

4/21/97

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

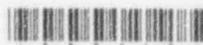
FROM: Virgil Curley, Licensing Assistant
Operating Licensing Branch, R I

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON
January 20-24, 1997, AT Limerick Generating Station, Units 1 & 2.
DOCKET #50-352 and 50-353

On January 20-24, 1997 Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

- Item #1 - a) Facility submitted outline and initial exam submittal, designated for distribution under RIDS Code A070.
- b) As given operating examination, designated for distribution under RIDS Code A070.
- Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

9704250135 970421
PDR ADOCK 05000352
V PDR



1996 LGS
OPERATING EXAMINATION
NRC INITIAL EXAM

Initial Submission
Category B RO Questions

CAT B - Control Rm Sys / Walkthrough - RO Questions

Topic	Reference	K&A			B.1		B.2	
					RO	SRO	RO	SRO
Recirc/SDC	LOT0030.08C	202001	K1.18	3.3	105			
Recirc	LOT0040.08C	202002	A2.01	3.4	107			
Ext. Steam	LOT0530.06	256000	A2.08	3.1	95			
FWLCS	LOT0550.11A	259002	K4.04	2.9	97			
MT/RPS	LOT0560.09J	241000	K4.05	3.7	139			
EHC	LOT0590.02F	241000	K3.15	2.8	132			
HPCI	LOT0340.07	206000	K5.01	3.3	109			
HPCI	LOT0340.14	206000	K2.01	3.2	110			
PCIG	LOT0730.11	202001	A2.18	2.9	111			
REHVAC	LOT0200.08F	295032	EK2.02	3.6	112			
SLC	LOT0310.03B	211000	K1.03	2.5	96			
RRCS	LOT0315.03D	295037	EK2.02	4.0	104			
REFUEL	LOT0760.07	234000	A3.02	3.1	121			
INST	ST-6-107-591	216000	SG.05	3.3	120			
SBGT	LOT0200.04	290001	K1.04	3.7			137	
RF Vent	LOT0200.05	290001	A4.05	3.3			140	
CRDH	LOT0070.02I	201001	K4.04	3.6			179	
ARI	LOT0070.05A	201001	K2.05	4.5			178	
RHR	LOT0370.12B	205000	A1.02	3.3			116	
RHR	LOT0370.12B	205000	A4.02	4.1			115	

A070

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: RO

Facility: Limerick 1 and 2

Examination: 1996 -1997

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Recirculation	1	202001K1.18/3.3/SDC
		202002A2.01/3.4/Recirc
Feedwater	2	256000A2.08/3.1/Ext. Steam
		259002K4.04/2.9/FWLCS
Main Steam	3	241000K4.05/3.7/M/RPS
		241000K3.15/2.8/EHC
HPCI	4	206000K5.01/3.3/HPCI
		206000K2.01/3.2/HPCI
Secondary Containment	5	202001A2.18/2.9/PCIG
		295032EK2.02/3.6/REHVAC
SLC	1	211000K1.03/2.5/SLC
		295037EK2.02/4.0/RRCS
SRM	8	234000A3.02/3.1/Refuel
		216000SG.05/3.3/Inst
Reactor Enclosure HVAC	9	290001K1.04/3.7/SBGT
		290001A4.05/3.3/RF Vent
Reactor Protection	7	201001K4.04/3.6/CRDH
		201001K2.05/4.5/ARI
RHR	2	205000A1.02/3.3/RHR
		203000A4.02/4.1/RHR

EXAMINER: _____

CHIEF EXAMINER: _____

NO.: 105 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 202001K1.18 TAXONOMY NO.:
LESSON PLANS: LOT0030.08C
:
CATEGORY: 96
SYSTEMS: RECIRC

QUESTION :

*** RO ONLY ***

Unit 1 is in OPCIION 5 with the "1B" RHR pump running in Shutdown Cooling Mode. The HV-43-1F031B (Recirc Discharge) is open. Maintenance requests the HV-43-1F023B (Recirc Suction) be opened as part of a PMT for valve work. Describe any concerns you would have with opening the HV-43-1F023B valve.

ANSWER :

When in Shutdown Cooling with both Recirc pump suction and discharge valves open, a Shutdown Cooling Bypass path could be established causing decreased S/D cooling capability and potential for an unexpected OPCIION change.

Reference: B0032 S51.8.B

NO.: 107 REV.: 5 TYPE: ES ENTERED BY: MGP DATE ENTERED: 12/09/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 202002.A2.01 TAXONOMY NO.:
LESSON PLANS: LOT0040.08C
:
CATEGORY: 96
SYSTEMS: RFC

QUESTION :

*** RO ONLY ***

Unit experiences a recirc pump trip at high power. OT-112 is entered at 60% power and 43% core flow. Using the Power Flow operations map provided, indicate where power and flow will stabilize after the Immediate Actions of OT-112 have been completed.

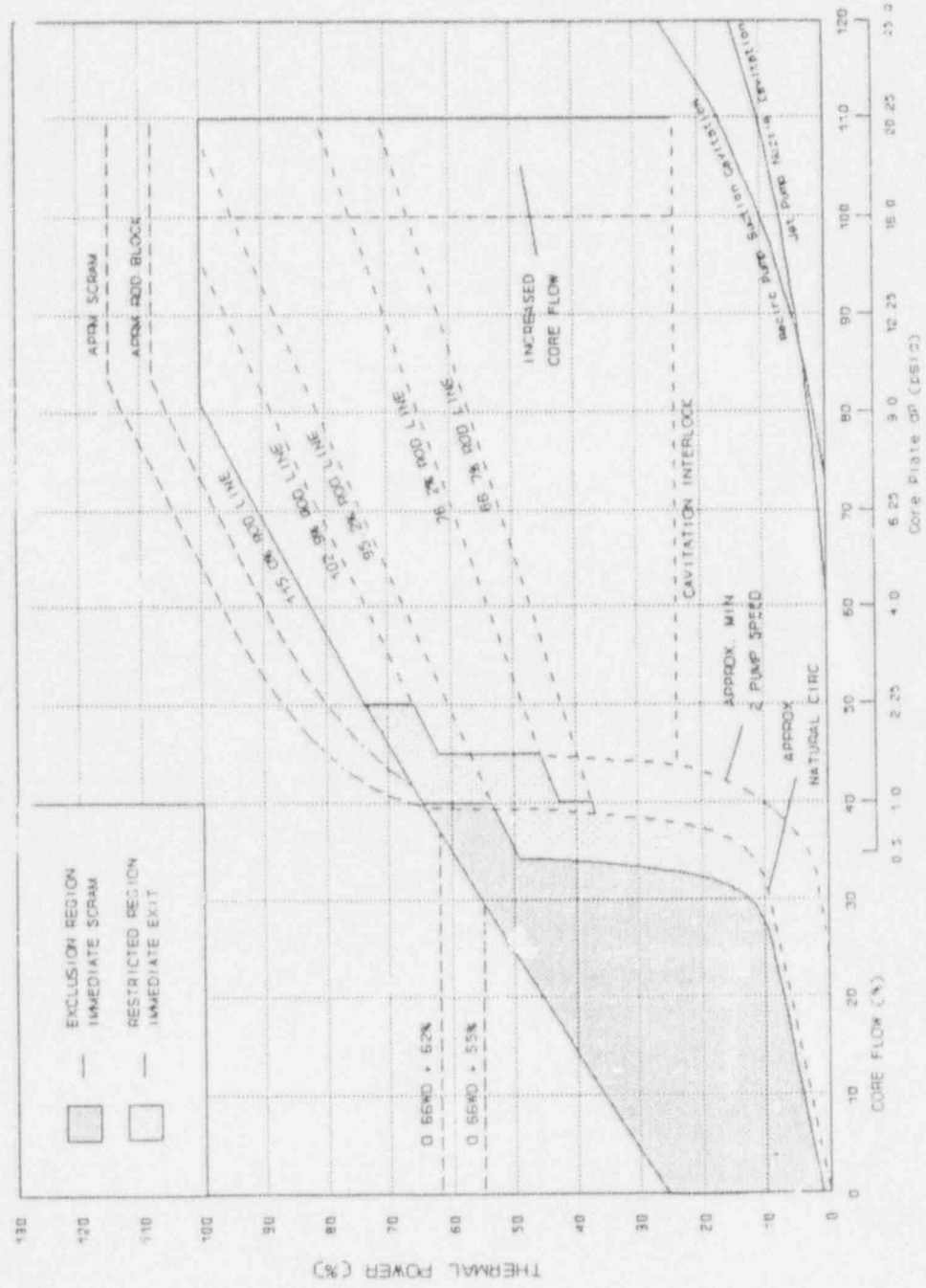
ANSWER :

Reactor power will drop below 33% per OT-112, flow will increase slightly.

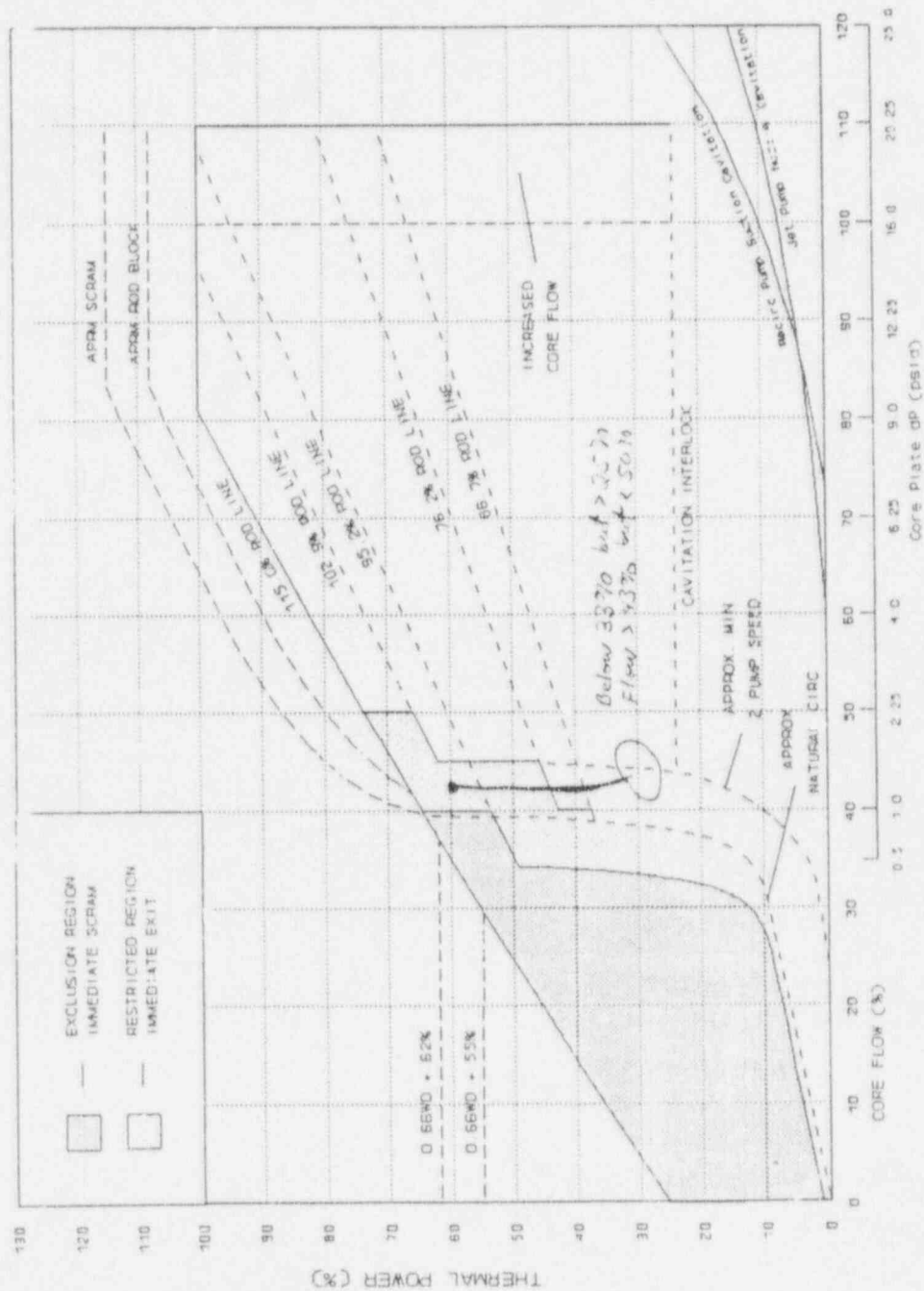
NOTE: The exact point cannot be determined, but core flow will be >43% and power will be <33%.

Reference: B0033, GP-5, OT-112

LGS POWER FLOW OPERATION MAP



LGS POWER FLOW OPERATION MAP



NO.: 95 REV.: 5 TYPE: ES ENTERED BY: DCW DATE ENTERED: 12/06/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 256000A2.08 TAXONOMY NO.:
LESSON PLANS: LOT0530.06
:
CATEGORY: 96
SYSTEMS: FW EXTSTM

QUESTION :

*** RO ONLY ***

A unit startup is in progress with reactor power at 70%. A major tube leak has occurred in the "6C" Feedwater Heater. The following alarms are lit:

- 6C FEEDWATER HEATER HI LEVEL
- FEEDWATER HEATER 3/4/5/6 HI-HI LEVEL ISOLATION

If no operator actions are taken,

- a. What effects will this have on the Condensate/feedwater system?
- b. Will it have any effect on reactor power?

ANSWER :

- a. Extraction steam to the 6C feed heater isolates and the dump valve opens to the condenser.
- b. Feed water temperature drops due to the loss of extraction steam and reactor power increases as a result.

Reference: #B0034

NO.: 97 REV.: 6 TYPE: ES ENTERED BY: RTR DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 259002K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0550.11A
CATEGORY: 96
SYSTEMS: FWLC

QUESTION :

*** RO ONLY ***

Given the following initial conditions:

- Feedwater Master Level Controller M/A is in AUTO set at 35".
- "A" and "E" RFP MGU M/A in AUTO.
- "C" RFP MGU M/A in MANUAL and "C" RFP speed is the same speed as "A" and "B" RFPs.

The "A" Narrow Range level instrument suddenly fails to "0" inches. The reactor scrams due to a main turbine trip, the RO places the mode switch in SHUTDOWN and selects the "B" Narrow Range indicator.

If no further operator actions are taken;

- a. How will the feedwater system respond after the scram?
- b. What will level be after conditions stabilize?
- c. Would the response be different if "C" RFP MGU M/A were in AUTO and why?

ANSWER :

- a. "C" RFP is in manual and won't respond to the FWLCS.
- *b. Level will increase until the +54" trip occurs.
- *c. If "C" RFP were initially in AUTO, all three pumps would run back initially in response to the scram and selecting "B" narrow range, level would then recover to 17.5" due to setpoint set down.

Reference: #B0035

NO.: 139 REV.: 3 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 241000K4.05 TAXONOMY NO.:
LESSON PLANS: LOT0560.09J
:
CATEGORY: 96
SYSTEMS: MNTURB RPS

QUESTION :

*** RO ONLY ***

Unit 2 is at 97% power.

- The PRO is performing MAIN TURBINE STOP AND CIV VALVE EXERCISE TEST (ST-6-001-760-2).

- a. What RPS function is expected while stroking #1 Main Stop Valve?
- b. Why is this response expected?

3WER :

- a. No RPS response expected.
- b. Insufficient number of TSV's closed.
"half scrams" from TSV closure require at LEAST two (2) valve closures, in this case MSV #2 is required for an A2 half scram, or MSV #3 for B1 half scram

"Full Scrams" from TSV closure require at LEAST three (3) valve closures.

Reference: B0036, ST-6-001-760-2, M-1-C71-1020-E-009, E-007, E-006

NO.: 132 REV.: 3 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 241000K3.15 TAXONOMY NO.:
LESSON PLANS: LOT0590.02F
:
CATEGORY: 96
SYSTEMS: EHC

QUESTION :

*** RO ONLY ***

Unit 1 is in OPCON 2 at 800 psig.

- Main turbine chest warming is in progress with the following PMS indications:

TO62	=	270°F
TO60	=	300°F
TO61	=	211°F
TO17	=	99 psig
- An EBC logic malfunction causes a "maximum open" signal to #2 MSV

What affect does this "maximum open" signal have on:

- a. the main turbine
- b. the reactor

ANSWER :

- a. Turbine:
 - 1) Turbine may roll off turning gear
 - 2) Heatup rate limitations may be exceeded for chest inner vs. outer delta T
- b. Reactor:
 - Scram due to 1st stage pressure exceeding bypass setpoint of TSV closure.

Reference: B0037, GP-2 Appendix 3

NO.: 109 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 206000K5.01 TAXONOMY NO.:
LESSON PLANS: LOT0340.07
:
CATEGORY: 96
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

T-270 provides direction on terminating and preventing HPCI injection. When a HPCI Initiation Signal is present, why must the manual "ISOLATION" Button be used to secure HPCI flow instead of the "TURBINE TRIP" Button?

ANSWER :

1. With initiation signal present, Aux Oil pump will remain running.
- *2. Depressing "TURBINE TRIP" will momentarily close the turbine stop valves and reduce HPCI speed, but once released, the turbine will restart.
- *3. Depressing manual "ISOLATION" Button will close the outboard steam supply valve. The turbine will not restart.

Reference: B0038, T-270

AGE 1

QUESTIONS for CAT B

12/06/96
15:43:23

NO.: 110 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 206000K2.01 TAXONCMY NO.:
LESSON PLANS: LOT0340.14
:
CATEGORY: 96
SYSTEMS: HPCI

QUESTION :

*** RO ONLY ***

During a Unit 2 startup in OPCI 2 with reactor pressure at 300# D24 Bus is deenergized.

Describe how this power loss affects HPCI operation.

ANSWER :

- * 1. The HPCI Outboard Isolation Valve loses power, this valve fails as-is, open.
- * 2. HPCI will still start and inject.

Reference: B0039, E-1F0

AGE 1

QUESTIONS for CAT B

12/06/96

15:43:29

NO.: 111 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 202001A2.18 TAXONOMY NO.:
LESSON PLANS: LOT0730.11

CATEGORY: 96
SYSTEMS: REHVAC

QUESTION :

*** RO ONLY ***

The "2C" REHVAC Supply fan trips off and Reactor Enclosure dp drops offscale negative. The RO manually inserts a full REHVAC isolation from the Main Control Room.

Describe the effects of this isolation on Reactor Recirc and SRVs.

ANSWER :

1. PCIG will isolate.
- * 2. Recirc Pump Motor Coolers will lose cooling.
- * 3. Non-ADS SRV's will lose pneumatics and cannot be operated.

Reference: B0040, ARC B-3, 004 Vent

NO.: 112 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 295032EK2.02 TAXONOMY NO.:
LESSON PLANS: LOT0200.08F
:
CATEGORY: 96
SYSTEMS: REHVAC

QUESTION :

*** RO ONLY ***

With Unit 1 at 85% power, DIV I DC is lost. How does this power loss affect the ability to isolate the RCIC room ventilation during a steam leak.

ANSWER :

1. One steam flooding damper on inlet will fail open.
2. One steam flooding damper on outlet will fail open.
- *3. One in-series steam flooding damper will close and isolate the room ventilation.

Reference: B0041, S76.0.A/E-508

NO.: 96 REV.: 5 TYPE: ES ENTERED BY: RTR DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 211000K1.03 TAXONOMY NO.:
LESSON PLANS: LOT0310.03B
:
CATEGORY: 96
SYSTEMS: SLC IA

QUESTION :

*** RO ONLY ***

An air tubing fitting has failed resulting in a localized total loss of instrument air to the SLC Tank level indicator dip tube.

What are the effects of this failure on SLC System tank level indication and pump operation?

ANSWER :

- a. SLC tank level in the Main Control Room (Panel *0C603) will indicate low and a low SLC tank level alarm will announce.
- b. All three SLC pumps will operate if required.

(NOTE: Their low level trips are fed from separate transmitters.)

Reference: #B0042

NO.: 104 REV.: 3 TYPE: ES ENTERED BY: RTR DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 295037EK2.02 TAXONOMY NO.:
LFSSON PLANS: LOT0315.03D
:
CATEGORY: 96
SYSTEMS: RRCS SLC

QUESTION :

*** RO ONLY ***

An ATWS is in progress on the unit with the following conditions:

- Reactor power 33%
- "C" APRM Bypassed
- "D" APRM Bypassed
- RPV pressure 1100 psig
- RPV level initially dropped to -60" BUT recovered to -20" within 70 seconds

If the DIVISION 2 Channels A and B RRCS pushbuttons are armed and pressed how will the SLC system respond? (assume no other parameters change)

ANSWER :

SLC will start and inject 118 seconds after the pushbuttons are depressed.

Reference: #B0043

NO.: 121 REV.: 3 TYPE: ES ENTERED BY: DCW DATE ENTERED: 12/06/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 234000A3.02 TAXONOMY NO.:
LESSON PLANS: LOT0760.07
:
CATEGORY: 96
SYSTEMS: REFUEL

QUESTION :

*** RO ONLY ***

Unit 1 is in OPCON 5 with Fuel Shuffle Phase I in progress.

Immediately after commencing step #114 you receive the following:

ROD OUT BLOCK annunciator

WITHDRAWAL BLOCK yellow status light

What condition(s) are represented by the above indications?

ANSWER :

Bridge is over the core

AND

The main hoist is now loaded.

Reference: B0044

TRANSFER AUTHORIZATION FOR FH-105
M-21966 Rev. 1/89
DOCTYPE 113

Unit LIMERICK GENERATING STATION Date 01/22/1996

Title 1R06 OFFLOAD TO MAINTENANCE

[illegible]

NO.: 120 REV.: 3 TYPE: ES ENTERED BY: DCW DATE ENTERED: 12/06/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 216000SG.05 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: INST

QUESTION :

*** RO ONLY ***

Unit 2 reactor cavity is flooded to support control rod blade (CRB) replacement.

- a. What is the MINIMUM required water level to continue CRB replacement?
- b. What three (3) instruments/indications allow this level to be monitored?

ANSWER :

Minimum required water level is 22' above the RPV flange.

- b. Level can be monitored on:

- 1) Shutdown Range (0-500") LI42-2R605
- 2) Upset Range (0-500") LR42-2R608
- 3) LI-53-203

Reference: B0045, ST-6-107-591-2

NO.: 137 REV.: 3 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 290001K1.04 TAXONOMY NO.:
LESSON PLANS: LOT0200.04
:
CATEGORY: 96
SYSTEMS: REHVAC

QUESTION :

*** RO ONLY ***

Unit 2 has been manually shutdown due to a small Drywell leak. Reactor Enclosure ventilation radiation levels have increased to the isolation setpoint due to a suspected Instrument Gas leak.

Describe the effect this isolation will have on Reactor Enclosure Ventilation AND the ability of MCR personnel to monitor Reactor Enclosure Ventilation radiation levels.

ANSWER :

- *1. Normal REHVAC supply and exhaust will shutdown.
- .. RERS and SBGT will start.
- 3. SBGT draws air through the same duct as normal vent exhaust.
- 4. REHVAC radiation monitors will still monitor air flow.
- *5. Ability to monitor REHVAC radiation in MCR will not be impaired.

Reference: B0046, M-76

AGE 1

QUESTIONS for CAT B

12/06/96
15:43:40

NO.: 140 REV.: 2 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 2900D1A4.05 TAXONOMY NO.:
LESSON PLANS: LOT0200.05
:
CATEGORY: 96
SYSTEMS: REHVAC

QUESTION :

*** RO ONLY ***

With both units in OPCON 1, an EO reports that Unit 1 Refuel Floor d/p is currently -0.18" WG and has been at this value for the last 28 minutes.

- a. What is/are the effect(s) on the Refuel Floor Ventilation system based on these conditions?
- b. What concerns do you have for operating with these conditions?

SWER :

- a. No effect, isolation signal <-0.1" WG for 100 sec.
- b. Value is lower than normal. Refuel Floor Secondary Containment is lost.

Reference: B0047, GP-8-1

NO.: 179 REV.: 1 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/09/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: DRAWN:
TASK NUMBER: SKA NO.: 201001K4.04 TAXONOMY NO.:
LESSON PLANS: LOT0070.02I
:
CATEGORY: 96
SYSTEMS: CRDH

QUESTION :

*** RO ONLY ***

How do the backup scram valves (SV-47-*F110A(B)) function to mitigate the potential for an ATWS caused by failure of individual HCU scram solenoids to reposition.

ANSWER :

Each one of the two B/U scram valves is capable of independently blocking and venting the scram air header supply to each HCU scram inlet and outlet valve (fail open) and the SDV vent and drain valves (fail closed) following receipt of an RPS trip system A and B input.

Reference: B0048 P&ID M-47 UFSAR

NO.: 178 REV.: 6 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/25/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 201001K2.05 TAXONOMY NO.:
LESSON PLANS: LOT0070.5A
:
CATEGORY: 96
SYSTEMS: CRDH

QUESTION :

*** RO ONLY ***

What is the source of power to the Alternate Rod Insertion solenoids?
Are these valves normally energized or de-energized to operate?

ANSWER :

1. 125V DC Safeguard power
2. ARI Solenoids are energized to operate

Reference: B0049

NO.: 116 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 205000A1.02 TAXONOMY NO.:
LESSON PLANS: LOT0370.12B
:
CATEGORY: 96
SYSTEMS: RHR

QUESTION :

*** RO ONLY ***

- Unit 2 scrammed
 - 27 rods failed to fully insert
 - T-112 Emergency Blowdown is in progress
 - RPV level is -210"
 - RPV pressure is 520#
 - RPV injection per T-245 (RPV FLOODING FROM RHR S/D COOLING) has been aligned via "B" loop
- A. When will RPV injection commence?
- B. What are ALL indications of injection?

ANSWER :

- A. 1. Flowpath aligned
2. RHR pump running
* 3. RPV pressure less than RHR discharge head
- *B. 1. Loop flow increase from 0 on FI-51-2R603B
2. Pump current increases
3. Check valve HV-51-2F050B DISC POS indicates open
4. RPV level increases

Reference: B50

NO.: 115 REV.: 2 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 203000A4.02 TAXONOMY NO.:
LESSON PLANS: LOT0370.12B
:
CATEGORY: 96
SYSTEMS: RHR

QUESTION :

*** RO ONLY ***

- LOCA conditions exist on Unit 1
- RPV level is being maintained with "B" LPCI at 5000 gpm
- RPV level is 20" and rising when you place the HV-51-1F017B to "CLOSE", then allow it to spring return to "AUTO"
- 30 seconds later:
 - LPCI injection rate is 1200 gpm
 - LPCI minimum flow valve HV-51-1F007B is open

A. What actions are required for the LPCI flowpath?

Why?

ANSWER :

- A. 1. Stop the 1B RHR pump
2. Close HV-51-1F017B
- B. HV-51-1F017B MOV tripped on torque switch actuation due to high d/p. Securing the pump will reduce the d/p and allow closing of HV-51-1F017B.

Reference: ECR96-00951, S51.2.A, 4.3, B0051

Initial Submission
Category "A" RD and SR3

CAT A - Administrative Tasks

FOOTNOTES:

A070

ADMINISTRATIVE TOPICS OUTLINE

Examination Level: RO Candidate's Name: _____

Facility: _____ Limerick 1 and 2 Examination: 1996 - 1997

Examiner's Name: _____
(Please Print)

Administrative Topic		Brief Question Description
A.1	Conduct of Operations (Fuel Handling)	Fill out a CCTAS and monitor reactivity changes during Core Alterations (Admin JPM)
A.1	Conduct of Operations Plant Parameter Verification)	Request, evaluate and troubleshoot faulty 3D P1 Case (Admin JPM)
A.2	Equipment Control (Tagging)	Use a Troubleshooting Control Form (TCF) to bypass an APRM. Fill out and disposition an Equipment Status Tag (Admin JPM)
A.3	Radiation Control (Personnel Monitoring)	Demonstrate the ability to use electronic dosimetry to determine dose and dose rate alarms in general and high radiation areas. (Admin JPM)
A.4	Emergency Plan (Emergency Communicator)	Locate and use the Emergency Notification system during a declared emergency event. (Admin JPM)

EXAMINER: _____

CHIEF EXAMINER: _____

1996 LGS INITIAL NRC EXAM

AJ#: 0001

SYSTEM: Fuel Handling

MATERIALS REQ:

1. CCTAS sheet (steps 50-56)

Direction to Simulator Instructor (if necessary):

0. Ensure simulator setup
 - a. Refuel IC 29
 - b. Communications box setup
 - c. CCTAS sheet staged
1. T = 0 minutes, as LSRO initiate step 50 of CCTAS by reading step.
2. T = 1 minute, as LSRO report "pulling bundle 31-46 NW from the core"
3. T = 1.25 minute insert remote function 277 on page RF1 to "yes"
4. T = 1.50 minute, as LSRO report "bundle clear of the core"
5. T = 2.50 minute remove remote function 277 on page RF1 to "NO"
6. T = 4.0 minute, as LSRO report "Step 50 complete bundle seated in pool location X-54 SW"

Directions to Evaluator:

1. This administrative JPM (AJ) is BEST performed before or after RO JPM 0521.
2. Read question to candidate.
3. The "*" items of the answer are knowledge/abilities being examined.
4. Read question to candidate.

NO.: 123 REV.: 2 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 234000A1.03 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: REFUEL

QUESTION :

*** RO ONLY ***

Coordinate with the Refuel Bridge to perform step #50 of the CCTAS.

ANSWER :

1. Reads, repeats CCTAS step.
- *2. Monitor's reactivity changes via SRM count rate while pulling bundle from the core.
- *3. Records SRM countrate on CCTAS.
4. Provides completion time to LSRO
- . Records completion date and time on CCTAS.

Reference: AJ0001 FH-105, 3.8

EXCHANGE AUTHORIZATION FOR FH-105

M-21966 Rev. 1/89

DOCTYPE 113

01/10/1997

title 1E07 OFFLOAD TO MAINTENANCE

[illegible]

1996 LGS INITIAL NRC EXAM

AJ#: 0002

SYSTEM: Plant Parameters, PMS, OD

MATERIALS REQ:

1. GP-5
2. RE-C-20
3. GP-14
4. Previous P-1

Direction to Simulator Instructor (if necessary):

1. Reset the simulator to a 100% IC
2. Request a P1 using "NSS 04" and ensure thermal limits and FLLP are less than 1.0; provide this copy to the evaluator.
3. Call up "SIM INS" at the Instructor Station.
4. Select "MFLCPR", backspace to clear the field and enter "1.261", press "Enter".
5. Select "MCPRLIM", backspace to clear the field and enter "2.000", press "Enter".
6. Select "MCPR", backspace to clear the field and enter "1.586", press "Enter".
7. Click on "Initialize Simulator".
8. The simulator will now provide the entered data on the P1 printout until the simulator is reset.

Directions to Evaluator:

1. Provide question to the candidate.
2. When the examinee reports that thermal limits are unacceptable, direct him to reference RE-C-20 and troubleshoot the P1.

If requested, provide the P1 obtained from step #2 above as the last official P1.

3. If requested, tell candidate RE will provide any additional data.
4. The "*" items of the answer are knowledge/abilities being examined.

NO.: 151 REV.: 1 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/21/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.15 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: OD PMS

QUESTION :

*** RO ONLY ***

Unit 1 has been at 100% power for the last 48 hours.

Request an official 3D P1 Case and evaluate the results.

ANSWER :

- *1. P1 obtained by selecting "NSS 04" and pressing "Enter" at PMS terminal.
- *2. MFLCPR is exceeding 1.0 and is unacceptable.
- *3. MCPRLIM is incorrect, causing MFLCPR to exceed 1.0.
- *4. Inform CRS and contact RE.

