

Facility: Limerick Examination Level: <b>RO</b>		Date of Examination: 10/8/12-10/12/12 Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A-1.1	R, N	Evaluate Overtime Work Request
Conduct of Operations A-1.2	R, N	Review of Drywell Floor Drain/Equipment Drain Tank Surveillance Logs
Equipment Control A-2	R, N	Blocking of equipment
Radiation Control A-3	N/A	N/A
Emergency Procedures/Plan A-4	R, N	EAL Callout
<b>NOTE:</b> All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
<b>* Type Codes &amp; Criteria:</b> (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

Facility: Limerick Examination Level: <b>SRO-I</b>		Date of Examination: 10/8/12-10/12/12 Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A-1.1	R, N	Evaluation of Overtime Hours to Determine Availability
Conduct of Operations A-1.2	R, N	Review of Drywell Floor Drain/Equipment Drain Tank Surveillance Logs
Equipment Control A-2	R, N	Blocking of equipment
Radiation Control A-3	R, N	Review inventory release from Equipment Drain Sample Tanks to Cooling Tower Blowdown Line.
Emergency Procedures/Plan A-4	R,N	EAL Call
<p><b>NOTE:</b> All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.</p>		
<p>* Type Codes &amp; Criteria:</p> <p>(C)ontrol room, (S)imulator, or Class(R)oom  (D)irect from bank (<math>\leq 3</math> for ROs; <math>\leq 4</math> for SROs &amp; RO retakes)  (N)ew or (M)odified from bank (<math>\geq 1</math>)  (P)revious 2 exams (<math>\leq 1</math>; randomly selected)</p>		

## **Limerick Generating Station**

### **Job Performance Measure**

#### **Evaluate Overtime Work Request**

RO JPM Designation: A-1.1

Revision Number: 0

Date: 04/16/12

Developed By:	<u>Patel</u>	<u>04/16/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>04/19/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/19/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.



## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

1. Provide applicant with the work history table.

### TASK STANDARD:

Reviews the work hour history and determines that overtime request will result in exceeding work hour limits and also previously worked schedule violates additional work hour rules.

### TASK CONDITIONS:

- Shift supervision has contacted you on Sunday, 10/07 (a scheduled day off), to report to the control room to work a 12 hour overtime shift from 0600-1800.
- You were on vacation from 9/1 to 9/22.
- Your work history for the previous 2 weeks is as follows (all hours worked performing licensed operating duties):

<b>Sunday 9/23</b>	<b>Monday 9/24</b>	<b>Tuesday 9/25</b>	<b>Wednesday 9/26</b>	<b>Thursday 9/27</b>	<b>Friday 9/28</b>	<b>Saturday 9/29</b>
Worked 1200-1800	Worked 0600-1800	Worked 0600-1800	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400
<b>Sunday 9/30</b>	<b>Monday 10/1</b>	<b>Tuesday 10/2</b>	<b>Wednesday 10/3</b>	<b>Thursday 10/4</b>	<b>Friday 10/5</b>	<b>Saturday 10/6</b>
Worked 0600-1500	Worked 0600-2100	OFF	Worked 0600-1800	Worked 0600-1800	Worked 0800-1200	Worked 0600-2100

### RO INITIATING CUE:

Using the work history provided:

1. Determine if you had adequately worked prior shifts and whether or not you are able to cover the requested shift.
2. Document your conclusion on the cue sheet.

### Information for Evaluator's Use:

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Evaluate Overtime Work Request**

**JPM Number: A1.1**

**Revision Number: 0**

**K/A Number and Importance:**    2.1.5      RO 2.9      SRO 3.9

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method:** Perform in Classroom

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete:**    25 min.    **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2 Supp. 1
2. LS-AA-119, Rev. 9

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the operator review the work hour history and determines that overtime request will result in exceeding work hour limits and also previously worked schedule violates additional work hour rules.

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

**JPM Start Time** \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b></p> <p>This JPM can be performed in the simulator, classroom or other similar environment</p> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>To begin this JPM provide the applicant the task conditions and the cue sheet.</p> <p>Review the work hours history table and the JPM cue sheet.</p>	<p>Applicant reviews work hours history table and the JPM cue sheet.</p>			
<p>1. Reviews LS-AA-119, "Fatigue Management and Work Hour Limits"</p>	<p>Applicant reviews LS-AA-119, "Fatigue Management and Work Hour Limits"</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b>2.</b></p> <p>★Applicant determines that the required 10 hour break between work periods will not be met, and that the additional hours will result in exceeding 26 hours in any 48 hours period.</p> <p>10 hours break not met – (From 2100 to 0600 = 9 hours)</p> <p>27hrs in 48hr period – (Sat 10/6 [15 hrs] + Sun 10/7 [12 hrs] = 27 hrs)</p>	<p>Applicant determines that he/she cannot work the requested shift because the required 10 hour break between work periods will not be met, and the additional hours will result in exceeding 26 hours in any 48 hours period</p> <p>10 hours break not met – (From 2100 to 0600 = 9 hours)</p> <p>27hrs in 48hr period – (Sat 10/6 [15 hrs] + Sun 10/7 [12 hrs] = 27 hrs)</p>			
<p><b>3.</b></p> <p>★Applicant also determines that the previously worked schedule, there was NOT a 34 hour break in any 9 day period.</p> <p>9 day period [9/23 -10/01] did not have a 34 hour break</p>	<p>Applicant determines that previously worked schedule violation occurred due to not having a 34 hour break in a 9 day period.</p>			
<p><b><u>EVALUATOR CUE:</u></b></p> <p>No further actions are required for this JPM.</p> <p><b><u>EVALUATOR:</u></b></p> <p>Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?</p>				

JPM Stop Time \_\_\_\_\_

**TASK CONDITIONS:**

- Shift supervision has contacted you on Sunday, 10/07 (a scheduled day off), to report to the control room to work a 12 hour overtime shift from 0600-1800.
- You were on vacation from 9/1 to 9/22.
- Your work history for the previous 2 weeks is as follows (all hours worked performing licensed operating duties):

<b>Sunday 9/23</b>	<b>Monday 9/24</b>	<b>Tuesday 9/25</b>	<b>Wednesday 9/26</b>	<b>Thursday 9/27</b>	<b>Friday 9/28</b>	<b>Saturday 9/29</b>
Worked 1200-1800	Worked 0600-1800	Worked 0600-1800	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400
<b>Sunday 9/30</b>	<b>Monday 10/1</b>	<b>Tuesday 10/2</b>	<b>Wednesday 10/3</b>	<b>Thursday 10/4</b>	<b>Friday 10/5</b>	<b>Saturday 10/6</b>
Worked 0600-1500	Worked 0600-2100	OFF	Worked 0600-1800	Worked 0600-1800	Worked 0800-1200	Worked 0600-2100

**INITIATING CUE:**

Using the work history provided:

1. Determine if you had adequately worked prior shifts and whether or not you are able to cover the requested shift.
2. Document your conclusion below.

**ANSWER:**

**TASK CONDITIONS:**

- Shift supervision has contacted you on Sunday, 10/07 (a scheduled day off), to report to the control room to work a 12 hour overtime shift from 0600-1800.
- You were on vacation from 9/1 to 9/22.
- Your work history for the previous 2 weeks is as follows (all hours worked performing licensed operating duties):

<b>Sunday 9/23</b>	<b>Monday 9/24</b>	<b>Tuesday 9/25</b>	<b>Wednesday 9/26</b>	<b>Thursday 9/27</b>	<b>Friday 9/28</b>	<b>Saturday 9/29</b>
Worked 1200-1800	Worked 0600-1800	Worked 0600-1800	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400	Worked 0600-1400
<b>Sunday 9/30</b>	<b>Monday 10/1</b>	<b>Tuesday 10/2</b>	<b>Wednesday 10/3</b>	<b>Thursday 10/4</b>	<b>Friday 10/5</b>	<b>Saturday 10/6</b>
Worked 0600-1500	Worked 0600-2100	OFF	Worked 0600-1800	Worked 0600-1800	Worked 0800-1200	Worked 0600-2100

**INITIATING CUE:**

Using the work history provided:

1. Determine if you had adequately worked prior shifts and whether or not you are able to cover the requested shift.
2. Document your conclusion below.

**ANSWER:**

# **Limerick Generating Station**

## **Job Performance Measure**

### **Evaluation of Overtime Hours to Determine Availability**

SRO JPM Designation: A-1.1

Revision Number: 0

Date: 04/16/12

Developed By:	<u>Patel</u>	<u>04/16/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>04/19/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/19/12</u>
	Chief Examiner	Date



## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

1. Provide applicant with RO candidates work history table.

### TASK STANDARD:

Reviews the work hour history for various RO candidates and determines if any one of the candidates can stand an entire shift. Explains why and why not?

### TASK CONDITIONS:

- Unit 1 is in OPCON 1
- Unit 1 oncoming RO for the 1800-0600 shift has called off sick
- Date is 10/10
- Time is 1700

Reference the attached RO work hour sheet.

### SRO INITIATING CUE:

There are 5 RO's available to fill the position. You are told to perform verification of overtime hours to determine which RO, if any, can stand the entire shift. Explain why or why not.

### Information for Evaluator's Use:

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_

**Job Title:** ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

**JPM Title: Evaluation of Overtime Hours to Determine Availability**

**JPM Number: A1.1**

**Revision Number: 0**

**K/A Number and Importance: 2.1.5 RO 2.9 SRO 3.9**

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method: Perform in Classroom**

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete: 25 min. Actual Time Used: \_\_\_\_\_minutes**

**References:**

1. NUREG 1123, Rev. 2 Supp. 1
2. LS-AA-119, Rev. 9

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

**Evaluator's Name: \_\_\_\_\_(Print)**

**Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_**

Description: For this JPM, SRO needs to review the work hour history for various RO candidates and determines if any one of the candidates can stand an entire shift and explain why or why not?

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b></p> <p>This JPM can be performed in the simulator, classroom or other similar environment</p> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>To begin this JPM provide the applicant the task conditions and the cue sheet.</p> <p>Review RO candidates work hours history table and the JPM cue sheet.</p>				
1. Reviews LS-AA-119, "Fatigue Management and Work Hour Limits"	Applicant reviews LS-AA-119, "Fatigue Management and Work Hour Limits"			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b>2.</b></p> <p>★Applicant determines that the RO candidate #1 CANNOT fill the RO position because RO#1 violates &gt;72 hrs in any 7 days – from 10/4-10/10 (12+13+12+12+12+12=73 hrs)</p>	<p>Applicant determines that the RO candidate #1 CANNOT fill the RO position because RO#1 violates &gt;72 hrs in any 7 days – from 10/4-10/10 (12+13+12+12+12+12=73 hrs)</p>			
<p><b>3.</b></p> <p>★ Applicant determines that the RO candidate #2 CANNOT fill the RO position because RO#2 violates &lt;34 hours break in any 9 days (no 34hr break from 10/2 – 10/10)</p>	<p>Applicant determines that the RO candidate #2 CANNOT fill the RO position because RO#2 violates &lt;34 hours break in any 9 days (no 34hr break from 10/2 – 10/10)</p>			
<p><b>4.</b></p> <p>★ Applicant determines that the RO candidate #3 CAN fill the RO position. NO violation of the work hour limits.</p>	<p>Applicant determines that the RO candidate #3 CAN fill the RO position. NO violation of the work hour limits.</p>			
<p><b>5.</b></p> <p>★Applicant determines that the RO candidate #4 CANNOT fill the RO position because RO#4 violates &gt;26 hrs in any 48 hours – from 10/9-10/10 [15hrs (10/9-10)+12hrs (10/2-3) = 27 hrs]</p>	<p>Applicant determines that the RO candidate #4 CANNOT fill the RO position because RO#4 violates &gt;26 hrs in any 48 hours – from 10/9-10/10 [15hrs (10/9-10)+12hrs (10/2-3) = 27 hrs]</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b>6.</b></p> <p>★ Applicant determines that the RO candidate #5 CANNOT fill the RO position because RO#5 violates &lt;10 hours break (btwn work period) on 10/10 (0900 to 1800(10/10) = 9hrs break)</p>	<p>Applicant determines that the RO candidate #5 CANNOT fill the RO position because RO#5 violates &lt;10 hours break (btwn work period) on 10/10 (0900 to 1800(10/10) = 9hrs break)</p>			
<p><b><u>EVALUATOR CUE:</u></b> No further actions are required for this JPM.</p> <p><b><u>EVALUATOR:</u></b> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?</p>				

JPM Stop Time \_\_\_\_\_

**TASK CONDITIONS:**

- Unit 1 is in OPCON 1
- Unit 1 oncoming RO for the 1800-0600 shift has called off sick
- Date is 10/10
- Time is 1700

Reference the attached RO work hour sheet

**INITIATING CUE:**

There are 5 RO's available to fill the position. You are told to perform verification of overtime hours to determine which RO, if any, can stand the entire shift. Explain why or why not.

**ANSWER:**

RO#1:

RO#2:

RO#3:

RO#4:

RO#5:

**TASK CONDITIONS:**

- Unit 1 is in OPCON 1
- Unit 1 oncoming RO for the 1800-0600 shift has called off sick
- Date is 10/10
- Time is 1700

Reference the attached RO work hour sheet

**INITIATING CUE:**

There are 5 RO's available to fill the position. You are told to perform verification of overtime hours to determine which RO, if any, can stand the entire shift. Explain why or why not.

**ANSWER:**

RO#1:

RO#2:

RO#3:

RO#4:

RO#5:



RO Work Hour Sheet

RO									
	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9
1			1800(10/3)- 0200(10/4)	1800(10/4)- 0600(10/5)		1800(10/6)- 0700(10/7)	1800(10/7)- 0600(10/8)	1800(10/8)- 0600(10/9)	1800(10/9)- 0600(10/10)
2		0600(10/2)- 1800(10/2)	0600(10/3)- 1800(10/3)	0600(10/4)- 1800(10/4)	0600(10/5)- 1800(10/5)	0600(10/6)- 1200(10/6)	0600(10/7)- 1000(10/7)	0600(10/8)- 1200(10/8)	0600(10/9)- 1000(10/9)
3	0600(10/1)- 1800(10/1)		1800(10/3)- 0600(10/4)		1800(10/5)- 0800(10/6)	1800(10/6)- 0600(10/7)	1800(10/7)- 0800(10/8)	1800(10/8)- 0600(10/9)	
4	0800(10/1)- 1600(10/1)	0800(10/2)- 1600(10/2)	0800(10/3)- 1600(10/3)	0800(10/4)- 1600(10/4)			1800(10/7)- 0000(10/8)	1800(10/8)- 0600(10/9)	1700(10/9)- 0800(10/10)
5			0700(10/3)- 1500(10/3)	0700(10/4)- 1500(10/4)	0700(10/5)- 1500(10/5)	0700(10/6)- 1500(10/6)		0600(10/8)- 1100(10/8)	2300(10/9)- 0900(10/10)

RO Work Hour Sheet

RO									
	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9
1			1800(10/3)- 0200(10/4)	1800(10/4)- 0600(10/5)		1800(10/6)- 0700(10/7)	1800(10/7)- 0600(10/8)	1800(10/8)- 0600(10/9)	1800(10/9)- 0600(10/10)
2		0600(10/2)- 1800(10/2)	0600(10/3)- 1800(10/3)	0600(10/4)- 1800(10/4)	0600(10/5)- 1800(10/5)	0600(10/6)- 1200(10/6)	0600(10/7)- 1000(10/7)	0600(10/8)- 1200(10/8)	0600(10/9)- 1000(10/9)
3	0600(10/1)- 1800(10/1)		1800(10/3)- 0600(10/4)		1800(10/5)- 0800(10/6)	1800(10/6)- 0600(10/7)	1800(10/7)- 0800(10/8)	1800(10/8)- 0600(10/9)	
4	0800(10/1)- 1600(10/1)	0800(10/2)- 1600(10/2)	0800(10/3)- 1600(10/3)	0800(10/4)- 1600(10/4)			1800(10/7)- 0000(10/8)	1800(10/8)- 0600(10/9)	1700(10/9)- 0800(10/10)
5			0700(10/3)- 1500(10/3)	0700(10/4)- 1500(10/4)	0700(10/5)- 1500(10/5)	0700(10/6)- 1500(10/6)		0600(10/8)- 1100(10/8)	2300(10/9)- 0900(10/10)

### SRO Admin JPM A1.1 – ANSWER KEY

RO		10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9	10/10
1				1800(10/3)- 0200(10/4)	1800(10/4)- 0600(10/5)		1800(10/6)- 0700(10/7)	1800(10/7)- 0600(10/8)	1800(10/8)- 0600(10/9)	1800(10/9)- 0600(10/10)	1800(10/10)- 0600(10/11)
		0	0	8	12	0	13	12	12	12	12
2			0600(10/2)- 1800(10/2)	0600(10/3)- 1800(10/3)	0600(10/4)- 1800(10/4)	0600(10/5)- 1800(10/5)	0600(10/6)- 1200(10/6)	0600(10/7)- 1000(10/7)	0600(10/8)- 1200(10/8)	0600(10/9)- 1000(10/9)	1800(10/10)- 0600(10/11)
		0	12	12	12	12	6	4	6	4	12
3		0600(10/1)- 1800(10/1)		1800(10/3)- 0600(10/4)		1800(10/5)- 0800(10/6)	1800(10/6)- 0600(10/7)	1800(10/7)- 0800(10/8)	1800(10/8)- 0600(10/9)		1800(10/10)- 0600(10/11)
		12	0	12	0	14	12	14	12	0	12
4		0800(10/1)- 1600(10/1)	0800(10/2)- 1600(10/2)	0800(10/3)- 1600(10/3)	0800(10/4)- 1600(10/4)			1800(10/7)- 0000(10/8)	1800(10/8)- 0600(10/9)	1700(10/9)- 0800(10/10)	1800(10/10)- 0600(10/11)
		12	12	12	12	0	0	6	12	15	12
5				0700(10/3)- 1500(10/3)	0700(10/4)- 1500(10/4)	0700(10/5)- 1500(10/5)	0700(10/6)- 1500(10/6)		0600(10/8)- 1100(10/8)	2300(10/9)- 0900(10/10)	1800(10/10)- 0600(10/11)
		0	0	8	8	8	8	0	5	10	12

- >16 hrs in any 24 hours –
- >26 hrs in any 48 hours – RO Candidate # 4 violation (15(10/9-10)+12(10/2-3) = 27 hrs)
- >72 hrs in any 7 days – RO Candidate #1 violation (12+13+12+12+12+12=73 hrs)
- <10 hours break (btwn work period) – RO Candidate # 5 violation (0900 to 1800(10/10) = 9hrs break)
- <34 hours break in any 9 days – RO Candidate # 2 violation (no 34hr break from 10/2 – 10/10)

## **Limerick Generating Station**

### **Job Performance Measure**

**Review Drywell Floor Drain Sump/Equipment Drain Tank Logs and  
Determine Compliance with TS 3.4.3.2**

RO JPM Designation: A-1.2

Revision Number: 0

Date: 04/16/12

Developed By:	<u>Lally</u>	<u>04/16/12</u>
	Author	Date
Review By:	<u>Patel</u>	<u>04/19/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/19/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

**Rev 0**

### **JPM Setup Instructions:**

1. Provide marked up ST-6-107-596-1, "Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3"
2. Provide Unit 1 Tech Specs
3. Provide calculator for applicant use

### **TASK STANDARD:**

Review the data for drywell floor drain and equipment drain tanks, determine that \_\_\_\_ was exceeded between \_\_\_\_\_.

### **TASK CONDITIONS:**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

### **RO INITIATING CUE:**

This is your first shift returning from a two week vacation. Your review of all logs is complete pending completion of review of ST-6-107-596-1. Perform this review and document discrepancies found, if any.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Review Drywell Floor Drain Sump/Equipment Drain Tank Logs and Determine Compliance with TS 3.4.3.2**

**JPM Number: A-1.2**

**Revision Number: 0**

**K/A Number and Importance:**    2.1.25      RO 3.9      SRO 4.2

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method:** Perform in Classroom

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete:**    25 min.    **Actual Time Used:**    \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2 Supp. 1
2. ST-6-107-596-1, Rev. 23
3. LGS Unit 1 TS 3.4.3.2

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the operator review surveillance data for drywell floor drain and equipment drain tank logs to determine compliance with TS 3.4.3.2



NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b><u>EVALUATOR NOTE:</u></b> This JPM can be performed in the simulator, classroom or other similar environment. Ensure ST-6-107-596-1, Unit 1 Tech Specs, and a calculator are available for candidate use.  <b><u>EVALUATOR CUE:</u></b> Provide the candidate with the task conditions, initiating cue, and the pre-filled out ST-6-107-596-1				
Obtain and review ST-6-107-596-1	Obtains and reviews surveillance procedure			
(Step 4.2.1) IF FI-61-115, FLOOR, FL, AND FI-61-135, EQUIP, FL, are OPERABLE, THEN GO TO Step 4.2.3	Applicant notes that step 4.2.2 is N/A, concluding that instrumentation was OPERABLE			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
(Step 4.2.4) Calculate Total Leakrate by adding together each of the recorded values on Attachment 2, Table 1 AND RECORD Total Leakrate on Attachment 2, Table 1	<p>Applicant verifies Total Leakrate calculations are correct for all Total Leakrate entries</p> <p><b>Notes math error Day 2 Total Leakrate 1.3 gpm vice 2.3 gpm</b></p>			
<p>★ (Step 4.2.5) Perform the following at 08:15, 16:15, AND 00:15:</p> <p>1. IF Total Leakrate is less than or equal to 25 gpm, AND FI-61-115, FLOOR, FL, is less than or equal to 5 gpm AND FI-61-115, FLOOR, FL increases is less than or equal to 2 gpm from previous 00:15 reading THEN ENTER SAT on Attachment 2, Table 1. Otherwise ENTER UNSAT on Attachment 2, Table 1, AND NOTIFY SSV</p> <p><b><u>Evaluator Note:</u></b> Roleplay as unit supervisor and acknowledge applicant report. <i>If applicant does not identify any TS violation, ask them if there are any TS concerns.</i></p>	<p><b>Applicant identifies on day 5 that the 0815 floor drain reading is now 3.9 gpm. This is an increase of &gt;2 gpm over the last 24 hours. Applicant notes this and that step 4.2.5.1 should not have been marked SAT. Notes that they would notify SSV as Tech Spec actions are required</b></p>			
<p><b><u>EVALUATOR CUE:</u></b> No further actions are required for this JPM</p>				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b>EVALUATOR:</b> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

JPM Stop Time \_\_\_\_\_

## **TASK CONDITIONS**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

## **INITIATING CUE**

This is your first shift returning from a two week vacation. Your review of logs is complete pending completion of review of ST-6-107-596-1. Perform this review and document discrepancies found, if any, on this sheet.

### **TASK CONDITIONS**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

### **INITIATING CUE**

This is your first shift returning from a two week vacation. Your review of all logs is complete pending completion of review of ST-6-107-596-

1. Perform this review and document discrepancies found, if any, on this sheet.

## **Limerick Generating Station**

### **Job Performance Measure**

**Review Drywell Floor Drain Sump/Equipment Drain Tank Logs and  
Determine Compliance with TS 3.4.3.2**

SRO JPM Designation: A-1.2

Revision Number: 0

Date: 04/16/12

Developed By:	<u>Lally</u>	<u>04/16/12</u>
	Author	Date
Review By:	<u>Patel</u>	<u>04/19/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/19/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

**Rev 0**

### **JPM Setup Instructions:**

1. Provide marked up ST-6-107-596-1, "Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3"
2. Provide Unit 1 Tech Specs
3. Provide calculator for applicant use

### **TASK STANDARD:**

Review the data for drywell floor drain and equipment drain tanks, determine that \_\_\_\_ was exceeded between \_\_\_\_.

### **TASK CONDITIONS:**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

### **SRO INITIATING CUE:**

This is your first shift returning from a two week vacation. Your review of logs is complete pending completion of review of ST-6-107-596-1. Perform this review and document discrepancies found, if any, on this sheet. Additionally, determine what actions are required, if any, and document on this sheet.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.



**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Review Drywell Floor Drain Sump/Equipment Drain Tank Logs and Determine Compliance with TS 3.4.3.2**

**JPM Number: A-1.2**

**Revision Number: 0**

**K/A Number and Importance:**    2.1.25      RO 3.9      SRO 4.2

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method:** Perform in Classroom

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete:**    25 min.    **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2 Supp. 1
2. ST-6-107-596-1, Rev. 23
3. LGS Unit 1 TS 3.4.3.2

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the operator review surveillance data for drywell floor drain and equipment drain tank logs to determine compliance with TS 3.4.3.2

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

**JPM Start Time** \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b> This JPM can be performed in the simulator, classroom or other similar environment.</p> <p>Ensure ST-6-107-596-1, Unit 1 Tech Specs, and a calculator are available for candidate use.</p> <p><b><u>EVALUATOR CUE:</u></b> Provide the candidate with the task conditions, initiating cue, and the pre-filled out ST-6-107-596-1</p>				
Obtain and review ST-6-107-596-1	Obtains and reviews surveillance procedure			
(Step 4.2.1) IF FI-61-115, FLOOR, FL, AND FI-61-135, EQUIP, FL, are OPERABLE, THEN GO TO Step 4.2.3	Applicant notes that step 4.2.2 is N/A, concluding that instrumentation was OPERABLE			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
(Step 4.2.4) Calculate Total Leakrate by adding together each of the recorded values on Attachment 2, Table 1 AND RECORD Total Leakrate on Attachment 2, Table 1	<p>Applicant verifies Total Leakrate calculations are correct for all Total Leakrate entries</p> <p><b>Notes math error Day 2 Total Leakrate 1.3 gpm vice 2.3 gpm</b></p>			
<p>★ (Step 4.2.5) Perform the following at 08:15, 16:15, AND 00:15:</p> <p>1. IF Total Leakrate is less than or equal to 25 gpm, AND FI-61-115, FLOOR, FL, is less than or equal to 5 gpm AND FI-61-115, FLOOR, FL increases is less than or equal to 2 gpm from previous 00:15 reading THEN ENTER SAT on Attachment 2, Table 1. Otherwise ENTER UNSAT on Attachment 2, Table 1, AND NOTIFY SSV</p> <p><b><u>Evaluator Note:</u></b> Roleplay as unit supervisor and acknowledge applicant report.</p>	<p><b>Applicant identifies on day 5 that the 0815 floor drain reading is now 3.9 gpm. This is an increase of &gt;2 gpm over the last 24 hours. Applicant notes this and that step 4.2.5.1 should not have been marked SAT. Notes that they would notify SSV as Tech Spec actions are required</b></p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
★Refers to and evaluates compliance with Tech Spec 3.4.3.2	<p><b>Applicant states/documents that the plant should be in TS 3.4.3.2 Action e, which states:</b></p> <p>With any reactor coolant system leakage greater than the limit in f above (2 gpm increase in UNIDENTIFIED LEAKAGE over a 24-hour period), identify the source of leakage within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours</p>			
<p><b><u>EVALUATOR CUE:</u></b></p> <p>No further actions are required for this JPM</p>				
<p><b>EVALUATOR:</b></p> <p>Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?</p>				

JPM Stop Time \_\_\_\_\_

## **TASK CONDITIONS**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

## **INITIATING CUE**

This is your first shift returning from a two week vacation. Your review of logs is complete pending completion of review of ST-6-107-596-1. Perform this review and document discrepancies found, if any, on this sheet. Additionally, determine what actions are required, if any, and document on this sheet.

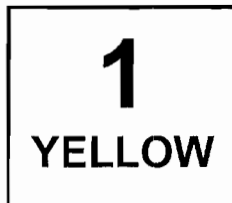
## **TASK CONDITIONS**

1. Unit 1 is in MODE 1
2. Unit 1 has been at 100% power for 179 days

## **INITIATING CUE**

This is your first shift returning from a two week vacation. Your review of logs is complete pending completion of review of ST-6-107-596-1. Perform this review and document discrepancies found, if any, on this sheet. Additionally, determine what actions are required, if any, and document on this sheet.

W/O #: R1134036-01  
ACT COMPLETED BY: \_\_\_\_\_  
CREM/M&TE by: \_\_\_\_\_  
TEST DATE/TIME: \_\_\_\_\_  
GRADE: \_\_\_\_\_



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DB:db

EXELON NUCLEAR  
LIMERICK GENERATING STATION

**ST-6-107-596-1** DRYWELL FLOOR DRAIN  
SUMP/EQUIPMENT DRAIN TANK  
SURVEILLANCE LOG/OPCON 1,2,3

Test Freq: Weekly - **OR** - Initiating Events: A. \_\_\_\_\_  
Tech Spec: 4.4.3.2.1.b B. Other \_\_\_\_\_  
1. Reason \_\_\_\_\_  
2. A/R No. \_\_\_\_\_

**TEST RESULTS:** (Circle **SAT** or **UNSAT** - Below)

**SAT** - All Procedure steps completed satisfactorily.

**UNSAT** - Test Results of one **OR** more Procedure steps completed unsatisfactorily.

Performed by: ..... (Sign/Date/Time) \_\_\_\_\_

Reviewed by (SSV) ..... (Sign/Date) \_\_\_\_\_

**IMMEDIATE NOTIFICATION OF OPERATIONS SHIFT MANAGEMENT** (**UNSAT** Results Only)

Shift Supervision: ..... (Sign) \_\_\_\_\_

(Date/Time) \_\_\_\_\_

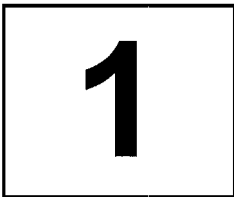
Corrective Action (if required) ..... (ETT **or** A/R - Number) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Person making entry in Additional Action/Test Comment Section

(Attachment 1) ..... (Sign/Date) \_\_\_\_\_





PLACEKEEP/INITIALS

~~1.0~~ **PURPOSE**

To record and evaluate the following flow rates each shift to fulfill Tech.  
Spec. 4.4.3.2.1.b:



Drywell Floor Drain Sump



Drywell Equipment Drain Tank

~~2.0~~ **PREREQUISITES**

~~2.10~~ Correct revision of procedure being used.

[✓]

~~2.20~~ Procedure printed on yellow paper.

[✓]

~~2.30~~ Briefing performed as required.

[✓]

PLACEKEEP/INITIALS**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 (Attachment 1). [ / ]

**3.2** IF any abnormalities are observed  
THEN PERFORM the following:

**3.2.10** **DOCUMENT** in the Additional Action/Test Comments section. [ / ]

**3.2.20** **INFORM** SSV. [ / ]

**3.3** Each log entry shall be reviewed to ensure fulfillment of Tech. Spec.  
4.4.3.2.1.b  
IF any abnormal entry exists,  
THEN SSV shall be notified immediately [ / ]

**3.4** To ensure that Tech. Spec. 4.4.3.2.1.b Surveillance Frequency is  
satisfied, step 4.4 must be performed later in the shift than step 4.2. [ / ]

**3.50** IF ST is started after start date (Saturday at 0815) in preparation for  
OPCON change,  
THEN N/A shall be entered in the blocks for the readings  
AND initials that were **not** taken. [ / ]

**3.60** Instruments used in this procedure to satisfy Tech Spec (\*)  
OR IST (I) requirements shall be free of EDTs  
OR the nature of the deficiency shall be understood  
AND determined **not** to impact test results. [ / ]

**3.70** IF an unexpected decrease in leakage occurs as measured by this test,  
THEN it could be caused by the outboard PCIV (HV-061-131  
OR HV-061-111) **not** seating properly, causing leak-by of the valve in the  
closed position. An IR should be generated if this occurs. (Ref 6.4) [ / ]

PLACEKEEP/INITIALS

## NOTE

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

2. Conditional **IF...THEN** steps that are **not** applicable  
**AND** steps to be skipped per direction of the **IF...THEN** step shall be  
marked N/A  
**AND** initialed. [✓]

4.0 **PROCEDURE**4.10 **PREPARATION**

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

4.1.20 **VERIFY** procedure being performed on unit 1.

PLACEKEEP/INITIALS**4.20 DRYWELL FLOOR DRAIN SUMP/EQUIPMENT DRAIN TANK FLOW RATE READINGS**

**4.2.1** IF FI-61-115, FLOOR, FL,  
AND FI-61-135, EQUIP, FL, are OPERABLE,  
THEN GO TO step 4.2.3.

**4.2.2** IF FI-61-115, FLOOR, FL,  
OR FI-61-135, EQUIP, FL, is INOPERABLE,  
THEN PERFORM the following:

**1.** PERFORM steps 4.3.2 through 4.3.6 as soon as possible.

**2.** ENTER value calculated in step 4.3.6 (using integrator) in Attachment 2, Table 1 in place of reading from inoperable flow indicator(s).

**3.** ENTER a comment in the Additional Action/Test Comments section (Attachment 1) identifying what value(s) in Attachment 2, Table 1 came from step 4.3.6.

**NOTE**

**1.** Data is required to be collected  
AND entered in Tables of Attachment 2 at the following times nominally:

**1.** 08:15

**2.** 16:15

**3.** 00:15

**2.** The Tech Spec Surveillance Interval is 8 hours.

**3.** Every effort should be made to take readings at the indicated times.

**4.2.3** RECORD values/time on Attachment 2, Table 1 for the current day/reading at 08:15, 16:15,  
AND 00:15, at panel 00C624,  
AND VERIFY values are SAT  
OR UNSAT per step 4.2.5.

PLACEKEEP/INITIALS

4.2.4

**CALCULATE** Total Leakrate by adding together each of the recorded values on Attachment 2, Table 1**AND RECORD** Total Leakrate on Attachment 2, Table 1.**NOTE**

Tech Spec 3.4.3.2 leakrate limits are:

Total Leakrate of 30 gpm at any time. [✓]

Total Leakrate of 25 gpm averaged over any 24-hour period. [✓]

Floor Drain Sump Leakrate (unidentified leakage) of 5 gpm at any time

**OR** an increase in Floor Drain Sump leakrate of 2 gpm in a 24-hour period. [✓]

4.2.5

**PERFORM** the following at 08:15, 16:15,**AND** 00:15:

1. **IF** Total Leakrate is less than or equal to 25 gpm,  
**AND** FI-61-115, FLOOR, FL, is less than or equal to 5 gpm  
**AND** FI-61-115, FLOOR, FL, increase is less than or equal to 2 gpm from previous 00:15 reading  
**THEN ENTER** SAT on Attachment 2, Table 1.  
**Otherwise ENTER** UNSAT on Attachment 2, Table 1,  
**AND NOTIFY** SSV.

4.2.6

**PERFORM** the following at 00:15 ONLY

1. **IF** this is Day 7,  
**THEN PERFORM** the following:
  - a.0 **RECORD** 00:15 Reading/Time for FI-61-115, FLOOR, FL, in next week's ST-6-107-596-1 on Attachment 2, Table 1 for Day 1 (Previous 00:15 reading).
  - b.0 **DEPRESS** HS-61-155, "UNIT 1 DRYWELL EQUIP DRN RESET" on 00C424  
**AND RECORD** leak rate reading  
**AND** date/time of reset.

PLACEKEEP/INITIALS**4.3 AVERAGE LEAKRATE VERIFICATION**

4.3.10 **IF** recorder FQRSH-61-112 **not** available,  
**THEN PERFORM** the following  
Otherwise, **GO TO** 4.3.2.

1.0 **AVERAGE** the last 3 readings of FI-61-115.

N/A ✓

2.0 **ENTER** average in table 3 as point 3.

N/A ✓

3.0 **AVERAGE** the last 3 readings of FI-61-135.

N/A ✓

4.0 **ENTER** average in table 3 as point 4.

N/A ✓

5.0 **GO TO** step 4.3.8 to determine whether readings are  
acceptable.

N/A ✓

**NOTE**

1. The totalizers FQRSH-61-112 (Point 3) Floor Sump  
**AND** FQRSH-61-112 (Point 4) Equip Sump are automatically reset at the  
following times 0015, 0815

**AND** 1615. Readings should be obtained from the Hard Copy log on the  
recorder after these times.

[ ✓ ]

2. For FQRSH-61-112 (Point 3) and FQRSH-61-112 (Point 4), a reading of  
≤10 gallons may be recorded as zero.

[ ✓ ]

4.3.2 **RECORD** time

**AND** reading of integrators FQRSH-61-112 (Point 3), FLOOR  
SUMP,

**AND** FQRSH-61-112 (Point 4), EQUIP SUMP, in Attachment 2,  
Table 2, for the current day/shift, at panel 10C602.

✓

PLACEKEEP/INITIALS

4.3.30

**VERIFY** FQRSH-61-112 (Point 4), EQUIP SUMP, setpoint as follows:

1. **PRESS** {MENU} pushbutton.
2. **PRESS** {UP or DOWN ARROW key} until DISPLAY MENU prompt appears  
**AND PRESS** {ENTER}.
3. **PUSH** {UP or DOWN ARROW key} until DISP ALARM LIMIT prompt appears.
4. **PRESS** {ENTER}  
**AND** ENTER PT X prompt will appear.
5. **IF** ENTER PT X = 4  
**THEN PRESS** {ENTER}.  
**Otherwise PRESS** {UP or DOWN ARROW key} until POINT X = 4  
**AND PRESS** {ENTER}
6. ALARM setpoint prompt will appear.
7. **PRESS** {UP or DOWN ARROW key} until Hi ALARM setpoint appears.
8. **IF** FI-61-135, EQUIP, FL, is INOPERABLE,  
**THEN VERIFY** setpoint indication is 004800.
9. **IF** FI-61-135, EQUIP, FL, is OPERABLE,  
**THEN VERIFY** setpoint indication is 007200.
10. **IF** setpoint is **not** the value specified in step 4.3.3.8  
**OR** 4.3.3.9,  
**THEN CONTACT** I&C to adjust setpoint.
- 11.0 **IF** setpoint is adjusted,  
**THEN ENSURE** I&C verifies the recorder program  
**AND** profile information using the current calibration sheet.

N/A

N/A

N/A

PLACEKEEP/INITIALS

4.3.4

**VERIFY** FQRSH-61-112 (Pont 3), FLOOR SUMP setpoint as follows:

1. **PRESS** {MENU} pushbutton.
2. **PRESS** {UP or DOWN ARROW key} until DISPLAY MENU prompt appears  
**AND PRESS** {ENTER}.
3. **PUSH** {UP or DOWN ARROW key} until DISP ALARM LIMIT prompt appears.
4. **PRESS** {ENTER}  
**AND** ENTER PT X prompt will appear.
5. **IF** ENTER PT X = 3  
**THEN PRESS** {ENTER}.  
**Otherwise PRESS** {UP or DOWN ARROW key} until POINT X = 3  
**AND PRESS** {ENTER}
6. ALARM setpoint prompt will appear.
7. **PRESS** {UP or DOWN ARROW key} until Hi ALARM setpoint appears.
8. **IF** FI-61-115, FLOOR, FL, is INOPERABLE,  
**THEN VERIFY** setpoint indication is 000400.
9. **IF** FI-61-115, FLOOR, FL, is OPERABLE,  
**THEN VERIFY** setpoint indication is 000960.
10. **IF** setpoint is **not** the value specified in step 4.3.4.8  
**OR** 4.3.4.9,  
**THEN CONTACT** I&C adjust setpoint
11. **IF** setpoint is adjusted,  
**THEN ENSURE** I&C verifies the recorder program  
**AND** profile information using the current calibration sheet.

N/A

N/A

N/A



PLACEKEEP/INITIALS

4.3.5

**CALCULATE** the total time (in minutes) for each integrator, since the integrator was reset on the previous shift

**AND RECORD** in Attachment 2, Table 2 for the current day/shift.

4.3.6

**CALCULATE** average leakrate, for each integrator, since the integrator was reset on the previous shift by dividing reading (gallons) recorded in step 4.3.2 by time since integrator was last reset (minutes) recorded in step 4.3.5

**AND RECORD** in Attachment 2, Table 3, for current day/shift:

$$ALR = \frac{iv}{T}$$

ALR = average leakrate (gpm)

iv = integrator value (gallons) (step 4.3.2)

T = time since integrator was last reset (minutes) (step 4.3.5)

4.3.7

**CALCULATE** total average leakrate by adding together leakrates for each integrator determined in step 4.3.6

**AND RECORD** in Attachment 2, Table 3, for current day/shift:

$$TALR = ALR1 + ALR2$$

TALR = Total Average Leakrate (gpm)

ALR1 = Average leakrate for Floor Sump (step 4.3.6)

ALR2 = Average leakrate for Equip Sump (step 4.3.6)

4.3.8

**IF** Total Average Leakrate is less than or equal to 25 gpm, **THEN ENTER** SAT in Attachment 2, Table 3, for current day/shift.

**Otherwise ENTER** UNSAT in Attachment 2, Table 3, **AND NOTIFY** SSV.

**NOTE**

For FQRSH-61-112 (Point 3) and FQRSH-61-112 (Point 4), a reading of  $\leq 10$  gallons may be recorded as zero.

PLACEKEEP/INITIALS

4.3.9

IF this is Day 7, 00:15 reading,  
THEN RECORD time FQRSH-61-112 (Point 3), FLOOR  
SUMP, integrator was reset  
AND time FQRSH-61-112 (Point 4), EQUIP SUMP, integrator  
was reset in next week's ST-6-107-596-1 on Attachment 2,  
Table 2, for Day 1 (Previous 00:15 reading Time Reset).

**NOTE**

Section 4.4 should be performed several hours after Section 4.2 in order to ensure that 8-hour surveillance frequency of T.S. 4.4.3.2.1.b will be satisfied even if next shift turnover is unexpectedly delayed.

4.4

**SECOND CHECK OF TECH SPEC FLOW INDICATION**

4.4.1

IF FI-61-115, FLOOR, FL,  
AND FI-61-135, EQUIP, FL, are OPERABLE,  
THEN GO TO step 4.4.5.

4.4.2

IF FI-61-115, FLOOR, FL, is INOPERABLE,  
THEN PERFORM the following:

1.

IF FQRSH-61-112 (Point 3), FLOOR SUMP, reading is  
less than 400 gallons  
AND FI-61-135, EQUIP, FL, reading is less than or equal  
to 15 gpm,  
THEN ENTER SAT  
AND time on Attachment 2, Table 1.  
Otherwise ENTER UNSAT  
AND time on Attachment 2, Table 1,  
AND NOTIFY SSV.

PLACEKEEP/INITIALS

4.4.3

**IF** FI-61-135, EQUIP, FL, is INOPERABLE,  
**THEN PERFORM** the following:

1.

**IF** FQRSH-61-112 (Point 4), EQUIP SUMP, reading is  
less than 4800 gallons

**AND** FI-61-115, FLOOR, FL, reading is less than or  
equal to 5 gpm

**THEN ENTER SAT**

**AND** time on Attachment 2, Table 1.

**Otherwise ENTER UNSAT**

**AND** time on Attachment 2, Table 1

**AND NOTIFY** SSV.

N/A

4.4.4

**IF** FI-61-115, FLOOR, FL,  
**AND** FI-61-135, EQUIP, FL, are INOPERABLE  
**THEN PERFORM** the following:

1.

**IF** FQRSH-61-112 (Point 3), FLOOR SUMP, reading is  
less than 400 gallons

**AND** FQRSH-61-112 (Point 4), EQUIP SUMP, reading is  
less than 4800 gallons

**THEN ENTER SAT**

**AND** time on Attachment 2, Table 1.

**Otherwise ENTER UNSAT**

**AND** time on Attachment 2, Table 1,

**AND NOTIFY** SSV.

N/A

4.4.5

**VERIFY** the following parameters at 00C624 for  
points that are OPERABLE:

✓

FI-61-115, FLOOR, FL, is less than or equal to 5 gpm

✓

✓

FI-61-135, EQUIP, FL, is less than or equal to 15 gpm

✓

1.

**IF** above parameters are acceptable,

**THEN ENTER SAT**

**AND** time on Attachment 2, Table 1.

**Otherwise ENTER UNSAT**

**AND** time on Attachment 2, Table 1,

**AND NOTIFY** SSV.

✓

PLACEKEEP/INITIALS

4.4.6

**ENTER** initials on Attachment 2 for current day/shift in the following:

- ☒ Table 1
- ☒ Table 2
- ☒ Table 3

4.4.70

**ENTER** initials on Attachment 3 for day and performance that all steps were completed for that day and shift.

4.4.8

**IF** this is day seven,  
**THEN NOTIFY** SSV  
**AND** PRO/RO of the following:

- Test completion
- Test results

4.4.9

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

**5.0 ACCEPTANCE CRITERIA**

- 5.1 Tech Spec Surveillance requirements listed in this procedure have been completed satisfactorily  
**AND** referenced Tech Spec leakage limits were **not** exceeded.

**6.0 REFERENCES**

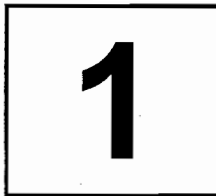
- 6.1 UFSAR Section 5.2.5  
6.2 UFSAR Section 9.3.2  
6.3 UFSAR Section 9.3.3  
6.40 Technical Evaluation 1120157-03

**7.0 TECHNICAL SPECIFICATIONS**

- 7.1 4.4.3.2.1.b  
7.2 3.4.3.2

**8.0 INTERFACING PROCEDURES**

NONE



**ATTACHMENT 1**

**Page 1 of 1**

**ADDITIONAL ACTION/TEST COMMENTS**

Page \_\_\_\_ of \_\_\_\_

(additional sheets may be added)

Comment #	Instrument	Page #	* INOP 'Y/N'	* LCO #	* eSOMS LCOTR #	Cause & IR/AR #

\* SRO to determine INOP, LCO #, and LCO TR #.

# 1

Date of first entry on this sheet \_\_\_/\_\_\_/\_\_\_

ATTACHMENT 2  
Page 1 of 8

DAY 1 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	0.9	0.9	0.9	0.9
FI-61-135 (EQUIP, FL)	1.4	1.4	1.4	N/A
Total Leakrate (gpm) (step 4.2.4)	2.3	2.3	2.3	N/A
Time of Readings	0815	1615	0015	0015
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT	SAT	
INITIALS	✓	✓	X	
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT	SAT	SAT	
Time of Second Check	1215	2015	0415	
INITIALS	✓	X	X	

TABLE 2 (steps 4.3.2 thru 4.3.5)										
	Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
		Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3), FLOOR SUMP	0015	0815	432	480	1615	434	480	0015	434	480
FQRSH-61-112 (Point 4), EQUIP SUMP	0015	0815	669	480	1615	669	480	0015	667	480

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))	0.9	0.9	0.9
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))	1.39	1.39	1.39
Total Average Leakrate (gpm)	2.29	2.29	2.29
SAT OR UNSAT (step 4.3.8)	SAT	SAT	SAT

\* From Day 7 of last week's ST-6-107-596-1.

# 1

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

ATTACHMENT 2  
Page 2 of 8

DAY 2 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	0.9	0.9	0.9	0.9
FI-61-135 (EQUIP, FL)	1.4	1.4	1.4	N/A
Total Leakrate (gpm) (step 4.2.4)	2.3	2.3	1.3	N/A
Time of Readings	0815	1615	0015	0015
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT	SAT	
INITIALS	✓	✓	X	
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT	SAT	SAT	
Time of Second Check	1215	2015	0415	
INITIALS	✓	X	X	

TABLE 2 (steps 4.3.2 thru 4.3.5)										
	Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
		Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3), FLOOR SUMP	0015	0815	431	480	1615	432	480	0015	432	480
FQRSH-61-112 (Point 4), EQUIP SUMP	0015	0815	669	480	1615	668	480	0015	667	480

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))	0.9	0.9	0.9
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))	1.39	1.39	1.39
Total Average Leakrate (gpm)	2.29	2.29	2.29
SAT OR UNSAT (step 4.3.8)	SAT	SAT	SAT

\* From yesterday's Table in this procedure.



Date of first entry on this sheet \_\_\_/\_\_\_/\_\_\_

ATTACHMENT 2  
Page 3 of 8

## DAY 3 - SURVEILLANCE LOG

TABLE 1  
(Sections 4.2 AND 4.4)

	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	0.9	0.9	0.9	0.9
FI-61-135 (EQUIP, FL)	1.4	1.4	1.4	N/A
Total Leakrate (gpm) (step 4.2.4)	2.3	2.3	2.3	N/A
Time of Readings	0815	1615	0015	0015
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT	SAT	
INITIALS	✓	✓	X	
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT	SAT	SAT	
Time of Second Check	1215	2015	0415	
INITIALS	✓	X	X	

TABLE 2  
(steps 4.3.2 thru 4.3.5)

	Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
		Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3), FLOOR SUMP	0015	0815	433	480	1615	433	480	0015	432	480
FQRSH-61-112 (Point 4), EQUIP SUMP	0015	0815	668	480	1615	667	480	0015	669	480

TABLE 3  
(steps 4.3.6 thru 4.3.8)

	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))	0.9	0.9	0.9
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))	1.39	1.39	1.39
Total Average Leakrate (gpm)	2.29	2.29	2.29
SAT OR UNSAT (step 4.3.8)	SAT	SAT	SAT

\* From yesterday's Table in this procedure.

# 1

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

ATTACHMENT 2  
Page 4 of 8

DAY 4 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	0.9	0.9	0.9	0.9
FI-61-135 (EQUIP, FL)	1.4	1.4	1.4	N/A
Total Leakrate (gpm) (step 4.2.4)	2.3	2.3	2.3	N/A
Time of Readings	0815	1615	0415	0015
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT	SAT	
INITIALS	✓	✓	X	
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT	SAT	SAT	
Time of Second Check	1215	2015	0415	
INITIALS	✓	X	X	

TABLE 2 (steps 4.3.2 thru 4.3.5)										
	Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
		Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3), FLOOR SUMP	0015	0815	432	480	1615	433	480	0015	432	480
FQRSH-61-112 (Point 4), EQUIP SUMP	0015	0815	668	480	1615	669	480	0015	667	480

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))	0.9	0.9	0.9
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))	1.39	1.39	1.39
Total Average Leakrate (gpm)	2.29	2.29	2.29
SAT OR UNSAT (step 4.3.8)	SAT	SAT	SAT

\* From yesterday's Table in this procedure.

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

## ATTACHMENT 2

Page 5 of 8

## DAY 5 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	3.9	0.9	0.9	0.9
FI-61-135 (EQUIP, FL)	1.4	1.4	1.4	N/A
Total Leakrate (gpm) (step 4.2.4)	5.3	2.3	2.3	N/A
Time of Readings	0815	1615	0015	0015
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT	SAT	
INITIALS	VI	SC	✓	
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT	SAT	SAT	
Time of Second Check	1215	2015	0415	
INITIALS	VI	✓	✓	

TABLE 2 (steps 4.3.2 thru 4.3.5)										
	Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
		Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3), FLOOR SUMP	0015	0815	1865	480	1615	433	480	0015	432	480
FQRSH-61-112 (Point 4), EQUIP SUMP	0015	0815	666	480	1615	668	480	0015	669	480

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))	3.89	0.9	0.9
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))	1.39	1.39	1.39
Total Average Leakrate (gpm)	5.28	2.29	2.29
SAT OR UNSAT (step 4.3.8)	SAT	SAT	SAT

\* From yesterday's Table in this procedure.

# 1

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

ATTACHMENT 2  
Page 6 of 8

DAY 6 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)	0.9	0.9		
FI-61-135 (EQUIP, FL)	1.4	1.4		N/A
Total Leakrate (gpm) (step 4.2.4)	2.3	2.3		N/A
Time of Readings	0815	1615		
SAT OR UNSAT (step 4.2.5.1)	SAT	SAT		
INITIALS	Λ	Λ		
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)	SAT			
Time of Second Check	1215			
INITIALS	Λ			

TABLE 2 (steps 4.3.2 thru 4.3.5)									
Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61-112 (Point 3) FLOOR SUMP									
FQRSH-61-112 (Point 4), EQUIP SUMP									

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))			
EQUIP SUMP AVERAGE LEAKRATE (FQIS-61-112 (Point 4))			
Total Average Leakrate (gpm)			
SAT OR UNSAT (step 4.3.8)			

\* From yesterday's Table in this procedure.

