

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.1
Subject Description:	Mode Changes
Question Number:	1

Question:
<p>Unit 1 is about to shift the Reactor Mode Switch from SHUTDOWN to STARTUP to commence a plant startup.</p> <p>As the Shift Supervisor determine the attachments in GO-100-002, PLANT STARTUP, HEATUP AND POWER OPERATION, that must be completed prior to the mode change.</p>

Answer:
<p><b>Attachments A, E, D, B, and C must be completed.</b></p> <p>Atts. E, D, must be completed first; Att E Startup Surveillance Checklist (Surv tests for NIs, High Pressure ECCS, RBM) and Att B Unit 1 Pre-Startup Checklist, (Goes through each system OP to insure each system is lined up, in standby and operable.</p> <p>Att A Station Verification of Activities for entering Mode 2.</p> <p>Att D Operations Work Items, SOs and CLs Required for Startup.</p> <p>Att C Unit 1 Pre-Start Final Checks, Chem and HP and all rods inserted, authorization)</p>

Technical Reference(s):
T.S. and GO-100-002, Sect 6.1 through 6.7

K/A #:	Importance:
2.1.2, 2.1.12, 2.1.23, 2.2.1	4.0, 4.0, 4.0, 3.6

Comments:

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.1
Subject Description:	Mode Changes
Question Number:	2

**Question:**

Unit 1 is ready to place the Reactor Mode Switch to STARTUP and begin control rod withdrawal for a reactor startup. The following is reported:

- The Speed and Flow indication for RCIC is inoperable at the Remote Shutdown Panel

Determine if the Reactor Mode Switch can be positioned to STARTUP or NOT. If yes, explain why. If no, explain why not.

**Answer:**

*Only the information in bold is required for the answer.*

\*\*\*\*\*

**Yes the Reactor Mode Switch can be positioned to STARTUP and the startup commenced.** (T.S. 3.0.4 allows the mode switch to be shifted to STARTUP when the actions to be entered permit continued operation or if the specification states that LCO 3.0.4 is not applicable). **A NOTE modifying the ACTIONS table for TS 3.3.3.2 states that LCO 3.04 is not applicable.**

If the student does not recognize the note, or understand the placement of the note and its relevance, they may determine that LCO 3.0.4 is applicable and that the required actions do not permit operation for an unlimited period of time. With this information, a student would determine that the Reactor Mode Switch **CANNOT** be positioned to STARTUP.

**Technical Reference(s):**

T.S. 3.0.4, 3.3.3.2

**K/A #:**

2.1.2, 2.1.12,  
2.1.33, 2.2.1

**Importance:**

4.0, 4.0, 4.0, 3.6

**Comments:**

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.1 - 2
Subject Description:	Parameter Verification (Chemistry)
Question Number:	1

Question:
With the plant is at 100% power Chemistry calls the Control Room and reports that the reactor coolant system conductivity is 1.2 umho/cm @25°C.
Evaluate the plant chemistry and determine the necessary actions, if any.

Answer:
<p><i>NOTE: Only the information in "BOLD" is required to answer the question. Additional information describes how the necessary actions are determined.</i></p> <p>*****</p> <p><i>Evaluator: When assessing Condition B Completion Time, the student may ask about the cumulative hours for chemistry outside the limits. If asked, report that the cumulative hours outside the limits for the past 12 months are 25 hours.</i></p> <p>Since conductivity is above 1.0 umho/cm in MODE 1, entry into TR 3.4.1 Condition A and B is required. Per Condition A, <b>analyze a reactor coolant sample for Chlorides and pH once per 8 hours, and perform a CHANNEL CHECK of the continuous conductivity monitor once per 24 hours.</b> Per Condition B, <b>restore conductivity to <math>\leq 1.0</math> umho/cm within 72 hours.</b></p> <p>*****</p> <p>Per ON-100-003, Section 3.10:</p> <ul style="list-style-type: none"> <li>• <b>Notify the Manager-Nuclear Operations.</b></li> <li>• <b>Request Chemistry Supervision to determine cause and recovery actions.</b></li> <li>• <b>Track time above the ACTION LEVEL 2 threshold (<math>&gt;1.0</math> umho/cm) since a shutdown is required if NOT below 1.0 umho/cm within 24 hours.</b></li> </ul>

Technical Reference(s):
TR 3.4.1, Condition A and B
TR Table 3.4.1-1
ON-100-103, Section 3.3, 3.10

K/A #:	Importance:
2.1.34	2.9

Comments:

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.1 - <b>2</b>
Subject Description:	Parameter Verification (Instruments)
Question Number:	2

Question:
Unit 1 is at 100% power. Based on the attached log sheet, determine the Technical Specification implications twenty-four (24) hours after becoming aware of the condition if NO actions are taken?