Reference: AJ002, RE-C-20, GP-5, Unit 1 C.O.L.R., GP-14

LIMERICK-1 CYCLE 7

SEQUENCE NO 6

3D MCNICORE
PERIODIC LOG03-DEC-1996 12:18 CALCULATED
03-DEC-1996 12:18 PRINTED
CASE ID FMLS1960315102955
RESTART FMLS1960315083000
LPRM ABSOLUTE - FULL CORE

CORE PARAMETERS

POWER	MWT	3461.		
NER	MWE	1169.		
FLOW	MLB/HR	86.797	CALC RESULTS	
FPAPDR		0.845		
SUBC	BTU/LB	26.09	Keff	1.0000
PR	PSia	1057.6	XE WORTH %	-2.35
CORE	MWD/sT	12858.1	XE RATED	1.03
CYCLE	MWD/sT	3489.5		
MCPR		1.586	FLLLP	0.956

LOAD LINE SUMMARY	
CORE POWER	100.1%
CORE FLOW	86.8%
LOAD LINE	110.3%

CORRECTION FACTOR: MFLCPR= 1.000 MFLPD= 1.000 MAPRAT= 1.000
 OPTION: ARTS DUAL LOOP MANUAL FLOW MCPRLIM= 2.000

MOST LIMITING LOCATIONS (NON-SYMMETRIC)

MFLCPR	LOC	MFLPD	LOC	MAPRAT	LOC	PCRAT	LOC
1.261	33-48	0.845	49-34-12	0.840	33-50-12	0.818	57-34-12
1.256	31-46	0.844	17-16- 5	0.838	15-18- 5	0.806	53-14- 5
1.253	33-32	0.836	47-20- 5	0.837	17-16- 5	0.802	57-28- 4
1.249	31-38	0.834	45-14- 5	0.835	47-20- 5	0.796	47- 8- 5
1.237	45-32	0.832	47-16- 5	0.835	29-30- 5	0.753	15-18- 5
1.234	23-32	0.827	31-46-12	0.831	31-46-12	0.752	17-16- 5
1.232	27-36	0.824	29-48-12	0.831	17-18- 5	0.752	31-46-12
1.228	47-38	0.823	19-18- 5	0.828	45-14- 5	0.752	47-20- 5
1.220	25-34	0.823	17-20- 5	0.826	19-18- 5	0.749	45-14- 5
1.228	37-48	0.822	29-38- 8	0.825	47-22- 5	0.746	29-38- 8

SEQ. A-2

C=MFLCPR D=MFLPD M=MAPRAT P=PCRAT *=MULTIPLE

CORE AVE AXIAL
NOTCH REL PW LOC

							0.421	25	
							00	0.482	24
59							02	0.542	23
L							04	0.647	22
55		16		16			06	0.823	21
51			M				08	0.858	20
L							10	0.901	19
47	08	36	00C	36	08		12	0.973	18
43							14	0.987	17
L							16	1.020	16
39	16	36	08	40	08	36	18	1.074	15
35						D	20	1.084	13
L						P	22	1.122	13
31	00	40	12	40	00		24	1.186	12
27							26	1.199	11
L							28	1.236	10
23	16	36	08	40	08	36	30	1.299	09
19							32	1.311	08
L							34	1.308	07
15	08	36	00	36	08		36	1.302	06
11							38	1.300	05
L							40	1.106	04
07		16		16			42	0.783	03
03	L	L	L	L	L	L	44	0.718	02
	02	06	10	14	18	22	46	0.359	01
			26	30	34	38			
						42			
						46			
						50			
						54			
						58			

CORE AVERAGE RADIAL POWER DISTRIBUTION

RING #	1	2	3	4	5	6	7	8
REL PW	0.925	1.330	1.233	1.270	1.125	1.161	0.882	0.629

LIMERICK-1 CYCLE 7 INSTRUMENT READINGS/STATUS
CALIBRATED LPRM READINGS

SEQUENCE NO 6
03-DEC-1996 12:18 CALCULATED
03-DEC-1996 12:18 PRINTED
CASE ID FMLS1960315102955
LPRM ABSOLUTE - FULL CORE

J	19.9	27.0	26.0	24.8
C	26.8	32.9	36.8	29.8
B	35.2	37.1	43.4M	35.4
A	32.9	32.8	39.1M	35.4

OF TIPS NOT SCANNED:

FAILED SENSORS:

LPRM (NONE FAILED)

LPRM (0 PANACEA REJECTED)

OTHER SENSORS (0 TOTAL)

SUB RODS

NONE

T = TIP RUN RECOMMENDED

C = MFLCPR LOCATION

M = MAPRAT LOCATION

D = MFLPD LOCATION

P = PCRAT LOCATION

* = MULTIPLE LOCATION

49D	22.2	30.9	35.7	33.2C	34.4	26.7	
C	30.4	43.3	57.7	54.0	53.9	35.2	
B	41.4	55.4	70.7	63.6	57.9	47.0	
A	42.6	56.7	57.1	60.1	56.5	50.9	
41D	32.6	37.0	40.0	41.0	38.7	34.8	25.3
C	43.6	58.6	58.9	66.9	56.1	54.1	29.7
B	52.3	73.6	69.4	79.2	67.8	68.0*	35.3
A	51.7	57.1	57.8	62.8	56.9	56.4	32.5
33D	34.1	35.0	42.9	45.5	40.2	33.8	26.7
C	51.2	58.6	66.5	59.2	66.6	54.1	36.6
B	60.4	69.0	78.9	68.8	79.2	63.6	43.1
A	58.5	59.4	62.7	58.1	62.7	59.5	38.5
25D	34.9	37.4	41.7	43.4	39.7	36.2	27.8
C	47.4	61.5	60.3	66.6	58.8	57.8	32.9
B	54.8	75.5	70.6	78.9	69.4	70.8	37.0
A	51.5	56.7	59.5	62.8	57.7	56.6	32.2
D	26.9	34.0	37.7	35.4	36.9	30.9	20.3
C	38.1	49.4	61.6	58.7	58.5	43.3	26.6
B	49.4	62.1	75.5	69.0	73.6	55.3	35.0
A	51.5	57.7	56.7	59.4	56.9	56.9	32.9
09D	26.8	33.8	32.8	32.0	22.3		
C	38.2	47.3	51.0	43.5	30.5		
B	49.6	54.8	60.4	52.3	41.5		
A	51.4	52.3	59.4	52.1	42.2		

08	16	24	32	40	48	56
----	----	----	----	----	----	----

CORE SUMMARY

CORE POWER	100.1%	CALC SUB FLOW	86.7%	DP MEAS PSI	10.92
CORE FLOW	86.8%	OPER SUB FLOW	-1.0%	DP ALC PSI	10.92
LOAD LINE	110.3%	FLOW BASIS	MEAS	FEEDWTR FLOW MLB/HR	15.10

APRM CALIBRATION

	A	B	C	D	E	F
READING	99.6	100.1	100.4	100.1	99.5	100.3
AGAF	1.005	1.000	0.998	1.000	1.007	0.998
APRM - %CTP	-0.5	0.1	0.3	0.0	-0.6	0.2

TIP RUNS RECOMMENDED
STRINGS: NONE

DRIVE FLOW	MLB/HR	27.17
FEEDWTR TEMP	DEG.F	435.3

LIMERICK-1 CYCLE 7 SEQUENCE NO 6

3D MONICORE
PERIODIC LOG03-DEC-1996 12:16 CALCULATED
03-DEC-1996 12:16 PRINTED
CASE ID FMLS1960315102955
RESTART FMLS1960315083000
LPRM ABSOLUTE - FULL CORE

CORE PARAMETERS

POWER MWT 3459.
POWER MWE 1169.
OW MLB/HR 86.791
FPAPDR 0.845
SUBC BTU/LB 26.06
PR PSia 1057.6
CORE MWD/sT 12858.1
CYCLE MWD/sT 3489.5
MCPR 1.417

CALC RESULTS

Keff 1.0000
XE WORTH % -2.35
XE RATED 1.03
FLLLP 0.955

LOAD LINE SUMMARY

CORE POWER 100.0%
CORE FLOW 86.8%
LOAD LINE 110.2%

CORRECTION FACTOR: MFLCPR= 1.000 MFLPD= 1.000 MAPRAT= 1.000
OPTION: ARTS DUAL LOOP MANUAL FLOW MCPRLIM= 1.290

MOST LIMITING LOCATIONS (NON-SYMMETRIC)

MFLCPR	LOC	MFLPD	LOC	MAPRAT	LOC	PCRAT	LOC
0.914	33-48	0.845	49-34-12	0.840	33-50-12	0.818	57-34-12
0.911	31-46	0.844	17-16- 5	0.838	15-18- 5	0.806	53-14- 5
0.909	33-32	0.836	47-20- 5	0.837	17-16- 5	0.802	57-28- 4
0.905	31-38	0.834	45-14- 5	0.835	47-20- 5	0.796	47- 8- 5
0.896	45-32	0.832	47-16- 5	0.835	29-30- 5	0.753	15-18- 5
0.894	23-32	0.827	31-46-12	0.831	31-46-12	0.752	17-16- 5
0.893	27-36	0.824	29-48-12	0.831	17-18- 5	0.752	31-46-12
0.890	47-38	0.823	19-18- 5	0.828	45-14- 5	0.752	47-20- 5
0.884	25-3	0.823	17-20- 5	0.826	19-18- 5	0.749	45-14- 5
0.890	37-48	0.822	29-38- 8	0.825	47-22- 5	0.746	29-38- 8

SEQ. A-Z

C=MFLCPR D=MFLPD M=MAPRAT P=PCRAT *=MULTIPLE

CORE AVE AXIAL
NOTCH REL PW LOC

								0.422	25						
								00	0.482	24					
								02	0.542	23					
59								04	0.647	22					
L								06	0.823	21					
55		16		16				08	0.858	20					
51			M					10	0.901	19					
L								12	0.973	18					
47		08	36	00C	36	08		14	0.987	17					
43								16	1.020	16					
L								18	1.074	15					
39	16	36	08	40	08	36	16	20	1.084	13					
35						D	P	22	1.122	13					
L								24	1.186	12					
31		00	40	12	40	00		26	1.199	11					
27								28	1.236	10					
L								30	1.299	09					
23	16	36	08	40	08	36	16	32	1.311	08					
19								34	1.307	07					
L								36	1.301	06					
15		08	36	00	36	08		38	1.300	05					
11								40	1.106	04					
L								42	0.783	03					
07			16		16			44	0.718	02					
03	L	L	L	L	L	L	L	46	0.359	01					
	02	06	10	14	18	22	26	30	34	38	42	46	50	54	58

CORE AVERAGE RADIAL POWER DISTRIBUTION

RING #	1	2	3	4	5	6	7	8
REL PW	0.925	1.330	1.233	1.270	1.125	1.161	0.882	0.629

LIMERICK-1 CYCLE 7 INSTRUMENT READINGS/STATUS
CALIBRATED LPRM READINGS

SEQUENCE NO 5
03-DEC-1996 12:16 CALCULATED
03-DEC-1996 12:16 PRINTED
CASE ID FMLS1960315102955
LPRM ABSOLUTE - FULL CORE

OF TIPS NOT SCANNED:

FAILED SENSORS:
LPRM (NONE FAILED)

LPRM (0 PANACEA REJECTED)
OTHER SENSORS (0 TOTAL)
SUB RODS
NONE

T = TIP RUN RECOMMENDED
C = MFLCPR LOCATION
M = MAPRAT LOCATION
D = MFLPD LOCATION
P = PCRAT LOCATION
* = MULTIPLE LOCATION

T	19.9	27.0	26.0	24.8			
C	26.7	32.9	36.8	29.8			
B	35.2	37.1	43.4M	35.4			
A	32.9	32.8	39.0M	35.4			
49D	22.2	30.9	35.7	33.2C	34.4	26.7	
C	30.4	43.3	57.6	54.0	53.9	35.2	
B	41.4	55.4	70.7	63.5	67.9	47.0	
A	42.5	56.7	57.1	60.1	56.4	50.9	
41D	32.6	37.0	39.9	41.0	38.7	34.8	25.3
C	43.6	58.6	58.9	66.9	56.1	54.1	29.7
B	52.3	73.6	69.4	79.2	67.7	68.0*	35.2
A	51.7	57.0	57.8	62.8	56.9	56.4	32.5
33D	34.1	35.0	42.9	45.5	40.2	33.8	26.7
C	51.2	58.5	66.5	59.2	66.6	54.1	36.6
B	60.4	68.9	78.8	68.8	79.2	63.6	43.1
A	58.5	59.4	62.6	58.0	62.7	59.5	38.5
25D	34.9	37.4	41.7	43.4	39.6	36.2	27.8
C	47.4	61.5	60.3	66.6	58.7	57.8	32.8
B	54.8	75.5	70.6	78.9	69.4	70.8	36.9
A	51.5	56.7	59.5	62.8	57.7	56.5	32.2
7D	26.9	34.0	37.7	35.4	36.9	30.9	20.3
C	38.1	49.4	61.6	58.7	58.4	43.3	26.6
B	49.4	62.0	75.5	69.0	73.6	55.3	35.0
A	51.5	57.7	56.7	59.3	56.9	56.9	32.8
09D	26.8	33.8	32.8	32.0	22.3		
C	38.2	47.3	51.0	43.5	30.4		
B	49.5	54.8	60.3	52.3	41.5		
A	51.4	52.3	59.3	52.0	42.2		
	08	16	24	32	40	48	56

CORE SUMMARY

CORE POWER	100.0%	CALC SUB FLOW	88.2%	DP MEAS PSI	10.92
CORE FLOW	86.8%	OPER SUB FLOW	-1.0%	DP CALC PSI	10.92
LOAD LINE	110.2%	FLOW BASIS	MEAS	FEEDWTR FLOW MLB/HR	15.09

APRM CALIBRATION

	A	B	C	D	E	F
READING	99.5	100.1	100.3	100.1	99.4	100.3
AGAF	1.005	0.999	0.997	1.000	1.006	0.998
APRM - %CTP	-0.5	0.1	0.3	0.0	-0.6	0.2

TIP RUNS RECOMMENDED
STRINGS: NONE

DRIVE FLOW MLB/HR 27.17
FEEDWTR TEMP DEG.F 435.3

1990 LGS INITIAL NRC EXAM

AJ#:0003

SYSTEM: Tagging (EST), Admin

MATERIALS REQ:

1. Equipment Status Tag
2. Approved TCF (for training only)

Direction to Simulator Instructor (if necessary): N/A

Directions to Evaluator:

1. This administrative JPM should be performed in the plant.
2. Manipulation of APRM bypass joystick, application of EST, and narrative log entry will be **SIMULATED** only.
3. Provide cue if asked that "bypass light is on".
4. Evaluator will ensure EST is not processed by the S.O.A. and the tag(s) are destroyed.
5. Provide question to the candidate.
6. Provide training TCF to the candidate.
7. The "*" items of the answer are knowledge/abilities being examined.

NO.: 165 REV.: 1 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/25/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.02 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: A

QUESTION :

*** RO ONLY ***

You are the Unit 2 RO. The CRS directs you to perform applicable system configuration changes and any required component tagging per the attached troubleshooting control form.

ANSWER :

1. Review TCF form for instructions and approvals
- *2. Fill in block #14, "as found" position as "neutral"
3. Place "C" APRM Bypass joystick to "C" position.
- *4. Fill out equipment status tag per OM-C-10.6 for "C" bypass joystick
- . Obtain CRS concurrence
- . Annotate tag with "Unit 2 RO" as operator classification
7. Hang EST on "C" APRM bypass joystick
8. Make entry in U-2 RO narrative log
- *9. Ensure EST lower stub placed in SOA office for processing

Reference: AJ0003, A-41.1, OM-C-10.6

Effective Date:

Exhibit A-41.1-1, Rev. 03

Page 1 of 1

RAB:djb

PORC	NO
SQR	YES
QR	NO
50.59	NO
RESP. MGR.	YES

LGS TROUBLESHOOTING CONTROL FORM

1. SYS#/NAME <i>C' APRM</i>	2. UNIT <i>2</i>	3. WORK REF <i>N/A</i>	4. DATE	5. PREPARER <i>[Signature]</i>	6. ICF # <i>TDG-001</i>
7. PROBLEM: <i>A.G.R. METER FOR 'C' APRM EXHIBITING ERRATIC BEHAVIOR, POSSIBLY FAILING</i>					
8. TROUBLESHOOTING METHOD: <i>INSTALL MONITORING EQUIPMENT TO RECORD METER BEHAVIOR</i>					
9. IMPACT ON OPERATIONS (if none, mark N/A): <i>N/A</i>					
10. SPECIAL PLANT/EQUIPMENT CONDITIONS REQUIRED (if none, mark N/A): <i>'C' APRM MUST BE BYPASSED</i>					
11. RESTORATION INSTRUCTIONS (if none, mark N/A): <i>ALL TEST EQUIPMENT MUST BE REMOVED PRIOR TO UNBYPASSING 'C' APRM</i>					
12. APPROVALS: 50.59 DETERMINATION NEEDED? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		IVOR REQUIRED? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		<i>[Signature]</i> PREPARED <i>J. Golman</i> WORK GROUP SUPERVISOR (MUST BE A SQR)	
72 Hour Duration Permitted SSVN _____		EQUIPMENT STATUS TAGS REQUIRED? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
13. DESCRIPTION OF SYS. CONFIGURATION CHANGE (INCLUDE DESCRIP. OF REMOVED COMPONENT)		14. AS FOUND	15. AS LEFT	16. AS LEFT INITIAL	17. IVOR INITIAL
<i>'C' APRM BYPASSED / BYSTICK IN 'C' POSITION</i>					
18. RESULTS/POST TCF TESTING (if none, mark N/A): <i>N/A</i>					
19. RESTORED BY/APPROPRIATE ADMINISTRATIVE CONTROLS IN PLACE: WORKER SIGNATURE _____ DATE _____			20. IVOR BY: SIGNATURE(S) _____ DATE _____		
21. ALL SECTIONS COMPLETE/SSVN/COI/ APPROPRIATE RO INFORMED WORK COMPLETE:			WORKER SIGNATURE _____ DATE _____ TIME _____		

EQUIPMENT STATUS TAG Nº 15865

POSITION/CONDITION _____

REASON/DISPOSITION _____

EQUIPMENT STATUS TAG Nº 15865

UNIT # _____ SYS # _____

EQUIPMENT _____

TAG LOCATION _____

HUNG BY _____ DATE _____

AUTHORIZING CO. _____

EQUIPMENT STATUS TAG Nº 15866

UNIT # _____

EQUIP. NAME / # _____

HUNG BY _____

DATE _____

TAG Nº 15866

REASON/DISPOSITION _____

POSITION/CONDITION _____

1996 LGS INITIAL NRC EXAM

AJ#: 0004

SYSTEM: Personnel Monitoring, RADOS

MATERIALS REQ:

1. Electronic dosimeter.

Direction to Simulator Instructor (if necessary):

N/A

Directions to Evaluator:

1. Anytime after candidate obtains an electronic dosimeter (E.D.), ask the following questions.
2. Provide question to the candidate.
3. The "*" items of the answer are knowledge/abilities being examined.

QUESTIONS for CAT A

PAGE 1

12/09/96
12:32:53

NO.: 127 REV.: 5 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: HP

QUESTION :

*** RO ONLY ***

What two (2) conditions, including setpoints, will cause your electronic dosimeter to alarm?

How does the dose rate alarm setpoint change when entering a high radiation area?

ANSWER :

* Candidate should depress black pushbutton next to display on the E.D. to arrive at the dose rate alarm (91mR/hr) and total dose alarm (75 mR)

OR

* Candidate can review general RWP for values of dose rate alarm and total dose alarm.

* If entering a high rad area or RWP area, then the E.D. is placed back in to machine and the wearer would scan badge number and RWP bar code into change setpoint. This can be accomplished at the HP station (41 line). The actual setpoint can be found in the specific RWP.

Reference: AJ0004

1996 LGS INITIAL NRC EXAM

AJ#: 0005

SYSTEM: Emergency Communicator, ERP

MATERIALS REQ:

1. Pre-made Emergency Notification Message form declaring an Alert due to RCIC fire.

Direction to Simulator Instructor (if necessary):

N/A

Directions to Evaluator:

1. This JPM can be done any time you are in the MCR .
2. Provide the attached copy of Appendix ERP-200-1, Page 1.
3. Provide question to the candidate.
4. The "*" items of the answer are Knowledge/Abilities being examined.

NO.: 126 REV.: 4 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: ERP

QUESTION :

*** RO ONLY ***

An Alert has been declared on Unit 1. The Shift Manager (acting E.D.) has directed you to notify the NRC.

- a. Identify the phone you will use?
- b. What information will you provide to the NRC?
- c. What are your duties and responsibilities in regard to the NRC Communicator Role?

ANSWER :

- a. NRC phone is the red phone located at CRS desk in the MCR.
- * b. Provide the information from Appendix ERP-200-1, Form 1, Emergency Notification Message Form.
- * c1. Contact the NRC within 15 minutes of declaration.
- c2. Log the time and person responding in Appendix ERP-110-1.
- * c3. Remain on the phone until the NRC disconnects or authorizes securing the line.

Reference: AJ0005
ERP-200
ERP-110
Appendix ERP-110-1
Appendix ERP-200-1

VALID ONLY

WHEN RED

12-5-95

**LEVEL I
CONTINUOUS USE**APPENDIX ERP-200-1
EMERGENCY DIRECTOR FORMSForm 1: EMERGENCY NOTIFICATION MESSAGE FORM

This is a Drill



This is not a Drill

1. This is : _____ at Limerick Generating Station Unit _____

My phone number is: _____

2. EMERGENCY CLASSIFICATION:

Unusual Event
AlertSite Area Emergency
General Emergency
The Event has been Terminated

AT: _____

TIME: _____ DATE: _____

THIS REPRESENTS A/AN:

Escalation
Reduction
No Change

IN CLASSIFICATION STATUS:

3. BRIEF NON-TECHNICAL DESCRIPTION OF THE EVENT:

FIRE IN ACIL ROOM

Relay this information to State/Local Agencies only

4. THERE IS:

No Release
Liquid Release

Airborne Release

5. WHEN GENERAL EMERGENCY IS THE INITIAL EVENT, PROVIDE PROTECTIVE ACTION RECOMMENDATION BELOW: (ONLY THE EMERGENCY DIRECTOR SHALL FURNISH THIS INFORMATION TO THE STATE AND COUNTIES)

6. WIND DIRECTION IS FROM: 70° WIND SPEED IS: 6 MPH

This is a Drill



This is not a Drill

DATE: _____ TIME: _____ APPROVED _____
(Ref. ERP-200 Section 6.5.2)

ADMINISTRATIVE TOPICS OUTLINE

Examination Level: SRO Candidate's Name: _____

Facility: _____ Limerick 1 and 2 Examination: 1996 - 1997

Examiner's Name: _____
(Please Print)

Administrative Topic		Brief Question Description
A.1	Conduct of Operations (Fuel Handling)	Review, evaluate and identify failed Surveillance Test associated with start of core alterations. (Admin JPM)
A.1	Conduct of Operations (Key Control)	Operate a locked device making all official entries and logs. (Admin JPM)
A.2	Equipment Control (Use of P&ID)	Use station prints to identify proper position of a manually operated valve. (Admin JPM)
A.3	Radiation Control (Personnel Monitoring)	Demonstrate the ability to use electronic dosimetry to determine dose and dose rate alarms in general and high radiation areas. (Admin JPM)
A.4	Emergency Plan (Emergency Communicator)	Classify the Emergency Action Level (EAL) for an event. Make a Protective Action Recommendation (PAR) for an event.

EXAMINER: _____

CHIEF EXAMINER: _____

1996 LGS INITIAL NRC EXAM

AJ#: 0006

SYSTEM: Fuel Handling

MATERIALS REQ:

1. ST-6-097-630-1(filled out)

Direction to Simulator Instructor (if necessary): NONE

Directions to Evaluator:

1. Provide filled-in ST to candidate for review
2. Read question to candidate
3. The "*" items of the answer are Knowledge/Abilities being examined

NO.: 122 REV.: 2 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 234000KA.11 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Core Alterations are to begin on your shift. The on-shift LSRO has just completed ST-6-097-630-1. The completed ST has been presented for your review. Core Alterations will begin upon your approval.

ANSWER :

- * 1. ST is completed UNSAT
- 2. Step 4.3.2 is signed as SAT with a note.
- 3. The note provided for step 4.3.2 violates T.S. 4.9.6.1.d
- * 4. Core Alterations can not begin
- 5. Discuss with LSRO UNSAT step.

Reference: AJ0006 ST-6-097-630-1

2-29-96

PECO ENERGY COMPANY
LIMERICK GENERATING STATION**ST-6-097-630-1 CORE ALTERATION TESTING FOR
OFFLOADING, SHUFFLING AND
RELOADING THE CORE**

Test Freq: Weekly - OR - Initiating Events:
 Tech Spec: 4.9.1.2 4.9.6.1
 4.9.1.3 4.9.6.2
 4.9.4 4.9.6.3

A

Prior to Core Alterations

B.

Prior to handling Control Rods

C.

Other

1. Reason

2. A/R No.

TEST RESULTS: (Circle SAT or UNSAT - Below)SAT All Asterisk (*) steps completed satisfactorily.UNSAT - Test Results of one OR more Asterisk (*) steps completed unsatisfactorily.

Performed by: (Sign/Date/Time)

Est M Orpha

Reviewed by (SSV) (Sign/Date)

IMMEDIATE NOTIFICATION OF OPERATIONS SHIFT MANAGEMENT (UNSAT Results Only)

Shift Supervision: (Sign)

(Date/Time)

Corrective Action (if required) (ETT or A/R - Number)

ADDITIONAL ACTION/TEST COMMENTS (User may add additional pages, if necessary)

- ① main hoist did not stop at "NORMAL UP", but did stop at "BACKUP HOIST LIMIT". LSRO determined that active fuel would not be less than 6 feet 6 inches below normal water level
- ② Section 4.5 not performed. CRBs will not be handled during outage. FHD log entry made. Section 4.6 not performed. CRBs will not be handled during outage. FHD log entry made

Person making entry (Sign/Date)

*Est M Orpha***CONTROLLED COPY
VALID ONLY
WHEN RED**

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	PURPOSE	4
2.0	PREREQUISITES	4
3.0	PRECAUTIONS	5
4.0	PROCEDURE	7
4.1	PREPARATION	7
4.2	SHIFT PERMISSION TO TEST	8
4.3	MAIN HOIST LOAD CELL AND TRAVEL LIMIT	8
4.4	REFUEL INTERLOCKS TESTING	12
4.5	MONORAIL AUXILIARY HOIST LOAD CELL AND TRAVEL LIMIT . . .	22
4.6	FRAME MOUNTED AUXILIARY HOIST CELL AND TRAVEL LIMIT . .	25
4.7	REACTOR SUBCRITICAL TIME	26
4.8	SERVICE PLATFORM LOAD CELL	27
4.9	RETURN TO NORMAL	27
5.0	ACCEPTANCE CRITERIA	28
6.0	REFERENCES	28
7.0	TECHNICAL SPECIFICATIONS	29
8.0	INTERFACING PROCEDURES	29

TABLE OF CONTENTS (Cont)

ATTACHMENTS

Attachment 1, SURVEILLANCE REQUIREMENTS PRIOR TO BEGINNING CORE ALTERATIONS	30
Attachment 2, SURVEILLANCE REQUIREMENTS ONCE PER 7 DAYS DURING CORE ALTERATIONS OR AFTER REPAIRS, MAINTENANCE, OR REPLACEMENT OF COMPONENTS	31
Attachment 3, SURVEILLANCE REQUIREMENTS PRIOR TO HANDLING CONTROL ROD BLADES	32
Attachment 4, AUXILIARY HOIST MECHANICAL STOP SETTINGS	33
Attachment 5, INDEPENDENT VERIFICATION OF RESTORATION	34

1.0 PURPOSE

To verify Tech Spec requirements during OPCON 5 are met when used in conjunction with the daily log for the time frames specified:

- Prior to beginning CORE ALTERATIONS.
- Routine Surveillance once per 7 days during CORE ALTERATIONS.
- Prior to handling Control Rod Blades within the Reactor Pressure Vessel.
- Prior to resuming CORE ALTERATIONS after Mode Switch has been unlocked.
- Prior to resuming CORE ALTERATIONS after repair, maintenance or replacement of any component that could affect Refuel Interlocks associated with the Limerick Technical Specifications.

2.0 PREREQUISITES

- 2.1 HP has been contacted if entry into an RWP area is required.
- 2.2 Plant in OPCON 5
OR OFFLOADED.
- 2.3 RWM is bypassed
OR in one rod test mode.
- 2.4 All control rods that are not bypassed per T.S. 3.9.10.1
OR 3.9.10.2 are fully inserted.
- 2.5 The REACTOR MODE switch is in "REFUEL" position.
- 2.6 Reactor Manual Control System is operable for performance of Subsection 4.4.
- 2.7 IF applicable,
THEN FH-107 has been performed for Unit 2 Refuel Platform non-normal reactor.
- 2.8 Refuel Platform is positioned over the Spent Fuel Pool with no hoists loaded.
- 2.9 IF aux hoist(s) are to be tested,
THEN only one swivel adapter is attached to aux hoist cable(s).

2.10 No other testing
OR plant condition which could interfere with this test is being performed/present.

2.11 The following tools/test equipment are available:

- General purpose grapple
- Test box to simulate control rod position
- Electrical Tape
- Test Refuel Bridge Strike Plate to simulate Refuel Platform over core

3.0 PRECAUTIONS

3.1 IF a procedural step can not be completed
OR any other difficulty is encountered during this test,
THEN a comment shall be entered in the Additional Action/Test Comments section.

3.2 IF a step denoted as a Tech Spec Requirement, marked with an asterisk(*), can not be successfully completed,
THEN Shift Supervision (SSVN) shall be notified immediately.

3.3 Any observed abnormality shall be documented in the Additional Action/Test Comments section
AND brought to the attention of SSVN.

3.4 The satisfactory completion of this surveillance test requires performance of
OR verifying performance of other procedures. ST Coordinator shall be contacted for completion dates/times.

3.5 Minimum operability requirements for SRM channels:

- All core quadrants where CORE ALTERATIONS are being performed must have one detector of an OPERABLE SRM channel located in that quadrant
AND another located in an adjacent quadrant.
- The use of special moveable detectors during CORE ALTERATIONS in place of normal SRM detectors is permissible as long as these special detectors are connected to the normal SRM circuits
AND all other SRM operability requirements are satisfied.

- 3.6 The minimum water level requirement of at least 22 ft. above the reactor pressure vessel flange only applies during the handling of irradiated fuel assemblies
OR irradiated control rods within the reactor pressure vessel.
- 3.7 Direct communications are required to be established between Control Room AND Refueling Floor personnel during CORE ALTERATIONS, except for control rods with their normal drive systems.
- 3.8 Verification that the reactor is subcritical 24 hours prior to CORE ALTERATIONS applies only to movement of irradiated fuel in the Reactor Pressure Vessel.
- 3.9 Section 4.5 and 4.6 may be performed outside the permissive zone of Boundary Zone Computer interlocks. Extreme care must be exercised to prevent Main Hoist Mast from touching Fuel Pool wall.
- 3.10 Operating Main Hoist while Bridge/Trolley is in motion may cause core component
OR equipment damage.
- 3.11 Several serious industry events have occurred recently due to the mismatch of thread sizes on the G.E. swivel adapter/terminal end (G.E. part no. 129B3131G002)
AND the following shall be observed: **CM-5**
- The swivel adapters are sized at 1/2"-13 UNC on the female end and 7/16"-14 UNC on the male end.
 - The swivel adapters shall be used singly to attach G.E. supplied servicing grapples to the refuel platform's frame mounted auxiliary hoist
OR monorail auxiliary hoist only.
 - The swivel adapter shall not be doubled up
OR used to attach servicing grapples to any crane
OR hoist other than the refuel platform frame mounted auxiliary hoist
OR monorail auxiliary hoist.
 - The swivel adapters
AND associated locknut shall be firmly secured to the GE supplied servicing grapples.

INITIALS

NOTE

It is the responsibility of the person
OR persons performing this test to ensure all blanks/data sheets are correctly
AND completely filled in.

4.0 PROCEDURE

4.1 PREPARATION

4.1.1 **VERIFY** all prerequisites of Section 2.0 are satisfied.

PM

4.1.2 **INITIAL** the reason(s) this test is being performed
AND ENTER N/A for the others:

- Prior to the start of CORE ALTERATIONS
(Attachment 1, normally performed once per
outage).
- Routine surveillance once per 7 days during
CORE ALTERATIONS (Attachment 2).
- Within 7 days prior to the start of handling
control rod blades (Attachment 3).
- Prior to resuming CORE ALTERATIONS
after mode switch has been unlocked
(Attachment 1).
- Prior to resuming CORE ALTERATIONS after
repair, maintenance or replacement of any
component that could affect the refuel
interlocks associated with the Limerick
Technical Specifications. (Attachment 2).

PM

N/A

N/A

N/A

N/A

4.1.3 **ENTER** N/A for steps in Attachments 1, 2,
OR 3 **not** required to be completed per step 4.1.2.

PM

INITIALS

- 4.1.4 **IF** Section 4.4 is required to be performed
AND Reactor Cavity is not available for testing,
THEN INSTALL Test Refuel Bridge Strike Plate.
Otherwise **ENTER** N/A for this step.

PM

4.2 SHIFT PERMISSION TO TEST

- 4.2.1 **OBTAIN** SSV permission to start test.

PM

- 4.2.2 **OBTAIN** PRO/RO permission to start test.

wmt

/
Date/Time

NOTE

1. Section 4.3 is required to be performed within 7 days prior to start of CORE ALTERATIONS.
2. **IF** the following was N/A'd in step 4.1.2
THEN all steps in Section 4.3 are N/A:

- Prior to the start of CORE ALTERATIONS (Attachment 1, normally performed once per outage).

4.3 MAIN HOIST LOAD CELL AND TRAVEL LIMIT

- 4.3.1 **LOWER** main hoist approximately 24 inches from
grapple NORMAL UP position.

PM

- 4.3.2 **RAISE** main hoist to grapple NORMAL UP position
AND VERIFY hoist motion stops automatically when
NORMAL UP light is Lit.

PM (*)

INITIALS

4.3.3 **VERIFY** that limit switch arm deflection occurs within a maximum of 2 inches travel on the associated limit switch ramp.

PMW (*)

4.3.4 **OPEN** hoist power center door
AND DEPRESS
AND TAPE door switch.

4.3.5 **VERIFY** the following on logic relay status board:

- MHL LED is Lit

PMW (*)

- MHL2 LED is Lit

PMW (*)

4.3.6 **POSITION** main hoist over Test Weight 2 Bail.

PMW

4.3.7 **LOWER** main hoist
AND GRAPPLE Test Weight 2.

PMW

NOTE

The following step demonstrates that the hoist loaded control rod block interlock

AND redundant loaded interlock is operable. LED's which are off indicate that the interlock coil de-energized.

4.3.8 **RAISE** Test Weight 2 above fuel pool floor until weight indication exceeds 550 lbs
AND VERIFY the following:

- MHL LED off

PMW (*)

- MHL2 LED off

PMW (*)

4.3.9 **LOWER** Test Weight 2 to fuel pool floor
AND RELEASE grapple.

4.3.10 **POSITION** main hoist over Test Weight 3 Bail.

4.3.11 **LOWER** main hoist and grapple Test Weight 3.

INITIALS

NOTE

The following step demonstrates that the main hoist overload cutoff is operable.

- 4.3.12 **SLOWLY** attempt to raise the test weight from the fuel pool floor
AND VERIFY:

- Hoist JAM indicator is lit.
- Main hoist will not raise.

PM (*)
PM (*)

- 4.3.13 **LOWER** Test Weight 3 to fuel pool floor.

- 4.3.14 **RELEASE** grapple
AND RAISE main hoist to NORMAL UP position.

PM

- 4.3.15 **REMOVE** tape from door switch
AND CLOSE hoist power center door.