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

## ATTACHMENT 2

Page 7 of 8

DAY 7 - SURVEILLANCE LOG

TABLE 1 (Sections 4.2 AND 4.4)				
	08:15 Reading	16:15 Reading	00:15 Reading	Previous 00:15* Reading
FI-61-115 (FLOOR, FL)			**	
FI-61-135 (EQUIP, FL)				N/A
Total Leakrate (gpm) (step 4.2.4)				N/A
Time of Readings			**	
SAT OR UNSAT (step 4.2.5.1)				
INITIALS				
Step 4.2.6.1.b Completed INITIALS	N/A	N/A		
Second Check of FLOOR, FL AND EQUIP, FL (Section 4.4)				
Time of Second Check				
INITIALS				

\*

From yesterday's Table in this procedure.

Date of first entry on this sheet \_\_\_\_/\_\_\_\_/\_\_\_\_

## ATTACHMENT 2

Page 8 of 8

## TABLES 2 &amp; 3

TABLE 2 (steps 4.3.2 thru 4.3.5)									
Previous 00:15 Reading Time Reset*	08:15 Reading			16:15 Reading			00:15 Reading		
	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset	Time	Reading (gal)	Min. since last Reset
FQRSH-61 -112 (Point 3), FLOOR SUMP							***		
FQRSH-61 -112 (Point 4), EQUIP SUMP							***		

TABLE 3 (steps 4.3.6 thru 4.3.8)			
	08:15 Reading	16:15 Reading	00:15 Reading
FLOOR SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 3))			
EQUIP SUMP AVERAGE LEAKRATE (FQRSH-61-112 (Point 4))			
Total Average Leakrate (gpm)			
SAT OR UNSAT (step 4.3.8)			

\* From yesterday's Table in this procedure.

\*\*\* Also record this value in Day 1 Attachment 2, Table 2, of next week's ST-6-107-596-1.



# **Limerick Generating Station**

## **Job Performance Measure**

**Determine Blocking Required per OP-MA-109-101 "Clearance and Tagging"**

RO JPM Designation: A-2

Revision Number: 0

Date: 04/12/12

<b>Developed By:</b>	<u>DeMarshall</u>	<u>04/12/12</u>
	<b>Author</b>	<b>Date</b>
<b>Review By:</b>	<u>Lally</u>	<u>04/18/12</u>
	<b>Examiner</b>	<b>Date</b>
<b>Approved By:</b>	<u>Caruso</u>	<u>04/25/12</u>
	<b>Chief Examiner</b>	<b>Date</b>



## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

**Rev 0:** JPM split into separate RO and SRO actions. RO to provide proposed blocking points, SRO to review and correct proposed blocking points.

## **JPM Setup Instructions:**

1. Provide OP-MA-109-101
2. Provide prints E-15, E-57 (sheet 1), and M-52 (sheets 1 and 2)
3. Provide blank Proposed Blocking Sheet

## **TASK STANDARD:**

Provide a list of proposed blocking points for 1C Core Spray Pump in accordance with OP-MA-109-101, that identifies the components specified in the attached Proposed Blocking Key.

## **TASK CONDITIONS:**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **RO INITIATING CUE:**

Using the appropriate drawings, provide a list of proposed blocking points that meet the requirements of OP-MA-109-101. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type

## **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

JPM Title: Determine Blocking Required per OP-MA-109-101 "Clearance and Tagging"

JPM Number: A-2

Revision Number: 0

K/A Number and Importance: 2.2.41 RO 3.5 SRO 3.9

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 20 min. Actual Time Used: \_\_\_\_\_minutes

**References:**

1. NUREG 1123 Rev. 2, Supp. 1
2. OP-MA-109-101 Rev. 13
3. E-15
4. E-57, sheet 1
5. M-52, sheets 1 and 2

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: \_\_\_\_\_(Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Description: This JPM has the operator determine blocking points for the 1C Core Spray Pump to support impeller replacement. The normal means of clearance development, PIMS, is unavailable. The applicant will provide proposed blocking points in accordance with OP-MA-109-101.

NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b></p> <ul style="list-style-type: none"> <li>Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> <li>♦ Prints: M-52 sheets 1 and 2, E-15, E-57 sh. 1</li> <li>♦ OP-MA-109-101</li> <li>♦ Attached Proposed Blocking Sheet (blank)</li> </ul> </li> </ul> <p><b><u>EVALUATOR NOTE:</u></b> To begin this JPM, provide the applicant with the Task Conditions, Initiating Cue Sheet and Proposed Blocking Sheet.</p> <p>Reviews the scope of work planned for 1C Core Spray Pump.</p> <p>OP-MA-109-101 is an Information Use only procedure. Applicant should reference clearance Section 5, "Clearance Tag Standards," and Section 7, "Clearance Development Standards," for general equipment blocking rules to develop proposed blocking list. Applicant may also reference Attachment 6, "Clearance Writer and Approver Checklist."</p>	<p>Determines that pump and motor need to be blocked <u>AND</u> should isolate all pump flowpaths to allow for impeller replacement work.</p> <p>Locates and uses referenced drawings to determine blocking points; Uses M-52 Sheets 1 and 2, E-15, and E-57 Sheet 1 to develop proposed blocking list.</p>			
<p>★Develops list of proposed blocking points based upon print review and OP-MA-109-101 guidance</p> <p><b><u>EVALUATOR NOTE:</u></b> Applicant may at anytime reference OP-MA-109-101 to ensure compliance and follow appropriate check sheets.</p>	<p>Proposed blocking list generated matches attached Proposed Blocking Key; <u>AND</u> all critical steps met.</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Provides completed list of proposed blocking points to the Unit Supervisor to be forwarded to WCC.</p> <p><b><u>EVALUATOR CUE:</u></b>  Role play the Unit Supervisor and acknowledge receipt of the proposed blocking points.  Inform applicant that the list will be forwarded to the WCC.</p>	Unit Supervisor is given the list of proposed blocking points.			
<p><b><u>EVALUATOR CUE:</u></b>  Once applicant turns in list of proposed blocking points, the JPM is complete.</p> <p><b>DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.</b></p>				

JPM Stop Time \_\_\_\_\_

# NOTE

Do **NOT** give the next  
page (Key)  
to the Applicant!

Applicant is given Cue sheet and Blank Proposed Blocking  
sheet

# PROPOSED BLOCKING KEY

## DO NOT GIVE TO CANDIDATE

NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

Component	Position	Tag Type
1. ★1C Core Spray Pump 1CP206 Handswitch HS-052-136C	★STOP	★INFO tag
2. ★1C Core Spray Pump Suction Valve HV-052-1F001C Handswitch HS-052-101C	★CLOSE	★INFO tag
3. ★1C Core Spray Pump 1CP206 4kV Breaker 152-11706	★OPEN, RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
4. ★1C Core Spray Pump Suction Valve HV-052-1F001C 440V Breaker 152-21709	★OPEN, RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
5. ★1C Core Spray Pump Discharge Isolation Valve 052-1F020C	★CLOSED	★RED tag
6. ★1C Core Spray Pump Min Flow Valve Isolation Valve 52-1F010C	★CLOSED	★RED tag
7. ★1C Core Spray Pump Discharge Drain Valve 52-1029C	★OPEN	INFO tag
8. ★1C Core Spray Pump Discharge Drain Valve 52-1030C	★OPEN	INFO tag
9. ★1C Core Spray Pump Discharge Drain Valve 52-1001C	★OPEN	INFO tag
10. ★1C Core Spray Pump Discharge Drain Valve 52-1002C	★OPEN	INFO tag
11. ★1C Core Spray Pump Discharge Vent Valve 52-1005C	★OPEN	INFO tag
12. ★1C Core Spray Pump Discharge Vent Valve 52-1006C	★OPEN	INFO tag
13. ★1C Core Spray Pump Suction Drain Valve 52-1028C	★OPEN	INFO tag
14. ★1C Core Spray Pump Suction Vent Valve 52-1F034C	★OPEN	INFO tag
15. ★1C Core Spray Pump Seal Vent Valve 52-1F016C	★OPEN	INFO tag
16. ★1C Core Spray Pump Seal Vent Valve 52-1071C	★OPEN	INFO tag
17. ★1C Core Spray Pump Suction From CST Valve 1F002C	★CLOSED	★RED tag
18. ★1C Core Spray Pump Safeguard Piping Fill Isolation Valve 52-1047A	★CLOSED	★RED tag



## **TASK CONDITIONS**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **INITIATING CUE**

Using the appropriate drawings, provide a list of proposed blocking points that meet the requirements of OP-MA-109-101. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type



## **TASK CONDITIONS**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **INITIATING CUE**

Using the appropriate drawings, provide a list of proposed blocking points that meet the requirements of OP-MA-109-101. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type



# **Limerick Generating Station**

## **Job Performance Measure**

**Review and Verify Blocking Required per OP-MA-109-101 "Clearance and Tagging"**

SRO JPM Designation: A-2

Revision Number: 0

Date: 04/12/12

Developed By:	<u>DeMarshall</u>	<u>04/12/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>04/18/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/25/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

**Rev 0:** JPM split into separate RO and SRO actions. RO to provide proposed blocking points, SRO to review and correct proposed blocking points.

## **JPM Setup Instructions:**

1. Provide OP-MA-109-101
2. Provide prints E-15, E-57 (sheet 1), and M-52 (sheets 1 and 2)
3. Provide blank Proposed Blocking Sheet

## **TASK STANDARD:**

Review the list of proposed blocking points for 1C Core Spray Pump; identify and note discrepancies in accordance with attached key; determine applicable Tech Spec.

## **TASK CONDITIONS:**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **SRO INITIATING CUE:**

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking points to ensure they meet the requirements of OP-MA-109-101 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Document discrepancies found, if any, on this sheet and determine required Tech Spec ACTION(s), if any.

## **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title:** Determine Blocking Required per OP-MA-109-101, "Clearance and Tagging"

**JPM Number:** A-2

**Revision Number:** 0

**K/A Number and Importance:** 2.2.41      RO 3.5      SRO 3.9

**Suggested Testing Environment:** Classroom

**Actual Testing Environment:** Classroom

**Testing Method:** Perform in Classroom

**Alternate Path:** No

**Time Critical:** No

**Estimated Time to Complete:** 20 min.      **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. NUREG 1123 Rev. 2, Supp. 1
2. OP-MA-109-101 Rev.13
3. E-15, Rev. 29
4. E-57, sheet 1, Rev. 41
5. M-52, sheet 1, Rev. 50
6. M-52, sheet 2, Rev. 46

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?      ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_      **Date:** \_\_\_\_\_



Description: This JPM has the operator determine blocking points for the 1C Core Spray Pump to support impeller replacement. The normal means of clearance development, PIMS, is unavailable. The applicant will review proposed blocking points in accordance with OP-MA-109-101.

NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b></p> <ul style="list-style-type: none"> <li>• Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> <li>◆ Prints: M-52 sheets 1 and 2, E-15, E-57 sh. 1</li> <li>◆ OP-MA-109-101</li> <li>◆ Attached Proposed Blocking Sheet (filled out)</li> </ul> </li> </ul> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>To begin this JPM, provide the applicant with the Task Conditions, Initiating Cue Sheet and Proposed Blocking Sheet.</p> <p>Reviews the scope of work planned for 1C Core Spray Pump.</p> <p>OP-MA-109-101 is an Information Use only procedure. Applicant should reference clearance Section 5, "Clearance Tag Standards," Section 7, "Clearance Development Standards," and Attachment 10, "Clearance Challenge," for general equipment blocking rules and verification of correct blocking points. Applicant may also reference Attachment 6, "Clearance Writer and Approver Checklist."</p>	<p>Determines that pump and motor need to be blocked <u>AND</u> should isolate all pump flowpaths to allow for impeller replacement work</p>			
<p>Reviews list of proposed blocking points against referenced drawings per OP-MA-109-101 guidance</p> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>Applicant may at anytime reference OP-MA-109-101 to ensure compliance and follow appropriate check sheets.</p>	<p>Uses M-52 (Sheets 1 and 2), E-15, and E-57 Sheet 1, to review proposed blocking points</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
★Using E-15, applicant recognizes that the requested 4kV breaker listed (152-11705) for 1C Core Spray Pump 1CP206, is incorrect	Applicant identifies 152-11706 as the correct 4kV breaker for 1C Core Spray Pump <u>AND</u> revises the tagging clearance			
★Using M-52, Sheet 2, applicant recognizes that 1C Core Spray Pump Safeguard Piping Fill Isolation Valve 52-1047A has been omitted from the tagging clearance	Applicant identifies that 1C Core Spray Pump Safeguard Piping Fill Isolation Valve 52-1047A is a required blocking point <u>AND</u> revises the tagging clearance to include the valve			
Provides completed list of corrected blocking points to the Unit Supervisor to be forwarded to WCC.  <b><u>EVALUATOR CUE:</u></b> Role play the Unit Supervisor and acknowledge receipt of the corrected blocking sheet. Inform applicant that the list will be forwarded to the WCC.	Unit Supervisor is given the corrected blocking sheet.			
Determines that Tech Spec 3.5.1, "ECCS - Operating," is applicable	Determines that ACTION 3.5.1.a.1 is required:  "With one CSS subsystem inoperable, provided that at least two LPCI subsystems are OPERABLE, restore the inoperable CSS subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours."			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR CUE:</u></b> Once applicant turns in list of corrected blocking points and determines TS applicability, the JPM is complete.</p> <p><b>DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.</b></p>				

JPM Stop Time \_\_\_\_\_

# NOTE

Do **NOT** give the next  
page (Key)  
to the Applicant!

Applicant is given Cue sheet and Proposed Blocking sheet

# PROPOSED BLOCKING KEY

## DO NOT GIVE TO CANDIDATE

NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

Component	Position	Tag Type
1. ★1C Core Spray Pump 1CP206 Handswitch HS-052-136C	★STOP	★INFO tag
2. ★1C Core Spray Pump Suction Valve HV-052-1F001C Handswitch HS-052-101C	★CLOSE	★INFO tag
3. ★1C Core Spray Pump 1CP206 4kV Breaker 152-11706	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
4. ★1C Core Spray Pump Suction Valve HV-052-1F001C 440V Breaker 152-21709	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
5. ★1C Core Spray Pump Discharge Isolation Valve 052-1F020C	★CLOSED	★RED tag
6. ★1C Core Spray Pump Min Flow Valve Isolation Valve 52-1F010C	★CLOSED	★RED tag
7. ★1C Core Spray Pump Discharge Drain Valve 52-1029C	★OPEN	INFO tag
8. ★1C Core Spray Pump Discharge Drain Valve 52-1030C	★OPEN	INFO tag
9. ★1C Core Spray Pump Discharge Drain Valve 52-1001C	★OPEN	INFO tag
10. ★1C Core Spray Pump Discharge Drain Valve 52-1002C	★OPEN	INFO tag
11. ★1C Core Spray Pump Discharge Vent Valve 52-1005C	★OPEN	INFO tag
12. ★1C Core Spray Pump Discharge Vent Valve 52-1006C	★OPEN	INFO tag
13. ★1C Core Spray Pump Suction Drain Valve 52-1028C	★OPEN	INFO tag
14. ★1C Core Spray Pump Suction Vent Valve 52-1F034C	★OPEN	INFO tag
15. ★1C Core Spray Pump Seal Vent Valve 52-1F016C	★OPEN	INFO tag
16. ★1C Core Spray Pump Seal Vent Valve 52-1071C	★OPEN	INFO tag
17. ★1C Core Spray Pump Suction From CST Valve 1F002C	★CLOSED	★RED tag
18. ★1C Core Spray Pump Safeguard Piping Fill Isolation Valve 52-1047A	★CLOSED	★RED tag

## **TASK CONDITIONS**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **INITIATING CUE**

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking points to ensure they meet the requirements of OP-MA-109-101 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Document discrepancies found, if any, on this sheet and determine required Tech Spec ACTION(s), if any.

# PROPOSED BLOCKING FOR SRO REVIEW

Print References: E-15, E-57 (Sheet 1), M-52 (Sheets 1 & 2)

Component	Position	Tag Type
1. ★1C Core Spray Pump 1CP206 Handswitch HS-052-136C	★STOP	★INFO tag
2. ★1C Core Spray Pump Suction Valve HV-052-1F001C Handswitch HS-052-101C	★CLOSE	★INFO tag
3. ★1C Core Spray Pump 1CP206 4kV Breaker 152-11705	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
4. ★1C Core Spray Pump Suction Valve HV-052-1F001C 440V Breaker 152-21709	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
5. ★1C Core Spray Pump Discharge Isolation Valve 052-1F020C	★CLOSED	★RED tag
6. ★1C Core Spray Pump Min Flow Valve Isolation Valve 52-1F010C	★CLOSED	★RED tag
7. ★1C Core Spray Pump Discharge Drain Valve 52-1029C	★OPEN	INFO tag
8. ★1C Core Spray Pump Discharge Drain Valve 52-1030C	★OPEN	INFO tag
9. ★1C Core Spray Pump Discharge Drain Valve 52-1001C	★OPEN	INFO tag
10. ★1C Core Spray Pump Discharge Drain Valve 52-1002C	★OPEN	INFO tag
11. ★1C Core Spray Pump Discharge Vent Valve 52-1005C	★OPEN	INFO tag
12. ★1C Core Spray Pump Discharge Vent Valve 52-1006C	★OPEN	INFO tag
13. ★1C Core Spray Pump Suction Drain Valve 52-1028C	★OPEN	INFO tag
14. ★1C Core Spray Pump Suction Vent Valve 52-1F034C	★OPEN	INFO tag
15. ★1C Core Spray Pump Seal Vent Valve 52-1F016C	★OPEN	INFO tag
16. ★1C Core Spray Pump Seal Vent Valve 52-1071C	★OPEN	INFO tag
17. ★1C Core Spray Pump Suction From CST Valve 1F002C	★CLOSED	★RED tag



## **TASK CONDITIONS**

Unit 1 is at 100% power.

1C Core Spray Pump has been scheduled for impeller replacement, but due to an oversight, no clearance package was developed

Database problems within PIMS have prevented development of a clearance order by electronic means

## **INITIATING CUE**

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking points to ensure they meet the requirements of OP-MA-109-101 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when PIMS is returned to service. Document discrepancies found, if any, on this sheet and determine required Tech Spec ACTION(s), if any.

# PROPOSED BLOCKING FOR SRO REVIEW

Print References: E-15, E-57 (Sheet 1), M-52 (Sheets 1 & 2)

Component	Position	Tag Type
1. ★1C Core Spray Pump 1CP206 Handswitch HS-052-136C	★STOP	★INFO tag
2. ★1C Core Spray Pump Suction Valve HV-052-1F001C Handswitch HS-052-101C	★CLOSE	★INFO tag
3. ★1C Core Spray Pump 1CP206 4kV Breaker 152-11705	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
4. ★1C Core Spray Pump Suction Valve HV-052-1F001C 440V Breaker 152-21709	★OPEN, ★RACKED OUT, (applicant may also request breaker REMOVED)	★RED tag
5. ★1C Core Spray Pump Discharge Isolation Valve 052-1F020C	★CLOSED	★RED tag
6. ★1C Core Spray Pump Min Flow Valve Isolation Valve 52-1F010C	★CLOSED	★RED tag
7. ★1C Core Spray Pump Discharge Drain Valve 52-1029C	★OPEN	INFO tag
8. ★1C Core Spray Pump Discharge Drain Valve 52-1030C	★OPEN	INFO tag
9. ★1C Core Spray Pump Discharge Drain Valve 52-1001C	★OPEN	INFO tag
10. ★1C Core Spray Pump Discharge Drain Valve 52-1002C	★OPEN	INFO tag
11. ★1C Core Spray Pump Discharge Vent Valve 52-1005C	★OPEN	INFO tag
12. ★1C Core Spray Pump Discharge Vent Valve 52-1006C	★OPEN	INFO tag
13. ★1C Core Spray Pump Suction Drain Valve 52-1028C	★OPEN	INFO tag
14. ★1C Core Spray Pump Suction Vent Valve 52-1F034C	★OPEN	INFO tag
15. ★1C Core Spray Pump Seal Vent Valve 52-1F016C	★OPEN	INFO tag
16. ★1C Core Spray Pump Seal Vent Valve 52-1071C	★OPEN	INFO tag
17. ★1C Core Spray Pump Suction From CST Valve 1F002C	★CLOSED	★RED tag

## **Limerick Generating Station**

### **Job Performance Measure**

**Review and Approve Inventory Release from Equipment Drain Sample Tank  
to Cooling Tower Blowdown Line**

SRO JPM Designation: A-3

Revision Number: 0

Date: 04/16/12

Developed By: Patel 04/16/12  
Author Date

Review By: Lally 04/19/12  
Examiner Date

Approved By: Caruso 04/19/12  
Chief Examiner Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

**Rev 0**

### **JPM Setup Instructions:**

1. Provide marked up copy of ST-5-061-570-0, "Radwaste Discharge Permit"
2. Provide marked up copy of S62.1.E, "Inventory Release From 0A(B)T303 Equipment"
3. Provide marked up copy of ST-5-061-575-0, "Liquid Radwaste Effluent INOP Monitor"

### **TASK STANDARD:**

Review data for the equipment drain sample tank 0AT303 release in-progress and determine that tank released needs to be stopped due to:

- ST-5-061-575-0 not being marked as SAT with appropriate Chemistry Supervision Signature, as required.
- Minimum recirculation tank times were not satisfied for the EDST A
- Cooling Tower Blowdown Flow rate as indicated on FI-63-055.

### **TASK CONDITIONS:**

1. Radwaste Radiation Monitor [XXXXX –Please provide designation} is INOPERABLE.
2. FI-063-055, Cooling Tower Blowdown Flow, is in service, reading 4,800 gpm.
3. The RWE0 has completed ST-5-061-570-0, Radwaste Discharge Permit up to start of the release activity step 4.6.3.
4. Chemistry has completed ST-5-061-575-0, "Liquid Radwaste Effluent INOP Monitor" due to the Radwaste Radiation Monitor being INOPERABLE.
5. The operator has completed SS62.1.E, "Inventory Release from 0A(B)T303 Equipment Drain Sample Tanks to Cooling Tower Blowdown Line" up to the step 4.3.8.
6. No Hold Pond release is in progress.

### **INITIATING CUE:**

1. You have just taken the shift as the CRS.
2. The prior crew has been relieved and is undergoing post-event FFD testing based on a human performance issue.
3. Equipment Drain Sample Tank "A" discharge to cooling tower blowdown line is in progress
4. The shift manager has directed you to review the documentation for the on-going release to ensure all requirements have been satisfied.

When complete, document any discrepancies, if any, on the JPM cue sheet below.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Review and Approve Inventory Release from Equipment Drain Sample Tank to Cooling Tower Blowdown Line**

**JPM Number: A-3**

**Revision Number: 0**

**K/A Number and Importance:**    2.3.11      RO 3.8      SRO 4.3

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method:** Perform in Classroom

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete:**    25 min.    **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2 Supp. 1
2. ST-5-061-570-0, Rev. 46
3. ST-5-061-575-0, Rev. 15
4. S62.1.E, Rev. 26

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the operator review data for the equipment drain sample tank 0AT303 release in-progress and determine that tank released needs to be stopped due to:

- ST-5-061-575-0 not being marked as SAT with appropriate Chemistry Supervision Signature, as required.
- Minimum recirculation tank times were not satisfied for the EDST A
- Cooling Tower Blowdown Flow rate as indicated on FI-63-055

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>EVALUATOR NOTE:</u></b></p> <p>This JPM can be performed in the simulator, classroom or other similar environment</p> <ul style="list-style-type: none"> <li>• Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> <li>♦ Marked up copy of ST-5-061-570-0, "Radwaste Discharge Permit"</li> <li>♦ Marked up copy of S62.1.E, "Inventory Release From 0A(B)T303 Equipment"</li> <li>♦ Marked up copy of ST-5-061-575-0, "Liquid Radwaste Effluent INOP Monitor"</li> </ul> </li> </ul> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>To begin this JPM provide the applicant the task conditions, initiating cue, S62.1.E, ST-5-061-570-0, and ST-5-061-575-0</p>	<p>Applicant reviews S62.1.E and the JPM cue sheet</p>			



ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>1.</p> <p>★ Applicant determines that due to Radwaste Radiation Monitor [XXXXX] being INOPERABLE, ST-5-061-575-0 needs to be completed SAT per Radwaste Discharge Permit and S62.1.E. However, ST-5-061-575-0 is not marked appropriately as SAT and the required Chemistry Supervision Signature is missing.</p> <p>Therefore, applicant determines that ST-5-061-575-0 is not completed SAT.</p>	<p>Identifies that ST-5-061-575-0 is not marked SAT with required Chemistry Supervision Signature.</p>			
<p>2.</p> <p>★ Applicant also determines that in the ST-5-061-570-0, "Radwaste Discharge Permit" minimum recirculation tank time was not satisfied for the EDST A. The EDST Tank should have been recalculated for 80 min. The actual recirculation time was (10:30 to 11:30, 60 min).</p>	<p>Applicant determines that in the ST-5-061-570-0, "Radwaste Discharge Permit" minimum recirculation tank time was not satisfied for the EDST A. (Tank not recirculated for 80 mins, 10:30 to 11:30 = 60 min)</p>			
<p>3.</p> <p>★ Applicant also determines that in the ST-5-061-570-0, "Radwaste Discharge Permit" cooling tower blowdown flow as indicated on FI-63-055 is not within the limits of S62.1E of between 5000 gpm to 9,000 gpm. The actual blowdown flow rate is 4,800 gpm.</p>	<p>Applicant also determines that in the ST-5-061-570-0, "Radwaste Discharge Permit" cooling tower blowdown flow as indicated on FI-63-055 is not within the limits of S62.1E of between 5000 gpm to 9,000 gpm. (Actual blowdown flow rate is 4,800 gpm).</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b>4.</b> ★Applicant determines that release needs to be STOPPED.	Applicant determines that release needs to be STOPPED.			
<b><u>EVALUATOR CUE:</u></b> No further actions are required for this JPM				
<b><u>EVALUATOR:</u></b> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

JPM Stop Time \_\_\_\_\_

**TASK CONDITIONS:**

1. Radwaste Radiation Monitor [XXXXX –Please provide designation} is INOPERABLE.
2. FI-063-055, Cooling Tower Blowdown Flow, is in service, reading 4,800 gpm.
3. The RWEO has completed ST-5-061-570-0, Radwaste Discharge Permit up to start of the release activity step 4.6.3.
4. Chemistry has completed ST-5-061-575-0, "Liquid Radwaste Effluent INOP Monitor" due to the Radwaste Radiation Monitor being INOPERABLE.
5. The operator has completed SS62.1.E, "Inventory Release from 0A(B)T303 Equipment Drain Sample Tanks to Cooling Tower Blowdown Line" up to the step 4.3.8.
6. No Hold Pond release is in progress.

**INITIATING CUE:**

1. You have just taken the shift as the CRS.
2. The prior crew has been relieved and is undergoing post-event FFD testing based on a human performance issue.
3. Equipment Drain Sample Tank "A" discharge to cooling tower blowdown line is in progress
4. The shift manager has directed you to review the documentation for the on-going release to ensure all requirements have been satisfied.

When complete, document any discrepancies, if any, on the JPM cue sheet below.

**ANSWER:**

**TASK CONDITIONS:**

1. Radwaste Radiation Monitor [XXXXX –Please provide designation} is INOPERABLE.
2. FI-063-055, Cooling Tower Blowdown Flow, is in service, reading 4,800 gpm.
3. The RWEO has completed ST-5-061-570-0, Radwaste Discharge Permit up to start of the release activity step 4.6.3.
4. Chemistry has completed ST-5-061-575-0, "Liquid Radwaste Effluent INOP Monitor" due to the Radwaste Radiation Monitor being INOPERABLE.
5. The operator has completed SS62.1.E, "Inventory Release from 0A(B)T303 Equipment Drain Sample Tanks to Cooling Tower Blowdown Line" up to the step 4.3.8.
6. No Hold Pond release is in progress.

**INITIATING CUE:**

1. You have just taken the shift as the CRS.
2. The prior crew has been relieved and is undergoing post-event FFD testing based on a human performance issue.
3. Equipment Drain Sample Tank "A" discharge to cooling tower blowdown line is in progress
4. The shift manager has directed you to review the documentation for the on-going release to ensure all requirements have been satisfied.

When complete, document any discrepancies, if any, on the JPM cue sheet below.

**ANSWER:**

**Limerick Generating Station**

**Job Performance Measure  
Emergency Plan Communications  
(TIME CRITICAL)**

RO JPM Designation: A-4

Revision Number: 0

Date: 04/18/12

Developed By:	<u>DeMarshall</u>	<u>04/18/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>04/20/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>04/25/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

Ensure the following are available for applicant use:

- EP-AA-112-F-08, "ERO Position Log"
- EP-AA-112-100-F-05, "Shift Communicator (CR) Checklist"
- EP-MA-114-100, "Mid Atlantic State/Local Notifications"
- Label Book containing "Brief Non-Technical Descriptions" of the EALs

When applicant is ready to start JPM:

- Record Declaration Time (**JPM Start Time minus two minutes**), in Section 3.c of the State/Local Event Notification Form (ENF).
- Sign for "Emergency Director Approval" on Page 1 of the ENF.
- Provide partially completed ENF to applicant.

### TASK STANDARD:

1. Applicant completes ENF by placing the "Brief Non-Technical Description" label for EAL **CG6** in Block 4.b (Page 1).
2. Applicant verbally communicates ENF information to the offsite agencies utilizing backup telephone numbers.

### TASK CONDITIONS:

**See State/Local Event Notification Form**

### INITIATING CUE:

A General Emergency has been declared for Unit 1 due to "Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged," while in Mode 4.

Shift Emergency Director is too busy to complete the State/Local Event Notification Form. Complete the ENF and perform offsite agency notifications within 15 minutes of the Declaration Time recorded in Block 3.c (**JPM Start Time minus two minutes**).

**THIS IS A TIME CRITICAL JPM**

### Information for Evaluator's Use:

UNSAT requires written comments on respective step.

★Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed. The timeclock starts when the candidate acknowledges the initiating cue.



**Operator's Name:** \_\_\_\_\_  
**Job Title:**        ☐ NLO        ☐ RO        ☐ SRO        ☐ STA        ☐ SRO Cert

**JPM Title: Classify a General Emergency and Make Protective Action Recommendations**

**JPM Number: A-4**

**Revision Number: 0**

**K/A Number and Importance:**        2.4.39        RO 3.9

**Suggested Testing Environment: Simulator**

**Actual Testing Environment: Simulator**

**Testing Method:** Perform in Simulator

**Alternate Path: Yes**

**Time Critical: Yes**

**Estimated Time to Complete:**        13 min.        **Actual Time Used:** \_\_\_\_\_ minutes

**References:**

1. NUREG 1123 Rev. 2, Supp. 1
2. Label Book containing "Brief Non-Technical Descriptions" of the EALs
3. EP-AA-112-100-F-05, "Shift Communicator Checklist"
4. EP-MA-114-100, "Mid Atlantic State/Local Notifications"
5. EP-MA-114-100-F-01, "State/Local Event Notification Form"
6. EP-AA-112-F-08, "ERO Position Log"

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes    ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:        ☐ **Satisfactory**        ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_        **Date:** \_\_\_\_\_

Description: This JPM has the applicant complete the State/Local Event Notification Form and perform offsite agency notifications within 15 minutes of the event classification time.

NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

**PERFORMANCE CHECKLIST:**

**JPM Start Time** \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>1. <b><u>EVALUATOR NOTE:</u></b> <b>Remind Simulator Booth Operator NOT to answer the Limerick CODE “841” Notification call.</b></p> <p><b><u>EVALUATOR CUE:</u></b> Provide applicant with initiating Cue Sheet.</p> <p>When applicant is ready to start JPM:</p> <ul style="list-style-type: none"><li>• Record Declaration Time (<b>JPM start time minus two minutes</b>), in Block 3.c of the State/Local Event Notification Form (ENF).</li><li>• Sign for “Emergency Director Approval” on Page 1 of the ENF.</li><li>• Provide partially completed ENF to applicant.</li></ul> <p><b>Record DECLARATION TIME (ENF Block 3.c):</b> _____</p>	<p>Applicant reviews initial conditions and initiating cues.</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★2. Determines that ENF Block 4.b is incomplete, obtains "Brief Non-Technical Description" Label Book, and applies the label for EAL <b>CG6</b>, to Block 4.b on Page 1.</p>	<p>Completes the ENF by applying the "Brief Non-Technical Description" label for EAL <b>CG6</b> to Block 4.b.</p> <p><b>CG6 Brief Non-Technical Description:</b></p> <p>"While in cold shutdown, plant operators have indications that a large amount of water has leaked from the reactor coolant system which has affected the ability to cool reactor fuel. Possible protective actions for the general public may be indicated at this level."</p> <p><b>EVALUATOR NOTE:</b></p> <p>Pre-printed labels containing "Brief Non-Technical Descriptions" of the EALs are located in a Label Book maintained in the simulator.</p>			
<p>3. Obtains EP-AA-112-100-F-05, "Shift Communicator (CR) Checklist"</p>	<p>Performs Initial/Ongoing Actions in accordance with EP-AA-112-100-F-05</p>			
<p>4. (EP-AA-112-100-F-05, Step 1.5) Initiates and maintains a position log using EP-AA-112-F-08, "ERO Position Log."</p>	<p>Documents significant actions performed using EP-AA-112-F-08.</p> <p><b>EP-AA-112-F-08 Location:</b> (EP-AA-112-100-F-05, Tab 3)</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>5. (EP-AA-112-100-F-05, Step 2.1)</p> <p>Performs State/Local notifications in accordance with EP-MA-114-100, "Mid Atlantic State/Local Notifications": (EP-MA-114-100, Step 4.2.3)</p> <p>Within 15 minutes of Event declaration, complete initial Roll Call of agencies listed on ENF by dialing Limerick CODE "841" using dedicated EP phone line <i>(uses NARS network to simultaneously connect the listed agencies in a conference call for transmittal of ENF information)</i></p> <p><b><u>EVALUATOR NOTE:</u></b></p> <p><b>NARS</b> stands for "Nuclear Accident Reporting System"</p> <p><b>Booth Operator will simulate a NARS network failure by NOT answering the Limerick CODE "841" Notification call.</b></p>	<p>Dials Limerick CODE 841 to conference State/Local agencies listed in the ENF.</p> <p><b><u>EP-MA-114-100 Location:</u></b> (EP-AA-112-100-F-05, Tab 4)</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★6. (EP-MA-114-100, Step 4.2.3.1) Recognizes a failure of the NARS network and initiates agency contact using the alternate telephone numbers for each agency listed on the ENF, starting with the Lead Agency (PEMA).</p> <p><b><u>EVALUATOR NOTE:</u></b> When the applicant dials PEMA's number, Booth Operator will role play as John Doe from that agency.</p> <p><b>Record Time Critical NOTIFICATION TIME:</b></p> <p>_____</p> <p><b>Contact with PEMA must be made within 15 minutes of the DECLARATION TIME recorded in Step 1 above.</b></p>	<p>Uses the following backup numbers listed in the ENF to initiate State/Local agency contact, starting with PEMA:</p> <p><b>PEMA:</b></p> <ul style="list-style-type: none"> <li>• EXT. 116 <u>or</u></li> <li>• 9-1-800-424-7362 <u>or</u></li> <li>• 9-1-717-651-2001</li> </ul> <p><b>Montgomery County:</b></p> <ul style="list-style-type: none"> <li>• EXT. 117 <u>or</u></li> <li>• 9-1-610-631-6541</li> </ul> <p><b>Chester County:</b></p> <ul style="list-style-type: none"> <li>• EXT. 118 <u>or</u></li> <li>• 9-1-610-344-5100</li> </ul> <p><b>Berks County:</b></p> <ul style="list-style-type: none"> <li>• EXT. 119 <u>or</u></li> <li>• 9-1-610-655-4931</li> </ul>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★7. (EP-MA-114-100, Step 4.2.6)</p> <p>Reads each Block from the approved ENF:</p> <ul style="list-style-type: none"> <li>• Uses the Phonetic Alphabet for clarity</li> <li>• Speaks clearly and slowly</li> </ul> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>Once the applicant has successfully communicated the event to the first offsite agency (PEMA), <u>AND</u> dialed the correct extension number for the next agency (Montgomery County), the JPM is complete.</p>	<p>When PEMA answers the phone, applicant reads the ENF Block-by-Block, providing the following information (<b>See Key</b>):</p> <ul style="list-style-type: none"> <li>• "This is a DRILL."</li> <li>• His/Her Name.</li> <li>• Limerick Generating Station</li> <li>• Phone Number</li> <li>• Current Time (in 24 hr clock)</li> <li>• Unit 1 affected</li> <li>• Initial Declaration</li> <li>• Declaration Time/Date</li> <li>• Event Classification (CG6)</li> <li>• Brief Non-Technical Description</li> <li>• Radiological Release status</li> <li>• Meteorological Information</li> <li>• PAR Information</li> </ul>			
<p><b><u>EVALUATOR CUE:</u></b></p> <p>JPM is complete.</p>				

JPM Stop Time \_\_\_\_\_

# NOTE

**Do not give the next 3 pages (Exam Key) to the student!**



## **CUE SHEET:**

### **TASK CONDITIONS**

**See State/Local Event Notification Form**

### **INITIATING CUE**

A General Emergency has been declared for Unit 1 due to "Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged," while in Mode 4.

Shift Emergency Director is too busy to complete the State/Local Event Notification Form. Complete the ENF and perform offsite agency notifications within 15 minutes of the Declaration Time recorded in Block 3.c (**JPM Start Time minus two minutes**).

**THIS IS A TIME CRITICAL JPM**

## **CUE SHEET:**

### **TASK CONDITIONS**

**See State/Local Event Notification Form**

### **INITIATING CUE**

A General Emergency has been declared for Unit 1 due to "Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged," while in Mode 4.

Shift Emergency Director is too busy to complete the State/Local Event Notification Form. Complete the ENF and perform offsite agency notifications within 15 minutes of the Declaration Time recorded in Block 3.c (**JPM Start Time minus two minutes**).

**THIS IS A TIME CRITICAL JPM**

**Limerick Generating Station**

**Job Performance Measure**

**Classify a General Emergency and Make Protective Action Recommendations  
(TIME CRITICAL)**

SRO JPM Designation: A-4

Revision Number: 0

Date: 04/16/12

Developed By:	<u>DeMarshall</u>	<u>04/16/12</u>
	Author	Date

Review By:	<u>Lally</u>	<u>04/18/12</u>
	Examiner	Date

Approved By:	<u>Caruso</u>	<u>04/25/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

Ensure the following are available for applicant use:

1. Label Book containing "Brief Non-Technical Descriptions" of the EALs
2. EP-AA-1008, Table LGS 3-1 Emergency Action Level Matrix (Hot and Cold)
3. EP-AA-111, Emergency Classification and Protective Action Recommendations
4. EP-AA-111-F-08, Limerick / Peach Bottom Plant Based PAR Flowchart
5. EP-AA-112-100-F-01, Shift Emergency Director Checklist
6. EP-MA-114-100, "Mid Atlantic State/Local Notifications"
7. EP-MA-114-100-F-01, State/Local Event Notification Form

### TASK STANDARD:

1. Declaration of a General Emergency based on classification CG6 (**Cold Matrix**) within 15 minutes of applicant acceptance of the initiating cue.
2. Make Protective Action Recommendation (PAR) [evacuate 360 degrees from 0-2 miles, evacuate downwind Sectors SW / WSW / W from 2-5 miles, recommend KI for the General Public in Evacuated Areas].
3. Completed Event Notification Form provided to Shift Communicator, and State/Local Notifications initiated within 12 minutes of declaring the General Emergency (includes PAR).

### TASK CONDITIONS:

Unit 1 plant conditions:

#### Time 0344:

- 'B' RHR in Shutdown Cooling at 10,000 gpm with an RCS temperature of 173 °F
- Suppression Pool Level 24'-0"
- Earthquake of magnitude 0.09g felt in the plant and confirmed by seismic instrumentation as observed on panel 00C693:
  - Event Alarm yellow light lit
  - SYSTEM RECORDING ACTIVATED alarm (ARC-MCR-00C693, WINDOW A1)
  - OBE EXCEEDED alarm (ARC-MCR-00C693, WINDOW B1)

#### Time 0345:

- A Large Break LOCA occurs coincident with a Loss of Offsite Power
- D12 and D14 Diesels fail to start
- D13 Diesel starts but fails to auto load (attempts to manually load D13 are unsuccessful)
- D11 Diesel starts and loads

**Time 0355:**

- RPV water level, which dropped to as low as -180", being maintained at -170" by 'A' Low Pressure ECCS, with the inability to restore level above TAF
- Suppression Pool Level 24'-3"

**Time 0425:**

- 'A' Low Pressure ECCS maintaining RPV level at -170"
- Primary Containment established
- Primary Containment Hydrogen concentration > 6.2%
- Primary Containment Oxygen concentration > 5.5%
- RCS coolant activity 350 uCi/gm

**INITIATING CUE:**

No prior classifications have been made. As Shift Emergency Director, make the highest Event classification based on the given plant conditions, and perform required notifications by completing the State/Local Event Notification Form. Allow 3 minutes for the Shift Communicator to transmit the message to offsite authorities.

**THIS IS A TIME CRITICAL JPM****Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

★Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Classify a General Emergency and Make Protective Action Recommendations**

**JPM Number: A-4**

**Revision Number: 0**

**K/A Number and Importance:**      2.4.44      SRO 4.4

**Suggested Testing Environment: Classroom**

**Actual Testing Environment: Classroom**

**Testing Method:** Perform in Classroom

**Alternate Path: No**

**Time Critical: Yes**

**Estimated Time to Complete:**      25 min.      **Actual Time Used:** \_\_\_\_\_ minutes

**References:**

1. NUREG 1123 Rev. 2, Supp. 1
2. Label Book containing "Brief Non-Technical Descriptions" of the EALs
3. EP-AA-1008, Table LGS 3-1 Emergency Action Level Matrix (Hot and Cold)
4. EP-AA-111, Emergency Classification and Protective Action Recommendations
5. EP-AA-111-F-08, Limerick / Peach Bottom Plant Based PAR Flowchart
6. EP-AA-112-100-F-01, Shift Emergency Director Checklist
7. EP-MA-114-100, "Mid Atlantic State/Local Notifications"
8. EP-MA-114-100-F-01, State/Local Event Notification Form

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes    ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the applicant review plant conditions, declare a General Emergency (Cold Matrix), make Protective Action Recommendations, complete the Event Notification Form, and initiate State/Local notifications.



NOTE: Critical Element(s) indicated by ★ in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>1. <b><u>EVALUATOR NOTE:</u></b> Ensure the following are available for applicant use:</p> <ul style="list-style-type: none"> <li>• Label Book, Brief Non-Technical Descriptions</li> <li>• EP-AA-1008, Table LGS 3-1 Emergency Action Level Matrix (Hot and Cold)</li> <li>• EP-AA-111, Emergency Classification and Protective Action Recommendations</li> <li>• EP-AA-111-F-08, Limerick / Peach Bottom Plant Based PAR Flowchart</li> <li>• EP-AA-112-100-F-01, Shift Emergency Director Checklist</li> <li>• EP-MA-114-100, "Mid Atlantic State/Local Notifications"</li> <li>• EP-MA-114-100-F-01, State/Local Event Notification Form</li> </ul> <p><b><u>EVALUATOR NOTE:</u></b> Provide applicant with initiating Cue Sheet. When applicant is ready to begin the JPM, inform the applicant this is a TIME CRITICAL JPM.</p> <p><b>Record START TIME:</b> _____</p> <p>Reviews Cue Sheet and asks any questions regarding the initial conditions or initiating cues.</p>	<p>Applicant reviews initial conditions and initiating cues.</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>2. Calls Shift Communicator to the Main Control Room.</p> <p><b><u>EVALUATOR CUE:</u></b> Wait 3-4 minutes, then report as the Shift Communicator.</p>	Shift Communicator called to the Main Control Room.			
<p>3. Identifies operating MODE for the affected Unit.</p>	<p>Recognizes EP-AA-1008, Table LGS 3-1, Cold Matrix, is applicable (Unit 1 RCS temperature 173 °F with 'B' RHR in Shutdown Cooling, prior to OBE earthquake)</p>			
<p>★4. (EP-AA-1008, Table LGS 3-1, Cold Matrix) Classifies the Event per the given plant conditions.</p> <p><b><u>EVALUATOR NOTE:</u></b> When applicant declares the EAL classification, <b>Record TIME:</b> _____</p> <p><b>Time to determine correct EAL must be made within 15 minutes of START TIME recorded in Step 1 above.</b></p> <p><b><u>EVALUATOR NOTE:</u></b> <b>Twelve minute clock to provide completed Event Notification Form to Shift Communicator and initiate State/Local Notifications starts.</b></p>	<p>Uses EP-AA-1008, Table LGS 3-1, Cold Matrix to classify Event.</p> <p>Declares a GENERAL EMERGENCY in accordance with Classification <b>CG6</b>, "Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged"</p> <p><b><u>EAL Threshold Values:</u></b></p> <p>Note: The Emergency Director should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</p> <p>1.a RPV level &lt;-161 inches for ≥ 30 minutes</p> <p><b>AND</b></p> <p>1.b Any Containment Challenge Indication (Table C5)</p> <ul style="list-style-type: none"> <li>• Primary Containment Hydrogen concentration &gt;6% and Oxygen &gt;5%</li> </ul>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5. Refers to Section 1.4 of EP-AA-112-100-F-01, "Shift Emergency Director Checklist," for GENERAL EMERGENCY initial actions.	Obtains a copy of EP-AA-112-100-F-01 and refers to Section 1.4 to perform GENERAL EMERGENCY initial actions.			
6. (EP-AA-112-100-F-01, Step 1.4.D) <b>SELECT</b> the Emergency Public Address Announcements from the form <b>and DIRECT</b> performance of the public address announcement within 15 minutes of event classification ( <i>Located behind Tab 1</i> ).  <b><u>EVALUATOR CUE:</u></b> If step performed, inform applicant that the public address announcement has been made.	Selects Emergency Public Address Announcement from form located behind Tab 1, and Directs performance of announcement within 15 minutes of event classification.			
7. (EP-AA-112-100-F-01, Step 1.4.E) If the ERO has <b><u>not</u></b> been activated, <b>then DIRECT</b> the "ERO Response Required" steps of the ERO Notification or Augmentation form ( <i>Located behind Tab 2</i> ).  <b><u>EVALUATOR CUE:</u></b> If step performed, inform applicant that ERO activation has been initiated.	Directs ERO activation using the ERO Notification or Augmentation form located behind Tab 2.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★8. (EP-AA-112-100-F-01, Step 1.4.F)</p> <p>Determines correct PAR in accordance with EP-AA-111-F-08, "Limerick / Peach Bottom Plant Based PAR Flowchart," (<i>Located behind Tab 7</i>).</p> <p><b><u>EVALUATOR CUE:</u></b> When Meteorological data is requested, provide the following information for Tower 1 (175 ft elevation):</p> <ul style="list-style-type: none"> <li>• Wind Direction (From) is 63°</li> <li>• Wind Speed is 11 mph</li> </ul>	<p>Evaluates EP-AA-111-F-08 flowchart for Limerick PAR determination:</p> <ul style="list-style-type: none"> <li>• Has a GE been declared? <b>YES</b></li> <li>• Release via Controlled direct containment vent &lt; 1 hr? <b>NO</b></li> <li>• Loss of 'FUEL CLAD' Barrier? <b>YES</b></li> <li>• Loss of 'REACTOR COOLANT SYSTEM' Barrier: <b>YES</b></li> <li>• Loss of 'PRIMARY CONTAINMENT' Barrier? <b>NO</b></li> </ul> <p><b><u>PAR:</u></b></p> <ul style="list-style-type: none"> <li>➤ Evacuate <b>360</b> degrees from <b>0-2</b> miles</li> <li>➤ Evacuate downwind Sectors <b>SW / WSW / W</b> from <b>2-5</b> miles</li> <li>➤ Recommend <b>KI</b> for General Public in Evacuated Areas</li> </ul>			
<p>★9. (EP-AA-112-100-F-01, Step 1.4.G)</p> <p>Completes EP-MA-114-100-F-01, "State/Local Event Notification Form" (<i>Located behind Tab 4</i>).</p> <p><b><u>EVALUATOR CUE:</u></b> Provide Event Notification Form if requested.</p>	<p>Completed Event Notification Form matches the key; Critical aspects include:</p> <ul style="list-style-type: none"> <li>• Declaration Time/Date</li> <li>• EAL No.: CG6</li> <li>• Brief Non-Technical Description</li> <li>• Radiological Release status</li> <li>• Meteorological Information</li> <li>• PAR</li> </ul>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★10. (EP-AA-112-100-F-01, Step 1.4.G)</p> <p>Provides completed Event Notification Form to Shift Communicator</p> <p><b><u>AND</u></b></p> <p>Directs Shift Communicator to Initiate State/Local Notifications</p> <p><b><u>EVALUATOR NOTE:</u></b></p> <p>When applicant provides completed Event Notification Form to Shift Communicator <b><u>AND</u></b> directs Shift Communicator to initiate State/Local Notifications,</p> <p><b>Record TIME: _____</b></p> <p><b>Completed Event Notification Form must be provided to the Shift Communicator <u>AND</u> State/Local Notifications must be initiated within 12 minutes of the Classification Time recorded in Step 4 above.</b></p>	<p>Shift Communicator provided with Event Notification Form <b><u>AND</u></b> directed to initiate State/Local Notifications <b><u>within 12 minutes</u></b> of event classification.</p>			
<p><b><u>EVALUATOR CUE:</u></b></p> <p>When Event Notification Form is given to Shift Communicator with direction to initiate State/Local Notifications, inform applicant "This JPM is complete."</p>				

**JPM Stop Time \_\_\_\_\_**

# NOTE

**Do not** give the next 2 pages (Exam Key) to the student!

## CUE SHEET:

### TASK CONDITIONS

Unit 1 plant conditions:

#### Time 0344:

- 'B' RHR in Shutdown Cooling at 10,000 gpm with an RCS temperature of 173 °F
- Suppression Pool Level 24'-0"
- Earthquake of magnitude 0.09g felt in the plant and confirmed by seismic instrumentation as observed on panel 00C693:
  - Event Alarm yellow light lit
  - SYSTEM RECORDING ACTIVATED alarm (ARC-MCR-00C693, WINDOW A1)
  - OBE EXCEEDED alarm (ARC-MCR-00C693, WINDOW B1)

#### Time 0345:

- A Large Break LOCA occurs coincident with a Loss of Offsite Power
- D12 and D14 Diesels fail to start
- D13 Diesel starts but fails to auto load (attempts to manually load D13 are unsuccessful)
- D11 Diesel starts and loads

#### Time 0355:

- RPV water level, which dropped to as low as -180", being maintained at -170" by 'A' Low Pressure ECCS, with the inability to restore level above TAF
- Suppression Pool Level 24'-3"

#### Time 0425:

- 'A' Low Pressure ECCS maintaining RPV level at -170"
- Primary Containment established
- Primary Containment Hydrogen concentration > 6.2%
- Primary Containment Oxygen concentration > 5.5%
- RCS coolant activity 350 uCi/gm

### INITIATING CUE

No prior classifications have been made. As Shift Emergency Director, make the highest Event classification based on the given plant conditions, and perform required notifications by completing the State/Local Event Notification Form. Allow 3 minutes for the Shift Communicator to transmit the message to offsite authorities.