Answer:
<p><i>NOTE: Only the information in "BOLD" is required to answer the question. Additional information describes how the necessary actions are determined.</i></p> <p><i>If asked what the RO observed, or what the instruments currently indicate, inform the candidate the instruments indicate:</i></p> <p>LIS-B21-1N042A: +39 inches  LIS-B21-1N042B: +32 inches</p> <p>*****</p> <p>CHANNEL CHECK is outside the agreement criteria for the 42A-B instruments. If the investigation of the instrument response (determine the problem) for the 42A&amp;B instruments is <u>NOT</u> complete within 24 hours, <b>both channels must be declared inoperable</b> per SO-100-006, Section 6.3.</p> <p>Per ON-145-004, Table 1, these instruments provide the ADS Permissive Logic. Per SO-100-006, Attachment D, Ref. No. 28, the TS ACTION ITEM is TS Table 3.3.5.1-1 Function 4.d and 5.d, which require entry into TS 3.5.1 Condition H, <b>place the unit in MODE 3 within 12 hours of declaring the ADS valves inoperable.</b></p>

Technical Reference(s):
SO-100-006, Section 6.3
SO-100-006, Attachment A, Item C1
ON-145-004, Table 1

K/A #:	Importance:
2.1.7	4.4
2.1.12	4.0
2.1.33	4.0

Comments:
<div></div>

ITEM	REQUIREMENT/INSTRUMENT	NIGHTS		DAYS		ACCEPTABLE	REF. NO.*
		1900-0100	0100-0700	0700-1300	1300-1900		
REACTOR BUILDING ELEV 749'							
C1	PERFORM a channel check on following Reactor Vessel Level Instruments: (Panel 1C004)					ENTER SAT	
	a. LIS-14221C	SAT				CHANNEL CHECK ACCEPTANCE CRITERIA	29
	b. LIS-B21-1N025B	SAT				LIS-14221C&D within 16"	29
	c. LIS-B21-1N024B	SAT				LIS-B21-1N025A-D within 40"	28
	d. LITS-B21-1N026B	SAT				LIS-B21-1N024A-D within 4"	29
	e. LIS-B21-1N031C	SAT				LITS-B21-1N026A-D within 16"	29
	f. LIS-B21-1N031A	SAT				LIS-B21-1N031A-D within 16"	29
	g. LIS-B21-1N042A	UNSAT				LIS-B21-1N042A&B within 4"	29
	h. LIS-B21-1N024A	SAT					28
	i. LITS-B21-1N026A	SAT					28
	j. LIS-B21-1N025A	SAT					29
	(Panel 1C005)						29
	k. LIS-B21-1N025D	SAT					29
	l. LIS-B21-1N031D	SAT					29
	m. LIS-B21-1N031B	SAT					29
	n. LIS-14221D	SAT					29

\* See Shiftly Surveillance Log Reference (SO-100-006, Attachment D) for details.

ITEM	REQUIREMENT/INSTRUMENT	NIGHTS		DAYS		ACCEPTABLE	REF. NO.*
		1900-0100	0100-0700	0700-1300	1300-1900		
o.	LIS-B21-1N024D	<u>SAT</u>	_____	_____	_____		28
p.	LITS-B21-1N026D	<u>SAT</u>	_____	_____	_____		29
q.	LIS-B21-1N042B	<u>LINSAT</u>	_____	_____	_____		28
r.	LIS-B21-1N024C	<u>SAT</u>	_____	_____	_____		28
s.	LITS-B21-1N026C	<u>SAT</u>	_____	_____	_____		29
t.	LIS-B21-1N025C	<u>SAT</u>	_____	_____	_____		29
C2	PERFORM channel check on following undervoltage relays:					ENTER SAT if either:	
a.	Relay 27B1,B2,B3,B4-1A20102	<u>SAT</u>	_____	_____	_____	a) No targets with power on bus (Volts cubicle 4)	27
b.	Relay 27B1,B2,B3,B4-1A20202	<u>SAT</u>	_____	_____	_____	OR b) Targets Up with NO power on bus (Volts cubicle 4)	27

\* See Shiftly Surveillance Log Reference (SO-100-006, Attachment D) for details.