- 4.3.16 **RECORD** satisfactory completion of Section 4.3 on
Attachment 1.

PM

INITIALS**NOTE**

1. Section 4.4 is required to be performed:
 - Prior to the start of CORE ALTERATIONS.
 - Once per 7 days during CORE ALTERATIONS.
 - Prior to resuming CORE ALTERATIONS after repair, maintenance or replacement of components affecting these interlocks.
2. IF Reactor Manual Control System is NOT operable,
THEN N/A this section.
3. IF all of the following were N/A'd in step 4.1.2
THEN all steps in Section 4.4 are N/A:
 - Prior to the start of CORE ALTERATIONS (Attachment 1, normally performed once per outage).
 - Routine surveillance once per 7 days during CORE ALTERATIONS (Attachment 2).
 - Prior to resuming CORE ALTERATIONS after repair, maintenance or replacement of any component that could affect the refuel interlocks associated with the Limerick Technical Specifications. (Attachment 2).

INITIALS

4.4 REFUEL INTERLOCKS TESTING

4.4.1 **IF** wire 0815 is lifted in main hoist power cabinet per GP 6.1, Shutdown Operations - Refueling, Core Alterations and Core Off-Loading, (simulating a withdrawn control rod to the refuel platform),

THEN temporarily **CONNECT** wire for performance of this subsection, if **not** **ENTER** N/A for this step
AND applicable portions of Attachment 5 section as required:

1. **VERIFY** ROR LED is not Lit. N/A (*)
2. **CONNECT** wire 0815 at HTB-2. N/A
3. **VERIFY** ROR LED is Lit. N/A (*)
4. **DIRECT** second operator to complete Independent Verification of Restoration (IVOR) on Attachment 5 for the following:
 - Connection of wire 0815 at HTB-2 N/A
 - ROR LED is Lit N/A

4.4.2 **VERIFY** that various control rods can be selected at panel 10C603
AND SELECT BLOCK indicator at the left of the rod select matrix is not Lit. WMT

4.4.3 **PERFORM** the following to install test box in Auxiliary Equipment Room:

1. **REQUEST** Reactor Operator to select rod 38-59. PM
2. **DISCONNECT** four rod group J38-63 at panel 10C615 (BAY B). PM

INITIALS

3. **POSITION** test box as follows:

Rod Switch Position

38-59 00

PM

4. **CONNECT** test box cable to connector
J38-63 at panel 10C615 (Bay B).

PM

5. **REQUEST** Reactor Operator to verify on the
4 rod display that indicated position of rods
38-59
AND 34-59 is 00.

PM

- 4.4.4 **VERIFY** the following at panel 10C616 Activity Control
No's 1
AND 2:

- Rods Not Full In, Box F₁ LEDs are not Lit
- Grapple Load, Box P_G LEDs are not Lit
- Overcore, Box P_C LEDs are not Lit

PM (*)

PM (*)

PM (*)

NOTE

1. Dummy Bundle fuel pool storage location may be obtained from Reactor Engineering.
2. Bail handle of Dummy Bundle has the word DUMMY on it.

- 4.4.5 **VERIFY** Dummy Bundle in Fuel Pool Storage Location.

PM

- 4.4.6 **POSITION** Main Hoist over Dummy Bundle.

- 4.4.7 **LOWER** grapple onto Dummy Bundle.

INITIALS

4.4.8 **PERFORM** the following for double verification of grapple

AND Dummy Bundle position:

1. **REQUEST** Platform Operator to verify grapple is properly positioned onto Dummy Bundle.
2. **REQUEST** Fuel Handling Director to verify grapple is properly positioned onto Dummy Bundle.

PM

PM
(FHD)

4.4.9 **ENGAGE** grapple

AND RAISE Dummy Bundle to NORMAL UP position.

4.4.10 **VERIFY** the following:

- Grapple NORMAL UP indicator is Lit.
- Hoist position indicates approximately 0.00 inches.

4.4.11 **ALIGN** Dummy Bundle with center of transfer canal.

4.4.12 **NOTIFY** Reactor Operator that refueling CONTROL ROD BLOCK is about to be tested.

4.4.13 **PERFORM** the following to simulate one control rod not full in:

1. **REQUEST** Reactor Operator to select rod 38-59.
2. **REQUEST** Reactor Operator to verify on 4 rod display that indicated position of rods 38-59
AND 34-59 is at "00."

PM

PM

INITIALS

3. **CHANGE** the indicated position for rod 38-59 from '00' to '02' using test box installed in Aux Equipment Room.
4. **REQUEST** Reactor Operator to verify 4 rod display for rod 38-59 is indicating "02."
5. **REQUEST** Reactor Operator to verify no Rod Withdrawal Blocks are present.

PMV

PMV

PMV

NOTE

The refueling platform should automatically stop prior to the mast reaching either the area over the core

OR if Test Strike Plate is installed, in Fuel Pool Area, the refuel platform should stop automatically approximately three feet past limit switch strike plate.

- 4.4.14 **DRIVE** refueling platform west, attempting to pass over the Unit 1 Reactor Core.

PMV

- 4.4.15 **PERFORM** the following:

1. **VERIFY** Refuel Platform stopped prior to mast reaching area over the core,
OR if using Test Refuel Bridge Strike Plate, in Fuel Pool Area, the refuel platform should stop automatically within three feet of limit switch contact with strike plate.
2. **VERIFY** FUEL HOIST INTERLOCK indicator is Lit.
3. **VERIFY** ROD BLOCK INTERLOCK #1
AND ROD BLOCK INTERLOCK #2 indicators are Lit.

PMV (*)

PMV (*)

PMV (*)

INITIALS

4. IF using UNIT 1 Refuel Platform,
THEN VERIFY BRIDGE REV. STOP #1
indicator is Lit.
Otherwise ENTER N/A for this step.
5. IF using UNIT 2 Refuel Platform,
THEN VERIFY BRIDGE FORWARD STOP #1
indicator is Lit.
Otherwise ENTER N/A for this step.
6. VERIFY main hoist will not RAISE
OR LOWER.
7. IF using UNIT 1 Refuel Platform,
THEN VERIFY Platform can not be driven in
REVERSE.
Otherwise ENTER N/A for this step.
8. IF using UNIT 2 Refuel Platform,
THEN VERIFY Platform can not be driven
FORWARD.
Otherwise ENTER N/A for this step.
9. REQUEST Reactor Operator to verify that
Rod 38-59 may not be withdrawn by applying
a withdraw signal
AND observing the following:
- No normal withdrawal sequencing
occurs
 - Rod Withdrawal Block is Lit on
10C603

PMW (*)N/A (*)PMW (*)PMW (*)N/A (*)PMW (*)

INITIALS

4.4.16 **VERIFY** the following at panel 10C616 Activity Control

No's 1

AND 2:

- Rods Not Full In, Box F₁ LEDs are Lit.
- Grapple Load, Box P_G LEDs are Lit.
- Overcore, Box P_C LEDs are Lit.

PW (*)

PW (*)

PW (*)

4.4.17 **DRIVE** Refueling Platform east to clear refueling track switches.

PW

4.4.18 **PERFORM** the following at Platform Interlock Status Display:

1. **VERIFY** FUEL HOIST INTERLOCK indicator is not Lit.

PW (*)

2. **VERIFY** ROD BLOCK INTERLOCK #1
AND ROD BLOCK INTERLOCK #2 indicators are not Lit.

PW (*)

3. **IF** using UNIT 1 Refuel Platform,
THEN VERIFY BRIDGE REV. STOP #1 indicator is not Lit.
Otherwise if not **ENTER** N/A for this step.

PW (*)

4. **IF** using UNIT 2 Refuel Platform,
THEN VERIFY BRIDGE FORWARD STOP #1 indicator is not Lit.
Otherwise **ENTER** N/A for this step.

N/A (*)

INITIALS

NOTE

A Rod Block condition does not effect the ability to select rods, only the refuel position one-rod-out interlock prevents rod selectability.

4.4.19 **VERIFY** SELECT BLOCK display to the left of the rod select matrix is Lit.

PMV (*)

4.4.20 **VERIFY** a second control rod can not be selected.

PMV (*)

4.4.21 Using test box in Aux. Equipment Room,
POSITION switch for Control Rod 38-59 to "00":

PMV

4.4.22 **REQUEST** Reactor Operator to verify 4 rod display for rod 38-59 is indicating "00."

PMV

4.4.23 **DRIVE** Refueling Platform west to activate both refueling track switches.

PMV

4.4.24 **WHEN** both refueling track switches are activated,
THEN STOP Refueling Platform
AND PERFORM the following:

1. **VERIFY** ROD BLOCK INTERLOCK #1
AND ROD BLOCK INTERLOCK #2 indicators are Lit.

PMV (*)

2. **REQUEST** Reactor Operator to verify that Rod Withdrawal Block is Lit on 10C603
AND Rod 38-59 may not be withdrawn by applying a withdraw signal
AND observing no normal withdraw sequencing occurs.

PMV (*)

3. **IF** using UNIT 1 Refuel Platform,
THEN VERIFY Platform can be driven REVERSE over the core.
Otherwise **ENTER** N/A for this step.

PMV (*)

INITIALS

4. IF using UNIT 2 Refuel Platform,
THEN VERIFY Platform can be driven
FORWARD over the core.
Otherwise ENTER N/A for this step. N/A (*)
- 4.4.25 VERIFY Refuel Platform over core Strike Plate is physically intact
AND free of obvious damage along its full length. PMW
- 4.4.26 RETURN Dummy Bundle to designated Spent Fuel Pool
Storage location. PMW
- 4.4.27 PERFORM the following for double verification of
correct storage location of Dummy Bundle:
1. REQUEST Platform Operator to verify
Dummy Bundle is in designated Spent Fuel
Pool Storage location. PMW
2. REQUEST Fuel Handling Director to verify
Dummy Bundle is in designated Spent Fuel
Pool Storage location. PMW
(FHD)
- 4.4.28 RELEASE grapple
AND RAISE Main Hoist to NORMAL UP position. PMW
- 4.4.29 IF Test Refuel Strike Plate was installed,
THEN PERFORM the following to remove Test Strike
Plate, if not ENTER N/A for this step.
1. REMOVE Test Refuel Bridge Strike Plate. PMW
2. INSTALL set screws removed in step 4.1.4. PMW
- 4.4.30 PERFORM the following to remove Test Box installed
in Auxiliary Equipment Room:
1. DISCONNECT test box cable
AND CONNECT rod group J38-63 at panel
10C615 (BAY B). PMW

INITIALS

2. **REQUEST** Reactor Operator to verify rods 38-59
AND 34-59 indicate "00" on 4 rod display at panel 10C603.
3. **DIRECT** second operator to complete Independent Verification of Restoration (IVOR) on Attachment 5 for the following:
 - Disconnecting test box cable
AND connection of rod group J38-63 at panel 10C615 (BAY B).
 - Rods 38-59
AND 34-59 indicate "00" on 4 rod display.

PMW

PMW

PMW

- 4.4.31 **IF** step 4.3.1 is not N/A,
THEN RESTORE GP6.1, Shutdown Operations - Refueling, Core Alterations and Core Off-Loading, lifted lead to altered condition, if not **ENTER** N/A for this step
AND applicable Attachment 5 IVOR section as required:

1. **VERIFY** ROR LED is Lit.
2. **LIFT**
AND **APPLY** tape to lead wire 0815 at HTB-2 at Refuel Platform Main Hoist power cabinet.
3. **VERIFY** ROR LED is not Lit.
4. **DIRECT** second operator to complete Independent Verification of Restoration (IVOR) on Attachment 5 for the following:
 - Wire 0815 at HTB-2 being lifted
AND taped.
 - ROR LED is not Lit.

N/A (*)

N/A

N/A (*)

N/A

N/A

INITIALS

- 4.4.32 **INDICATE** satisfactory completion of Section 4.4 in
Attachment 1
OR 2 as applicable.

PM

NOTE

1. Section 4.5 is required to be performed within 7 days prior to handling control rod blades within the Reactor Pressure Vessel.
2. IF this Section is not performed prior to the start of CORE ALTERATIONS, THEN the monorail auxiliary hoist shall not be used to handle control rod blades within the Reactor Pressure Vessel until this Section is performed.
3. IF the following was N/A'd in step 4.1.2
 - Prior to the start of CORE ALTERATIONS (Attachment 1, normally performed once per outage).

THEN Section 4.5 shall be performed
AND the following shall be initialed in step 4.1.2:

 - Within 7 days prior to the start of handling control rod blades (Attachment 3).

OR the monorail auxiliary hoist shall not be used to handle control rod blades within the Reactor Pressure Vessel
AND the following shall be N/A'd in step 4.1.2:

 - Within 7 days prior to the start of handling control rod blades (Attachment 3).
4. IF the following is N/A in step 4.1.2:
 - Within 7 days prior to the start of handling control rod blades (Attachment 3).

THEN all steps of Section 4.5 are N/A.
5. IF Section 4.5 is not to be performed
THEN an entry shall be made in Fuel Handling Director Log Book indicating that this section was not performed.

INITIALS

4.5 MONORAIL AUXILIARY HOIST LOAD CELL AND TRAVEL LIMIT

NOTE

Step 4.5.1 may require lowering the mechanical stop (jam block).

- 4.5.1 **ATTACH** general purpose grapple to the Monorail Aux Hoist swivel adapter. **CM-5**

N/A

NOTE

Dry Test Weight for checking proper operation of Aux Hoist load cell is located on Fuel Floor.

- 4.5.2 **MANEUVER** Monorail Aux Hoist over Dry Test Weight.

N/A

- 4.5.3 **LOWER** hoist
AND ENGAGE grapple to Dry Test Weight.

N/A

NOTE

Step 4.5.4 demonstrates the overload cutoff for the Monorail Aux Hoist is OPERABLE.

- 4.5.4 **ATTEMPT** to slowly raise Dry Test Weight
AND VERIFY Monorail Aux Hoist RAISE capability is
INOPERATIVE.

N/A (*)

- 4.5.5 **ENSURE** reading on Pendant Load Readout is between
450
AND 550 pounds. **CM-1, CM-3**

N/A (*)

- 4.5.6 **LOWER** Test Weight onto fuel floor until cable is slack.

N/A

- 4.5.7 **RELEASE** grapple
AND RAISE hoist to over-hoist position.

N/A

- 4.5.8 **REMOVE** grapple from hoist swivel adapter.

N/A

INITIALS

NOTE

Attachment 4 presents desired mechanical stop settings.

If control rod blade will not be handled by the monorail aux. hoist,
THEN ATTACH "DO NOT USE" or equivalent tag and N/A Steps 4.6.9 and 4.6.10.

- 4.5.9 **SET** mechanical stop (JAM BLOCK) such that hook
invert of grapple to be used for handling control rod
blades is 6 feet 7 inches below normal water level. **CM-1** N/A (*)
- 4.5.10 **RECORD** which grapple mechanical stop is set on
Attachment 3 N/A
- 4.5.11 **INDICATE** satisfactory completion of Section 4.5 on
Attachment 3. N/A

INITIALS

NOTE

1. Section 4.6 is required to be performed within 7 days prior to handling control rod blades within the reactor pressure vessel.
2. IF this subsection is not performed prior to the start of CORE ALTERATIONS THEN the frame mounted auxiliary hoist shall not be used to handle control rod blades within the Reactor Pressure Vessel until this Section is performed.
3. IF the following is not applicable from step 4.1.2:
 - Prior to the start of CORE ALTERATIONS (Attachment 1, normally performed once per outage).

THEN Section 4.6 shall be performed
AND the following shall be initialed in step 4.1.2:

 - Within 7 days prior to the start of handling control rod blades (Attachment 3).

OR the frame mounted Auxiliary Hoist shall not be used to handle control rod blades within the Reactor Pressure Vessel
AND the following shall be N/A'd in step 4.1.2:

 - Within 7 days prior to the start of handling control rod blades (Attachment 3).
4. IF the following is N/A in step 4.1.2:
 - Within 7 days prior to the start of handling control rod blades (Attachment 3).

THEN all steps of Section 4.6 are N/A.
5. IF Section 4.6 is not to be performed
THEN an entry shall be made in Fuel Handling Director Log Book indicating that this section was not performed.

INITIALS

4.6 FRAME MOUNTED AUXILIARY HOIST CELL AND TRAVEL LIMIT

NOTE

Step 4.6.1 may require lowering the mechanical stop (jam block).

- 4.6.1 **ATTACH** general purpose grapple to the frame mounted Aux. Hoist swivel adapter. **CM-5**

N/A

NOTE

Dry Test Weight for checking proper operation of Aux. Hoist load cell is located on fuel floor.

- 4.6.2 **MANEUVER** Frame Mounted Aux. Hoist over Dry Test Weight.

N/A

- 4.6.3 **LOWER** hoist
AND ENGAGE grapple to Dry Test Weight.

N/A

NOTE

Step 4.6.4 demonstrates the overload cutoff for the Frame Mounted Aux. Hoist is OPERABLE.

- 4.6.4 **ATTEMPT** to slowly raise Dry Test Weight
AND VERIFY Frame Mounted Aux. Hoist **RAISE**
capability is INOPERATIVE.

N/A (*)

- 4.6.5 **ENSURE** reading on Pendant Load Readout is between
450
AND 550 lbs. **CM-1, CM-3**

N/A (*)

- 4.6.6 **LOWER** Dry Test Weight onto fuel floor until cable is
slack.

N/A

- 4.6.7 **RELEASE** grapple
AND RAISE hoist to over-hoist position.

N/A

INITIALS

4.6.8 **REMOVE** grapple from swivel adapter.

N/A

NOTE

Attachment 4 has desired mechanical stop settings.

IF control rod blade will not be handled by the frame aux. hoist,

THEN ATTACH "DO NOT USE" or equivalent tag and N/A Steps 4.6.9 and 4.6.10.

4.6.9 **SET** mechanical stop (JAM BLOCK) such that hook invert of grapple to be used for handling control rod blades is 6 feet 7 inches below normal water level. CM-1

N/A (*)

4.6.10 **RECORD** which grapple mechanical stop is set on Attachment 3.

N/A

4.6.11 **RECORD** satisfactory completion of subsection 4.6 on Attachment 3.

N/A

NOTE

1. Section 4.7 is required to be performed 24 hrs. prior to the start of CORE ALTERATIONS.

2. **IF** the following is not applicable from step 4.1.2:

Prior to the start of CORE ALTERATIONS (Attachment 1, normally performed once per outage).

THEN step 4.7.1,

AND on Attachment 1 is not applicable

AND shall be marked N/A.

3. For purpose of this test, Reactor is considered to be subcritical once Reactor Mode switch is placed in "SHUTDOWN" position.

4.7 REACTOR SUBCRITICAL TIME

4.7.1 **REFER TO** Reactor Operator's Log,
AND RECORD time/date Reactor Mode switch was placed in "SHUTDOWN" on Attachment 1.

PW

N/A (*)

~~PMV~~ PMV N/A

N/A / N/A
Time/Date

INITIALS

4.9.2 **ENSURE** Attachment 5 complete.

PMV

4.9.3 **NOTIFY** SSV
AND PRO/RO of the following:

PMV

- Test completion
- Test results

4.9.4 **ENSURE** cover sheet is correctly
AND completely filled in.

5.0 ACCEPTANCE CRITERIA

5.1 Steps denoted with asterisk (*) have been completed satisfactorily.

6.0 REFERENCES

- 6.1 **CM-1**, TSCR 90-03-0, Commitment Tracking, T00962
- 6.2 **CM-2**, SRM Minimum Count Rate, Commitment Tracking, T00798
- 6.3 **CM-3**, Aux Hoist Jam Setting, Commitment Tracking, T02081
- 6.4 **CM-4**, LGS RCM Analysis-R/F Bridge, Commitment Tracking, T02707
- 6.5 **CM-5**, PBAPS PEP I0001540
- 6.6 M-C-797-005
- 6.7 M1-C71-1020, Elementary Diagram, Reactor Protection System
- 6.8 M1-C11-1050, Elementary Diagram, Reactor Manual Control System
- 6.9 M1-F21-E-051, Elementary Diagram, Refueling Platform
- 6.10 LGS PORC Position 30
- 6.11 LGS PORC Position 54
- 6.12 LGS UFSAR Section 7.7.1.15.3.7
- 6.13 LGS UFSAR Section 9.1.4.2.7.1

7.0 TECHNICAL SPECIFICATIONS

7.1 4.9.1.2

7.2 4.9.1.3

7.3 4.9.4

7.4 4.9.6.1

7.5 4.9.6.2

7.6 4.9.6.3

8.0 INTERFACING PROCEDURES

8.1 GP 6.1, Shutdown Operations - Refueling, Core Alterations and Core Off-Loading

8.2 ST-2-074-600-1, SRM A Functional Test

8.3 ST-2-074-601-1, SRM B Functional Test

8.4 ST-2-074-602-1, SRM C Functional Test

8.5 ST-2-074-603-1, SRM D Functional Test

8.6 ST-6-047-370-1, Pre Control Rod Withdrawal Check

8.7 ST-6-097-300-1, Rx Mode Switch Functional Test

8.8 ST-6-107-634-1, Service Platform Testing

8.9 ST-6-107-875-1, Shutdown Margin Determination (SDM)

ATTACHMENT 1
Page 1 of 1

SURVEILLANCE REQUIREMENTS PRIOR TO BEGINNING CORE ALTERATIONS

Step Number	Requirement	Completed SAT	Time/Date	Limiting Time/Date	Most Limiting Start Time/Date	Performed by Initials/N/A
4.3.15	Main Hoist Load Cells AND Travel limits	<input checked="" type="radio"/> Y	N	_____ + 7 Days = _____		
4.4.20	Refuel Interlocks	<input checked="" type="radio"/> Y	N	_____ + 7 Days = _____	_____ Time/Date	<u>RM</u> (*)
4.7.1	Sub-Critical	<input checked="" type="radio"/> Y	N	_____ + 24 hours = _____		
				(May <u>not</u> start CORE ALTERATIONS before this time)		
4.8.2	Service Platform Load Cell	Y/N	N/A	_____ + 24 hour = _____		

ATTACHMENT 2
Page 1 of 1

SURVEILLANCE REQUIREMENTS ONCE PER 7 DAYS
DURING CORE ALTERATIONS OR AFTER REPAIRS, MAINTENANCE, OR REPLACEMENT OF COMPONENTS

<u>Step Number</u>	<u>Requirement</u>	<u>Completed Time/Date</u>	<u>Within the last 7 days? SAT/UNSAT</u>	<u>Performed by Initials/N/A</u>
4.4.32	Refuel Interlocks	<u>N/A</u>	SAT/UNSAT	<u>N/A (*)</u>

ATTACHMENT 3
Page 1 of 1

SURVEILLANCE REQUIREMENTS PRIOR TO HANDLING CONTROL ROD BLADES

Step Number	Requirement	Completed Time/Date	CRB Handling Limiting Start Time/Date	Grapple for which Mechanical Stop is set:	Performed by Initials/N/A
4.5.10,	Grapple on Monorail Auxiliary				
4.5.11	Hoist Load Cell AND Travel Limit	<u>N/A</u> + 7 days = <u>N/A</u>		<u>N/A</u> (*)	<u>N/A</u> (*)
4.6.10,	Grapple on Frame Mounted				
4.6.11	Auxiliary Hoist Load Cell AND Travel Limit	<u>N/A</u> + 7 days = <u>N/A</u>		<u>N/A</u> (*)	<u>N/A</u> (*)

ATTACHMENT 4
Page 1 of 1

AUXILIARY HOIST MECHANICAL STOP SETTINGS

1. **SET** Mechanical Stop for desire grapple:

GRAPPLE	WATER SURFACE TO BOTTOM OF SWIVEL ADAPTER (inches)
CONTROL ROD GRAPPLE	64
JET PUMP GRAPPLE	64
CONTROL ROD LATCH TOOL	45

ATTACHMENT 5
Page 1 of 1

INDEPENDENT VERIFICATION OF RESTORATION

1.0 The following steps require Independent Verification of Restoration:

REFERENCE STEP <u>NUMBER</u>	<u>ACTION</u>	IVOR <u>INITIALS</u>
4.4.1.4	Wire 0815 at HTB-2 connected at refueling platform main hoist power cabinet.	<u>N/A</u>
4.4.1.4	ROR LED is Lit at refueling platform main hoist power cabinet.	<u>N/A</u>
4.4.30.3	Simulated Control Rod position test box with cable disconnected <u>AND</u> rod group J38-63 connected at panel 10C615 (Bay B).	<u>PC</u>
4.4.30.3	Rods 38-59 <u>AND</u> 34-59 both indicate 00 on 4 rod display.	<u>PC</u>
4.4.31.4	Wire 0815 at HTB-2 lifted <u>AND</u> taped at refueling platform main hoist power cabinet.	<u>N/A</u>
4.4.31.4	ROR LED is <u>not</u> Lit at refueling platform main hoist power cabinet.	<u>N/A</u>

1996 LGS INITIAL NRC EXAM

AJ#: 0007

SYSTEM: Key Control, Admin

MATERIALS REQ:

1. Flatblade screwdriver, LV-200 key.

Direction to Simulator Instructor (if necessary):

N/A

Directions to Evaluator:

1. This administrative JPM should be performed in the plant.
2. The CRS and Unit 2 RO should be informed of this Admin JPM per the requirements of A-C-8
3. Provide question to the candidate
4. The "*" items of the answer are Knowledge/Abilities being examined

NO.: 124 REV.: 3 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001K1.01 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You are the Floor Supervisor. The CRS directs you to verify that the Indicating Lamp #1 in cabinet 20TB49-2F007 (Terminal Box for Manual Transfer Switch 43-CB22313 for RCIC 2F007 Valve) on Reactor Enclosure Elev. 253, area 15 is lit. It was reported that the light was out and the CRS wants to ensure the bulb has been replaced. The CRS also notes that the cabinet requires a screwdriver and LV-200 key.

ANSWER :

1. Obtain LV-200 key and screwdriver.
2. Make A-C-8 entry (Locked Valve and Device log)
Proceed to cabinet, unlock and open cabinet.
Verify "ID1" lamp on, close and lock cabinet.
4. Complete locked valve log for 20TB49-2F007.
5. Ensure an IVOR is designated to check cabinet locked.

Reference: AJ0007, A-C-8

TIME

ERATING STATION

UNIT 1

LOCKED VALVE LOG

SECTION _____ PAGE

DEVICE NUMBER	DEVICE DESCRIPTION	NORM POS. LC/LO	NEW POS.	OPERATED BY (NAME/GROUP)	REASON (ST. PERMIT #, MRF #, ETC)	AUTH BY (INIT.)	TIME/ DATE OF CHANGE	REST. POS. LC/LO	RESTORED BY (NAME)	TIME/ DATE RESTORED	IVOR BY (NAME)	TIME/ DATE IVORED
10T344- 1F007	Terminal Box for Manual Transducer Serial # 43-082233	LC	Open	NAME: Exam. Rec GRP: ops	JPM	Exam. Rec Init.	TIME: Current Time DATE: Today's Date			TIME: DATE:		TIME: DATE:
				NAME:			TIME: DATE:			TIME: DATE:		TIME: DATE:
				GRP:			TIME: DATE:			TIME: DATE:		TIME: DATE:
				NAME:			TIME: DATE:			TIME: DATE:		TIME: DATE:
				GRP:			TIME: DATE:			TIME: DATE:		TIME: DATE:
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				GRP:			TIME: DATE:			TIME: DATE:		TIME: DATE:

1996 LGS INITIAL NRC EXAM

AJ#:0008

SYSTEM: Use of P&ID, Admin

MATERIALS REQ:

N/A

Direction to Simulator Instructor (if necessary): N/A

Directions to Evaluator:

1. This administrative JPM can be performed in the plant or simulator.
2. Provide question to the candidate
3. Provide valve name as "Charlie" condensate filter/demin vessel bypass" when requested.
4. Provide additional information only if requested:

Location: 264C-T7-200

Size: 8"

Type: Butterfly

5. The "*" items of the answer are knowledge/abilities being examined.

NO.: 166 REV.: 2 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/25/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.07 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: A

QUESTION :

*** SRO ONLY ***

You are the CRS. Unit 1 is at 100% power with eight condensate filter demineralizers in service. The Unit 1 Turbine EO reports to you that during rounds he observed flow noise from the 16-1487C valve and has confirmed by handwheel operation that the valve is not shut. The EO requests to know if this is the correct position for the valve.

ANSWER :

1. Request valve name/description from EO
- *2. Obtain P&ID M-16, Sheet 1
- *3. Location 16-1487C on M-16
 - . Correctly interpret normal valve position as "CLOSED" and/or verify correct position per 1S16.1.A (COL-1), Rev. 3, step 322.

NOTE: This item is to examine candidate's ability to use station drawings. Examiner may terminate answer at this point.

Reference: AJ0008, M-16, COL 1S16.1.A (COL-1)

06/02/95

LIMBICK GENERATING STATION

1516.1.A (COL-1), REV. 3

PAGE 21

=====

STEP	STEP RVSD (*)	FEED/PANEL	APPARATUS DESCRIPTION	NUMBER	LOCATION	POSITION	TAG OK? y/n	BY	DATE
314.0		10C116	SLOW VENT VLV. "Q" CONT. SW.	XV-16-122H	341-T6-217	CLSD	___	___	___
315.0		10C116	PLENUM VENT VLV. "VP" CONT. SW.	XV-16-123H	341-T6-217	CLSD	___	___	___
316.0		10C116	B/W INLET/PRECOAT OUTLET VLV. "W" CONT. SW.	XV-16-144H	341-T6-217	CLSD	___	___	___
317.0		10C116	PRECOAT INLET VLV. "F" CONT. SW.	XV-16-141H	341-T6-217	CLSD	___	___	___
318.0		10C116	VESSEL AIR SUPPLY VLV "M"	HV-16-120H	341-T6-217	CLSD	___	___	___
319.0		10C116	PRESSURIZING BYPASS "I"	HS-16-125H	341-T6-217	CLSD	___	___	___
320.0	*	10C116	"H" HOLDING PP. CONT. SW. (HOLD PUMP)	HS-16-130H	341-T6-217	OFF	___	___	___
321.0			ANION FEED VLV AIR SUPPLY VALVE	HV-16-180(AS)	341-T6-217	OPN	___	___	___
322.0	R		"C" COND F/D VESSEL BYPASS	16-1487C	264C-T7-200	CLSD	___	___	___
323.0			END				___	___	___

1996 LGS INITIAL NRC EXAM

AJ#: 0009

SYSTEM: Personnel Monitoring, RADOS

MATERIALS REQ:

1. Electronic dosimeter.

Direction to Simulator Instructor (if necessary):

N/A

Directions to Evaluator:

1. Anytime after candidate obtains an electronic dosimeter (E.D.), ask the following questions.
2. Provide question to the candidate.
3. The "*" items of the answer are Knowledge/Ability being examined.

NO.: 144 REV.: 5 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
 DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
 TASK NUMBER: SKA NO.: 294001K1.03 TAXONOMY NO.:
 LESSON PLANS:
 :
 CATEGORY: 96
 SYSTEMS: HP

QUESTION :

*** SRO ONLY ***

What two (2) conditions, including setpoints, will cause your electronic dosimeter to alarm?

How does the dose rate alarm setpoint change when entering a high radiation area?

ANSWER :

* Candidate should depress black pushbutton next to display on the E.D. to arrive at the dose rate alarm (91 mr/hr) and the total dose alarm (75 mr)

OR

* Candidate can review general RWP for values of dose rate alarm and total dose alarm.

* If entering a high rad area or RWP area, then the ED is placed back into the machine and the wearer would scan badge bar code and RWP bar code in to change setpoint. This is accomplished at HP station (41 line). The actual setpoints can also be found in the specific RWP.

Reference: AJ0009

QUESTIONS for CAT A

PAGE 1

12/09/96
10:12:20

NO.: 118 REV.: 2 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

A rapid plant shutdown has been performed due to an unisolable steam leak in the HPCI pump room. HP reports that radiation levels on the 177' elevation of the reactor enclosure have increased from <1 mR/hr to 1200 mR/hr. What EAL must be declared if any?

ANSWER :

Alert (Boundary Degradation LOCA)

Reference: A0010 ERP-101-11,

NO.: 117 REV.: 1 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 294001A1.16 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: ERP

QUESTION :

*** SRO ONLY ***

An ATWS has been in progress on Unit 2 for 45 minutes. The following conditions exist:

Suppression Pool Temperature - 115°F
SLC System - discharge pipe ruptured, SLC not injecting to vessel
Rx Power - 7%
Rx Level - being maintained -161" to -185"
EOF - not activated

You are the Emergency Director. What is the current EAL and what information must be provided to the state?