**THIS IS A TIME CRITICAL JPM**

## CUE SHEET:

### TASK CONDITIONS

Unit 1 plant conditions:

#### Time 0344:

- 'B' RHR in Shutdown Cooling at 10,000 gpm with an RCS temperature of 173 °F
- Suppression Pool Level 24'-0"
- Earthquake of magnitude 0.09g felt in the plant and confirmed by seismic instrumentation as observed on panel 00C693:
  - Event Alarm yellow light lit
  - SYSTEM RECORDING ACTIVATED alarm (ARC-MCR-00C693, WINDOW A1)
  - OBE EXCEEDED alarm (ARC-MCR-00C693, WINDOW B1)

#### Time 0345:

- A Large Break LOCA occurs coincident with a Loss of Offsite Power
- D12 and D14 Diesels fail to start
- D13 Diesel starts but fails to auto load (attempts to manually load D13 are unsuccessful)
- D11 Diesel starts and loads

#### Time 0355:

- RPV water level, which dropped to as low as -180", being maintained at -170" by 'A' Low Pressure ECCS, with the inability to restore level above TAF
- Suppression Pool Level 24'-3"

#### Time 0425:

- 'A' Low Pressure ECCS maintaining RPV level at -170"
- Primary Containment established
- Primary Containment Hydrogen concentration > 6.2%
- Primary Containment Oxygen concentration > 5.5%
- RCS coolant activity 350 uCi/gm

### INITIATING CUE

No prior classifications have been made. As Shift Emergency Director, make the highest Event classification based on the given plant conditions, and perform required notifications by completing the State/Local Event Notification Form. Allow 3 minutes for the Shift Communicator to transmit the message to offsite authorities.

**THIS IS A TIME CRITICAL JPM**



Facility: <u>Limerick</u>		Date of Examination: <u>10/9/12</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>1</u>

Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Recirculation Pump System/Start Up 1A Recirc Pump	A, N, S	1
b. Manually Start HPCI	A, EN, N, S	2
c. Main Turbine Bypass Valve Exercising	D, S	3
d. SDC Operations	A, L, N, S	4
e. EDG Operations	A, E, N	6
f. Scram Channel A1 and A2 Functional Test	A, M, S	7
g. Restore RECW, DWCW, and Instrument Gas	D, S	8
h. Standby Gas Treatment Manual Startup with Charcoal Enclosure Hi Temp	A, M, S	9
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Maximize CRD Flow After Shutdown During Emergency Conditions (T-240) Unit 2	E, L, N, R	1
j. Alignment of Equipment for Manual Operation of LPCI	A, N, R	2
k. Venting Primary Containment Using the 6" ILRT Line from the Drywell	E, N	5
<p><sup>@</sup> All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered safety feature	- / - / $\geq 1$ (control room system)	
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

## **Limerick Generating Station**

### **Job Performance Measure**

#### **Start Reactor Recirculation Pump (Alternate Path)**

JPM Designation: A

Revision Number: 0

Date: 2/27/12

Developed By:	<u>Chris Lally</u>	<u>2/27/12</u>
	Author	Date
Review By:	<u>Manan Patel</u>	<u>2/28/12</u>
	Examiner	Date
Approved By:	<u>John Caruso</u>	<u>2/28/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

1. Reset to single loop IC, post recirc pump trip with sufficient control rod insertion as necessary to allow for recirc pump restart
2. Ensure 1A RRP shutdown IAW S43.2.A, and startup of 1A RRP complete up to and including step 4.3.13
3. Insert the following malfunctions to trigger when 1A RRP discharge valve is full open:
  - a. VIC105A6, VIC106A3, VIC106A5: 1 minute ramp time to 20 mils
  - b. ARC-MRC-111 D2 30 second time delay

### TASK STANDARD:

1A Reactor Recirculation Pump started and then secured due to high vibration

### TASK CONDITIONS:

1. 1A Recirculation Pump tripped due to ASD setpoint programming error
2. The cause has been found and corrected
3. Reactor power is currently \_\_\_\_\_%, ready for startup of 1A RRP
4. S43.1.A, Start Up of Recirculation System, is complete up to and including step 4.3.13
5. ST-6-043-391-1, "Reactor Recirculation Single Loop Operation Temperature and Flow Check," was last performed 2 minutes ago. It has been reviewed and temperatures are satisfactory by SSV

**Comment [cml1]:** Needs to be determined based upon post pump trip and rod insertion power

### INITIATING CUE:

You have been directed by Shift Supervision to start up 1A Reactor Recirculation Pump in accordance with S43.1.A

### Information for Evaluator's Use:

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

JPM Title: Start Reactor Recirculation Pump (Alternate Path)

JPM Number: A

Revision Number: 0

K/A Number and Importance: 202001 A3.02 3.1/3.0

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

Testing Method: Perform

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 15 minutes Actual Time Used: \_\_\_\_\_ minutes

**References:**

1. Nureg 1123, Rev. 2, Supp. 1 202001 A3.02 3.1/3.0
2. S43.1.A Start Up of Recirculation System, Rev. 0
3. ARC MCR 1AC802 111 D-2 1A Recirc Pump Motor HI Vibration Rev. 1
4. S43.2.A Shutdown of A Recirculation Pump, Rev. 30

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Description: This JPM has the applicant perform a startup of the 'A' Reactor Recirculation Pump. Upon receipt of a high vibration alarm indicative of a problem with the pump, the applicant will trip the 'A' Reactor Recirculation Pump.

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

JPM A

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

**PERFORMANCE CHECKLIST:**

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b>CAUTION</b>				
1. Step 4.3.16 should be performed as promptly as possible to prevent Recirc Pp trip on discharge valve position.				[   ]
2. Operation of Recirc Pp for more than one minute with HV-43-1F031A, DISCHARGE, closed may cause pump damage.				[   ]
3. <b>IF</b> HV-43-1F031A, DISCHARGE, is <b>not</b> fully open within three minutes of the supply breaker closing, <b>THEN</b> the ASD breaker will trip.				[   ]
<b>NOTE</b>				
Step 4.3.14 will initiate the following sequence of actions:				
1. The ASD starts the pre-charge cycle.				[   ]
2. The pre-charge 'In progress' light illuminates on MCR panel 10C602.				[   ]
3. If the pre-charge completes in <45 seconds, the 'pre-charge complete' light illuminates on MCR 10C602. (The pre-charge status 'complete' light may illuminate and then extinguish quickly)				[   ]
4. The 13.2KV breaker for the ASD will close once the pre-charge cycle is complete.				[   ]
5. The reactor recirc pump motor will start and ramp up to 466 rpms speed as indicated on XR-043-101A recorder at 10C602 panel.				[   ]
6. The Pump "A Running" light on 10C602 will illuminate when the recirc pump motor gets to approximately 333 rpms.				[   ]
<b>NOTE</b>				
During the pre-charge cycle MINOR, MAJOR AND TRIP alarms will annunciate but will reset.				

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM A*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b>CAUTION</b>				
<p>1. <b>WHEN</b> starting a Recirc Pump at power, power <b>AND</b> level changes should be limited by jogging open HV-43-1F031A DISCHARGE for 1 to 2 seconds.  <b>THEN</b> allowing approximately 5 to 10 seconds for power <b>AND</b> level to stabilize before proceeding. This may need to be performed 2 to 3 times as required. [   ]</p> <p>2. Recirc Pump Discharge Valves must be jogged to the full open position within 3 minutes of the Supply Breaker closing  <b>OR</b> the pump will trip. [   ]</p>				
*1. (Step 4.3.14) <b>PLACE</b> ASD 'START A' switch to " <b>START</b> "	Applicant places ASD 'START A' switch to "START" and observes startup sequence			
<p>2. (Step 4.3.15) When the pre-charge cycle is complete, <b>AND</b> the ASD supply breaker closes, <b>THEN</b> perform the following:</p> <p>a. Verify the Recirc Pump is ramping up in speed as indicated on XR_043-101A on 10C602 panel</p> <p>b. Verify either "Pump A RUNNING" light is lit <b>OR</b> pump speed is &gt;333 RPMs</p>	<p>Applicant verifies that ASD supply breaker closes and 1A RRP begins ramping up in speed.</p> <p>Verifies either Pump A RUNNING light lit or pump speed is &gt;333 RPMs</p> <p><b>Evaluator Note:</b> In the following step, applicant must ensure previous transient has subsided before next jog, while also ensuring discharge valve is full open before 3 minutes has elapsed; else a pump trip will occur.</p>			



**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM A*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*3. (Step 4.3.16) JOG OPEN HV-43-1F031A, DISCHARGE, at 10C602 for 1 to 2 seconds allowing 5 to 10 seconds for power <b>AND</b> level to stabilize. Repeat as necessary until both the following conditions are met:</p> <ul style="list-style-type: none"> <li>Recirc Pp speed is stable at 466 rpms</li> <li>FI-42-1R611A, "Total Jet Pump Loop Flow" (FL) is approximately 15 lbs/hr X10E6 or higher</li> </ul>	<p>Applicant alternates turning HV-43-1F031A control switch to OPEN and PULL TO LOCK to jog the discharge valve open in 1 to 2 second intervals.</p> <p><b>Evaluator Note:</b> The first few discharge valve opening strokes will have a pronounced effect on core power and reactor water level. Once conditions are met as described, larger valve strokes can be used to obtain full open indication on HV-43-1F031A</p>			
<p><b><u>ALTERNATE PATH BEGINS HERE</u></b></p> <p>*4. (Step 4.3.17) Ensure HV-43-1F031A is full OPEN.</p>	<p><b><u>ALTERNATE PATH BEGINS</u></b></p> <p>Applicant verifies full open indication on HV-43-1F031A</p>			
<p>5. (Step 4.3.18) Reset any clearable HMI alarms by pressing the "A Fault Reset" Push button TWICE.</p>	<p>Applicant attempts to reset any HMI alarms that may have come in during the startup cycle</p>			
<p>6. (Step 4.3.19) Verify Recirc Pp normal operating conditions per S43.9.A U/1, "Routine inspection of the Reactor Recirculation System".</p>	<p>Applicant acquires S43.9.A if vibration alarm has not yet come in</p>			
<p><b>Note to Evaluator:</b></p> <p>Ensure Annunciator 112 D-2 1B RECIRC M-G PUMP MOTOR HI VIBRATION inserted 30 seconds after Discharge Valve is fully open</p> <p>Ensure Malf VIC105A6 0-20 mils inserted over 1 minute after Discharge Valve is fully open</p> <p>Ensure Malf VIC106A3 0-20 mils inserted over 1 minute after Discharge Valve is fully open</p> <p>Ensure Malf VIC106A5 0-20 mils inserted over 1 minute after Discharge Valve is fully open</p> <p><b>Note to Evaluator (If Candidate attempts to respond to VMS), provide the following Cue:</b></p> <p>The CRS informs you another operator will respond to the VMS alarms on 107 REACTOR</p>				
<p>7. (ARC-111-D2, Step 1) If vibration monitoring system indicates a problem, THEN reduce speed of 1A Recirc Pump to clear annunciator.</p>	<p>Applicant notes Recirc Pump at minimum speed and no further speed reduction can be accomplished</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM A*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8. (Step 2) Attempt to clear alarm by pressing reset button at 10C602 for several seconds	Applicant presses reset button at 10C602 for several seconds			
9. (Step 3) IF annunciator cannot be cleared after reducing flow to the low speed setpoint, AND Vibration monitoring system indicates a problem, THEN secure 1A Recirc Pump per S43.2.A	Applicant verifies recirculation pump vibration is not instrument malfunction and is worsening; proceeds to S43.2.A to secure the 1A Recirc Pump			
10. (S43.2.A, Step 3.1) Operation with less than two Reactor (Rx) Coolant Recirc Loops requires actions per Technical Specification (TS) 3.4.1.1	Applicant notifies SSV that actions per TS 3.4.1.1 are required <b>Evaluator Note:</b> Roleplay as SSV and acknowledge report			
11. (Step 4.4) IF Rx is at power, THEN monitor position on Power/Flow Map in accordance with GP-5 Appendix 2, Planned Rx Maneuvering Without Shutdown AND/OR OT-112 Recirculation Pump Trip, as applicable	Applicant monitors position on Power/Flow Map  <b>Evaluator Note:</b> Plant conditions support plant trip without any subsequent action, as plant was stable and ready for pump start at beginning of JPM			
12. (Step 4.5.1) Ensure that recirc pump is at min speed, 466 RPM as indicated on recorder XR-043-101A on panel 10C602	Applicant ensures that recirc pump is at min speed, 466 RPM as indicated on recorder XR-043-101A on panel 10C602			
*13. (Step 4.5.2) <b>TRIP</b> the 1A ASD system via push button PB-043-102A on 10C602 panel "A Normal Stop" <b>AND VERIFY</b> that the 1A ASD 13.2 KV breaker opens	Applicant trips the 1A ASD system via push button PB-043-102A on 10C602 panel "A Normal Stop" <b>AND</b> verifies that the 1A ASD 13.2 KV breaker opens			
*14. (Step 4.5.3) Place the ASD 1 'A START' hand switch to "STOP"	Applicant places the ASD 1 'A START' hand switch to "STOP"			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

## NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM A

### HANDOUT PAGE

#### **TASK CONDITIONS:**

1. 1A Recirculation Pump tripped due to ASD setpoint programming error
2. The cause has been found and corrected
3. Reactor power is currently \_\_\_\_\_%, ready for startup of 1A RRP
4. S43.1.A, Start Up of Recirculation System, is complete up to and including step 4.3.13
5. ST-6-043-391-1, "Reactor Recirculation Single Loop Operation Temperature and Flow Check," was last performed 2 minutes ago. It has been reviewed and temperatures are satisfactory by SSV

**Comment [cm12]:** Needs to be determined based upon post pump trip and rod insertion power

#### **INITIATING CUE:**

You have been directed by Shift Supervision to start up 1A Reactor Recirculation Pump in accordance with S43.1.A

*NRC LIMERICK GENERATING STATION INITIAL EXAMINATION*

JPM A

HANDOUT PAGE

**TASK CONDITIONS:**

1. 1A Recirculation Pump tripped due to ASD setpoint programming error
2. The cause has been found and corrected
3. Reactor power is currently       %, ready for startup of 1A RRP
4. S43.1.A, Start Up of Recirculation System, is complete up to and including step 4.3.13
5. ST-6-043-391-1, "Reactor Recirculation Single Loop Operation Temperature and Flow Check," was last performed 2 minutes ago. It has been reviewed and temperatures are satisfactory by SSV

**Comment [cml3]:** Needs to be determined based upon post pump trip and rod insertion power

**INITIATING CUE:**

You have been directed by Shift Supervision to start up 1A Reactor Recirculation Pump in accordance with S43.1.A

# **Limerick Generating Station**

## **Job Performance Measure**

### **HPCI MANUAL START (ALTERNATE PATH)**

JPM Designation: B

Revision Number: 0

Date: 02/21/12

Developed By:	<u>DeMarshall</u>	<u>02/09/12</u>
	Author	Date
Review By:	<u>Patel</u>	<u>02/14/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>02/21/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. Reset Simulator to any IC with reactor pressure greater than 500 psi.
2. Place Suppression Pool Cooling in service.
3. Provide copy of S55.1.D, HPCI System Full Flow Functional Test.
4. Provide copy of S55.2.A, HPCI Shutdown From Automatic OR Manual Initiation.
5. Program override for Annunciator 117 HPCI (E2) to ON 60 seconds after HPCI Turbine speed reaches 2300 rpm.

### **TASK STANDARD:**

HPCI started in accordance with S55.1.D and secured following a low oil pressure alarm condition.

### **TASK CONDITIONS:**

1. All prerequisites for HPCI operation have been completed in accordance with S55.1.D.
2. Vibration Monitoring System (VMS) is in service.
3. Suppression Pool Cooling in service to support HPCI run.
4. ST-6-060-390-1, Suppression Pool Temperature Check, is being performed.
5. No maintenance has been performed on the Turbine oil system or governor control system.
6. No water was drained from any part of the system.

### **INITIATING CUE:**

The SRO has directed you to place Unit 1 HPCI in Full Flow Test using the Manual Quick Start Method per S55.1.D.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

JPM Title: HPCI Manual Start (Alternate Path)

JPM Designation: B

Revision Number: 0

K/A Number and Importance: 206000 A2.15 RO 3.4 SRO 3.5

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

Testing Method: Perform

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2, Supp. 1, 206000 A2.15 RO 3.4 SRO 3.5
2. S55.1.D, Rev. 40
3. S55.2.A, Rev. 14
4. ARC-MCR-117 (E2), Rev. 1
5. Module/LP ID: LL0T0055, HPCI, Rev. 0

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: \_\_\_\_\_(Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_



**Description:**

This JPM has the operator place Unit 1 HPCI in Full Flow Test using the Manual Quick Start Method, and upon receipt of Annunciator HPCI 117 (E2), HPCI OIL LO PRESS, has the operator immediately trip the HPCI turbine.

**Evaluator Note:**

The steps of S55.1.D are listed for reference and tracking of applicant's actions.

**History:**

New Alternate Path JPM requiring the applicant to trip the HPCI turbine on a low oil pressure alarm condition, after placing HPCI in Full Flow Test using the Manual Quick Start Method.

# NRC LGS INITIAL EXAMINATION

JPM B

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews.	Applicant obtains current revision of S55.1.D, reads section 2.0 Prerequisites and 3.0 Precautions.			
2. Verify procedure being performed on Unit 1 HPCI train.	Applicant verifies Unit 1 HPCI train.			
3. (S55.1.D, Step 4.1.5) <b>ENSURE</b> the following valves aligned as indicated: <ul style="list-style-type: none"> <li>HV55-1F071, TEST OUTBOARD is <b>closed</b>.</li> <li>HV55-1F008, TEST ISOL is <b>closed</b>.</li> <li>HV55-1F011, CONDENSATE RETURN is <b>closed</b>.</li> <li>HV49-1F022, TEST ISOL is <b>closed</b>.</li> </ul>	Applicant ensures the <b>GREEN</b> CLOSED indicating lamp <b>ILLUMINATED</b> for the following valves: <ul style="list-style-type: none"> <li>HV55-1F071</li> <li>HV55-1F008</li> <li>HV55-1F011</li> <li>HV49-1F022</li> </ul>			
*4. (Step 4.1.6) <b>OPEN</b> HV-55-1F011, CONDENSATE RETURN.	Applicant places the HV-55-1F011 handswitch to <b>OPEN</b> and Observes: <ul style="list-style-type: none"> <li>a. <b>RED</b> OPEN indicating lamp <b>ILLUMINATED</b>.</li> <li>b. <b>GREEN</b> CLOSED indicating lamp <b>EXTINGUISHED</b>.</li> </ul>			
5. (Step 4.1.8) <b>START</b> 10P216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP).	Applicant places the 10P216 handswitch to <b>START</b> and Observes the <b>RED</b> RUNNING indicating lamp <b>ILLUMINATED</b> .			

**NRC LGS INITIAL EXAMINATION**

*JPM B*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p>6. (Step 4.1.9)</p> <p><b>MONITOR</b> Suppression Pool temperature per ST-6-060-390-1, Suppression Pool Temperature Check.</p> <p><b><u>Evaluator Note:</u></b></p> <p>If status of Suppression Pool temperature monitoring is requested, Evaluator prompts applicant to review Task Conditions.</p>	<p>Applicant verbalizes that ST-6-060-390-1 is in progress (as stated in the Task Conditions).</p>			
<p>7. (Step 4.1.10)</p> <p><b>INFORM</b> HP of changing radiological conditions due to Unit 1 HPCI system start.</p> <p><b><u>Evaluator Roleplay (HP):</u></b></p> <p>"This is HP. I understand that radiological conditions will change when Unit 1 HPCI is started."</p>	<p>Applicant notifies HP of impending HPCI start and associated changes in radiological conditions.</p>			
<p>*8. (Step 4.3.1)</p> <p><b>ENSURE</b> FIC-55-1R600, "HPCI Pump Discharge Flow Controller" (FL), set to 5,600 gpm in "AUTO."</p>	<p>Applicant ensures FIC-55-1R600 M/A selector switch in the "A" position</p> <p><b><u>AND</u></b> FIC-55-1R600 set to 5,600 gpm (between 5,500 and 5,700 GPM).</p>			
<p>9. Make plant announcement stating that Unit 1HPCI will be started.</p> <p><b><u>Evaluator Cue:</u></b></p> <p>Evaluator informs applicant that another operator has already made the plant announcement.</p>	<p>N/A</p>			

**NRC LGS INITIAL EXAMINATION**

*JPM B*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*10. (Step 4.3.2)</p> <p><u>Simultaneously</u> <b>OPEN</b> HV-55-1F001, "HPCI Steam Supply"(INLET)</p> <p><b>AND START</b> 10P213, "Auxiliary Oil Pump (AUX OIL PUMP).</p>	<p>Applicant <u>simultaneously</u> places the HV-55-1F001 handswitch to <b>OPEN</b> and the 10P213 handswitch to <b>START</b>, and Observes:</p> <ul style="list-style-type: none"> <li>a. HV-55-1F001 <b>RED</b> OPEN indicating lamp <b>ILLUMINATED</b>.</li> <li>b. HV-55-1F001 <b>GREEN</b> CLOSED indicating lamp <b>EXTINGUISHED</b>.</li> <li>c. 10P213 <b>RED</b> RUNNING indicating lamp <b>ILLUMINATED</b>.</li> </ul>			
<p>*11. (Step 4.3.3)</p> <p><b>WHEN</b> SI-56-161, "Turbine Speed" (S) starts to go up,</p> <p><b>THEN</b> <u>immediately</u> <b>THROTTLE</b> open HV-55-1F008, "HPCI Test Loop Shutoff" (TEST ISOL), until desired flow is obtained, while maintaining turbine speed greater than 2200 rpm.</p>	<p>Applicant Observes greater than zero rpm speed indication on SI-56-161, and <u>immediately</u> jogs the HV-55-1F008 handswitch OPEN as required to establish flow of <math>\geq 1000</math> gpm with turbine speed greater than 2200 rpm.</p>			
<p>12. (Step 4.3.5)</p> <p><b>VERIFY</b> FV-56-112, "Turbine Stop Valve" (STOP), OPEN.</p>	<p>Applicant verifies FV-56-112 OPEN as indicated by:</p> <ul style="list-style-type: none"> <li>a. FV-56-112 <b>RED</b> OPEN indicating lamp <b>ILLUMINATED</b>.</li> <li>b. FV-56-112 <b>GREEN</b> CLOSED indicating lamp <b>EXTINGUISHED</b>.</li> </ul>			

**NRC LGS INITIAL EXAMINATION**

*JPM B*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p>13. (Step 4.3.6)</p> <p><b><u>VERIFY</u></b> FV-56-111, "Turbine Control Valve" (CONTROL), OPEN.</p>	<p>Applicant verifies FV-56-111 throttled OPEN as indicated by:</p> <ul style="list-style-type: none"> <li>a. FV-56-111 <b>RED</b> OPEN indicating lamp <b>ILLUMINATED</b>.</li> <li>b. FV-56-11 <b>GREEN</b> CLOSED indicating lamp <b>ILLUMINATED</b>.</li> </ul>			
<p>14. (Step 4.3.7)</p> <p><b><u>WHEN</u></b> FV-56-112, "Turbine Stop Valve" (STOP) Opens,</p> <p><b><u>THEN VERIFY</u></b> HV-56-1F059, "HPCI Lube Oil Cooling Water Valve," OPEN.</p>	<p>Applicant verifies HV-56-1F059 OPEN as indicated by:</p> <ul style="list-style-type: none"> <li>a. HV-56-1F059 <b>RED</b> OPEN indicating lamp <b>ILLUMINATED</b>.</li> <li>b. HV-56-1F059 <b>GREEN</b> CLOSED indicating lamp <b>EXTINGUISHED</b>.</li> </ul>			
<p><b><u>ALTERNATE PATH BEGINS HERE</u></b></p> <p>15. Annunciator response to HPCI OIL LO PRESS [ARC-MCR-117 (E2)].</p> <p><b><u>Evaluator Note:</u></b> Programmed malfunction for receipt of Annunciator 117 HPCI (E2), set for 60 seconds after HPCI Turbine speed reaches 2300 rpm.</p>	<p><b><u>ALTERNATE PATH BEGINS</u></b></p> <p>Applicant:</p> <ul style="list-style-type: none"> <li>a. Acknowledges alarm</li> <li>b. Reports alarm to Unit Supervisor</li> <li>c. References alarm response for ARC-MCR-117 (E2)</li> </ul>			

**NRC LGS INITIAL EXAMINATION**

*JPM B*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p><b><u>Evaluator Note:</u></b> Operator Action in accordance with ARC-MCR-117 (E2), "HPCI OIL LO PRESS," is to immediately trip the HPCI turbine.</p> <p>Guidance for HPCI turbine shutdown is provided in Section 4.7 of S55.2.A, "HPCI SHUTDOWN FROM AUTOMATIC OR MANUAL INITIATION."</p> <p>It is acceptable for the applicant to either shutdown the HPCI turbine from memory by performing the actions specified in Steps 16 and 17 below, at which point S55.2.A should be referenced to ensure all required actions have been completed <b><u>OR</u></b> shutdown the HPCI turbine with procedure S55.2.A in hand.</p>	N/A			
<p>*16. (S55.2.A, Step 4.7.1)</p> <p><b><u>Simultaneously DEPRESS AND HOLD</u></b> "Turbine Trip" (TURBINE TRIP) pushbutton, <b><u>AND CLOSE</u></b> HV-55-1F001, "HPCI Steam Supply" (INLET).</p>	<p>Applicant <b><u>simultaneously DEPRESSES</u></b> and <b>HOLDS</b> the "Turbine Trip" pushbutton <b><u>AND</u></b> places HV-55-1F001 handswitch to <b>CLOSE</b>.</p>			
<p>*17. (S55.2.A, Step 4.7.2)</p> <p><b><u>WHEN</u></b> HV-55-1F001, "HPCI Steam Supply" (INLET), is fully closed, <b><u>THEN RELEASE</u></b> "Turbine Trip" (TURBINE TRIP) pushbutton.</p>	<p>Applicant <b>RELEASES</b> "Turbine Trip" when HV-55-1F001 is fully closed as indicated by:</p> <ul style="list-style-type: none"> <li>a. HV-55-1F001 <b>RED OPEN</b> indicating lamp <b>EXTINGUISHED</b>.</li> <li>b. HV-55-1F001 <b>GREEN CLOSED</b> indicating lamp <b>ILLUMINATED</b>.</li> </ul>			

**NRC LGS INITIAL EXAMINATION**

*JPM B*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
18. (ARC-MCR-117 (E2) <b>VERIFY</b> 10P213, Auxiliary Oil Pump (AUX OIL PUMP), is running, <b><u>AND</u></b> if not, <b><u>THEN START</u></b> 10P213.	Applicant places the 10P213 handswitch to <b>START</b> if the Auxiliary Oil Pump is not running as indicated by: a. 10P213 <b>RED</b> RUNNING indicating lamp <b>EXTINGUISHED</b> .			
<b><u>Evaluator Cue:</u></b> JPM is complete				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. All prerequisites for HPCI operation have been completed in accordance with S55.1.D.
2. Vibration Monitoring System (VMS) is in service.
3. Suppression Pool Cooling in service to support HPCI run.
4. ST-6-060-390-1, Suppression Pool Temperature Check, is being performed.
5. No maintenance has been performed on the Turbine oil system or governor control system.
6. No water was drained from any part of the system.

**INITIATING CUE:**

The SRO has directed you to place Unit 1 HPCI in Full Flow Test using the Manual Quick Start Method per S55.1.D.



HANDOUT PAGE

**TASK CONDITIONS:**

1. All prerequisites for HPCI operation have been completed in accordance with S55.1.D.
2. Vibration Monitoring System (VMS) is in service.
3. Suppression Pool Cooling in service to support HPCI run.
4. ST-6-060-390-1, Suppression Pool Temperature Check, is being performed.
5. No maintenance has been performed on the Turbine oil system or governor control system.
6. No water was drained from any part of the system.

**INITIATING CUE:**

The SRO has directed you to place Unit 1 HPCI in Full Flow Test using the Manual Quick Start Method per S55.1.D.

# **Limerick Generating Station**

## **Job Performance Measure**

### **Perform Turbine Bypass Valve Testing IAW ST-6-001-761-1**

JPM Designation: C

Revision Number: 0

Date: 2/7/12

Developed By:	<u>Chris Lally</u>	<u>2/7/12</u>
	Author	Date
Review By:	<u>Manan Patel</u>	<u>2/16/12</u>
	Examiner	Date
Approved By:	<u>John Caruso</u>	<u>2/28/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. Reset simulator to IC-17 or another 100% power IC
2. Acknowledge annunciators and reset alarms
3. Prepare a yellow copy of ST-6-001-761-1 completed up to and including Step 4.3.3 through BPV-7

### **TASK STANDARD:**

BPV-8 and BPV-9 cycled full open then closed, test completed satisfactorily

### **TASK CONDITIONS:**

1. Unit 1 is at 100% power
2. No other testing is in progress on Unit 1
3. ST-6-001-761-1 is complete up to and including Step 4.3.3 for BPV-7
4. Permission to continue the ST is obtained from the CRS and RO, all prerequisites are met

### **INITIATING CUE:**

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

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**        ☐ NLO        ☐ RO        ☐ SRO        ☐ STA        ☐ SRO Cert

**JPM Title: Perform Turbine Bypass Valve Testing IAW ST-6-001-761-1**

**JPM Number: C**

**Revision Number: 0**

**K/A Number and Importance: 241000 A4.06 (3.9/3.9)**

**Suggested Testing Environment: Simulator**

**Actual Testing Environment: Simulator**

**Testing Method: Perform**

**Alternate Path: No**

**Time Critical: No**

**Estimated Time to Complete: 15 min.    Actual Time Used: \_\_\_\_\_minutes**

**References:**

1.    NUREG-1123 Rev.2 Supp. 1
2.    ST-6-001-761-1 Rev. 20

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:        ☐ **Satisfactory**        ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM has the applicant perform operational tests on two of the remaining main turbine bypass valves to verify operability of the main turbine bypass valves.

History: Not used on 2008/2010 Limerick Initial License Exams

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM C

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain ST-6-001-761-1 in progress ( <b>Evaluator Cue:</b> Provide examinee with yellow copy of ST-6-001-761-1 completed up to and including step 4.3.3 BPV-7.)	Applicant reviews procedure and cue			
2. (Step 4.3.2) PERFORM the following for one valve at a time:	N/A			
3. (Step 4.3.2.1) VERIFY READY TO SELECT light lit, at panel 10C670.	Applicant verifies READY TO SELECT green light is lit on 10C670.			
*4. (Step 4.3.2.2) POSITION BYPASS VALVE TEST selector switch to appropriate position. ( <b>Evaluator Note:</b> Alarm ARC-MCR-106 D4, BYPASS VALVE OPEN is an expected alarm for the next step. Additionally, ARC-MCR-107 I-2 and I-3 vibration alarms may annunciate, but require no action.)	Applicant rotates BYPASS VALVE TEST selector to position 8.			
*5. (Step 4.3.2.3) DEPRESS AND HOLD TEST BYPASS VALVE pushbutton.	Applicant depresses and holds TEST Bypass Valve pushbutton.			
6. (Step 4.3.2.4) VERIFY TESTING AND DO NOT SELECT lights lit while valve is being exercised.	Applicant verifies TESTING and DO NOT SELECT amber lights are lit.			
*7. (Step 4.3.2.5) WHEN Bypass Valve is full open, THEN RELEASE TEST BYPASS VALVE pushbutton.	When #8 Bypass Valve indicates 100% on 10C670, applicant then releases TEST BYPASS VALVE pushbutton.			
8. (Step 4.3.2.6) VERIFY Bypass Valve recloses AND ENTER initials in appropriate blank in step 4.3.3.	Applicant verifies #8 Bypass Valve indicates 0%, and enters initials in blank for BPV-8.			
9. (Step 4.3.2.7) VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Applicant acknowledges and resets BYPASS VALVE OPEN alarm.			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM C*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
10. (Step 4.3.2.8) WHEN READY TO SELECT light lit <u>AND</u> plant conditions are stable, <u>THEN REPEAT</u> steps 4.3.2.1 through 4.3.2.7 for next valve to be tested.	Applicant verifies that power, pressure and level have all stabilized before proceeding on to testing BPV-9.			
11. (Step 4.3.2.1) VERIFY READY TO SELECT light lit, at panel 10C670.	Applicant verifies READY TO SELECT green light is lit on 10C670.			
*12. (Step 4.3.2.2) POSITION BYPASS VALVE TEST selector switch to appropriate position. ( <b>Evaluator Note:</b> Alarm ARC-MCR-106 D4, BYPASS VALVE OPEN is an expected alarm for the next step. Additionally, ARC-MCR-107 I-2 and I-3 vibration alarms may annunciate, but require no action.)	Applicant rotates BYPASS VALVE TEST selector to position 9.			
*13. (Step 4.3.2.3) DEPRESS <u>AND</u> HOLD TEST BYPASS VALVE pushbutton.	Applicant depresses and holds TEST Bypass Valve pushbutton.			
14. (Step 4.3.2.4) VERIFY TESTING <u>AND</u> DO NOT SELECT lights lit while valve is being exercised.	Applicant verifies TESTING and DO NOT SELECT amber lights are lit.			
*15. (Step 4.3.2.5) <u>WHEN</u> Bypass Valve is full open, <u>THEN</u> RELEASE TEST BYPASS VALVE pushbutton.	When #9 Bypass Valve indicates 100% on 10C670, applicant then releases TEST BYPASS VALVE pushbutton.			
16. (Step 4.3.2.6) VERIFY Bypass Valve recloses <u>AND</u> ENTER initials in appropriate blank in step 4.3.3.	Applicant verifies #9 Bypass Valve indicates 0%, and enters initials in blank for BPV-9.			
17. (Step 4.3.2.7) VERIFY BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears.	Applicant acknowledges and resets BYPASS VALVE OPEN alarm.			
18. (Step 4.3.3) Verify each bypass valve completed one cycle of full travel	Applicant verifies Step 4.3.3 marked to indicate all bypass valves completed a full cycle of travel			
19. (Step 4.3.4) Position BYPASS VALVE TEST selector switch in "OFF"	Applicant rotates BYPASS VALVE TEST selector switch to OFF			



**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM C*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
20. (Step 4.3.5) <b>IF</b> the number of Bypass Valves which are cycled satisfactorily per surveillance requirement 4.7.8.a, is less than the number required in Table titled "Minimum Required Bypass Valves To Maintain System Operability" of the Core Operating Limits Report (COLR) <b>THEN</b> ENSURE action statement c of Tech Spec 3.2.2 has been satisfied, as determined from the LCO Log, per S38.1.L "3D Monicore Thermal Limit Curve Set Changes" completed within one hour.	N/A entered for step 4.3.5.			
21. (Step 4.3.6) <b>IF</b> the EOC-RPT trip system is inoperable per Tech Spec 3.3.4.2 <b>AND</b> the main turbine bypass system is inoperable per Tech Spec 3.7.8 <b>AND</b> reactor power is $\geq 25\%$ , <b>THEN</b> MCPR is <u>UNANALYZED</u> <b>AND</b> the Tech Spec 3.2.3.b must be entered. <u>Otherwise</u> ENTER N/A for this step.	N/A entered for step 4.3.6			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. Unit 1 is at 100% power
2. No other testing is in progress on Unit 1
3. ST-6-001-761-1 is complete up to and including Step 4.3.3 for BPV-7
4. Permission to continue the ST is obtained from the CRS and RO, all prerequisites are met

**INITIATING CUE:**

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

HANDOUT PAGE

**TASK CONDITIONS:**

1. Unit 1 is at 100% power
2. No other testing is in progress on Unit 1
3. ST-6-001-761-1 is complete up to and including Step 4.3.3 for BPV-7
4. Permission to continue the ST is obtained from the CRS and RO, all prerequisites are met

**INITIATING CUE:**

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

# **Limerick Generating Station**

## **Job Performance Measure**

### **SDC Restoration (Alternate Path)**

JPM Designation: D

Revision Number: 0

Date: 3/1/12

Developed By:	<u>Patel</u>	<u>2/7/12</u>
	Author	Date

Review By:	<u>C. Lally</u>	<u>2/27/12</u>
	Examiner	Date

Approved By:	<u>J. Caruso</u>	<u>2/29/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. Reset simulator to IC-29
2. Ensure Rx in OPCON 4 with reactor coolant temperature at 150°F.
3. Apply mousetraps to the following:
  - HV51-1F027A and B, SUPP POOL SPRAY
  - HV51-1F040 and 49, LETDOWN TO RW
  - HV51-1F024A, SUPP POOL CLNG
  - HV43-1F023A and B, RECIRC SUCTION
4. Prepare a copy of S51.8.B marked up to and including 4.4.24
5. Prepare a copy of ST-6-107-640-1 marked up to and including section 4.3

### **TASK STANDARD:**

Successfully establish Alternate Shutdown Cooling using RHR/CS, SRV's & Suppression Pool.

### **TASK CONDITIONS:**

1. 1A RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 150°F as read on XI-36-101 point 1.
2. 0A RHRSW pump is in service providing flow to "1A" RHR Heat Exchanger.
3. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to lower reactor coolant temperature within the 75°F to 85°F band.
4. 1B, 1C, & 1D RHR pumps are OOS for maintenance, expected time to recovery is 8 hours.
5. The Unit 1 Reactor Operator is performing the cooldown ST.

### **INITIATING CUE:**

The CRS has directed you to continue performing S51.8.B at step number 4.4.24, to provide additional cooling to reactor coolant.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**        ☐ NLO        ☐ RO        ☐ SRO        ☐ STA        ☐ SRO Cert

**JPM Title:** SDC Restoration

**JPM Number:** D

**Revision Number:** 0

**K/A Number and Importance:** 295021 AA1.04 3.7/3.7 (RO/SRO)

**Suggested Testing Environment:** Simulator

**Actual Testing Environment:** Simulator

**Testing Method:** Perform in Simulator

**Alternate Path:** Yes

**Time Critical:** No

**Estimated Time to Complete:** 15 min.    **Actual Time Used:** \_\_\_\_\_ minutes

**References:**

1. NUREG 1123, 223002, K1.08, RO/SRO 3.4/3.5
2. ON-121, Rev. 29
3. S51.8.B, Rev. 71
4. ST-6-107-640-1, Rev. 50
5. S41.7B, Rev. 7

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes    ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:        ☐ **Satisfactory**        ☐ **Unsatisfactory**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_        **Date:** \_\_\_\_\_

Description: This JPM has the operator establish preferred Alternate Shutdown Cooling using RHR, SRV's & Suppression Pool in service upon isolation of the normal SDC due to a spurious auto closure of HV-051-\*F008 RHR inboard isolation valve.

History: Not used on 2008/2010 Limerick Initial License Exams, New JPM



# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM D

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Applicant obtains procedure S51.8B and determines step 4.4.24.5 is applicable.</p> <p>Step 4.4.24.5</p> <p>1. <u>IF</u> additional cooling is required, Then <u>PERFORM</u> the following:</p> <ul style="list-style-type: none"> <li>a. <b>OPEN</b> HV-C-51-1F048A, HEAT EXCH BYPASS</li> <li>b. <b>OPEN</b> HV-51-1F003A, OUTLET</li> <li>c. <b>CLOSE</b> HV-C-51-103A, POS</li> </ul> <p><b><u>Evaluator Cue:</u></b> Additional cooling is required</p>	<ul style="list-style-type: none"> <li>• HV-C-51-1F048A handswitch to OPEN</li> <li>• HV-51-1F003A handswitch to OPEN</li> <li>• Depress HV-C-51-103A controller "CLOSE" pushbutton to reduce meter output to 0%</li> </ul>			
<p><b>Alt Path begins here: Insert MNS157B spurious auto closure of HV-051-*F008 RHR Shutdown Cooling Outboard PCIV</b></p>				
<p>2. Applicant acknowledges the following alarms associated with RHR 1A pump trip on loss of suction path:</p> <ul style="list-style-type: none"> <li>• 113, F-3, 1A RHR disch hi/low pressure</li> <li>• 113, F-2, 1A RHR motor OC/trip</li> </ul>	<p>Acknowledges the following alarms associated with RHR 1A pump trip on loss of suction path:</p> <ul style="list-style-type: none"> <li>• 113, F-3, 1A RHR disch hi/low pressure</li> <li>• 113, F-2, 1A RHR motor OC/trip</li> </ul>			
<p>*3. Applicant will <b>enter</b> ON-121, "Loss of Shutdown Cooling."</p>	<p><b>Enter</b> ON-121, "Loss of Shutdown Cooling."</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 2.1.90</p> <p>4. <b>IF</b> caused by inadvertent Outboard isolation signal to any of the following valves:  <b>THEN PERFORM</b> Attachment 4.</p> <ul style="list-style-type: none"> <li>• HV-51-*F008, "RHR Shutdown Clg Suction Outboard PCIV" (OUTBOARD)</li> <li>• HV-51-*F015A, "A RHR Shutdown Clg Injection PCIV" (OUTBOARD)</li> <li>• HV-51-*F015B, "B RHR Shutdown Clg Injection PCIV" (OUTBOARD)</li> </ul> <p><b>Evaluator Cue:</b> When applicant determines that Attachment 4 is applicable, then inform the applicant that Attachment 4 will be completed by another operator to install jumpers in the Aux Equipment Room.</p> <p><b>Evaluator Cue:</b> After 30 sec, inform applicant that Attachment 4 attempts to open HV-51-*F008 were unsuccessful.</p>	<p>Applicant determines that Alternate Shutdown Cooling is needed to be aligned per Attachment 6.</p>			
<p>Step 2.1.90</p> <p>5. <b>IF</b> required to implement Alternate Shutdown Cooling due to the failure of HV-51-*F008 <b>OR</b> HV-51-*F009  <b>THEN PERFORM</b> Attachment 6.</p>	<p>Applicant determines that Alternate Shutdown Cooling is needed to be aligned per Attachment 6.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 1.0</p> <p>6. <b>IF</b> Alternate Shutdown Cooling using RHR, SRV's &amp; Suppression Pool Cooling (NOT in OPCON 5) is required, <b>THEN PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>• <b>VERIFY</b> at least one SRV will operate by ensuring ST-4-041-470-* is in surveillance.</li> <li>• <b>VERIFY</b> at least one loop of RHR is capable of being placed in Suppression Pool Cooling per S51.8.A.</li> </ul> <p><b>Evaluator Cue:</b> Inform the applicant that another operator has verified that at least one SRV will operate IAW ST-4-041-470 and at least one loop of RHR is capable of being placed in Suppression Pool Cooling per S51.8A.</p>	<p><b>VERIFIES</b> at least one SRV will operate by ensuring ST-4-041-470-* is in surveillance.</p> <p><b>VERIFIES</b> at least one loop of RHR is capable of being placed in Suppression Pool Cooling per S51.8.A.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 1.30</p> <p>7. <b>VERIFY</b> one loop of LPCI is lined up for operation per S51.1.A <b>OR</b> one loop of Core Spray is lined up for operation per S52.1.A.</p> <p><b>Evaluator Note/Cue:</b> Note that only one method is preferred in the current situation, SRVs and one loop of Core Spray should be used for an alternate shutdown cooling method. The applicant should recognize that the <b>ONLY</b> available RHR pump should be aligned to suppression pool cooling. Based on the above facts, <b>CUEING</b> may be needed to direct applicant to use Core Spray loop, if the applicant does not recognize the need.</p> <p><b>Evaluator Cue:</b> When applicant determines that Core Spray loop is needed for alternate shutdown cooling method, inform applicant that <b>CORE SPRAY LOOP A SETUP</b> steps are completed, and <b>Core Spray Loop A is lined up for operation per S52.1A.</b></p>	<p><b>VERIFIES</b> one loop of LPCI is lined up for operation per S51.1.A <b>OR</b> one loop of Core Spray is lined up for operation per S52.1.A.</p>			
<p>Step 2.0</p> <p>*7. <b>PERFORM</b> S41.7.B</p> <p><b>Evaluator Cue:</b> Inform applicant that all prerequisites for S41.7B have been verified to be met by another operator.</p>	<p><b>Obtains</b> S41.7B, USE OF SRV'S AND SUPPRESSION POOL COOLING AS AN ALTERNATE SHUTDOWN COOLING METHOD</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b>Warning:</b> Personnel must be evacuated from Drywell prior to operating this decay heat removal method.</p> <p>8. <b>IMPLEMENT</b> Suppression Pool Cooling per S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) And Level Control <b>AND PLACE</b> mousetraps on affected handswitches.</p> <p><b>Evaluator Cue:</b> For exam purposes, do not use plant page or other radio equipment to evacuate personnel from Drywell. Verbally communicate that to me.</p>	<p><b>Obtains</b> S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) And Level Control</p>			
<p>S51.8.A, Step 4.2.1</p> <p>9. <b>START</b> selected RHR Service Water loop per S12.1.A, RHR Service Water System Startup.</p> <p><b>Evaluator Cue:</b> Inform applicant that all prerequisites for S51.8.A have been verified to be met by another operator.</p>	<p><b>N/A</b></p> <p><b>Determines</b> that RHR Service Water pump 0A is already started and Running.</p>			
<p>Step 4.2.2</p> <p>10. <b>ENSURE</b> HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION), closed.</p>	<p><b>ENSURES</b> HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION), closed.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT			STANDARD		SAT	UNSAT	Comment Number
Step 4.2.3 11. <b>ENSURE</b> alignment of the following valves as indicated:			<b>ENSURES</b> alignment of the following valves as indicated:				
HV-51-*F047A	"RHR Heat Exchanger Shell Side Inlet" (INLET)	OPEN	HV-51-*F047A	"RHR Heat Exchanger Shell Side Inlet" (INLET)	OPEN		
HV-51-*F003A	"RHR Heat Exchanger Shell Side Outlet" (OUTLET)	OPEN	HV-51-*F003A	"RHR Heat Exchanger Shell Side Outlet" (OUTLET)	OPEN		
HV-51-*F004A	"Suppression Pool Suction" (SUCTION)	OPEN	HV-51-*F004A	"Suppression Pool Suction" (SUCTION)	OPEN		
Step 4.2.5 12. <b>DISPATCH</b> Equipment Operator to inspect breaker for Trips <b>OR</b> Flags prior to pump start unless a plant transient requires a start of pump. <b>Evaluator Cue:</b> No abnormal indications are present locally at the breaker.			<b>DISPATCHES</b> Equipment Operator to inspect breaker for Trips <b>OR</b> Flags prior to pump start unless a plant transient requires a start of pump.				
Step 4.2.6 *14. <b>START</b> *A P202, RHR Pump (PUMP).			<b>STARTS</b> *A P202, RHR Pump (PUMP).				

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.2.7</p> <p>*15. <b>Throttle OPEN</b> HV-51-*F024A, "RHR Pump Full Flow Test Return" (SUPP POOL CLG), <b>AND PERFORM</b> the following:</p> <ol style="list-style-type: none"> <li>1. <b>MAINTAIN</b> flow indicated on FI-51-*R603A. "RHR Loop Flow," between 8000 to 8500 gpm</li> <li>2. <b>IF</b> greater than 8500 gpm required to maximize cooling, <b>THEN MINIMIZE</b> amount of time to reduce amount of water added to Suppression Pool.</li> </ol>	<p><b>Throttle OPENS</b> HV-51-*F024A, "RHR Pump Full Flow Test Return" (SUPP POOL CLG) to <b>MAINTAIN</b> flow indicated on FI-51-*R603A. "RHR Loop Flow," between 8000 to 8500 gpm.</p>			
<p>Step 4.2.8</p> <p>16. <b>CLOSE</b> HV-C-51-*F048A, HEAT EXCH BYPASS</p>	<p><b>CLOSES</b> HV-C-51-*F048A, HEAT EXCH BYPASS</p>			
<p>Step 4.2.9</p> <p>17. <b>MONITOR</b> Suppression Pool temperature on SPOTMOS <b>OR</b> TE-51-*04A "RHR Pump A Suction" on XI-36-*01 at panel *0C614 <b>AND PERFORM</b> the following:</p> <ol style="list-style-type: none"> <li>3. <b>MAINTAIN</b> temperature below 92°F.</li> </ol>	<p><b>MONITOR</b> Suppression Pool temperature on SPOTMOS <b>OR</b> TE-51-*04A "RHR Pump A Suction" on XI-36-*01 at panel *0C614 to <b>Maintain</b> temperature below 92°F.</p>			

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM D

ELEMENT		STANDARD		SAT	UNSAT	Comment Number
Step 4.2.4 *18. At *0C601, <b>CLOSE</b> the following:		At *0C601, <b>CLOSES</b> the following:				
HV-041-*F022A(B, C,D)	"Main Steam Isolation Valve"	HV-041-*F022A(B, C,D)	"Main Steam Isolation Valve"			
HV-041-*F028A(B, C,D)	"Main Steam Isolation Valve"	HV-041-*F028A(B, C,D)	"Main Steam Isolation Valve"			
HV-041-*F016	"Main Steam Line Drain Valve"	HV-041-*F016	"Main Steam Line Drain Valve"			
HV-041-*F019	"Main Steam Line Drain Valve"	HV-041-*F019	"Main Steam Line Drain Valve"			
Step 4.2.5 *19. At *0C602, <b>CLOSE</b> the following:		At *0C602, <b>CLOSE</b> the following:				
HV-041-*F001	"Vessel Head Vent Valve"	HV-041-*F001	"Vessel Head Vent Valve"			
HV-041-*F002	"Vessel Head Vent Valve"	HV-041-*F002	"Vessel Head Vent Valve"			
HV-041-*F005	"Vessel Head Vent Valve"	HV-041-*F005	"Vessel Head Vent Valve"			
Step 4.2.6 *20. At *0C648, <b>CLOSE</b> the following:		At *0C648, <b>CLOSE</b> the following:				
HV-049-*F007	"RCIC Steam Supply Valve"	HV-049-*F007	"RCIC Steam Supply Valve"			
HV-049-*F008	"RCIC Steam Supply Valve"	HV-049-*F008	"RCIC Steam Supply Valve"			
HV-049-*F076	"RCIC Steam Warmup Line PCIV"	HV-049-*F076	"RCIC Steam Warmup Line PCIV"			



**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT		STANDARD	SAT	UNSAT	Comment Number
Step 4.2.7 *21. At *0C647, <b>CLOSE</b> the following:		At *0C647, <b>CLOSE</b> the following:			
HV-055-*F002	"HPCI Main Steam Supply Valve"	HV-055-*F002 "HPCI Main Steam Supply Valve"			
HV-055-*F003	"HPCI Main Steam Supply Valve"	HV-055-*F003 "HPCI Main Steam Supply Valve"			
HV-055-*F100	"HPCI Steam Warmup Line PCIV"	HV-055-*F100 "HPCI Steam Warmup Line PCIV"			
Step 4.2.80 *22. <b>PLACE</b> any one SRV handswitch in "OPEN" at *0C626 <b>AND PLACE</b> Equipment Status Tag on handswitch.		<b>PLACES</b> any one SRV handswitch in "OPEN" at *0C626 <b>AND PLACES</b> Equipment Status Tag on handswitch			
Step 4.2.9 *23. <b>IF</b> two SRVs are operable, <b>THEN PLACE</b> an additional SRV handswitch in "OPEN" at *0C626 <b>AND PLACE</b> Equipment Status Tag on handswitch.		<b>PLACES</b> an additional SRV handswitch in "OPEN" at *0C626 <b>AND PLACES</b> Equipment Status Tag on handswitch			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b>NOTE: UPON PRE-PRE VALIDATION NRC MAY END JPM HERE BASED ON TIME.</b></p> <p>Step 4.2.10</p> <p>*24. <b>RAISE</b> Reactor level to 118 inches on LI-042-*R605, "Shutdown Range," using CRD <b>AND/OR</b> condensate transfer via one LPCI Injection valve as follows:</p> <ol style="list-style-type: none"> <li><b>OPEN</b> HV-51-*F017D(C), "RHR LPCI Inj Vlv," <b>AND PLACE</b> mousetrap on handswitch. (CM-1)</li> <li>Slowly <b>THROTTLE</b> 51-*018D(C), "RHR Pp Disch Hdr Cond Trans Fill Inlet Vlv," to obtain approximately one inch per minute level rise on LI-042-*R605, "Shutdown Range."</li> </ol>	<p><b>RAISES</b> Reactor level to 118 inches on LI-042-*R605, "Shutdown Range," using CRD <b>AND/OR</b> condensate transfer via one LPCI Injection valve as follows:</p> <ol style="list-style-type: none"> <li><b>OPENS</b> HV-51-*F017D(C), "RHR LPCI Inj Vlv," <b>AND PLACES</b> mousetrap on handswitch. (CM-1)</li> <li>Slowly <b>THROTTLES</b> 51-*018D(C), "RHR Pp Disch Hdr Cond Trans Fill Inlet Vlv," to obtain approximately one inch per minute level rise on LI-042-*R605, "Shutdown Range."</li> </ol>			
<p>Step 4.2.11</p> <p>25. <b>IF</b> condensate transfer is being used to raise reactor level <b>AND</b> water begins to fill Main Steam lines, <b>THEN THROTTLE</b> 051-*018D(C), "RHR Pp Disch Hdr Cond Trans Fill Inlet Vlv," until level is equal to or greater than 150 inches on LI-042-*R605, "Shutdown Range."</p>	N/A			
<p>Step 4.2.12</p> <p>*26. <b>ALIGN</b> one LPCI per S51.1.A, Set Up Of RHR System For Automatic Operation In LPCI Mode <b>OR</b> one loop of Core Spray per S52.1.A, Core Spray Setup For Service Operation, with suction aligned to Suppression Pool.</p> <p><b>Evaluator Cue:</b> "A" Loop of Core Spray is aligned per S52.1A for operation with suction aligned to suppression pool.</p>	<p><b>ALIGNS</b> one loop of Core Spray per S52.1.A, Core Spray Setup For Service Operation, with suction aligned to Suppression Pool.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM D*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Step 4.2.13 *27. <b>START</b> LPCI pump <b>OR</b> Core Spray loop injection system <b>AND</b> slowly <b>RAISE</b> flow to maximum by throttling loop injection valves <b>AND PLACE</b> mousetrap on affected pump handswitch.	<b>STARTS</b> Core Spray loop injection system <b>AND</b> slowly <b>RAISE</b> flow to maximum by throttling loop injection valves <b>AND PLACE</b> mousetrap on affected pump handswitch.			
Step 4.2.14 26. <b>CLOSE</b> 51-*018D(C), "RHR Pp Disch Hdr Cond Trans Fill Inlet Vlv."	<b>CLOSES</b> 51-*018D(C), "RHR Pp Disch Hdr Cond Trans Fill Inlet Vlv."			
Step 4.2.15 27. <b>SECURE</b> CRD injection per S46.2.A, Shutdown of Control Rod Drive Hydraulic System.	<b>SECURES</b> CRD injection per S46.2.A, Shutdown of Control Rod Drive Hydraulic System			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 150°F as read on XI-36-101 point 1.
2. "0A" RHRSW pump is in service providing flow to "1A" RHR Heat Exchanger.
3. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to lower reactor coolant temperature within the 75°F to 85°F band.
4. "1B", "1C", & "1D" RHR pumps are OOS for maintenance, expected time to recovery is 8 hours.
5. The Unit 1 Reactor Operator is performing the cooldown ST.

