A.
3	493,A	C	RHRSW Heat Exchanger Inlet Valve F014A fails open.
	115RC	I	1A RHRSW Heat Exchanger outlet radiation monitor fails upscale
4	451,A	I	HPCI Outboard Steam Isolation Valve (1F003) inadvertent isolation
5	547	C	CRD Pump trips on clogged suction filter
6	016,D	M	Rod 26-35 sticks full out
	017,D	M	Rod 30-35 sticks full out
	018,D	M	Rod 34-51 sticks full out
	067	M	Steam leak in the drywell, starts at 50 GPM, at 1.68 psig the leak will increase to 100 GPM. 10 minutes after the shutdown, the leak will take a step increase to 3500 gpm.
	066	M	Steam Line Rupture in the Drywell
	236F	M	All reference legs flash

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of ____

[illegible]

Event Description: When the PRO has established a pool let down, the 1A RHRSW Heat Exchanger outlet radiation monitor fails upscale resulting in an RHRSW pump trip and heat exchanger isolation. The heat exchanger inlet valve fails in the open position and will not close.

[illegible]

Event Description: A small steam leak (50 gpm) in the drywell results in a shutdown. When the mode switch is placed to shutdown the steam leak grows to 100 gpm. Three rods are stuck in the full out position resulting in an ATWS. When 10 minutes have elapsed, the steam leak will step increase to 3500 gpm and one minute later the Main Steam Line will rupture in the drywell. At 100 psig in the vessel reference legs will flash resulting in a loss of indicated level.

Time	Position	Applicant's Actions or Behavior
	CRS	Enter OT-101 and direct actions in an attempt to isolate the leak.
	CRS	Direct rapid plant shutdown prior to 1.68 psig scram signal.
	RO/PRO	Conduct rapid plant shutdown in accordance with GP-4.
	CRS	Enter T-101 and execute accordingly.
	RO	Recognize all rods not full in and announce ATWS.
	CRS	Enter T-117 and T-102, direct actions accordingly.
	CRS	Direct PRO to Inhibit ADS.
	PRO	Place ADS INHIBIT switches to inhibit.
	PRO	Report that Recirc pumps are running without RECW cooling.
	CRS	Direct PRO to trip Recirc pumps.
	CRS	Direct RO/PRO to bypass isolations and restore DWCW and H ₂ O ₂ analyzers to service.
	RO/PRO	Bypass isolations of DWCW and H ₂ O ₂ analyzer and restore to operation.
	CRS	Direct PRO to shut down and isolate RWCW per OT-101.
	PRO	Shut down and isolate RWCW per OT-101.
	RO	Monitor RPV level and pressure. Control level with feedpumps in normal band.
	CRS	Dispatch personnel to perform T-218 for the 3 stuck rods.
	CRS	Direct PRO to spray the suppression pool.
	PRO	Spray the suppression pool per T-225. Use "B" Loop of RHRSW and "B" RHR loop.
	CRS	Direct RO to commence RPV depressurization to mitigate the affects of the leak.

Event Description: See page one of event.

Time	Position	Applicant's Actions or Behavior
	RO	Operate the EHC Bypass Valve Jack to open bypass valves. Commence cooldown and implement cooldown ST, ST-6-107-640-1.
	RO	Line up for startup level control, closing the feed pump discharges (108A,B,C) and open the 138.
	CREW	Recognize prompt jump in DW pressure.
	CRS	When LOCA signal received, direct PRO to operate ECCS as necessary to prevent flood up of reactor.
	PRO	Secure all unnecessary ECCS, maintain level between 12.5" and +54".
	CRS	When on the safe side of the Drywell Spray Initiation Limit Curve, direct PRO to spray the drywell.
	PRO	Commence lineup to spray the drywell per T-225.
	CREW	Recognize and announce reference leg flash.
	CRS	Enter and direct actions per T-112.
	CRS	Direct crew to terminate and prevent injection to the RPV. Dispatch an operator to the AER to perform T-270.
	RO	Ensure feed pumps are tripped and discharge valves closed. Close startup level control valve.
	PRO	Secure all low pressure ECCS.
	CRS	Direct the PRO to place 5 ADS valve handswitches to open.
	PRO	Place 5 ADS handswitches to open position.
	CRS	Enter and direct actions per T-116. Dispatch personnel to perform AER steps of T-245.
		NOTE: Simulator operator will perform AER steps of T-270 and T-245 when requested. The simulator operator will NOT perform T-218 for the stuck rods.
	RO	Restart DWCW after the LOCA. Perform SE-10 actions.