ANSWER :

1. Upgrade to or declare a General Emergency due to scram failure (Appendix ERP-101-10)
2. Call the state and provide them with the information on ERP-200-1 Form 1 and include a PAR to evacuate 2 mile radius, evacuate affected sector(s) and 2 adjacent sections for 2-5 miles

Reference: A0011, ERP-101 and ERP-200

1996 LGS
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
RPS	T217	295015 AA1.02	4.2		138		
RPS	LOT0300.04	212000 A2.03	3.5		136		
CE HVAC	LOT0450.07	290003 K4.01	3.2		133		
TOXIC GAS	LOT0450.05	290003 K5.01	3.5		134		
4KV	S92.8 A	262001 A4.03	3.4		180		
EDG	ST-6-092-365	264000 SG.11	4.1		182		
INST	LOT0050.07	216000 A2.12	2.9		186		
RCIC	LOT0380.07	217000 A2.16	3.4		185		
MAIN STEAM	ST-6-001-761	239001 A1.10	3.8		147		
MAIN STEAM	ST-6-001-760	239001 K4.01	3.8		148		
RECIRC	LOT0040.08C	202001 A2.06	3.8		108		
RECIRC	LOT0030.07	202001 A2.23	3.2		106		
ESW	LOT0680.04	295018 AK2.02	3.6		135		
RHRWS	LOT0400.07	264000 K1.04	3.3		119		
RADWASTE	LOT0705.04	268000 A1.02	3.6				181
SEC. CONT.	LOT0190.08A	290001 K6.01	3.6				184
FPC	LOT0750.07	233000 K3.02	3.2				113
REFUEL	LOT0760.07	234000 K4.01	4.1				114
CRDH	LOT0070.05	201001 A1.05	3.4				183
CRDM	LOT0060.09	201001 K3.03	3.2				164

A070

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: SRO (I)

Facility: Limerick 1 and 2

Examination: 1996 - 1997

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Reactor Protection	7	295015AA1.02/4.2/RPS
		212000A2.03/3.5/RPS
Control Room Emergency Ventilation	9	290003K4.01/3.2/CEHVAC
		290003K5.01/3.5/Toxic Gas
Emergency Diesel Generator	6	262001A4.03/3.4/4 KV
		264000SG.11/4.1/EDG
RCIC	2	216000A2.12/2.9/Inst
		217000A2.16/3.4/RCIC
EHC	3	239001A1.10/3.8/Main Steam
		239001K4.01/3.8/Main Steam
Recirculation	1	202001A2.06/3.8/Recirc
		202001A2.23/3.2/Recirc
RHRSW	5	295018AK2.02/3.6/ESW
		264000K1.04/3.3/RHRSW
Secondary Containment	5	268000A1.02/3.6/Radwaste
		290001K6.01/3.6/Sec. Cont.
Refueling Equipment	8	233000K3.02/3.2/FPC
		234000K4.01/4.1/Refuel
Control Rod Hydraulics	1	201001A1.05/3.4/CRDH
		201001K3.03/3.2/CRDM

EXAMINER: _____

CHIEF EXAMINER: _____

INDIVIDUAL WALK-THROUGH TEST OUTLINE

Examination Level: SRO (U)

Facility: Limerick 1 and 2

Examination: 1996 - 1997

Examiner's Name (print): _____

System / JPM	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Control Room Emergency Ventilation	9	290003K4.01/3.2/CEHVAC
		290003K5.01/3.5/Toxic Gas
RCIC	2	216000A2.12/2.9/Inst
		217000A2.16/3.4/RCIC
EHC	3	239001A1.10/3.8/Main Steam
		239001K4.01/3.8/Main Steam
Secondary Containment	5	268000A1.02/3.6/Radwaste
		290001K6.01/3.6/Sec. Cont.
Refueling Equipment	8	233000K3.02/3.2/FPC
		234000K4.01/4.1/Refuel

EXAMINER: _____

CHIEF EXAMINER: _____

NO.: 138 REV.: 5 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 295015AA1.02 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: RPS

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 2 at 6% power.

- A feedwater malfunction has resulted in RPV level dropping to 5 inches and is now 21 inches.
 - Approximately 40 rods failed to scram with the Scram Inlet and Outlet valves "OPEN".
 - Main turbine is tripped.
 - T-217 has been completed up to and including step 4.1.7.
 - SDV HIGH LEVEL scram annunciated
- a. What are the MCR, RPS related, indications if the T-217 jumper installed in 10C611 Bay B becomes dislodged and falls out?
- b. Why do you get this RPS response?

ANSWER :

- a. "half scram" indications
- B1, B2, B3, B4 scram system logic white lights go out
 - AUTO SCRAM channel B1 annunciator
- b. SDV HI LEVEL TRIP is initiated with no bypass

Reference: B0031, T-217, M-1-C71-1020-E-2-020 sheet 9

NO.: 136 REV.: 6 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 212000A2.03 TAXONOMY NO.:
LESSON PLANS: LOR0300.04
:
CATEGORY: 96
SYSTEMS: RPS

QUESTION :

*** SRO ONLY ***

Your RO and PRO are supporting I&C performing the MSIV - RPS Channel B2 Functional Test on the B MSL inboard MSIV (HV41-1F022B) at 95% power.

- a. What is happening to this MSIV when the PRO is depressing the "MAIN STEAM ISOLATION TEST: INBOARD B" pushbutton with HV41-1F022B in "TEST" on the 10C601 panel?
- b. What is the impact on the unit if the RPS function does NOT occur from the MSIV actuator and the PRO continues to depress the test button?

ANSWER :

- *a. A "slow" closure of HV41-1F022B MSIV.

(NOTES: Not required for answer)

1. AC test solenoid is energized as a result of HV41-1F022B in TEST AND INBOARD B: pushbutton depressed.
2. Under piston PCIG is vented off inboard MSIV until spring pressure starts closing the valve.)

- *b. Full Reactor Scram due to High Neutron FLUX or Reactor High Pressure if MSIV continues to close causing reactor pressure to increase.

Reference: B0030, PEP I0005675, ST-2-041-619-0

NO.: 133 REV.: 4 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 290003K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.07
:
CATEGORY: 96
SYSTEMS: CEHVAC

QUESTION :

*** SRO ONLY ***

An OCC101 Control Enclosure HVAC Trouble alarm has annunciated.
Investigation reveals that the 0A Emergency Switchgear/Battery Room
Supply Fan has tripped.

What are the effects on the Control Enclosure HVAC and Chillwater
System?

ANSWER :

1. 0B Emergency Switchgear/Battery Room Supply Fan will AUTO start on
low air flow.
2. The 0B Control Enclosure Chill Water Pump will auto start.
3. The 0B Control Enclosure Chiller will auto start.

Reference: B0029

NO.: 134 REV.: 7 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 290003K5.01 TAXONOMY NO.:
LESSON PLANS: LOT0450.05
:
CATEGORY: 96
SYSTEMS: CEHVAC

QUESTION :

*** SRO ONLY ***

I&C is changing out the Backup N₂ Bottle (OBS744) for the "B" Toxic Gas Analyzer. Simultaneously with this action an outage prep clearance has the Reactor EO shut the "Zero Gas Isolation Valve" for the Toxic Gas Analyzers (57-0057).

- a. What MCR annunciator(s) do you expect?
- b. What automatic response OR manual action is required of CREFAS?

ANSWER :

- . TOXIC CHEMICAL ANALYZER TROUBLE alarm
- b. No automatic response
No manual action required
(NOTE: Not required for answer)
HIGH TOXIC CHEMICAL CONC. alarm requires 2 of 3 logic from Toxic Gas Analyzers. HIGH TOXIC CHEMICAL CONC. alarm NOT TOXIC CHEMICAL ANALYZER TROUBLE alarm requires manual initiation of CREFAS.)

Reference: B0028
ARC 002 Vent E-1/E-2
S78.1.F

NO.: 180 REV.: 2 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/25/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 262001A4.03 TAXONOMY NO.:
LESSON PLANS: LOT0660
:
CATEGORY: 96
SYSTEMS: 4KV

QUESTION :

*** SRO ONLY ***

What is the purpose of performing "cell switch voltage checks" when installing 4KV Breakers?

When are "cell switch voltage checks" required?

ANSWER :

To ensure the breaker is racked-in to the position which closes the cell switch contact connecting 125VDC to the breaker closing device contacts.

All switch voltage checks are required anytime the breaker will not be closed following installation.

Reference: B0027 S92.8.A

NO.: 182 REV.: 3 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/26/96
 DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
 TASK NUMBER: SKA NO.: 264000SG.11 TAXONOMY NO.:
 LESSON PLANS: ST-6-092-365
 :
 CATEGORY: 96
 SYSTEMS: EDG

QUESTION :

*** SRO ONLY ***

You are the CRS with both units in OPCON 1. During performance of ST-6-092-312-1, the flex crew EO performing the test reports a failure to START of the D12 Fuel Oil Transfer Pump when performing section 4.12 Fuel Oil Transfer Operability Test.

Which Tech Spec sections require review to determine applicable action statements?

When and how often must this review take place?

ANSWER :

Unit 1 Tech Specs

3.8 Electrical Power
 3.7.1.1 B RHRSW
 3.7.1.2 B ESW
 3.7.2 B CREFAS

Unit 2 Tech Specs

3.6.5.3 B SGTS
 3.7.1.1 B RHRSW
 3.7.1.2 B ESW
 3.7.2 B CREFAS

2. Within two (2) hours and once per 12 hours thereafter.

Reference: B0026, ST-6-092-365-0

NO.: 186 REV.: 3 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/26/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 216000A2.12 TAXONOMY NO.:
LESSON PLANS: LOT0050.07
:
CATEGORY: 96
SYSTEMS: RPVINST

QUESTION :

*** SRO ONLY ***

Describe the effects on ECCS systems due to isolating condensing chamber XY-42-1D004B by closing 42-1F042B during normal plant operation.

ANSWER :

1. Isolation of DIV 2 instrument reference legs with CRD backfill in service will result in the following ECCS effects:
 - a. Closing ref. leg isolation will subject the entire instrument rack for DIV 2 to CRD pressure. This results in indicated level going low and pressure going high.
 - b. Effect on ECCS systems:
 - * 1) HPCI start
 - * 2) 'B' RHR Pump start
 - * 3) 'B' Core Spray Pump start
 - 4) Loss of Low Press. permissive for B & D CS injection

Reference: B0025, INN 93-89, P&ID M-42, IC-11-00505

NO.: 185 REV.: 2 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/26/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 217000A2.16 TAXONOMY NO.:
LESSON PLANS: LOT0380.07
:
CATEGORY: 96
SYSTEMS: RCIC

QUESTION :

*** SRO ONLY ***

Unit 2, CST level, Rosemount Trip Unit (LIS-49-E51-2N635A) on 20C617 has been inadvertently placed in Calibrate with no (zero) stable or transient current applied. Gross fail and trip, red LEDS are lit. Describe the impact on the RCIC suction flowpath and its ability to operate in Full Flow Test Mode.

ANSWER :

1. HV-49-2F029 and HV-49-2F031, RCIC Pump Suction Valves from the Suppression Pool open after a 12 second time delay.
2. HV-49-2F010 will close when 2F029 and 2F031 are fully closed.
3. RCIC can NOT operate in full flow test mode. (HV-55-2F011 Condensate Return and HV-49-2F022 Test Isol cannot be opened.)

Reference: B0024, T-230, E51-1040

NO.: 147 REV.: 3 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/20/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 239001A1.10 TAXONOMY NO.:
LESSON PLANS: LOT0590.02
:
CATEGORY: 96
SYSTEMS: EHC

QUESTION :

*** SRO ONLY ***

The Unit 1 RO is performing ST-6-001-761-1, Main Turbine Bypass Valve Exercising. Step 4.1.2 directs the RO to notify the Load Dispatcher that transients up to 40 MWe will be occurring due to surveillance testing of bypass valves. Use the EHC logic diagram to explain why these transients occur.

ANSWER :

The bypass valve test opens a bypass valve regardless of Reactor pressure. As the bypass valve opens, pressure drops to a value less than pressure set.

Turbine speed remains at 1800 rpm, therefore input to the LVG in the pressure control logic is from the pressure regulator gain unit.

The LVG sends a signal to CLOSE down on the control valves to maintain pressure. As the bypass valve is closed, the signal changes in value and control valves re-open.

Control Valve opening and closing results in changing generator load.

Reference: B0023, ST-6-001-761

NO.: 148 REV.: 4 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/20/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 239001K4.01 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: EHC

QUESTION :

*** SRO ONLY ***

The Main Turbine Stop and CIV Valve Exercise Test (ST6-001-760-1) is in progress. A caution at step 4.3.2 states, "IF low condenser vacuum exists, THEN a Group IA isolation might occur during Main Turbine reset". What is the bases behind this caution?

ANSWER :

EHC logic allows MSV 1, 3 and 4 to drift open during turbine reset. If multiple MSV reach 90% open THEN the low vacuum isolation bypass will be removed and result in a Group IA isolation.

eference: B0022 ARC 114 B-3

NO.: 108 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 202001A2.06 TAXONOMY NO.:
LESSON PLANS: LOT004.08C
:
CATEGORY: 96
SYSTEMS: RFC

QUESTION :

*** SRO ONLY ***

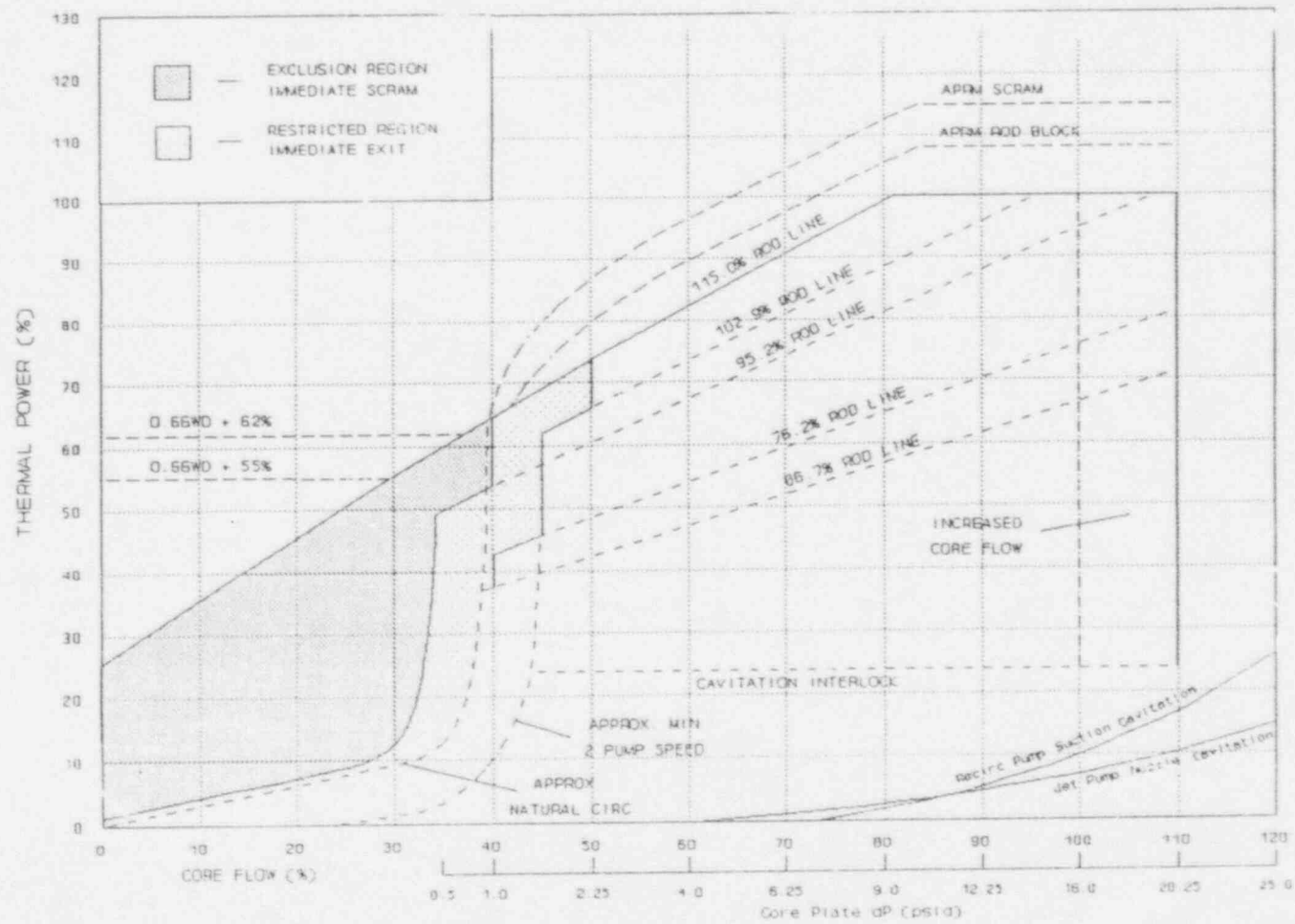
Unit 2 is operating at 100% power with 90% recirc flow when the 2B Condensate Pump trips. Using the Power Flow operations map provided, indicate where reactor power will stabilize following this transient.

ANSWER :

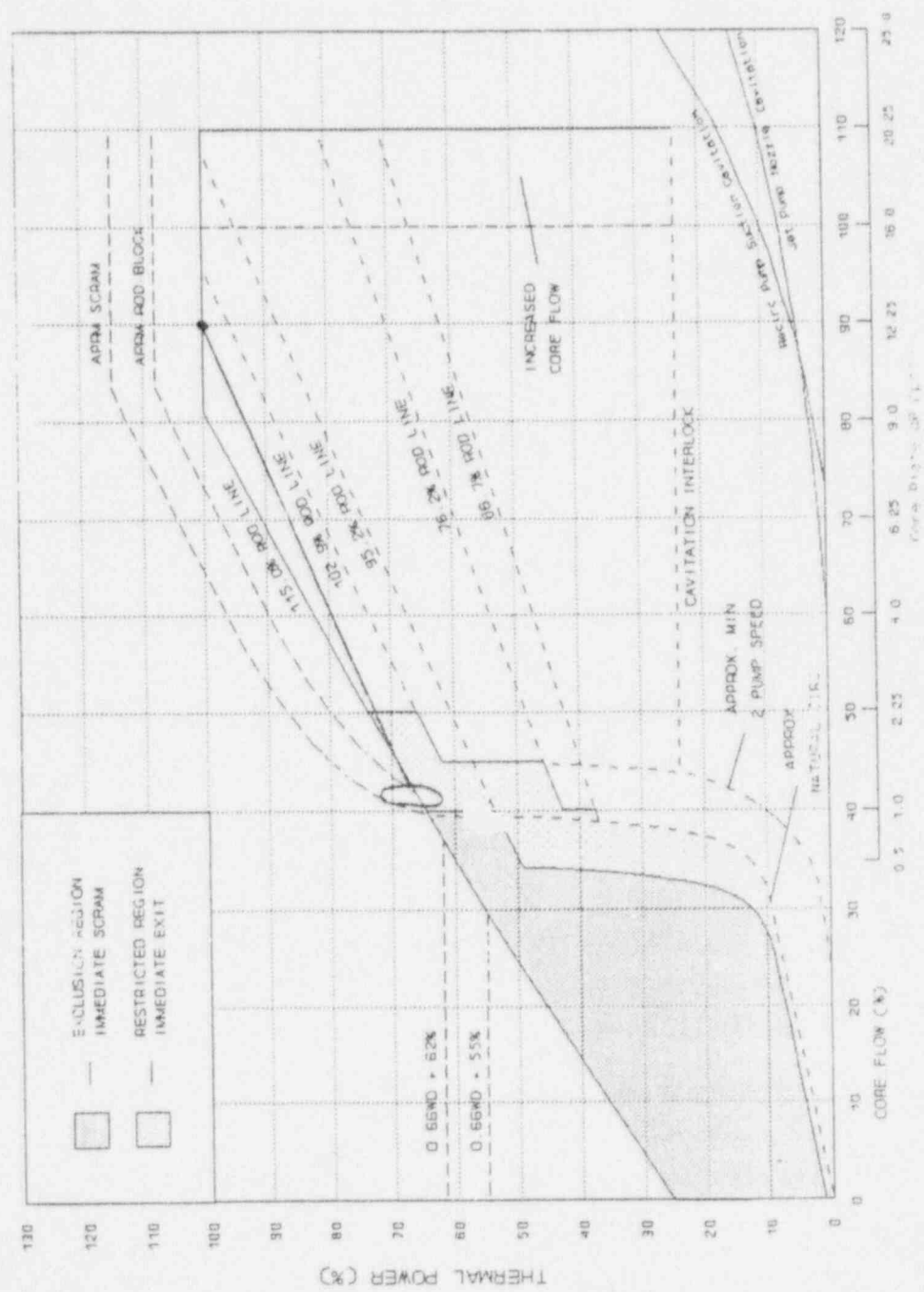
Reactor power will drop to the area indicated on the attached Power Flow operations map. (The exact point cannot be determined, but core flow will be $\approx 42\%$ and power will be between 60-70%.)

Reference: B0021, GP-5, S43.0.B

LGS POWER FLOW OPERATION MAP



LGS POWER FLOW OPERATION MAP



KEY

NO.: 106 REV.: 3 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
 DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
 TASK NUMBER: SKA NO.: 202001A2.23 TAXONOMY NO.:
 LESSON PLANS: LOT0030.07
 :
 CATEGORY: 96
 SYSTEMS: RECIRC

QUESTION :

*** SRO ONLY ***

Describe the effects of an inadvertent Group VIII isolation (D/W Chilled Water and Recirc Pump Cooling Water) on the Reactor Recirc System.

ANSWER :

- * 1. RECW flow to the pump seal coolers will be lost.
- * 2. DWCW flow to the pump motor coolers will be lost.
- 3. The recirc pumps will have to be shutdown (within 10 minutes) unless the isolations are bypassed.

Reference: B0020, GP-8-1, S43.0.D, ON-113

NO.: 135 REV.: 6 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/18/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 295018AK2.02 TAXONOMY NO.:
LESSON PLANS: LOT0680.04

CATEGORY: 96
SYSTEMS: ESW

QUESTION :

*** SRO ONLY ***

Unit 1 is experiencing a LOCA with Loss of Division 4 DC power. All other electrical systems are in a normal lineup.

- RPV level is -123 inches slowly lowering with injection from the 1B RHR Pump and B Core Spray Loop.
- Drywell pressure is 0.9 psig.
- a. Describe the sequence of events for ESW when RPV level drops to -131 inches
- b. Describe the effects on ECCS room cooling if HV11-044 does NOT reposition.

ANSWER :

- a. LOCA signal occurs at -129" RPV level.
 - 1. EDG's start except D14 due to loss of DIV 4 DC - OD ESW Pump does NOT receive a start signal.
 - 2. D12 EDG start causes OB ESW Pump start.
 - 3. OB ESW Pump start signals HV11-044 OPEN (Failed to Open) and HV11-125 SHUT.
 - 4. HV11-074 does NOT receive an OPEN signal

*b. Room cooling for 1B RHR Pump and 1B Core Spray Pump is lost.

Reference: B0019, S11.1.A, Op Aid

NO.: 119 REV.: 3 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/15/96
 DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
 TASK NUMBER: SKA NO.: 264000K1.04 TAXONOMY NO.:
 LESSON PLANS: LOT0400.07

:
 CATEGORY: 96
 SYSTEMS: RHRSW

QUESTION :

*** SRO ONLY ***

"0B" RHRSW pump is running with flow through the "D" spray network to cool the Spray Pond Water. All Spray/Bypass Select Switches (HSS-12-016A-1, B, C-1, D) are in "SPRAY".

What are the ESW and RHRSW return paths to the spray pond when the D12 Emergency Diesel Generator is manually started from the MCR?

ANSWER :

1. 53 seconds after the EDG start the 0B ESW pump will start.
2. With HSS12-016B in "Spray" the HV12-031B will close and the HV12-032B will open.
- *3. Spray flow through the "B" and "D" spray network now exists.
- *4. Bypass flow thru the "A" loop winter bypass line with HV12-031A, 031C open exists for ESW flow.

Reference: B0018, S11.1.A,

NO.: 181 REV.: 1 TYPE: ES ENTERED BY: DCW DATE ENTERED: 11/25/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 268000A1.02 TAXONOMY NO.:
LESSON PLANS: LOT0705.04
:
CATEGORY: 96
SYSTEMS: RAMSHP

QUESTION :

*** SRO ONLY ***

Describe how the Liquid Radwaste System automatically functions to prevent liquid releases from exceeding Offsite Dose Calculation Manual specifications during batch releases to the Schuylkill River.

ANSWER :

Two series, isolation valves in the Liquid Radwaste Effluent flowpath to the cooling tower blowdown line HV-63-051 and HV-63-055 automatically isolate to stop the release if:

- a. Hi-Hi Radiation level detected by Rad Monitor in effluent flowpath
- b. Low flow in Cooling Tower Blowdown Line (combined Unit 1 and Unit 2)

Reference: B0017 ODCM P&ID M-63 S63.1.C

NO.: 184 REV.: 2 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/26/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 290001K6.01 TAXONOMY NO.:
LESSON PLANS: LOT0190.08A
:
CATEGORY: 96
SYSTEMS: SECNMT

QUESTION :

*** SRO ONLY ***

During winter months, with the unit in OPCON 1, how does a loss of plant heating steam to Reactor Building Ventilation affect the ability to maintain Reactor Enclosure Secondary Containment Integrity?

What is the long term effect of the heating steam loss?

ANSWER :

1. Loss of heating steam to RE HVAC coils allows cooler air to be drawn into the RE where it will be warmed and increase in volume.
2. RE HVAC exhaust fans will not be able to increase blade pitch enough to draw out sufficient volume of air to maintain 0.25" VAC w.g.

RE HVAC will isolate at 0.10" VAC w.g. after a 50 min. TD.

Reference: B0016, ON-111, Tech. Spec. 3.6.5.1.1., S76.6.B

NO.: 113 REV.: 6 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 233000K3.02 TAXONOMY NO.:
LESSON PLANS:
:
CATEGORY: 96
SYSTEMS: FPCCU

QUESTION :

*** SRO ONLY ***

Unit 2 is in OPCON 3 with Shutdown Cooling (SDC) in service.

- The gate between the Unit 2 Spent Fuel Pool and the Cask Storage Pit is removed.
- Unit 2 skimmer surge tank level is 7.0 feet and being reduced to support placement of a Shipping Cask in the Cask Pit.
- Normal FPC letdown path is being used with the 2A FPC Pump in service.
- a. The 2A FPC Pump trips on "thermal overload". What is the effect on fuel pool water level? (Assume no operator action)
- b. At what level will Fuel Pool Water level stabilize?

ANSWER :

- a. Level will be lowered due to direct siphoning through 53-2048 to radwaste.
- b. Level will continue to lower until "siphon breakers" in the FPC supply line are uncovered.

(NOTE to Evaluator: This is elevation 349'2". This is still approximately 22 feet of H₂O above fuel. This question is to determine whether the candidate can determine whether fuel is uncovered, or even if level will drop to the bottom of the FPC supply pipes. An actual value is NOT required.)

Reference: B0015; S53.3.G; M-53 sheets 3,4; ST-6-107-594-2, page 26

NO.: 114 REV.: 5 TYPE: ES ENTERED BY: PMO DATE ENTERED: 11/14/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 234000K4.01 TAXONOMY NO.:
LESSON PLANS: LOT0760.07
:
CATEGORY: 96
SYSTEMS: REFUEL

QUESTION :

*** SRO ONLY ***

Unit 1 is in OPCON 5 with Core Alterations in progress using the Unit 2 Refuel Bridge.

CCTAS step 107 is being performed.

- Your RO just acknowledged the following alarms:

ROD OUT BLOCK
RPIS INOPERATIVE

- The LSRO is reporting a "bridge problem" with the following alarm conditions:

ROD BLOCK INTERLOCK #1
ROD BLOCK INTERLOCK #2
FUEL HOIST INTERLOCK
FORWARD STOP #1

What is the most likely cause of these conditions?

ANSWER :

1. Fuel hoist is loaded with bundle from 13-30.
2. The refuel bridge is over the Unit 1 core.
- * 3. The refuel bridge is NOT getting a signal that all control rods are FULL-IN during core alterations.

Reference: B0014, ST-6-097-630-2 4.4.15

TRANSFER AUTHORIZATION FOR FH-105
M-21966 Rev. 1/89
DOCTYPE 113

Unit LIMERICK GENERAL STATION Date 01/22/1996

Title 1R06 OFFLOAD TO MAINTENANCE

[illegible]

TRANSFER AUTHORIZATION FOR FH-105
M-21966 Rev. 1/89
DOCTYPE 113

Unit LIMERICK GENERATING STATION Date 01/22/1996

Title 1R06 OFFLOAD TO MAINTENANCE

[illegible]

NO.: 183 REV.: 1 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/26/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 201001A1.05 TAXONOMY NO.:
LESSON PLANS: LOT0070.05
:
CATEGORY: 96
SYSTEMS: CRDH

QUESTION :

*** SRO ONLY ***

You are the CRS when Unit 1 RO reports to you that during performance of ST-6-047-200-1, SDV Valve Exercise Test, SDV Inboard Drain Valve, XV-47-1F011 has failed to re-open.

1. Can the Control Rod Drive Hydraulic System carry out its purpose in completing a reactor scram?
2. Where would you direct the crew to monitor the approach to an entry condition for OT-105 until the drain valve can be opened?

ANSWER :

1. Yes, CRDH system can still carry out its design function during a scram.
2. Monitor A.E.R. indication for SDV level, LISH-47-1N601(A,B) at 10C609 panel and LISH-47-1N601(B,D) at 10C611 panel for rising percentage. Entry condition for OT-105 is "SDV NOT DRAINED ALARM" (108, E-2) at 5 gallons or 12% as read on the Rosemount Trip Unit.

Reference: B0013, ST-6-047-200-1, OT-105

NO.: 164 REV.: 1 TYPE: ES ENTERED BY: MGR DATE ENTERED: 11/22/96
DIFFICULTY: 0 POINT VALUE: 1.0 RESPONSE TIME: 0 DRAWING:
TASK NUMBER: SKA NO.: 20100K3.03 TAXONOMY NO.:
LESSON PLANS: LOT0060.09
:
CATEGORY: 96
SYSTEMS: CRDM

QUESTION :

*** SRO ONLY ***

Describe how a control rod drive mechanism functions during a scram, to insert its control rod following a total loss of CRD Hydraulic system pressure.

ANSWER :

1. Cooling water/insert line depressurizes below reactor pressure following HCU accumulator discharge
- *2. CRD mechanism ball check valve repositions due to reactor pressure greater than insert line pressure
3. Reactor vessel water at reactor pressure is now directed by the ball check valve to the under piston area of the mechanism drive piston completing the scram stroke

Reference: B0012, ON-107

1996 LGS
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	
Recirc	SF 1	202002	A4.07 3.3	0012				A1, B8
Feedwater	SF 2	259001	A4.02 3.9	0007				A2
Main Steam	SF 3	241000	A4.06 3.9	0083				H, A3
HPCI	SF 4	206000	A4.02 4.3	0058				D, A4, B7
Sec. Cont.	SF 5	290001	A3.01 3.9	0022				K, A5, B3
4KV	SF 6	295003	AA1.01 3.7	0041				G, A6, B6
SRM	SF 8	234000	A4.01 3.7	0085				E, H, A7, B4
RE HVAC	SF 9	295032	EA1.03 3.7			0214		G, F, B9
RPS	SF 7	212000	A4.17 4.1			0210		G, F
SRV	SF 3	295016	SG.06 4.1			0225		G, F
RPS	SF 7	212000	A1.11 3.3		0003			D, K, A1, B3
CREFAS	SF 9	290003	A4.01 3.2		0023			K, J, A2
EDG	SF 6	264000	A4.04 3.7		0027			A3
RCIC	SF 2	217000	A2.10 3.1		0002			D, A4, J, B7
SDC	SF 4	295016	SG.06 4.1		0084			H, E, A5, J
Recirc	SF 1	202002	A4.07 3.2		0011			B8, A6
RHRSW	SF 5	219000	A4.05 3.4		0010			A7
Pri. Cont.	SF 5	295024	EA1.11 4.2				0213	F, G, J, B6
FP	SF 8	286000	A2.08 3.3				0260	A9, G, H, J
CRDH	SF 1	201001	KA.09 3.4				0259	H, F, A10

FOOTNOTES:

- A - 7 Different SF Systems
- B - Coverage of 10CFR55.45 (a) (3), (4), (6), (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)
- K - ESF

Indicates changes were made due to review of Audit Examination

A070

A070

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

TITLE: SCRAM CHANNEL A1 AND A2 FUNCTIONAL TEST (Alternate Path)

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 an EO stationed in the Auxiliary Equipment Room.
3. A1/A2 day selected under full core display.
4. Insert malfunction 29,C.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location (Circle One):

Plant Simulator

Approximate Completion Time:

15 minutes

Importance Rating:

System Number:

3.4/3.3 A1.11
3.6/3.7 A4.02

212000
212000

References:

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

Task Standards:

A1 half scram signal is inserted. After scram failure is noted, the reactor mode switch is placed in shutdown.

Initiating Cues:

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

Tasks Conditions:

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

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of ST-6-071-306-1. (Note: The instructor will provide the operator with a copy of ST-6-071-306-1.)	N/A	N/A
2. RPS System operable. (Cue: RPS is operable.)	RPS system is determined to be operable.	
3. All scram relays are reset; no half scrams present.	No half-scram is present.	
4. Communications established between: - Main Control Room panel 10C603. - Auxiliary Equipment Room panel 10C609.	Communication established with other 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 of Section 2.0 are satisfied.	N/A	N/A
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. POSITION CH A1 collar in ARMED, at panel 10C603...	Collar CH A1 on 10C603 rotated to the ARMED position.	

STEP	STANDARD	SAT/UNSAT
10a. AND VERIFY "MANUAL SCRAM SWITCH ARMED A,B" alarm annunciates at panel 108 REACTOR.	Panel 108 window D-2 lit.	
* 11. Fully DEPRESS CH A1, at panel 10C603.	CH A1 button depressed on 10C603.	
12. RELEASE CH A1 AND VERIFY the following at panel 108 REACTOR:	N/A	N/A
12a. MANUAL SCRAM SYSTEM A alarm annunciates.	Panel 108 window D-1 lit.	
13. AUTO SCRAM CHANNEL A1 alarm annunciates. (Cue: If at any time from this point on, the CRS is told of failure of half-scam, say "I want you to handle the situation by yourself.") NOTE: The operator may enter OT-117 to determine reactor mode switch must be placed in shutdown. As soon as the reactor is scrammed, the operator can be told "You have met the termination criteria for this JPM. You can stop here." Once the reactor is scrammed, all subsequent steps are N/A.	Panel 108 window B-1 is noted to be <u>not</u> lit.	
14. VERIFY the following indicating lights <u>not</u> lit at panel 10C603: A1 (DS9C) A2 (DS9G) A3 (DS9E) A4 (DS9A)	Indicating lights A1, A2, A3, and A4 are noted to be still <u>lit</u> on 10C603.	
The following steps are from OT-117, starting at step 3.2.		
15. IF half SCRAM has been initiated <u>AND</u> associated white SCRAM lights do not go off, <u>THEN</u> immediately INSERT manual half SCRAM on affected RPS side. (i.e. Trip System A1 and/or A2(B1 and/or B2)).	A2 manual half scram is attempted. (A1 manual half scram has already been attempted.)	
16. IF white SCRAM lights remain lit, <u>THEN</u> manually SCRAM the reactor <u>AND</u> PLACE Reactor Mode Switch in SHUTDOWN, <u>AND</u> ENTER T-101 <u>AND</u> EXIT this procedure.	The reactor mode switch is placed in SHUTDOWN.	
(Cue: Once the reactor mode switch is placed in SHUTDOWN, the operator can be told "You have met the		

STEP	STANDARD	SAT/UNSAT
termination criteria for this JPM. You can stop here.")		