**INITIATING CUE:**

The CRS has directed you to continue performing S51.8.B at step number 4.4.24, to provide additional cooling to reactor coolant.

HANDOUT PAGE

**TASK CONDITIONS:**

1. "1A" RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 150°F as read on XI-36-101 point 1.
2. "0A" RHRSW pump is in service providing flow to "1A" RHR Heat Exchanger.
3. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to lower reactor coolant temperature within the 75°F to 85°F band.
4. "1B", "1C", & "1D" RHR pumps are OOS for maintenance, expected time to recovery is 8 hours.
5. The Unit 1 Reactor Operator is performing the cooldown ST.

**INITIATING CUE:**

The CRS has directed you to continue performing S51.8.B at step number 4.4.24, to provide additional cooling to reactor coolant.

## **Limerick Generating Station**

### **Job Performance Measure**

**Perform A Remote Manual Start of the D12 Diesel Generator and Load to 2000 KW (Alternate Path)**

JPM Designation: E

Revision Number: 0

Date: 02/21/12

<b>Developed By:</b>	<u>DeMarshall</u>	<u>02/14/12</u>
	<b>Author</b>	<b>Date</b>
<b>Review By:</b>	<u>Patel</u>	<u>02/16/12</u>
	<b>Examiner</b>	<b>Date</b>
<b>Approved By:</b>	<u>Caruso</u>	<u>02/21/12</u>
	<b>Chief Examiner</b>	<b>Date</b>

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. The simulator can be set up to any IC that the plant is stable.
2. Provide copy of S92.1.O, Local and Remote Manual Startup of a Diesel Generator.
3. Provide copy of S92.2.N, Shutdown of the Diesel Generators.
4. Remote function RDG315 toggled to SLOW START.
5. An EO is stationed locally at the diesel generator (many steps require local operation or verification of automatic function).
6. Program override for Annunciator 122 D12 (C1) and Annunciator 122 D12 (D1) to ON 45 seconds after 2000 KW load has been achieved.

### **TASK STANDARD:**

Perform a Remote Manual Start of the D12 Diesel Generator per S92.1.O.

Load the D12 Diesel Generator to 2000 KW per S92.1.O.

Perform a Rapid Shutdown of the D12 Diesel Generator after the Generator Output breaker fails to trip open on a Generator Differential Overcurrent condition.

### **TASK CONDITIONS:**

1. All prerequisites for Remote Manual Startup of the D12 Diesel Generator have been completed in accordance with S92.1.O.
2. Procedure S92.1.O completed up to and including Step 4.3.7.
3. D12 Safeguard Bus supplied from 201 Safeguard Transformer.
4. EO stationed locally at D12 Diesel Generator.
5. Technical Specifications have been entered due to the D12 Diesel Generator being INOP during this test.

### **INITIATING CUE:**

You are directed by Shift Supervision to start and load D12 Diesel Generator to 2000 KW from the Main Control Room per S92.1.O; the procedure has been performed up to and including Step 4.3.7.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.



**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title:** Perform A Remote Manual Start of the D12 Diesel Generator and Load to 2000 KW  
(Alternate Path)

**JPM Designation:** E

**Revision Number:** 0

**K/A Number and Importance:** 264000 A4.04 RO 3.7 SRO 3.7

**Suggested Testing Environment:** Simulator

**Actual Testing Environment:** Simulator

**Testing Method:** Perform

**Alternate Path:** Yes

**Time Critical:** No

**Estimated Time to Complete:** 25 min.    **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2, Supp. 1, 264000 A4.04 RO 3.7 SRO 3.7
2. S92.1.O, Rev. 53
3. S92.2.N, Rev. 33
4. Module/LP ID: LL0T0092B, Diesel Generators and Auxiliaries, Rev. 0
5. ARC-MCR-122 (C1), Rev. 0
6. ARC-MCR-122 (D1), Rev. 0

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Description:**

This JPM has the operator (1) perform a Remote Manual start of the D12 Diesel Generator, (2) load the D12 Diesel Generator to 2000 KW, and (3) perform a Rapid Shutdown of the Diesel Generator after the Generator Output breaker fails to trip open on a Generator Differential Overcurrent condition.

**Evaluator Note:**

The steps of S92.1.O and S92.2.N are listed for reference and tracking of applicant's actions.

**History:**

New Alternate Path JPM requiring the applicant to perform a Rapid Shutdown of the D12 Diesel Generator (following a Remote Manual start and load to 2000 KW), after the Generator Output breaker fails to trip on a Generator Differential Overcurrent condition.

# NRC LGS INITIAL EXAMINATION

JPM E

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews.	Applicant obtains current revision of S92.1.O, reads section 2.0 Prerequisites and 3.0 Precautions.			
2. Make plant announcement of impending D12 Diesel Generator start.  <b><u>Evaluator Cue:</u></b> Evaluator informs applicant that another operator has already made the plant announcement.	N/A			
*3. (S92.1.O, Step 4.3.8) <b>PLACE</b> 101-BG501/CS, "Diesel Generator Control," to "START."	Applicant places Switch 101-BG501/CS to START and verifies "red flagged" indication.			
4. (Step 4.3.9) <b>CHECK</b> Prelube Pump for excessive bearing noise.  <b><u>Evaluator Cue:</u></b> "EO reports the Prelube Pump is running and there is no excessive bearing noise."	Applicant directs EO to verify Prelube Pump in operation and to check for excessive bearing noise.			
5. (Step 4.3.10) <b>WHEN</b> 3 minute time delay for Prelube Pump operation is completed, <b>THEN OBSERVE</b> diesel generator starts.  <b><u>Evaluator Cue:</u></b> For the purposes of the JPM, you can assume 3 minutes have elapsed	Applicant observes D12 Diesel starts <b>AND</b> the "D12 Diesel Running" annunciator illuminated.			

**NRC LGS INITIAL EXAMINATION**

*JPM E*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>Evaluator Note:</u></b> Expected indications in Steps 6, 7 and 8 below, are verified following receipt of the "D12 DIESEL RUNNING" annunciator.</p>	N/A			
<p>6. (Step 4.3.11) <b>VERIFY</b> diesel accelerates to between 300 to 400 rpm by observing engine tachometer at engine gauge panel <b>OR</b> local control panel.</p> <p><b><u>Evaluator Cue:</u></b> "EO reports diesel speed is 370 rpm."</p>	<p>Applicant directs EO to verify Diesel speed between 300 and 400 rpm by observing engine tachometer indication at the 1BG501 engine guage panel <b>OR</b> 1BG501 local control panel.</p>			
<p>7. (Step 4.3.12) <b>VERIFY</b> lube oil pressure <math>\geq</math> 12 psi on red pointer at local PI-GA-101B.</p> <p><b><u>Evaluator Cue:</u></b> "EO reports lube oil pressure is 18 psig."</p>	<p>Applicant directs EO to verify lube oil pressure <math>\geq</math> 12 psi using red pointer indication at local PIGA-101B.</p>			
<p>8. (Step 4.3.13) <b>VERIFY</b> jacket water pressure <math>\geq</math> 10 psi on red pointer at local PI-GA-120B.</p> <p><b><u>Evaluator Cue:</u></b> "EO reports jacket water pressure is 15 psig."</p>	<p>Applicant directs EO to verify jacket water pressure <math>\geq</math> 10 psig using red pointer indication at local PI-GA-120B.</p>			
<p><b>Step 4.3.14 NOTE</b> Step 4.3.14 will cause the GENERATOR LOSS OF EXCITATION alarm at panel 1BC514 as engine speed is raised with exciter shutdown.</p>	N/A			

# NRC LGS INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>9. (Step 4.3.14)</p> <p>Gradually <b>RAISE</b> engine speed to 900 rpm within 1 to 2 minutes by continually rotating the Governor SPEED Control Knob clockwise (position of 21.00 ± 0.1).</p> <p><b>Evaluator Cue:</b> "EO reports that the diesel is at 900 rpm."</p>	<p>Applicant directs EO to gradually <b>RAISE</b> engine speed to 900 RPM within 1 to 2 minutes by continually rotating the Governor SPEED Control Knob clockwise (position of 21.00 ± 0.1).</p>			
<p>10. (Step 4.3.15)</p> <p><b>PLACE</b> EXCITER SHUTDOWN/ RESET switch to "RESET."</p> <p><b>Evaluator Cue:</b> "EO reports the EXCITER SHUTDOWN / RESET Switch is in RESET."</p>	<p>Applicant directs EO to place the EXCITER SHUTDOWN / RESET Switch in RESET.</p>			
<p>11. (Step 4.3.17)</p> <p><b>VERIFY</b> frequency meter reads from 59 to 61 Hz.</p>	<p>Applicant verifies frequency between 59-61 Hz.</p>			
<p>12. (Step 4.3.18)</p> <p><b>IF</b> ESW pump <b>not</b> already running,</p> <p><b>THEN VERIFY</b> ESW pump starts 50 to 60 seconds after diesel start.</p>	<p>Applicant verifies OBP548 ESW pump running.</p>			
<p>13. (Step 4.3.19)</p> <p><b>VERIFY</b> cooling water is available to diesel generator by observing PI-11-107B, "ESW Supply," indicates higher pressure than PI-11-108B, "ESW Return."</p> <p><b>Evaluator Cue:</b> "EO reports cooling water available."</p>	<p>Applicant directs EO to verify cooling water available to the diesel by observing proper D/P between ESW Supply (PI-11-107B) and ESW Return (PI-11-108B) indicators.</p>			

# NRC LGS INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
14. (Step 4.3.20) <b>VERIFY</b> 1BV512, "Diesel Gen Vent Air Exh Fan," <b>OR</b> 1FV512, "Diesel Gen Vent Air Exh Fan," is on.  <u><b>Evaluator Cue:</b></u> "EO reports an exhaust fan is running."	Applicant directs EO to verify that either the 1BV512 or 1FV512 exhaust fan is running.			
15. (Step 4.4.1) <b>IF</b> diesel was started locally, <b>THEN RETURN</b> diesel control to Control Room: a. <b>PLACE</b> LOCAL-REMOTE switch to REMOTE. b. <b>INFORM</b> Control Room Operator diesel control has been returned to MCR. c. <b>PLACE</b> 101-BG501, "Diesel Generator Control", to START to convert governor to droop mode.	Applicant N/A's Step 4.4.1 and proceeds to Step 4.4.2.			
16. (Step 4.4.2) <b>PLACE</b> 143-BX103, "201 Safeguard Transformer Tap Changer Selector," to "MANUAL."  <u><b>Evaluator Cue:</b></u> "The Tap Changer is in MANUAL."	Applicant places 143-BX103 Tap Changer in MANUAL.			
*17. (Step 4.4.3) <b>INSERT</b> synchroscope switch handle into Synchroscope Switch for the 1BG501 Diesel Generator Breaker <b>AND PLACE</b> to "ON."	Applicant inserts Synch Switch handle for 1BG501 and places Synchroscope Switch 125-11607/SS in the "ON" position.			

**NRC LGS INITIAL EXAMINATION**

*JPM E*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>18. (Step 4.4.4)  <b>OBSERVE</b> Synchroscope for the 1BG501 Diesel Generator operates properly:</p> <p>a. Synchroscope rotating.</p> <p>b. <b>WHEN</b> synchroscope is at 180°,  <b>THEN</b> both lights are lit  <b>AND</b> fully bright.</p> <p>c. <b>WHEN</b> synchroscope is at 0°,  <b>THEN</b> both lights are not LIT.</p>	<p>Applicant observes proper operation of the 1BG501 Synchroscope as indicated by:</p> <p>a. Synchroscope rotating.</p> <p>b. <b>WHEN</b> synchroscope is at 180°,  <b>THEN</b> both lights are lit  <b>AND</b> fully bright.</p> <p>c. <b>WHEN</b> synchroscope is at 0°,  <b>THEN</b> both lights are not LIT.</p>			
<p>19. (Step 4.4.5)  <b>VERIFY</b> speed controls operate properly as follows:</p> <p>a. <b>OBSERVE</b> diesel generator frequency as indicated by synchroscope.</p> <p>b. <b>PLACE</b> 165-BG501/CS, "Diesel Generator Speed Control," to "RAISE"  <b>AND</b> to "LOWER."</p> <p>c. <b>VERIFY</b> change in synchroscope rotation rate or direction of rotation.</p>	<p>Applicant verifies proper operation of the speed controls by observing changes in synchroscope rotation rate and direction of rotation, in response to placing Switch 165-BG501/CS to "RAISE"  <b>AND</b> to "LOWER."</p>			
<p>20. (Step 4.4.6)  <b>VERIFY</b> voltage controls operating properly as follows:</p> <p>a. <b>OBSERVE</b> diesel generator voltage as indicated on Incoming Voltmeter.</p> <p>b. <b>PLACE</b> 170-BG502/CS VOLTAGE REGULATOR to "RAISE"  <b>AND</b> to "LOWER."</p> <p>c. <b>VERIFY</b> change on Incoming Voltage meter.</p>	<p>Applicant verifies proper operation of voltage controls by observing changes in diesel generator voltage on the Incoming Voltage meter, in response to placing Switch 170-BG502/CS to "RAISE"  <b>AND</b> to "LOWER."</p>			

**NRC LGS INITIAL EXAMINATION**

*JPM E*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*21. (Step 4.4.7) <b>ADJUST</b> engine speed using 165-BG501/CS, "Diesel Generator Speed Governor Control," until synchroscope is rotating slowly in FAST direction (clockwise).	Applicant <b>ADJUSTS</b> engine speed using 165-BG501/CS, until synchroscope is rotating slowly in FAST direction (clockwise).			
*22. (Step 4.4.8) <b>ADJUST</b> diesel generator voltage using 170-BG502/CS, "Diesel Generator Voltage Regulator," until Synchronizing Incoming Voltmeter is slightly higher than Synchronizing Running Voltmeter.	Applicant <b>ADJUSTS</b> generator voltage using 170-BG502/CS, until Synchronizing Incoming Voltmeter reads 0.5 to 5 volts higher than Synchronizing Running Voltmeter.			
*23. (Step 4.5.1) <u><b>WHEN</b></u> Synchroscope is within 3 degrees before 12 o'clock, <u><b>THEN CLOSE</b></u> Diesel Generator Breaker.	Applicant <b>CLOSES</b> D12 output breaker 152-11607/CS when Synchroscope is within 3 degrees before the 12 o'clock position, and verifies: <ul style="list-style-type: none"> <li>a. D12 output breaker 152-11607/CS "red flagged" indication.</li> <li>b. D12 output breaker 152-11607 shuts and remains closed.</li> </ul>			
24. (Step 4.5.2) Immediately <b>RAISE</b> load to between 200 to 300 KW by turning 165-BG501CS "Diesel Generator Speed Governor Control," to "RAISE."	Applicant immediately <b>RAISES</b> load to between 200 to 300 KW as indicated on kilowatt meter W/BG501-2, by turning 165-BG501CS to "RAISE."			
25. (Step 4.5.3) Immediately <b>LOAD</b> 100 KVAR by turning 170-BG502/CS, "Diesel Generator Voltage Regulator" to "RAISE."	Applicant immediately <b>LOADS</b> 100 KVAR as indicated on kilovar meter VAR/BG501-2, by turning 170-BG502/CS to "RAISE."			
26. (Step 4.5.4) <b>TURN</b> Synchroscope Switch to "OFF."	Applicant <b>TURNS</b> Synchroscope Switch 125-11607/SS to the OFF position.			



# NRC LGS INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*27. (Step 4.5.5) . Gradually <b>RAISE</b> diesel generator load at rate of less than or equal to 350 KW/min to desired value.	Applicant gradually <b>RAISES</b> diesel generator load at a rate of less than or equal to 350 KW/min, to 2000 KW as indicated on kilowatt meter W/BG501-2, with KVARs less than 1500 KVARs.			
<b><u>ALTERNATE PATH BEGINS HERE</u></b>	<b><u>ALTERNATE PATH BEGINS</u></b>			
28. Annunciator response to: D12 D-G DIFF / GROUND LOCKOUT [ARC-MCR-122 (C1)]  <b><u>AND</u></b> D12 D-G TROUBLE [ARC-MCR-122 (D1)].  <b><u>Evaluator Note:</u></b> Programmed malfunction for receipt of Annunciator 122 D12 (C1) and Annunciator 122 D12 (D1), set for 45 seconds after 2000 KW load has been achieved.	Applicant:  a. Acknowledges alarms b. Reports alarms to Unit Supervisor c. References alarm responses for: <ul style="list-style-type: none"> <li>• ARC-MCR-122 (C1)</li> <li>• ARC-MCR-122 (D1)</li> </ul>			

**NRC LGS INITIAL EXAMINATION**

*JPM E*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>Evaluator Note:</u></b>  D12 Diesel Generator output breaker fails to trip on Differential Overcurrent. Operator Action in accordance with ARC-MCR-122 (C1), "D12 D-G DIFF / GROUND LOCKOUT," is to verify the Automatic Action, which is a trip of the engine and the output breaker.</p> <p>Guidance for performing a diesel generator "Rapid Shutdown Due to Alarm  <b>OR</b> Abnormal Condition," is provided in Section 4.2 of S92.2.N, "Shutdown of the Diesel Generators."</p> <p>It is acceptable for the applicant to either shutdown the D12 Diesel Generator from memory by performing the actions specified in Steps 29 and 30 below, at which point S92.2.N should be referenced to ensure all required actions have been completed  <b>OR</b>  shutdown the D12 Diesel Generator with procedure S92.2.N in hand.</p>	<p>N/A</p>			
<p>*29. (S92.2.N, 4.2.1)  <b>PLACE</b> Diesel Generator Breaker to "PULL TO LOCK."</p>	<p>Applicant places D12 output breaker 152-11607/CS in "PULL TO LOCK" position and verifies:</p> <ul style="list-style-type: none"> <li>a. D12 output breaker 152-11607/CS "green flagged" indication</li> <li>b. D12 output breaker 152-11607 opens and remains opens.</li> </ul>			

# NRC LGS INITIAL EXAMINATION

*JPM E*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*30. (4.2.2) <b>PLACE</b> 101-BG501/CS, "Diesel Generator Control," to "PULL TO LOCK."	Applicant places Switch 101- 1BG501/CS to "PULL TO LOCK" position and verifies "green flagged" indication.			
<b><u>Evaluator Cue:</u></b> JPM is complete.				

JPM Stop Time \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. All prerequisites have been satisfied.
2. Procedure S92.1.O completed up to and including Step 4.3.7.
3. D12 Safeguard Bus supplied from 201 Safeguard Transformer.
4. EO stationed locally at D12 Diesel Generator.
5. Technical Specifications have been entered due to the D12 Diesel Generator being INOP during this test.

**INITIATING CUE:**

You are directed by Shift Supervision to start and load D12 Diesel Generator to 2000 KW from the Main Control Room per S92.1.O; the procedure has been performed up to and including Step 4.3.7.

HANDOUT PAGE

**TASK CONDITIONS:**

1. All prerequisites have been satisfied.
2. Procedure S92.1.O completed up to and including Step 4.3.4.
3. D12 Safeguard Bus supplied from 201 Safeguard Transformer.
4. EO stationed locally at D12 Diesel Generator.
5. Technical Specifications have been entered due to the D12 Diesel Generator being INOP during this test.

**INITIATING CUE:**

You are directed by Shift Supervision to start and load D12 Diesel Generator to 2000 KW from the Main Control Room per S92.1.O; the procedure has been performed up to and including Step 4.3.7.

## **Limerick Generating Station**

### **Job Performance Measure**

#### **SCRAM CHANNEL A1 and A2 FUNCTIONAL TEST (Alternate Path)**

JPM Designation: F

Revision Number: 0

Date: 3/1/12

<b>Developed By:</b>	<u>Patel</u>	<u>2/14/12</u>
	<b>Author</b>	<b>Date</b>
<b>Review By:</b>	<u>C. Lally</u>	<u>2/27/12</u>
	<b>Examiner</b>	<b>Date</b>
<b>Approved By:</b>	<u>J. Caruso</u>	<u>2/29/12</u>
	<b>Chief Examiner</b>	<b>Date</b>

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. The simulator can be reset to any IC that has RPS reset and the reactor is stable. (IC-17)
2. A1/A2 day selected under full core display.
3. Insert malfunction C71-S3C (fail as is) "A2 manual pushbutton" to prevent auto scram channel A2 alarm from annunciating and also causing SCRAM SYSTEM LOGIC lights to remain lit.

### **TASK STANDARD:**

Upon identification of failure to Scram for RPS channel A2, place the reactor mode switch to shutdown.

### **TASK CONDITIONS:**

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

### **INITIATING CUE:**

The CRS has directed you to perform ST-6-071-306-1, Unit 1 Channel A1/A2 RPS Manual Scram Channel Functional Test.

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.



Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

JPM Title: SCRAM CHANNEL A1 and A2 FUNCTIONAL TEST

JPM Number: F

Revision Number: 0

K/A Number and Importance: 212000 A1.11 3.4/3.3 (RO/SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

Testing Method: Perform in Simulator

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: \_\_\_\_\_ minutes

**References:**

1. NUREG 1123, 212000 A1.11 3.4/3.3 (RO/SRO)
2. ST-6-071-306-1, Rev. 12

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: \_\_\_\_\_(Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Description: This JPM has the operator to verify the reactor manual scram logic channels A1 and A2 function by performing ST-6-071-306-1. The operator will determine that channel A2 manual scram logic fails, and half-scram failed to actuate. The operator will enter OT-117, RPS failures, and manually scram the reactor.

History: Not used on 2008/2010 Limerick Initial License Exams. Modified Bank JPM #003. Changed alternate path functional test occurrence to Channel A2.

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM F

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of ST-6-071-306-1.	Obtains a copy of ST-6-071-306-1.			
Step 4.3.1 2. <b>VERIFY</b> the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603: <ul style="list-style-type: none"> <li>• B1 (DS9D)</li> <li>• B2 (DS9H)</li> <li>• B3 (DS9F)</li> <li>• B4 (DS9B)</li> </ul>	<b>VERIFIES</b> the following SCRAM SYSTEM LOGIC lights are Lit at panel 10C603: <ul style="list-style-type: none"> <li>• B1 (DS9D)</li> <li>• B2 (DS9H)</li> <li>• B3 (DS9F)</li> <li>• B4 (DS9B)</li> </ul>			
Step 4.3.2 *3. <b>POSITION</b> CH A1 collar in ARMED, at panel 10C603 <b>AND VERIFY</b> "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR.	<b>ROTATES</b> CH A1 pushbutton collar in ARMED, at panel 10C603 <b>AND VERIFIES</b> "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR.			
Step 4.3.3 *4. Fully <b>DEPRESS</b> CH A1, at panel 10C603.	Fully <b>DEPRESSES</b> CH A1 pushbutton, at panel 10C603.			
Step 4.3.4 *5. <b>RELEASE</b> CH A1 <b>AND VERIFY</b> the following at panel 108 REACTOR. <ul style="list-style-type: none"> <li>• MANUAL SCRAM SYSTEM A alarm annunciates.</li> <li>• AUTO SCRAM CHANNEL A1 alarm annunciates.</li> </ul>	<b>RELEASES</b> CH A1 pushbutton <b>AND VERIFIES</b> the following at panel 108 REACTOR. <ul style="list-style-type: none"> <li>• MANUAL SCRAM SYSTEM A alarm annunciates.</li> <li>• AUTO SCRAM CHANNEL A1 alarm annunciates.</li> </ul>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM F*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Step 4.3.5 6. <b>VERIFY</b> the following SCRAM SYSTEM LOGIC lights <b>not</b> Lit at panel 10C603: <ul style="list-style-type: none"> <li>• A1 (DS9C)</li> <li>• A2 (DS9G)</li> <li>• A3 (DS9E)</li> <li>• A4 (DS9A)</li> </ul>	<b>VERIFIES</b> the following SCRAM SYSTEM LOGIC lights are <b>not</b> Lit at panel 10C603: <ul style="list-style-type: none"> <li>• A1 (DS9C)</li> <li>• A2 (DS9G)</li> <li>• A3 (DS9E)</li> <li>• A4 (DS9A)</li> </ul>			
Step 4.3.6 7. <b>VERIFY</b> REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 <b>not</b> lit at panel 10C609.	<b>VERIFIES</b> REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 is <b>not</b> lit at panel 10C609.			
Step 4.3.8 8. <b>VERIFY</b> "MANUAL SCRAM SYSTEM A" alarm can be cleared at panel 108 REACTOR.	<b>Depresses</b> alarm reset pushbutton and <b>VERIFIES</b> "MANUAL SCRAM SYSTEM A" alarm can be cleared at panel 108 REACTOR			
Step 4.3.9 *9. <b>POSITION</b> CH A1 collar in DISARMED at panel 10C603, <b>AND</b> <b>VERIFY</b> "MANUAL SWITCH ARMED A, B" alarm can be cleared at panel 108 REACTOR.	<b>POSITIONS</b> CH A1 collar in DISARMED at panel 10C603, <b>AND</b> <b>VERIFY</b> "MANUAL SWITCH ARMED A, B" alarm can be cleared at panel 108 REACTOR			
Step 4.3.10 *10. <b>POSITION</b> "SCRAM RESET" to the following at panel 10C603: <ul style="list-style-type: none"> <li>• Group 1/4</li> <li>• Group 2/3</li> </ul>	<b>POSITIONS</b> "SCRAM RESET" to the following at panel 10C603: <ul style="list-style-type: none"> <li>• Group 1/4</li> <li>• Group 2/3</li> </ul>			
Step 4.3.11 11. <b>VERIFY</b> "AUTO SCRAM CHANNEL A1" alarm can be cleared at panel 108 REACTOR	<b>Depresses</b> alarm reset pushbutton and <b>VERIFIES</b> "AUTO SCRAM CHANNEL A1" alarm can be cleared at panel 108 REACTOR			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM F*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Step 4.3.12 12. <b>VERIFY</b> the following SCRAM SYSTEM LOGIC lights lit at panel 10C603: <ul style="list-style-type: none"> <li>• A1 (DS9C)</li> <li>• A2 (DS9G)</li> <li>• A3 (DS9E)</li> <li>• A4 (DS9A)</li> </ul>	<b>VERIFIES</b> the following SCRAM SYSTEM LOGIC lights are lit at panel 10C603: <ul style="list-style-type: none"> <li>• A1 (DS9C)</li> <li>• A2 (DS9G)</li> <li>• A3 (DS9E)</li> <li>• A4 (DS9A)</li> </ul>			
Step 4.3.13 13. <b>VERIFY</b> "REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1" lit at panel 10C609.	<b>VERIFIES</b> "REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1" is lit at panel 10C609.			
Step 4.4.1 14. <b>VERIFY</b> the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603: <ul style="list-style-type: none"> <li>• B1 (DS9D)</li> <li>• B2 (DS9H)</li> <li>• B3 (DS9F)</li> <li>• B4 (DS9B)</li> </ul>	<b>VERIFIES</b> the following SCRAM SYSTEM LOGIC lights are Lit at panel 10C603: <ul style="list-style-type: none"> <li>• B1 (DS9D)</li> <li>• B2 (DS9H)</li> <li>• B3 (DS9F)</li> <li>• B4 (DS9B)</li> </ul>			
Step 4.4.2 *15. <b>POSITION</b> CH A2 collar in ARMED, at panel 10C603 <b>AND VERIFY</b> "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR.	<b>POSITIONS</b> CH A2 collar in ARMED, at panel 10C603 <b>AND VERIFIES</b> "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR			
Step 4.4.3 *16. Fully <b>DEPRESS</b> CH A2, at panel 10C603.	Fully <b>DEPRESSES</b> CH A2, at panel 10C603.			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM F*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<b>Alt Path begins here: Ensure that malfunction C71-S3C</b> has been inserted to prevent auto scram channel A2 alarm from annunciating and also causing SCRAM SYSTEM LOGIC lights to remained Lit.				
Step 4.4.4 *17. <b>RELEASE</b> CH A2 <b>AND VERIFY</b> the following at panel 108 REACTOR:. <ul style="list-style-type: none"> <li>MANUAL SCRAM SYSTEM A alarm annunciates</li> <li>AUTO SCRAM CHANNEL A2 alarm annunciates</li> </ul>	Applicant recognizes that on Panel 108 window B-2 "AUTO SCRAM CHANNEL A2" is <b>NOT Lit</b> .			
Step 4.4.5 *18. <b>VERIFY</b> the following SCRAM SYSTEM LOGIC lights <b>not</b> Lit at panel 10C603: <ul style="list-style-type: none"> <li>A1 (DS9C)</li> <li>A2 (DS9G)</li> <li>A3 (DS9E)</li> <li>A4 (DS9A)</li> </ul>	Applicant recognizes that indicating lights A1, A2, A3, and A4 are still <b>LIT</b> on 10C603.			
*19. Enter OT-117, "RPS Failures" and attempts to <b>INSERT</b> manual <b>half SCRAM</b> on <b>A1</b> IAW OT-117 Step 3.2.1:  <b>IF</b> half SCRAM has been initiated <b>AND</b> associated white SCRAM lights do <b>not</b> go off, <b>THEN</b> immediately <b>INSERT</b> manual half SCRAM on affected RPS side	Applicant enters OT-117, "RPS Failures" and attempts to <b>INSERT</b> manual <b>half SCRAM</b> on <b>A1</b> IAW OT-117 Step 3.2.1 by <b>POSITIONING</b> CH A1 collar in ARMED position and Fully <b>DEPRESSING</b> CH A1 pushbutton on panel 10C603.			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

**JPM F**

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p>*20. Applicant recognizes that white SCRAM lights still remain Lit, and require manual <b>SCRAM</b> IAW OT-117 Step 3.2.1.1:</p> <p><b>IF</b> white SCRAM lights remain Lit, <b>THEN</b> manually <b>SCRAM</b> the reactor <b>AND PLACE</b> Reactor Mode Switch in "SHUTDOWN," <b>AND ENTER</b> T-101 <b>AND EXIT</b> this procedure.</p>	<p>Applicant recognizes that white SCRAM lights still remain Lit, and require manual <b>SCRAM</b> IAW OT-117 Step 3.2.1.1.</p> <p>Applicant <b>Places</b> Rx Mode Switch in "SHUTDOWN"</p>			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

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

**INITIATING CUE:**

The CRS has directed you to perform ST-6-071-306-1, Unit 1 Channel A1/A2 RPS Manual Scram Channel Functional Test.



## *NRC LIMERICK GENERATING STATION INITIAL EXAMINATION*

*JPM F*

### HANDOUT PAGE

#### **TASK CONDITIONS:**

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

#### **INITIATING CUE:**

The CRS has directed you to perform ST-6-071-306-1, Unit 1 Channel A1/A2 RPS Manual Scram Channel Functional Test.

# **Limerick Generating Station**

## **Job Performance Measure**

**Restore RECW, DWCW, and Instrument Gas (E-1AY160)  
(TIME CRITICAL)**

JPM Designation: G

Revision Number: 0

Date: 02/21/12

Developed By:	<u>DeMarshall</u>	<u>02/10/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>02/15/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>02/21/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## **REVISION RECORD (Summary):**

Rev 0

### **JPM Setup Instructions:**

1. Reset the Simulator to IC-17.
2. Provide copy of Event Procedure E-1AY160, Loss of 1A RPS UPS Power.
3. Insert Malfunction MED280A (Loss of 1AY160).

### **TASK STANDARD:**

Restore RECW to the Recirc Pump, restore DWCW flow to the drywell, restore Instrument Gas to the Drywell, and restore Instrument Gas Block and Vent Valves.

### **TASK CONDITIONS:**

1. 1AY160 was de-energized 1 minute ago.
2. 1B DW Chiller was running.
3. A Brief has been conducted by the CRS, identifying the need to prioritize restoration of RECW to the Recirc Pump seals to prevent seal failure.

### **INITIATING CUE:**

#### **This is a Time Critical JPM**

You are directed by Shift Supervision to perform the initial actions of E-1AY160 to:

1. Restore RECW to the Recirc Pumps
2. Restore DWCW to the Drywell
3. Restore Instrument Gas
4. Restore Instrument Gas Block and Vent Valves

### **Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title:** Restore RECW, DWCW, and Instrument Gas (E-1AY160)

**JPM Designation:** G

**Revision Number:** 0

**K/A Number and Importance:** 400000 A4.01 RO 3.1 SRO 3.0

**Suggested Testing Environment:** Simulator

**Actual Testing Environment:** Simulator

**Testing Method:** Perform

**Alternate Path:** No

**Time Critical:** Yes

**Estimated Time to Complete:** 15 min.    **Actual Time Used:** \_\_\_\_\_ minutes

**References:**

1. NUREG 1123, Rev. 2, Supp. 1, 400000 A4.01 RO 3.1 SRO 3.0
2. E-1AY160, Rev. 21
3. Module/LP ID: LL0T0013, RECW, Rev. 0
4. Module/LP ID: LGSOPS0087, DCWS, Rev. 0
5. Module/LP ID: LGSOPS0059, Instrument Gas System, Rev. 1
6. Module/LP ID: LL0T0093, 480 And 120 VAC Power Distribution, Rev. 0

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:      ☐ **Satisfactory**      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_    **Date:** \_\_\_\_\_

**Description:**

This JPM has the operator restore (1) RECW to the Recirc Pump, (2) DWCW flow to the drywell, (3) Instrument Gas, and (4) Instrument Gas Block and Vent Valves.

**Evaluator Note:**

The steps of E-1AY160 are listed for reference and tracking of applicant's actions.

**History:**

Direct Bank JPM editorially enhanced to incorporate NRC standards, and verified not to have been used in the previous two initial license exams dated October 2008 and October 2010.

# NRC LGS INITIAL EXAMINATION

JPM G

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_ (Official start time for Time Critical portion of the JPM recorded when applicant acknowledges the initiating cue)

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure E-1AY160.	Applicant obtains current revision of E-1AY160.			
2. (E-1AY160, Step 2.1) <b>ENTER</b> ON-113, Loss of RECW.  <u><b>Evaluator Cue:</b></u> ON-113 is being performed by another operator.	N/A			
3. (Step 2.2) <b>IF</b> Recirc Pumps trip, <b>THEN ENTER</b> OT-112, Recirculation Pump Trip.	N/A			
4. (Step 2.3) <b>PERFORM</b> the following to restore RECW to Recirc Pump seal  <b>AND</b> motor oil coolers, on 10C655:	N/A			
*4a. (Step 2.3.1) <b>PLACE</b> HS-13-112, "Seals/ Oils Ctrs Inbd Isol Bypass" to "BYPASS"	Applicant places HS-13-112 keylock switch to BYPASS <u>within 9 minutes of start time.</u>			
*4b. (Step 2.3.2) <b>PLACE</b> HS-13-106, "Recirc Pumps Seals/Oil Coolers" (IN), to "OPEN"	Applicant places HS-13-106 handswitch to OPEN <u>within 9 minutes of start time</u> <b>AND</b> verifies HV-13-106 OPEN.			

**NRC LGS INITIAL EXAMINATION**

*JPM G*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*4c. (Step 2.3.3)</p> <p><b>PLACE</b> HS-13-107, "Recirc Pumps Seals/Oil Cooler" (OUT), to "OPEN"</p> <p><b>Time Critical Stop Time</b></p> <p>_____</p> <p><b><u>Evaluator Note:</u></b></p> <p><b>Time must be <math>\leq 9</math> minutes from JPM start time for SAT grade.</b></p>	<p>Applicant places HS-13-107 handswitch to OPEN <u>within 9 minutes of start time</u> <b>AND</b> verifies HV-13-107 OPEN</p>			
<p>5. (Step 2.3.4)</p> <p><b>REFER TO</b> Tech Spec 3.6.3 <b>AND</b> Tech Spec 3.3.2.b <b>AND TAKE</b> action for an inoperable isolation valve.</p>	<p>Applicant notifies CRS that Tech. Specs. 3.6.3 and 3.3.2.b are applicable.</p>			
<p>6. (Step 2.4)</p> <p><b>PERFORM</b> the following to restore Drywell Cooling:</p>	<p>N/A</p>			
<p>*6a. (Step 2.4.1)</p> <p><b>PLACE</b> HS-87-116, D/W CHILL WTR OUTBD ISOL BYPASS, keylock switch to "BYPASS" at 10C681.</p>	<p>Applicant places HS-87-116 keylock switch to BYPASS.</p>			
<p>6b. (Step 2.4.2)</p> <p><b>ENSURE</b> compliance with Tech. Spec. Action Statement 3.6.3.a. <b>AND</b> 3.3.2.b</p>	<p>Applicant notifies CRS that Tech. Specs. 3.6.3 and 3.3.2.b are applicable.</p>			
<p>7. (Step 2.4.3)</p> <p><b>OPEN</b> the following Drywell Chilled Water Isolation valves as required:</p>	<p>N/A</p>			



**NRC LGS INITIAL EXAMINATION**

*JPM G*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7a. (Step 2.4.3) 1) <u>Handswitch #</u> : HSS-87-121A (Loop A) <u>Valve Number -- Description</u> HV-87-120A "Chld Wtr In" HV-87-121A "Chld Wtr Out"	Applicant places HSS-87-121A handswitch in CHILLED WATER <b>AND</b> verifies HV-87-120A and HV-87-121A OPEN.			
*7b. (Step 2.4.3) 2) <u>Handswitch #</u> : HSS-87-121B (Loop B) <u>Valve Number -- Description</u> HV-87-120B "Chld Wtr In" HV-87-121B "Chld Wtr Out"	Applicant places HSS-87-121B handswitch in CHILLED WATER <b>AND</b> verifies HV-87-120B and HV-87-121B OPEN.			
8. (Step 2.4.4) <b>IF</b> Drywell Chiller trips, <b>THEN REFER TO S87.1.A</b> , Startup of Drywell Chilled Water System, <b>AND START</b> Drywell Chilled Water System.	N/A			
9. (Step 2.5) <b>PERFORM</b> the following to restore Instrument Gas on 10C601, ISOLATION:	N/A			
*9a. (Step 2.5.1) <b>PLACE</b> HS-59-129A, "Instrument Gas Supply" (DRYWELL A), in "CLOSE".	Applicant places HS-59-129A handswitch in CLOSE.			
*9b. (Step 2.5.2) <b>PLACE</b> HSS-57-191A, "Containment Isolation Bypass" (A), in "BYPASS".	Applicant places HSS-57-191A keylock switch in BYPASS.			
*9c. (Step 2.5.3) <b>PLACE</b> HS-59-129A, "Instrument Gas Supply" (DRYWELL A), in "AUTO".	Applicant places HS-59-129A handswitch in AUTO <b>AND</b> verifies HV-59-129A OPEN			

# NRC LGS INITIAL EXAMINATION

JPM G

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*9d. (Step 2.5.4) <b>PLACE</b> HS-59-101, "Instrument Gas Suction" (INBOARD), in "OPEN".	Applicant places HS-59-101 handswitch in OPEN <b>AND</b> verifies HV-59-101 OPEN			
9e. (Step 2.5.5) <b>ENSURE</b> compliance with Tech. Spec. Action Statement 3.6.3.a. <b>AND</b> 3.3.2.b	Applicant notifies CRS that Tech Specs 3.6.3.a and 3.3.2.b are applicable			
10. (Step 2.6) <b>PERFORM</b> the following to restore Instrument Gas Blocks <b>AND</b> Vents:	N/A			
*10a. (Step 2.6.1) <b>PLACE</b> HSS-57-191C, "Containment Isolation Bypass" (C), in "BYPASS".	Applicant places HSS-57-191C keylock switch in BYPASS			
*10b. (Step 2.6.2) <b>PLACE</b> HS-59-140, "Instrument Gas Block Valve Control Switch" to "OPEN".	Applicant places HS-59-140 handswitch to OPEN <b>AND</b> verifies HV-59-140 OPEN <b>AND</b> HV-59-142 CLOSED			
10c. (Step 2.6.3) <b>ENSURE</b> compliance with Tech. Spec. Action Statement 3.6.3.a. <b>AND</b> 3.3.2.c.	Applicant notifies CRS that Tech Specs 3.6.3.a and 3.3.2.c are applicable			
<b><u>Evaluator Cue:</u></b> JPM is complete.				

JPM Stop Time \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. 1AY160 was de-energized 1 minute ago.
2. 1B DW Chiller was running.
3. A Brief has been conducted by the CRS, identifying the need to prioritize restoration of RECW to the Recirc Pump seals to prevent seal failure.

**INITIATING CUE:**

**This is a Time Critical JPM.**

You are directed by Shift Supervision to perform the initial actions of E-1AY160 to:

1. Restore RECW to the Recirc Pumps
2. Restore DWCW to the Drywell
3. Restore Instrument Gas
4. Restore Instrument Gas Block and Vent Valves

HANDOUT PAGE

**TASK CONDITIONS:**

1. 1AY160 was de-energized 1 minute ago.
2. 1B DW Chiller was running.
3. A Brief has been conducted by the CRS, identifying the need to prioritize restoration of RECW to the Recirc Pump seals to prevent seal failure.

**INITIATING CUE:**

**This is a Time Critical JPM.**

You are directed by Shift Supervision to perform the initial actions of E-1AY160 to:

1. Restore RECW to the Recirc Pumps
2. Restore DWCW to the Drywell
3. Restore Instrument Gas
4. Restore Instrument Gas Block and Vent Valves

# **Limerick Generating Station**

## **Job Performance Measure**

### **Standby Gas Treatment Manual Startup With Charcoal Enclosure HI Temp (Alternate Path)**

JPM Designation: H

Revision Number: 0

Date: 02/21/12

Developed By:	<u>DeMarshall</u>	<u>02/13/12</u>
	Author	Date
Review By:	<u>Lally</u>	<u>02/16/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>02/21/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

### JPM Setup Instructions:

1. Reset simulator to IC-17  
**NOTE:** It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.
2. Provide copy of S76.8.A, Manual Startup and Shutdown of SGTS.
3. Provide copy of S76.7.B, Standby Gas Treatment System Charcoal Filter High Temperature Response.
4. Program override for Annunciator 002 VENT (H5) to ON 45 seconds after HS-76-040A (A SGTS Exhaust Fan) taken to RUN.

### TASK STANDARD:

1A train of SGTS placed in service per S76.8.A.  
1A train of SGTS subsequently isolated per S76.7.B on a charcoal filter high temperature alarm condition.

### TASK CONDITIONS:

1. Secondary Containment isolation signal is not present.
2. No Primary Containment purging or inerting operations in progress.
3. An EO is standing by to assist.
4. Brief has been performed for placing the 1A train of SGTS in service.
5. Radiation Protection has been notified of the potential for contamination level change prior to startup or shutdown of SGTS.

### INITIATING CUE:

Post Maintenance Testing is required on the 1A train of SGTS. You are directed by Shift Supervision to place the 1A train of SGTS in service per S76.8.A for a 15 minute run.

### Information for Evaluator's Use:

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**      ☐ NLO      ☐ RO      ☐ SRO      ☐ STA      ☐ SRO Cert

**JPM Title: Standby Gas Treatment Manual Startup With Charcoal Enclosure HI Temp  
(Alternate Path)**

**JPM Designation: H**

**Revision Number: 0**

**K/A Number and Importance:**    261000   A2.03    RO 2.9    SRO 3.2

**Suggested Testing Environment: Simulator**

**Actual Testing Environment:**    Simulator

**Testing Method:** Perform

**Alternate Path: Yes**

**Time Critical: No**

**Estimated Time to Complete:**    15 min.    **Actual Time Used:**    \_\_\_\_\_minutes

**References:**

1. NUREG 1123, Rev. 2, Supp. 1, 261000 A2.03    RO 2.9    SRO 3.2
2. S76.7.B, Rev. 13
3. S76.8.A, Rev. 18
4. Module/LP ID: LL0T0200, Reactor Enclosure HVAC, Rev. 18
5. ARC-MCR-002 (G5), Rev. 0

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?    ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:                      ☐ **Satisfactory**                      ☐ **Unsatisfactory**

**Comments:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_



**Description:**

This JPM has the operator place the 1A train of SGTS in service, and subsequently secure the 1A train on a charcoal filter high temperature alarm condition.

**Evaluator Note:**

The steps of S76.7.B and S76.8.A are listed for reference and tracking of applicant's actions.

**History:**

Bank Alternate Path JPM modified to (1) eliminate the option of shutting down the affected train of SGTS per S76.8.A prior to taking action to isolate the train per S76.7 B, and (2) change the train with the charcoal filter high temperature alarm condition from 1B to 1A.

# NRC LGS INITIAL EXAMINATION

JPM H

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews.	Applicant obtains current revision of S76.8.A, reads section 2.0 Prerequisites and 3.0 Precautions.			
2. (S76.8.A, Step 4.2.1) <b>CLOSE</b> "B" SGTS Filter Train by placing HS-076-013B to "AUTO."	Applicant places HS-076-013B handswitch to "AUTO."			
3. (Step 4.2.2) <b>PLACE</b> SGTS fan 0BV163 in standby, by placing HS-076-040B to "STANDBY."	Applicant places HS-076-040B (EXH FAN B) handswitch to "STANDBY."			
<p><b>Step 4.3 NOTE</b></p> <p>Step 4.3 will cause 004 VENT B-2 "Reactor Enclosure Refueling Floor Isolation System Armed/Bypassed" Alarm.</p> <p>Step 4.3 will open RE-SGTS Connection Valve, HV-76-196 to establish flowpath from Reactor Enclosure HVAC to SGTS system.</p> <p><b><u>Evaluator Note:</u></b></p> <p>When applicant directs EO to Place HS-76-196 to "TEST" or to perform Step 4.3 of S76.8.A, Remote Function RRE180 is inserted (simulates HS-76-196 Test Switch to "TEST").</p>	N/A			

**NRC LGS INITIAL EXAMINATION**

*JPM H*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*4. (Step 4.3)</p> <p><b>PLACE</b> HS-76-196, "RE-SGTS Connection Valve HV-76-196 Test Switch," to "TEST" at 0AC124.</p> <p><b><u>Evaluator Roleplay (EO):</u></b></p> <p>AFTER Remote Function RRE180 has been inserted to simulate HS-76-196 Test Switch to "TEST," report either:</p> <p>"HS-76-196 Test Switch is in TEST"</p> <p><b><u>OR</u></b></p> <p>"Step 4.3 of S76.8.A is complete."</p>	<p>Applicant directs EO to place HS-76-196, "RE-SGTS Connection Valve HV-76-196 Test Switch," to "TEST" at 0AC124.</p>			
<p>*5. (Step 4.4)</p> <p><b>PLACE</b> HS-76-040A, "SGTS Exhaust Fan" (EXH FAN A) to "RUN" at 00C681 to start SGTS Exhaust Fan A.</p>	<p>Applicant places HS-76-040A, (EXH FAN A) handswitch to "RUN" at 00C681 to start SGTS Exhaust Fan A.</p> <p><b><u>AND</u></b></p> <p>Observes expected flow of 6000 to 7000 scfm as indicated on FI-76-032, "Purge Fan/SGTS Hi" at 00C681.</p>			
<p><b><u>ALTERNATE PATH BEGINS HERE</u></b></p> <p>6. Annunciator response to A REAC ENCL SGTS CHARCOAL FLT HI TEMP [ARC-MCR-002 (G5)].</p> <p><b><u>Evaluator Note:</u></b></p> <p>Programmed malfunction for receipt of Annunciator 002 VENT (G5), set for 45 seconds after HS-76-040A placed to "RUN."</p>	<p><b><u>ALTERNATE PATH BEGINS</u></b></p> <p>Applicant:</p> <ol style="list-style-type: none"> <li>Acknowledges alarm</li> <li>Reports alarm to Unit Supervisor</li> <li>References alarm response for ARC-MCR-002 (G5)</li> </ol>			

# NRC LGS INITIAL EXAMINATION

JPM H

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7. (ARC-MCR-002 (G5)) <b>VERIFY</b> high temp using TI-76-010A on 00C681.	Applicant observes TI-76-010A indicates $\geq 200$ Deg. F.			
8. (ARC-MCR-002 (G5)) Refer to S76.7.B (SGTS Charcoal Filter High Temperature Response).  <u><b>Evaluator Note:</b></u> The 1A train of SGTS is isolated in accordance with S76.7.B, Section 4.2, "Inspection of Affected SGTS Filter Train," (Steps 4.2.1 through 4.2.4). S76.7.B is referenced in ARC-MCR-002 (G5).  <u><b>Evaluator Cue:</b></u> Prerequisite 2.5 states "Briefing performed as required." If a brief is requested, inform applicant that the brief has been completed.	Applicant obtains current revision of S76.7.B, reads section 2.0 Prerequisites and 3.0 Precautions.			
9. (S76.7.B, Step 4.2.1) Immediately <b>NOTIFY</b> SSV <b>AND</b> Health Physics of SGTS Filter status.	Applicant notifies SSV and Health Physics of the SGTS 1B train Charcoal Filter high temperature condition.			
*10. (Step 4.2.2) <b>PLACE</b> unaffected HS-76-013B, "SGTS Filter Isolation," at 00C681 in "OPEN" to ensure filter train flow path.	Applicant places HS-076-013B handswitch in "OPEN."			
*11. (Step 4.2.3) <b>PLACE</b> affected HS-76- 013A, "SGTS Filter Isolation," in "CLOSE" to isolate affected SGTS Filter Train.	Applicant places HS-076-013A handswitch in "CLOSE."			