Event Description: See page one of event.

[illegible]

Scenario No.: 3

Event No.: _____

Page _____ of _____

Event Description: _____

[illegible]

Scenario No.: 3 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description:

[illegible]

Scenario No.: 3

Event No.: _____

Page ____ of ____

Event Description: _____

[illegible]

Scenario No.: 3 Event No.: _____ Page _____ of _____

Event No.: _____

Page of

Event Description: _____

Downloaded from <http://www.jstor.org/stable/2345678> on Tue, 20 Jun 2016 12:34:12 UTC

1

[illegible]

MALFUNCTION: 115RC

REV: 3
3/3/95

DESCRIPTION: DRAWER INOPERATIVE FOR PROCESS RADIATION MONITOR:
RHRSW Heat Exchanger 1A Outlet Radiation Monitor

CAUSE: FAILURE OF PROCESS RADIATION MONITOR 1K619C
CAUSES OUTPUT TO FAIL HIGH.

EFFECTS:

When this malfunction is activated the output of RHRSW Heat Exchanger 1A Outlet Radiation Monitor 1K619C will fail to maximum.

The red pen for recorder RR12-OR616A on panel 00C667 will increase to maximum.

The following annunciators will actuate immediately:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
011 SERV WTR B	B-4	RHRSW Hi Radiation
011 SERV WTR B	C-4	RHRSW Rad Monitor Hi-Hi/ Inop/Dnscl

Activation of this malfunction will also result in the following:

1. The immediate auto closure of Heat Exchanger Inlet Valve HV51-1F014A.
2. The closure of Heat Exchanger Outlet Valve HV51-1F068A after a time delay of 60 seconds.
3. Illuminate Amber Lamp: "Hx A Outlet Hi-Hi/Inop/Dwnsc" on t h e Remote Shutdown Panel.

MALFUNCTION REMOVAL:

Removal of this malfunction will restore the output of 1K619C to normal, and allow the Heat Exchanger isolation valves to be reopened as appropriate.

REFERENCES:

M-12, SH. 1
Elem Diag D12-1020, SH. 8A

DESCRIPTION: FAILURE OF RHRSW HEAT EXCHANGER A INLET VALVE
1F014A

CAUSE: HV51-1F014A mechanically binds, preventing all movement
of the valve.

EFFECTS:

This malfunction will cause the A RHRSW heat exchanger inlet valve to remain in its present position. The valve will not respond to manual open/close signals, and will not close on high radiation.

The following Amber Status Lamp on Panel 10C601 will light as soon as movement of the valve is attempted:

"Power Off or Thermal Overcurrent of Any Valve"

The following annunciator will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
113 COOL A	E-1	Div 1 RHR Out of Service

MALFUNCTION REMOVAL:

Removal of this malfunction will allow the affected valve to respond to open/close signals.

REFERENCES:

M-51
E-371, E-372
Elem Diag E11-1040 sheet 22

DESCRIPTION: INADVERTANT ISOLATION OF HPCI STEAM SUPPLY (F003, F002)

CAUSE: Contacts (T1-M1) of K15B, K15D short, causing closure of F003 (F002)

EFFECTS:

When this malfunction is inserted, HV55-F72A, B003 (F002), HPCI steam supply valve will close, if open. If the valve was already closed when the malfunction was inserted, then it will be prevented from opening. Steam to the HPCI turbine will be isolated. A HPCI turbine trip will occur.