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 1 Channel A1/A2 RPS Manual Scram Channel Functional Test.

Tasks Conditions:

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

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Initiate a Control Room Chlorine/Toxic Chemical 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, Rev. 5, Manual Initiation of Control Room Radiation or Chlorine/Toxic Chemical Isolation

Task Standard(s):

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

Initiating Cues:

You are directed by shift supervision to manually initiate a Control Room HVAC Chlorine/Toxic Chemical 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. VERIFY 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.")	Recognized from task conditions that Control Room HVAC is in normal operating mode per S78.1.A., <u>OR</u> consulted supervisor to obtain this information.	N/A
3. VERIFY 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.")	Recognized from task conditions that Control Room Emergency Fresh Air System is lined up for automatic operation, <u>OR</u> consulted supervisor to obtain this information.	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 "CL2".	Switch HSS-78-017A (TRIP A) arming collar is rotated to "CL2" at 00C681.	
*10. PLACE Control Room Isolation Valve Trip Switch HSS-78-017B (TRIP B) to "CL2".	Switch HSS-78-017B (TRIP B) arming collar is rotated to "CL2" at 00C681.	
*11. PLACE Control Room Isolation Valve Trip Switch HSS-78-017C (TRIP C) to "CL2".	Switch HSS-78-017C (TRIP C) arming collar is rotated to "CL2" at 00C681.	
*12. PLACE Control Room Isolation Valve Trip Switch HSS-78-017D (TRIP D) to "CL2".	Switch HSS-78-017D (TRIP D) arming collar is rotated to "CL2" at 00C681.	
*13. 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
*14. 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.	
*15. 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.	
*16. 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.	
*17. 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.	
*18. 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.	
*19. 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.	
*20. 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 release ^d at 00C681.	
21. RECORD CREFAS run time in appropriate log.	CREFAS start data is recorded in CREFAS run time log.	
22. ENSURE CHLOR ISLN Channel A amber light is lit.	CHLOR ISLN Channel A amber light is lit on 00C681.	
23. ENSURE CHLOR ISLN Channel B amber light is lit.	CHLOR ISLN Channel B amber light is lit on 00C681.	
24. ENSURE CHLOR ISLN Channel C amber light is lit.	CHLOR ISLN Channel C amber light is lit on 00C681.	
25. ENSURE CHLOR ISLN Channel D amber light is lit.	CHLOR ISLy Channel D amber light is lit on 00C681.	

STEP	STANDARD	SAT/UNSAT
26. VERIFY CONTROL ROOM CHLORINE ISOLATION INITIATED annunciator alarmed at 002 VENT A-2.	Window A-2 on 002 VENT, CONTROL ROOM CHLORINE ISOLATION INITIATED, is alarmed.	
27. 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 not alarmed at least 25 seconds after the isolation is initiated.	
28. ENSURE OA(B)V127, EMERGENCY AIR FAN A(B), is running.	OAV127, EMERGENCY AIR FAN A, is running by observing indicating light (A FAN) is red on 00C681.	
29. ENSURE FI-78-015, EMERG AIR FL, is between 2700 and 3300 CFM.	Flow indication on FI-78-015 on 00C681 is between 2700 and 3300 cfm.	
30. 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 00C681.	
31. 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 00C681.	
32. VERIFY PDI-78-054, CONTROL ROOM AIR INSIDE/OUTSIDE ΔP_x , is 0 inches water, after allowing time for positive pressure to decay. (Cue: The pointer for PDI-78-054 is slowly dropping.)	Observe indication on PDI-78-054 on 00C681.	
33. Ensure the device positions for CL2 Isolation as per Attachment 1.	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 00C681. Red light on, green off.	

STEP	STANDARD	SAT/UNSAT
b. Ensure HD-78-002A(B) is OPEN.	HD-78-002A (FILTER INLET of EMERGENCY AIR FAN A) is open on OOC681. Red light on, green off.	
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, green off.	
d. Ensure HV-73-010A(B) is OPEN.	HV-78-010A (RETURN ISLN of EMERGENCY AIR FAN A) is open on OOC681. Red light on, green off.	
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 Chlorine Isolation. (Cue: All components on Attachment 1 outside the control room are in the proper condition for a chlorine 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 chlorine isolation.	
34. IF CL2 isolation <u>not</u> complete, <u>THEN</u> REPEAT section 4.3.	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 Chlorine/Toxic Chemical Isolation.

Task Condition(s):

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

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: SHUTDOWN THE D11 DIESEL GENERATOR

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset simulator to any IC.
2. Start the D11 diesel and load it using S92.1.0, increase KW to 2000-2500, and the KVAR to 1000.
3. Place 101 tap changer in MANUAL.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.7/3.7 A4.04

System Number:

264000

References:

1. S92.2.N, Rev. 14, Shutdown of the Diesel Generators
2. S11.2.A, Rev. 11, Emergency Service Water System Shutdown

Task Standards:

D11 diesel is shutdown.

Initiating Cues:

Shift Supervision directs you to shutdown the D11 diesel generator from the MCR.

Tasks Conditions:

1. The D11 diesel generator was manually started and has been operating between 2000 and 2500 KW in parallel with the associated safeguard bus for one hour.
2. 101 Safeguard Transformer Local Tap Changer Selector is in MANUAL.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S92.2.N, Rev. 14	A copy of S92.2.N, Rev. 14 is obtained.	
*2. <u>WHEN</u> diesel has been operating above 1400 KW for at least 1 hour, <u>THEN</u> REDUCE load to 1400 KW.	Speed Governor Control Switch, 165-A G501/CS is placed to "LOWER", to slowly reduce KW load to 1400 KW as indicated on W/A G501-2.	
*3. <u>AFTER</u> 5 minutes, <u>THEN</u> CONTINUE to reduce load.	At least 5 minutes have elapsed prior to continuing to reduce load below 1400 KW.	
4. Slowly REDUCE KW load by turning 165-A(B,C,D) G501/CS, "Diesel Generator Speed Governor Control Switch", to "LOWER".	Speed Governor Control Switch, 165-A G501/CS is placed to "LOWER", to slowly reduce KW load.	
5. Slowly REDUCE KVARs load by turning 170-A(B,C,D) G502/CS, "Diesel Generator Voltage Regulator", to "LOWER".	Voltage Regulator Control Switch, 170-A G502/CS is placed to "LOWER" to slowly reduce KVARs as indicated on VAR/A G501/2.	
*6. <u>WHEN</u> KW <u>AND</u> KVAR loads are between 0 to 100, <u>THEN</u> OPEN appropriate Diesel Generator Breaker.	Once generator KW and KVAR have been reduced to less than 100, the breaker control switch, 152-115 07/CS is momentarily taken to TRIP. The diesel generator output breaker is open (red light off, green light on).	

STEP	STANDARD	SAT/UNSAT
*7. PLACE 143-A(B)X103, "*01 Safe-guard Transformer Tap Changer Selector", in "AUTO".	Tap changer selector switch 143-AX103 is rotated to the "AUTO" position.	
<p>8. <u>IF</u> shutting down engine from local panel, <u>THEN</u> PERFORM the following:</p> <p>a. PLACE LOCAL-REMOTE switch to "LOCAL"</p> <p>b. PLACE ENGINE CONTROL CSL to "STOP" <u>AND</u> VERIFY diesel engine shuts down.</p> <p>c. PLACE LOCAL-REMOTE switch to "REMOTE".</p> <p>NOTE: Diesel is <u>NOT</u> being shut down from the local panel.</p>	N/A	N/A
*9. <u>IF</u> shutting down engine from Main Control Room, <u>THEN</u> TURN 101-A(B,C,D)G501/CS, "Diesel Generator Control" to "STOP" <u>AND</u> VERIFY diesel generator shuts down.	Diesel Generator control switch 101-A G501/CS is momentarily placed to "STOP". The diesel engine is shutdown.	
10. Acknowledge and clear alarms on panel 120D11 windows C3, C4 and D2.	Panel 120D11 alarms on windows C3, C4 and D2 are acknowledged and cleared.	

STEP	STANDARD	SAT/UNSAT
<p>*11. IF diesel generator was running for greater than 1 hour, <u>THEN</u> PERFORM appropriate check for water in day tank:</p> <p>ST-6-092-611-*, D*1 Diesel Generator Day Tank Check for Water</p> <p>ST-6-092-612-*, D*2 Diesel Generator Day Tank Check for Water</p> <p>ST-6-092-613-*, D*3 Diesel Generator Day Tank Check for Water</p> <p>ST-6-092-614-*, D*4 Diesel Generator Day Tank Check for Water</p> <p>(Cue: If asked, say, "I understand you want me to perform step 4.5.3 of S92.2.N (or ST-6-092-611-1) for D11.")</p>	<p>PO is directed to perform step 4.5.3 of S92.2.N or perform ST-6-092-611-1 for D11 diesel.</p>	
<p>12. <u>WHEN</u> ESW pumps are <u>no</u> longer required, <u>THEN</u> SHUTDOWN ESW pumps per S11.2.A, Emergency Service Water System Shutdown.</p> <p>(Cue: When a copy of S11.2.A is obtained, inform the operator, "You have met the termination criteria for this JPM.")</p>	<p>A copy of S11.2.A is obtained.</p>	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
Sat/Unsat

Initiating Cues:

Shift Supervision directs you to shutdown the D11 diesel generator from the MCR.

Tasks Conditions:

1. The diesel generator was manually started and has been operating between 2000 and 2500 KW in parallel with the associated safeguard bus for one hour.
2. 101 Safeguard Transformer Local Tap Changer Selector is in MANUAL.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: RCIC Manual Slow Start Using FIC-49-1R600 (Alternate Path)

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

1. Reset the simulator to any 100% power IC.
2. When a pump discharge pressure of at least 70 psig greater than reactor pressure is achieved, and pump flowrate is approximately 600 gpm with controller in AUTO, then insert MALF-1474, RCIC Turbine Bearing Oil Hi Temp annunciator.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

20 Minutes

Importance Rating(s):

3.1/3.1 A2.10
3.7/3.7 A4.01
3.4/3.3 A4.03
3.6/3.6 A4.04

System Number(s):

K/A 217000
K/A 217000
K/A 217000
K/A 217000

References:

1. S49.1.D, Rev. 19 RCIC System Full Flow Functional Test
2. ARC 116 RCIC, E-5, Rev. 12

Task Standard(s):

Manually place RCIC in full flow test. Remove RCIC from service when high bearing oil temperature annunciates.

Task Condition(s):

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. S49.9.A, Routine inspection of RCIC system has been performed
4. Vibration Monitoring System is in service.

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 RCIC in full flow test per S49.1.D for a 15 minute PMT following vacuum pump repairs. You are to obtain a discharge pressure at least 70 psig greater than reactor pressure, and a pump flowrate of 600 gpm with the controller in AUTO by the manual slow start method using FIC-49-1R600.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of S49.1.D. (Note: The evaluator should provide the operator with a copy of S49.1.D, Rev. 19.)	N/A	N/A
2. Verify suppression pool level normal (22' to 24.25').	Suppression pool level is between 22' and 24.25' on LI-52-140A(B) at panel 10C626 or LR55-115 at panel 10C648.	
3. Verify suppression pool temperature is below 95 degrees F.	TI-41-101(103) indicates <95 degrees F.	
4. Verify RCIC pump suction is lined up to the CST.	HV-49-1F010 is open.	
5. Verify steam leak detection system available. (Cue: If requested, notify the operator the Steam Leak Detection System is not known to be INOP.)	Steam Leak Detection System is available as indicated in alarm indications.	
6. Verify suppression pool cooling is available.	Suppression pool cooling is not tagged out.	
7. Verify RCIC inspection has been performed per S49.9.A, Routine Inspection of RCIC system. (Cue: If requested, inform the operator that S49.9.A is complete.)	N/A	N/A

STEP	STANDARD	SAT/UNSAT
8. Verify RCIC system is available for auto initiation per S49.1.A, Normal RCIC Line-up for Automatic Operation. (Cue: If requested, notify operator that RCIC is not known to be INOP.)	RCIC is available by observing 116 RCIC alarm panel or as provided by SSVN.	
9. If RCIC is expected to run for more than 1 hour, then suppression pool oxygen level verified to be less than 3%. (Cue: RCIC is not expected to be run for more than 1 hr)	N/A	N/A
10. If Vibration Monitoring System is available, then verify in service. (Cue: If asked, report that the Vibration Monitoring System is in service.)	N/A	N/A
11. Ensure HV-55-*F071, HPCI/RCIC Flush Line to Suppression Pool (TEST OUTBOARD) is closed.	HV-55-1F071 is closed.	
12. Ensure HV-55-*F008, Test Loop Shutoff (TEST ISOL) closed.	HV-55-1F008 is closed.	
13. Ensure HV-49-*F022, RCIC Test Loop Isolation (TEST ISOL) is closed.	HV-49-1F022 is closed.	
*14. Open HV-55-*F011, HPCI/RCIC Test Return to CST (CONDENSATE RETURN).	Rotate control switch for HV-55-1F011 to open, and verify the valve strokes open.	
15. Start *OP219, Barometric Condenser Vacuum Pump (VACUUM PUMP).	Rotate VACUUM PUMP control switch to start.	
*16. OPEN HV-50-*F046, RCIC Lube Oil Cooling Water Supply (COOLING WATER).	Rotate control switch for HV-50-1F046 to open, and verify the valve strokes open.	
17. Monitor suppression pool temperatures per ST-6-060-390-*, Suppression Pool Temperature Check. (Cue: If requested, notify operator ST-6-060-390-1 is being performed by an additional operator.)	N/A	N/A

STEP	STANDARD	SAT/UNSAT
18. If required to limit suppression pool temperature any time during this procedure, then place Suppression Pool Cooling Mode of RHR system in service per S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control. (Cue: If requested, inform operator Suppression Pool Cooling is not required.)	N/A	N/A
19. Inform HP of changing radiological conditions due to RCIC system start.	HP is informed of Unit 1 RCIC start.	
*20. Place FIC-49-*R600, RCIC Pump Discharge Flow Controller (FL) in MANUAL.	FIC-49-1R600 M/A selector switch repositioned to "M".	
*20a. ...and set to 0%.	Depress FIC-49-1R600 "CLOSE" detent pushbutton until controller output indicating 0%.	
21. Make plant announcement concerning RCIC start.	PA announcement concerning RCIC start has been made.	
*22. Open HV-50-*F045, RCIC Steam Supply (INLET).	Place HV-50-1F045 control switch to the OPEN position.	
*23a. Slowly raise the output of FIC-49-*R600 to greater than 2200 RPM as indicated on SI-50-*01-1, Turbine Speed (S).	Depress FIC-49-1R600 "OPEN" pushbutton to achieve greater than 2200 RPM as indicated on SI-50-101-1.	
*23b. ...and as speed is observed to increase, throttle open HV-49-*F022, RCIC Full Flow Shutoff (TEST ISOL).	When SI-50-101-1 indicates greater than 0 RPM, throttle open HV-49-1F022.	
24a. If HV-49-*F022 will not open, then lower output of FIC-49-*R600, RCIC Pump Discharge Flow Controller (FL), to greater than or equal to 2200 RPM.	N/A	N/A
24b. Throttle open HV-49-*F022.	N/A	N/A
*25a. Slowly raise output of FIC-49-*R600 to approximately 600 gpm.	Depress FIC-49-1R600 "OPEN" detent to achieve 400 to 700 gpm as indicated on FI-49-1R600-1.	
*25b. ...and match setpoint to actual flow...	Flow controller is adjusted such that when the controller is switched to AUTO, flowrate changes less than 100 gpm.	

STEP	STANDARD	SAT/UNSAT
*25c. ...then place FIC-49- *R600 in AUTO.	The M/A selector switch is repositioned to "A", with a flowrate change of less than 100 gpm.	
*26. Throttle HV-49-*F022, RCIC Full Flow Tests (TEST ISOL) and adjust FIC-49-*R600 as necessary to maintain pump discharge pressure at least 70 psig over reactor pressure and pump flowrate of 600 gpm.	Pump discharge pressure at least 70 psig over reactor pressure.	
NOTE: Insert Malfunction 1474		
27. 116 RCIC window E-5 annunciates.	116 RCIC window E-5 acknowledged	
NOTE: Steps 28 and 29 are directed by the ARC. If RCIC is tripped, and the ARC not referenced, mark step 28 N/A.		
28. Verify HV-50-1F046, Lube Oil Cooling Supply Valve is open.	HV-50-1F046 is open.	
29. Check temperature of suction source. IF possible, then swap to alternate.	N/A	N/A
*30. If RCIC is not needed to maintain reactor water level, then remove RCIC from service immediately.	RCIC turbine secured.	
NOTE: You have met the termination criteria for this JPM. You can stop here.		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to place Unit 1 RCIC in full flow test per S49.1.D for a 15 minute PMT following vacuum pump repairs. You are to obtain a discharge pressure at least 70 psig greater than reactor pressure, and a pump flowrate of 600 gpm with the controller in AUTO by the manual slow start method using FIC-49-1R600.

Task Condition(s):

1. LGS Unit 1 is in OPCON 1 at 100% power.
2. ST-6-060-390-1 is currently being performed.
3. S49.9.A, Routine inspection of RCIC system has been performed.
4. Vibration Monitoring System is in service.

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Place RHR In Shutdown Cooling From The RSP

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

Evaluator Signature: _____ **Date:** _____

Directions to Simulator Operator:

- Reset simulator to IC #15.
- Secure "B" Loop of SDC and place all RSP Emergency Transfer switches to EMERGENCY
- Complete SE-1 up to and including step 4.9.5

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

20 Minutes

Importance Rating(s):

4.1/4.1 SG6

System Number:

295016

References:

1. SE-1, Remote Shutdown

Task Standards:

"A" RHR is shutdown cooling mode from RSP.

Initiating Cues:

You are directed by the Shift Supervisor to place the RHR in shutdown cooling mode in accordance with SE-1.

Tasks Conditions:

1. The Main Control Room has been evacuated due to Toxic gas problems
2. The reactor is shutdown and cooled down and preparations have been made to place shutdown cooling in service from the RSP.
3. SE-1 has been completed up to and including step 4.9.5. A floor operator has been assigned to assist you when required.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
*1. Obtain SE-1	SE-1 obtained	
2. <u>IF</u> RHRSW A Loop is <u>not</u> in service, <u>THEN PERFORM</u> the following:	N/A	N/A
*3. <u>IF</u> SE-1 was entered for reasons other than a fire, <u>THEN</u> throttle <u>OPEN</u> HV-51-*F068A, "A RHR Htx Outlet" (HX A OUTLET), for 18 to 20 seconds.	Recognize SE-1 entered due to toxic gas and take hand switch to open for 18 to 20 seconds and then pull to stop.	
4. <u>IF</u> SE-1 was entered due to a fire, <u>THEN ATTEMPT</u> to throttle valve from the RSP.	N/A	N/A
5. <u>IF</u> successful, <u>THEN VERIFY</u> valve position locally AND open the valve breaker	N/A	N/A
6. <u>IF</u> unsuccessful, <u>THEN PERFORM</u> either of the following methods to throttle HV-51-*F068A, "A RHR Hx RHRSW Outlet" (HX A OUTLET)	N/A	N/A

STEP	STANDARD	SAT/UNSAT
*7. OPEN HV-51-*F014A, "A RHR Htx RHRSW Inlet" (HX A INLET)	Handswitch for HV-51-1F068A is taken to open position and red light comes on and green light goes out	
*8. START OAP506, "A RHRSW Pump" (SERV WATER PUMP A), at 10C201	Handswitch taken to start, red light on, green light off	
*9. Manually THROTTLE HV-51-*F068A, HX A OUTLET, to maintain pump discharge pressure between 70 to 100 psig as read on PI-012-001A-2, OR PI-012-001A-3	Valve throttled to maintain discharge pressure between 70 and 100 psig	
*10. IF HV-43-*F023A, PUMP SUCTION, closed, THEN START *AP202, "A RHR Pump" AND immediately throttle OPEN HV-51-*F015A, "A RHR Shutdown Cooling Injection PCIV" (OUTBOARD), to establish 1500 gpm flow.	Pump handswitch taken to start and within 10 seconds the 1F015 A injection valve is throttled open. Establish 1500 gpm.	
11. IF HV-43-*F023A could not be closed in step 4.9.6.9, THEN START *AP202, "A RHR Pump" AND immediately throttle OPEN HV-51-*F-17A, "A RHR LPCI Injection PCIV" (OUTBOARD A), to establish 1500 gpm flow.	Recognize step not necessary and continue.	
12. WHEN Reactor pressure is stable, THEN RAISE RHR flow to 10,000 gpm maximum. (Cue: When the operator starts to increase flow by opening the F015A, you can say, "You can stop here, you have met the termination criteria for this JPM.)	1F015A valve is opened to increase flow.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by the Shift Supervisor to place the RHR in shutdown cooling mode in accordance with SE-1.

Tasks Conditions:

1. The Main Control Room has been evacuated due to Toxic gas problems
2. The reactor is shutdown and cooled down and preparations have been made to place shutdown cooling in service from the RSP.
3. SE-1 has been completed up to and including step 4.9.5. A floor operator has been assigned to assist you when required.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Resetting a 42% Recirculation System Runback

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. Close the 1A Cond. Pump discharge valve. (1A Cond. Pump will trip)
3. When the 1A Cond. Pump discharge valve is fully closed, restart 1A Cond. Pump and open the discharge valve.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

5 Minutes

Importance Rating(s):

3.3/3.2
3.7/3.7

System Number(s):

K/A 202002 A4.07
K/A 202001 A4.01

References:

S43.0.B, Rev. 15, Resetting a Recirculation System Runback

Task Standard(s):

1A Reactor Recirculation pump 42% runback signal is reset.

Initiating Cues:

You are directed by shift supervision to reset the 42% runback on the 1A Reactor Recirculation Pump.

Task Conditions:

1. The plant was operating at 100% power when the 1A Condensate pump tripped.
2. The plant has received a 42% runback on both reactor recirculation pumps.
3. The 1A Condensate pump has been returned to service.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain a copy of S43.0.B.	Current revision of S43.0.B obtained.	
NOTE: Steps 2,3,and 4 should be performed concurrently.		
*2. ADJUST XC-M1-*R621A(B), "Recirc Pp Speed Controller" to lower speed demand until decrease in Recirc Pp speed is observed on XY4-M1-*R621A(B), "Recirc Pp Speed", at 10C602 OR on VMS.	XC-M1-1R621A close pushbutton is depressed until Recirc pump speed indication decreases on XY4-M1-1R621A, at panel 10C602. Speed decrease causes a power drop of less than 5%.	
3. VERIFY XY6-M1-*R621A(B) (DEVN), responds.	Downward deflection on the Deviation meter XY6-M1-1R621A at 10C602 is observed.	
4. WHEN decrease in Recirc. Pp speed is observed, THEN VERIFY XY5-M1-*R621A(B), "Speed Controller Demand" (DEMAND), AND XY4-M1-*R621A(B) (S) track with each other.	Demand meter XY5-M1-1R621A and Speed meter XY4-M1-1R621A at 10C602 are observed to track with each other.	
5. ENSURE cause of RUNBACK has been corrected. (Cue: If asked, say, "All recirc pump runback conditions are clear.")	N/A	N/A
6. ENSURE XY6-M1-*R621A(B) (DEVN), is approximately 0%.	Deviation meter XY6-M1-1R621A at 10C602 is approximately 0%.	

STEP	STANDARD	SAT/UNSAT
*7. DEPRESS AND RELEASE runback reset pushbutton (HIGH LIMIT).	High Limit reset pushbutton at 10C602 is depressed and released. Speed changes less than 4%.	
8. VERIFY runback indication light (HIGH LIMIT) clear.	High Limit runback indicator light for the 1A Recirc pump at 10C602 is clear.	
9. Depress annunciator reset pushbutton on *0C655, and VERIFY *A(B) RECIRC FLOW LIMIT at *11 RECIRC (*12 CLEANUP) clear.	1A RECIRC FLOW LIMIT annunciator on 111 RECIRC is clear.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to reset the 42% runback on the 1A reactor recirculation pump.

Task Condition(s):

1. The plant was operating at 100% power when the 1A Condensate pump tripped.
2. The plant received a 42% runback on both reactor recirculation pumps.
3. The 1A Condensate Pump has been returned to service.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: RHR Service Water System Startup

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

- Reset the simulator to any IC with NO RHRSW or ESW Pumps running.
- RHRSW in normal shutdown alignment
- Remote function, page MC 47, 50 to make temperature at 50°F.
- Ensure copies of S12.1.A and ST-6-0120-620-0 available.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.8/3.7
3.4/3.4

System Number:

219000 A4.01
219000 A4.05

General References:

1. S12.1.A, Rev. 26 RHR Service Water System Startup
2. ST-6-012-620-0, Rev. 1 RHRSW Spray Network Draining

Task Standards:

Place B or D RHRSW Pump in operation with flow through the 2B RHR heat exchanger at $\leq 11,000$ gpm flowrate AND discharge pressure 75 - 85#

Initiating Cues:

SSV directs "CO place "B" loop of RHRSW in service in preparation for suppression pool cooling with the 2B RHR heat exchanger".

Tasks Conditions:

1. RHR and RHRSW systems are OPERABLE and aligned as normal for 100% power operation.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain copy of S12.1.A from Shift Assistant	S12.1.A, Rev. 26 obtained	
2. Obtain copy of ST-6-012-620-0 from Shift Assistant	ST-6-012-620-0 obtained	
3. Spray Pond Pump Structure HVAC system available (CUE: if asked, SSV reports "HVAC system is operable. All 4 fans in auto per System Manager")	Recognizes "normal" HVAC alignment on OOC681 or request status from SSV	N/A
4. System lined up per S12.1.A (COL-1,(2)) (CUE: if asked, SSV reports "RHRSW is aligned per COL")	Requests status of COL from SSV	N/A
5. System aligned to the Cooling Tower <u>OR</u> the Spray Pond as the heat sink per S12.7.B, Winter Bypass Line Operation.	Recognizes RHRSW is aligned to spray pond with HV12-031A, B, C, D OPEN and HV12-032A, B, C, D SHUT.	N/A

STEP	STANDARD	SAT/UNSAT
<p>6. RHRSW Radiation Monitors in service per S26.1.0, Placing RHR Service Radiation Monitors in service.</p> <p>(CUE: if asked, SSV reports "RHRSW rad monitors are operable")</p>	<p>Recognizes "normal" rad monitor indications and lack of annunciators 010 D4, E4 and 011 A4, B4, C4</p> <p>OR</p> <p>Requests status from SSV</p>	N/A
<p>7. PHR Heat Exchanger shell side filled.</p> <p>(CUE: if asked, SSV reports "RHR Heat Exchangers are all filled and vented.")</p>	<p>Recognize lack of annunciator 115 G-2 and 1F047B and 1F003B open</p> <p>OR</p> <p>check PI-51-205B indicates >0#</p> <p>OR</p> <p>Requests status from SSV</p>	N/A
<p>8. Verify lubricating oil level of RHRSW Pump(s) at standstill level line on sightglass.</p> <p>(CUE: wait 10 minutes and report "B(D) RHRSW Pump is ready to start.")</p>	<p>EO contacted, report made "RHRSW pump is ready to start." <u>PRIOR</u> to pump start</p>	
<p>9. OPEN HV-51-2F014B, Heat Exchanger Inlet</p>	<p>HV-51-2F014B momentarily placed in OPEN. Observe indicating lights.</p>	
<p>10. Throttle OPEN HV-51-2F068B for 18-20 seconds.</p>	<p>HV-51-2F068B momentarily placed in OPEN, 18-20 seconds later HV-51-2F068B momentarily placed in PULL TO STOP. Observe indicating lights.</p>	
<p>11. IF PI-51-205B, HX DISCH, indicates system static pressure less than 15 psig, THEN fill system per S12.3.A(B). Filling of RHR Service Water Loop A(B) using A(B) ESW.</p>	<p>Verifies PI-51-205B indicates $\geq 15\#$</p>	
<p>12. PLACE associated OA(B,C,D)V543, SPRAY POND PUMP ROOM FANS, in "Run" at 00C681.</p>	<p>Place OBV543 <u>OR</u> ODV543 in "RUN" observe indicating light for fan</p>	

STEP	STANDARD	SAT/UNSAT
13. Make PA announcement for starting "B" or "D" RHRSW Pump.	PA announcement made for pump start. NOTE: This announcement may be made any time up to this point.	
14.* Start OB or OD P506, Pump	Place OB or OD Pump to START, observe starting current surge, observe pump discharge pressure <140# NOTE: If RHRSW Pump is started before HV-51-2F014B is <u>FULL</u> open terminate JPM)	
15.* THROTTLE HV-51-2F068B to the maximum obtainable position without exceeding 11,000 gpm on FI-51-2R602B while maintaining pump discharge pressure PI-12-001B between 75# to 85#.	Adjust HV-51-2F068B immediately to prevent RHRSW Pump trip on high pressure <u>AND</u> runout condition indicated by annunciator 011 A-2(B-2) (<72# for <u>10 seconds</u>) (if either condition occurs, terminate the JPM)	
16. Verify the following:	N/A	N/A
*a. Pump motor current is less than 92 amps on A/11603-2	Indicated motor amps for running RHR pump is < 92 amps on A/11603-2	
*b. Pump discharge pressure is greater than 75# on PI-12-001B	Indicated pump discharge pressure on PI-12-001B is >75# and <85#	
*c. Steady state pump discharge pressure does <u>Not</u> exceed 120#	Indicated pump discharge pressure on PI-12-001B is >75# and <85#	

STEP	STANDARD	SAT/UNSAT
17. Acknowledge annunciator 107 reactor I-2, Vibration Alarm Alert (NOTE TO INSTRUCTOR: alarm expected for "B" pump start, NOT expected for "D" pump start.)	Silences alarm AND references ARC OR Silences alarm, AND dispatch EO to TSC, and requests PRO check VMS CRT.	
18. INITIATE ST-6-012-620-0, RHRSW Spray Network Draining	N/A	N/A
a. Verify all prerequisites are satisfied	Initial ST Step 6.1.1 after verifying no other ESW or RHRSW pumps running.	
b. Obtain Shift Supervisor's permission to start test. (CUE: SSV directs, "you have permission to start ST-6-012-620-0")	Initial ST step 6.2.1 after obtaining SSV permission.	
*c. Obtain Control Room Operator's permission to start test. (CUE: RO reports, "ST-6-012-620-0 is signed into the log, you have permission to commence")	Initial ST step 6.2.2 after obtaining SSV permission	
NOTE: At this point JPM may be terminated. (CUE: You have met the termination criteria for this JPM, you may stop)		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

<hr/>	
SAT	UNSAT

Initiating Cues:

SSV directs "CO place "B" loop of RHRSW in service in preparation for suppression pool cooling with the 2B RHR heat exchanger".

Tasks Conditions:

1. RHR and RHRSW systems are OPERABLE and aligned as normal for 100% power operation.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Drywell Spray Interlock Bypass

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

4.2/4.2 EA1.11
3.6/3.8 A2.15

System Number(s):

295024
226001

References:

1. Unit 1, T-225, Rev 14
2. Unit 2, T-225, Rev 13

Task Standard(s):

Drywell spray interlock for *A RHR is bypassed using T-225

Task Condition(s):

1. Unit ____ has scrambled due to a leak in the Drywell.
2. Conditions requiring Drywell Spray have been met.
3. T-225 has been completed up to and including step 4.3.4.c, however the white indicating light did not illuminate.

Initiating Cues:

Shift Supervision directs you to perform step 4.3.4.d of T-225 on Unit ____.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain current revision of T-225.	Current revision of T-225 obtained.	
*2. Obtain the following equipment from Unit * T-200 cabinet in OSC. <ul style="list-style-type: none"> • Slotted screwdriver • screwholding screwdriver • 4 electrical jumpers • flashlight (Cue: You have obtained the equipment.)	Operator obtains: <ul style="list-style-type: none"> • slotted screwdriver • screwholding screwdriver • 4 electrical jumpers • flashlight 	
*3. At Panel *OC617, Bay A install jumper from FFF5-7 to FFF5-6. (Cue: Jumper installed.)	Jumper installed from FFF5-7 to FFF5-6 in *OC617	
*4. At Panel *OC617 Bay B, install jumper from FFF9-2 to FFF9-1. (Cue: Jumper installed.)	Jumper installed from FFF9-2 to FFF9-1 in *OC617.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: SAT/UNSAT

Initiating Cues:

| Shift Supervision directs you to perform step 4.3.4.d of T-225 on Unit ____.

Task Condition(s):

- | 1. Unit ____ has scrambled due to a leak in the Drywell.
- | 2. Conditions requiring Drywell Spray have been met.
- | 3. T-225 has been completed up to and including step 4.3.4.c, however the white indicating light did not illuminate.

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: **Alternate Injection From The Fire System**

Operator: _____ (RO/SRO) Evaluator: _____

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

None

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

25 minutes

Importance Rating(s):

3.2/3.3 K/A A2.08

System Number(s):

286000

References:

1. T-244, Alternate Injection From The Fire System

Task Standard(s):

Backup Diesel Driven Fire Pump started locally.