# NRC LGS INITIAL EXAMINATION

*JPM H*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
12. (Step 4.2.4) <b>ENSURE</b> HV-76-012A, "Filter Outlet" <b>AND</b> HV-76- 011A, "Filter Inlet" for affected SGTS filter train closed.	Applicant verifies HV-76-012A, "Filter Outlet," <b>AND</b> HV-76- 011A, "Filter Inlet closed.			
<b>Evaluator Cue:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. Secondary Containment isolation signal is not present.
2. No containment purging or inerting is in progress.
3. An EO is standing by to assist.
4. Brief has been performed for placing the 1A train of SGTS in service.
5. Radiation Protection has been notified of the potential for contamination level change prior to startup or shutdown of SGTS.

**INITIATING CUE:**

Post Maintenance Testing is required on the 1A train of SGTS. You are directed by Shift Supervision to place the 1A train of SGTS in service per S76.8.A for a 15 minute run.

HANDOUT PAGE

**TASK CONDITIONS:**

1. Secondary Containment isolation signal is not present.
2. No containment purging or inerting is in progress.
3. An EO is standing by to assist.
4. Brief has been performed for placing the 1A train of SGTS in service.
5. Radiation Protection has been notified of the potential for contamination level change prior to startup or shutdown of SGTS.

**INITIATING CUE:**

Post Maintenance Testing is required on the 1A train of SGTS. You are directed by Shift Supervision to place the 1A train of SGTS in service per S76.8.A for a 15 minute run.

# **Limerick Generating Station**

## **Job Performance Measure**

### **Maximizing CRD Flow After Shutdown During Emergency Conditions**

JPM Designation: I

Revision Number: 0

Date: 2/9/12

<b>Developed By:</b>	<u>Chris Lally</u>	<u>2/9/12</u>
	<b>Author</b>	<b>Date</b>
<b>Review By:</b>	<u>Manan Patel</u>	<u>2/14/12</u>
	<b>Examiner</b>	<b>Date</b>
<b>Approved By:</b>	<u>John Caruso</u>	<u>2/28/12</u>
	<b>Chief Examiner</b>	<b>Date</b>



## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

**REVISION RECORD (Summary):**

1. Rev 0

**JPM Setup Instructions:**

1. Provide copy of Unit 2 T-240 for applicant use

**TASK STANDARD:**

Successfully maximize CRD flow using T-240 to open the CRD pump suction filter bypass and start the standby CRD pump

**TASK CONDITIONS:**

1. Unit 2 is SHUTDOWN
2. RPV water level is -100", down slow
3. TRIP procedures direct RPV level restoration using T-240
4. CRD system is in operation

**INITIATING CUE:**

Take actions necessary to restore RPV level per T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions

**Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

**Operator's Name:** \_\_\_\_\_  
**Job Title:**                      NLO                      RO                      SRO                      STA                      SRO Cert

**JPM Title:** Maximizing CRD Flow After Shutdown During Emergency Conditions

**JPM Number:** I

**Revision Number:** 0

**K/A Number and Importance:** 295031 EA1.10 3.6/3.7

**Suggested Testing Environment:** Plant

**Actual Testing Environment:** Plant

**Testing Method:** Simulate

**Alternate Path:** No

**Time Critical:** No

**Estimated Time to Complete:** 20 min.    **Actual Time Used:** \_\_\_\_\_minutes

**References:**

1. T-240 U2 Rev. 17
2. Nureg-1123 Rev. 2, Supp. 1

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily?                      Yes    No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be:

**Satisfactory**

**Unsatisfactory**

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Note:** Any grade of UNSAT requires a comment.

**Evaluator's Name:** \_\_\_\_\_(Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Description: This JPM directs the applicant to perform T-240 to maximize CRD system flow after shutdown. This will be completed by opening the CRD pump suction filter bypass and starting the standby CRD pump.

History: Not used on 2008/2010 Limerick Initial License Exams, New JPM

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM I

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain current revision of Unit 2 T-240 <b>Evaluator Cue:</b> Once applicant demonstrates ability to obtain current revision of Unit 2 T-240, provide him/her a copy	Applicant describes where they would obtain T-240			
2. (Step 3.1) TRIP <b>OR</b> SAMP procedures must direct the use of this procedure	Applicant verifies T-240 directed from TRIP/SAMP by referring to initiating cue			
3. (Step 3.2) CRD System in operation	Applicant verifies CRD system in operation by referring to initiating cue			
4. (Step 3.3) <b>IF</b> step 4.7 to be performed, <b>THEN</b> the following tools / equipment obtained from Unit 2 T-200 "Hose Storage Cabinet", (580-R17-283) (ATTACHMENT 3) BL-840 key required: 3/4" Drive Socket Wrench (1) 1 5/8" x 3/4" Drive Socket 14" Pipe wrench 12" Adjustable Wrench (1) Flashlight <b>Evaluator Cue:</b> If prompted by applicant to determine if step 4.7 is going to be performed, reply that it cannot be determined without first performing any actions to determine their effect.	N/A			
<b>CAUTION</b> 1. High flow <b>AND</b> high CRD pump suction filter dP will lower NPSH 2. Lowering reactor pressure will cause rising CRD pump flow 3. CRD pumps trip at 4.5 inches HG vacuum suction pressure 4. To prevent CRD Pump runout <u>local</u> pump discharge pressure must be greater than 1,200 psig on PI-46-208A(B), "CRD Pump Discharge"	Applicant reads and acknowledges caution			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM I*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p>*5. (Step 4.1) Fully <b>OPEN</b> HV-46-2F003 "Drive Water Pressure Control" (DRIVE WATER PRESSURE), at 20C603 (MCR)</p> <p><b>Evaluator Cue:</b> This is Unit 2 control room, HV-46-2F003 is fully open</p>	Applicant simulates contacting reactor operator to fully OPEN HV-46-2F003 "Drive Water Pressure Control" (DRIVE WATER PRESSURE)			
<p>*6. (Step 4.2) <b>OPEN</b> FV-C-46-2F002A at 20C603 (MCR) using FC-46-2R600 "Rod Drive Flow Controller" (FL), in "MANUAL" to maximize CRD flow, while maintaining greater than 1200 psig as indicated on PI-46-208A, "CRD Pump Discharge" (270-T10-200)</p> <p><b>Evaluator Cue:</b> This is Unit 2 control room, FV-C-46-2F002A is open. (If prompted by applicant for PI-46-208A(B), tell applicant that it is as-read on the local gauge for the running pump)</p>	Applicant simulates contacting reactor operator to OPEN FV-C-46-2F002A, "Flow control" and verifies > 1200 psig is maintained as indicated on PI-46-208A(B), "CRD Pump Discharge" (270-T10-200).			
<p>*7. (Step 4.3) <b>OPEN</b> 46-2F045, "CRD Pump Suction Filter Bypass" (270-T10-200).</p> <p><b>Evaluator Cue:</b> 46-2F045, "CRD Pump Suction Filter Bypass" is OPEN</p>	Applicant simulates opening 46-2F045, "CRD Pump Suction Filter Bypass"			
<p>8. (Step 4.4) If additional CRD flow is required THEN PLACE second CRD pump in service:</p> <p><b>Evaluator Cue:</b> Unit 2 Reactor Operator reports that reactor water level trend is still down slow</p>	Applicant proceeds to Step 4.4.1			
<p><b>CAUTION</b></p> <p><b>IF</b> one of two running pumps trip, <b>THEN</b> immediate operator action is needed to reduce flow <b>OR</b> other running pump may be damaged by exceeding runout flow (200 gpm).</p>	Applicant reads and acknowledges caution			
<p>9. (Step 4.4.1 <b>ENSURE</b> 46-2F014B(A), the on-coming CRD pump Discharge Stop Check (270-T10-200), (Attachment 1), is CLOSED</p> <p><b>Evaluator Cue:</b> 46-2F014B(A) is CLOSED</p>	Applicant simulates closing/checking closed 46-2F014 for non-running pump			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM I*

<b>ELEMENT</b>	<b>STANDARD</b>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
<p>*10. (Step 4.4.2) <b>START</b> 1B(A) CRD pp with HS-46-108B at 10C603 (MCR)</p> <p><b>Evaluator Cue:</b> Acknowledge request and tell applicant they hear the previously non-running pump come up to speed</p>	Applicant simulates contacting control room to START 1B(A) CRD pp			
<p>*11. (Step 4.4.3) Slowly <b>OPEN</b> 46-2F014B(A), "CRD Pump Discharge Stop Check" (270-T10-200), for the on-coming pump (ATTACHMENT 1)</p> <p><b>Evaluator Cue:</b> 46-2F014 is OPEN</p>	Applicant simulates slowly opening 46-2F014B(A) for the on-coming pump			
<p>*12. <b>OPEN</b> FV-C-46-2F002B, "Flow control" at 20C603 (MCR) using FC-46-2R600 "Rod Drive Flow Controller" (FL), to maximize CRD flow, while maintaining &gt; 1200 psig as indicated on PI-46-208A(B), "CRD Pump Discharge" (270-T10-200).</p> <p><b>Evaluator Cue:</b> FV-C-46-2F002B, "Flow control" is OPEN at 10C603. Unit 2 Reactor Operator reports RPV water level is rising slowly</p>	Applicant simulates contacting control room to OPEN FV-C-46-2F002B, to maximize CRD flow, while verifying > 1200 psig is maintained as indicated on PI-46-208A(B), "CRD Pump Discharge" (270-T10-200)			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. Unit 2 is SHUTDOWN
2. RPV water level is at -100", down slow
3. TRIP procedures direct RPV level restoration using T-240
4. CRD system is in operation

**INITIATING CUE:**

Take actions necessary to restore RPV water level per T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions



HANDOUT PAGE

**TASK CONDITIONS:**

1. Unit 2 is SHUTDOWN
2. RPV water level is at -100", down slow
3. TRIP procedures direct RPV level restoration using T-240
4. CRD system is in operation

**INITIATING CUE:**

Take actions necessary to restore RPV water level per T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions

# **Limerick Generating Station**

## **Job Performance Measure**

### **Alignment of Equipment For Manual Operation of LPCI (Alternate Path)**

JPM Designation:   J  

Revision Number:   0  

Date:   02/23/12  

Developed By:	<u>  DeMarshall  </u>	<u>  02/17/12  </u>
	Author	Date
Review By:	<u>  Lally  </u>	<u>  02/22/12  </u>
	Examiner	Date
Approved By:	<u>  Caruso  </u>	<u>  02/23/12  </u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

## REVISION RECORD (Summary):

Rev 0

## JPM Setup Instructions:

1. Provide copy of 1FSSG-3045E, Fire Area 045E Fire Guide.

## TASK STANDARD:

Perform Alignment of Equipment for B LPCI Operation (Unit 1), including restart of the "1B" RHR pump after the pump trips, per 1FSSG-3045E, due to fire in the CRD Hydraulic Equipment Area.

## TASK CONDITIONS:

Initial Conditions:

1. Unit 1 is SHUTDOWN in OPCON 3.
2. RPV pressure is 285 psig.
3. Condensate is unavailable.
4. HPCI and RCIC are unavailable due to large governor control oil leaks identified on both systems during EO rounds.
5. "1B" RHR Pump, with flow through the "1B" RHR HX, is being used to maintain RPV level between +12.5" AND +54" in accordance with Step RC/L-4 of TRIP procedure T-101, RPV Control.
6. "1A" RHR Pump is unavailable due to emergent corrective maintenance on pump motor breaker 152-11504.
7. Special Event Procedure SE-3, SABOTAGE, is being implemented.

Subsequently, a Fire is reported in Unit 1 CRD Hydraulic Equipment Area (El. 253'). As a result:

1. HV-051-1F017B has **LOST** MCR indication, can **NOT** be positioned normally, and needs to be in the **OPEN** position.
2. The following valves have **LOST** MCR indication, can **NOT** be positioned normally, and need to be in the **CLOSED** position:
  - HV-051-1F015B "1B RHR SHUTDOWN CLG INJECTION PCIV (OUTBOARD)"
  - HV-051-1F027B "1B RHR SUPP POOL SPRAY LINE PCIV"
  - HV-C-051-1F048B "1B RHR HTX SHELL SIDE BYPASS VLV (HEAT EXCH BYPASS)"

## INITIATING CUE:

You are directed by Shift Supervision to perform Alignment of Equipment for B LPCI Operation (Unit 1) per 1FSSG-3045E.

## Information for Evaluator's Use:

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

**JPM Title: Alignment of Equipment for Manual Operation of LPCI (Alternate Path)**

**JPM Designation: J**

**Revision Number: 0**

**K/A Number and Importance: 203000 K4.14 RO 3.6 SRO 3.7**

**Suggested Testing Environment: Plant**

**Actual Testing Environment: Plant**

**Testing Method: Simulate**

**Alternate Path: Yes**

**Time Critical: No**

**Estimated Time to Complete: 25 min. Actual Time Used: \_\_\_\_\_minutes**

**References:**

1. NUREG 1123 Rev. 2, Supp.1, 203000 K4.14 RO 3.6 SRO 3.7
2. 1FSSG-3045E, Rev. 15
3. Module/LP ID: LL0T0735, Remote Shutdown Panel, Rev. 13
4. Module/LP ID: LL0T0051, Residual Heat Removal (RHR) System, Rev. 0

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

**Evaluator's Name: \_\_\_\_\_(Print)**

**Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_**

**Description:**

This JPM has the operator perform Alignment of Equipment for Unit 1 "B" LPCI Operation, including restart of the "1B" RHR pump after the pump trips, per 1FSSG-3045E, due to fire in the CRD Hydraulic Equipment Area (El. 253').

**Evaluator Note:**

The steps of 1FSSG-3045E are listed for reference and tracking of applicant's actions.

**History:**

Not used on the 2008/2010 Limerick initial license exams. New Alternate Path JPM requiring the applicant to simulate a local restart of the 1B RHR pump in accordance with FSSG-3045E, following a trip of the pump due to fire in the Unit 1 CRD Hydraulic Equipment Area (El. 253').

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM J

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>1. Obtain current revision of 1FSSG-3045E.</p> <p><b><u>Evaluator Cue:</u></b></p> <p>Once applicant demonstrates ability to obtain current revision of the procedure, provide copy.</p>	<p>Applicant demonstrates where to obtain 1FSSG-3045E <b><u>AND</u></b> verifies current revision.</p>			
<p>2. Review Section 3.0, Contingency Actions.</p>	<p>Applicant reviews Step 3.0, Contingency Actions, <b><u>AND</u></b> recognizes that Attachment 2 is applicable.</p>			
<p>3. <b>Step 3.3.1 and 3.3.2 NOTE</b></p> <p>A flathead screwdriver from the OSC Equipment Box <b><u>OR</u></b> the RSP Safe Shutdown Equipment Box is required to perform steps 3.3.1 <b><u>AND</u></b> 3.3.2.</p> <p><b><u>Evaluator Note:</u></b></p> <p>Use of the screwdriver will be necessary for the applicant to gain physical access to panels 10-C601-X2 (Step 3.3.1) and 10-C601-X1 (Step 3.3.2).</p>	<p>Applicant reads NOTE and obtains flathead screwdriver.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

JPM J

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*4. (1FSSG-3045E, Attachment 2, Step 3.3.1)</p> <p><b>IF</b> HV-51-1F017B, "1B RHR LPCI INJ PCIV (OUTBOARD B)" can <b>NOT</b> be positioned normally,</p> <p><b>THEN POSITION</b> valve from 10-C601-X2, "1B RHR EMERGENCY LOCAL VALVE CONTROL PANEL X2" (16-283-506), using Transfer Switch, HSS51-117BX.</p> <p><b>Evaluator Cue:</b></p> <p>After Transfer switch HSS51-117BX is placed to "EMER" (simulated), Evaluator informs applicant of the following valve position indication at 10-C601-X2:</p> <p>HSS51-117BX - <b>RED</b> indicating light <b>ON</b>, <b>GREEN</b> indicating light <b>OFF</b>.</p>	<p>Applicant accesses panel 10-C601-X2 and simulates <b>POSITIONING</b> Transfer Switch HSS51-117BX to "EMERG."</p>			
<p>5. Inform MCR that HV-51-1F017B indicates <b>OPEN</b> at 10-C601-X2.</p> <p><b>Evaluator Cue:</b> Roleplay as control room and acknowledge report.</p>	<p>Applicant:</p> <ul style="list-style-type: none"> <li>Recognizes HV-51-1F017B, "1B RHR LPCI INJ PCIV (OUTBOARD B)," is <b>OPEN</b>.</li> <li>Informs MCR that HV-51-1F017B is in the required <b>OPEN</b> position.</li> </ul>			



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ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*6. (Step 3.3.2)  <u>IF</u> any of the following valves:</p> <ul style="list-style-type: none"> <li>• HV-051-1F015B</li> <li>• HV-051-1F027B</li> <li>• HV-C-051-1F048B</li> </ul> <p>can <b>NOT</b> be positioned normally,  <u>THEN POSITION</u> valve from 10-C601-X1, "1B RHR EMERGENCY LOCAL VALVE CONTROL PANEL X1," (12-217-304), using Transfer Switches:</p> <ul style="list-style-type: none"> <li>• HSS51-115BX (HV-051-1F015B)</li> <li>• HSS51-127BX (HV-051-1F027B)</li> <li>• HSS51-148BX (HV-C-051-1F048B)</li> </ul> <p><b><u>Evaluator Cue:</u></b>  After the three Transfer Switches are placed to "EMER" (simulated), Evaluator informs applicant of the following valve position indications at 10-C601-X1:</p> <ul style="list-style-type: none"> <li>• HSS51-115BX - <b>RED</b> indicating light <b>OFF</b>,  <b>GREEN</b> indicating light <b>ON</b>.</li> <li>• HSS51-127BX - <b>RED</b> indicating light <b>OFF</b>,  <b>GREEN</b> indicating light <b>ON</b>.</li> <li>• HSS51-148BX - <b>RED</b> indicating light <b>ON</b>,  <b>GREEN</b> indicating light <b>OFF</b>.</li> </ul>	<p>Applicant accesses panel 10-C601-X1 and simulates <b>POSITIONING</b> the following Transfer Switches to "EMERG":</p> <ul style="list-style-type: none"> <li>• HSS51-115BX</li> <li>• HSS51-127BX</li> <li>• HSS51-148BX</li> </ul>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

JPM J

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>7. Inform MCR that HV-C-51-1F048B, "1B RHR HTX SHELL SIDE BYPASS VLV (HEAT EXCH BYPASS)," indicates <b>OPEN</b> at 10-C601-X1, <b>AND</b> that the valve will be taken to <b>CLOSE</b>.</p> <p><b>Evaluator Cue:</b> Roleplay as control room and acknowledge report.</p>	<p>Applicant:</p> <ul style="list-style-type: none"> <li>Recognizes that HV-C-051-1F048B is <b>OPEN</b> and needs to be <b>CLOSED</b>.</li> <li>Informs the MCR that HV-C-51-1F048B is not in the required <b>CLOSED</b> position, <b>AND</b> that action will be taken to <b>CLOSE</b> the valve.</li> </ul>			
<p>*8. <b>CLOSE</b> HV-C51-1F048B, "1B RHR HTX SHELL SIDE BYPASS VLV (HEAT EXCH BYPASS)," from panel 10-C601-X1.</p> <p><b>Evaluator Note:</b> HV-C51-1F048BX MOV Control Switch must be positioned to close the valve (simulated). The Transfer Switch only aligns power to the MOV.</p> <p><b>Evaluator Cue:</b> After HV-C51-1F048BX MOV Control Switch at panel 10-C601-X1 is positioned to close the valve (simulated), Evaluator informs applicant of the following valve position indication at 10-C601-X1:</p> <p>HV-C-051-1F048B valve closing "dual indication" followed by full closed "Green light <b>ON</b>, Red light <b>OFF</b>" indication after appropriate time delay.</p>	<p>Applicant simulates positioning HV-C51-1F048BX Control Switch at panel 10C-601-X1 to <b>CLOSE</b> HV-C-51-1F048B.</p>			
<p>9. Inform MCR that HV-C-51-1F048B indicates <b>CLOSED</b> at 10-C601-X1.</p> <p><b>Evaluator Cue:</b> Roleplay as control room and acknowledge report.</p>	<p>Applicant informs MCR that HV-C51-1F048B indicates <b>CLOSED</b> at 10C-601-X1.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

JPM J

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><b><u>ALTERNATE PATH BEGINS HERE</u></b></p> <p>10. <b><u>Evaluator Cue:</u></b></p> <p>Evaluator simulates contacting applicant via plant page. Roleplay as control room supervisor to notify applicant:</p> <ul style="list-style-type: none"> <li>• "1B" RHR pump has tripped.</li> <li>• Reactor Level is lowering.</li> </ul> <p><i>If prompted by applicant for further guidance, ask applicant for their recommendation or direct applicant to continue with the procedure.</i></p>	<p><b><u>ALTERNATE PATH BEGINS</u></b></p> <p>Applicant recognizes that Step 3.3.3 of Attachment 2 is applicable.</p>			
<p>11. <b>Step 3.3.3 NOTE</b></p> <ol style="list-style-type: none"> <li>1. Obtain Remote Shutdown Keyring #3 from OSC equipment box, Main Control Room Shift Manager's key locker <b><u>OR</u></b> RSP keybox.</li> <li>2. A GE-75 key, on Keyring #3, is required in the following step.</li> </ol> <p><b><u>Evaluator Cue:</u></b></p> <p>Evaluator informs applicant that the G-75 key on Keyring #3 has been obtained.</p>	<p>Applicant reads NOTE and recognizes that it will be necessary to first obtain a GE-75 key (Keyring #3) in order to perform Step 3.3.3.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

JPM J

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*12. (Step 3.3.3)</p> <p><b><u>IF</u></b> RHR pump trips  <b><u>OR</u></b> fails to start,  <b><u>THEN PERFORM</u></b> the following:</p> <ol style="list-style-type: none"> <li><b>POSITION</b> HSS-51-102 "1B RHR PP TRANSFER SWITCH" at D12-BUS-04 (8-239-433) to "EMER."</li> <li><b>CLOSE</b> D12-BUS-04 breaker using local control switch 1B RHR PUMP 152-11604.</li> </ol> <p><b><u>Evaluator Cue:</u></b>            After actions have been completed to restart 1B RHR pump, inform applicant that "1B RHR Pump is running <b><u>AND</u></b> that Reactor Level is rising.</p>	<p>Applicant simulates <b>POSITIONING</b> HSS-51-102 at D12-BUS-04 to "EMER"</p> <p><b><u>AND</u></b> simulates <b>CLOSING</b> D12-BUS-04 breaker using local control switch 1B RHR PUMP 152-11604.</p>			
<p><b><u>Evaluator Cue:</u></b> JPM is complete.</p>				

JPM Stop Time \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

Initial Conditions:

1. Unit 1 is SHUTDOWN in OPCON 3.
2. RPV pressure is 285 psig.
3. Condensate is unavailable.
4. HPCI and RCIC are unavailable due to large governor control oil leaks identified on both systems during EO rounds.
5. "1B" RHR Pump, with flow through the "1B" RHR HX, is being used to maintain RPV level between +12.5" AND +54" in accordance with Step RC/L-4 of TRIP procedure T-101, RPV Control.
6. "1A" RHR Pump is unavailable due to emergent corrective maintenance on pump motor breaker 152-11504.
7. Special Event Procedure SE-3, SABOTAGE, is being implemented.

Subsequently, a Fire is reported in Unit 1 CRD Hydraulic Equipment Area (El. 253'). As a result:

1. HV-051-1F017B has **LOST** MCR indication, can **NOT** be positioned normally, and needs to be in the **OPEN** position.
2. The following valves have **LOST** MCR indication, can **NOT** be positioned normally, and need to be in the **CLOSED** position:
  - HV-051-1F015B "1B RHR SHUTDOWN CLG INJECTION PCIV (OUTBOARD)"
  - HV-051-1F027B "1B RHR SUPP POOL SPRAY LINE PCIV"
  - HV-C-051-1F048B "1B RHR HTX SHELL SIDE BYPASS VLV (HEAT EXCH BYPASS)"

**INITIATING CUE:**

You are directed by Shift Supervision to perform Alignment of Equipment for B LPCI Operation per 1FSSG-3045E (Unit 1).

HANDOUT PAGE

**TASK CONDITIONS:**

Initial Conditions:

1. Unit 1 is SHUTDOWN in OPCON 3.
2. RPV pressure is 285 psig.
3. Condensate is unavailable.
4. HPCI and RCIC are unavailable due to large governor control oil leaks identified on both systems during EO rounds.
5. "1B" RHR Pump, with flow through the "1B" RHR HX, is being used to maintain RPV level between +12.5" AND +54" in accordance with Step RC/L-4 of TRIP procedure T-101, RPV Control.
6. "1A" RHR Pump is unavailable due to emergent corrective maintenance on pump motor breaker 152-11504.
7. Special Event Procedure SE-3, SABOTAGE, is being implemented.

Subsequently, a Fire is reported in Unit 1 CRD Hydraulic Equipment Area (El. 253'). As a result:

1. HV-051-1F017B has **LOST** MCR indication, can **NOT** be positioned normally, and needs to be in the **OPEN** position.
2. The following valves have **LOST** MCR indication, can **NOT** be positioned normally, and need to be in the **CLOSED** position:
  - HV-051-1F015B "1B RHR SHUTDOWN CLG INJECTION PCIV (OUTBOARD)"
  - HV-051-1F027B "1B RHR SUPP POOL SPRAY LINE PCIV"
  - HV-C-051-1F048B "1B RHR HTX SHELL SIDE BYPASS VLV (HEAT EXCH BYPASS)"

**INITIATING CUE:**

You are directed by Shift Supervision to perform Alignment of Equipment for B LPCI Operation per 1FSSG-3045E (Unit 1).

## **Limerick Generating Station**

### **Job Performance Measure**

#### **Venting Primary Containment Using the 6" ILRT Line from the Drywell**

JPM Designation: K

Revision Number: 0

Date: 3/1/12

Developed By:	<u>Patel</u>	<u>2/9/12</u>
	Author	Date
Review By:	<u>C. Lally</u>	<u>2/24/12</u>
	Examiner	Date
Approved By:	<u>J. Caruso</u>	<u>2/28/12</u>
	Chief Examiner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, or simulator)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating and terminating cues are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by Examiner review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:  
Procedure Rev. \_\_\_\_\_ Date \_\_\_\_\_
- \_\_\_\_\_ 9. Pilot test the JPM:
  - a. verify cues both verbal and visual are free of conflict, and
  - b. ensure performance time is accurate.
- \_\_\_\_\_ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 11. When JPM is revalidated, Examiner sign and date JPM cover page.



**REVISION RECORD (Summary):**

Rev 0

**JPM Setup Instructions:**

None

**TASK STANDARD:**

Vent Primary Containment using the 6" ILRT line from the Drywell to the D/G Corridor using section 4.9 of the T-200 procedure.

**TASK CONDITIONS:**

1. TRIP procedures direct containment venting in accordance with T-200.
2. Primary Containment pressure is rising rapidly (60 psig and rising) requiring 6" ILRT vent path to be established.
3. Suppression Pool level is 28 feet and rising very slowly due to HPCI/RCIC operation.
4. The required steps in T-200 have been performed up to section 4.9.
5. Operators are standing by in the MCR.

**INITIATING CUE:**

You are directed by Shift Supervision to perform Section 4.9 of T-200 on UNIT 1 to support venting primary containment through the 6 inch ILRT line from the Drywell.

**Information for Evaluator's Use:**

UNSAT requires written comments on respective step.

\* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: \_\_\_\_\_  
Job Title: ☐ NLO ☐ RO ☐ SRO ☐ STA ☐ SRO Cert

JPM Title: Venting Primary Containment Using the 6" ILRT Line from the Drywell

JPM Number: K

Revision Number: 0

K/A Number and Importance: 223001 A2.07 4.2/4.3 (RO/SRO)

Suggested Testing Environment: Plant

Actual Testing Environment: Plant

Testing Method: Simulate

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: \_\_\_\_\_ minutes

**References:**

1. NUREG 1123, 223001, A2.07 4.2/4.3 (RO/SRO)
2. T-200, Rev. 23

**EVALUATION SUMMARY:**

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: \_\_\_\_\_ (Print)

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Description: This JPM has the operator establish Primary Containment Vent path using 6" ILRT line from the Drywell to the D/G Corridor.

History: Not used on 2008/2010 Limerick Initial License Exams, New JPM

# NRC LIMERICK GENERATING STATION INITIAL EXAMINATION

JPM K

NOTE: Critical Element(s) indicated by \* in Performance Checklist.

## PERFORMANCE CHECKLIST:

JPM Start Time \_\_\_\_\_

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Applicant obtains procedure T-200 and determines step 4.9.1 is applicable.</p> <p>Step 4.9.1</p> <p>1. <b>DIRECT</b> dose assessment personnel to monitor offsite dose</p> <p><b>Evaluator Cue:</b> Dose assessment personnel will monitor offsite dose.</p>	<p>Applicant obtains procedure T-200 and determines step 4.9.1 is applicable.</p>			
<p>Step 4.9.2</p> <p>*2. <b>OPEN</b> ILRT Cooling/Filter Skid to Containment Purge Line Flange, located just inside diesel generator corridor access door by removing flange plate (ILRT AIR SUPPLY) 6-inch JBD-352-1-1 (313-DG-217) (ATTACHMENT 12).</p> <p><b>Evaluator Cue:</b> (Once applicant describes how they would open flange by loosening fasteners) Flange is open</p>	<p>Applicant simulates <b>OPENING</b> ILRT Cooling/Filter Skid to Containment Purge Line Flange, located just inside diesel generator corridor access door by removing flange plate (ILRT AIR SUPPLY) 6-inch JBD-352-1-1 (313-DG-217) per ATTACHMENT 12.</p>			
<p>Step 4.9.3</p> <p>*3. <b>SWAP</b> spectacle flange in 6-inch HBD-161 line downstream of HV-60-114 (304-R11-217) (ATTACHMENT 12).</p> <p><b>Evaluator Cue:</b> (Once applicant describes how they would reposition and swap flange) Flange has been swapped.</p>	<p>Applicant simulates <b>SWAPPING</b> spectacle flange in 6-inch HBD-161 line downstream of HV-60-114.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.4</p> <p>*4. Manually <b>OPEN</b> the following valves (ATTACHMENT 13):</p> <ul style="list-style-type: none"> <li>HV-60-111</li> <li>HV-60-114</li> </ul> <p><b>Evaluator Cue:</b> HV-60-111 and HV-60-114 are OPEN.</p>	<p>Applicant simulates <b>OPENING</b> the following valves:</p> <ul style="list-style-type: none"> <li>HV-60-111</li> <li>HV-60-114</li> </ul>			
<p>Step 4.9.5</p> <p>5. <b>EVACUATE</b> Diesel Generator corridor (Elev. 217').</p> <p><b>Evaluator Cue:</b> For the exam purpose do not make any plant announcements, just identify the method you would use to evacuate the corridor.</p>	<p>Applicant simulates <b>EVACUATING</b> Diesel Generator corridor (Elev. 217'</p>			
<p>Step 4.9.6</p> <p>*6. <b>LIFT AND TAPE</b> lead GGG8-10 at Panel 10C623 to inhibit containment isolation closure signal for HV-57-109 (Auxiliary Equipment Room) (ATTACHMENT 6).</p> <p><b>Evaluator Cue:</b> (Once applicant describes how they would lift and tape the lead) Lead is lifted and taped.</p>	<p>Applicant simulates <b>LIFTING AND TAPING</b> of lead GGG8-10 at Panel 10C623 to inhibit containment isolation closure signal for HV-57-109 (Auxiliary Equipment Room) IAW Attachment 6.</p>			
<p>Step 4.9.7</p> <p>*7. <b>INSTALL</b> jumper from GGG8-11 to GGG8-12 in Panel 10C623, to bypass containment isolation opening inhibit signal for HV-57-109 (Auxiliary Equipment Room) (ATTACHMENT 6).</p> <p><b>Evaluator Cue:</b> (Once applicant describes how and where they would install jumper) Jumper installed.</p>	<p>Applicant simulates <b>INSTALLING</b> jumper from GGG8-11 to GGG8-12 in Panel 10C623, to bypass containment isolation opening inhibit signal for HV-57-109 (Auxiliary Equipment Room) IAW Attachment 6.</p>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.8</p> <p>*8. <b>INSTALL</b> jumper from CCC10-16 to CCC10-18 in Panel 10C622, to inhibit containment isolation signal for HV-57-121 (Auxiliary Equipment Room) (ATTACHMENT 4).</p> <p><b>Evaluator Cue:</b> (Once applicant describes how and where they would install jumper) Jumper installed.</p>	<p>Applicant simulates <b>INSTALLING</b> jumper from CCC10-16 to CCC10-18 in Panel 10C622, to inhibit containment isolation signal for HV-57-121 (Auxiliary Equipment Room) IAW Attachment 4.</p>			
<p>Step 4.9.9</p> <p>9. <b>INSTALL</b> jumper from DDD2-10 to DDD2-11 in Panel 00C624 (Main Control Room) to inhibit North Stack WRAM High High isolation signal.</p> <p><b>Evaluator Cue:</b> Another Operator has installed this jumper in the Main Control Room.</p>	N/A			
<p>Step 4.9.10</p> <p>10. <b>INSTALL</b> jumper from DDD2-15 to DDD2-16 in Panel 00C624 (Main Control Room) to inhibit North Stack WRAM High High isolation signal.</p> <p><b>Evaluator Cue:</b> Another Operator has installed this jumper in the Main Control Room.</p>	N/A			
<p>Step 4.9.11</p> <p>11. <b>DEPRESS</b> HS-57-045, NORTH STACK RAD ISOL, on Panel 00C624 (Main Control Room)</p> <p><b>Evaluator Cue:</b> Another Operator has depressed NORTH STACK RAD ISOL, on Panel 00C624.</p>	N/A			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.12</p> <p>*12. <b>PERFORM</b> the following to provide Reactor Enclosure venting:</p> <ul style="list-style-type: none"> <li><b>CLOSE</b> all steam flooding dampers by momentarily placing each keylock switch in "TEST" at Panel 10C234 (402A-R15-253) (ATTACHMENT 7) <b>AND</b> Panel 10C245 (506-R11-283) (ATTACHMENT 8) to minimize steam flooding in critical areas (PA2235 key required)</li> </ul>	<p>Applicant simulates <b>CLOSING</b> all steam flooding dampers by momentarily placing each keylock switch in "TEST" at Panel 10C234 (402A-R15-253) (ATTACHMENT 7) <b>AND</b> Panel 10C245 (506-R11-283) (ATTACHMENT 8) to minimize steam flooding in critical areas (PA2235 key required)</p>			
<p>Step 4.9.13</p> <p>13. <b>PLACE</b> HS-76-193A, "Reactor Enclosure Recirc," <b>AND</b> HS-76-193B to "OFF" on Panel 10C681 (Main Control Room).</p> <p><b>Evaluator Cue:</b> Another Operator has just placed HS-76-193A, "Reactor Enclosure Recirc," <b>AND</b> HS-76-193B to "OFF" on Panel 10C681 in the Main Control Room</p>	N/A			
<p>Step 4.9.14</p> <p>*14. <b>PLACE</b> the following handswitches to "OFF" on Panel 10C206 (608-R15-313) (ATTACHMENT 9).</p> <ul style="list-style-type: none"> <li>HS-76-105A, "Reactor Enclosure Air Supply"</li> <li>HS-76-105B, "Reactor Enclosure Air Supply"</li> <li>HS-76-105C, "Reactor Enclosure Air Supply"</li> </ul> <p><b>Evaluator Cue:</b> HS-76-105A, HS-76-105B, HS-76-105C are all indicating "OFF".</p>	<p>Applicant simulates and <b>PLACES</b> the following handswitches to "OFF" on Panel 10C206 (608-R15-313) (ATTACHMENT 9).</p> <ul style="list-style-type: none"> <li>HS-76-105A, "Reactor Enclosure Air Supply"</li> <li>HS-76-105B, "Reactor Enclosure Air Supply"</li> <li>HS-76-105C, "Reactor Enclosure Air Supply"</li> </ul>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.15</p> <p><b>15. PROVIDE LONG TERM GAS SUPPLY TO ADS VALVES</b></p> <ul style="list-style-type: none"> <li>• <b>ENSURE</b> the following at Panel 10C626 (Main Control Room):                             <ul style="list-style-type: none"> <li>○ HV-59-151A, "ADS Instrument Gas PCIV" (A), open</li> <li>○ HV-59-151B, "ADS Instrument Gas PCIV" (B), open</li> </ul> </li> </ul> <p><b>Evaluator Cue:</b> BOTH HV-59-151A, "ADS Instrument Gas PCIV" and HV-59-151B, "ADS Instrument Gas PCIV" indicate <b>OPEN</b> at the Panel 10C626 in the Main Control Room.</p>	N/A			



**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.15</p> <p>*16. <b>CONNECT</b> Nitrogen Gas Bottles at following valves <b>AND OPEN</b> as necessary to ensure long term gas supply to ADS valves:</p> <ul style="list-style-type: none"> <li>• 59-1118, "B Long Term N2 Supply To ADS Outside Connection" (336-A8-217) (ATTACHMENT 10)</li> <li>• 59-1119, "B Long Term N2 Supply To ADS Outside Connection" (336-A8-217) (ATTACHMENT 10)</li> <li>• 59-1137, "A Long Term N2 Supply To ADS Outside Connection" (313-DG-217) (ATTACHMENT 11)</li> <li>• 59-1138, "A Long Term N2 Supply To ADS Outside Connection" (313-DG-217) (ATTACHMENT 11)</li> <li>• 59-1211, "Air Supply To Long Term N2 Instrument Gas Test Valve" (313-DG-217) (ATTACHMENT 11)</li> </ul> <p><b>NOTE: BASED ON PRE-VALIDATION TIME ANALYSIS, MAY END JPM PRIOR TO THIS STEP.</b></p> <p><b>Evaluator Cue:</b> (Once applicant simulates opening 59-1118) Sufficient pressure and gas supply exists; proceed with procedure.</p>	<p>Applicant simulates <b>CONNECTING</b> Nitrogen Gas Bottles at following valves <b>AND OPENS</b> as necessary to ensure long term gas supply to ADS valves:</p> <ul style="list-style-type: none"> <li>• 59-1118, "B Long Term N2 Supply To ADS Outside Connection" (336-A8-217) (ATTACHMENT 10)</li> <li>• 59-1119, "B Long Term N2 Supply To ADS Outside Connection" (336-A8-217) (ATTACHMENT 10)</li> <li>• 59-1137, "A Long Term N2 Supply To ADS Outside Connection" (313-DG-217) (ATTACHMENT 11)</li> <li>• 59-1138, "A Long Term N2 Supply To ADS Outside Connection" (313-DG-217) (ATTACHMENT 11)</li> <li>• 59-1211, "Air Supply To Long Term N2 Instrument Gas Test Valve" (313-DG-217) (ATTACHMENT 11)</li> </ul>			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Step 4.9.15</p> <p>17. <b>POSITION</b> SV-59-150A/152A <b>AND</b> SV-59-150B/152B, on Panel 10C626 (Main Control Room), as necessary to maintain pressure to ADS valves.</p> <p><b>Evaluator Cue:</b> SV-59-150A/152A <b>AND</b> SV-59-150B/152B, on Panel 10C626 (Main Control Room) have been positioned appropriately to maintain adequate pressure to ADS valves.</p>	N/A			
<p>Step 4.9.16</p> <p>*18. Prop <b>OPEN</b> the diesel corridor door to complete vent path to outside with door stop from T-200 Cabinet <b>THEN EVACUATE</b> the area <b>AND NOTIFY</b> Shift Supervision that the diesel corridor door is open.</p> <p><b>Evaluator Cue:</b> Roleplay as Shift Supervisor to acknowledge the diesel corridor open.</p>	<p>Applicant props <b>OPEN</b> the diesel corridor door to complete vent path to outside with door stop from T-200 Cabinet, <b>THEN EVACUATES</b> the area <b>AND NOTIFIES</b> Shift Supervision that the diesel corridor door is open</p>			
<p>Step 4.9.17</p> <p>19. Throttle <b>OPEN</b> HV-57-121, "Drywell Nitrogen Purge Line Isolation Valve" (DRYWELL PURGE), on 10C601 (Main Control Room).</p> <p><b>Evaluator Cue:</b> HV-57-121, "Drywell Nitrogen Purge Line Isolation Valve" (DRYWELL PURGE), on 10C601 (Main Control Room) has been <b>throttled OPEN</b>.</p>	N/A			

**NRC LIMERICK GENERATING STATION INITIAL EXAMINATION**

*JPM K*

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Step 4.9.18 20. Throttle <b>OPEN</b> HV-57-109, "Nitrogen Purge Isolation Valve" (PURGE ISOLATION), on 10C601 (Main Control Room). <b>Evaluator Cue:</b> HV-57-109, "Nitrogen Purge Isolation Valve" (PURGE ISOLATION), on 10C601 (Main Control Room) has been <b>throttled OPENED</b> .	N/A			
<b>CUE:</b> JPM is complete.				

**JPM Stop Time** \_\_\_\_\_

HANDOUT PAGE

**TASK CONDITIONS:**

1. TRIP procedures direct containment venting in accordance with T-200.
2. Primary Containment pressure is rising rapidly (60 psig and rising) requiring 6" ILRT vent path to be established.
3. Suppression Pool level is 28 feet and rising very slowly due to HPCI/RCIC operation.
4. The required steps in T-200 have been performed up to section 4.9.
5. Operators are standing by in the MCR.

**INITIATING CUE:**

You are directed by Shift Supervision to perform Section 4.9 of T-200 on UNIT 1 to support venting primary containment through the 6 inch ILRT line from the Drywell.

HANDOUT PAGE

**TASK CONDITIONS:**

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5. Operators are standing by in the MCR.

**INITIATING CUE:**

You are directed by Shift Supervision to perform Section 4.9 of T-200 on UNIT 1 to support venting primary containment through the 6 inch ILRT line from the Drywell.

**Appendix D****Scenario Outline****Form ES-D-1**

Facility: Limerick	Scenario No.: <u>1</u>	Op-Test No.: _____	
Examiners: _____	Operators: _____		
Initial Conditions: Unit 1 at 90% power to recover HCU maintenance rods, D11 EDG out of service for overhaul, day 2 of 30 day LCO			
Turnover: Recover the HCU maintenance rods and return Unit 1 to 100% power			
Event No.	Mal. No.	Event Type*	Event Description
1		R-ATC	Raise power by control rod withdrawal
2	MPR011B	I-ATC, TS-SRO	1B RBM Fails Inop
3	MMC077B	C-BOP	Hotwell level controller failure
4	MRD016A, MRD016B	C-ATC TS-SRO	Control rod __-__ drifts out
5	MED015D	C-BOP, C-ATC	Closure failure of 101-D12/Temporary loss of D124-G-D Load Center/Temporary loss of ability to drive control rods
6	MSL001A, MCU195A	C-ATC, TS-SRO	SLC spurious injection with RWCU isolation failure
7	MRP029C, MRP407C, MSL559	M-ALL C-ATC C-BOP	Electric ATWS/RRCS failure/SLC header rupture
8	MMT002, MCR412A, MEH108	C-ATC	T-221 failure, main turbine trip, bypass valve closure, running CRD pump trips
9	MSW492A-D	C-BOP	RHRSW Pump Trip in Suppression Pool Cooling
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

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## Scenario Summary and Administration Instructions

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### Scenario Summary

**Event 1:** The crew begins with the plant at \_\_\_% power following a load drop for \_\_\_\_\_. The crew is directed as part of turnover to raise reactor power using control rods and recirc to 100%.

**Event 2:** During withdrawal of the third control rod, the 1B Rod Block Monitor will fail Inop, causing RBM Upscale/Inop alarms and also a rod withdrawal block. The crew will take action per alarm response to bypass the malfunctioning RBM and the SRO will reference Tech Specs.

**Event 3:** Once the Tech Spec call is complete and the RBM has been bypassed, the hotwell level transmitter output signal will fail to minimum, resulting in a loss of automatic hotwell level control. Priority is to either swap level transmitter input to the level controller or take manual control of hotwell level control.

**Event 4:** When hotwell level control has been restored and stabilized, control rod \_\_\_-\_\_\_ will drift out. The crew will enter ON-104, Control Rod Problems. Priority is for the crew to take action to manually insert the rod and close the isolation valves for the insert and withdraw header for that CRD. SRO will reference Tech Specs and direct that the HCU for control rod \_\_\_-\_\_\_ be hydraulically disarmed.

**Event 5:** Once the control rod has been declared inoperable and action taken to disarm it, the 201-D12 breaker will trip and the 101-D12 breaker will fail to close automatically, resulting in a loss of the D12 bus. The crew will enter E-D12, Loss of D12 Safeguard Switchgear. Priority is to re-energize the bus by closing the 101-D12 breaker, restore drywell cooling and restore ability to move control rods by resetting RDCS.

**Event 6:** Once power to D12, drywell cooling, and RDCS have been restored, SLC pump A will receive a spurious start signal. In addition, the RWCU isolation valve will fail to close. The crew will enter OT-104 for negative reactivity addition. Priority is to secure the A SLC pump and close the RWCU isolation valve. Once those actions are complete, OT-104 directs a manual SCRAM be inserted due to the injection of SLC.

**Events 7-9:** When the crew attempts to perform a manual reactor SCRAM, an electrical ATWS will occur and no control rods will insert. The crew will enter T-117, Power/Level Control and begin taking ATWS mitigating actions. The remaining SLC pump will fail to start automatically, requiring crew action to start SLC. Several minutes after injection begins, the SLC header will rupture inside primary containment, resulting in a loss of SLC injection. While action is being taken to insert control rods, the running CRD pump will trip requiring the crew to start the standby pump to continue with rod insertion.

While reactor water level is being lowered using T-270, the main turbine will trip, leaving bypass valves and SRV for pressure control. Shortly after the turbine trip, the bypass valves will slowly fail closed, forcing more steam flow through SRVs to the Suppression Pool. When the Suppression Pool temperature reaches 110°F, the crew will take action to reduce reactor water level further. Failure of the T-221 jumpers will result in MSIV closure, loss of reactor feedwater, bypass valves, and the main condenser. The crew will transition level and pressure control to HPCI/RCIC and SRVs.

Due to the heat addition to the Suppression Pool, the crew will take action per T-102 to place two loops of Suppression Pool Cooling in service. Once Suppression Pool Cooling has been established, one of the running RHRSW pumps will trip, forcing the crew to start the standby

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### Scenario Summary and Administration Instructions

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RHRSW pump to maintain Suppression Pool Cooling in two loops. Once level control has been re-established and stabilized using HPCI/RCIC, control rods will successfully be inserted by performance of T-215. Once all control rods have been verified inserted and level being restored to +12.5" to +54", the scenario may be terminated.

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5–8)	7
2. Malfunctions after EOP entry (1–2)	2
3. Abnormal events (2–4)	3
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2) T-101/T-117	2
6. EOP contingencies requiring substantive actions (0–2)	0
7. Critical tasks (2–3)	3



## **Critical Tasks**

1.

★ **Inhibit ADS per T-117 LQ-3**

### **Safety Significance**

Inhibiting ADS prevents uncontrolled injection of large amounts of relatively cold, unborated low pressure ECCS water when the reactor is not shutdown with control rods.

### **Indications/Cues for Event Requiring Critical Task**

ATWS with reactor power level above 4% APRM power

### **Performance Criteria**

Auto ADS inhibited by placing both Auto Inhibit switches at 10C626 back panel to INHIBIT

### **Performance Feedback**

Successful ADS inhibiting is indicated by white indicating lights at switches illuminating

### **Consequences for Failure to Perform Task**

LQ-3 INHIBIT AUTO ADS

### **DISCUSSION**

LGS TRIP Step LQ-3 directs actions to inhibit the automatic initiation of the Automatic Depressurization System (ADS). In order to effect a reduction in reactor power, actions in T-117, Level/Power Control, may deliberately lower RPV level to a level below the automatic initiation setpoint of the ADS. Actuation of the ADS imposes a severe thermal transient on the RPV and complicates efforts to maintain RPV level within the ranges specified in T-117. Further, rapid and uncontrolled injection of large amounts of relatively cold, unborated water from low pressure injection systems may occur as RPV pressure drops to and below the shutoff head pressures of these pumps. Such an occurrence would quickly dilute in-core boron concentration and reduce reactor coolant temperature. ***When the reactor is not shutdown, or when the shutdown margin is small, sufficient positive reactivity might be added in this way to cause a reactor power excursion large enough to severely damage the core. Therefore, ADS initiation is purposely prevented as the first action of T-117.*** When required, explicit direction to depressurize the RPV is provided in the TRIP procedures, thereby negating any requirement to maintain the automatic initiation capability of the ADS.

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## Scenario Summary and Administration Instructions

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2.

- **Inserts control rods per T-117 RC/Q-12 and RC/Q-13**

### **Safety Significance**

Control rod insertion initiates power reduction immediately

### **Indications/Cues for Event Requiring Critical Task**

Exceeding an RPS scram setting with NO reactor scram signal, and RPS/ARI failure to fully insert all control rods.

### **Performance Criteria**

Insert Control Rods by one or more of the following methods:  
Drive control rods with RMCS after bypassing RWM.  
Direct performance of T-215 to remove SCRAM solenoid fuses

### **Performance Feedback**

Successful insertion of control rods will be indicated by:  
Rod position full in indication for manual insertion of control rods, and all rods indicating full in once SCRAM solenoids for control rods have been de-energized.

### **Consequences for Failure to Perform Task**

Failure to insert control rods allows power to remain elevated with resultant power oscillations and potential core damage.

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## Scenario Summary and Administration Instructions

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3.

- ★ Lower RPV water level to reduce power per T-117 LQ-5 and LQ-11/12

### Safety Significance

Core damage due to unstable operation can be prevented or at least mitigated by promptly reducing feedwater flow so that level is lowered below the feedwater spargers, and subsequently to the top of active fuel when it has been determined that the primary containment is being threatened due to the failure-to-scam event.