<b>Susquehanna 1 &amp; 2</b>	
<b>Category "A" - Examination Outline Cross Reference</b>	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.2
Subject Description:	Surveillance Testing
Question Number:	1

<b>Question:</b>
<p>During a review of SO-159-003, Monthly Outside Containment Verification of Primary Containment Isolation Valves, which implements SR 3.6.1.3.2, the following occurred:</p> <ul style="list-style-type: none"> <li>• At 1200 on August 14, it was discovered that one containment isolation valve, was inadvertently removed from the valve list during a previous procedure revision.</li> <li>• The valve had NOT been verified closed in forty (40) days.</li> <li>• The valve is verified closed at 1400 on August 15.</li> </ul> <p>Determine the implications of the these conditions, if any. Explain your answer.</p>

<b>Answer:</b>
<p>The surveillance interval specified in SR 3.0.2 is exceeded.</p> <p>SR 3.0.3 allows a delay period of 24 hours to perform the surveillance (verify that the isolation valve is closed) without declaring the LCO Statement NOT met. When the 24 hours from discovery expires, the ACTIONS must be entered.</p> <p>The Tech Spec 3.6.1.3 actions are entered at 1200 on August 15 because the additional time allowed to test the valve per SR 3.0.3 (24 hours) was exceeded.</p>

<b>Technical Reference(s):</b>
<p>SR 3.6.1.3.2</p> <p>SR 3.0.3 and Bases</p>

<b>K/A #:</b>	<b>Importance:</b>
2.1.10	3.9
2.1.12	4.0
2.2.12	3.4

<b>Comments:</b>



Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.2
Subject Description:	Surveillance Testing
Question Number:	2

ON UNIT 1 SUB 8/10/2001

Question:
Upon completion of your shift, it is determined that the average core thermal power over the last 12 hours was 3450 Mwth. Determine the reporting requirement(s) for this event.

<p><b>24-hour ENS report.</b>  <i>Basis for the answer:</i>  <b>LICENSE CONDITION VIOLATION:</b> Violation of a Unit 1 or Unit 2 license condition, excluding the Technical Specifications.  <b>Maximum Power Level (Section 2.C.(1)):</b> PPL Susquehanna, LLC is authorized to operate the facility at reactor core power levels not in excess of 3441 megawatts thermal in accordance with the conditions specified herein and in Attachment 1 of this license. The preoperational tests, startup tests and other items identified in Attachment 1 of this license shall be completed as specified. Attachment 1 is hereby incorporated into this license. Reportable conditions related to this License Condition are: (1) Any shift average over 100% (3441 MWth), or (2) Any excursion over 102% (3509 MWth) regardless of how it occurred.</p> <p>*****</p> <p><b>30-day written report.</b>  <i>Basis for the answer:</i>  <b>LICENSE CONDITION VIOLATION:</b> Violation of a Unit 1 or Unit 2 license condition, excluding the Technical Specifications.</p>
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Technical Reference(s):
ON-100-004, NDAP-QA-0720, Att. H, #1, I, #10, L License NFP-14, License NFP-22

K/A #:	Importance:
2.4.30	3.6
2.4.43	3.5

Comments:

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.3
Subject Description:	Radiation Protection
Question Number:	1

**Question:**

**RWP 2001-0037 is attached for your use.** *(See Adm Section for RO for copy of RWP)*

Given RWP 2001-0037, determine the following:

For the ALARA blocking specified, determine the components that must be tagged and why?

**Answer:**

**Blocking to prevent the mixing/transfer of RWCU Phase Separator Tanks.**

**Blocking to prevent the decant/influent to the RWCU Phase Separator Tanks.**

Per NDAP-QA-0323 Section 6.6.8c:  
On OC307 and OC323

- 2252094
- 0251216
- 1252086
- 066079
- 0251921
- 0251899
- 0252065
- 0252063
- 0251770
- 0251761
- 0251766
- 0251755

**Technical Reference(s):**

RWP 2001-0037  
NDAP-QA-0323, 6.6.8(c)  
NDAP-QA-0626, 6.2.5h, 2d, 2e, 2f, 3c,  
3d, 3e

K/A #:	Importance:
2.3.1	2.6/3.0
2.3.10	2.9/3.3

Comments:

Susquehanna 1 & 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	SRO
Administrative Topic	A.3
Subject Description:	Radiation Protection
Question Number:	2

Question:
<b>RWP 2001-0037 is attached for your use.</b>
Given RWP 2001-0037, determine the authorization required if it is desired to omit one of the components from the required ALARA blocking?