Initiating Cues:

You are directed by Shift Supervision to perform T-244 to supply Fire Water to increase reactor level.

Task Condition(s):

1. Unit 1 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 out of service and unavailable.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain a copy of Unit 1 T-244.	Unit 1 T-244 obtained	
2. PERFORM the following in 402-R16-253 (Attachment 1):	N/A	N/A
*3. CONNECT hose to fitting downstream of 22-1429, "Fire Protection/RHR interconnection Isolation Valve." (Cue: hose is connected as described)	One end of hose is connected to downstream side of 22-1429	
*4. CONNECT other end of hose to 51-1178, "1B RHR Fire Protection Crosstie Connection Isolation Valve." (Cue: hose is connected as described)	Other end of hose is connected to 51-1178	
*5. OPEN 22-1429 (Cue: valve handwheel turns in the counterclockwise direction and stops)	22-1429 handwheel turned fully counterclockwise	

STEP	STANDARD	SAT/UNSAT
<p>*6. OPEN 51-1178</p> <p>(Cue: handwheel turns in counterclockwise direction and stops)</p>	51-1178 handwheel turned fully counterclockwise	
7. START available Fire Pump:	N/A	N/A
<p>8. IF starting OOP512, "Motor Driven Fire Pump," THEN DEPRESS HS-22-002-1 at OOC650 (Main Control Room) AND VERIFY pump starts.</p> <p>(Cue: If asked, reply that MDFP is not available)</p>	Recognize from task conditions that the Motor Driven Fire Pump is unavailable and proceed to step 4.2.2	
<p>9. IF starting OOP511, "Diesel Driven Fire Pump", THEN DEPRESS HS-22-026-1 at OOC650 (Main Control Room) AND VERIFY pump is running.</p> <p>(Cue: MCR attempts to start the Diesel Driven Fire Pump have been unsuccessful)</p>	Contact main control room and request start of DDFP. When MCR reports failure to start, continue with procedure.	
<p>10. IF OOP511, "Diesel Driven Fire Pump", fails to start, THEN PLACE control switch at OOC519 (Diesel Fire Pump Room) in "MANUAL A"...</p> <p>(Cue: Switch is in "Manual A".)</p>	Control switch in "Manual A"	
<p>11. AND HOLD HS-22-026-2 in "START" at OOC519 until diesel starts.</p> <p>(Cue: Switch is in "START" position, the engine is not cranking.)</p>	HS-22-026-2 in "START" position. Recognize failure to start and continue with procedure	

STEP	STANDARD	SAT/UNSAT
<p>12. IF diesel fails to crank in step 4.2.2.1, THEN PLACE control switch in "MANUAL B" at 00C519...</p> <p>(Cue: Switch is in "MANUAL B".)</p>	Control switch in "MANUAL B".	
<p>13. AND HOLD HS-22-026-2 in "START" at 00C519 until diesel starts.</p> <p>(Cue: Switch is in "START" position, engine does not crank or start)</p>	HS-22-026-2 in "START" position. Recognize failure to start and continue on with procedure	
<p>14. VERIFY 00P511, "Diesel Driven Fire Pump" starts.</p> <p>(Cue: Engine is not running.)</p>	N/A	N/A
<p>*15. IF 00P512, "Motor Driven Fire Pump", AND 00P511, "Diesel Driven Fire Pump," are unavailable, THEN PLACE control switch for 10P402, "Backup Diesel Driven Fire Pump," in "TEST" at 10C096 (Lower Parking Lot Pump Enclosure) AND VERIFY pump starts.</p> <p>(Cue: Switch is in TEST, diesel cranks and comes up to speed)</p>	Control switch for 10P402 placed in TEST	
<p>16. OPEN HV-51-1F017B, (Outboard) at 10C601 (Main Control Room)</p> <p>(Cue: If asked, report that the HV-51-1F017B is now open)</p>	MCR contacted and asked to open the HV-51-1F017B for injection.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by Shift Supervision to perform T-244 to supply Fire Water to increase reactor level.

Task Condition(s):

1. Unit 1 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 out of service and unavailable.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: MANUAL SCRAM/ISOLATION OF ROD DRIFTING OUT

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

N/A

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.7/3.4

System Number:

201001 KA.09

References:

1. ON-104, Control Rod Problems, Rev. 23

Task Standard(s):

Control Rod 26-07 fully inserted and isolated from its HCU.

Initiating Cues:

You are directed to manually scram Control Rod 26-07 on Unit ____ locally and isolate it from the HCU per ON-104 step 2.2.26.

Tasks Conditions:

1. Control Rod 26-07 on Unit ____ has drifted out.
2. ON-104 has been entered and Attachment 2 completed up to step 2.2.15.
3. Reactor Power is 52%, all Thermal Limits are acceptable.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain copy of ON-104. (Cue: Evaluator should provide a copy of ON-104 to examinee.)	ON-104, Rev. 23 obtained.	
*2. INITIATE single rod scram on drifting control rod by repositioning both "NORM-TEST-SRI" toggle switched on HCU to "TEST". (Cue: Both switches are in "TEST" position.)	Both toggle switches on Control Rod 26-07 pulled down and moved to "TEST" position.	
3. <u>IF</u> control rod fails to fully insert, <u>THEN</u> DISCONTINUE single rod scram by repositioning "NORM-TEST-SRI" toggle switches on HCU to "NORM" <u>AND</u> GO TO step 2.2.26.8. (Cue: Report as CRS that "Control Rod 26-07 is full in" when contacted on plant communication system.)	N/A	N/A
4. CLOSE affected CRD's 47--01 valve. (Cue: The handwheel rotates clockwise and then comes to a stop.)	47-*-01 handwheel for Rod 26-07 rotated clockwise until the valve is closed.	
5. CLOSE affected CRD's 47--02 valve. (Cue: The handwheel rotates clockwise and then comes to a stop.)	47-*-02 handwheel for Rod 26-07 rotated clockwise until the valve is closed.	
*6. DISCONTINUE single rod scram by repositioning both "NORM-TEST-SRI" toggle switches on HCU to "NORM." (Cue: Both switches are in the "NORM" position.)	Both toggle switches on Control Rod 26-07 pulled down and moved to "NORM" position.	

STEP	STANDARD	SAT/UNSAT
7. IF rod drifts out again, THEN ENSURE affected CRD is unisoalted from its HCU per step 2.2.26.7 AND REPEAT steps 2.2.26.1 through 2.2.26.5 twice more, as necessary. IF NOT, GO TO step 2.2.26.9. (Cue: If contacted on plant communication system, report as CRS/RO that "Rod is still full in.")	Rod 26-07 determined not drifting.	
Tell examinee, "You have met the termination criteria for this JPM. You can stop here."		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

You are directed to manually scram Control Rod 26-07 on Unit ____ locally and isolate it from the HCU per ON-104 step 2.2.26.

Tasks Conditions:

1. Control Rod 26-07 on Unit ____ has drifted out.
2. ON-104 has been entered and Attachment 2 completed up to step 2.2.15.
3. Reactor Power is 52%, all Thermal Limits are acceptable.

CATEGORY "C"

INTEGRATED PLANT OPERATIONS

SIMULATOR SCENARIO #3A (B)

Rev. 0

Simulation Facility: Limerick Unit 1

Scenario No.: 3A (B)

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: Reactor at \approx 50% power. 1C RFP is tagged out for corrective maintenance. Complete a GP-3 up to and including step 3.1.8. Fill out RMSI up to and including page 10. OC ESW pump is running in accordance with the S11.1.A procedure.

Turnover: Continue the power reduction to 25% power in order to remove the main turbine from service for EHC leak repairs. GP-3 is completed up to and including step 3.1.8. The shift is expected to obtain PSD permission and take the turbine out of service when 25% is reached. The turbine outage is expected to last for approximately four hours while an EHC leak at the #3 Turbine Control Valve is corrected. RMSI is completed up to and including page 10.

"C" RFP is out of service and tagged for repairs to a water leak on the pump casing drain line just upstream of valve 06-1028C.

Biocide of ESW is complete and the shift is expected to secure the OA ESW pump. The EO has just reported that he has opened the 11-1010, 11-2010 and 11-0034A valves in preparation for the ESW pump shut down. (Note: ST6-012-630-0 prepared)

Event No.	Malf. No.	Event Type*	Event Description
1	None	N	Secure the OA ESW Pump
2	None	N/R	Power reduction to 25% to remove turbine from service
3	46,B,100	I	"B" Main Steam Line Flow transmitter fails high
4	280,A	C	Loss of 120 volt RPS Distribution Panel 1AY160
5	410,C	C	HV-59-129A and B fail closed (IG to drywell)
6	555, 120	M	120 Rod ATWS (hydraulic locked)
	559		SLC Injection line rupture
	024		RDCS fails inoperative
	550		Main Steam Sparger Isolation valve (HV01-109) fails
	110		Turbine trip

Event No.	Malf. No.	Event Type*	Event Description
7	245,B 846 244,A	C	1A RFP failure (report of lube oil leak from floor operator) 1B RFP HP Steam Isolation Valve stuck closed 1A RFPT Lube Oil Reservoir Low Level Alarm 1A RFP Trip
8	115,RC	I	When suppression pool cooling is in service, the "A" RHRSW HX Rad Monitor fails upscale.

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

Scenario No.: 3A (B)		Event 1
<u>Event Description:</u> Secure the OA ESW Pump		
Time	Position	Applicant's Actions or Behavior
	PRO	Obtain a copy of S11.2.A
	PRO	Stop the pump and immediately perform ST-6-012-620-0 RHRSW Spray Network Drain
	PRO	Secure the running spray pond pump house fan

Scenario No.: 3A (B)		Event 2
<u>Event Description:</u> Reduce power to 25% in order to remove the turbine from service.		
Time	Position	Applicant's Actions or Behavior
	RO/PRO	Reduce recirc flow to minimum in accordance with RMSI
	RO	Continue driving rods to reduce power in accordance with RMSI and GP-3
	PRO	Monitor BOP, control oil temperatures for running feed pumps and MG Sets
	CRS	Direct actions per GP-3
	CRS	Direct house loads transferred
	PRO	Transfer house loads in accordance with S91.6.B

Scenario No.: 3A (B)		Event 3
<u>Event Description:</u> When the RO has driven the remaining 4 RMSI rods, the "C" MSL flow transmitter output fails to maximum. (Malf. 46, B, 100%)		
Time	Position	Applicant's Actions or Behavior
	RO	Acknowledge REACTOR HI/LO LEVEL alarm and determine reactor level high and report to CRS
	CRS	Direct the RO to take manual control of feed water and restore level to 35"
	RO	Take manual control of feed and restore level to 35"

Scenario No.: 3A (B)

Event 3 continued

Event Description: When the RO has driven the remaining 4 RMSI rods, the "C" MSL flow transmitter output fails to maximum. (Malf. 46, B,100%)

	CRS	Enter and execute OT-110 Reactor High Level
	CREW	Recognize and report that the "C" MSL flow transmitter is failed high, dispatch personnel to troubleshoot and repair
	CRS	Direct the RO to swap to single element mode of feed control
	RO	Transfer to single element mode in accordance with S6.0.E

Scenario No.: 3A (B)

Event 4 / 5

Event Description: When actions for MSL flow transmitter are complete (single element control established), then the RPS-UPS 120 Volt Distribution Panel 1AY160 will deenergize due to a fault. Simultaneous with the failure, the HV-59-129A and B Instrument Gas isolation valves to the drywell will fail closed.

(Malf. 280,A and 410,C)

Time	Position	Applicant's Actions or Behavior
	CREW	Using the multiple alarms present, recognize that a failure of the 1AY160 panel has occurred and dispatch personnel to investigate.
	CRS	Enter and execute procedure E-1AY160. Direct the PRO to bypass isolations and restore RECW, DWCW, PCIG and IA.
	CRS	If time permits the CRS should refer to T.S. 3.6.3 for Isolation Bypass
	PRO	Perform appropriate sections of E-1AY160 and recognize that the HV-59-129A and B are closed and will not open and report to the CRS.
	RO	Monitor reactor parameters and refer to ARCs as time allows

Scenario No.: 3A (B)

Event 4 / 5 continued

Event Description: When actions for MSL flow transmitter are complete (single element control established), then the RPS-UPS 120 Volt Distribution Panel 1AY160 will deenergize due to a fault. Simultaneous with the failure, the HV-59-129A and B Instrument Gas isolation valves to the drywell will fail closed.

(Malf. 280,A and 410,C)

	CRS	Recognize that DWCW can not be restored to the recirc pumps (129A and B closed). Direct a plant shutdown in preparation for shutting down both recirc pumps in accordance with ARCs A-5 on 111 RECIRC and 112 RECIRC.
	RO	Run back recirc to minimum
	RO	When core flow is less than 50 mlbm/hr, scram the reactor by arming and depressing the "B" side RPS pushbuttons.
	CRS	Investigate T-103 entries caused by the loss of power by dispatching personnel (109 RAD alarms E-1, E-2, F-1, F-2)

Scenario No.: 3A (B)

Event 6

Event Description: When the scram is inserted, 120 rods fail to insert due to hydraulic lock problems and one minute later the turbine trips. When SLC is injected the discharge line in the drywell bursts and SLC does not work to shut down the reactor. RDCS fails and main steam spargers are not available due to a stuck closed isolation valve. As soon as the turbine trips, power to the EHC system is lost and bypass valves are not available. Pressure control using SRVs will be required. (Malf. 555,120 / 559 / 024 / 550 / 110)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute T-101 and T-117
	RO	Place the mode switch in shut down
	RO	Insert SRMs and IRMs
	RO	Manually initiate RRCS
	RO/PRO	Trip recirc pumps (if running) at least 10 second apart

Scenario No.: 3A (B)

Event 6 continued

Event Description: When the scram is inserted, 120 rods fail to insert due to hydraulic lock problems and one minute later the turbine trips. When SLC is injected the discharge line in the drywell bursts and SLC does not work to shut down the reactor. RDCS fails and main steam spargers are not available due to a stuck closed isolation valve. As soon as the turbine trips, power to the EHC system is lost and bypass valves are not available. Pressure control using SRVs will be required. (Malf. 555,120 / 559 / 024 / 550 / 110)

	RO	Bypass RWM, adjust CRD drive water pressure and attempt to insert rods. Report RDCS failure to CRS.
	CRS	Direct the performance of T-217 and T-218 to get rods inserted
	CREW	Recognize SLC pumps started and running with low discharge pressure. Dispatch personnel to investigate.
	CRS	Direct T-209 SLC injection via RCIC
	RO	Control reactor level above -129" using feed water to prevent a group one isolation
	CRS	Direct ADS inhibited
	PRO	Inhibit ADS
	PRO	Stabilize reactor pressure between 990 and 1096 psig using SRVs
	CRS	At 95°F in the suppression pool, enter and execute T-102
	CRS	Direct two loops of pool cooling
	PRO	Place two loops of pool cooling in service
	CRS	At 110°F in the pool, direct performance of T-270 in the MCR and AER.
	PRO	Trip RCIC and isolate HPCI
	RO	Ensure the feed pump discharge valves and the startup level control valve are closed.
	CRS	When APRM downscals are received, direct the PRO to inject with RCIC and HPCI as needed to maintain level between -185" and the level where APRM downscals were received or -161".

Scenario No.: 3A (B)

Event 6 continued

Event Description: When the scram is inserted, 120 rods fail to insert due to hydraulic lock problems and one minute later the turbine trips. When SLC is injected the discharge line in the drywell bursts and SLC does not work to shut down the reactor. RDCS fails and main steam spargers are not available due to a stuck closed isolation valve. As soon as the turbine trips, power to the EHC system is lost and bypass valves are not available. Pressure control using SRVs will be required. (Malf. 555,120 / 559 / 024 / 550 / 110)

	PRO	Maintain level as directed using HPCI and RCIC
	CRS	When conditions allow after the LOCA signal, direct the performance of SE-10
	RO	Perform SE-10 if directed
	CREW	Bypass and restore DWCW isolation when above 135°F in the drywell
	CREW	Bypass and restore H ₂ / O ₂ Analyzers

Scenario No.: 3A (B)

Event 7

Event Description: Five minutes after the reactor is scrammed, the PRO will report a major lube oil leak on the A RFP. Five minutes later a 1A RFPT Lube Oil Reservoir Low Level alarm will be received. Ten minutes after the initial report, the A RFP will trip. When the crew attempts to place B RFP in service, the HP steam admission valve will fail to open resulting in the need to perform T-251 HPCI to Feed Water Only and use HPCI for level control. If requested, the simulator operator will wait 10 minutes and then perform T-251 (simulator operator must ensure HPCI to CS closed prior to performing T-251). T-270 will be performed if requested, 10 minutes after the request to either perform or stand by to perform the procedure. No other T-200 procedures will be completed by the simulator operator. (Malf. 245,B / 244,A / 846)

Time	Position	Applicant's Actions or Behavior
	CRS	When report of leak is received, direct the RO to place "B" RFP in service
	RO	Recognize "B" RFP failure and report to CRS.
	CRS	Direct the PRO to control reactor level with RCIC and HPCI to feed only using S55.7.A if above -38" initiation signal.

Scenario No.: 3A (B)

Event 7 continued

Event Description: Five minutes after the reactor is scrammed, the PRO will report a major lube oil leak on the A RFP. Five minutes later a 1A RFPT Lube Oil Reservoir Low Level alarm will be received. Ten minutes after the initial report, the A RFP will trip. When the crew attempts to place B RFP in service, the HP steam admission valve will fail to open resulting in the need to perform T-251 HPCI to Feed Water Only and use HPCI for level control. If requested, the simulator operator will wait 10 minutes and then perform T-251 (simulator operator must ensure HCPI to CS closed prior to performing T-251). T-270 will be performed if requested, 10 minutes after the request to either perform or stand by to perform the procedure. No other T-200 procedures will be completed by the simulator operator. (Malf. 245,B / 244,A / 846)

	CRS	When required, direct the performance of T-251 to floor personnel and have the PRO prepare to perform T-251 in the MCR.
	PRO	Operate HPCI through feed water only (T-251 as necessary) and RCIC to maintain reactor level above TAF

Scenario No.: 3A (B)

Event 8

Event Description: When the PRO has placed pool cooling in service, the "A" (B) RHRSW heat exchanger rad monitor will fail upscale resulting in a heat exchanger isolation and RHRSW pump trip. If dispatched to investigate, the simulator operator will wait 5 minutes and then report that water has leaked onto the Rad Monitor skid and is causing problems. (Malf. 115,RC)

Time	Position	Applicant's Actions or Behavior
	PRO	Acknowledge alarms for RHRSW HI RADIATION and RHRSW RAD MONITOR HI-HI/INOP/DNSCL. Report isolation and trip of RHRSW pump to CRS
	CRS	Dispatch personnel to troubleshoot and repair the RHRSW rad monitor

SIMULATOR OPERATOR INSTRUCTIONS

SCENARIO SETUP NOTES:

1. Reset the simulator to IC-2.
2. Pull the last 4 rods in RMSI (pg.12) to 48 and increase reactor recirc pump speed until each pump is at 66% speed.
3. Fill out RMSI up to and including page 10 and fill out a copy of GP-3 up to and including step 3.1.8.
4. Open an ST-6-012-620-0 RHRSW Spray Network Drain and leave on ESW System mimic.
5. Start the 0A ESW pump in accordance with S11.1.A
6. Print out a P-1 and check thermal limits in spec. Set AGAF values to 1.0
7. Ensure all deep bed demineralizers in service
8. Remove "C" RFP from service in accordance with S6.2.C and S6.2.A. Ensure all RFP minimum flow controllers are in manual.
9. Place clearance tags on FW system. C FW pump side should be isolated and tagged and steam should be off the turbine and tagged.
10. Get a copy of GP-3 appendix A for RO to use for rod insertion and place copy on RO cart. (special simulator version)
11. Insert MALF. 555,120 ATWS 120 rods
12. Insert MALF. 559 SLC discharge piping rupture
13. Insert MALF. 550 Steam sparger isolation valve fails as is

SIMULATOR SCENARIO OPERATION

1. Perform duties of EO as needed to support the "A" ESW pump evolution. Reset vibration monitor alarm if requested and report it's cause as the ESW pump when tripped.
2. If PSD called for permission to continue power reduction, inform the crew that they have permission to continue the power decrease. They should call you for a release prior to separating from the grid.
3. When the RO has driven at least the last 4 rods in RMSI (indicated on PMS), then insert MSL Flow Transmitter Failure - MALF. 46,,B,100

4. If asked to investigate the transmitter failure, report that nothing is readily apparent and that I&C has been notified to assist.
5. When single element control is established, then simultaneously insert MALF. 280,A and MALF. 410,C to deenergize the 1AY160 bus and fail the HV59-129A and B closed.
6. If asked to investigate the loss of power to the RPS bus wait 10 minutes and then report that both the normal and alternate feeder breakers to the Inverter are tripped open and that further investigation is required.
7. When the reactor is scrammed, insert MALF. 024 RDCS inop and MALF. 245,B -1B RFPT Steam Failure. If asked to investigate the RDCS failure, wait 10 minutes and then report that there are several LEDs lit on the panel and that RDCS will not RESET.
8. One minute after the reactor is scrammed, insert MALF. 110 Turbine trip
9. If asked to investigate SLC failure, wait 15 minutes and then report that there are no visible problems with SLC.
10. Five minutes after the reactor scram, call the MCR on the radio and report a large lube oil leak on the 200' elevation of the TE. The leak appears to be coming from the 1A RFPT. This report should express some urgency. The oil is spraying all over the sump area and it is not possible to find the source. Sump level is decreasing slowly.
11. Five minutes after the reported oil leak, insert MALF. 846 1A RFPT Lube Oil Reservoir Low Level
12. Ten minutes after the reactor scram insert MALF. 244,A - 1A RFPT trip
13. If asked to perform T-251 wait 5 minutes and then call the MCR to ensure that HPCI to Core Spray Injection Valve HV55-1F006 is closed. Wait another 5 minutes and then perform T-251 and call the MCR to report its completion.
14. If asked to perform T-270, wait 10 minutes (or 10 minutes have elapsed since operator staged) and perform T-270 in AER. When complete, call the MCR and tell them that T-270 complete and that they can restore suppression cooling.
15. No other T-200 procedures will be accomplished during the scenario. If called and pressed for a status report, the simulator operator should state that the procedures are in progress and that you will check on the operators assigned.
16. When suppression pool cooling is in service on 1A loop, insert MALF. 115,RC; A RHRSW Rad Monitor Fails High. If requested to investigate, wait 5 minutes and inform the MCR that water leakage from the roof has entered the monitor skid and caused a suspected short. Maintenance is notified. If chemistry is asked to sample the RHRSW and RHR Systems and a status is requested, report that sampling is in progress.

17. If asked to investigate / operate steam sparger isolation valve HV01-103, report that the valve is jammed shut and will not open manually.

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO # 2A (B)

Rev. 0

Simulation Facility: Limerick Unit 1

Scenario No.: 2A (B)

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: Reactor is at 95% power.

Turnover: Turbine Stop and Control Valve testing has just been completed. Expect the PSD to call within the next 30 minutes to raise power to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1	303,10	C	1C RE Exhaust Fan blade pitch fails- loss of secondary containment
2	None	R/N	Raise power to 100% after requested by PSD
3	20,C,50	I	"C" APRM output fails to 50% power. (malfunction to be entered after second recirc flow bump, ~96% power)
4	RF 353,0% on page RR1	C	Loss of SW cooling to the "A" Recirc MG set
5	None	R	Insert rods per RMSI to less than 33% power
6	1102 1111 548 253,B 777 786	M	Vibration Alert Alarm Vibration Danger Alarm Loss of condensate due to a hotwell leak FW line "B" break outside of containment Steam Flooding Damper PNL 10C245 Trouble Alarm Steam Flooding Damper PNL 10C234 Trouble Alarm
7	446A 446B 445,100	M	1F002 HPCI Inboard Steam Isolation fails as is (open) 1F003 HPCI Outboard Steam Isolation fails as is (open) Steam leak in the HPCI room
8	237,B,30	I	"B" Reference leg defect of 30" prevents Div. 2 LOCA signal from occurring with all others

Event No.	Malf. No.	Event Type*	Event Description
9	412,A	C	"A" CRD pump trip
10	None	M	Loss of sufficient HP feed

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

Scenario No.: 2A (B)

Event 1

Event Description: 1C RE Exhaust Fan blade pitch fails. If the crew elects to start the standby fan (1C) then the malfunction (303) will be removed and fan start reported. (MALF. 303,10)

Time	Position	Applicant's Actions or Behavior
	PRO	Respond to RE LOW DP/LOSS POWER/INOP Alarm
	PRO	Monitor RE dP and report to CRS
	CRS	Evaluate report of failed pitch control linkage. Recognize that RE dP is going away and direct the standby fan started and the B fan secured.
	PRO	Refer to ARC B-3 on 004 VENT
	CRS	Reference T.S. 3.6.5.1.1 for loss of secondary containment due to $< -.25"$

Scenario No.: 2A (B)

Event 2

Event Description: As soon as the crew has taken action for the loss of RE dP, (or 10 minutes after the fan failure report) the PSD will request that LGS Unit 1 raise power to 100%. The crew is expected to raise power.

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to GP-5 section 3.3 and direct actions required to raise power to 100%.
	RO/PRO	Manipulate recirc controls such that power is raised to 100%.
	RO	Monitor reactor parameters during the power ascension.
	CRS	Direct a P-1 Edit obtained and ensure thermal limits are satisfactory
	CREW	Increase power in < 10 MWe increments

Scenario No.: 2A (B)

Event 3

Event Description: When the RO/PRO has made two adjustments to recirc flow for the power increase, (96% power) "C" APRM fails to 50%. The crew is expected to recognize this failure and take action to bypass the "C" APRM to remove it from the RBM circuitry. (MALF. 20,C,50)

Time	Position	Applicant's Actions or Behavior
	RO	Recognize that "C" APRM indication is incorrect and report to CRS.
	CRS	Reference TS
	CREW	Dispatch personnel to investigate "C" APRM
	RO	Bypass "C" APRM when directed

Scenario No.: 2A (B)

Event 4/5

Event Description: Once actions for the INOP "C" APRM are complete a loss of Service Water to the "A" Recirc MG set will occur. This forces the CRS to direct the pump tripped and secured. The crew should drive rods as needed to reduce power to less than 33%. (Remote Function 353,0% on page RR1)

Time	Position	Applicant's Actions or Behavior
	CREW	Reduce recirc pump speed in response to the high oil temperature alarms received.
	RO/PRO	Refer to ARCs B-1, G-1 and G-2 on 111RECIRC
	CRS	Direct the PRO to trip the "A" recirc pump and secure it in accordance with S43.2.A.
	PRO	Trip and secure the "A" recirc pump IAW S43.2.A
	CRS	Enter and execute OT-112 for the Recirc pump trip and GP-5 section 3.2 for unexpected drop in power. Direct the RO to drive rods to less than 33% power.
	CRS	Refer to T.S. 3.4.1.1 for single loop
	RO	Drive rods per RMSI to reduce power to less than 33%
	CREW	Contact chemistry to perform ST-5's
	CRS	Contact chemistry to adjust GEZIP
	PRO	Throttle SW to the RFP and MG set lube oil coolers to maintain oil temperatures in band

Scenario No.: 2A (B)

Event 6

Event Description: When conditions are stable after the recirc pump trip, a hotwell leak will occur which eventually leads to a plant shutdown and loss of condensate/feedwater. Vibration alarms will accompany the leak and if requested to investigate, the simulator operator will report vibration increased on all 3 condensate pumps. As soon as the plant is scrammed a "B" feedwater line break will occur outside of primary containment. The high temperature in the tunnel will cause a reference leg defect which causes "B" PAMS and fuel zone level and "B" NR to indicate 30" higher than all other indications.

(MALF. 1102 / 1111 / 548 / 253,B)

Time	Position	Applicant's Actions or Behavior
	CREW	Acknowledge Hotwell HI/LO Level alarm and recognize that hotwell level is going down.
	CRS	Direct a rapid plant shutdown
	RO	Runback recirc to minimum
	PRO	Transfer house loads
	RO	When core flow is less than 50 mlbm/hr, scram the reactor by arming and depressing the scram push buttons
	CRS	Enter T-101 and direct appropriate actions
	PRO	Trip the turbine at 50 MW
	RO	Insert SRM's and IRM's
	RO	Recognize high feed flows in addition to Steam Leak Detection Alarms and report suspected line break to CRS
	CRS	Shift level control to RCIC/HPCI

Scenario No.: 2A (B)

Event 7

Event Description: When HPCI initiates an un-isolable steam leak into the HPCI room will occur which reduces reactor level. If T-290 is requested, the simulator operator will provide HPCI room temperatures to the crew. HPCI temperatures will decrease due to fire water admission to the room. The simulator operator will also report Outboard MSIV room temperatures. (MALF. 446,A / 446,B / 445,100%)

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize HPCI failure to isolate on valid isolation signal and report to CRS. Recognize RCIC discharge pressure is low and report failure of RCIC to inject to the CRS.
	CRS	Direct manual HPCI isolation

Scenario No.: 2A (B)

Event 7 Continued

Event Description: When HPCI initiates an un-isolable steam leak into the HPCI room will occur which reduces reactor level. If T-290 is requested, the simulator operator will provide HPCI room temperatures to the crew. HPCI temperatures will decrease due to fire water admission to the room. The simulator operator will also report Outboard MSIV room temperatures. (MALF. 446,A / 446,B / 445,100%)

	PRO	Attempt to isolate HPCI using isolation pushbutton and key lock hand switches. Report failure to isolate to CRS.
	CRS	Enter T-103 and T-104 and direct actions required
	CREW	Dispatch an EO to perform T-290

Scenario No.: 2A (B)

Event 8

Event Description: Reference leg defect occurs in "B" leg due to high temperatures in the steam tunnel. This causes "B" Fuel Zone Recorder, "B" PAMS WR and "B" NR level to indicate 30" higher than all other indications. This will delay the Div. 2 LOCA signal unless actions are taken. (MALF. 237,B,30)

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize inconsistency in level indication and report
	CRS	Verify most conservative level indications being used and direct manual division 2 LOCA signal initiated when -129" is reached.
	PRO	Insert a division 2 LOCA when directed

Scenario No.: 2A (B)

Event 9

Event Description: While performing T-240 on CRD, the running CRD pump will trip. (MALF. 412,A)

Time	Position	Applicant's Actions or Behavior
	RO	Recognize and report CRD pump trip to the CRS
	RO	Dispatch personnel to troubleshoot CRD pump trip
	RO	Start the "B" CRD pump and use it to inject per T-240

Scenario No.: 2A (B)

Event 10

Event Description: Loss of sufficient HP feed.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize failure of HP feed and direct SLC injection to the vessel
	RO	Inject SLC as directed
	CRS	Enter and execute T-111
	CRS	Direct ADS Inhibited
	PRO	Inhibit ADS
	CRS	Direct at least 2 ECCS pumps started and aligned for injection (CRS may wait for the LOCA signal to start pumps)
	PRO	Operate ECCS as directed
	CRS	If level cannot be maintained above the TAF, then enter T-112 and perform an emergency blowdown, otherwise, direct PRO to inject available systems to maintain level above the TAF
	PRO	Operate ECCS as needed to maintain level above the TAF

SIMULATOR OPERATOR INSTRUCTIONS

SCENARIO SETUP NOTES:

1. Reset the simulator to IC 17.
2. Reduce power using flow to reach 95%
3. Request a P-1 edit and ensure all thermal limits and AGAFs in spec.
4. Insert MALF. 446,A HPCI Inboard Steam Isolation fails open
5. Insert MALF. 446,B HPCI Outboard Steam Isolation fails open
6. Set up the PMS MON DIS screen at the instructor station to provide HPTAREA and MSTTUNEL points for temperature monitoring.

SIMULATOR SCENARIO OPERATION

1. Two minutes after the crew assumes the shift, insert MALF. 303,10 to simulate RE fan failure. If asked to investigate RE HVAC, then wait three minutes and report that the 1B Exhaust Fan blade pitch controller has failed. The pitch control linkage is separated and fan pitch looks to be at a minimum position. There are 2 supply fans running, 2 exhaust fans running and one REECE fan in operation. If the crew requests the standby exhaust fan (1C) started and 1B secured, wait 3 minutes and remove MALF. 303,10. Call the MCR and report start of 1C and that 1B is secured.
2. As soon as the crew has taken action for the loss of RE dP, (or 10 minutes after the fan failure report) the PSD will call the MCR and request that LGS Unit 1 raise power 100%.
3. When the RO/PRO has made two adjustments to recirc flow for the power increase ($\approx 96\%$ power), insert MALF. 20,C,50 to fail the output of "C" APRM to 50 %. If called to investigate wait 10 minutes and report that I&C suspects a failed averaging circuit and that they will prepare a TCF and come to the control room when they are ready to begin troubleshooting.
4. Once actions for the "C" APRM are complete, insert REMOTE FUNCTION 353 at 0% on page RR1 to secure cooling water to the "A" Recirc MG Set. If asked to investigate wait 5 minutes and report that SW piping out of the "A" MG oil cooler is hot to the touch. SW temperature out of the cooler is approximately the same as Lube Oil temperature indicated on Lube Oil inlet to the fluid drive. It doesn't appear as if SW is flowing fully through the cooler.
5. When conditions have stabilized after the recirc pump trip, insert MALF. 1102 and 1111 Vibration alarms and MALF. 548 Hotwell leak simultaneously. If asked to investigate, wait two minutes and report that vibrations are high on all three condensate pumps.