### Indications/Cues for Event Requiring Critical Task

ATWS with reactor power level above 4% APRM power

ATWS with reactor power level above 4% APRM power with:

- RPV water level above -161"
- Suppression Pool Temperature above 110°F
- SRV open or Drywell Pressure above 1.68 psig

### Performance Criteria

Lower reactor water level by manually controlling injection rate from Feedwater, HPCI (through feedwater ONLY via performance of T-251) and/or RCIC to the bands prescribed by T-117 LQ-5 and LQ-12

### Performance Feedback

Lowering water level to -60 to -100 (and later to -161 to -186) inches will result in power level lowering as indicated on the Average Power Range Monitors

### Consequences for Failure to Perform Task

LQ-5	<u>IF</u>	reactor power above 4% <u>OR</u> unknown
		<u>AND</u>
		RPV level above -50",
	<u>THEN</u>	lower RPV level below -50" by terminating
		<u>AND</u> preventing RPV injection per T-270 except from:
		<ul style="list-style-type: none"><li>• Boron Injection Systems</li><li>• RCIC</li><li>• CRD</li></ul>

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## Scenario Summary and Administration Instructions

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AND

continue at step LQ-6

### DISCUSSION

LGS TRIP Step LQ-5 is a continue re-checking step, and as such, should be referred to frequently to determine if both of the conditions listed exist, and if so, to carry out the specified action. Step LQ-5 directs actions to deliberately lower RPV level below -50 inches when reactor power is above 4% or cannot be determined.

To prevent or mitigate the consequences of any large irregular neutron flux oscillations induced by neutron flux/thermal-hydraulic instabilities, RPV level is lowered below -50 inches, which corresponds to an RPV level two feet below the elevation of the feedwater sparger nozzles.

***This places the feedwater spargers in the steam space, thereby providing effective heating of the relatively cold feedwater and eliminating the potential for high core inlet subcooling. For plant conditions that are susceptible to reactor power oscillations, the initiation and growth of these oscillations is principally dependent upon the subcooling at the core inlet; the greater the subcooling, the more likely that reactor power oscillations will commence and rise in magnitude.***

If reactor power is at or below 4%, it is highly unlikely that the core bulk boiling boundary would be below that which provides suitable stability margin for operation at high powers and low flows. (A minimum boiling boundary of four feet above the bottom of active fuel has been shown to be effective as a stability control because a relatively long two-phase column is required to develop a coupled neutron flux/thermal-hydraulic instability.) Furthermore, flow/density variations would be limited with reactor power this low since the core has a relatively low average void content. Therefore, there is significant stability margin with power at or below 4%.

Two feet below the feedwater sparger nozzles has been selected as the upper bound of the RPV level control band. This level is sufficiently low that steam heating of the injected water will be at least 65% to 75% effective (i.e., the temperature of the injected water will be increased to 65% to 75% of its equilibrium value in the steam environment). This level is sufficiently high that the capability to bypass the low RPV level MSIV isolation should be able to control RPV level with feedwater pumps to preclude the isolation. However, if RPV level must be lowered to or below the low RPV level MSIV isolation setpoint, direction is given to bypass selected interlocks to prevent the unintended loss of the main condenser and preserve the operability of the Feedwater and Condensate Systems.

Lowering RPV level is accomplished by terminating and preventing all injection into the RPV, except from boron injection systems, the Reactor Core Isolation Cooling (RCIC) System, and the Control Rod Drive (CRD) System. Boron injection systems, the RCIC System, and the CRD System are relatively low flow systems. Additionally, boron injection systems and the CRD System may be needed to establish and maintain reactor shutdown conditions. When restoration of injection is subsequently required, but other outside core shroud injection systems are incapable of injection, continued RCIC System operation (along with boron injection systems and CRD) may prevent RPV level from dropping to the level that requires emergency RPV depressurization. The marginal drop in the rate of RPV level reduction resulting from continued RCIC System operation has a negligible impact on lowering core inlet subcooling.

---

### Scenario Summary and Administration Instructions

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With RPV injection terminated, RPV level and reactor power will drop at the maximum possible rate allowed by boiloff. Failure to completely stop RPV injection flow (with the above noted exceptions) would delay the reduction in core inlet subcooling, thus raising the potential for neutron flux oscillations.

To facilitate RPV level reduction in an expeditious and controlled manner, interlocks which interfere with terminating and preventing injection into the RPV may be defeated. These include injection valve and test valve control logic, pump start logic, etc. and are identified in T-270, Terminate And Prevent Injection Into The RPV.

When RPV level has been lowered below -50 inches, operators are directed to continue at Step LQ-6.

- LQ-11                      Terminate AND prevent RPV injection per T-270 except from:
- Boron Injection Systems
  - RCIC
  - CRD
- REGARDLESS** of any reactor power OR RPV level oscillations

#### DISCUSSION

LGS TRIP Step LQ-11 directs actions which attempt to lower reactor power by deliberately lowering RPV level when it has been determined that the primary containment is being threatened during a failure-to-scrum event.

The combination of plant conditions which indicate a threat to the primary containment, combined with the inability to shut down the reactor through control rod insertion, dictate a requirement to promptly reduce reactor power since, as long as these conditions exist, suppression pool heatup will continue. Reactor power must be reduced so that injection of the Hot Shutdown Boron Weight (HSBW) of boron can be completed before suppression pool temperature exceeds the Heat Capacity Temperature Limit (HCTL).

Reactor power is reduced by terminating RPV injection to deliberately lower RPV level. Since RPV level is allowed to drop only to the top of active fuel (TAF, -161 inches) before RPV injection is restored, Step LQ-7 is conditioned upon RPV level being above TAF. If RPV level is initially below TAF, the objective of this step has already been accomplished. Injection will, therefore, not be terminated since RPV level might drop too far before injection is restored.

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## Scenario Summary and Administration Instructions

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***If the primary containment is being threatened during failure-to-scram conditions, operators are, or have been, directed to reject as much heat as possible from the RPV to the main condenser (T-101, RPV Control, Step RC/P-9), to place all available suppression pool cooling into operation (in T-102, Primary Containment Control, Step SP/T-4), to trip the Reactor Recirculation Pumps (T-101 Step RC/Q-10), and to concurrently inject boron and manually insert control rods (actions beginning at T-101 Step RC/Q-11). One additional action remains available to mitigate the consequences of a failure-to-scram event: deliberately lowering RPV level to effect a reduction in reactor power. Lowering RPV level reduces the natural circulation driving head and core flow, thereby reducing reactor power and the heat addition rate to the suppression pool. The reactor power reduction achieved by lowering RPV level may be sufficient to reduce reactor power below the BLIT, thus ensuring that boron injection can be completed before the HCTL is reached.***

The process by which reactor power is reduced by lowering RPV level occurs as follows:

1. The reactor is in a natural circulation mode following Reactor Recirculation Pump trip (accomplished in T-101 Step RC/Q-10). The natural circulation driving head is a function of the fluid density difference between the regions inside and outside of the core shroud (void fraction directly affects the fluid density inside the shroud) and the height of the fluid columns (RPV level).
2. As RPV level is lowered, the height of the fluid columns is reduced, thereby reducing the natural circulation driving head.
3. As the natural circulation driving head is reduced, natural circulation flow through the core is reduced.
4. The reduced core flow results in a reduced rate of steam removal from the core.
5. The reduced rate of steam removal results in an increased void fraction inside the core shroud.
6. The increased void fraction adds negative reactivity to the reactor.
7. The negative reactivity drives the reactor slightly subcritical and reactor power begins to decrease.
8. The reduced reactor power results in a reduced steam generation rate.
9. The reduced steam generation rate results in a reduced void fraction.
10. When the void fraction drops to its original value (with some slight adjustment to account for reduced Doppler reactivity), the reactor returns to criticality at a lower power.

Lowering RPV level is accomplished by terminating and preventing all injection into the RPV, except from boron injection systems, the RCIC System, and the CRD System. Boron injection systems, the RCIC System, and the CRD System are relatively low flow systems. Additionally, boron injection systems and the CRD System may be needed to establish and maintain reactor shutdown conditions. When restoration of RPV injection is subsequently required, but other outside shroud injection systems are incapable of injection, continued RCIC System operation (along with boron injection systems and the CRD System) may prevent RPV level from dropping to the level that requires emergency RPV depressurization. The marginal rise in integrated power resulting from continued RCIC System operation while RPV level is deliberately lowered has a negligible impact on suppression pool temperature.

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### Scenario Summary and Administration Instructions

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With RPV injection terminated and prevented, RPV level and reactor power will drop at the maximum possible rate allowed by boiloff. Failure to completely stop RPV injection flow (with the above noted exceptions) prolongs the elevated reactor power condition, thus depositing more energy than necessary into the suppression pool. For RPV level reductions which uncover the feedwater spargers, failure to completely stop RPV injection flow also delays reduction in core inlet subcooling, thus raising the possibility of neutron flux/thermal-hydraulic instabilities.

Even in the absence of large irregular neutron flux oscillations induced by neutron flux/thermal-hydraulic instabilities, reactor power oscillations of relatively smaller magnitude may occur when RPV level is lowered significantly below the normal operating range with the reactor still at power. Typically, the magnitude of these oscillations is below the Large Oscillation Threshold (LOT) value of 25%, which is discussed in detail in the T-101 Bases document section associated with Step RC/Q-17. These smaller oscillations have been analyzed and determined to result in thermal transients well within the design capabilities of the fuel. Oscillations are noted at this point to indicate that they are to be expected, and were considered in developing the steps which require deliberately lowering RPV level with the reactor at power.

To facilitate RPV level reduction in an expeditious and controlled manner, any interlocks which may prevent terminating and preventing injection into the RPV are allowed to be defeated, and are identified in T-270, Terminate And Prevent Injection Into The RPV. The specified interlocks includes those such as injection valve and test valve control logic, pump start logic, etc.

Operators are directed to continue at Step LQ-12.

## Scenario Summary and Administration Instructions

The scenario may be terminated once the ATWS has been terminated with level restoration using Condensate or Low Pressure ECCS and upon direction of the Chief Examiner

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION																										
	<ul style="list-style-type: none"> <li>■ Reset simulator to Scenario _____</li> <li>■ Take out of FREEZE and run scenario file _____, then ensure the following: <ul style="list-style-type: none"> <li>- Reactor Power is 90% with stable reactor water level</li> <li>- 1A CRD pump in service</li> </ul> </li> </ul>																										
	<ul style="list-style-type: none"> <li>■ Apply Information Tags on the following components: <ul style="list-style-type: none"> <li>- D11 EDG</li> </ul> </li> </ul>																										
	<ul style="list-style-type: none"> <li>■ Ensure materials for applicants: <ul style="list-style-type: none"> <li>- ReMa package for load drop marked up through power reduction</li> <li>- Turnover sheet: <ul style="list-style-type: none"> <li>○ 90% power ____ MWe</li> <li>○ Power was reduced to 90% in the previous shift to allow recovery of HCU maintenance rods</li> <li>○ Recover HCU maintenance rods per ReMa</li> <li>○ Return Unit 1 to 100% power IAW ReMa</li> </ul> </li> </ul> </li> </ul>																										
	<ul style="list-style-type: none"> <li>■ Ensure the following malfunctions are loaded: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">- MPR011B</td><td>1B RBM Fails Inop</td></tr> <tr> <td>- MMC077B</td><td>Hotwell Level Controller Failure</td></tr> <tr> <td>- MRD016A and MRD016B</td><td>Control Rod ____ Drifts Out</td></tr> <tr> <td>- MED015D</td><td>Trip of 201-D12</td></tr> <tr> <td>- XXXXXXXX</td><td>Closure failure of 101-D12</td></tr> <tr> <td>- XXXXXXXX</td><td>Closure failure of D12 EDG Output Breaker</td></tr> <tr> <td>- MSL001A</td><td>SLC Spurious Injection</td></tr> <tr> <td>- MCU195A</td><td>RWCU Isolation Failure</td></tr> <tr> <td>- MRP029C</td><td>Electric ATWS</td></tr> <tr> <td>- MRP407C</td><td>RRCS Failure</td></tr> <tr> <td>- MMT002 ramp 50</td><td>Main Turbine Thrust Wear Indicator Trip</td></tr> <tr> <td>- MCR412A</td><td>1A CRD Pump Trip</td></tr> <tr> <td>- MSW492A-D</td><td>Selected RHRSW Pump Trip</td></tr> </table> </li> <li>■ Ensure the following remote functions are loaded: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>■ Ensure the following overrides are loaded: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> </ul>	- MPR011B	1B RBM Fails Inop	- MMC077B	Hotwell Level Controller Failure	- MRD016A and MRD016B	Control Rod ____ Drifts Out	- MED015D	Trip of 201-D12	- XXXXXXXX	Closure failure of 101-D12	- XXXXXXXX	Closure failure of D12 EDG Output Breaker	- MSL001A	SLC Spurious Injection	- MCU195A	RWCU Isolation Failure	- MRP029C	Electric ATWS	- MRP407C	RRCS Failure	- MMT002 ramp 50	Main Turbine Thrust Wear Indicator Trip	- MCR412A	1A CRD Pump Trip	- MSW492A-D	Selected RHRSW Pump Trip
- MPR011B	1B RBM Fails Inop																										
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- MCR412A	1A CRD Pump Trip																										
- MSW492A-D	Selected RHRSW Pump Trip																										



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**Scenario Summary and Administration Instructions**

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✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"><li>■ <b>Ensure</b> the following triggers are built:<ul style="list-style-type: none"><li>- MSL559 trigger to actuate 5 minutes after Mode Switch in SHUTDOWN</li><li>- MEH108 trigger to ramp close bypass valves over 5 minute period after turbine trip</li></ul></li></ul>
	<ul style="list-style-type: none"><li>■ <b>Reset</b> any annunciators that should not be present</li></ul>

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**Scenario Summary and Administration Instructions**

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**INSTRUCTIONS FOR SIMULATOR OPERATOR**

**EVENT 1: Control Rod Withdrawal**

✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

**EVENT 2: 1B RBM Fails Inop**

✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	<ul style="list-style-type: none"> <li>■ When chief examiner ready to proceed, insert MPR011B for 1B RBM Fails Inop</li> </ul>
	<ul style="list-style-type: none"> <li>■ As EO sent to investigate failure of 1B RBM, report that "B RBM INOP" light is illuminated and meter indicates upscale.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

**EVENT 3: Hotwell Level Controller Malfunction**

✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	<ul style="list-style-type: none"> <li>■ When 1B RBM bypassed, TS call complete, and chief examiner ready to proceed, insert MMC077B, Hotwell Level Controller Failure</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

**EVENT 4: Rod \_\_-\_\_ Drifts Out**

✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	<ul style="list-style-type: none"> <li>■ When hotwell level control has been stabilized, and chief examiner ready to proceed, insert MRD016A, MRD016B to drift control rod __-__ out</li> </ul>
	<ul style="list-style-type: none"> <li>■ As EO dispatched to HCU __-__, report that the exhaust water line is hot</li> </ul>
	<ul style="list-style-type: none"> <li>■ If requested to close 47-*-01 and 47-*-02 valves at HCU for rod __-__, then remove malfunction MRD016B for rod __-__, and report that the valves are closed</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

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**Scenario Summary and Administration Instructions**

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**EVENT 5: Momentary Loss of D12**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once control rod 30-27 is disarmed, the Tech Spec call is complete, and when chief examiner ready to proceed, insert MED015D for 201-D12 breaker trip</li> </ul>
	<ul style="list-style-type: none"> <li>If directed as EO to reset RDCS, wait three minutes, toggle remote function <b>RRD001</b> to reset, and report completion</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

**EVENT 6: SLC Spurious Injection with RWCU Isolation Failure**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once power restored to D12, RDCS is reset, the chief examiner is ready to proceed, MSL001A and MCU195A for A SLC pump spurious start with RWCU isolation valve failure</li> </ul>
	<ul style="list-style-type: none"> <li>When dispatched as EO to open breaker for 1A SLC, report that you were in the area for rounds (activate _____) and report that breaker for 1A SLC pump is opened</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

**EVENT 7: Electric ATWS, Loss of SLC, CRD Pump Trip, RHRSW Pump Trip**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>When reactor water level stable in band -60"→-110" and chief examiner ready to proceed, insert turbine trip MMT002</li> </ul>
	<ul style="list-style-type: none"> <li>Once 5 control rods have been inserted, insert CRD Pump trip MCR412A</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-270, wait 7 minutes and trigger <b>RTR220 through RTR227</b> or load T-270 scenario file. When complete, report that T-270 is complete in the AER</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-251, wait two minutes, then contact PRO to verify that HPCI to Core Spray valve HV-55-1F006, Closed. Activate <b>RTR309</b> and report T-251 complete</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-216, wait 4 minutes and report that T-216 cannot be completed due to inability to open RV-047-101</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-221, acknowledge direction and take no action</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-209, report that lineup is in progress, estimated time to complete is 45 minutes</li> </ul>
	<ul style="list-style-type: none"> <li>As EO sent to perform T-215, wait until level has been stabilized between -161" → -186", and report that you are about to pull scram fuses per T-215. <b>DELETE MRP029C</b> and report that T-215 is complete</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

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**Scenario Summary and Administration Instructions**

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✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	■ Once ATWS has been terminated with level restoration using condensate or low pressure ECCS and upon direction of the Chief Examiner, place the simulator in freeze

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_ Scenario No.: 1 Event No.: 1 Page \_\_\_\_ of \_\_\_\_

Event Description: Control Rod Withdrawal

Priority: Withdraw control rods to raise reactor power as directed

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Directs ATC and BOP to raise reactor power via control rod withdrawal</p> <p><b>Evaluator Note:</b> Scenario will proceed to next event, 1B RBM Inop failure, during withdrawal of third control rod</p>
	ATC	<p>Applicant acquires S73.1.A, Normal Operation of RMCS, section 4.3 Establish 48 as target position for control rods</p> <p><b>Evaluator Note:</b> If notch position 48 is the target position, then it is acceptable to hold CONTINUOUS WITHDRAW until position 48 is displayed</p>
	ATC	<p>(Step 4.3.1) Applicant reviews Attachment 1, and determines that no rods are channel distortion susceptible</p> <p>(Step 4.3.2) Applicant verifies drive water pressure is 255 to 265 psid, as indicated on PDI-46-1R602, "Drive Water Differential Pressure Indicator."</p> <p>(Step 4.3.3) Selects the control rod to be withdrawn at 10C603, "Reactor Control Console."</p> <p>(Step 4.3.4) Verifies correct rod position is indicated on the Four Rod Display</p> <p>(Step 4.3.5) Applicant verbally informs peer checker of target position (48) and obtains peer checker concurrence</p> <p>(Step 4.3.6) Applicant verbally informs peer checker of notch position that the WITHDRAW and CONTINUOUS WITHDRAW push buttons will be released (48) and obtains peer checker concurrence</p> <p>(Step 4.3.7) Applicant simultaneously depresses WITHDRAW and CONTINUOUS WITHDRAW pushbuttons at 10C603</p>

## Scenario Summary and Administration Instructions

ATC	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>WHEN</b> WITHDRAW  <b>AND</b> CONTINUOUS WITHDRAW pushbuttons are depressed,  <b>THEN</b> the proper RDCS light sequence is:</p> <ol style="list-style-type: none"> <li>1. INSERT light Lit  <b>AND THEN</b> extinguishes after approximately 0.6 seconds.</li> <li>2. WITHDRAW  <b>AND</b> CONTINUOUS WITHDRAW lights Lit.</li> </ol> </div> <p>(Step 4.3.8) Applicant verifies proper RDCS light sequence, and releases WITHDRAW and CONTINUOUS WITHDRAW pushbuttons when control rod reaches position 48.</p> <p><b>Evaluator Note:</b> Applicant is expected to observe APRMs for proper NI response and monitor RBM indicated levels and rod position indication change to ensure proper rod motion. Applicant may receive an RBM rod block due to local power change around withdrawing control rod. If this happens, applicant will communicate to SRO, and deselect/reselect the desired control rod to re-initialize the RBM and continue with control rod withdrawal</p>
ATC	<p>(Step 4.3.11) Applicant verifies SETTLE light lit and then extinguishes after approximately 6.1 seconds</p> <p>(Step 4.3.13) Applicant verifies that the control rod has been withdrawn to target notch position (48) at Four Rod Display</p> <p>(Step 4.3.14) If control rod is positioned to notch position 48, then perform an overtravel check per ST-6-107-730-1, Control Rod Coupling Check</p>
ATC	<p>(ST-6-107-730-1, Step 4.3.2) When a control rod is withdrawn to FULL OUT position, the notch withdraw or continuous withdraw selected rod at panel 10C603</p> <p>(Step 4.3.3) Applicant verifies the following:</p> <ul style="list-style-type: none"> <li>-ROD OVERTRAVEL annunciator remains clear at panel 108 REACTOR</li> <li>-Individual rod selected indicates 48 on Four Rod Display (ROD HEIGHT) at panel 10C603</li> <li>-Individual rod selected RED <u>out</u> light is lit at the Full Core Display at panel 10C649</li> </ul> <p>(Step 4.3.4) Applicant documents successful completion of coupling check for selected control rod</p> <p><b>Evaluator Note:</b> The above steps will be repeated for subsequent rods until RBM Inop failure begins Event 2</p>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_ Scenario No.: 1 Event No.: 2 Page \_\_\_\_ of \_\_\_\_

Event Description: 1B RBM Fails Inop

Priority: Declare 1B RBM inoperable and bypass 1B RBM

Time	Position	Applicant's Actions or Behavior
	SRO	Receives report from ATC of RBM Upscale/Inop and Rod Withdrawal Block alarms, and that power, level, and pressure are steady
	SRO	Consults Tech Specs 3.1.4.3 and 3.3.6, notes no required actions due to power >90% and MCPR >1.40
	SRO	Declares 1B RBM Inoperable and recognizes the failed RBM should be bypassed.
	SRO	Briefs crew on plant status and directs bypassing 1B RBM <b>Evaluator Note:</b> Once 1B RBM has been bypassed and Tech Specs referenced, proceed to next event, Hotwell Level Controller Failure
	SRO	Contacts WWM to have FIN/I&C investigate failure of 1B RBM
	ATC	Reports ARC-MCR-108 D-3 RBM UPSCALE/INOPERATIVE alarm, and ARC-MCR-108 F-3 ROD OUT BLOCK.
	ATC	Refers to the alarm response and verifies the indications on 10C653 and ODAs
	ATC	Based on control room indications, reports INOP trip of 1B RBM
	ATC	(ARC-MCR-108 D-3 Step 5) If the RBM is INOP, THEN perform the following: a. Determine IF the affected RBM can be bypassed (using the BYPASS joystick) per Tech Spec 3.1.4.3 AND 3.3.6 b. If RBM can be BYPASSED, then BYPASS the affected RBM AND contact I&C for troubleshooting
	ATC	Places BLOCK CH BYPASS joystick down to B position
	ATC	Verifies ARC-MCR-108 D-3 RBM UPSCALE/INOPERATIVE alarm, and ARC-MCR-108 F-3 ROD OUT BLOCK alarms clear. Report 1B RBM bypassed to SRO

**Comment [cml1]:** May need to change this based upon initial scenario power level

**Scenario Summary and Administration Instructions**

**Appendix D**

**Required Operator Actions**

**Form ES-D-2**

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 3 Page \_\_\_\_ of \_\_\_\_

Event Description: Hotwell Level Controller Failure

**Priority:** Recognize failure, swap level transmitters or take manual control of Hotwell Level

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Verifies power, pressure, level steady with ATC</p> <p>Directs BOP to perform ARC</p> <p>Directs performance of actions in ARC-MCR-104 D2, "HP COND HOTWELL HI/LO LEVEL"</p> <p>Contacts Work Week Manger/FIN to troubleshoot failed hotwell level instrument</p> <p><b>Evaluator Note:</b> Once hotwell level control has been swapped to the alternate transmitter/manual control taken of hotwell level <b>AND</b> hotwell level steady, proceed to next event. Rod ____-____ drift out</p>
	BOP	<p>(All actions from ARC-MCR-104 D2)</p> <ol style="list-style-type: none"> <li>1. Verify proper operation of makeup/reject valves (<i>Observes rising hotwell level and lowering CST level</i>)</li> <li>2. If valves are not responding to level, switch to alternate level transmitter as follows: <ol style="list-style-type: none"> <li>a. Place level controllers LIC-05-101 AND LIC-05-102 in MANUAL mode at 10C652</li> <li>b. Select alternate level transmitter (LT-05-101A or LT-05-101B) using HS-05-101, "LEVEL CONTROL SEL," at 10C652</li> <li>c. Adjust setpoints of LIC-05-101 AND LIC-05-102 to match current hotwell level value</li> <li>d. Place LIC-05-101 AND LIC-05-102 in AUTO mode, AND slowly adjust setpoint to desired hotwell level value</li> </ol> </li> </ol>
	BOP	<p>Monitors and ensures the following parameters:</p> <ol style="list-style-type: none"> <li>a. Hotwell AND CST levels returning to pre-transient levels</li> <li>b. Reject/makeup valve positions returning to pre-transient levels</li> <li>c. Condensate pump discharge pressure returns to pre-transient level</li> <li>d. Reactor feed pump suction pressure returns to pre-transient level</li> </ol>



**Scenario Summary and Administration Instructions**

**Appendix D**

**Required Operator Actions**

**Form ES-D-2**

Op-Test No.: _____ Scenario No.: 1      Event No.: 4      Page ____ of ____		
Event Description: Rod ____-____ Drifts Out <b>Priority:</b> Priority is to insert/isolate, declare rod ____-____ inoperable		
Time	Position	Applicant's Actions or Behavior
	SRO	Announces entry into ON-104, Control Rod Problems Announces entry into OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion Proceeds to ON-104, Section 2.2 for Control Rod Drift Out Directs ATC/BOP to reduce reactor power to pre-transient power level Briefs crew that if more than one control rod drifts out, the crew will SCRAM and enter T-100 or T-101 Directs insertion and disarming of control rod 30-27
	SRO	Declares control rod ____-____ inoperable. Complies with TS 3.1.3.1, action b.2 Action b.2 If the inoperable control rod is inserted, within 1 hour disarm the associated directional control valves either: a) Electrically, or b) Hydraulically by closing the drive water and exhaust water isolation valves Directs ATC to have EO hydraulically disarm HCU for rod ____-____ Contacts Engineering Duty Manager, Reactor Engineering Contacts Work Week Manager/FIN <b>Evaluator Note:</b> Once control rod ____-____ has been declared inoperable, inserted and disarmed, proceed to next event, loss of D12.
	ATC	Reports ARC-MCR-108 F-4 Rod Drift alarm Announces entry into ON-104, Control Rod Problems

## Scenario Summary and Administration Instructions

ATC/BOP	<p>(ARC-MCR-108 F-4 Step 1) Refer to ON-104, Control Rod Problems, OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion, AND to Tech Spec 3.1.3.6 pertaining to control rod drive coupling for actions/limitations due to rod drift.</p> <p>(ON-104 Step 2.2.1) Notify Shift Supervision</p> <p>(Step 2.2.2) STOP all control motion demands</p> <p>(Step 2.2.3) APPLY continuous control rod insert signal to drifting rod until fully inserted</p> <ol style="list-style-type: none"> <li>1. IF control rod drifts out after fully inserted, THEN REAPPLY continuous control rod insert signal as necessary to maintain control rod fully inserted (<i>Rod will drift out when continuous insert is released; continuous insert must continue to be applied</i>)</li> </ol> <p>(Step 2.2.4) If more than one control rod drifts out, THEN manually SCRAM the reactor and PLACE Mode Switch in "SHUTDOWN" and ENTER T-100 OR T-101, as applicable (<i>This step is N/A as only one control rod is drifting</i>)</p> <p>(Step 2.2.5) Go to flowchart on Attachment 2 AND consult Tech Spec 3.1.3.1</p> <p><i>Applicant proceeds through flowchart to step 2.2.19</i></p> <p>(Step 2.2.19) Maintain continuous control rod insert signal to drifting rod as necessary to maintain rod full in. Isolate affected rod from its HCU as follows:</p> <ol style="list-style-type: none"> <li>(A) Close affected CRDs 47-*-01 valve (<i>Applicant directs EO</i>)</li> <li>(B) Close affected CRDs 47-*-02 valve (<i>Applicant directs EO</i>)</li> <li>(C) Release INSERT pushbutton</li> </ol> <p>(Step 2.2.20) Demand P-1 (<i>Applicant will find no thermal limits greater than 1.0 and will return to ON-104 step 2.2.25</i>)</p> <p>(Step 2.2.25.9) DECLARE control rod inoperable, AND perform actions required by Tech Spec 3.1.3.1</p> <p>Directs EO to hydraulically disarm HCU for rod ____</p>
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## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 5 Page \_\_\_\_ of \_\_\_\_

Event Description: Inadvertent trip of 201-D12, failure of 101-D12 to automatically close

Priority: Restore power to D12 bus, reset RDCS to restore ability to move control rods

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report of steady power/pressure/level from ATC</p> <p>Receives report of loss of D12 bus, failure of 101-D12 breaker to auto-close from BOP</p> <p>Enters transient alarm response</p> <p>Directs BOP to restore power to D12 bus</p>
	SRO	<p>References E-D12, Loss of D12 Safeguard Switchgear</p> <p>Briefs crew on E-D12 and actions required, and once power restored, directs performance of restoration actions of E-D12.</p> <p>Requests WWM/FIN/Electrical Maintenance support to determine cause of trip of 201-D12</p> <p>References Tech Specs (Multiple Tech Specs affected; 3.6.3, 3.5.1, 3.4.3.1, 3.8.1, 3.7.1.1, 3.7.1.2, 3.6.1.4, 3.6.5.3.....TRM 3.4.4)</p> <p><b>Evaluator Note:</b> <i>Once action has been taken to restore power to D12 bus, reset RDCS, and restore drywell cooling, proceed to next even, SLC spurious injection with RWCU isolation failure</i></p>
	ATC	<p>Acknowledges multiple alarms, and prioritizes response to multiple alarms, most importantly:</p> <p>108 E-4 RDCS Inoperative</p> <p>111 A-5/112 A-5 Recirc Pump Motor Winding Cooling Water Lo Flow</p>
		<p>(ARC-MCR-108 E-4 Step 1) Refer to S73.0.F</p> <p>(Step 2) Contacts SRO/Obtains permission to reset RDCS</p> <p>Dispatches EO to perform S73.0.F</p>

### Scenario Summary and Administration Instructions

		<p>(S73.0.F, Step 4.3, RDCS Reset) Applicant marks step 4.3.2 and 4.3.10 N/A due to immediate need to reset RDCS</p> <p>(Step 4.3.3) Communicates to EO that the RDCS inoperative condition has been logged</p> <p>(Step 4.3.4) Communicates to EO that SSV permission has been obtained</p> <p>(Step 4.3.5) EO in field depresses RESET for at least two seconds at 10C616</p> <p>(Step 4.3.9) Applicant resets/verifies reset of RDCS INOPERATIVE at 108 REACTOR (E-4)</p>
	BOP	<p>(E-D12, Step 2.2) Applicant verifies 1A TECW Pump is running at 10C655</p> <p>(Step 2.3) Applicant either: Starts D ESW Pump or Secures D12 EDG</p> <p><b>Starts D ESW Pump: (N/A if Securing D12 EDG)</b></p> <p>(S11.1.A Step 4.3.2) Applicant aligns HSS-12-016A-1(B, C-1, D) SPRAY BYPASS SELECT to SPRAY or BYPASS based upon spray pond temperature and SSV direction</p> <p>(Step 4.4.1) Applicant ensures HS-081-041A(B, C, D), "Spray Pond Pump House Fan Handswitch," in RUN</p> <p>(Step 4.4.2) Applicant Places ODP548, "Emergency Service Water Pump," in START, verifies pump amps and pressure/flow</p> <p>(Step 4.4.3) Notifies chemistry that ESW system is in operation</p>
		<p><b>Securing D12 EDG: (N/A if starting D ESW Pump)</b></p> <p>(S92.2.N Step 4.7.2) Applicant turns 101-DG501/CS, "Diesel Generator Control," to STOP and verifies diesel generator shuts down</p>
		<p>(E-D12 Step 2.7) Applicant monitors Hotwell Level using PMS points E1666 or E1667 and manually control reject valves as necessary</p>

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**Scenario Summary and Administration Instructions**

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		<p>(Step 2.4/4.1.10) Applicant may reference S43.0.D for problems with drywell chill water due to PCIV closure. Applicant will perform Step 4.1.10 to restore drywell chill water by opening the following:</p> <ul style="list-style-type: none"> <li>• Loop B Drywell Clg Water Supply PCIV HV-87-122</li> <li>• Loop B Drywell Clg Water Supply PCIV HV-87-123</li> <li>• Loop A Drywell Clg Water Supply PCIV HV-87-128</li> <li>• Loop A Drywell Clg Water Supply PCIV HV-87-129</li> </ul> <p>And monitor Recirc Pump motor winding and chill water return temperatures on XI-036-101/102 at Panel 10C614</p>
		<p>(E-D12 Step 3.6) Applicant verifies 1AP211 or 1CP211, "Fuel Pool Cooling Water Pump" running at 10C221</p>
		<p>(E-D12 Step 4.1.3, or in response to ARC-MCR-127 C-2, "1 Unit Recombiner Train Aftercondenser Hi/Lo level")</p> <p>Applicant places CV-69-156, Drain Select, to "MN COND"</p>
		<p>Dispatches EO to Aux Equipment Room to reset RHRSW Rad Monitors and Reactor Building ARMs</p>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page ____ of ____		
Event Description: SLC Spurious Injection with RWCU Isolation Failure <b>Priority:</b> Enter OT-104, secure SLC pump, and perform reactor SCRAM		
Time	Position	Applicant's Actions or Behavior
	SRO	Announces entry into OT-104 (Step 3.4) Applicant verifies plant is operating in an authorized region of the Power/Flow Map Directs ATC to secure 1A SLC pump Contacts WWM/FIN Consults TS 3.1.5 Action a: With only one pump and corresponding explosive valve OPERABLE in OPERATIONAL CONDITION 1 or 2, restore one inoperable pump and corresponding explosive valve to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours (Step 3.7) Once SLC pump secured, directs ATC to perform reactor SCRAM  <b>Evaluator Note:</b> Once the mode switch is placed in SHUTDOWN, scenario will progress to next event, no cue is necessary
	ATC	Responds to multiple alarms: 108 I-4, "Standby Liquid Squib Valve Loss of Continuity," and 113 B-5, "Core Spray Line Internal Break"  Reports to SRO that 'A' SLC pump has started and is injecting; also reports that HV-44-1F001 (RWCU I/B isolation valve) failed to close  Manually takes control switch for HV-44-1F001 to CLOSE  Directs EO to open breaker 34 for 'A' SLC Pump at D114-R-C  Arms and depresses manual SCRAM pushbuttons

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 1 Event No.: 7, 8, 9 Page \_\_\_\_ of \_\_\_\_

Event Description: Electric ATWS, Main Turbine Trip, CRD Pump Trip, HPCI flow controller failure

★ Contains action items to complete critical task 1, Inhibit ADS per T-117 LQ-3

● Contains action items to complete critical task 2, Insert control rods per T-117 RC/Q-12 and RC/Q-13

■ Contains action items to complete critical task 3, Lower RPV water level to reduce power per T-117 LQ-5 and LQ-11/12

Time	Position	Applicant's Actions or Behavior
	SRO	Enters T-101, RPV CONTROL due to SCRAM condition with power above 4%, (Step RC-4) Directs ATC to place the Mode Switch in SHUTDOWN
		(T-101 RC-6) Directs ATC to insert SRM/IRM
		(T-101 RC/L-2) Announces exit of RC/L of T-101, and entry into T-117
	★	<b>(T-117 LQ-3) Directs BOP to Inhibit Auto ADS</b>
		(T-101 RC/Q-6) Directs ATC to manually initiate RRCS and ensure ARI initiation
		(T-117 LQ-4) Directs BOP to perform T-221
		(T-101 RC/Q-8) Directs ATC to ensure Recirc runback to minimum
	■	<b>(T-117 LQ-5) Directs BOP to terminate/prevent, perform T-270 to lower level to -60" → -100"</b> <b>Evaluator Note:</b> Once reactor water level is steady in band -60" → -100", direct booth operator to insert MMT002 to trip the main turbine, forcing pressure control to bypass valves and SRVs
		(T-101 RC/Q-10) Directs ATC to trip both Recirc pumps, at least 10 seconds apart
	●	<b>(T-101 RC/Q-12) Directs ATC to insert rods manually with RWM bypassed</b>
		When notified of CRD pump trip: Directs ATC to start the standby CRD pump
	●	<b>(T-101 RC/Q-13) Directs ATC or BOP to perform T-213, T-215, T-216</b> (T-101 RC/Q-16) Directs ATC to inject SLC

## Scenario Summary and Administration Instructions

		<p>When Main Turbine trips: (T-101 RC/P-11) Directs BOP to stabilize RPV pressure below 1096 psig using bypass valves and SRV</p> <p><b>Evaluator Note:</b> <i>Approximately 2 minutes after the turbine trips, the bypass valves will begin to fail closed, resulting in more SRVs opening, and approaching 110 °F in the Suppression Pool in approximately 9 minutes after turbine trip</i></p>
		<p>When Suppression Pool temperature reaches 95°F: Announces entry into T-102 and (SP/T-5) directs BOP to place two loops Suppression Pool Cooling in service</p>
		<p>When informed SLC injection is no longer occurring: (T-101 RC/Q-20) Directs ATC to perform T-209 to inject SLC with RCIC</p>
	■	<p><b>When Suppression Pool temperature reaches 110°F:</b> <b>Directs BOP to perform T-270 and maintain RPV water level -161"→-186"</b> <b>Directs BOP to perform T-251</b></p> <p><b>Evaluator Note:</b> <i>Actual level band will be determined by criterion in step LQ-12. Worst case level control band is -161"→-186"</i></p>
		<p>Monitors curve SP/T-1. If Suppression Pool temperature approaches HCTL curve due to isolated ATWS: Directs BOP to reduce pressure using SRV to the next lower pressure HCTL band (701-900 psig, 501-700 psig, etc.)</p>
	ATC	<p>Reports failure to SCRAM, places Mode Switch in SHUTDOWN</p>
		<p>Inserts SRM/IRM:</p> <ul style="list-style-type: none"> <li>Depresses 'Power On' pushbutton</li> <li>Depresses 'Select' Pushbuttons for all SRM and IRM</li> <li>Depresses 'Drive In' Pushbutton</li> <li>Monitors SRM/IRM indication for verification of instruments driving in</li> </ul>
		<p>Arms and depresses 1A/1B and 2A/2B RRCS Manual Initiation Pushbuttons</p> <p>Places control switch for B SLC Pump to RUN and either:</p> <ul style="list-style-type: none"> <li>Directs EO in field to re-close breaker for A SLC pump <b>OR</b></li> <li>Obtains key and places control switch for C SLC Pump to RUN</li> </ul> <p>Reports ARI failure to SRO</p>
		<p>Applicant depresses 28% Low Limit A/B Recirc Runback pushbutton to run Recirc Pumps to minimum</p>
		<p>Applicant depresses Reactor Recirc 'A Normal Stop' and 'B Normal Stop' at least 10 seconds apart</p>



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**Scenario Summary and Administration Instructions**

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	●	<p>Applicant takes Rod Worth Minimizer keylock switch to BYPASS and verifies RWM mode indicates BYPASS</p> <p>Applicant then references the Reactor Maneuvering Shutdown Instructions. ATC selects and inserts control rods according to RMSI sequence:</p> <ul style="list-style-type: none"> <li>• Selects control rod by depressing desired control rod pushbutton on rod select matrix</li> <li>• Verifies rod selected is the desired control rod</li> <li>• Depresses Continuous Insert pushbutton until control rod position indicates 00</li> <li>• Selects next control rod in sequence</li> <li>• Once RMSI control rods inserted, ATC will continue inserting rods as possible, concentrating more on inner control rods and alternating quadrants</li> </ul>
	●	<p>Applicant notes lack of control rod motion and annunciators 108 G-1 '1A CRD Water Pump Trip' and 108 G-2, '1A CRD Water Pump Motor Overcurrent'</p> <p>(ON-107 Step 2.2.2) IF 1AP158, "CRD Pump," cannot be started, then perform the following:</p> <ol style="list-style-type: none"> <li>1. Dispatches EO to close 46-1F014A, "Discharge Stop Check," for 1A CRD Pump</li> <li>2. References S46.6.A to place 1B CRD Pump in service</li> </ol> <p>(S46.6.A Step 4.4) Directs EO to:</p> <ul style="list-style-type: none"> <li>• Verify proper oil levels in pump components</li> <li>• Ensure 46-1014B, "CRD Pump Min-Flow Stop," Full Open</li> <li>• Ensure 46-1F015B, "CRD Pump Min-Flow Stop Check," Full Open</li> <li>• Ensure 46-1F014B, "CRD Pump Discharge Stop Check," Closed</li> </ul> <p>(Step 4.5) Starts B CRD pump by placing HS-46-108B to START at 10C603</p> <p>(Step 4.6) Directs EO to slowly open 46-1F014B, "CRD Discharge Stop Check," for 1B CRD Pump</p>
		Reports closure of all bypass valves to SRO
		Dispatches EO for performance of T-209
	●	<b>Reports all control rods fully inserted to SRO</b>
		<p><i>As directed by SRO, ATC will take over level control from BOP using condensate.</i></p> <p>Adjusts LIC-06-138, "A Feedwtr Start-Up Lvl Control" (LV, STARTUP BYPASS), in "Manual" (MAN) at panel 10C603 as necessary to begin restoring RPV water level to +12.5" to +54"</p>

**Scenario Summary and Administration Instructions**

	★BOP	Inhibits Auto ADS by placing both Auto Inhibit switches at 10C626 back panel to INHIBIT
		Directs EO performance of T-221 Steps 4.2.1 and 4.2.3
		Reports to SRO that A SBLC injection failed, proceeding to inject with B SBLC
	●	Dispatches EO for T-215, T-216
	■	Dispatches EO for T-251, reports to EO that HV-55-1F006 is closed
	■	<p><u>Obtains T-270</u>  Directs EO performance of Section 4.7  <u>Terminates/Prevents HPCI injection by:</u>  (Step 4.2.1) Obtaining PA-2235 key</p> <p>(Step 4.2.3.1) Simultaneously DEPRESS and HOLD HS-056-161, "Pushbutton for HPCI Turbine Trip (E41A-519)" (TURBINE TRIP) AND CLOSE HV-55-1F003, "HPCI Main Steam Supply Outbrd PCIV" (OUTBOARD)</p> <p>(Step 4.2.3.2) Verify HV-55-1F003, "HPCI Main Steam Supply Outbrd PCIV" (OUTBOARD), closed</p> <p>(Step 4.2.3.3) Release HS-056-161, "Pushbutton For HPCI Turbine Trip (E41A-S19)" (TURBINE TRIP)</p>
	■	<p>(Step 4.4.2) IF required, THEN ENSURE the following valves closed:</p> <ul style="list-style-type: none"> <li>HV-52-1F005 "Core Spray Loop A Shutoff PCIV" (OUTBOARD)</li> <li>HV-52-1F037 "Core Spray B Loop Inboard Disch Vlv" (INBOARD DISCHARGE)</li> </ul>
	■	<p>(Step 4.5.2) IF required, THEN ENSURE the following valves closed:</p> <ul style="list-style-type: none"> <li>HV-51-1F017A, "1A RHR LPCI Inj PCIV" (OUTBOARD A)</li> <li>HV-51-1F017B, "1B RHR LPCI Inj PCIV" (OUTBOARD B)</li> <li>HV-51-1F017C, "1C RHR LPCI Inj PCIV" (OUTBOARD C)</li> <li>HV-51-1F017D, "1D RHR LPCI Inj PCIV" (OUTBOARD D)</li> </ul>

## Scenario Summary and Administration Instructions

	■	<p>Terminate and prevent per T-270, except Boron, RCIC and CRD (LQ-5).</p> <p><b>4.6 TERMINATION/PREVENTION OF CONDENSATE/FEEDWATER INJECTION (MAIN CONTROL ROOM)</b></p> <p><b>4.6.1 ENSURE HV-06-138A, "1A RFP BPV" (BYPASS), closed at panel 10C651.</b></p> <p><b>4.6.2 ENSURE LIC-06-138, "A Feedwtr Start-Up Lvl Control" (LV, STARTUP BYPASS), in "Manual" (MAN) AND output demand at 0% at panel 10C603.</b></p> <p><b>4.6.3 ENSURE LIC-06-120, "Reactor Feedpumps Bypass Cont Vlv" (PUMP BYPASS) in "Manual" (MAN) AND output demand at 0% at panel 10C603.</b></p> <p><b>4.6.4 ENSURE FIC-M1-1R601A,B,C, "A,B,C RFPT Speed Controller," in "Manual" (MAN) for all three RFPTs at panel 10C603.</b></p> <p><b>4.6.5 DEPRESS EMERGENCY STOP pushbutton for all three RFPTs at panel 10C603.</b></p> <p><b>4.6.6 WHEN EMERGENCY STOP light goes out, THEN DEPRESS AUTO START pushbutton for all three RFPTs at panel 10C603.</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p><b>1 IF performing T-270 for emergency RPV depressurization, THEN steps 4.6.7 through 4.6.9 should be performed concurrently. Otherwise, these steps may be performed in any order as desired.</b></p> <p><b>2 Steps 4.6.7 through 4.6.9 are performed from panel 10C651 in Main Control Room.</b></p> </div> <p><b>4.6.7 CLOSE HV-06-108A, "1A RFP Discharge" (FEED DISCH A).</b></p> <p><b>4.6.8 CLOSE HV-06-108B, "1B RFP Discharge" (FEED DISCH B).</b></p> <p><b>4.6.9 CLOSE HV-06-108C, "1C RFP Discharge" (FEED DISCH C).</b></p>
	■	<b>Lower level and control - 60 to -100 inches as directed using feedwater</b>
		Operates EHC/SRV control switches as necessary to stabilize Rx Pressure 990-1096#

## Scenario Summary and Administration Instructions

		<p><b><u>Places Suppression Pool Cooling in service:</u></b></p> <p>(S51.8.A Appendix 1 Step 1.1) Refers to S12.1.A Appendix 1 hard card to start RHRSW</p> <p>(Step 1.2) Opens HV-51-1F014A(B), HEAT EXCHANGER OUTLET Throttles open HV-51-1F068A(B) for 18 to 20 seconds</p> <p>(Step 1.3) Verifies PI-51-105A(B)-1, HX DISCH, indicates system static pressure greater than or equal to 15 psig</p> <p>(Step 1.4) Applicant may place HSS-12-002A(B), PUMP TRIP BYPASS to "BYPASS" to bypass HI RAD and/or HI Pump Discharge pressure trips</p> <p>(Step 1.5) IF 'A' loop pump to be placed in service, ensures either 0A-V543 or 0C-543, Spray Pond Pump Room Fan in RUN at 00C681</p> <p>(Step 1.6) IF 'B' loop pump to be placed in service, ensures either 0B-V543 or 0D-V543, Spray Pond Pump Room Fan in RUN at 00C681</p> <p>(Step 1.7) Starts 0A(B, C, D)P506, RHRSW Pump</p> <p>(Step 1.8) Throttles HV-51-1F068A(B) to max obtainable position without exceeding 11,000 gpm on FI-51-1R602A(B) while maintaining pump discharge pressure (PI-12-001A-1(B)) between 75-85 psig (Steps repeated for subsequent RHRSW pump)</p> <p><b><u>Evaluator Note:</u></b> Once two loops of Suppression Pool Cooling are in service, the first RHRSW pump placed into service will trip on overcurrent. The BOP will report the pump trip to the SRO and proceed to start the alternate RHRSW pump in that loop</p> <p>(S51.8.A Appendix 1 Step 1.2) Closes HV-51-1F017A(B), OUTBOARD to satisfy valve interlocks with LOCA signal present</p> <p>(Step 1.3) N/A</p> <p>(Step 1.4) Starts 1A(B)P202, RHR Pump</p> <p>(Step 1.5) Opens HV-51-1F024A(B), "RHR Pump Full Flow Test Return" and adjusts valve position to maintain flow indicated on FI-51-1R603A(B), "RHR Loop Flow," between 8000-8500 gpm (Steps repeated for subsequent loop)</p>
		Reports trip of main turbine to SRO
	■	<b>Re-performs T-270 to reduce RPV water level to -161" using feedwater by raising and lowering RFPT speed to obtain required feedwater flow rate and RPV water level</b>
		Reports closure of all MSIV at -129" RPV water level

## Scenario Summary and Administration Instructions

	■	<p>Transitions level control from feedwater to HPCI/RCIC Obtains S55.1.E Appendix 1 to recover HPCI, and adjusts RCIC flow controller as necessary to obtain and maintain RPV water level in the assigned band</p> <p><b>HPCI</b> (S55.1.E Appendix 1)</p> <p>1.0 N/A</p> <p>1.0 N/A</p> <p>2.0 <b>PLACE</b> FIC-55-*R600, "HPCI Flow Controller" (PUMP DISCHARGE, FL), in "MANUAL" <b>AND ADJUST</b> to obtain a 0% demand signal.</p> <p>3.0 N/A</p> <p>4.0 N/A</p> <p>5.0 N/A</p> <p>6.0 <b>OPEN</b> HV-55-*F100, "HPCI Steam Line Warmup Bypass" (WARMUP BYPASS), <b>AND MONITOR</b> pressure on PI-55-*R602, "Turbine Inlet Steam Pressure" (PX).</p> <p>7.0 <b>ENSURE</b> red light indication is lit indicating HV-55-*F100 is open. (CM-1 T04118)</p> <p>8.0 <b>WHEN</b> pressure in steam line, as indicated by PI-55-*R602, is stable, <b>THEN OPEN</b> HV-55-*F003, "HPCI Steam Line Outboard Isolation" (OUTBOARD).</p> <p>9.0 <b>CLOSE</b> HV-55-*F100, "HPCI Steam Line Warmup Bypass" (WARMUP BYPASS).</p> <p>10.0 <b>ADJUST</b> FIC-55-*R600, "HPCI Flow Controller" (PUMP DISCHARGE, FL), to slowly throttle open FV-56-*11, "HPCI Turbine Control Valve," to obtain a desired flowrate</p> <p>11.0 <b>WHEN</b> a desired flowrate is attained, <b>THEN ENSURE</b> FIC-55-*R600, "HPCI Flow Controller" (PUMP DISCHARGE, FL) is matched to actual flow, <b>AND PLACE</b> FIC-55-*R600 in "AUTO."</p> <p><b>Evaluator Note:</b> Applicant will adjust HPCI/RCIC flow as necessary to maintain RPV water level in the assigned level band</p>
	■	<p>Restores RPV level to between +12.5" and +54" using HPCI</p> <p><b>Evaluator Note:</b> Level control will be transitioned to condensate using the 'A' RFP bypass startup level controller to minimize heat addition to Suppression Pool</p>
		<p><b>Evaluator Note:</b> Scenario may be terminated once the ATWS has been terminated and condensate or low pressure ECCS is being used for level control</p>

**POST SCENARIO:** Have the applicant in the CRS position identify the highest EAL classification for the combination of events experienced during the scenario.