If Malfunction 451A is activated, HV-55-1F100 will also close.

The following alarm lamps on Panel 10C647 will illuminate:

DS26	HPCI ISOLATION DIV 2 INITIATED (F003)
DS18	HPCI ISOLATION DIV 4 INITIATED (F002)
DS41	HPCI HV55-F002 CONT SW IN CLOSED POSITION OR VALVE NOT FULLY OPEN
DS40	HPCI HV55-F003 CONT SW IN CLOSED POSITION OR VALVE NOT FULLY OPEN

The following annunciator will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
117 HPCI	A-1	HPCI Out of Service

Removal of this malfunction will return the shorted contacts to normal. If no other isolation signals are present, the valve can be re-opened.

REFERENCES:

ELEM DIAG E41-1040, SH. 6, 11, 12

MALFUNCTION: 547

REV: 0
1/5/95

DESCRIPTION: CRD Pump Trips on Clogged Suction Filter

CAUSE: CRD Pump Suction Filter Clogs with debris.

EFFECTS:

When this malfunction is activated, the suction filter for the running CRD pump will clog with debris. CRD pump suction pressure will slowly decrease, resulting in a trip of the running CRD pump on low suction pressure.

The following annunciators will actuate as a direct result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
108 REACTOR	G-1	1A / 1B CRD Water Pump Trip
108 REACTOR	G-3	1A / 1B CRD Pump Suction Lo Press
108 REACTOR	H-3	CRD Pump Suction Filter Hi DP
108 REACTOR	H-4	CRD Charging Water Low Pressure

MALFUNCTION REMOVAL:

Removal of this malfunction will restore the CRD pump suction filter to normal and allow the CRD pump to be manually restarted.

REFERENCES:

M-46, P&ID, Control Rod Drive Hydraulic, sheet 1

DESCRIPTION: CONTROL ROD (XX-YY) FAILURE (STUCK)

CAUSE: MECHANICAL BINDING OF THE SELECTED CONTROL ROD BLADE

NOTE: Malfunction 016 can be used ONLY ONCE. IF it is desired to fail more than one control rod, THEN use Malfunctions 017 through 019.

NOTE: Activate this malfunction on the Malfunction Summary Tableau, Page CC, as follows:

Line No,16,activation time,XX-YY,D RETURN

or, to have the malfunction go active immediately:

Line no,16,,XX-YY,D

where XX-YY is the control rod number.

EFFECTS:

The affected control rod will not respond in either direction when selected for movement by the reactor manual control system regardless of drive water pressure. When selected for movement, the drive water flow will decrease to approximately 1 gpm for insertion or 0.3 gpm for withdrawal.

If a reactor scram signal occurs while the control rod is stuck, the rod will not scram. The inability of any stuck rod to move or scram will be reflected in the reactivity calculations during reactor transients.

MALFUNCTION REMOVAL:

Removal of this malfunction will free the control rod blade and allow normal operation. If the control rod is stuck and also uncoupled from the drive mechanism, the drive will be permitted to move normally to any position farther withdrawn than the stuck control rod. The removal of this malfunction will cause the control rod to drop to the position of the drive mechanism. The neutron flux will respond as appropriate for a reactivity addition of this type.

DESCRIPTION: STEAM LEAK IN DRYWELL (VARIABLE 1-5000 GPM)

CAUSE: VARIABLE LEAK ON THE WELD WHERE RELIEF VALVE (F013G)
JOINS THE MAIN STEAM LINE.

EFFECTS:

Activation of this malfunction will cause steam to be transferred from the main steam line to the drywell. The amount will be dependent upon the severity of the malfunction.

At small severities, drywell pressure and temperature will increase. Condensed moisture will show up as an increase in Drywell Cooler Drain Flow. Drywell cooler inlet air temperatures will increase. Containment rad levels will reflect leakage of primary coolant into the Drywell.