6. As soon as the reactor scrams, insert MALF. 253,B - Feed line break outside of containment, MALF. 777 Steam Flooding Damper Panel 10C245 Trouble alarm, MALF. 786 Steam Flooding Damper Panel 10C234 Trouble alarm, and MALF. 445,100 HPCI leak simultaneously.
7. One minute after the feed line beak insert MALF. 237,B,30 for the reference leg defect.
8. When the RO begins to maximize CRD using T-240, or 10 minutes after the scram, insert MALF. 412,A - A CRD pump trip. If asked to investigate, wait 5 minutes and report that the breaker tripped and there are no indicating flags up. If the crew requests support for starting the "B" CRD pump, wait 5 minutes, report the pump ready for a start and then open the pump discharge valve when the pump is running. "A" CRD pump discharge should be closed if requested. Local CRD discharge pressure can be obtained from value on 904 screen.
9. If asked to perform T-290 in the AER then after 8 minutes utilize PMS SIM MON screen points HPTAREA for HPCI room temperatures and MSTTUNEL for outboard MSIV room temperatures. HPCI temperatures will decrease due to fire suppression systems and the lowest temperature that should be reported will be 122 °F regardless of what the PMS point is reading. O/B MSIV room temperatures are accurate and should be provided as displayed.
10. If asked to provide a report of steam flooding dampers that are actuated, wait 10 minutes and then report the following dampers as closed:
 - Both dampers for the HPCI pump room 109 (Panel 10C234)
 - All four dampers for the steam chase room 407 (Panel 10C234)
 - All eight dampers for the steam chase room 518 (Panel 10C245)
11. If asked to investigate a 1BC208 panel trouble alarm, wait 10 minutes and report HPTAREA Temp. (not less than 122 °F) and that both unit coolers are operating.
12. If asked to secure fire water to the HPCI room, report back as the fire brigade leader that you advise against securing fire water because a loud roaring noise can be heard coming from the HPCI pump room.
13. If T-248 is requested, report difficulty in getting the T-200 hose locker open has resulted in a delay. T-248 should be completed soon.
14. IF SE-10 shunt trip resets are requested, wait 15 minutes, reset trips and then notify control room of completion.

CATEGORY "C"
INTEGRATED PLANT OPERATIONS
SIMULATOR SCENARIO #1A (B)

Rev. 0

Simulation Facility: Limerick Unit 1

Scenario No.: 1A (B)

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Examiner: _____

Applicant: _____

Initial Conditions: 1B Circulating Water pump is out of service and info tagged. 1B RFP is operating on the MSC to support maintenance activities.

Turnover: Maintain 100% power. The 1B Circulating Water pump is out of service, electrical maintenance is waiting on a replacement 13.2 KV breaker. Maintenance activities are complete and the System Manager requests that the crew swap the B RFP from the MSC to the MGU in the AUTO mode.

Event No.	Malf. No.	Event Type*	Event Description
1	None	N	Swap the B RFP from MSC to the MGU in the AUTO Mode
2	1102 1111 2252 86C	C	Vibration Alert Alarm Vibration Danger Alarm Circ Water Pump House Structure Fire Alarm C Circulating Water Pump trip (5 minutes after fire alarm)
3	None	N/R	Power reduction due to loss of vacuum
4	556,B	I	During the power reduction the B RFP will swap from AUTO mode to MANUAL mode
5	None	N	Approximately 5 minutes after the fire alarm, the fire brigade will call the MCR and request a start of the Motor Driven Fire Pump
6	149,E	I	"N" SRV opens and closes after initial pressure reduction, malfunction will be removed after the crew starts to decrease pressure set.
7	441,100 441,300 440,B,3 440,B,10	M	Leak in the drywell, 5 minutes later the leak grows to 300 gpm. At T = 15 the leak increases to a 3% LOCA (Malf. 440,B,3) and at T = 20 the leak grows to 10% LOCA (Malf. 440,B,10)

Event No.	Malf. No.	Event Type*	Event Description
8	16,G 17,G 18,G	C	When the reactor scrams, 3 rods fail to insert, rods 2-39, 18-47, and 50-19 fail to scram
9	560,B	C	Suction strainer clogging on "A" RHR pump
10	236,F 440,B, 100	M	At 100 psig in the RPV, all reference legs will flash and the leak will increase to a 100% DBA LOCA.
11	None	M	Emergency depressurization
12	None	M	RPV Flooding

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

Scenario No.: 1A (B)

Event 1

Event Description: Swap the B RFP from MSC to the MGU in the AUTO Mode

Time	Position	Applicant's Actions or Behavior
	RO	Use S06.0.E to swap the B RFP to the MGU in AUTO
		- Depress and release the CLOSE push button on B MGU to lower the MGU until RFP positive control is obtained (speed decreases)
		- Raise MSC to HSS in SLOW RAISE until full red indication is obtained
		- Adjust RFP to desired flow using CLOSE/OPEN push button on MGU
		- Adjust bias on MGU such that input signal when added to the positive or negative bias setting will equal the output signal
		- Press the AUTO push button on the MGU
		- Report completion to the CRS

Scenario No.: 1A (B)

Event 2

Event Description: When the B RFP is in the AUTO Mode on the MGU, a fire will occur on C Circulating Water Pump. (MALF. 1102 / 1111 / 2252 / 86,C)

Time	Position	Applicant's Actions or Behavior
	RO/PRO	Dispatch personnel to investigate cause of vibration alarms
	RO/PRO	Dispatch fire brigade in response to fire alarm in circ water pump house structure
	CRS	Refer to SE-8 and ARC 006 FIRE H-6-U
	CRS	Direct PRO to secure C Circ Water Pump and monitor vacuum for decrease
	PRO	Either take C Circ Water Pump control switch to STOP or CLOSE the HV-09-110C Circ Pump Discharge at the 10C652 panel.
	PRO	Complete securing C Circ Water Pump utilizing S09.2.A
	PRO	Reduce cooling tower makeup flow as needed to stay below 10000 gpm blowdown

Scenario No.: 1A (B)

Event 3

Event Description: Power reduction due to loss of vacuum. Vacuum will decay when the PRO secures the Circulating Water pump due the fire. The RO will have to reduce power to approximately 90% to stop the decrease in vacuum.

Time	Position	Applicant's Actions or Behavior
	RO	Reduce power in accordance with RMSI and GP-5 until condenser vacuum is stable
		- Reduce recirculation flow to 90% if required
		- Drive rods per RMSI if required
	CRS	Enter and execute OT-116, Loss of Condenser Vacuum and GP-5
	PRO	Notify the PSD of drop in power
	CRS	If greater than 15% power drop is performed then ensure chemistry is informed to complete ST-5's.

Scenario No.: 1A (B)

Event 4

Event Description: At approximately 97% power, the B RFP swaps from AUTO to MANUAL mode inadvertently. This results in a mismatch between A/C feed line flows and B feed line flow. (MALF. 556,B)

Time	Position	Applicant's Actions or Behavior
	RO	Recognize mismatch between B RFP and A/C RFP flow indications and realize that the B RFP MGU has swapped to MANUAL mode.
	CRS	Direct RO to take manual control of B RFP and match FW flows
	CREW	Dispatch personnel to troubleshoot the B RFP MGU

Scenario No.: 1A (B)

Event 5

Event Description: Five minutes after the fire alarm, the Fire Brigade leader will contact the MCR and request that they manually start the Motor Driven Fire Pump.

Time	Position	Applicant's Actions or Behavior
	PRO	When requested by the fire brigade, start the MDFP using MCR pushbutton. Refer to S22.8.A as needed.

Scenario No.: 1A (B)

Event 6

Event Description: When actions are complete for the loss of vacuum and the circulating pump fire, "N" SRV Opens. The SRV closes once the operator starts to lower pressure set. If the crew does not lower pressure set, the simulator operator will remove the SRV open malfunction one minute after it is inserted. (MALF. 149,E)

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize SRV open and enter and execute OT-114
		- Direct two loops of pool cooling placed in service
		- Direct RO to reduce pressure set to 900 psig
	RO	Reduce pressure set to 900 psig by depressing decrease push button on the 10C653 panel
	PRO	Place two loops of suppression pool cooling in service in accordance with S51.8.A.

Scenario No.: 1A (B)

Event 7

Event Description: As soon as the SRV closes, a 100 gpm leak develops in the drywell (T=0). At T=5 minutes the leak grows to 300 gpm, at T=15 minutes the leak becomes much larger (3% LOCA) and at T=20 minutes the leak grows to a 10% LOCA. The crew will initially be able to control level with feedwater and condensate but condenser hotwell will eventually empty requiring ECCS for level control. DW sprays will be required during the scenario but may be pre-empted by adequate core cooling concerns. (MALF. 441 and 440,B)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter OT-101 and direct actions in an attempt to isolate the leak
	CRS	Direct a rapid plant shutdown in response to rapidly increasing drywell pressure
	RO/PRO	Conduct a plant shutdown in accordance with GP-4
	CRS	Enter T-101 and T-102 and execute accordingly
	PRO	Report that recirc pumps are running without RECW and that they should be secured
	CRS	Direct PRO to secure Recirc pumps
	CRS	Direct RO/PRO to restore drywell chilled water bypassing isolations as needed.

Scenario No.: 1A (B)

Event 7 continued

Event Description: As soon as the SRV closes, a 100 gpm leak develops in the drywell (T=0). At T=5 minutes the leak grows to 300 gpm, at T=15 minutes the leak becomes much larger (3% LOCA) and at T=20 minutes the leak grows to a 10% LOCA. The crew will initially be able to control level with feedwater and condensate but condenser hotwell will eventually empty requiring ECCS for level control. DW sprays will be required during the scenario but may be pre-empted by adequate core cooling concerns. (MALF. 441 and 440,B)

Time	Position	Applicant's Actions or Behavior
	CRS	Direct PRO to bypass isolations and restore Hydrogen and Oxygen analyzers
	PRO	Trip both recirc pumps when directed
	RO/PRO	Restore drywell chilled water when directed
	RO/PRO	Restore analyzers to service when directed
	CRS	Direct suppression pool sprays
	PRO	Spray the suppression pool in accordance with T-225
	CRS	Direct RO/PRO to isolate RWCU in accordance with OT-101
	RO/PRO	Isolate RWCU in accordance with OT-101
	RO	Monitor RPV level and pressure and maintain level using feed pumps in the normal band. (account for the fact that B MGU is in manual)
	RO	Line up for startup level control, closing the feed pump discharges (108A,B,C) and open the bypass valve (138) and operate the startup level control valve controller in manual or auto mode.
	CREW	Recognize prompt jump in drywell pressure
	CRS	When LOCA signal occurs, direct the PRO to operate ECCS as needed to maintain level and prevent floodup of vessel
	PRO	Operate ECCS to maintain level above top of active fuel and prevent floodup of vessel
	CRS	When on the safe side of the Drywell Spray Initiation Limit Curve and adequate core cooling is assured, direct the PRO to spray the drywell
	PRO	Spray the drywell in accordance with T-225
	CRS	Direct SE-10 performed after the LOCA signal

Scenario No.: 1A (B)

Event 8

Event Description: When the reactor scrams, three rods fail to insert (rods 2-39, 18-47 and 50-19) (MALF. 16,G / 17,G / 18,G)

Time	Position	Applicant's Actions or Behavior
	RO	When reactor scrammed, recognize all rods have not inserted and report to SRO
	CRS	Enter T-117 and execute as needed
	CRS	Direct ADS inhibited
	PRO	Inhibit ADS
	CRS	Direct RO to insert rods manually, bypassing the RWM if needed
	RO	Insert rods manually, adjust drive water dP as needed to accomplish rod insertion, bypass the RWM if blocks are present

Scenario No.: 1A (B)

Event 9

Event Description: When the PRO attempts to use "A" RHR for drywell or pool sprays, suction strainer clogging will occur. (MALF. 560,B)

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize inability to obtain required flow rates and report possible strainer clogging to SRO.
	CRS	Direct drywell sprays with the other RHR pump to get adequate flow, if needed, the A RHR pump can be left in sprays

Scenario No.: 1A (B)

Events 10,11, 12

Event Description: At approximately 100 PSIG in the RPV, all reference legs flash and the crew is expected to perform a blowdown and then flood up the vessel. The leak grows to a 100% DBA LOCA which will require containment flooding to ensure adequate core cooling. The crew is expected to try to establish a 50 psig dP, and then after time recognize they can not accomplish it and enter containment flooding procedures. (MALF. 236,F / 440,B,100)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize and announce reference legs flashed
	CRS	Enter and execute T-112
	CRS	Ensure LP ECCS running for makeup

Scenario No.: 1A (B)

Events 10,11, 12 continued

Event Description: At approximately 100 PSIG in the RPV, all reference legs flash and the crew is expected to perform a blowdown and then flood up the vessel. The leak grows to a 100% DBA LOCA which will require containment flooding to ensure adequate core cooling. The crew is expected to try to establish a 50 psig dP, and then after time recognize they can not accomplish it and enter containment flooding procedures.

(MALF. 236,F / 440,B,100)

	CRS	Direct 5 ADS valves opened
	PRO	Take 5 ADS valve hand switches to open
	CRS	Enter and direct actions per T-116
	CRS	Direct ECCS injection to the vessel in order to establish RPV pressure 50 psig above the suppression pool pressure
	PRO	Align all condensate and ECCS injection to the vessel
	CRS	Recognize 50 psig dP will not be established and enter and execute T-118 to flood the containment.

SIMULATOR OPERATOR INSTRUCTIONS

SCENARIO SETUP NOTES:

1. Reset to IC 17
2. Secure 1B Circulating Water Pump, place clearance on its hand switch and pull indicating light bulbs from socket.
3. Place the 1B RFP on the MSC per S06.0.E
4. Insert MALF. 16,,G,02-39; Rod fails to scram
5. Insert MALF. 17,,G,18-47; Rod fails to scram
6. Insert MALF. 18,,G,50-19; Rod fails to scram
7. Insert MALF. 56U,B; Suction strainer clogging on "A" RHR pump

SIMULATOR SCENARIO OPERATION

1. When the "B" RFP is on the MGU and level control is in AUTO, insert MALF. 1102 Vibration Alert and 1111 Vibration Danger Alarms
2. 1 minute after vibration alarms inserted, insert MALF. 2252 Circ Water Pump House Structure Fire Alarm. Five minutes later, insert MALF. 8d,C - "C" Circ Pump trip.
3. If asked to investigate vibration alarms, wait five minutes and report that alarms were due to "C" Circulating water pump.
4. Five minutes after fire alarm, radio the MCR as the fire brigade leader and report that "C" Circulating pump motor is covered with oil and is on fire. There is heavy smoke in the area. Request that the MCR manually start the motor driven fire pump as a precautionary measure. Five minutes later report that the fire is out and brigade will stand down. No off-site assistance is required.
5. Power will be reduced to stabilize vacuum. When power is 97%, insert MALF. 556,B to swap the the B MGU to manual.
6. When actions for the loss of vacuum and fire are complete, insert MALF. 149,E "N" SRV opens. As soon as the operators begin to reduce pressures set, remove the malfunction. If the operators do not reduce pressure set, remove MALF.149,E one minute after it is inserted. If asked to pull fuses for the SRV, wait 8 minutes, toggle fuses on page AD1 and report completion to the MCR.
7. As soon as the SRV closes (T=0), insert MALF. 441,100. Five minutes later (T=5) increase the leak to 300 gpm using MALF. 441,300. At T=15, insert MALF. 440,B,3% and at T=20, insert MALF.440,B,10%.

8. At 100 psig in the vessel, insert MALF. 236,F to flash reference legs and MALF. 440,B,100 to increase the leak to 100% DBA LOCA.
9. If requested to start CRD pumps, wait five minutes and report pre-start checks complete and discharge valves repositioned as requested. Support pump starts as needed.
10. If requested to reset shunt trips, wait 15 minutes, reset the trips and report completion to the MCR. Perform other SE-10 actions as required, ie EDG running checks and check for fire alarms when diesels running.

1996 LGS
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	
Recirc	SF 1	202002 A4.07	3.3	0012				A1, B8
Feedwater	SF 2	259001 A4.02	3.9	0007				A2
Main Steam	SF 3	241000 A4.06	3.9	0083				H, A3
HPCI	SF 4	206000 A4.02	4.3	0058				D, A4, B7
Sec. Cont.	SF 5	290001 A3.01	3.9	0022				K, A5, B3
4KV	SF 5	295003 AA1.01	3.7	0041				G, A6, B6
SRM	SF 8	234000 A4.01	3.7	0085				E, H, A7, B4
RE HVAC	SF 9	295032 EA1.03	3.7			0214		G, F, B9
RPS	SF 7	212000 A4.17	4.1			0210		G, F
SRV	SF 3	295016 SG.06	4.1			0225		G, F
RPS	SF 7	212000 A1.11	3.3		0003			D, K, A1, B3
CREFAS	SF 9	290003 A4.01	3.2		0023			K, J, A2
EDG	SF 6	264000 A4.04	3.7		0027			A3
RCIC	SF 2	217000 A2.10	3.1		0002			D, A4, J, B7
SDC	SF 4	295016 SG.06	4.1		0084			H, E, A5, J
Recirc	SF 1	202002 A4.07	3.2		0011			B8, A6
RHRSW	SF 5	219000 A4.05	3.4		0010			A7
Pri. Cont.	SF 5	295024 EA1.11	4.2				0213	F, G, J, B6
FP	SF 8	286000 A2.08	3.3				0260	A9, G, H, J
CRDH	SF 1	201001 KA.09	3.4				0259	H, F, A10

FOOTNOTES:

A - 7 Different SF Systems
B - Coverage of 10CFR55.45 (a) (3), (4), (6), (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)
K - ESF

 Indicates changes were made due to review of Audit Examination

PECO Energy Company
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Resetting a 28% Recirculation System Runback

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. Insert Malfunction 505, B (A Recirc pump inadvertent low limit runback).
3. Verify that 1A Recirc pump has runback to 28% speed, then remove Malfunction 505, B.

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

10 Minutes

Importance Rating(s):

3.3/3.2

System Number(s):

K/A 202001 A4.07

References:

S43.0.B, Resetting a Recirculation System Runback

Task Standard(s):

1A Reactor Recirculation pump 28% runback signal is reset per S43.0.B.

Initiating Cues:

You are directed by shift supervision to reset the 28% runback on the 1A Reactor Recirculation pump.

Task Conditions:

1. The plant was operating at 100% power when a broken wire caused an inadvertent 28% runback of the 1A Reactor Recirculation pump.
2. I&C has repaired the broken wire that caused the 1A Recirc Pump runback.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain a copy of S43.0.B. (Cue: If asked, respond: "I want you to obtain a copy of the procedure you need")	Most current revision of S43.0.B is obtained.	
*2. ADJUST XC-M1- *R621A(B), "Recirc Pp Speed Controller" to lower speed demand until decrease in Recirc Pp speed is observed on XY4-M1- *R621A(B), "Recirc Pp Speed" (S), at *0C602 OR on VMS.	XC-M1-1R621A close pushbutton is depressed until Recirc pump speed indication decreases on XY4-M1-1R621A, at panel 10C602.	
3. VERIFY XY6-M1- *R621A(B) (DEVN) responds.	Downward deflection on the deviation meter XY6-M1-1R621A at 10C602 is observed.	
4. WHEN decrease in Recirc Pp speed is observed, THEN VERIFY XY5-M1-*R621A(B) (DEMAND), AND XY4-M1-*R621A(B), track with each other.	Demand meter XY5-M1-1R621A and speed meter XY4-M1-1R621A at 10C602 are observed to track with each other.	

STEP	STANDARD	SAT/UNSAT
5. ENSURE cause of runback has been corrected. (Cue: If asked, say: "All recirc pump runback conditions are clear.")	Recognized from task conditions that cause of runback corrected, or consulted supervisor to obtain this information.	
6. Simultaneously PERFORM the following at *0C602	N/A	N/A
7. ENSURE XY6-M1-*R621A(B) (DEVN), is approximately 0%.	Deviation meter XY6-M1-1R621A at 10C602 is approximately 0%.	
*8. DEPRESS AND RELEASE runback reset pushbutton (LOW LIMIT).	Low Limit reset pushbutton at 10C602 is depressed and released while deviation is still indicating 0%.	
9. VERIFY runback indication (LOW LIMIT) AND *A(B) RECIRC FLOW LIMIT at *11 RECIRC (*12 CLEANUP) C-4 clear.	Low Limit runback indicator light for the 1A Recirc pump at 10C602.	
10. Depress annunciator reset pushbutton on *0C655, and verify *A(B) RECIRC FLOW LIMIT at *11 RECIRC (*12 CLEANUP) clear.	Annunciator reset pushbutton on 10C655 is depressed and 1A RECIRC FLOW LIMIT annunciator on 111 RECIRC is verified cleared.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to reset the 28% runback on the 1A Reactor Recirculation pump.

Task Condition(s):

1. The plant was operating at 100% power when a broken wire caused an inadvertent 28% runback of the 1A Reactor Recirculation pump.
2. I&C has repaired the broken wire that caused the 1A Recirc pump runback.

PECO ENERGY COMPANY
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Place The "1C" Reactor Feed Pump In Service From Standby

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

Evaluator Signature: _____ **Date:** _____

Directions to Simulator Operator:

- Reset simulator to IC #3. Verify A and B RFPs are in service. Verify C RFP in Standby with discharge pressure 200 psig less than reactor pressure.
- Increase power to 55 to 60% using recirc flow
- Ensure closed: HV-06-108C, RFP discharge, HV-02-119C, 6C FWH extraction supply
- Ensure HIC-06-106C is in manual, set at 60%

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location (Circle One):

Plant Simulator

Approximate Completion Time:

20 Minutes

Importance Rating(s):

3.9/3.7

A4.02

System Number:

259001

References:

1. GP-2, Normal Plant Startup
2. S06.1.C, Placing a Standby Reactor Feed Pump in Service

Task Standards:

"1C" RFP in service and supplying water to the RPV in manual control.

Initiating Cues:

You are directed by the Shift Supervisor to place the "1C" RFP in service in manual control.

Tasks Conditions:

1. "1C" RFP has been in standby and running at 200 psig less than reactor pressure for 1 hour.
2. Reactor power is approximately 60%.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
*1. Obtain S06.1.C.	S06.1.C obtained	
*2. Slowly RAISE oncoming RFP speed with the MGU until RFP discharge pressure is 100 psig less than reactor pressure.....	PI-06-105C, is 75 to 125 psig, less than reactor pressure.	
3. AND ADJUST Min Flow Valve as required to remain on the safe side of Attachment 1.	Min Flow Valve in manual and opened to ensure on the safe side of attachment 1	
*4. Slowly OPEN HV-06-*08C, DISCH, AND VERIFY RPV level is maintained.	Open HV-06-108C Red light on, green off. Reactor level checked and is maintained between 30 and 40 inches	
5. PERFORM the following to have RFPT feed RPV:	N/A	N/A
*6. Slowly RAISE oncoming RFPT speed with MGU until RFPT begins feeding RPV as evidenced by HV-06-*05C "Discharge Check Valve" (CHECK) opening OR flow to reactor as indicated on FI-06-1R604C.	Flow indicated on FI-06-1R604C or HV-06-105C indicates open.	

STEP	STANDARD	SAT/UNSAT
7. ADJUST RFP Min Flow to maintain on the safe side of Attachment 1	Min flow maintained on safe side of attachment 1	
8. WHEN RFP Flow is greater than 0.5×10^6 lbm/hr as indicated on FI-06-*R604A(B,C), THEN ENSURE process computer point K000(A), K001(B), K002 (C) Feed Flow points are scanning actual Feed Pump flow values for P1/3D monicore calculation.	Process computer points pulled up on Group Point Display List #48 or as single points on process computer and checked for normal value as indicated by NML in green and lack of magenta ***.	
*6. CONTINUE to slowly raise the oncoming RFPT speed ViA MGU AND adjusting RFP Min Flow until the flow rates to the reactor for each RFP feeding the reactor are approximately equal.	Flow rates for all RFP's to the reactor are approximately equal within $.5 \times 10^6$ lbm/Hr of each other and Min Flow still on safe side of attachment 1. (NOTE: Min flow adjustment not critical)	
*7. REFER TO S02.1.A, Placing of Feedwater Heaters in Service (Steam Side), AND OPEN Sixth Heater Extraction Valve (Cue: When operator has obtained a copy of S02.1.A, Say " You can stop here, you have met the termination criteria for this JPM".)	N/A	N/A

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

You are directed by the Shift Supervisor to place the "1C" RFP in service in manual control.

Tasks Conditions:

1. "1C" RFP has been in standby and running at 200 psig less than reactor pressure for 1 hour.
2. Reactor power is approximately 60%.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: MAIN TURBINE BYPASS VALVE EXERCISING

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

Reset to a 100% power IC and adjust recirc flow to obtain 99% power.

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

20 Minutes

Importance Rating:

3.9/2.9

System Number:

241000 A4.06

General References:

1. ST-6-001-761-1, Main Turbine Bypass Valve Exercising, Rev. 5

Task Standards:

First four (4) Bypass valves tested successfully.

Initiating Cues:

You have been directed by the CRS to perform ST-6-001-761-1, Main Turbine Bypass Valve Exercising.

Tasks Conditions:

1. Unit 1 is at 99% power.
2. No other testing is in progress on Unit 1.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of ST-6-001-761-1. (Cue: Provide examinee with yellow copy of ST-6-001-761-1.)	ST-6-001-761-1, Rev. 5 obtained.	
2. Plant in OPCON 1 with thermal power greater than or equal to 20% of rated thermal power <u>OR</u> plant in OPCON 4 <u>OR</u> 5.	Monitor 10C603 to determine OPCON 1.	
3. All nine Bypass valves (BPV-1 through BPV-9) are full closed.	Nine Bypass valves indicate 0% on 10C670.	
4. BYPASS VALVE TEST selector switch in "OFF."	Bypass Valve Test selector in "OFF" on 10C670.	
5. <u>IF</u> in OPCON 1, <u>THEN</u> condenser vacuum being maintained greater than or equal to 8 1/2" Hg.	Vacuum greater than 8 1/2" Hg as indicated on PR-05-101 on 10C652 or PMS.	
6. After testing one valve, reactivity transient shall be allowed to completely dissipate prior to testing next valve.	N/A	N/A
7. <u>IF</u> a procedural step can <u>NOT</u> be completed, <u>OR</u> any other difficulty if encountered during this test, <u>THEN</u> a comment shall be entered in the Additional/Test Comments section.	N/A	N/A
8. <u>IF</u> a step denoted as a Tech Spec Requirement, marked with an asterisk (*), can <u>NOT</u> be successfully completed, <u>THEN</u> Shift Supervisor shall be notified <u>immediately</u> .	N/A	N/A
9. Operator assistance may be required to operate equipment.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
10. This test opens the bypass valves in OPCON 1 resulting in reactivity transients. During the course of this test, <u>no</u> other operational changes are to be made that will affect core reactivity, specifically <u>no</u> other turbine valve testing.	N/A	N/A
11. VERIFY all prerequisites of Section 2.0 are satisfied.	Prerequisites completed.	
12. <u>IF</u> in OPCON 1, <u>THEN</u> NOTIFY Load Dispatcher that transients up to 40 MWe will be occurring due to surveillance testing of bypass valves.	Load Dispatcher contacted using plant communication system and informed of 40 MWe transients.	
13. OBTAIN SSV permission to start test. (Cue: When asked permission to start test, reply, "You have permission to start Bypass Valve test.")	SSV permission for test to start obtained.	
14. OBTAIN PRO/RO permission to start test. (Cue: When asked permission to start test, reply, "You have permission to start Bypass Valve test.")	PRO/RO permission for test to start obtained.	
*15. RECORD "AS FOUND" positions of all valves listed in Attachment 1, Independent Verification of Restoration (IVOR).	AS FOUND column of Att. 1 completed with position as "CLOSED" for all BPV and "OFF" for Bypass Valve Test Switch. Initials of examinee completed for all 10 items.	
16. PERFORM the following for one valve at a time:	N/A	N/A
16a. VERIFY READY TO SELECT light lit, at panel 10C670.	READY TO SELECT green light lit on 10C670.	

STEP	STANDARD	SAT/UNSAT
*16b. POSITION BYPASS VALVE TEST selector switch to appropriate position.	BYPASS VALVE TEST selector in position 1.	
*16c. DEPRESS <u>AND</u> HOLD TEST BYPASS VALVE pushbutton.	Depress and hold TEST Bypass Valve pushbutton.	
16d. VERIFY TESTING <u>AND</u> DO NOT SELECT lights lit while valve is being exercised.	TESTING and DO NOT SELECT amber lights lit.	
*16e. <u>WHEN</u> Bypass Valve is full open, <u>THEN</u> RELEASE TEST BYPASS VALVE pushbutton.	When #1 Bypass Valve indicates 100% on 10C670, then release TEST BYPASS VALVE pushbutton.	
16f. VERIFY Bypass Valve recloses <u>AND</u> ENTER initials in appropriate blank in step 4.3.3.	Verify #1 Bypass Valve indicates 0%, examinee enters initials in blank for BPV-1.	
16g. VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Acknowledge and reset BYPASS VALVE OPEN alarm.	
16h. WHEN READY TO SELECT light lit <u>AND</u> plant conditions are stable, <u>THEN</u> REPEAT steps 4.3.2.1 through 4.3.2.7 for next valve to be tested.	READY TO SELECT green light lit.	
17a. VERIFY READY TO SELECT light lit, at panel 10C670.	READY TO SELECT green light lit on 10C670.	
*17b. POSITION BYPASS VALVE TEST selector switch to appropriate position.	BYPASS VALVE TEST selector in position 2.	
*17c. DEPRESS <u>AND</u> HOLD TEST BYPASS VALVE pushbutton.	Depress and hold TEST Bypass Valve pushbutton.	
17d. VERIFY TESTING <u>AND</u> DO NOT SELECT lights lit while valve is being exercised.	TESTING and DO NOT SELECT amber lights lit.	
*17e. <u>WHEN</u> Bypass Valve is full open, <u>THEN</u> RELEASE TEST BYPASS VALVE pushbutton.	When #2 Bypass Valve indicates 100% on 10C670, then release TEST BYPASS VALVE pushbutton.	

STEP	STANDARD	SAT/UNSAT
17f. VERIFY Bypass Valve recloses <u>AND</u> ENTER initials in appropriate blank in step 4.3.3.	Verify #2 Bypass Valve indicates 0%, examinee enters initials in blank for BPV-2.	
17g. VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Acknowledge and reset BYPASS VALVE OPEN alarm.	
17h. WHEN READY TO SELECT light lit <u>AND</u> plant conditions are stable, <u>THEN</u> REPEAT steps 4.3.2.1 through 4.3.2.7 for next valve to be tested.	READY TO SELECT green light lit.	
18a. VERIFY READY TO SELECT light lit, at panel 10C670.	READY TO SELECT green light lit on 10C670.	
*18b. POSITION BYPASS VALVE TEST selector switch to appropriate position.	BYPASS VALVE TEST selector in position 3.	
*18c. DEPRESS <u>AND</u> HOLD TEST BYPASS VALVE pushbutton.	Depress and hold TEST Bypass Valve pushbutton.	
18d. VERIFY TESTING <u>AND</u> DO NOT SELECT lights lit while valve is being exercised.	TESTING and DO NOT SELECT amber lights lit.	
*18e. <u>WHEN</u> Bypass Valve is full open, <u>THEN</u> RELEASE TEST BYPASS VALVE pushbutton.	When #3 Bypass Valve indicates 100% on 10C670, then release TEST BYPASS VALVE pushbutton.	
18f. VERIFY Bypass Valve recloses <u>AND</u> ENTER initials in appropriate blank in step 4.3.3.	Verify #3 Bypass Valve indicates 0%, examinee enters initials in blank for BPV-3.	
18g. VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Acknowledge and reset BYPASS VALVE OPEN alarm.	
18h. WHEN READY TO SELECT light lit <u>AND</u> plant conditions are stable, <u>THEN</u> REPEAT steps 4.3.2.1 through 4.3.2.7 for next valve to be tested.	READY TO SELECT green light lit.	

STEP	STANDARD	SAT/UNSAT
19a. VERIFY READY TO SELECT light lit, at panel 10C670.	READY TO SELECT green light lit on 10C670.	
*19b. POSITION BYPASS VALVE TEST selector switch to appropriate position.	BYPASS VALVE TEST selector in position 4.	
*19c. DEPRESS <u>AND</u> HOLD TEST BYPASS VALVE pushbutton.	Depress and hold TEST Bypass Valve pushbutton.	
19d. VERIFY TESTING <u>AND</u> DO NOT SELECT lights lit while valve is being exercised.	TESTING and DO NOT SELECT amber lights lit.	
*19e. <u>WHEN</u> Bypass Valve is full open, <u>THEN</u> RELEASE TEST BYPASS VALVE pushbutton.	When #4 Bypass Valve indicates 100% on 10C670, then release TEST BYPASS VALVE pushbutton.	
19f. VERIFY Bypass Valve recloses <u>AND</u> ENTER initials in appropriate blank in step 4.3.3.	Verify #4 Bypass Valve indicates 0%, examinee enters initials in blank for BPV-4.	
19g. VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Acknowledge and reset BYPASS VALVE OPEN alarm.	
(Cue: You have met the termination criteria for this JPM. You can stop here.)		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

You have been directed by the CRS to perform ST-6-001-761-1, Main Turbine Bypass Valve Exercising.

Tasks Conditions:

1. Unit 1 is at 99% power.
2. No other testing is in progress on Unit 1.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: HPCI Manual Start To Control Reactor Pressure
- Alternate Path

This JPM is a complete re-write. Rev bars are not used.

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

1. Reactor scrammed with MSIV's closed.
2. Vessel level between 0 and 40".
3. When HPCI is at 5600 gpm, insert MALF. 1493

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

4.3/4.3 K/A A4.02

System Number(s):

206000

References:

1. S55.1.D, Rev. 20
2. ARC 117 WINDOW D-4, Rev. 19

Task Standard(s):

HV-55-1F093 and HV-55-1F095 are closed following HPCI vacuum breaker line high temperature alarm.