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### Scenario Summary and Administration Instructions

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Applicable classifications: **MS3** and **FS1** based upon Table LGS 3-1 of EP-AA-1008

**FS1:** Loss OR Potential Loss of ANY Two Barriers

Loss of RCS barrier based upon criteria 2.a.1: RPV Level <-161"

**AND**

Loss or Potential Loss of Fuel Clad Barrier based upon criteria 2.a.2:

Potential Loss: RPV Level <-161" **OR**

Loss: RPV Level <-186"

**MS3:** Failure of the Reactor Protection System Instrumentation to Complete or Initiate and Automatic Reactor Scram Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram Was NOT Successful

1. Automatic scram, Manual scram and ARI were not successful from the Reactor Console as indicated by **EITHER:**

a. Reactor Power remains >4%

**OR**

b. Suppression Pool temperature >110°F **AND** boron injection required for reactivity control

Facility: Limerick

Scenario No.: 2

Op-Test No.: \_\_\_\_\_

Examiners: \_\_\_\_\_

Operators: \_\_\_\_\_

Initial Conditions: 100% power following a rod pattern adjustment, MOL, D11 Diesel out of service to repair a Jacket Water System leak (48 hours into a 30 day LCO - 3.8.1, AC Sources Operating); repairs expected to be completed within the next 24 hours

Turnover: Maintain power with Recirc to compensate for Xenon

Event No.	Malf. No.	Event Type*	Event Description
1	MPR017A	I-ATC TS-SRO	'A' Recirc Flow Unit fails downscale
2	MFH564B	C-BOP R-ATC	FWH 12B Level Sensing Line Fails High (Reduce Power $\leq$ 85%)
3	MEH105C	C-ATC TS-SRO	EHC Pressure Regulator 'A' Fails (Oscillates)
4	MRD016D XXXXXXX	C-ATC C-BOP TS-SRO	'1A' Recirc Pump Motor Bearing Temperatures Exceed 200 °F Requiring Pump Trip / Results in Single Loop Operation in Restricted Region of Power/Flow Map / Stuck Control Rod 30-31 During Insertion IAW Reactor Maneuvering Shutdown Instructions (RMSI)
5	MED282B	C-ATC C-BOP TS-SRO	Loss of 125/250 VDC Safeguard Bus 1BD105
6	MED261	M-All	Grid Instability Resulting in Loss of Offsite Power
7	MDG420C	C-ATC	D13 Diesel Auto Start Failure (Recoverable)
8	MRR440A MDG418D	M-All	Small Break LOCA (0.5% to 1% ramp over 5 minutes) with D14 Diesel Trip on Bus Lockout
9	MRC466	C-BOP	RCIC Trip on Overspeed (Recoverable after RPV Level reaches -129")
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

### Scenario Summary

**Event 1:** The scenario begins with Unit 1 at 100% power following a rod pattern adjustment. Diesel D11 is tagged to repair a leak in the Jacket Water Cooling System. After turnover, the 'A' Recirc Flow Unit will fail downscale resulting in a rod block. The crew determines that the 'A' APRM has the off-normal Recirc flow condition and places it in bypass in accordance with ARC-MCR-108 (E3). The SRO will refer to Tech Specs for RPS (3.3.1) and Control Rod Block (3.3.6) Instrumentation.

**Event 2:** After 'A' APRM has been bypassed, Feedwater Heater 12B Level Sensing Line fails such that all level instruments for the 12B FWH provide a false high level signal resulting in isolation of the 'B' Low Pressure Heater String (FWHs 11B through 15B). Condensate isolation valves HV06-101B and HV06-102B will auto close, as appropriate, after a 15 second time delay. The crew responds to the positive reactivity insertion caused by the FW inlet temperature reduction, by reducing Rx power to  $\leq 85\%$  per OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion," and in accordance with GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and the Reactor Maneuvering Shutdown Instructions (RMSI).

**Event 3:** Once the power reduction has been completed, the EHC System 'A' regulator will start to oscillate. The Pressure Setpoint feeding the 'A' EHC regulator will oscillate 7 psi above and 7 psi below its initial setpoint with a period of 28 seconds. This oscillation will cause the turbine EHC system to open and close the turbine control and bypass valves in response to the oscillating pressure error signal. The reactor will not trip due to these oscillations. The crew will implement OT-102, "Reactor High Pressure," and OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion," concurrently. ON guidance requires the crew to (1) reduce Reactor power in accordance with GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and the RMSI, to maintain Rx power at or below the initial pre-transient level, and (2) control Reactor pressure below 1053 psig with bypass valves using the jack, or by reducing pressure set, which effectively shifts the oscillations to the bypass valves, preventing/minimizing cycling of the turbine. Rx pressure of 1053 psig will not be challenged by failure of the 'A' EHC pressure regulator, making it unnecessary to use bypass valves or adjust pressure set to control Reactor pressure. The crew will transfer pressure control to the backup regulator in accordance with S31.6.A, "Transferring Pressure Control to Backup Pressure Regulator," which will reduce, but not entirely eliminate, the magnitude of the oscillations. With power level  $\leq 85\%$ , the SRO will enter Tech Spec 3.2.3 for MCPR, on the basis that operation with a single EHC pressure regulator between 25% and 90% Reactor power has not been analyzed.

**Event 4:** After the EHC malfunction has been evaluated, '1A' Recirc Pump Motor Bearing temperatures rise to the alarm setpoint of 190 °F and exceed the pump trip threshold temperature of 200 °F. The crew responds to the rising temperature by tripping and shutting down the '1A' Recirc Pump in accordance with the direction provided in ARC-MCR-111 (G3), "1A/1B RECIRC PUMP MOTOR HI TEMP," S43.0.D, "Response to Recirc Pump Motor High Temperature Condition," and S43.2.A, "Shutdown of a Recirculation Pump." The crew will implement OT-112, "Recirculation Pump Trip," and OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion," concurrently, review GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," to ensure all required actions are performed for the power reduction, monitor for power oscillations, and determine position on the correct Power/Flow Map (OPRM Operable – Any Feedwater Heater Out Of Service). The crew determines that they are operating in the Restricted Region of the Map and must therefore immediately exit the region by inserting control rods using RMSI guidance. During control rod insertion, initial attempt to insert



Control Rod 30-31 in Step 1 of the RMSI results in no rod movement. The crew enters ON-104, "Control Rod Problems," and is able to move the rod one notch at an elevated Drive Water dP of 400 psid. Crew returns Drive Water dP to within the normal band (255-265 psid) and inserts Control Rod 30-31 to notch position 00 using Continuous Insert. Crew successfully exits the Restricted Region of the Power/Flow Map with no additional control rod problems. The SRO will enter Tech Spec 3.4.1.1 for SLO (i.e., reduction of APRM Simulated Thermal Power Upcale and Rod Block Trip Setpoints and Allowable Values) and prioritize performance of required STs (i.e., Thermal Limits Determination, APRM recalibrations, Jet Pump Operability Verifications, Recirc Pump Shiftly Checks). The SRO will also refer to Tech Spec 3.1.3 for Control Rod Operability.

**Event 5:** Once the Restricted Region of the Power/Flow Map has been exited and the plant stabilized, a phase overcurrent of 125/250V DC Bus 1BD105 causes the supply fuses for both the batteries and the battery chargers to blow, resulting in a complete loss of power to the bus. The crew will enter E-1FB, "Loss of Division II Safeguard 125/250V DC Bus 1FB," perform MCR panel walkdowns, identify affected systems/components, and manually initiate MCR Chlorine Isolation. The loss of Division II 125/250V DC power renders HPCI completely unavailable. In addition, the following component breakers will not close or trip due to loss of DC control power

- 1B RHR Pump
- 1B Core Spray Pump
- 1B TEECE Fan
- Div 2 Safeguard AC Breakers
- ESW Pump B
- RHR SW Pump B
- Diesel Generator D12

The SRO will enter multiple Tech Specs, including ECCS-Operating (3.5.1 - multiple ECCS systems inoperable), AC Sources-Operating (3.8.1 – D12 D/G inoperability due to loss of 1BD105 results in two diesels out of service (D11 and D12)), DC Sources-Operating (3.8.2), and Onsite Power Distribution-Operating (3.8.3).

**Events 6-9:** After Tech Specs are addressed for DC Bus 1BD105, a grid instability results in a loss of all power to the 10 Station Aux Transformer, 20 Regulating Transformer, and 11 Unit Aux Transformer. This will immediately result in a Unit 1 Generator Lockout, Main Turbine Trip, and Reactor Scram. A Unit 2 Generator Lockout will also occur. SRO enters T-101, "RPV Control," on RPV Low Level and RPV High Pressure, prioritizing Level control with RCIC (HPCI unavailable due to loss of 1BD105) and Pressure control with SRVs. Crew recognizes inability to cool the Suppression Pool with the D11 Diesel out of service for corrective maintenance (initial condition), and unavailability of the D12 Diesel due to loss of 1BD105. Crew monitors Suppression Pool Temperature and SRO enters T-102, "Primary Containment Control," when temperature reaches 95 °F. D13 Diesel fails to auto start but is recoverable, and can be started by the operator (Critical Task). D14 Diesel starts and loads as expected. Shortly after initial actions to stabilize Reactor level and pressure have been completed, a Small Break LOCA occurs coincident with a trip of D14 Diesel (Bus Lockout). Crew re-enters T-101 and T-102 on high Drywell Pressure and implements both SE-10, "LOCA," and OT-101, "High Drywell Pressure." RCIC subsequently trips on overspeed, leaving the 1A CRD Pump and 1C SLC Pump as the only remaining high pressure injection sources available to maintain level. The 1C RHR Pump and 1C Core Spray Pump are available for low pressure injection. Note however, that Core Spray Outboard Injection Valve HV-052-1F005 (1F037) must be manually opened in the field due to loss of Division I power. RCIC can be recovered with field operator action after level reaches -129", but is insufficient (even with CRD and SLC injecting) to prevent level from

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## Scenario Summary and Administration Instructions

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reaching TAF due to the size of the leak. The SRO determines that RPV level cannot be maintained above -161", exits the RC/L leg, and enters T-111, "Level Restoration/Steam Cooling." The SRO directs the crew to Inhibit ADS, and when level drops to -161", enters T-112, "Emergency Blowdown. The SRO directs the crew to emergency depressurize the RPV (Critical Task) per T-112, and to maximize RPV injection using sources powered from Safeguard Bus D13. The scenario may be terminated when RPV blowdown is in progress, and RPV water level can be restored and maintained between +12.5" and +54" in accordance with T-101.

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5–8)	9
2. Malfunctions after EOP entry (1–2)	2
3. Abnormal events (2–4)	5
4. Major transients (1–2)	2
5. EOPs entered/requiring substantive actions (1–2) T-101/T-117	1
6. EOP contingencies requiring substantive actions (0–2) EO-100-113/EO-100-112	2
7. Critical tasks (2–3)	2

## **Critical Tasks**

1.

★ **Start of the D13 Diesel Generator per T-101 RC-5**

### **Safety Significance**

Ensuring emergency diesel generator (EDG) starts is an important action which ensures the reliability of electrical power to, not the least of all, ECCS pumps. Loss of injection systems (i.e., Low Pressure ECCS) impacts the ability to provide adequate core cooling through continued core submergence based on inventory loss.

### **Consequences for Failure to Perform Task**

Failure to start the D13 Diesel Generator with no AC power capability to the D11, D12, and D14 4 KV Safeguard Busses, results in a Station Blackout Condition and subsequent inability to comply with T-111 Step LR-4 (performed concurrent with T-101), which provides direction to maximize injection into the RPV with all available normal and Emergency Core Cooling System (ECCS) injection sources. This will lead to uncovering of the core, the inability to restore and maintain level above -161", and the potential for fuel clad damage. While injection from low pressure ECCSs may not be possible if RPV pressure remains high, available systems should be aligned such that maximum flow will be delivered to the RPV as soon as RPV pressure drops below the system shutoff head pressures and injection interlock setpoints. Without the capability to inject with low pressure ECCS to restore RPV level above TAF, emergency RPV depressurization cannot be performed, and steam cooling would be required per T-111 Step LR-9.

Event Procedure E-1, "Loss of All AC Power "Station Blackout," Bases states: "Step 3.3 provides direction to attempt to start diesel generators which have not already started by one of the three methods available to the operator. If offsite power has not been restored then this step should be performed expeditiously in order to perform step 3.4 which provides direction for cross-tie of the 4 KV buses. This step and step 3.4 must be completed within one hour in order to provide the necessary alternate AC source to satisfy the Limerick design basis for station blackout. The operator should select the method available that will most expeditiously successfully start the diesel generators.

### **Indications/Cues for Event Requiring Critical Task**

D13 BUS UNDERVOLTAGE (B-1) alarmed at 121 D13

D13 DIESEL FAILED TO START (C-2) alarmed at 121 D13

D13 DIESEL RUNNUNG (C-4) not in alarm at 121 D13

No Bus voltage on Diesel Generator 13 voltmeter V117-2 at 1CC661

### **Performance Criteria**

Start the D13 D/G manually from the Main Control Room.

**Performance Feedback**

D13 BUS UNDERVOLTAGE (B-1) alarm clear at 121 D13

D13 DIESEL FAILED TO START (C-2) alarm clear at 121 D13

D13 DIESEL RUNNUNG (C-4) in alarm at 121 D13

Indication of D13 Bus voltage on Diesel Generator 13 voltmeter V117-2 at 1CC661

## 2.

### ■ Emergency Depressurize RPV (T-112 EB-11) / Maximize RPV injection to restore RPV level above TAF (T-111 LR-18)

#### Safety Significance

Emergency RPV depressurization permits RPV injection flow from low head systems, maximizes the total injection flow, and minimizes the flow through any primary system leak. The ability to restore and maintain RPV level above -161" by maximizing injection from Low Pressure ECCS sources, ensures adequate core cooling and helps to preserve fuel clad integrity.

#### Consequences for Failure to Perform Task

The consequences of not depressurizing the RPV under conditions which require emergency RPV depressurization, could lead to a loss of adequate core cooling or failure of the primary containment.

LGS TRIP Step EB-11 directs actions to open all five Automatic Depressurization System (ADS) safety relief valves (SRVs).

The objective of T-112, Emergency Blowdown, is to depressurize the RPV as rapidly as possible within plant design limits and to maintain it in a "depressurized" state. Two separate aspects must be considered in deciding how these objectives are to be accomplished: the means for releasing the energy from the RPV and the capacity of the heat sink utilized to absorb this energy.

Depressurization of the RPV is most easily and rapidly performed by opening SRVs; thus instructions for operation of these valves are specified first, in preference to steps directing the use of other depressurization systems and mechanisms. Of the SRVs, those dedicated to the ADS function are the most reliable because of their qualifications, pneumatic supply systems, the design and operation of initiation circuitry, and the availability of control power. Additionally, the relative location of their discharge devices uniformly distributes the heat load around the suppression pool.

Concurrent opening of all five ADS valves is within analyzed plant design limits. Other steps in the TRIP procedures provide instructions for maintaining sufficient suppression pool heat capacity to accommodate simultaneous opening of all ADS valves at any RPV pressure.

The reference to LGS TRIP NOTE #5 informs operators that the RPV depressurization performed in accordance with this step may be conducted "regardless of the resulting cooldown rate," since the need for the rapid depressurization of the RPV takes precedence over normal RPV cooldown rate limits.

#### Indications/Cues for Event Requiring Critical Task

RPV level cannot be maintained above TAF with available high head injection systems.

#### Performance Criteria

Open 5 ADS valves to emergency depressurize the RPV when level drops to -161".

### **Performance Feedback**

Verify ADS valves are open by observing red light open indication, acoustic monitor indications, lowering RPV pressure, and rising RPV level due to maximum injection from Low Pressure ECCS.

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### Scenario Summary and Administration Instructions

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The scenario may be terminated when RPV blowdown is in progress, RPV water level can be restored and maintained between +12.5" and +54" in accordance with T-101, and upon direction of the Chief Examiner

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"><li>■ Reset simulator to Scenario _____</li><li>■ Take out of FREEZE and run scenario file _____, then ensure the following:<ul style="list-style-type: none"><li>- Reactor Power is 100% with stable reactor water level</li></ul></li></ul>
	<ul style="list-style-type: none"><li>■ Apply Information Tags on the following components:<ul style="list-style-type: none"><li>- D11 Diesel Generator</li></ul></li></ul>
	<ul style="list-style-type: none"><li>■ Ensure materials for applicants:<ul style="list-style-type: none"><li>- Turnover sheet:<ul style="list-style-type: none"><li>○ 100% power. _____ MWe</li><li>○ MOL Core</li><li>○ D11 Diesel Generator is out of service to repair a Jacket Water System leak (48 hours into a 30 day LCO – 3.8.1, AC Sources Operating; repairs expected to be completed within the next 24 hours</li><li>○ Maintain power with Recirc to compensate for Xenon</li></ul></li></ul></li></ul>

## Scenario Summary and Administration Instructions

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<p>■ Ensure the following malfunctions are loaded:</p> <ul style="list-style-type: none"> <li>- MPR017A PRNMS RBM A Flow Comparator Alarm</li> <li>- MFH564B FWH 12B Level Sensing Line Fails High</li> <li>- MEH105C EHC Pressure Regulator A Oscillates</li> <li>- XXXXXXXX 1A Recirc Pump High Motor Bearing Temps</li> <li>- MRD016D Control Rod XX-YY Failure: Stuck (30-31)</li> <li>- MED282B Loss of 125/250 VDC Safeguard Bus1BD105</li> <li>- MED261 Loss of Offsite Power</li> <li>- MDG420C Diesel Generator D13 Fails to Auto Start</li> <li>- MRR440A LOCA (Variable 0-100%)</li> <li>- MDG418D Diesel Generator D14 Trips</li> <li>- MRC466 Inadvertent Trip of RCIC Overspeed Mechanism</li> </ul> <p>■ Ensure the following remote functions are loaded:</p> <ul style="list-style-type: none"> <li>- None</li> </ul> <p>■ Ensure the following overrides are loaded:</p> <ul style="list-style-type: none"> <li>- None</li> </ul> <p>■ Ensure the following triggers are built:</p> <ul style="list-style-type: none"> <li>- <b>MRD016D</b> trigger for stuck control rod 30-31 to actuate when plant enters the Restricted Region of the Power/Flow Map following Manual trip of 1A Recirc pump</li> <li>- <b>MDG420C</b> trigger for D13 D/G auto start failure to actuate simultaneous with MED261 for LOOP</li> <li>- <b>MRR440A</b> trigger for LOCA to actuate after MED261 for LOOP (when RPV level has been restored between +12.5" and +54", and RPV pressure stabilized</li> <li>- <b>MRR440A</b> trigger for LOCA to ramp from 0.5% to 1% over a 5 minute period</li> <li>- <b>MDG418D</b> trigger for D14 D/G trip to actuate simultaneous with MRR440A for LOCA</li> <li>- <b>MRC466</b> trigger for RCIC trip to actuate when Drywell Pressure exceeds 1.68 psig</li> </ul>
	<p>■ Reset any annunciators that should not be present</p>



## Scenario Summary and Administration Instructions

### INSTRUCTIONS FOR SIMULATOR OPERATOR

#### EVENT 1: PRNMS RBM A Flow Comparator Alarm

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

#### EVENT 2: FWH 12B Level Sensing Line Fails High

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ When chief examiner ready to proceed, insert MFH564B for FWH 12B Level Sensing Line Fails High</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator dispatched to verify high level in the 12B FWH, report that 12B FWH level is low</li> </ul>
	<ul style="list-style-type: none"> <li>■ When P-1 edit is generated by ATC for evaluation of Thermal Limits following positive reactivity insertion, ensure P-1 edit information shows that Thermal Limits have not been violated</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

#### EVENT 3: EHC Pressure Regulator 'A' Fails (Oscillates)

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ Ensure 'A' EHC pressure regulator is in service</li> </ul>
	<ul style="list-style-type: none"> <li>■ When power reduction to <math>\leq 85\%</math> has been completed, the plant stabilized, a determination made regarding whether power exceeded 3515 MWth, and chief examiner ready to proceed, insert MEH105C, EHC Pressure Regulator 'A' Fails (Oscillates)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Provide SRO with copy of S31.6.A, "Transferring Pressure Control to Backup Pressure Regulator," for briefing purposes</li> </ul>
	<ul style="list-style-type: none"> <li>■ When requested by SRO to provide a dedicated licensed operator and I&amp;C support for transferring regulators, ensure two people available for brief in the MCR</li> </ul>
	<ul style="list-style-type: none"> <li>■ Support continuous field communications with BOP when transferring to backup regulator</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

## Scenario Summary and Administration Instructions

### EVENT 4: 1A Recirc Pump Motor Bearing High Temps / Stuck Control Rod

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once pressure control has been transferred to backup EHC pressure regulator, appropriate actions to stabilize the plant completed, TSs evaluated, and the chief examiner ready to proceed, insert XXXXXXXX for 1A Recirc Pump Motor Bearing High Temps</li> </ul>
	<ul style="list-style-type: none"> <li>Manual trip of the 1A Recirc pump will result in plant operation in the Restricted Region of the Power/Flow Map <u>without</u> THI</li> </ul>
	<ul style="list-style-type: none"> <li>Once the plant has entered the Restricted Region of the Power/Flow Map, insert MRD016D for stuck control rod 30-31</li> </ul>
	<ul style="list-style-type: none"> <li>When Engineering Duty Manager (EDM) contacted regarding unsuccessful attempts to free control rod 30-31, report that (1) issue with 30-31 has been previously identified and evaluated, (2) performance of RT-6-047-320-1 is not required, and (3) ON-104, Steps 2.4.9.4 and 2.4.9.5 may be N/A'd</li> </ul>
	<ul style="list-style-type: none"> <li>Control rod 30-31 will be unstuck at a Drive Water dP of 400 psid</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

### EVENT 5: Loss of 125/250 VDC Safeguard Bus 1BD105

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once the Restricted Region of the Power/Flow Map has been exited, TSs for SLO and Control Rod Operability addressed, and the chief examiner ready to proceed, insert MED282B for Loss of 125/250 VDC Safeguard Bus 1BD105</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

### EVENTS 6/7/8/9: Loop / D13 EDG Auto Start Failure / LOCA / D14 EDG Trip / RCIC Trip

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once the first Subsection (either 4.4 or 4.5) of S78.8.A to Manually initiate MCR Chlorine Isolation has been completed, TSs addressed, and the chief examiner ready to proceed, simultaneously insert MED261 for LOOP and MDG420C for D13 EDG Auto Start Failure.</li> </ul>
	<ul style="list-style-type: none"> <li>When RPV level has been restored between +12.5" and +54", RPV pressure stabilized, and the chief examiner ready to proceed, simultaneously insert MRR440A for LOCA and MDG418D for D14 EDG trip.</li> </ul>
	<ul style="list-style-type: none"> <li>MRR440A trigger for LOCA to ramp from 0.5% to 1% over a 5 minute period</li> </ul>
	<ul style="list-style-type: none"> <li>When Drywell pressure exceeds 1.68 psig, insert MRC466 for RCIC Overspeed Trip</li> </ul>

## Scenario Summary and Administration Instructions

✓	<b>MALFUNCTION / REMOTE FUNCTION / REPORT</b>
	<ul style="list-style-type: none"> <li>■ When starting '1A' CRD pump per S46.1.A (directed from SE-10, LOCA), S46.1.A completed up to and including Step 4.5 for '1A' CRD pump; Step 4.8 N/A (A Stabilizing Valves will be selected) and Step 4.10 N/A (A Drive Water Filter being used)</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator dispatched to perform local actions of Step 4.11 of S46.1.A in preparation for starting 1A CRD pump, report Step 4.11 completed</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator directed to perform Step 4.19 of S46.1.A to open 1A CRD pump discharge valve, report that discharge valve has been opened</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator directed to verify proper CRD pump component oil levels per Step 4.22 of S46.1.A, report oil levels SAT</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator directed to verify local CRD pump discharge pressure per Step 4.23 of S46.1.A, report PI-046-108A indicates a value between 1400-1600 psig</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator directed to provide local CRD pump discharge pressure per Step 4.2 of T-240, report PI-046-108A indicates a value greater than 1,200 psig</li> </ul>
	<ul style="list-style-type: none"> <li>■ When AER operator directed to open 46-1F045, "CRD Pump Suction Filter Bypass," per Step 4.3 of T-240, report "CRD Pump Suction Filter Bypass" open</li> </ul>
	<ul style="list-style-type: none"> <li>■ When RPV level drops below -129", remove trigger MRC466, and report that the RCIC Mechanical Overspeed Trip has been reset locally and that RCIC is available as an injection source</li> </ul>
	<ul style="list-style-type: none"> <li>■ When BOP directs AER operator to throttle open Core Spray Outboard Injection Valve HV-052-1F005 (1F037), throttle open valve to obtain a flow rate of less than 3175 gpm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>
	<ul style="list-style-type: none"> <li>■ Once RPV blowdown is in progress, and RPV water level restored and maintained between +12.5" and +54" in accordance with T-101, and upon direction of the chief examiner, place the simulator in freeze</li> </ul>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 1 Page \_\_\_\_ of \_\_\_\_

Event Description: 'A' Recirc Flow Unit fails downscale

**Priority:** Determine that the 'A' Flow Unit has failed, bypass the 'A' APRM, and refer to the appropriate Tech Specs

Time	Position	Applicant's Actions or Behavior
	SRO	Receives report from ATC of Annunciator 108 E3, "APRM/RBM FLOW REF OFF NORMAL," and "FLOW COMPARE" alarm on the RBM ODA Receives report from ATC that power, pressure, and level are stable
	SRO	Consults Tech Specs 3.3.1 and 3.3.6; notes no required actions due to APRM minimum operable channels per trip system requirement met for both Specs
	SRO	Declares 'A' APRM Inoperable and recognizes the 'A' APRM should be bypassed
	SRO	Briefs crew on plant status and directs ATC to bypass 'A' APRM in accordance with ARC-MCR-108 E3 <b>Evaluator Note:</b> Once 'A' APRM has been bypassed and Tech Specs referenced, proceed to next event, FWH 12B Level Sensing Line Fails High.
	SRO	Contacts I&C to investigate failure of the 'A' Flow Unit
	ATC	Reports ARC-MCR-108 E3, "APRM/RBM FLOW REF OFF NORMAL" alarm and RBM "FLOW COMPARE" alarm
	ATC	Refers to the alarm response and verifies the indications on the 10C603 ODA
	ATC	(ARC-MCR-108 E3), (Step 3) Places APRM channel 'A' in "BYPASS"
	ATC	Verifies ARC-MCR-108 E3, "APRM/RBM FLOW REF OFF NORMAL" alarm and RBM "FLOW COMPARE" alarm clear. Reports 'A' APRM bypassed to SRO

## Scenario Summary and Administration Instructions

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 2 Page \_\_\_\_ of \_\_\_\_

Event Description: FWH 12B Level Sensing Line Fails High, power reduction

**Priority:** Reduce and maintain reactor power  $\leq 85\%$

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from BOP of Annunciator 102 G4, "FW HTRS 1&amp;2 HI-HI LEVEL LP HTR STRING ISOLATION"</p> <p>Directs BOP to perform ARC-MCR-102 G4</p>
	SRO	<p>Receives report from ATC of rising reactor power</p> <p>Announces entry in OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion"</p> <p>(Step 2.1) Ensures ATC takes the Immediate Operator Action to reduce Rx power and maintain at or below initial pre-transient power level in accordance with GP5 Appendix 2, and RMSI</p> <p>(Step 3.12.6.2.b) Determines FW inlet temperature reduction is <math>\leq 100</math> °F and directs ATC to perform follow-up action to reduce and maintain Rx power to <math>\leq 85\%</math> due to LP FWH String isolation, in accordance with GP5 Appendix 2, and RMSI</p> <p>(GP-5 Appendix 2, Step 3.1.1.2.c) Provides ATC with additional direction to reduce Rx power in accordance with RMSI, as required, until FW inlet temperature is in the "NORMAL OPERATING REGION" of Attachment 2, "Feedwater Inlet Temperature vs. Core Thermal Power"</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li>1. <b>IF</b> Core Flow is <b>GREATER THAN</b> 60 Mlb/hr, <b>THEN REDUCE</b> power as needed with flow until any of the following occur,  <ol style="list-style-type: none"> <li>A) <b>Core Flow reaches</b> <u>60 Mlb/hr</u></li> <li>B) An "<b>APRM UPSCALE</b>" alarm occurs</li> </ol> <b>OTHERWISE</b> N/A this step. </li> <li>2. <b>IF FLLLP</b> exceeds 1.0 <b>THEN FULLY INSERT</b> control rods from, "Rods required for Stability Rod Line" table to lower FLLLP to less than <b>OR</b> equal to 1.0, <b>OTHERWISE</b> N/A this step.</li> </ol>

## Scenario Summary and Administration Instructions

	SRO	<p>Determines if Rx power exceeded the licensed maximum rated thermal power of 3515 MWth due to the positivity reactivity insertion:</p> <p>(OT-104, Step 3.12.7) <b>IF</b> Rx power is &gt;100% 3515 MWth as indicated by Core Power And Flow Log,  <b>THEN REDUCE</b> Rx power to &lt;100% in accordance with GP-5 Appendix 2, Planned Rx Maneuvering Without Shutdown, Section 3.1, Reducing Rx Power  <b>AND</b> Reactor Maneuvering Shutdown Instructions.</p> <p><b>Evaluator Note:</b> <i>Power reduction to <math>\leq 85\%</math> previously performed per Step 3.12.6.2.b of OT-104.</i></p> <p>(Step 3.12.8) <b>CONSIDER</b> reportability of Rx power excursion  <b>AND REFER TO</b> Bases (OT-104 Bases)</p> <p>(Step 3.12.9) <b>DEMAND</b> a P-1 edit  <b>AND DETERMINE</b> whether a Thermal Limit violation exists.</p> <p><b>Evaluator Note:</b> P-1 edit generated by ATC will show that <i>Thermal Limits have <u>not</u> been violated</i>).</p>
	SRO	<p>Contacts appropriate personnel to determine whether a level control malfunction or a tube leak exists</p> <p><b>Evaluator Note:</b> <i>Once power reduction to <math>\leq 85\%</math> has been completed, the plant stabilized, and determination made regarding whether power exceeded 3515 MWth, proceed to next event, EHC Pressure Regulator 'A' Failure.</i></p>
	BOP	<p>Reports Annunciator 102 G4, "F/W HTRS 1&amp;2 HI-HI LEVEL LP HTR STRING ISOLATION" alarm</p>

## Scenario Summary and Administration Instructions

	BOP	<p>(All actions from ARC-MCR-102 G4)</p> <ol style="list-style-type: none"> <li>1. Verify Automatic Actions (<i>closure of FWH string inlet and outlet valves HV-06-101B &amp; HV-06-102B</i>)</li> <li>2. Attempt to reset alarm on MCR panel 102.</li> </ol> <p><b><u>Evaluator Note:</u></b> <i>Alarm will <u>not</u> reset.</i></p> <ol style="list-style-type: none"> <li>3. IF alarm clears, AND the MOV's are still in mid position, THEN: <ol style="list-style-type: none"> <li>a. Pull to stop HS-006-101B AND HS-006-102B.</li> <li>b. Re-open HV-006-101B AND HV-006-102B.</li> </ol> </li> <li>4. Have Operator verify high level in feedwater heater via level gauge EL. 239 OR locally at sight glass. For '1' Heaters – LI-003-101B should indicate approximately 23.0 in. For '2' Heaters - LI-003-105B should indicate off scale high</li> <li>5. Monitor F/W temperature decrease AND positive reactivity insertion caused by loss of feedwater heating.</li> </ol>
	ATC	Monitors APRMs for power indication and reports that Rx power is rising
	ATC	<p>(OT-104, Step 2.1) Performs Immediate Operator Action to reduce Rx power and maintain at or below initial pre-transient power level using RMSI</p> <p>(OT-104, Step 3.12.6.2.b) Performs follow-up action of OT-104 to reduce and maintain Rx power to <math>\leq 85\%</math>, using RMSI (directed by SRO)</p> <p>(GP-5 Appendix 2, Step 3.1.1.2.c) Reduces power, as required, until FW inlet temperature is in the "NORMAL OPERATING REGION" of Attachment 2, "Feedwater Inlet Temperature vs. Core Thermal Power," using RMSI (directed by SRO)</p> <p><b>DEPRESS</b> 1A and 1B Recirc Pump Speed Lower Pushbuttons as required <b><u>AND VERIFY</u></b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> <i>ASD controller manipulations will likely be performed from memory.</i></p>
	ATC	Generates P-1 edit for SRO to evaluate Thermal Limits

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 3 Page \_\_\_\_ of \_\_\_\_

Event Description: EHC Pressure Regulator 'A' Fails (Oscillates)

**Priority:** Recognize failure, transfer to 'B' EHC pressure regulator, reduce power to maintain at or below pre-transient power level

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from ATC/BOP of changes in Rx power with Control and Bypass valves oscillating, and pressure changes of approximately 10 psi</p> <p>Receives report from ATC/BOP that 'A' EHC pressure regulator is automatically swapping over to the 'B' EHC pressure regulator and back to the 'A' EHC pressure regulator</p> <p>Announces entry in OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion"</p> <p>Announces entry in OT-102, "Reactor High Pressure"</p> <p><b><u>Evaluator Note:</u></b> Immediate Operator Actions of OT-104 require power reduction to maintain Rx power at <u>OR</u> below initial pre-transient power level. Immediate Operator Actions of OT-102 require power reduction to maintain Rx pressure less than 1053 psig <u>AND</u> to Control Rx pressure below 1053 psig with bypass valves using the jack <u>OR</u> by reducing pressure set.</p> <p>Rx pressure of 1053 psig will not be challenged by failure of the 'A' EHC pressure regulator. Power reduction will be performed in accordance with OT-104.</p>



## Scenario Summary and Administration Instructions

	SRO	<p>(OT-104, Step 2.1) Ensures ATC takes the Immediate Operator Action to reduce and maintain Rx power to at or below initial pre-transient power level, in accordance with GP5 Appendix 2, and RMSI</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li>1. <b>IF</b> Core Flow is <b>GREATER THAN</b> 60 Mlb/hr, <b>THEN REDUCE</b> power as needed with flow until any of the following occur, <ul style="list-style-type: none"> <li>C) <b>Core Flow reaches</b> <u>60 Mlb/hr</u></li> <li>D) An <b>“APRM UPSCALE”</b> alarm occurs</li> </ul> <b>OTHERWISE</b> N/A this step. </li> <li>2. <b>IF FLLP</b> exceeds 1.0 <b>THEN FULLY INSERT</b> control rods from, “Rods required for Stability Rod Line” table to lower FLLP to less than <b>OR</b> equal to 1.0, <b>OTHERWISE</b> N/A this step.</li> </ol>
	SRO	<p><b>Evaluator Note:</b> <i>A licensed operator must be available to perform the EHC pressure regulator swap in the Auxiliary Equipment Room (AER) at 10C663, Bay A, since this activity is classified as a reactivity manipulation. Transfer to ‘B’ pressure regulator will lessen the impact to the plant but will not entirely eliminate the EHC oscillations.</i></p> <p>Briefs crew that they will be transferring to the ‘B’ EHC pressure regulator in an effort to stop / minimize the impact to the plant due to failure of the ‘A’ EHC pressure regulator</p> <p>Contacts Work Management to provide a dedicated licensed operator to swap regulators and to obtain I&amp;C support for the evolution</p> <p>Briefs the additional licensed operator, I&amp;C, and the control room crew on the regulator swap using S31.6.A, “Transferring Pressure Control to Backup Pressure Regulator”</p> <p>Directs BOP to be in continuous communication with the licensed operator performing the regulator transfer at 10C663</p>

## Scenario Summary and Administration Instructions

	SRO	<p>(OT-102, Step 3.6) <b><u>IF</u></b> an EHC Pressure Regulator fails  <b><u>OR</u></b> is out of service  <b><u>AND</u></b> reactor power is <math>\geq 25\%</math>  <b><u>AND</u></b> reactor power is <math>\leq 90\%</math>  <b><u>THEN</u></b> MCPR is UNANALYZED  <b><u>AND</u></b> the Tech Spec actions required by TS 3.2.3.b must be followed.</p> <p>Determines that the following ACTION is applicable with respect to TS 3.2.3:</p> <p>(ACTION 3.2.3.b) With MCPR less than the applicable MCPR limit adjusted by the MCPR(P) and MCPR(F) factors as shown in the CORE OPERATING LIMITS REPORT, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.</p>
	ATC/BOP	<p>Reports changes in Rx power with Control and Bypass valves oscillating, and pressure changes of approximately 10 psi</p> <p>Reports 'A' EHC pressure regulator is automatically swapping over to the 'B' EHC pressure regulator and back to the 'A' EHC pressure regulator</p>
	ATC	<p>Performs Immediate Operator Action of OT-104 (Step 2.1), to reduce and maintain Rx power to at or below initial pre-transient power level using RMSI</p> <p><b>DEPRESS</b> 1A and 1B Recirc Pump Speed Lower Pushbuttons as required  <b><u>AND VERIFY</u></b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>
	ATC	Monitors Rx power, pressure and level at 10C603 before, during, and after EHC regulator swap
	BOP	Provides continuous communication with the licensed operator performing the pressure regulator transfer at 10C663

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 4 Page \_\_\_\_ of \_\_\_\_

Event Description: '1A' Recirc Pump Motor Bearing Temperatures Exceed 200 °F  
**Priority:** Manually trip '1A' Recirc Pump, determine that the plant is operating in the Restricted Region of the Power/Flow Map, monitor for indications of power/flow instabilities

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from ATC of Annunciator 111 G3, "1A/1B RECIRC PUMP MOTOR HI TEMP," and that Motor Bearing Temperatures are 190 °F and rising</p> <p>Informed by ATC that S43.O.D, "Reponse to Recirc Pump Motor High Temperature Condition," direction is to trip the Recirc Pump if Motor Bearing Temperatures exceed 200 °F (<i>S43.O.D referenced from ARC-MCR-111 G3</i>)</p> <p>(S43.O.D, Step 4.3) Directs ATC to monitor temperatures and TRIP the '1A' Recirc Pump at 200 °F</p> <p>Briefs the crew on Single Loop Operations</p>
	SRO	<p>Announces entry into OT-112, "Recirculation Pump Trip"</p> <p>Announces entry into OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion"</p> <p><b>Evaluator Note:</b> <i>Guidance provided for SLO operation is similar in both OT-112 and OT-104. SRO will execute OT-112 and OT-104 concurrently. Scenario identifies actions specified in OT-112.</i></p> <p>Directs ATC to monitor for power oscillations in accordance with Attachment 3 of OT-112:</p> <p>(Step 3.19) Directs ATC to ensure the tripped Recirc Pump is properly shutdown per S43.2.A, "Shutdown of a Recirculation Pump"</p> <p>(Step 3.5) Directs BOP to determine Core Flow</p> <p>(Step 3.7) Directs BOP to verify plant operation in the authorized region of the Power/Flow Map using Attachment 2 (OPRM Operable - <u>Any</u> Feedwater Heater Out Of Service)</p> <p>(Step 3.23) Directs BOP to ensure RWCU is in service</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Informed by BOP that the plant is operating in the <u>Restricted Region</u> of the Power/Flow Map</p> <p>(OT-112, Step 3.8) Briefs the crew that the <u>Restricted Region</u> of the Power/Flow Map has been entered and directs ATC to immediately exit the region by inserting control rods using RMSI</p> <p>Re-issues order for ATC to monitor for power oscillations in accordance with Attachment 3 of OT-112</p> <p><b>Evaluator Note:</b> <i>Insert Stuck Control Rod malfunction once the plant enters the Restricted Region of the Power/Flow Map following Manual trip of the 1A Recirc pump.</i></p>
	SRO	<p>Receives report from ATC that control rod 30-31 appears to be stuck</p> <p>Announces entry into ON-104, "Control Rod Problems," and directs ATC to perform Step 2.4.9 (Stuck <b>AND</b> can <b>not</b> Insert)</p>
	SRO	<p>ON-104, (Step 2.4.9) Contacts Engineering Duty Manager to provide information regarding unsuccessful attempts to free control rod 30-31 at normal Drive Water pressure IAW ON-104, Step 2.4.9</p> <p><b>Evaluator Note:</b> <i>SRO contacts Engineering Duty Manager as directed in Step 2.4.9.3. EDM informs SRO that the issue with control rod 30-31 has been previously identified and evaluated. EDM informs SRO that performance of RT-6-047-320-1 is not required and may therefore N/A Steps 2.4.9.4 and 2.4.9.5.</i></p> <p>Directs ATC to N/A Steps 2.4.9.4 and 2.4.9.5 of ON-104, and to continue at Step 2.4.9.6</p>
	SRO	<p>Informed by ATC that control rod 30-31 was unstuck at a Drive Water Pressure of 400 psid</p> <p>(Step 2.4.9.9) Directs ATC to return Drive Water Pressure to normal band and announces ON-104 exited</p> <p>Directs ATC to continue with continuous insertion of control rods IAW RMSI (Table 1) and S73.1.A, Step 4.9.5, to exit the Restricted Region of the Power/Flow Map</p>
	SRO	<p>Announces that Restricted Region of the Power/Flow Map has been successfully exited and directs the ATC to secure from inserting control rods</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Complies with TS 3.4.1.1.a.1 for SLO:</p> <p>(OT-112, Step 3.16) Ensures applicable one Recirc Pump shiftly check sections of ST-6-107-590-1, "Daily Surveillance Log/OPCONS 1, 2, 3" are performed within 4 hours</p>
	SRO	<p>Complies with TS 3.4.1.1.a.2 for SLO:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTES</b></p> <p>TS ACTION 3.4.1.1.a.2 requires APRM Scram  <b>AND</b> Rod Block Trip Setpoints  <b>AND</b> Allowable Values to be reduced for SLO within 6 hours.</p> <p>The direction in Step 3.17 to reduce APRM Scram  <b>AND</b> Rod Block Trip Setpoints  <b>AND</b> Allowable Values ensures TS 3.4.1.1.a.2 requirements will be met.</p> </div> <p>(OT-112, Step 3.17) Initiates actions to recalibrate APRM channels for SLO in accordance with the following (<i>tripped Recirc Pump will not be returned to service within 6 hours</i>):</p> <p>ST-2-074-526-1, Implementation and Restoration of APRM 1 Single Loop Flow Biased STP Setpoints</p> <p>ST-2-074-527-1, Implementation and Restoration of APRM 2 Single Loop Flow Biased STP Setpoints</p> <p>ST-2-074-528-1, Implementation and Restoration of APRM 3 Single Loop Flow Biased STP Setpoints</p> <p>ST-2-074-529-1, Implementation and Restoration of APRM 4 Single Loop Flow Biased STP Setpoints</p>
	SRO	<p>Complies with TS 3.4.1.2.b for SLO:</p> <p>(OT-112, Step 3.18) Ensures ST-6-043-321-1, "Daily Jet Pump Verification for Single Recirc Loop Operation" is performed</p>

## Scenario Summary and Administration Instructions

	SRO	Complies with Tech Specs 3.2.1 (APLHGR), 3.2.3 (MCPR), and 3.2.4 (LHGR) for SLO:  (OT-112, Step 3.15) Ensures ST-6-107-889-1, "Thermal Limits Determination for Single Recirc Loop Operation" is performed within 4 hours
	SRO	Refers to Tech Spec 3.1.3.1 for Control Rod Operability and determines that entry is not required for control rod 30-31
	SRO	(OT-112, Step 3.20) Reviews GP-5 Appendix 2, Planned Maneuvering Without Shutdown, Section 3.1, Reducing Power, to ensure all required actions are performed for Rx power reduction  <b><u>Evaluator Note:</u></b> <i>Once the Restricted Region of the Power/Flow Map has been exited and TS for SLO and Control Rod Operability have been addressed by the SRO, proceed to next event, Loss of 125/250 VDC Safeguard Bus 1BD105.</i>
	BOP	(OT-112, Step 3.5) Determines that the Power/Flow Map in Attachment 2 (Any Feedwater Heaters Out Of Service) is the correct map for current plant conditions
	BOP	(OT-112, Step 3.6) Determines Core Flow: (Step 3.6.1) <b><u>IF</u></b> required <b><u>THEN PERFORM</u></b> the following for UNIT 1:  <b><u>IF</u></b> speed of operating Recirc Pump is $\leq 1000$ RPM, <b><u>THEN USE</u></b> Core Plate dP indication ( $\Delta P_x$ ) on XR-042-1R613, "Jet Pumps Flow & DP Lo" (RECIRC, FL) <b><u>OR</u></b> Computer Point B017 to estimate Core Flow <b><u>Otherwise,</u></b> <b>MARK</b> this step N/A.  <b><u>IF</u></b> speed of operating Recirc Pump is $> 1000$ RPM, <b><u>THEN USE</u></b> Core Flow indication on XR-042-1R613, "Jet Pumps Flow & DP Lo" (RECIRC, FL) <b><u>OR</u></b> Computer Point B018 to estimate Core Flow <b><u>Otherwise,</u></b> <b>MARK</b> this step N/A.
	BOP	(OT-112, Step 3.7) Determines that the plant is operating in the Restricted Region of the Power/Flow Map using Attachment 2 and informs SRO
	BOP	(OT-112, Step 3.23) Ensures RWCU is in service using 1A RWCU Pump <b><u>OR</u></b> Both the 1B <b><u>AND</u></b> 1C RWCU Pumps

## Scenario Summary and Administration Instructions

	ATC	<p>Reports Annunciator 111 G3, "1A/1B RECIRC PUMP MOTOR HI TEMP," and that Motor Bearing Temperatures are 190 °F and rising</p> <p>Informs SRO that S43.O.D, "Reponse to Recirc Pump Motor High Temperature Condition," direction is to trip the Recirc Pump if Motor Bearing Temperatures exceed 200 °F (<i>S43.O.D referenced from ARC-MCR-111 G3</i>)</p>
	ATC	<p>(S43.O.D, Step 4.3.1) Monitors '1A' Recirc pump temperatures and trips '1A' Recirc Pump per S43.2.A, "Shutdown of a Recirculation Pump," at 200 °F</p> <p><b><u>Evaluator Note:</u></b> <i>S43.2.A, Steps 4.5.2 and 4.5.3, to trip the 1A Recirc pump, will most likely be performed from memory.</i></p> <p>(S43.2.A, Step 4.5.2) <b>TRIP</b> the 1A ASD system via push button PB-043-102A on 10C602 panel "A Normal Stop"</p> <p><b><u>AND VERIFY</u></b> that the 1A ASD 13.2 KV breaker opens.</p> <p>(S43.2.A, Step 4.5.3) <b>PLACE</b> the ASD 1 'A START' hand switch to "STOP"</p>

## Scenario Summary and Administration Instructions

	ATC	<p>(OT-112, Step 3.19) Performs S43.2.A, "Shutdown of a Recirculation Pump," to ensure the tripped pump is properly shut down</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p>Closing Recirc Pump Isolation Valve stops pump rotation  <b>AND</b> causes motor thrust bearing engagement. With motor thrust bearing engaged, reverse flow through loop will <u>not</u> cause reverse rotation of pump.</p> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>CAUTION</b></p> <p>To prevent thermal binding/pressure locking, Recirc Pump Isolation Valves should <b>not</b> be closed for more than 5 minutes.</p> </div> <p>(S43.2.A, Step 4.7) <b>CLOSE</b> HV-043-1F031A, "1A Recirc Pump Disch Vlv" (DISCHARGE A)  <b>OR</b> HV-043-1F023A, "1A Recirc Pp Suction Vlv" (SUCTION A).</p> <p>(S43.2.A, Step 4.8) <b>IF</b> Recirc Pump Isolation Valves are <b>not</b> required to be closed  <b>AND</b> approximately 5 minutes have elapsed,  <b>THEN OPEN</b> HV-043-1F031A, "1A Recirc Pump Disch Vlv" (DISCHARGE A)  <b>OR</b> HV-043-1F023A, "1A Recirc Pp Suction Vlv" (SUCTION A).</p> <p>Informs SRO that '1A' Recirc Pump has been properly shutdown</p>
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	ATC	<p>Monitors for power oscillation using Attachment 3 of OT-112:</p> <div> <p align="center"><b>NOTE</b></p> <p>OPRM System enabled region is APRM Simulated Thermal Power (STP) <math>\geq 29.5\%</math>  <b>AND</b> Recirculation Drive Flow <math>&lt; 60\%</math>.</p> </div> <div> <p align="center"><b>CAUTIONS</b></p> <ul style="list-style-type: none"> <li>• ARC-MCR-108, REACTOR, Window A-4, "OPRM TRIPS ENABLED," should alarm to alert the Operator that Unit has entered region where OPRM Upscale Trip functions are active.</li> <li>• Stability region boundaries (shaded areas) on Power/Flow Maps on Pages 6 through 7 of this ATTACHMENT are based on BWROG analysis <b>AND</b> specific plant setpoint considerations. Operators must be aware that core THI can occur within OPRM System enabled region. Control rod withdrawal, core flow reduction, raised flux peaking <b>AND</b> a reduction in FW temperature each raise the likelihood of instability.</li> <li>• Core THI exists if <u>any one</u> of the indications listed in Step 1 below is observed.</li> </ul> </div> <p>1. <b>MONITOR</b> Rx for the following core THI indications:</p> <ul style="list-style-type: none"> <li>• <u>Any</u> APRM  <b>OR</b> LPRM noise signal grows by two  <b>OR</b> more times its initial noise level</li> <li>• APRM flux level oscillations exceed 10% (peak-to-peak)</li> <li>• Characteristic of APRM  <b>AND</b> LPRM signals changes from random to a regular periodic variation (with an approximate 1.0 to 3.5 second oscillation period)</li> <li>• Period meters display strong positive to negative swings (with an approximate 1.0 to 3.5 second oscillation period)</li> </ul>
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## Scenario Summary and Administration Instructions

	ATC	<p>Commences continuous insertion of Control Rod 30-31 to position 00 in accordance with Step 1 of RMSI Table 1, "Rods Required for Stability Rod Line," per S.73.1.A, "Normal Operation of the Reactor Manual Control System"</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <ol style="list-style-type: none"> <li>1. CONTINUOUS INSERT pushbutton bypasses the Rod Motion Timer.</li> <li>2. CONTINUOUS INSERT <b>OR</b> INSERT pushbutton may be used for continuous insert.</li> <li>3. For continuous rod movement, the intention is to stop the control rod one notch before its target position. A single notch insert is then performed to place the control rod in its target position.</li> <li>4. The target position is the position where the control rod is required to be when the rod movement is complete.</li> <li>5. <b>IF</b> notch position 00 is the target position, <b>THEN</b> it is acceptable to hold CONTINUOUS INSERT <b>OR</b> INSERT pushbutton until 00 is displayed.</li> </ol> <p>The reactor operator and peer checker shall verbalize at which notch position the rod motion signal will be removed prior to the start of rod motion.</p> </div> <p><b>Evaluator Note:</b> <i>Initial attempt to continuously insert control rod 30-31 is unsuccessful.</i></p> <p>(S73.1.A, Step 4.9.5.1) Depresses CONTINUOUS INSERT pushbutton for control rod 30-31</p> <p>(Step 4.9.5.2) Verifies INSERT light lit</p> <p>Observes no rod motion for control rod 30-31 and informs SRO that the rod appears to be stuck</p>
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## Scenario Summary and Administration Instructions