At high severities, reactor water level will swell to the Main Turbine and RFP high level trip setpoints.

At 1.68 psig the reactor scrams, HPCI initiates and a Containment Isolation occurs.

The following annunciators will actuate as appropriate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
107 REACTOR	F-2	Drywell Hi / Lo Press
115 COOL B	B-5	Drywell Cooler Drain Flow High
112 CLEAN UP	C-5	Drywell Equip Drain / Floor Drain Sump Leakage Hi Flow
112 CLEAN UP	K-2	Drywell Floor Drain Sump Hi Lo Level

Following reactor scram, reactor pressure will continue to decrease due to steam flowing into the drywell.

MALFUNCTION REMOVAL:

Removal of this malfunction restores the steam line to normal.

DESCRIPTION: STEAM LINE RUPTURE IN THE DRYWELL

CAUSE: RUPTURE OF MAIN STEAM LINE B BETWEEN THE REACTOR VESSEL AND FLOW ELEMENT (FE-N052). THIS WILL CORRESPOND TO A COMPLETE SEVER OF THE MAIN STEAM LINE AND WILL EQUAL 200% OF RATED FLOW. (WHERE RATED FLOW = 3.55×10^6 LB/HR)

EFFECTS:

This malfunction will cause steam to be transferred to the drywell from both ends of the rupture. A Group I isolation will occur due to high steam flow causing all steam flow to stop except for continued vessel blowdown in steamline B. The reactor will scram due to high drywell pressure. When the MSIV's are less than 90% open and the mode switch is in run, a backup reactor scram occurs. The large amount of steam lost will cause rapid depressurization of the reactor vessel. Reactor water level will fluctuate due to changes in mass flow rates and also due to shrink and swell phenomenon caused by the scram and rapid depressurization. Initially upon insertion of this malfunction, the reactor vessel level will increase to the high level trip setpoint. This will trip HPCI, RCIC and the FW pumps if running. When vessel level decreases, HPCI will auto restart if the auto start signal is present.

The increase in drywell pressure will actuate containment isolation, auto initiation of ECCS systems, and auto start of the diesel generators. Level of the suppression pool will respond, first to the mass added by vessel blowdown, and later to ECCS systems when they refill the reactor vessel. Containment temperature and humidity will increase due to the steam rupture.

The following annunciator will actuate:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
114 ISOL	D-2	Main Steam Line High Flow
113 COOL A	E-4	Div 1 Drywell High Pressure
113 COOL A	H-4	Div 3 Drywell High Pressure
115 COOL B	E-4	Div 2 Drywell High Pressure
115 COOL B	H-4	Div 4 Drywell High Pressure

The feedwater pumps if not already tripped due to high vessel level, will stop pumping when steam is no longer available to drive them. The ECCS, (HPCI), are allowed to fill the vessel to the high level trip, the above mentioned components will trip. When reactor vessel pressure decreases low enough, the condensate pumps will be able to supply water to the vessel.

The turbine control valves will start to close in an attempt to raise steam line pressure, but a turbine trip will occur due to high reactor vessel level.

This malfunction can be removed only by reinitialization of the simulator.

DESCRIPTION: ALL REFERENCE LEGS FLASH

CAUSE: Instructor Aid Malfunction that results in complete flashing of all Reactor Vessel Reference Legs.

EFFECTS:

When this malfunction is activated, ALL Reactor Vessel instrument reference legs will flash. Reactor level instruments tied to the reference leg will "see" a reactor level higher than normal level, by the amount of water in the reference leg that was flashed to steam.