Task Condition(s):

1. Unit 1 has scrammed and the MSIV's are closed.
2. Reactor pressure is rising.

Initiating Cues:

Shift Supervision directs you to place HPCI in Full Flow Test to control Reactor pressure.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain current revision of S55.1.D.	S55.1.D Rev. 20 obtained.	
2. If required to limit Suppression Pool temperature anytime during the performance of this procedure, then refer to S51.8.A, and place Suppression Pool Cooling Mode of RHR in Service. (Cue: The RO has been directed to place Suppression Pool Cooling in service.)	N/A	N/A
3. If Vibration Monitoring is available, then verify in service. (Cue: VMS is in service.)	VMS verified in service.	
4. Ensure HV55-1F071, TEST OUTBOARD is closed.	HV55-1F071 is closed. Green light on, red light off.	
5. Ensure HV55-1F008, TEST ISOL is closed.	HV55-1F008 is closed. Green light on, red light off.	

STEP	STANDARD	SAT/UNSAT
6. Ensure HV55-1F011, CONDENSATE RETURN is closed.	HV55-1F011 is closed. Green light on, red light off.	
7. Ensure HV49-1F022, TEST ISOL is closed.	HV49-1F022 is closed. Green light on, red light off.	
*8. Open HV55-1F011, CONDENSATE RETURN.	HV55-1F011 is open. Red light on, green light off.	
9. Start 10P216, VACUUM PUMP	10P216 is running. Red light on, green light off.	
10. Monitor Suppression Pool temperature per ST-6-060-390-1, Suppression Pool Temperature Check. (Cue: ST not required in OPCON 3.)	N/A	N/A
11. Inform HP of changing radiological conditions due to HPCI system start. (Cue: This is HP, I understand that radiological conditions will change when Unit 1 HPCI is started.)	HP informed of impending HPCI start.	
12. If Manual Quick Start, then go to Section 4.3. (Cue: Manual Quick Start is desired.)	N/A	N/A
13. Make Plant Announcement stating HPCI will be started.	Announcement made stating Unit 1 HPCI will be started.	
14. Ensure FIC55-1R600 HPCI Pump Discharge Flow Controller, set to 5600 gpm in Auto.	FIC55-1R600 is set at 5600 and auto is selected.	

STEP	STANDARD	SAT/UNSAT
*15. Simultaneously Open HV55-1F001, INLET and Start 10P213, AUX OIL PUMP.	HV55-1F001 handswitch placed to OPEN and AUX OIL PUMP handswitch placed to START, Red lights on, green lights off.	
*16. When SI-56-161 Turbine Speed, starts to go up, then immediately open HV55-1F008, TEST ISOL.	After SI-56-161 indicates greater than zero rpm, then place HV55-1F008 to open.	
17. Acknowledge and reset annunciator 117 B-3, HPCI PUMP LO FLOW.	Annunciator 117 B-3 acknowledged and reset.	
18. Verify FV56-112, STOP indicates open.	FV56-112 is open. Red light on, green light off.	
19. FV56-111, CONTROL indicates open.	FV56-111 is at least throttled open. Red light lit.	
20. When FV56-112, STOP opens, then verify HV56-1F059, COOLING opens.	HV56-1F059 is open. Red light on, green light off.	
21. Verify HV55-1F028, TRAP INBOARD is closed.	HV55-1F028 is closed. Green light on. Red light off.	
22. Verify HV55-1F029, OUTBOARD TO COND is closed.	HV55-1F029 is closed. Green light on. Red light off.	
23. Verify HV55-1F025, INBOARD TO RADWASTE is closed.	HV55-1F025 is closed. Green light on. Red light off.	
24. Verify HV55-1F026, DRAIN OUTBOARD is closed.	HV55-1F026 is closed. Green light on. Red light off.	
25. When SI-56-161 is greater than 1650 rpm, then verify 10P213, AUX OIL PUMP is not running.	10P213 is not running. Green light on, red light off.	
NOTE: The simulator operator should now insert MALF 1493	N/A	N/A

STEP	STANDARD	SAT/UNSAT
26. Acknowledge annunciator 117 window D-4.	Annunciator 117 D-4 acknowledged.	
27. Reference ARC 117, D-4	Arc 117 D-4 referenced	
28. Verify HV55-1F072 is open.	HV55-1F072 EXHAUST is open. Red light on, green light off.	
*29. Shut HPCI Vacuum Breaker Isolation Valves, HV-55-1F093 and HV-55-1F095.	HV55-1F093 OUTBOARD and HV55-1F095 INBOARD are closed. Green light on, red light off.	
(Cue: Once F093 and F095 are closed say "You have met the termination criteria for this JPM, you can stop here.		

LOJPM-0058

Rev. 2, 11/26/96

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Page 6 of 6

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

SAT/UNSAT

Initiating Cues:

Shift Supervision directs you to place HPCI in Full Flow Test to control Reactor pressure.

Task Condition(s):

1. Unit 1 has scrammed and the MSIV's are closed.
2. Reactor pressure is rising.

PECO NUCLAER
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manually Isolate the Reactor Enclosure

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator:

1. Reset simulator to IC-17
2. Insert Malfunctions 1562 (Cry Wolf 004 I2, REAC ENCL/REFUELING FLOOR HVAC PANEL 10C206 TROUBLE)

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating(s):

System Number(s):

3.9/4.0	A3.01	290001
3.9/3.8	A4.02	223002
3.8/3.8	A3.01	286003

References:

S76.8.B, Initiation of RE or RF Isolation
S76.9.A, Verification of RE or RF Isolation
GP-8.2, Manual Isolations

Task Standard(s):

Manual Reactor Enclosure isolation completed and all associated isolations verified.

Initiating Cues:

Shift Supervision has directed you to initiate a manual Reactor Enclosure Isolation of Unit 1 from the MCR using the manual isolation pushbuttons.

Task Conditions:

1. Unit 1 RE HVAC Supply Fans have tripped, with the Exhaust Fans failing to trip on excess negative ΔP .
2. RE negative pressure is preventing operation of airlocks.
3. Equipment Operators are unable to enter Unit 1 RE to shutdown HVAC.

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain copy of S76.8.B.	S76.8.B.1, Rev. 11, obtained.	
2. Prereq 2.1 - RERS and SGTS lined up for auto initiation. (Cue: "SGTS and RERS are lined up for auto initiation.")	N/A	N/A
3. If desired then shutdown Reactor Enclosure HVAC. (Cue: "This is the SSV". "Isolate the Reactor Enclosure with HVAC still running.")	N/A	N/A
NOTE: PCIG will isolate. If examinee communicates a concern, give following: (Cue: "This is the Shift Supervisor." "The Chief Operator will restore Instrument Gas.")	N/A	N/A
*4a. Place HS-76-*78A and HS-76-*78B to ISOLATION....	Collars armed for HS-76-*78A, B	
4b. (Acknowledge annunciator B2 on 004 VENT,) <u>NOTE:</u> Not a procedural step, but an OPS MANUAL requirement.	Annunciator ACKNOWLEDGE pushbutton depressed after scanning for other alarming annunciators.	

STEP	STANDARD	SAT/UNSAT
*4c.and depress and release buttons at *0C681.	HS-76-*78A and B pushbuttons depressed and released. May be done individually or simultaneously.	
4d. (Acknowledge annunciators on 004 VENT) <u>NOTE:</u> Not a procedural step, but an OPS MANUAL requirement.	Annunciator ACKNOWLEDGE pushbutton, depressed after scanning for other alarming annunciators.	
5. Record SGTS and RERS start times in MCR logs.	Start times recorded (Procedure step 4.1.1.)	
6. Monitor room temperatures on Aux Equip Room Steam Leak Detection per S76.0.C, Tracking of Room Temps While Reactor HVAC is Secured. (Cue: When directed- "This is the Equipment Operator. I will monitor room temperatures per S76.0.C.")	Direct Equipment Operator to monitor room temperatures per S76.0.C (Procedure Step 4.1.2)	
*7. Verify isolation per S76.9.A and GP-8. <u>NOTE:</u> Steps 7 - 18 are associated with section 4.1 of S76.9.A. GP-8 verification begins at step 19.	Obtain copy of S76.9.A <u>NOTE:</u> The critical task is performance of verification. Since no misoperation has occurred, there are no critical tasks associated with the individual verification steps (i.e., failure is constituted by complete omission of verification)	
8. Verify Channel A and Channel B Reactor Enclosure Isolation signals are initiated.	On Panel 004 VENT A (B) REACTOR ENCLOSURE ISOLATION SIGNAL INITIATED ARE ALARMED.	

STEP	STANDARD	SAT/UNSAT
<p>9. Verify Channel A and B HVAC Isolation valves have repositioned by assuring the following annunciators have <u>not</u> alarmed on Unit 1.</p> <p>A REACTOR ENCLOSURE ISOLATION NOT COMPLETE</p> <p>B REACTOR ENCLOSURE ISOLATION NOT COMPLETE</p>	<p>On Panel 004 VENT, annunciators E2 and F2 are not lit.</p>	
<p>10. Ensure both SGTS fans are running at OOC681.</p>	<p>Both fans running. Red RUN lamps lit.</p>	
<p>11. Verify Reactor Enclosure Secondary Containment Pressure is drawn down and maintained from -.25" to -.35" WG on PDI-76-198A(B) at *OC681.</p>	<p>PDI 76-198A or B on *OC681 indicates between -.25" to -.35" WG.</p>	
<p>12. When Reactor Enclosure pressure reaches -0.25" then place HS-76-040A or HS-76-040B to STBY.</p>	<p>When PDI-76-198A or B indicates at least -.25", shutdown A or B SGTS fan (but not both) by placing HS- 76-040A or B on OOC681 to STBY. Corresponding fan stops. (green STOP lamp lit) Fan inlet and outlet dampers close (red lamps out, green lamps lit).</p>	
<p>13. Place HS-76-013A or B "Carbon Filter Isol A(B) to AUTO at OOC681.</p>	<p>Isolate either A or B filter train by placing HS-76-013A or B to AUTO, (but not both). Filter inlet and outlet dampers close (red lamps out, green lamps lit).</p>	
<p>14. Verify RERS flow by checking PDI-76-*89A(B) "Filter Differential Pressure" ≥ 3 inches W.G. at *OC681.</p>	<p>Filter ΔP indicates ≥ 3 inches W.G. on PDI-76-*89A(B) on 1OC681.</p>	

STEP	STANDARD	SAT/UNSAT
<p>15. Check FI-76-042 "SGTS LOW" at OOC681.</p> <p>(CUE: "This is Unit 2 RO. Unit 2 Reactor Enclosure is not isolated.")</p>	<p>Note: Examinee can determine that Zone 1 is the only isolated zone from 004 VENT indications and cue.</p> <p>FI-76-042 on OOC681 reads at or below 1250 cfm.</p>	
<p>16. If desired, then check FI-76-400A(B) at OA(B)C 123.</p> <p>(CUE: If asked - "This is the equipment Operator. FI-76-400A(B) indicates 1200 cfm.")</p>	<p>N/A</p>	<p>N/A</p>
<p>17. Verify isolation valves listed in step 4.1.10 are closed at OCC101.</p> <p>(Cue: "This is the Equipment Operator. All valves listed in step 4.1.10 of S.76.9.A are closed.")</p>	<p>Direct Equipment Operator to verify valves are closed.</p>	
<p>18. Verify fans listed in step 4.1.11 are shutdown.</p> <p>(CUE: "This is the Equipment Operator. All Reactor Enclosure supply, Exhaust Fans and REECE fans are shut down.")</p>	<p>Direct Equipment Operator to verify Reactor Enclosure Supply, Exhaust, and Equipment Compartment Exhaust Fans are shutdown. In MCR on OOC681 the Drywell Purge fans are shutdown (green STOP lamps lit).</p>	

STEP	STANDARD	SAT/UNSAT
NOTE: Step 22 through 44 are associated with GP-8.2, Manual Isolations for verifying isolations due to signal S178A, B. In lieu of individual valve verification, ERFDS format 027, isolation status may be used. If ERFDS is used, complete steps 20 and 21, and mark 22 through 44 "N/A". If individual valve verification is performed, mark steps 20 and 21 "N/A", and complete steps 22 through 44.	N/A	N/A
19. Obtain GP-8.2	GP-8.2, Rev. 2 obtained. NOTE: Verification of manual RE HVAC isolation is listed under S178A and S178B.	
20. Verify ERFDS. Format 027 indicates all associated isolations are complete on Unit 1.	ERFDS format 027 shows "YES" in "VALVES CLOSED" column for Groups 6A, 6B, 7A and 7B.	
21. Verify all associated isolations are complete on Unit 2. CUE: "This is the Unit 2 RO. ERFDS shows Unit 2 Group 6A and 6B isolations complete".	Communicate with Unit 2 operator to determine isolation status.	
22. <u>Group 6A</u> Verify HV-57-121, D/W N2 Purge Supply closed.	HV-57-121 closed. Red lamp out, green lamp lit.	
23. Verify HV-57-131, S/P N2 Purge Supply closed.	HV-57-131 closed. Red lamp out, green lamp lit.	
24. Verify HV-57-109, Purge Isolation closed.	HV-57-109 closed. Red lamp out, green lamp lit.	

STEP	STANDARD	SAT/UNSAT
25. Verify HV-57-123, Drywell Vent Inboard closed.	HV-57-123 closed. Red lamp out, green lamp lit.	
26. Verify HV-57-135, Drywell Vent Outboard closed.	HV-57-135 closed. Red lamp out, green lamp lit.	
27. Verify HV-57-124, Supp. Pool Vent Outboard closed.	HV-57-124 closed. Red lamp out, green lamp lit.	
28. Verify HV-57-147, Supp. Pool Vent Outboard closed.	HV-57-147 closed. Red lamp out, green lamp lit.	
29. Verify HV-57-114, Drywell Exhaust closed.	HV-57-114 closed. Red lamp out, green lamp lit.	
30. Verify HV-57-115, Exhaust Isolation closed.	HV-57-115 closed. Red lamp out, green lamp lit.	
31. Verify HV-57-104, Supp. Pool Exhaust closed.	HV-57-104 closed. Red lamp out, green lamp lit.	
32. Verify HV-57-112, Exhaust Isolation closed.	HV-57-112 closed. Red lamp out, green lamp lit.	
33. <u>Group 6B</u> Verify HV-57-111, Drywell Exhaust Bypass Inboard closed.	HV-57-111 closed. Red lamp out, green lamp lit.	
34. Verify HV-57-117, TO Rx. Encl. Filter Outboard closed.	HV-57-117 closed. Red lamp out, green lamp lit.	

STEP	STANDARD	SAT/UNSAT
35. Verify HV-57-105, Supp. Pool Exhaust Bypass Inboard closed.	HV-57-105 closed. Red lamp out, green lamp lit.	
36. Verify HV-57-118, To Rx Encl. Filter Outboard closed.	HV-57-118 closed. Red lamp out, green lamp lit.	
37. Verify HV-57-160A, N2 Isol A closed.	HV-57-160A closed. Red lamp out, green lamp lit.	
38. Verify HV-57-160B, N2 Isol B closed.	HV-57-160B closed. Red lamp out, green lamp lit.	
<u>Group 7A</u>		
39. Verify HV-59-101, PCIG Compressor Suction Inboard closed.	HV-59-101 closed. Red lamp out, green lamp lit.	
40. Verify HV-59-102 PCIG Compressor Suction Outboard closed.	HV-59-102 closed. Red lamp out, green lamp lit.	
41. Verify HV-59-129A, PCIG A Header Supply closed.	HV-59-129A closed. Red lamp out, green lamp lit.	
42. Verify HV-59-129B, PCIG B Header Supply closed.	HV-59-129B closed. Red lamp out, green lamp lit.	
43. Verify HV-59-135, Prim. Containment Vac. Relief Valve Supply closed.	HV-59-135 closed. Red lamp out, green lamp lit.	

STEP	STANDARD	SAT/UNSAT
<u>Group 7B</u> 44. Verify HV-59-131, PCIG TIP Purge Supply closed.	HV-59-131 closed. Red lamp out, green lamp lit.	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating: _____
SAT/UNSAT

Initiating Cues:

Shift Supervision has directed you to initiate a manual Reactor Enclosure Isolation of Unit 1 from the MCR using the manual isolation pushbuttons.

Task Conditions:

1. Unit 1 RE HVAC Supply Fans have tripped, with the Exhaust Fans failing to trip on excess negative ΔP .
2. RE negative pressure is preventing operation of airlocks.
3. Equipment Operators are unable to enter Unit 1 RE to shutdown HVAC.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Transfer Loads From an Operating Diesel Generator

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

1. Perform GP-4 and normal scram actions.
2. Open 101 SAFEGUARD and 201 SAFEGUARD feeder breakers and reclose after the diesels are carrying the bus.
3. Wait for diesel fire alarms to clear.
4. Acknowledge and reset annunciators.

Evaluation Method (Circle one):

Perform

Simulate

Evaluation Location (Circle one):

Plant

Simulator

Approximate Completion Time:

20 Minutes

Importance Rating(s):

3.7/3.8 AA1.01
3.6/3.7 A4.05

System Number(s):

295003
264000

References:

1. S92.2.N, Rev. 14

Task Standard(s):

Parallel D11 Safeguard Bus to its' offsite power source.

Task Condition(s):

1. A Loss of Offsite Power occurred about 30 minutes ago.
2. Two stable Offsite sources have been restored.

Initiating Cues:

Shift Supervision directs you to parallel D11 with its' normal offsite power source per S92.2.N in preparation to shutdown D11 D/G.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
1. Obtain current revision of S92.2.N	Current revision of S92.2.N obtained.	
*2. Depress PB/A(B,C,D)G001 Diesel Generator Auto Start Signal Bypass.	AG001 pushbutton depressed. Amber light on.	
*3. Place 101-A(B,C,D)G501/CS, Diesel Generator Control to START to convert governor to droop mode.	101-AG501/CS placed to start.	
4. Place appropriate 143-A(B)X103 Safeguard Transformer Tap Changer Selector to MANUAL.	143-AX103 in MANUAL.	
*5. Insert synchroscope switch handle into Synchroscope Switch for appropriate *01-D** Safeguard Bus Feeder Breaker and place to ON.	101-D11(3) synch switch ON.	
6. Observe Synchroscope rotating.	Synchroscope rotating.	
7. When synchroscope is at 180 degrees, then both lights are lit and fully bright.	Both light fully lit at 180 degrees.	
8. When synchroscope is at 0 degrees, then both lights are not lit.	Both light extinguished at 0 degrees.	
9. Observe diesel generator frequency as indicated by the synchroscope.	N/A	N/A
10. Place 165-A(B,C,D)G501/CS Diesel Generator Speed Governor Control to RAISE and LOWER. Verify change in synchroscope rotation rate or direction of rotation.	165-AG501/CS positioned to RAISE then LOWER. The rate and/or direction of the synchroscope changes each time.	
11. Observe diesel generator voltage as indicated on Running Voltmeter.	N/A	N/A

STEP	STANDARD	SAT/UNSAT
12. Place 170-A(B,C,D)G502/CS Voltage regulator to RAISE then LOWER. Verify change in Running Voltage meter.	170-AG502/CS positioned to RAISE voltage increases then LOWER voltage decreases.	
*13. Adjust engine speed using 165-A(B,C,D)G501/CS Governor speed control, until the synchroscope is rotating slowly in the SLOW direction (counter-clockwise)	Synchroscope rotating slowly in the SLOW direction.	
*14. Adjust diesel generator voltage using 170-A(B,C,D)G502/CS, until Synchronizing Running Voltmeter is slightly higher than Synchronizing Incoming Voltmeter.	Running voltage is between 0 to 4 volts higher than Incoming voltage.	
*15. When synchroscope is within 3 degrees before 12 O'Clock, then close appropriate bus feeder breaker.	101-D11 feeder breaker is closed.	
16. Turn Synchroscope Switch to OFF.	Synchroscope in OFF.	
Cue: 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 parallel D11 with its' normal offsite power source per S92.2 N in preparation to shutdown D11 D/G.

Task Condition(s):

1. A Loss of Offsite Power occurred about 30 minutes ago.
2. Two stable Offsite sources have been restored.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: SRM CHANNEL COUNT RATE CHECK

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator:

1. Reset the simulator to any IC in Shutdown Cooling, OPCON 4
2. Insert Malf 213,A,13; 213,B,2; 213,C,8; 213,D,15

Evaluation Method (Circle One):

Perform Simulate

Evaluation Location:

Plant Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.7

System Number:

234000 A4.01

References:

1. ST-6-107-591-1, Daily Surveillance Log OPCONS 4,5

Task Standards:

Item 4 and A5-1 of Attachment 5 of ST-6-107-591-1 completed.

Initiating Cues:

You have been directed to complete the Day Shift ITEM 4 of Attachment 5 from ST-6-107-591-1 (Daily Log OPCONS 4,5).

Tasks Conditions:

1. Unit 1 is in OPCON 4.
2. The plant has been shutdown for 42 days.

PERFORMANCE CHECK LIST

STEP	STANDARD	SAT/UNSAT
1. Obtain a copy of ST-6-107-591-1 Item 4 of Attachment 5. (Cue: Provide examinee with yellow copy of ST-6-107-591-1.)	ST-6-107-591-1 obtained.	
*2. Record reading for XRX-M1-1R602A Point 2 - SRM CH A.	Record a value of between 12 and 14 in Day Shift SRM CH A box.	
*3. Record reading for XRX-M1-1R602A Point 1 - SRM CH C.	Record a value of between 7 and 9 in Day Shift SRM CH C box.	
*4. Record reading for XRX-M1-1R602B Point 2 - SRM CH B.	Record a value of less than 3 in Day Shift CH B box.	
*5. Record reading for XRX-M1-1R602B Point 1 - SRM CH D.	Record a value of between 13 and 15 in Day Shift SRM CH D box.	
6. SOURCE RANGE/SIGNAL TO NOISE RATIO DETERMINATION.	N/A	N/A
6a. <u>IF</u> count rate is less than 3 cps, <u>THEN</u> PERFORM a signal-to-noise ratio (SNR) calculation.	N/A	N/A
6b. VERIFY that the observed count rate <u>AND</u> corresponding SNR documented below fall on <u>OR</u> above the curve shown in Tech Spec Figure 3.3.6-1, if <u>NOT</u> , ENTER N/A in log.	N/A	N/A
*6c. Record FULL IN counts for SRM B.	Record a value of less than 3 in Day Shift table for FULL IN SRM B counts.	
*6d. Record FULL OUT counts for SRM B.	Depress "DRIVE" power button, depress "SRM B SELECT" button, depress and hold "DRIVE OUT" button until SRM B indicates OUT. Record a value of less than 3 in Day Shift table for FULL OUT SRM B counts.	
*6e. Calculate SNR.	Calculate SNR using formula: $\frac{\text{Count rate w/SRM IN} - \text{Count rate w/SRM OUT}}{\text{Count rate w/SRM OUT}}$ and determine SNR of less than 2.	

STEP	STANDARD	SAT/UNSAT
*6f. <u>IF</u> step A5-1.1 was completed satisfactorily, <u>THEN</u> ENTER SAT in log, if <u>NOT</u> , ENTER UNSAT <u>AND</u> immediately NOTIFY SSV.	Enter UNSAT in box after referencing T.S. Fig. 3.3.6-1, COMPLETE Section A5-1. Inform CRS that SRM B SNR is UNSAT.	
Tell examinee, "You have met the termination criteria for this JPM. You can stop here."		

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

Initiating Cues:

You have been directed to complete the Day Shift ITEM 4 of Attachment 5 from ST-6-107-591-1 (Daily Log OPCONS 4,5).

Tasks Conditions:

1. Unit 1 is in OPCON 4.
2. The plant has been shutdown for 42 days.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: BYPASSING REACTOR ENCLOSURE HVAC ISOLATION

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

Evaluator Signature: _____ Date: _____

Directions to Simulator Operator: NONE

Evaluation Method (Circle One):

Perform

Simulate

Evaluation Location (Circle One):

Plant

Simulator

Approximate Completion Time:

15 Minutes

Importance Rating:

3.7/3.7

EA1.03

3.6/3.5

Generic #13

System Number:

295032

290001

References:

T-227 Rev.14 (Unit 1) and Rev.13 (Unit 2), Bypass Of Reactor Enclosure HVAC High Drywell Pressure/Low RPV Water Level / Low DP Isolation

Task Standards:

Reactor enclosure HVAC isolation signal bypassed in accordance with T-227 with HVAC ready for restart.

Initiating Cues:

You are directed by Shift Supervision to bypass the Unit ___ reactor enclosure HVAC isolation in accordance with T-227 to prepare for HVAC restart.

Task Conditions:

1. Reactor enclosure exhaust radiation is 0.9mr/hr
2. Reactor enclosure ventilation is isolated
3. Drywell pressure is 2.1 psig

Performance Check List:

STEP	STANDARD	SAT/UNSAT
*1. Obtain equipment/tools from Unit *T-200 cabinet. - (1) screwdriver - (1) screwholding screwdriver - (1) flashlight - (4) jumpers (CUE: You have obtained the equipment.)	Student goes to T-200 locker and obtains (1) screwdriver, (1) screwholding screwdriver, (1) flashlight and (4) jumpers.	
NOTE: In addition to Reactor Enclosure HVAC, isolation signals to Drywell and Supp Pool Purge valves will be bypassed.		
2. ENSURE Primary Containment Bypass Permissive Interlock remains operable as follows:	N/A	N/A
*3. INSTALL jumper from terminal EEE7-8 to terminal EEE7-9 in *OC622 (Aux Equip Room). (Cue: Jumper is installed.)	Jumper installed from EEE7-8 to EEE7-9 in *OC622.	
*3. INSTALL jumper from terminal JJJ9-5 to terminal JJJ9-6 in *OC623 (Aux Equip Room). (CUE: Jumper is installed.)	Jumper installed from JJJ9-5 to JJJ9-6 in *OC623.	
*4. Place the following hand-switches to "CLOSE" at *OC601 (Main Control Room): Tan HV-57-*14, Drywell Exhaust	Control Room contacted, and confirmation made that all valve hand-switches for valves listed in step 4.2 of T-227 are closed.	

STEP	STANDARD	SAT/UNSAT
White HV-57-*17, To RE Filter (OUTBD) Tan HV-57-*04, Supp Pool Exhaust White HV-57-*18, To RE Filter (OUTBD) HV-57-*21, Drywell Purge HV-57-*23, Drywell Vent INBD HV-57-*31, Supp Pool Purge HV-57-*24, Supp Pool Vent INBD (CUE: Chief Operator reports handswitches listed in step 4.2 of T-227 are in "CLOSE".)		
NOTE: 1. Steps 4.3, 4.4 will bypass Rx. Encl. HVAC AND NSSSS group 6A, 6B auto isolations for A/B channels caused by: High Drywell Pressure (1.68#) Low RPV Water Level (-38") Rx Encl. Low Differential Pressure (-0.1" w.c.) 2. Manual and Rx Encl High Rad Signals will be operational		
*5. Install jumper from terminal CCC9-10 to terminal BBB4-1 at *OC622 (Aux Equip Room). (CUE: Jumper is installed.)	Jumper installed from CCC9-10 to BBB4-1 in panel *OC622.	
*6. Install jumper in from terminal AAA9-8 to terminal EEE9-3 at *OC623 (Aux Equip room). (CUE: Jumper is installed.) NOTE: At this point the JPM is complete. The evaluator should say "You can stop here, you have met the termination criteria for this JPM."	Jumper installed from AAA9-8 to EEE9-3 in panel *OC623.	

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 bypass the Unit ___ reactor enclosure HVAC isolation in accordance with T-227 to prepare for HVAC restart.

Task Conditions:

1. Reactor enclosure exhaust radiation is 0.9mr/hr
2. Reactor enclosure ventilation is isolated
3. Drywell pressure is 2.1 psig

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Manual Isolation and Vent of Unit * Scram Air Header

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

20 Minutes

Importance Rating(s):

System Number(s):

4.1/4.1 K/A A4.17
3.9/4.0 K/A EA1.05

212000
295037

References:

1. T-101, RPV Control
2. T-216, Rev. 8 (Unit 1), Rev. 6 (Unit 2), Manual Isolation and Vent of Scram Air Header

Task Standard(s):

Unit * Scram air header is depressurized.

Task Condition(s):

1. Unit ____ is in an ATWS situation.

Initiating Cues:

Yours are directed by shift supervision to manually isolate and vent the Unit ____ scram air header using T-216.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
<p>*1. Obtain current revision of T-216, as well as necessary tools/equipment from Unit * T-200 cabinet in OSC:</p> <ul style="list-style-type: none"> • 8" adjustable wrench • 1 flashlight <p>(Cue: You have obtained the equipment.)</p>	Obtain current revision of T-216, 8" adjustable wrench and 1 flashlight from Unit * T-200 cabinet.	
<p>*2. Close 47-*F095, air supply to Scram Valve Pilot Air Header.</p> <p>(Cue: The handwheel rotates and then comes to a stop.)</p>	Air supply valve to the scram air header 47-*F095 handwheel rotated clockwise until the valve is closed.	
<p>*3. Close instrument root valve for instrument PT-47-*N052 and PI-47-*R013 on north side of instrument rack *OC213.</p> <p>(Cue: The handwheel rotates clockwise and then comes to a stop.)</p>	Root valve for PT-47-*N052 and PI-47-*R013 handwheel rotated clockwise until the valve is closed.	
<p>*4. Remove test connection cap for instrument PT-47-*N052 on north side of instrument rack *OC213.</p> <p>(Cue: The cap rotates counter-clockwise until it comes free from the end of the pipe.)</p>	Using the adjustable wrench, rotate the cap in the counter-clockwise direction and remove the test connection cap downstream of the root valve for PT-47-*N052.	
<p>*5. Remove test connection cap from instrument root valve for instrument PI-47-*R013 on south side of instrument rack *OC213.</p> <p>(Cue: The cap rotates counter-clockwise until it comes free from the end of the pipe.)</p>	Using the adjustable wrench, rotate the cap in the counter-clockwise direction and remove the test connection cap downstream of the root valve for PI-47-*R013.	

STEP	STANDARD	SAT/UNSAT
<p>*6. Open instrument root valve for instruments PT-47-*N052 and PI-47-*R013.</p> <p>(Cue: The handwheel rotates counter-clockwise and then comes to a stop. You can hear air escaping from the test connections.)</p>	<p>Root valve for PT-47-*N052 and PI-47-*R013 handwheel rotated counter-clockwise until the valve is open.</p>	

Comments:

Note: Any grade of UNSAT requires a comment.

JPM Overall Rating:

SAT/UNSAT

Initiating Cues:

| You are directed by Shift Supervision to manually isolate and vent the Unit ____ scram air header using T-216.

Task Condition(s):

- | 1. Unit ____ is in an ATWS situation.

PECO NUCLEAR
Limerick Generating Station
Licensed Operator Job Performance Measure

Title: Connect Instrument Air to Instrument Gas for Remote Shutdown

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

Evaluator Signature: _____ Date: _____

Directions to the Simulator Operator/Evaluator:

Evaluation Method (Circle one):

Perform Simulate

Evaluation Location (Circle one):

Plant Simulator

Approximate Completion Time:

| 30 Minutes

Importance Rating(s):

4.1/4.1 Generic #6

System Number(s):

K/A 295016

References:

| 1. SE-1-1 Rev. 4

Task Standard(s):

| HV-59-*29A is opened, with instrument air supplying instrument gas.

Task Condition(s):

1. The Main Control Room has been evacuated due to a fire.
2. Instrument gas compressors have failed, and receiver inventory is depleted.
3. Instrument air is available.
4. D*1 and D*3 4KV busses are energized.

Initiating Cues:

Shift Supervision directs you to perform SE-1-1, steps 2.1.3 and 2.1.4 to provide long term pneumatics to SRVs using instrument air for Unit ____.

Critical Element(s) (Indicated by * in Performance Checklist)

Performance Check List:

STEP	STANDARD	SAT/UNSAT
<p>*1. Obtain current revision of SE-1-1, and air jumper and necessary tools from RSP Safe Shutdown Equipment Box.</p> <p>(Cue: After the operator tells you what equipment he/she will take, inform them: "You have that equipment.")</p> <p>(NOTE: The instructor should provide the operator with a copy of SE-1-1.)</p>	<p>Current revision of SE-1-1 obtained, and the operator has taken from the RSP Safe Shutdown Equipment Box (at a minimum):</p> <p>(1) air jumper</p> <p>(1) adjustable wrench</p>	
<p>*2. CLOSE air supply valve to HV-59-*29A, "Inst Gas Outboard PCIV" (DRYWELL A). (307-R16-241/374-R18-241)</p> <p>(Cue: Valve is closed.)</p>	<p>HV-59-*29A(AS) is closed.</p>	

STEP	STANDARD	SAT/UNSAT
*3. CONNECT air jumper from regulator outlet of HV-59-*29A (307-R16-241/374-R18-241) to valve inlet (bypassing the solenoid valve)...	Air jumper is connected between regulator outlet of HV-59-*29A and the valve's air inlet connection.	
(Cue: The air jumper is installed.)		
3a. AND PERFORM the following:	N/A	N/A
*3b. OPEN air supply valve to HV-59-*29A.	HV-59-*29(AS) is opened.	
(Cue: The valve is open.)		
3c. ENSURE HV-59-*29A open.	HV-59-*29A is open.	
(Cue: The instructor should use his pen to show the valve position change to OPEN when the air supply valve is opened.)		
(Cue: 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 SE-1-1, steps 2.1.3 and 2.1.4 to provide long term pneumatics to SRVs using instrument air for Unit ____.

Task Condition(s):

1. The Main Control Room has been evacuated due to a fire.
2. Instrument gas compressors have failed, and receiver inventory is depleted.
3. Instrument air is available.
4. D*1 and D*3 4KV busses are energized.