Answer:
(1) HP Supervisor
(2) Radiological Operations Supervisor and Shift Supervisor.

Technical Reference(s):
NDAP-QA-0626, 6.2,5(a) (4)

K/A #:	Importance:
2.3.1	2.6/3.0
2.3.10	2.9/3.3

Comments:

**PENNSYLVANIA POWER & LIGHT COMPANY  
JOB PERFORMANCE MEASURE  
APPROVAL AND ADMINISTRATIVE DATA SHEET**

SRO                                                                0                      06/14/01                      2.4.41                      4.1  
Appl To                      JPM Number                      Rev No.                      Date                      NUREG 1123 Sys. No.                      K/A

Task Title: Classify an emergency event from NRC scenario-1

Completed By:


Reviews:

Edwin Bowles  
Writer

04/30/01  
Date

  
Instructor/Writer                      6/26/01  
Date

Approval:

  
Requesting Supv./C.A. Head

6-28-01  
Date

  
Nuclear Training Supv.                      6/26/01  
Date

Date of Performance:                     

10 Min  
Allowed Time (Min)

                      
Time Taken (Min)

JPM Performed By:

                      
Last

                      
First

                      
M.I.

                      
Employee #/S.S. #

Performance Evaluation:    (    ) Satisfactory    (    ) Unsatisfactory

Evaluator Name:

                      
Signature

                      
Typed or Printed

Comments:

**REQUIRED TASK INFORMATION  
JOB PERFORMANCE MEASURE  
S/RO 03.OP.003.101**

**I. SAFETY CONSIDERATIONS**

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-001, Operations Shift Policies.
- B. All applicable safety precautions shall be taken in accordance with established PP&L safety policies and the Safety Rule Book, for example:
  - 1. Whenever any electrical panel is opened for inspection during JPM performance.
  - 2. Whenever entering any plant area where specific safety equipment; such as hearing or eye protection, safety shoes, hardhats, etc; is required and/or posted as being necessary.

**II. REFERENCES**

- A. EP-PS-103-6, Emergency Classification

**III. REACTIVITY MANIPULATIONS**

None

**IV. TASK CONDITIONS**

Following several malfunctions which result in a primary system break RPV level will lower to -161" (TAF) requiring an RPV Rapid Depressurization to allow the use of low pressure injection systems to recover RPV Water level.

**V. INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.

# PERFORMANCE CHECKLIST

Page 3 of 5

Appl. To/JPM No.: S/RO 03.OP.003.101

Student Name: \_\_\_\_\_

Step	Action	Standard	Eval	Comments
1.	Obtain Emergency Event Classification procedure EP-PS-100-4, Emergency Classification.	Procedure obtained		
2.	<p>Determine/Diagnose that RPV Water Level was below TAF for:</p> <ul style="list-style-type: none"> <li>less than 3 minutes the scenario should be declared an ALERT</li> <li>greater than three (3) minutes indicating a loss of coolant accident greater than make-up capacity, declare a SITE AREA EMERGENCY.</li> <li>greater than 20 minutes declare a General Emergency.</li> </ul>	<p>Determines past plant conditions specifically that RPV Water Level was below -161" for 3 +/- minutes, to determine event classification.</p> <p><b>NOTE:</b> If drywell is NOT sprayed and unsafe region of SAT CURVE is entered during rapid depressurization, then a GENERAL EMERGENCY is required because of the loss of level indication.</p>		
*3.	Classify Event	<p>Event classified depending upon time RPV Water Level was &lt;-161 inches per TAB 4 of EP-PS-100-4, EAL 12.1:</p> <ul style="list-style-type: none"> <li>ALERT</li> <li>SITE AREA EMERGENCY</li> <li>GENERAL EMERGENCY</li> </ul>		

\*Critical Step

#Critical Sequence

STCP-QA-125B

Rev. 2, (9/93)

Page 1 of 1

## **TASK CONDITIONS**

Following several malfunctions which result in a primary system break RPV level will lower to -161" (TAF) requiring an RPV Rapid Depressurization to allow the use of low pressure injection systems to recover RPV Water level.

## **INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.



## **TASK CONDITIONS**

Following several malfunctions which result in a primary system break RPV level will lower to -161" (TAF) requiring an RPV Rapid Depressurization to allow the use of low pressure injection systems to recover RPV Water level.