The following reactor level indicators will be affected by this malfunction:

Indicator	Description	Panel
LI42-1R604	WIDE RANGE LEVEL INDICATOR	10C603
LR C32-1R608	UPSET LEVEL RECORDER	10C603
LI C32-1R606A	RX NARROW RANGE CH.A	10C603
LI C32-1R606B	RX NARROW RANGE CH.B	10C603
LI C32-1R606C	RX NARROW RANGE CH.C	10C603
LI-1R605	SHUTDOWN RANGE LEVEL INDICATOR	10C602
LI-1R610	FUEL ZONE LEVEL RECORDER	10C601
LR-1R615	FUEL ZONE LEVEL RECORDER	10C601
XR-1R623A	POST ACCIDENT LEVEL RECORDER	10C601
XR-1R623B	POST ACCIDENT LEVEL RECORDER	10C601

MALFUNCTION REMOVAL:

Removal of this malfunction with the reactor pressurized will allow steam to condense within the condensing chamber and refill the reference leg. Affected level instruments will return to their normal level. If the reactor is de-pressurized, the reference leg will have to be refilled with the appropriate remote functions on PCM Page T202. Following refill, all reactor vessel level indications will indicate appropriate level.

REFERENCES:

M-42 sheet 1

CATEGORY "C"

INTEGRATED PLANT OPERATIONS

SIMULATOR SCENARIO #4

TRANSIENT AND EVENT CHECKLIST

SCENARIO SET NO.:

Applicant Type	Evolution Type	Number Reqr'd	Scenario Number			
			1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				

As RO	Reactivity	1				
	Normal					
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

SRO-U	Reactivity					
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				

NOTE: Enter the scenario set number and event numbers for each evolution type.

Simulation Facility: Limerick Unit 1

Scenario No.: 4

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: The reactor is at 100% power (IC-17). Select rod 14-23 on the rod select matrix.

Turnover: The reactor is at 100% power. The crew is expected to complete the Extraction Steam Bleeder Trip Valve Exercising RT, RT-6-002-761-1.

Event No.	Malf. No.	Event Type*	Event Description
1		N	The crew is expected to complete the Extraction Steam Bleeder Trip Valve Exercising RT, RT-6-002-761-1
2A	011,B	I	"B" RBM Fails (inoperative)
2B	115,M	I	Unit 1 Containment Leak Detector Radiation Monitor Fails Upscale
3	280,A	C	1A RPS and UPS 120 VAC Distribution Panel 1AY160 Fault
4	442,A	C	Recirculation Pump "A" RPT Breaker Trips
		R	Crew is expected to reduce power to 33% using rods
5	440,A	M	Unisolable 3% break in the recirculation loop
			NOTE: Event 2A <u>OR</u> 2B will be run depending on which position is in need of a manipulation. The same is true for events 3 and 4, only one should be run.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Examiner: _____

Chief Examiner: _____

Page 1 of ____

[illegible]

Event Description: While the PRO is performing the RT the "B" RBM Fails Upscale.

[illegible]

Event Description: When power has been reduced to approximately 33 % or the initial actions are complete for the loss of 1AY160, an unisolable break (3% of a DBA LOCA) in the recirculation loop will occur.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize high drywell pressure scram and enter T-101 and direct appropriate actions to maintain level.
	RO	Use FW and Condensate to maintain level greater than TAF. Monitor RPV level and report trends to the CRS.
	CRS	Recognize HPCI and RCIC not required and direct PRO to secure them.
	PRO	Coordinate with the RO and isolate HPCI by depressing the isolation push button and trip RCIC.
	CRS	Enter and direct actions per T-102.
	CRS	Direct suppression pool sprays.
	PRO	When directed, lineup suppression pool sprays in accordance with T-225.
	CRS	Direct the PRO to bypass isolations and restore DWCW and Hydrogen analyzers to service.
	PRO	Bypass and restore DWCW and Hydrogen analyzers to service per GP-8.
	CRS	NOTE: This step only applies if event 4 was the loss of 1AY160. Direct the PRO to Un-Bypass RECW and IG isolations to allow isolation to be complete.
	PRO	Operate bypass switches such that RECW and IG isolations are complete.
	RO	Monitor and report trends in RPV pressure to the CRS.
	CRS	Direct MSIV closure to conserve inventory.
	PRO	Close MSIVs when directed.
	CRS	When on the safe side of the DW Spray Initiation Limit Curve, direct the PRO to spray the drywell per T-225.
	PRO	When directed, spray the drywell per T-225.
	RO	Recognize that condensate hotwell level is low and report to CRS that vessel make up capability is limited.

Page 2 of 2

[illegible]

Page ____ of ____

Event Description:

[illegible]

Scenario No.: 4 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

Copyright © 2010 John Wiley & Sons, Ltd.

[illegible]

Page ____ of ____

Event Description: _____

[illegible]

Scenario No.: 4 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

[illegible]

Scenario No.: 4 Event No.: _____

Event No.: _____

Page ____ of ____

Event Description: _____

[illegible]

DESCRIPTION: RBM CHANNEL B FAILURE (INOPERATIVE)

CAUSE: RBM CChannel B trip reference (Z36) output signal to (Z35) fails to zero.

EFFECTS:

This malfunction will have no effect on the actual operation of RBM channel B. The "INOP" status lamp for RBM channel B will illuminate. RBM Channel B will continue to indicate changes in local flux.

The following annunciator will actuate as a direct result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
108 REACTOR	C-4	RBM Upscale / Inoperative
108 REACTOR	E-3	Rod Out Block

MALFUNCTION REMOVAL:

Removal of this malfunction will allow the RBM channel to return to normal operation. The associated alarms will clear.

REFERENCES:

Ele. Diag C51-1080 sheet 3

DESCRIPTION: 1A RPS AND UPS 120V AC DISTRIBUTION PANEL 1AY160
FAULT

CAUSE: SHORT TO GROUND CAUSING A COMPLETE LOSS OF POWER TO BUS
1AY160

EFFECTS:

Activation of this malfunction causes a phase overcurrent of 120V AC instrument bus 1AY160 which causes the normal MCC breaker (20102) and also the backup supply breaker (40104) to open. This results in a loss of power to RPS/UPS Bus 1AY160.

This malfunction results in a Channel A1/A2 RPS Trip and a Div 1/Div 3 MSIV Logic Trip.

This malfunction results in an auto closure of Drywell Chill Water Isolation Valves. Recirc Pump motor temperatures will increase, however, the Recirc Pump motors will trip NOT on high motor temperature.

This malfunction results in the auto closure of HV59-101, PCIG Compressors Inboard Suction Valve, however, the Inboard MSIVs will NOT begin drifting closed, due to PCIG storage in the MSIV accumulators.

The following annunciators (among many) will actuate as a result of this malfunction:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
120 D11	F-5	1A RPS & UPS Dist. Panel Trouble
108 REACTOR	A-5	RPS System A Out of Service
108 REACTOR	B-1	Auto Scram Channel A1
108 REACTOR	B-2	Auto Scram Channel A2
111 RECIRC	D-5	NSSSS Isol Sys Out of Service (Inbd)
111 RECIRC	E-5	NSSSS Isol Sys Out of Service (Outbd)
111 RECIRC	G-3	1A/B Recirc Pump Motor High Temperature
114 ISOL	A-1	Div 1 NSSSS MSIV Initiated
114 ISOL	B-1	Div 3 NSSSS MSIV Initiated
114 ISOL	G-2	1A Drywell Inst Gas Trouble
114 ISOL	G-3	1B Drywell Inst Gas Trouble

(CONTINUED ON NEXT PAGE)

MALFUNCTION: 280A (Continued)

Refer to the Limerick Load Analysis for a complete list of all loads lost due to this malfunction.

MALFUNCTION REMOVAL:

Removal of this malfunction will restore bus 1AY160 to normal. The normal and backup supply breakers will close when the malfunction is removed.