## **INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.

**PENNSYLVANIA POWER & LIGHT COMPANY  
JOB PERFORMANCE MEASURE  
APPROVAL AND ADMINISTRATIVE DATA SHEET**

SRO                                                                0                      06/14/01                      2.4.41                      4.1  
Appl To                      JPM Number                      Rev No.                      Date                      NUREG 1123 Sys. No.                      K/A

Task Title: Classify an emergency event from NRC scenario-2

Completed By:

Reviews:


Edwin Bowles  
Writer

04/30/01  
Date

  
Instructor/Writer

6/26/01  
Date

Approval:

  
Requesting Supv./C.A. Head

6-28-01  
Date

  
Nuclear Training Supv.

6/26/01  
Date

Date of Performance: \_\_\_\_\_

10 Min  
Allowed Time (Min)

\_\_\_\_\_  
Time Taken (Min)

JPM Performed By:

\_\_\_\_\_  
Last

\_\_\_\_\_  
First

\_\_\_\_\_  
M.I.

\_\_\_\_\_  
Employee #/S.S. #

Performance Evaluation:    (    ) Satisfactory    (    ) Unsatisfactory

Evaluator Name:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed or Printed

Comments:

## **REQUIRED TASK INFORMATION JOB PERFORMANCE MEASURE**

### **I. SAFETY CONSIDERATIONS**

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-001, Operations Shift Policies.
- B. All applicable safety precautions shall be taken in accordance with established PP&L safety policies and the Safety Rule Book, for example:
  - 1. Whenever any electrical panel is opened for inspection during JPM performance.
  - 2. Whenever entering any plant area where specific safety equipment; such as hearing or eye protection, safety shoes, hardhats, etc; is required and/or posted as being necessary.

### **II. REFERENCES**

- A. EP-PS-103-6, Emergency Classification

### **III. REACTIVITY MANIPULATIONS**

None

### **IV. TASK CONDITIONS**

Following several malfunctions problems in the SSES switchyard cause a loss 13.8 KV and require tripping the plant. When the mode switch is placed in Shutdown the rods do not fully insert due to a hydraulic ATWS. Concurrently the bypass valves will fail closed on low vacuum caused by the loss of the 13.8 KV buses requiring entry into Level/Power Control. As Suppression Pool temperature rises an operator will place RHR in Suppression Pool Cooling, but, after the lineup is established the RHR Pump will trip, depressurizing the system, the alternate loop of RHR must be started.

### **V. INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.

# PERFORMANCE CHECKLIST

Page 3 of 5

Appl. To/JPM No.: S/RO 03.OP.003.101

Student Name: \_\_\_\_\_

Step	Action	Standard	Eval	Comments
1.	Obtain Emergency Event Classification, EP-PS-100-4, Emergency Classification	Procedure obtained		
2.	Determine/Diagnose that control rods failed to insert and make the reactor subcritical, that reactor power exceeded 5% and SLC injected.	Determines both trip systems failed to insert control rods, that power exceeded 5% and SLC injected.		
*3.	Classify Event as an ALERT.	Event classified as an ALERT.		

\*Critical Step

#Critical Sequence

STCP-QA-125B

Rev. 2, (9/93)

Page 1 of 1

## **TASK CONDITIONS**

Following several malfunctions problems in the SSES switchyard cause a loss 13.8 KV and require tripping the plant. When the mode switch is placed in Shutdown the rods do not fully insert due to a hydraulic ATWS. Concurrently the bypass valves will fail closed on low vacuum caused by the loss of the 13.8 KV buses requiring entry into Level/Power Control. As Suppression Pool temperature rises an operator will place RHR in Suppression Pool Cooling, but, after the lineup is established the RHR Pump will trip, depressurizing the system, the alternate loop of RHR must be started.

## **INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.

## **TASK CONDITIONS**

Following several malfunctions problems in the SSES switchyard cause a loss 13.8 KV and require tripping the plant. When the mode switch is placed in Shutdown the rods do not fully insert due to a hydraulic ATWS. Concurrently the bypass valves will fail closed on low vacuum caused by the loss of the 13.8 KV buses requiring entry into Level/Power Control. As Suppression Pool temperature rises an operator will place RHR in Suppression Pool Cooling, but, after the lineup is established the RHR Pump will trip, depressurizing the system, the alternate loop of RHR must be started.

## **INITIATING CUE**

Perform an Emergency Plan classification in accordance with EP-PS-100 for the scenario that has just occurred.