REFERENCES:

E-32

E-33

E-619

LGS Procedure E-1AY160 U/I, Loss of 1A RPS and UPS Power

DESCRIPTION: Recirc Pump 1A RPT Breaker Trip (CB3A, CB4A, Both)

CAUSE: Inadvertent trip of selected RPT Breaker

EFFECTS:

This malfunction will result in the trip of one or both of Reactor Recirc Pump 1A RPT breakers. The trip of an RPT breaker results in a rapid coastdown of the Recirc Pump and motor, due to the loss of electrical connection between the M-G Set Generator and Recirc Pump motor.

The trip of the RPT breaker will result in a loss of M-G Set Generator field, resulting in a M-G Set Generator lockout (relay K8A) and trip of the Drive Motor breaker. The trip of the Drive Motor breaker will result in a trip of the M-G Set Generator Field breaker.

Recirculation Loop flow, for the affected loop, will decrease to approximately zero over a period of 20-30 seconds.

Reactor vessel level will swell, but will not result in a high level trip of the Main Turbine.

The following annunciators will actuate:

111 RECIRC

D-1	1A Recirc Pump Motor Trip
E-2	1A Recirc M-G Drive Motor Trip
E-3	1A Recirc M-G Generator Lockout Trip

Jet Pump flows in the affected loop will decrease to zero, and then increase due to reverse flow within the Jet Pumps.

Removal of this malfunction will allow the affected RPT breaker to be reclosed. After the M-G Set Generator Lockout has been reset (Remote Function 37) the M-G Set can be restarted.

REFERENCES:

Elem Diag B32-1030

DESCRIPTION: Recirculation Loop (A,B) Break (0-100%)

CAUSE: Break in Selected Recirc Loop between the reactor vessel and the Recirc Pump suction valve (HV43-1F023A,B). Break is variable 0 - 100%, where 100% is a complete severance of the loop (Design Basis Accident).

EFFECTS:

Activation of this malfunction will result in a transport of mass from the reactor vessel to the primary containment at a rate dependent upon the severity of the malfunction, and the differential pressure between the reactor and the drywell. A malfunction severity of 100% is equivalent to a complete severance of the recirc loop.

Drywell temperature, pressure and activity level will increase, appropriately.

If reactor level decreases below 12.5 inches, or if drywell pressure increases above 1.68 psig, a reactor scram will occur. HPCI will also receive an initiation signal at 1.68 psig.

If reactor water level decreases below -38 inches, initiation of HPCI and RCIC will occur. Core Spray and Low Pressure Coolant Injection (RHR) will receive an initiation signal on reactor pressure below 445 psig AND Drywell Pressure above 1.68 psig, or if reactor water level decreases below -129 inches.

MALFUNCTION REMOVAL:

Removal of this malfunction at the Instructor Station will have no effects on plant response. Removal of this malfunction requires re-initialization of the simulator.

REFERENCES:

M-43, P&ID Reactor Recirculation Pump sheet 1

DESCRIPTION: DRAWER INOPERATIVE FOR PROCESS RADIATION MONITOR:
Unit 1 Containment Leak Detector Radiation Monitor

CAUSE: FAILURE OF PROCESS RADIATION MONITOR D12-1K600
CAUSES OUTPUT TO FAIL HIGH.

EFFECTS:

When this malfunction is activated the output of Unit 1 Containment Leak Detector Radiation Monitor D12-1K600 will fail to maximum.

The black pen for recorder RR26-0R600 on panel 00C624 will increase to maximum.

The following annunciators will actuate immediately:

<u>PANEL</u>	<u>WINDOW</u>	<u>ENGRAVING</u>
003 RAD	B-1	Units 1 & 2 Containment Leak Detector Rad Monitor Hi-Hi/Inop
003 RAD	B-2	Units 1 & 2 Containment Leak Detector Hi Radiation

There are no automatic actions that will occur as a result of this malfunction.

Removal of this malfunction will restore the output of D12-1K600 to normal.

REFERENCES:

M-26, SH. 1,3

E-632

Elem diag D12-1020, SH. 9