	ATC	<p>(ON-104, Step 2.4.9.1) Attempts several single notch inserts with no success and informs SRO</p> <p><b><u>Evaluator Note:</u></b> <i>SRO contacts Engineering Duty Manager as directed in Step 2.4.9.3. EDM informs SRO that the issue with control rod 30-31 has been previously identified and evaluated. EDM informs SRO that performance of RT-6-047-320-1 is not required and may therefore N/A Steps 2.4.9.4 and 2.4.9.5.</i></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p>Drive Water dP can be determined by using PDI-46-1R602 <b><u>OR</u></b> by comparing Drive Pressure PI-046-1R006 on 10C213 at CRD Flow Control Station  <b><u>AND</u></b> Reactor Pressure (PX) from PI-042-1R605 on 10C603.</p> </div> <p>(Step 2.4.9.6) <b>RAISE</b> Drive Water dP to 300 psid by throttling closed HV-46-1F003, "Drive Water Press control Vlv" (DRIVE WATER PRESSURE), on 10C603,  <b><u>AND ATTEMPT</u></b> several one notch inserts.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>CAUTION</b></p> <p>Operation at elevated drive water dP must be limited to efforts to move stuck rod. Drive flow should be immediately restored to 255-265 psid following freeing of stuck rod.</p> </div> <p>(Step 2.4.9.7) IF unsuccessful,  <b><u>THEN RAISE</u></b> Drive Water dP to 350 psid  <b><u>AND ATTEMPT</u></b> several one notch inserts.</p> <p>(Step 2.4.9.8) <b><u>IF</u></b> unsuccessful,  <b><u>THEN RAISE</u></b> Drive Water dP to 400 psid  <b><u>AND ATTEMPT</u></b> several one notch inserts.</p> <p><b><u>Evaluator Note:</u></b> <i>Attempt to free Control rod 30-31 at 400 psid will be successful.</i></p> <p>(Step 2.4.9.9) ATC observes movement of control rod 30-31 at 400 psid, notifies SRO, returns Drive Water Pressure to 255-265 psid, and exits ON-104 when directed by the SRO</p>
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## Scenario Summary and Administration Instructions

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	ATC	<p>Re-commences continuous insertion of Control Rod 30-31 to position 00 in accordance with Step 1 of RMSI Table 1, "Rods Required for Stability Rod Line," per S.73.1.A, "Normal Operation of the Reactor Manual Control System"</p> <p>(S73.1.A, Step 4.9.5.1) Depresses CONTINUOUS INSERT pushbutton for control rod 30-31</p> <p>(Step 4.9.5.2) Verifies INSERT light lit</p> <p>(Step 4.9.5.5) Verifies control rod 30-41 has been inserted to position 00 using Four Rod Display</p> <p>Re-performs Steps 4.9.5.1, 4.9.5.2, and 4.9.5.5 to insert the RMSI Table 1 control rod(s) required to exit the Restricted Region of the Power/Flow Map</p>
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## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 5 Page \_\_\_\_ of \_\_\_\_

Event Description: Loss of 125/250 VDC Safeguard Bus 1BD105

**Priority:** Manually initiate MCR Chlorine Isolation, recognize HPCI, 'B' Low Pressure ECCS, and D12 D/G inoperable, address TS

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from ATC/BOP of loss of 1BD105 125/250 VDC Safeguard Bus</p> <p>Receives report from ATC that power, pressure, and level are stable</p> <p>Enters Transient Alarm Response</p> <p>Announces entry into E-1FB, "Loss of Division II Safeguard 125/250 VDC Bus"</p>
	SRO	<p>Briefs crew on E-1FB actions required</p> <p>(E-1FB, Step 2.1) Directs BOP/ATC to Manually INITIATE Main Control Room Chlorine Isolation per S78.8.A</p> <p>(Step 2.2) Requests field support to verify Reactor Enclosure/Refueling Floor Isolations</p> <p>(Step 2.3) Requests field support to Bypass and Remove 1BD160, "1B RPS UPS Staic Inverter," from service</p> <p>Requests I&amp;C/Electrical Maintenance support to determine cause for loss of 1BD105</p> <p>References Tech Specs (Multiple Tech Specs affected):</p> <ul style="list-style-type: none"> <li>• 3.5.1, ECCS-Operating (multiple ECCS systems inoperable)</li> <li>• 3.8.1, AC Sources-Operating (D12 D/G inoperability caused by loss of 1BD105 results in two diesels out of service (D11 and D12))</li> <li>• 3.8.2, DC Sources-Operating</li> <li>• 3.8.3, Onsite Power Distribution-Operating</li> <li>• 3.6.2.2, Suppression Pool Spray</li> <li>• 3.6.2.3, Suppression Pool Cooling</li> </ul>

## Scenario Summary and Administration Instructions

	SRO	<p>Determines that TS 3.0.3 is applicable with respect to TS 3.5.1, on the basis that the LCO cannot be met when cascading TS (Initial Conditions have D11 D/G Out of Service), resulting in:</p> <ul style="list-style-type: none"> <li>• Two Inoperable Core Spray Subsystems</li> <li>• Two Inoperable LPCI Spray Subsystems</li> <li>• HPCI System</li> </ul> <p>(3.0.3) When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in an OPERATIONAL CONDITION in which the Specification does not apply by placing it, as applicable, in:</p> <ol style="list-style-type: none"> <li>a. At least STARTUP within the next 6 hours.</li> <li>b. At least HOT SHUTDOWN within the following 6 hours, and</li> <li>c. At least COLD SHUTDOWN within the subsequent 24 hours.</li> </ol>
	SRO	<p>Determines that the following ACTIONS are applicable with respect to TS 3.8.1 when cascading TS (Initial Conditions have D11 D/G Out of Service):</p> <p>(ACTION 3.8.1.1.b) With two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.a within 1 hour and at least once per 8 hours thereafter...Restore at least one of the inoperable diesel generators to OPERABLE status within 72 hours* or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. See also ACTION e.</p> <p>(ACTION 3.8.1.1.e.1) For two train systems, with one or more diesel generators of the above required A.C. electrical power sources inoperable,... Otherwise, restore either the inoperable diesel generator or the inoperable system subsystem to an OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p> <p>(ACTION 3.8.1.1.e.2) For the LPCI systems, with two or more diesel generators of the above required A.C. electrical power sources inoperable, verify within 2 hours and at least once per 12 hours thereafter that at least two of the required LPCI system subsystems, trains, components, and devices are OPERABLE and its associated diesel generator is OPERABLE. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Determines that TS 3.0.3 is applicable with respect to TS 3.8.2, on the basis that the LCO cannot be met when cascading TS (Initial Conditions have D11 D/G Out of Service), resulting in:</p> <ul style="list-style-type: none"> <li>• Two Division I Battery Chargers Inoperable</li> <li>• Two Division II Battery Chargers Inoperable</li> </ul> <p>(3.0.3) When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in an OPERATIONAL CONDITION in which the Specification does not apply by placing it, as applicable, in:</p> <ol style="list-style-type: none"> <li>a. At least STARTUP within the next 6 hours.</li> <li>b. At least HOT SHUTDOWN within the following 6 hours, and</li> <li>c. At least COLD SHUTDOWN within the subsequent 24 hours.</li> </ol>
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.8.3 (TS do not cascade):</p> <p>(ACTION 3.8.3.1.b) With one of the above required Unit 1 D.C. distribution system divisions not energized, reenergize the division within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p>
	SRO	<p>Determines Tech Specs TS 3.5.1 and 3.8.2 to be the most limiting due to entry into TS 3.0.3</p> <p><b><u>Evaluator Note:</u></b> <i>Additional Tech Specs, including 3.6.2.2, Suppression Pool Spray, and 3.6.2.3, Suppression Pool Cooling, are also affected when cascading TS. In each case, the ACTION times for both loops Inoperable exceeds those imposed by TS 3.0.3.</i></p>
	ATC/BOP	<p>Acknowledge multiple alarms and conduct panel walkdowns to identify affected equipment</p> <p>Notify SRO that HPCI, 'B' Channel Low Pressure ECCS, and D12 D/G are affected by the loss of 1BD105, and prioritize ARC actions accordingly</p>

## Scenario Summary and Administration Instructions

ATC/BOP	<p>(E-1FB, Step 2.1) Manually INITIATE Main Control Room Chlorine Isolation per S78.8.A when directed by SRO (<i>All operations are at 00C681, "MCR Panel Heating and Ventilating Console," unless otherwise indicated</i>).</p> <p><b><u>Evaluator Note:</u></b> S78.8.A contains instructions to place MCR HVAC System into a Radiation or Chlorine/Toxic Chemical Isolation Lineup. Procedure requires both the 'A' and 'B' Subsections to be performed for chlorine or radiation isolations. Subsections 4.4 and 4.5 are applicable for loss of 1BD105. Only one Subsection, 4.4 or 4.5, will be observed. Accordingly, both subsections are included below. Once the first subsection is completed, proceed to next two events, Grid instability Resulting in Loss of Offsite Power and Failure of D13 D/G to Auto Start (these two malfunctions inserted simultaneously).</p> <p>(S78.8.A, Step 4.4.1 for 'A' Subsystem) <b><u>IF no</u></b> chemical isolation has been initiated,  <b><u>THEN ENSURE</u></b> alignment as follows:</p> <ul style="list-style-type: none"> <li>• HS-78-010A, 'A' CONT RM EMERG FRESH AIR FAN CONT 0AV127, in "AUTO"</li> <li>• HS-78-010B, 'B' CONT RM EMERG FRESH AIR FAN CONT 0BV127, in "STANDBY"</li> </ul> <p>(Step 4.4.1) <b>PLACE</b> the following Control Room Isolation Valve Reset Keylock Switches to "RESET":</p> <ol style="list-style-type: none"> <li>1. HS-78-017C, RESET C</li> <li>2. HS-78-017A, RESET A</li> </ol> <p>(Step 4.4.3) <b>PLACE</b> the following Control Room Isolation Valve Trip Switches to "Cl<sub>2</sub>":</p> <ol style="list-style-type: none"> <li>1. HSS-78-017C, TRIP C</li> <li>2. HSS-78-017A, TRIP A</li> </ol> <p>(Step 4.4.4) <b>PLACE</b> the following Control Room Isolation Valve Reset Keylock Switches to "AUTO":</p> <ol style="list-style-type: none"> <li>1. HS-78-017C, RESET C</li> <li>2. HS-78-017A, RESET A</li> </ol> <p>(Step 4.4.5) <b>DEPRESS</b>  <b><u>AND RELEASE</u></b> pushbutton portion of the following Trip Switches:</p> <ol style="list-style-type: none"> <li>1. HSS-78-017C, TRIP C</li> <li>2. HSS-78-017A, TRIP A</li> </ol>
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## Scenario Summary and Administration Instructions

ATC/BOP	<p>(S78.8.A, Subsection 4.4 for 'A' Subsystem - <b>continued</b>)</p> <p>(Step 4.4.6) <b>RECORD</b> CREFAS run time in appropriate log.</p> <p>(Step 4.4.7) <b>ENSURE</b> CHLOR ISLN Channel A,C amber lights are Lit.</p> <p>(Step 4.4.8) <b>VERIFY</b> CONTROL ROOM CHLORINE ISOLATION INITIATED annunciator alarmed at 002 VENT A-2.</p> <p>(Step 4.4.9) <b>VERIFY</b> CONTROL ROOM ISOLATION NOT COMPLETE annunciator is <b>not</b> alarmed at 002 VENT A-3, after 25 seconds.</p> <p>(Step 4.4.10) <b>ENSURE</b> 0A(B)V127, EMERGENCY AIR FAN A(B), is running.</p> <p>(Step 4.4.11) <b>ENSURE</b> 0A(B)V116, CONTROL ROOM AIR SUPPLY FAN A(B), running.</p> <p>(Step 4.4.12) <b>ENSURE</b> 0A(B)V121, CONTROL ROOM AIR RETURN FAN A(B), running.</p> <p>(Step 4.4.13) <b>VERIFY</b> PDI-78-054, CONTROL ROOM AIR INSIDE/OUTSIDE )PX, is 0 inches water, after allowing time for positive pressure to decay.</p>
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	ATC/BOP	<p>(S78.8.A, Step 4.5.1 for 'B' Subsystem) <b>IF no</b> chemical isolation has been initiated,  <b>THEN ENSURE</b> alignment as follows:</p> <ul style="list-style-type: none"> <li>• HS-78-010B, 'B' CONT RM EMERG FRESH AIR FAN CONT 0BV127, in "AUTO"</li> <li>• HS-78-010A, 'A' CONT RM EMERG FRESH AIR FAN CONT 0AV127, in "STANDBY"</li> </ul> <p>(Step 4.5.2) <b>PLACE</b> the following Control Room Isolation Valve Reset Keylock Switches to "RESET":</p> <ol style="list-style-type: none"> <li>1. HS-78-017B, RESET B</li> <li>2. HS-78-017D, RESET D</li> </ol> <p>(Step 4.5.3) <b>PLACE</b> the following Control Room Isolation Valve Trip Switches to "Cl<sub>2</sub>":</p> <ol style="list-style-type: none"> <li>1. HSS-78-017B, TRIP B</li> <li>2. HSS-78-017D, TRIP D</li> </ol> <p>(Step 4.5.4) <b>PLACE</b> the following Control Room Isolation Valve Reset Keylock Switches to "AUTO":</p> <ol style="list-style-type: none"> <li>1. HS-78-017B, RESET B</li> <li>2. HS-78-017D, RESET D</li> </ol> <p>(Step 4.5.5) <b>DEPRESS</b>  <b>AND RELEASE</b> pushbutton portion of the following Trip Switches:</p> <ol style="list-style-type: none"> <li>1. HSS-78-017B, TRIP B</li> <li>2. HSS-78-017D, TRIP D</li> </ol> <p>(Step 4.5.6) <b>RECORD</b> CREFAS run time in appropriate log.</p> <p>(Step 4.5.7) <b>ENSURE</b> CHLOR ISLN Channel B,D amber lights are Lit.</p> <p>(Step 4.5.8) <b>VERIFY</b> CONTROL ROOM CHLORINE ISOLATION INITIATED annunciator alarmed at 002 VENT A-2.</p> <p>(Step 4.5.9) <b>VERIFY</b> CONTROL ROOM ISOLATION NOT COMPLETE annunciator is <b>not</b> alarmed at 002 VENT A-3, after 25 seconds.</p> <p>(Step 4.5.10) <b>ENSURE</b> 0B(A)V127, EMERGENCY AIR FAN B(A), is running.</p> <p>(Step 4.5.11) <b>ENSURE</b> 0A(B)V116, CONTROL ROOM AIR SUPPLY FAN A(B), running.</p> <p>(Step 4.5.12) <b>ENSURE</b> 0A(B)V121, CONTROL ROOM AIR RETURN FAN A(B), running.</p>
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## Scenario Summary and Administration Instructions

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	ATC/BOP	<p>(S78.8.A, Subsection 4.5 for 'B' Subsystem - <b>continued</b>)</p> <p>(Step 4.5.13) <b>VERIFY</b> PDI-78-054, CONTROL ROOM AIR INSIDE/OUTSIDE )PX, is 0 inches water, after allowing time for positive pressure to decay.</p> <p>(Step 4.5.14) <b>IF</b> performing subsection for maintenance, <b><u>THEN ENSURE</u></b> the device positions for Cl<sub>2</sub> Isolation as per Attachment 2, <b><u>OTHERWISE ENSURE</u></b> the device positions for Cl<sub>2</sub> Isolation as per Attachment 1 <b>AND 2.</b></p>
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## Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 2 Event No.: 6, 7, 8, 9 Page \_\_\_\_ of \_\_\_\_

Event Description: LOOP, D13 D/G start failure (recoverable), Small Break LOCA with loss of high pressure feed capability, D14 D/G trip, RCIC trip (recoverable after RPV level reaches -129", Emergency Depressurization

★Contains action items to complete critical task 1, Manual Start of D13 D/G from the MCR after the diesel fails to Auto Start on LOOP

■Contains action items to complete critical task 2, Perform Rapid Depressurization when RPV level cannot be restored and maintained > -161" / Maximize RPV injection to restore level above TAF

Time	Position	Applicant's Actions or Behavior
	SRO	Announces entry into T-101, RPV CONTROL, due to SCRAM condition resulting from LOOP and RPV level < +12.5"
	SRO	(T-101 RC-4) Directs ATC to place the Mode Switch in SHUTDOWN
	SRO	(T-101 RC-5) Ensures SCRAM / Isolations / ECCS initiation
	★SRO	<p>(T-101 RC-5) Ensures available Diesels Start</p> <p>Directs ATC to start the D13 D/G after a failure of the diesel to start immediately following the LOOP</p> <p><b>Evaluator Note:</b> D13 D/G failure to start malfunction inserted coincident with LOOP. Attempt to start D13 D/G from the MCR is successful</p>
	SRO	(T-101 RC-6) Directs ATC to insert SRMs and IRMs
	SRO	(T-101 RC/Q-3) Announces exit of RC/Q of T-101
	SRO	(T-101 RC/L-4) Directs BOP to restore <u>AND</u> maintain RPV level between +12.5" <u>AND</u> +54" using RCIC
	SRO	(T-101 RC/P-4) Directs BOP to stabilize RPV pressure below 1096 psig using SRVs, provides appropriate pressure band (i.e., 800-1000 psig, etc)
	SRO	<p>Recognizes that Suppression Pool Cooling is unavailable with both the D11 and D12 Safeguard Buses de-energized</p> <p>Announces entry into T-102, Primary Containment Control, should Suppression Pool Temperature exceed 95 °F</p> <p><b>Evaluator Note:</b> When RPV level has been restored between +12.5" <u>AND</u> +54", and RPV pressure stabilized, booth operator inserts malfunctions for LOCA and D14 D/G Trip</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Recognizes indications of rising Drywell Pressure and announces entry into OT-101, High Drywell Pressure</p> <p>(Step 2.1) Directs ATC to MAXIMIZE Drywell cooling</p> <p><b>Evaluator Note:</b> <i>"Maximize Drywell cooling" means ensure one chiller and both Drywell Chilled Water pumps are operating and one fan is operating for each (8) Drywell Unit Cooler. Both Chilled Water pumps will be unavailable due to de-energization of the 114B and 124B Reactor Area Load Centers. Therefore, attempts to maximize DW cooling will be unsuccessful.</i></p> <p><b>Evaluator Note:</b> <i>When DW Pressure exceeds 1.68 psig, booth operator inserts malfunction for RCIC Trip on Overspeed (recoverable below -129").</i></p>
	SRO	Announces re-entry into T-101 and T-102 on High DW pressure 1.68 psig
	SRO	Announces re-entry into T-102 on High DW Temperature, should DW temperature rise above 145 °F
	SRO	<p>Determines that only available sources of high pressure feed, following trip of D14 D/G and RCIC trip, are '1C' SLC pump and '1A' CRD pump, <u>AND</u> that RPV level <u>CANNOT</u> be restored above +12.5"</p> <p>(T-101 RC/L-5; SE-10, Step 4.6) Directs ATC to start the '1A' CRD pump</p> <p>(T-101 RC/L-7) Directs ATC to start the '1C' SLC pump (Boron Tank)</p>
	SRO	<p>Contacts Work Management to investigate trip of D14 D/G and RCIC trip</p> <p>Determines that RPV level cannot be maintained above -161" and briefs crew</p> <p>(T-101 RC/L-9) Announces exit of RC/L of T-101 and entrance into T-111, "Level Restoration/Steam Cooling"</p>
	SRO	(T-101 RC/P-11) Directs BOP to stabilize RPV pressure below 1096 psig using Non-ADS SRVs; revises RPV pressure band as appropriate due to pressure reduction resulting from LOCA
	SRO	(T-111 LR-3) Directs BOP to Inhibit ADS
	SRO	<p>(T-111 LR-4) Directs BOP/ATC to Maximize RPV Injection EXCEEDING pump NPSH AND vortex limits if necessary (includes implementation of T-240 to maximize CRD flow)</p> <p><b>Evaluator Note:</b> <i>In order for '1C' Core Spray Pump to inject, Core Spray Outboard Injection Valve HV-052-1F005 (1F037) must be manually opened in the field due to loss of Division I power.</i></p> <p>Recognizes or is informed by BOP that Core Spray Outboard Injection Valve HV-052-1F005 (1F037) must be manually opened in the field due to loss of Division I power, in order for '1C' Core Spray Pump to inject</p> <p>Directs BOP to dispatch AER operator to manually open HV-052-1F005 (1F037)</p>

## Scenario Summary and Administration Instructions

	SRO	<p>When level is below -129", receives report that RCIC Mechanical Overspeed Trip has been reset locally and that RCIC is available as an injection source: Directs BOP to reset RCIC Turbine trip and place RCIC in service</p> <p><b>Evaluator Note:</b> <i>RCIC will be made available below -129", provided the SRO requested Work Management assistance following the failure. SRO may elect not to issue the order to place RCIC in service, depending on the rate at which level is lowering and the proximity to -161". Note that No procedural guidance exists for resetting RCIC with an initiation signal sealed in (-38"). Also note that even with RCIC feeding the vessel, injection will be insufficient to prevent reaching TAF.</i></p>
	SRO	<p>(T-111 LR-6) Determines that two or more subsystems from Table LR-2 <u>CANNOT</u> be lined up for injection</p> <p>(T-111 LR-7) Requests field support to line up alt subsystems in Table LR-1, recognizing that power restraints may impact the ability to successfully complete the line ups</p> <p>Briefs crew that when level drops to -161", T-101 RC/P will be exited, T-112, "Emergency Blowdown" entered, and the plant emergency depressurized (T-111 and T-112 executed concurrently)</p>
	SRO	<p>(T-101 RC/P-1) Announces exit of RC/P of T-101 (T-111 LR-17) Announces entry into T-112</p>
	■SRO	<b>(T-112 EB-11) Directs BOP to open 5 ADS valves</b>
	■SRO	<b>(T-111 LR-18) Once rapid depressurization has begun, directs BOP to maximize RPV injection using Low Pressure ECCS powered from Safeguard Bus D13</b>
	SRO	<p><b>Evaluator Note:</b> <i>Scenario may be terminated when RPV blowdown is in progress, and RPV level can be restored <u>AND</u> maintained between +12.5" <u>AND</u> +54" per T-101.</i></p> <p>(T-111 LR-2) Determines that RPV level can be maintained above -161" and enters T-101 at Step RC/L-1</p> <p>(T-101 RC/L-4) Directs BOP to restore AND maintain RPV level between +12.5" AND +54" using Low Pressure ECCS</p> <p>Directs ATC to perform follow up actions of SE-10, "LOCA," and OT-101, "High Drywell Pressure</p>
	ATC	Places Mode Switch in SHUTDOWN and informs SRO
	ATC	<p>Inserts SRM/IRM:</p> <ul style="list-style-type: none"> <li>• Depresses 'Power On' pushbutton</li> <li>• Depresses 'Select' Pushbuttons for all SRM and IRM</li> <li>• Depresses 'Drive In' Pushbutton</li> <li>• Monitors SRM/IRM indication for verification of instruments driving in</li> </ul>

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## Scenario Summary and Administration Instructions

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	★ATC	Recognizes and reports failure of the D13 D/G to start following LOOP:  <b>VERIFIES D13 D/G LOCAL-REMOTE switch in "REMOTE" at panel 1CC661, DIESEL 13</b>  <b>PLACES 101-CG501/CS, "Diesel Generator Control," to "START" at panel 1CC661, DIESEL 13</b>
	ATC	Recognizes and reports trip of D14 D/G amidst indications of rising Drywell pressure
	ATC	Informs SRO that Drywell cooling cannot be maximized due to the loss of power  <b><u>Evaluator Note:</u></b> <i>"Maximize Drywell cooling" means ensure one chiller and both Drywell Chilled Water pumps are operating and one fan is operating for each (8) Drywell Unit Cooler. Both Chilled Water pumps will be unavailable due to de-energization of the 114B and 124B Reactor Area Load Centers. Therefore, attempts to maximize DW cooling will be unsuccessful.</i>

## Scenario Summary and Administration Instructions

ATC	<p>Starts '1A' CRD pump per S46.1.A, "Control Rod Drive Hydraulic System Startup":</p> <p><b><u>Evaluator Note:</u></b> <i>S46.1.A completed up to and including Step 4.5 for '1A' CRD pump; Step 4.8 N/A (A Stabilizing Valves will be selected) and Step 4.10 N/A (A Drive Water Filter being used).</i></p> <p>(Step 4.6) <b>PLACE</b> D009A, "CRD Flow Controller," in "AUTO" at 10C213.</p> <p>(Step 4.7) <b>VERIFY</b> D009B, "CRD Flow Controller," in "MAN" <b><u>AND</u></b> <u>closed</u> at 10C213.</p> <p>(Step 4.9) <b>SELECT</b> Stabilizer Valves to be used by depressing A VALVES SELECTED at 10C603</p> <p>(Step 4.11) <b>ENSURE</b> the following locally:</p> <ul style="list-style-type: none"> <li>• (Step 4.11.1) Proper oil levels in pump components</li> <li>• (Step 4.11.2) 46-1014A, "CRD Pump Min-Flow Stop" <u>open</u></li> <li>• (Step 4.11.3) 46-1F015A, "CRD Pump Min-Flow Stop Check" <u>open</u></li> <li>• (Step 4.11.4) 46-1F014A(B), "CRD Pump Discharge Stop Check" <u>closed</u></li> </ul> <p>(Step 4.12) <b>VERIFY</b> HV-46-1F003, "CRD Drive Water Pressure Control Valve" <u>open</u> at 10C603.</p> <p>(Step 4.14) <b>VERIFY</b> D009-FC-46-1R600, "Rod Drive Flow Controller" (FL), in "MANUAL" <b><u>AND</u></b> <u>closed</u> at 10C603.</p> <p>(Step 4.15) <b>VERIFY</b> FVC-46-1F002A, "Flow Control," closed.</p> <p>(Step 4.16) <b>VERIFY</b> FVC-46-1F002B, "Flow Control," closed.</p> <p>(Step 4.17) <b>VERIFY</b> CRD PUMP SUCTION LO PRESS annunciator clear at 108 REACTOR (G-3).</p> <p>(Step 4.18) <b>START</b> 1AP158-HS-46-108A, "CRD Pump" (PUMP).</p> <p>(Step 4.19) Slowly <b>OPEN</b> 46-1F014A, "CRD Pump Discharge Valve."</p>
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## Scenario Summary and Administration Instructions

	ATC	<p>(Start of '1A' CRD pump per S46.1.A, "Control Rod Drive Hydraulic System Startup" – <b>continued</b>):</p> <p>(Step 4.22) <b>VERIFY</b> the following parameters of started CRD Pump:</p> <ul style="list-style-type: none"> <li>– CRD WATER PUMP MOTOR OVERCURRENT annunciator clear at 108 REACTOR (G-2)</li> <li>– Normal pump motor running current on A/11703-2 (A/11803-2), "Rod Drive Pump Ammeter" (AM)</li> <li>– Proper oil levels in pump components</li> <li>– Bearing temperature computer points indicating from 100 to 160°F at the following bearing points: <ul style="list-style-type: none"> <li>CRD A INBD BRG (Computer Point R005)</li> <li>CRD A OUTBD BRG (Computer Point R005)</li> </ul> </li> </ul> <p>(Step 4.23) <b>VERIFY</b> local pump discharge pressure PI-046-108A indicates 1400-1600 psig.</p> <p>(Step 4.24) <b>VERIFY</b> CRD CHARGING WATER LOW PRESSURE annunciator clear at 108 REACTOR (H-4).</p> <p>(Step 4.25) <b>VERIFY</b> PIS-46-1N600, "Charging Water Pressure" (PX), indicates 1,250 to 1,510 psig at 10C603.</p> <p>(Step 4.26) <b>VERIFY</b> CRD PUMP SUCTION FILTER HI Delta P annunciator clear at 108 REACTOR (H-3).</p> <p>(Step 4.27) <b>VERIFY</b> CRD DRIVE WATER FILTER HI Delta P annunciator clear at 108 REACTOR (G-4).</p>
	ATC	<p>Starts '1C' SLC Pump per S48.1.B, Appendix 1, "Standby Liquid Control System Manual Initiation Hardcard":</p> <p>(Step 1.0) Insert key into HS-48-104C and <b>START</b> '1C' SLC Injection Pump, by holding keylock switch in "RUN" for at least 1 second before releasing (<i>HS-48-104C spring returns to "NORM" from the "RUN" position <u>only</u></i>)</p> <ul style="list-style-type: none"> <li>• 1CP208, "SLC Injection Pump" (Control Switch normally in "STOP" <b>AND</b> key removed, preventing three pump system operation)</li> </ul> <p>(Step 2.0) <b>VERIFY</b> appropriate Squib Valve fires by loss of the associated continuity white lights:</p> <ul style="list-style-type: none"> <li>• XV-48-1F004C</li> </ul> <p>(Step 3.0) <b>VERIFY</b> SBLC is injecting by observing the following:</p> <ul style="list-style-type: none"> <li>• PI-48-1R600C, "Pump Discharge Pressure" (PX), greater than reactor pressure.</li> <li>• LI-48-1R601, "SLC Tank Level" (LV), lowering at a steady rate.</li> </ul>

## Scenario Summary and Administration Instructions

	ATC	<p>Maximizes CRD flow using T-240, "Maximizing CRD Flow After Shutdown During Emergency Conditions":</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>CAUTION</b></p> <ol style="list-style-type: none"> <li>1. High flow <b>AND</b> high CRD pump suction filter dP will lower NPSH.</li> <li>2. Lowering reactor pressure will cause rising CRD pump flow.</li> <li>3. CRD pumps trip at 4.5 inches HG vacuum suction pressure.</li> <li>4. To prevent CRD Pump runout <u>local</u> pump discharge pressure must be greater than 1,200 psig on PI-46-108A, "CRD Pump Discharge."</li> </ol> </div> <p>(Step 4.1) Fully <b>OPEN</b> HV-46-1F003, "Drive Water Pressure Control" (DRIVE WATER PRESSURE), at 10C603 (Main Control Room).</p> <p>(Step 4.2) <b>OPEN</b> FV-C-46-1F002A, "Flow Control," at 10C603 (Main Control Room) using FC-46-1R600, "Rod Drive Flow Controller" (FL), in "MANUAL" to maximize CRD flow, while maintaining greater than 1,200 psig as indicated on PI-46-108A, "CRD Pump Discharge" (252-T6-200).</p> <p>(Step 4.3) <b>OPEN</b> 46-1F045, "CRD Pump Suction Filter Bypass" (252-T6-200).</p>
	ATC	Commences performance of follow up actions of SE-10, "LOCA" and OT-101, "High Drywell Pressure"
	BOP	<p>Restores <b>AND</b> maintains RPV level between +12.5" AND +54" using RCIC per SRO direction:</p> <p><b>Evaluator Note:</b> <i>If RPV level lowers to -38" following the LOOP, RCIC system will automatically initiate. If level is lowering but has not yet reached -38", RCIC will be manually initiated to restore <b>AND</b> maintain level before reaching the -38" low low reactor water level. Manual actions to initiate and control RCIC will likely be performed from memory.</i></p> <p><b>ARM <u>AND</u> DEPRESS</b> Manual Initiation push button to start RCIC</p> <ul style="list-style-type: none"> <li>• Control injection using FIC-49-1R600, "RCIC Pump Discharge Flow Controller" (FL) to restore <b>AND</b> maintain RPV level between +12.5" AND +54"</li> </ul>

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### Scenario Summary and Administration Instructions

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	BOP	(Prior to LOCA) Stabilizes RPV pressure below 1096 within established pressure band by individually cycling SRV control switches located on 10C626, using the opening sequence specified on the control panel (ensures uniform distribution of heat to the suppression pool)
	BOP	Recognizes and reports trip of RCIC following receipt of 1.68 psig LOCA signal
	BOP	(After LOCA) Stabilizes RPV pressure below 1096 within revised pressure band(s) to accommodate pressure reduction resulting from primary leak, by individually cycling <b>Non-ADS SRV</b> control switches located on 10C626, using the opening sequence specified on the control panel (ensures uniform distribution of heat to the suppression pool)
	BOP	Inhibits Auto ADS by placing both ADS "NORM - INHIBIT" switches (S15A and S15C) at 10C626 back panel to "INHIBIT" position

	BOP	<p>When directed by SRO to maximize injection into the RPV (prior to level dropping to -161"), <u>Ensures</u> that Low Pressure ECCS powered from Safeguards Bus D13 is aligned such that maximum flow will be delivered to the RPV as soon as RPV pressure drops below the system shutoff head pressures.</p> <p><b><u>Evaluator Note:</u></b> <i>Following steps to manually initiate DIV 3 RHR and DIV 3 Core Spray will likely be performed from memory:</i></p> <p><b><u>ABOVE -129":</u></b></p> <p>Manually initiate DIV 3 RHR:</p> <ol style="list-style-type: none"> <li>1. TURN collar of the following MANUAL INITIATION pushbutton to "ARMED": (INITIATION 3) E11A-S61C</li> <li>2. VERIFY the following annunciator alarms: DIV 3 RHR MANUAL INITIATION SWITCH ARMED, annunciator (H2) alarms on 113 COOL A</li> <li>3. DEPRESS <u>AND RELEASE</u> the following MANUAL INITIATION pushbutton to initiate DIV 3 RHR System: (INITIATION 3) E11A-S61C</li> <li>4. ENSURE the 'C' RHR pump is running and the following RHR Pump minimum flow bypass valve is open: HV-51-1F007C, MIN FLOW</li> </ol> <p><b><u>AND</u></b></p> <p>Manually initiate DIV 3 Core Spray:</p> <ol style="list-style-type: none"> <li>5. TURN collar of the following MANUAL INITIATION pushbutton to "ARMED": (INITIATION 3) E21A-S22C</li> <li>6. VERIFY the following annunciator alarms: DIV 3 CORE SPRAY MANUAL INITIATION SWITCH ARMED, annunciator (C2) alarms on 113 COOL A</li> <li>7. DEPRESS <u>AND RELEASE</u> the following MANUAL INITIATION pushbutton to initiate DIV 3 Core Spray System: (INITIATION 3) E21A-S22C</li> <li>8. ENSURE the 'C' Core Spray pump is running and the following Core Spray Pump minimum flow bypass valve is open: HV-52-1F031A, MIN FLOW</li> </ol>
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## Scenario Summary and Administration Instructions

		<p>(Maximize injection into RPV – <b>continued</b>)</p> <p><b><u>BELOW -129”:</u></b></p> <p>Verifies that ‘C’ RHR pump is running and minimum flow bypass valve HV-51-1F007C is open</p> <p><b><u>AND</u></b></p> <p>Verifies that ‘C’ Core Spray pump is running and minimum flow bypass valve HV-52-1F031A is open</p>
	BOP	<p><b><u>Evaluator Note:</u></b> <i>In order for ‘1C’ Core Spray Pump to inject, Core Spray Outboard Injection Valve HV-052-1F005 (1F037) must be manually opened in the field due to loss of Division I power.</i></p> <p>Recognizes Core Spray Outboard Injection Valve HV-052-1F005 (1F037) must be manually opened in the field due to loss of Division I power and informs SRO</p> <p>Recognizes that Valve HV-052-1F005 (1F037) must be throttled open to prevent pump runout with only one CS pump operable in the ‘A’ CS Subsystem Loop</p> <p>Directs AER operator to manually <b>THROTTLE</b> open HV-052-1F005 (1F037) to mid-position (<i>direction to throttle valve to obtain desired flow will be provided after commencement of Emergency Blowdown when RPV pressure is below Core Spray pump shutoff head of 330 psig</i>)</p>
	BOP	<p><b><u>Evaluator Note:</u></b> <i>RCIC will be made available below -129”, provided the SRO requested Work Management assistance following the failure. SRO may elect not to issue the order to place RCIC in service, depending on the rate at which level is lowering and the proximity to -161”. Note that No procedural guidance exists for resetting RCIC with an initiation signal sealed in (-38”). Also Note that even with RCIC feeding the vessel, injection will be insufficient to prevent reaching TAF.</i></p> <p>When informed by SRO that RCIC Mechanical Overspeed Trip has been reset locally and that direction is to place RCIC in service:</p> <p>Obtains S49.1.C, “Recovery from RCIC Turbine Trip”</p> <p>Informs SRO that Prerequisite 2.4 (Reactor level is greater than -38”) cannot be met, and that NO procedural guidance exists for resetting RCIC with an initiation signal sealed in</p>
	■BOP	<p><b>When directed to open all ADS valves, places PSV-41-1F013E, K, H, M, and S “AUTO-OPEN” control switches located on 10C626 to the “OPEN” position, and verifies valve function by acoustic monitors and lowering RPV pressure</b></p>

## Scenario Summary and Administration Instructions

	■BOP	<p><b>Evaluator Note:</b> <i>Following step to restore level above -161" using RHR will likely be performed from memory:</i></p> <p><b>Maximizes RPV injection with 'C' LPCI to restore level above -161":</b></p> <ul style="list-style-type: none"> <li>• ('C' RHR) When RPV pressure drops below 350 psig ('C' RHR pump shutoff head): <ul style="list-style-type: none"> <li>- ENSURES 'C' RHR LPCI Injection Valve, HV-51-1F017C, is open (opens on 74 psid), and 'C' RHR pump injecting (10C601)</li> </ul> </li> </ul>
	BOP	<p>Maximizes RPV injection with 'C' Core Spray to restore level above -161":</p> <ul style="list-style-type: none"> <li>• ('C' Core Spray) When RPV pressure drops below 330 psig ('C' CS pump shutoff head): <ul style="list-style-type: none"> <li>- ENSURES 'C' CS pump injecting (10C601)</li> <li>- Obtains S52.7.B, "CORE SPRAY INJECTION WITH A SINGLE OPERABLE PUMP," <b>AND COORDINATES</b> with AER operator to perform Step 4.4 to prevent pump runout with only one CS pump operable in the 'A' CS Subsystem Loop  (Step 4.4) AER operator <b>THROTTLES</b> HV-52-1F005 (A Loop), to obtain a flow of less than 3,175 gpm as indicated on FI-52-1R601A, FL, at panel 10C601.</li> </ul> </li> </ul>
	BOP	<p><b>Evaluator Note:</b> <i>The step to restore and maintain level between +12.5" and +54" using RHR will likely be performed from memory:</i></p> <p>Restores <u>AND</u> maintains RPV level between +12.5" and +54" as indicated on LI-42-1R606A(B,C), (LV NR), at 10C603:</p> <ul style="list-style-type: none"> <li>• Throttles "C" RHR LPCI Injection Valve, HV-51-1F017C, as required to control level, at panel 10C601</li> <li>• Obtains S52.7.B, "CORE SPRAY INJECTION WITH A SINGLE OPERABLE PUMP," <b>AND COORDINATES</b> with AER operator to perform Step 4.4 to prevent pump runout with only one CS pump operable in the 'A' CS Subsystem Loop  (Step 4.4) AER operator <b>THROTTLES</b> HV-52-1F005 (A Loop), to obtain a flow of less than 3,175 gpm as indicated on FI-52-1R601A, FL, at panel 10C601.</li> </ul> <p><b>Evaluator Note:</b> <i>Scenario may be terminated when RPV blowdown is in progress, and RPV level can be restored <u>AND</u> maintained between +12.5" <u>AND</u> +54" per T-101</i></p>

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## Scenario Summary and Administration Instructions

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**POST SCENARIO:** Have the applicant in the CRS position identify the highest EAL classification for the combination of events experienced during the scenario.

Applicable classifications: **FS1** and **MA1** based upon Table LGS 3-1 of EP-AA-1008 (Revision 20)

**FS1:** Loss OR Potential Loss of ANY Two Barriers (SAE)

Loss of RCS barrier based upon criteria 2.a.1: RPV Level <-161"

**OR**

Loss of RCS barrier based upon criteria 2.b.1: Drywell Pressure > 1.68 psig

**AND**

Loss of RCS barrier based upon criteria 2.b.2: Drywell Pressure rise due to RCS leakage

**AND**

Potential Loss of Fuel Clad Barrier based upon criteria 1.a.2: RPV level <-161"

**MA1:** AC power capability to essential buses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout. (ALERT)

**NOTE:** The Emergency Director should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

1. AC power capability to unit 4 KV Safeguard Buses reduced to only one of the following sources for **> 15 minutes.**

- 101 Safeguard Transformer
- 201 Safeguard Transformer
- D11(21) Diesel Generator
- D12(22) Diesel Generator
- D13(23) Diesel Generator
- D14(24) Diesel Generator

**AND**

2. Any additional single power source failure will result in a unit blackout

Facility: Limerick

Scenario No.: 4

Op-Test No.: \_\_\_\_\_

Examiners: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Initial Conditions: 100% power, ST-6-092-314-1, "D14 Diesel Generator Slow Start Operability Test Run," in progress

Turnover: D14 D/G has been running at full load for 2 hours. ST-6-092-314-1 is completed up to and including step 4.12.3. The crew is directed to shutdown D14 D/G starting at step 4.12.4

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP	Shutdown D14 D/G IAW ST-6-092-314-1
2	MVI232F MRP029A	I-ATC TS-SRO	Rx Level Transmitter LT-42-1N080C Fails Low with No RPS Actuation Signal
3	VIC105A6	R-ATC TS-SRO	'1A' Recirc Pump Motor High Vibration (Power Reduced to $\leq 93\%$ to Clear Annunciator 111 D2)
4	MCU194	C-BOP TS-SRO	RWCU Leak with Auto Isolation Failure (Manual Isolation Successful)
5	MEG095	C-BOP	Main Generator Voltage Regulator Failure with Volts/Hertz Exceeding Alarm Setpoint
6	XXXXXX	C-ATC TS-SRO	'1A' Recirc Pump ASD Controller Fails Upscale
7	MMS069	C-BOP R-ATC TS-SRO	Steam Seal Evaporator Steam Outlet Valve Fails Closed
8	MED275C	C-BOP TS-SRO	OBE Earthquake with Loss of Safeguard Bus D134 (Loss of 1A Instrument Air Compressor / 'Loss of Secondary Containment')
9	MRT001B MMS061A MMS062A MMS136	M-ALL	Main Steam Line High High Radiation (Fuel Failure) / MSL Break in Outboard MSIV Room (Rooms 407 and 518) with Failure of the 'A' Main Steam Line to Isolate
10	MRE001A MRE001B MRE317 RRE013	C-ATC	SGTS Exhaust Fan 0A(B)V163 Trip with Failure to Start of the STBY SGTS Exhaust Fan 0B(A)V163 (Recoverable) / Leak Propagation

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



### Scenario Summary

**Event 1:** The scenario begins with Unit 1 at 100% power and ST-6-092-314-1, "D14 Diesel Generator Slow Start Operability Test Run," in progress. D14 D/G has been running at full load for 2 hours. ST-6-092-314-1 is completed up to and including step 4.12.3. The crew will shutdown D14 D/G starting at step 4.12.4.

**Event 2:** After D14 has been shutdown, Reactor Level Transmitter LT-42-N080C will fail downscale with no RPS system actuation (A2 half scram does not occur). The crew will enter and execute OT-117, "RPS Failure," and ultimately identify an RPS Trip System A2 failure. The RPS failure will require the crew to insert a manual half scram on the 'A' side RPS. The SRO will enter Tech Spec 3.3.1 for the RPS instrumentation failure.

**Event 3:** After Tech Specs have been addressed for RPS, the '1A' Recirc Pump Motor experiences a high vibration condition resulting from a pump imbalance as indicated by receipt of Annunciator 111 D2, "1A RECIRC PUMP MOTOR HI VIBRATION." The crew will reduce speed of the '1A' Recirc Pump to clear the annunciator using the direction provided in ARC-MCR-111 D2, resulting in a power reduction of approximately 7% ( $\leq 93\%$  RTP). Power reduction is performed in accordance with GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and the Reactor Maneuvering Shutdown Instructions (RMSI). The SRO will refer to Tech Spec 3.4.1.3 to ensure compliance with Recirc Loop Flow Mismatch requirements.

**Event 4:** Once the Tech Specs have been addressed for Recirc Loop Flow Mismatch, a primary system coolant leak occurs on the RWCU suction piping between HV44-1F004 and HV44-1F040 in the RWCU Isolation Valve Compartment (Rooms 510 and 522). The crew recognizes that the leak is from the RWCU system by receipt of Annunciator 112 (I3), "RWCU HI DIFF FLOW ISLN TIMER INITIATED." Rising offsite release rates at the Unit 1 South Stack confirm the existence of an actual leak. The crew recognizes failure of the RWCU system to automatically isolate when Annunciator 112 CLEANUP (I3) does not clear after 30 seconds, and takes prompt actions to manually isolate RWCU as directed by ARC-MCR-112 (I3). The manual isolation is successful. One or more RWCU Area ARMs may alarm depending upon the timeliness of the isolation. The SRO will appropriately enter T-103, "Secondary Containment Control," if a high alarm condition exists on one or more RWCU ARMs associated with T-103, Table SCC-1. The SRO will enter Tech Spec 3.3.2 for failure of RWCU System Isolation Actuation Instrumentation.

**Event 5:** After the Tech Spec call has been made for failure of the RWCU system to auto isolate, the Main Generator Auto Voltage Regulator fails, resulting in control on the DC Manual Regulator with Generator Volts/Hertz exceeding the annunciator alarm setpoint (ARC-MCR-125 (C4)). The crew takes immediate action in accordance with ARC-MCR-125 (C4) to lower and return generator output voltage to normal using the DC Manual Regulator.

**Event 6:** Once generator output voltage has been returned to normal, the '1A' Recirc Pump Adjustable Speed Drive (ASD) controller fails to its maximum output. '1A' Recirc Pump speed increases accordingly, resulting in a positive reactivity insertion as voids are swept out of the core and moderator density is raised. The crew identifies failure of the '1A' Recirc Pump ASD controller and reduces power by lowering '1B' Recirc Pump speed in accordance with OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion," GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and the RMSI. The SRO will refer to Tech Spec 3.4.1.3 to ensure compliance with Recirc Loop Flow Mismatch requirements.

**Event 7:** After power has been stabilized and Tech Specs have been addressed for Recirc Loop Flow Mismatch, the Steam Seal Evaporator Steam Outlet Valve (HV07-158) fails closed, causing a reduction in sealing steam pressure to the Main and RFP Turbines. A loss of sealing steam results in condenser air in-leakage and lowering condenser vacuum. The crew identifies a rise in condenser offgas flow coupled with lowering vacuum, enters OT-116, "Loss of Condenser Vacuum," and reduces power as necessary to maintain vacuum in accordance with GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and RMSI. The crew recognizes that the Steam Seal Evaporator Outlet Valve is closed, and takes prompt action to restore sealing steam by opening gland seal regulator back-up valve HV07-159 per the direction provided in ARC-MCR-106 (A3).

**Event 8:** Once sealing steam has been restored, the plant experiences an OBE Earthquake which results in loss of the D134 Safeguard Load Center. The crew will enter SE-5, "Earthquake," E-D134, "Loss of D134 Safeguard Load Center," and ON-111, "Loss of Secondary Containment," conduct MCR panel walkdowns, and identify affected systems/components. ON-111 directs entry into T-103, "Secondary Containment Control." Equipment availability following loss of D134 will lead SRO to prioritize the Loss of Secondary Containment resulting from loss of the Reactor Enclosure (RE) Supply and Exhaust Fans, and the REECE Fans. A Refuel Floor Isolation on Low Zone  $\Delta P$ , with both SGTS Fans drawing from the Refuel Floor, will occur several minutes into the event. Crew initial actions from E-D134 will focus on Manual Initiation of the Reactor Enclosure Secondary Containment Isolation Signal and verification of response (includes placing one of the two running SGTS Fans in STBY). Trip of the '1A' Instrument Air Compressor will not challenge Instrument Air with '1B' Instrument Air Compressor in service. As such, start of the Backup Service Air Compressor will not be an immediate priority. The SRO will enter multiple Tech Specs, including Onsite Power Distribution Systems-Operating (3.8.3), Secondary Containment (3.6.5), and Control Room Emergency Fresh Air Supply System (3.7.2).

**Events 9-10:** After the plant has been stabilized, a Reactor Fuel Pin Failure occurs (the result of '1A' Recirc Pump ASD controller failing to maximum output with resultant pump speed increase - see Event 6 above) causing a rise in MSL and SJAЕ Discharge Radiation levels, as well as numerous other high radiation alarms both in containment and in various areas of the plant. The crew will identify the increase in area radiation monitoring, enter ON-102, "Air Ejector Discharge or Main Steam Line High Radiation," and reduce power per GP-5 Appendix 2, "Planned Rx Maneuvering Without Shutdown," and the RMSI, in an attempt to maintain MSL radiation levels below the 1.5X NFPB Alarm setpoint (ARC-MCR-109 (F1/F2)) and air ejector discharge radiation level below the Hi Hi Alarm setpoint (ARC-MCR-109 (G1)). The crew will also enter and take the required actions as directed by T-103, "Secondary Containment Control." Eventually, MSL radiation levels will rise to greater than 3X NFPB Alarm setpoint (ARC-MCR-107 (I1)), requiring a T-103 shutdown and closure of the MSIVs. The crew will manually scram the reactor (Critical Task), enter T-101, "RPV Control," and execute both T-101 and T-103 concurrently. The SRO prioritizes Level Control with HPCI/RCIC, Pressure Control with SRVs, and directs the crew to close the MSIVs (Critical Task).

The 'A' MSL line will rupture downstream of Outboard MSIV HV41-1F028A with a failure of the 'A' MSL to isolate (MSL rupture and failure to isolate are the result of the OBE - See Event 8 above). The leak is located in the MSL and Feedwater Pipe Chase (Rooms 407 and 518). SGTS Exhaust Fan 0A(B)V163 trips with a failure to start of standby SGTS Exhaust Fan 0B(A)V163 (recoverable). A Reactor Enclosure Pipeway Penetration Failure between MSL Pipe Chase Room 518 and RWCU Isolation Valve Compartment Room 510, will pressurize and discharge steam to Compartment 510. Reactor Enclosure Door No. 423 between MSL Pipe

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## Scenario Summary and Administration Instructions

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Chase Room 518 and Corridor 506 was not properly closed the last time operated, resulting in the discharge of steam into Corridor 506 as evidenced by increased activity levels on ARMs in both the RWCU HX and RWCU Pump Areas. In addition, pressure in MSL Pipe Chase Room 518 increases to the setpoint of the blowout panels, discharging steam from the north wall of the Reactor Enclosure into the Turbine Enclosure Condenser Compartment. Pressure in the Condenser Compartment does not increase to the setpoint of the Condenser Compartment blowout panel, therefore no steam is discharged directly to the atmosphere outside the Turbine Enclosure. The crew recognizes that an unisolable primary discharge is in progress and that an Emergency Blowdown is required as directed by T-103, on either MSO Rad level exceeded in two or more areas or MSO Temperature exceeded in two or more areas. The SRO directs the crew to emergency depressurize the RPV (Critical Task) per T-112, "Emergency Blowdown." The SRO also determines that entry into T-104, "Radioactivity Release Control" was not required due to offsite release rates remaining below the ALERT level. The scenario may be terminated when RPV blowdown is in progress and RPV water level is being maintained between +12.5" and +54" in accordance with T-101.

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5–8)	9
2. Malfunctions after EOP entry (1–2)	1
3. Abnormal events (2–4)	4
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2) T-101/T-117	2
6. EOP contingencies requiring substantive actions (0–2) EO-100-113/EO-100-112	1
7. Critical tasks (2–3)	3

## **Critical Tasks**

1.

- ★ **Initiate a Manual Scram when MSL Rad Level reaches 3 x NFPB (T-103 SCC/RAD-4)**

### **Safety Significance**

Initiating a manual scram minimizes radiation exposure to the public by reducing primary system energy and radiation levels. Scramming the reactor reduces to decay heat levels the energy that the RPV may be discharging to and from the Reactor Building.

### **Consequences for Failure to Perform Task**

- |           |    |                                 |
|-----------|----|---------------------------------|
| SCC/RAD-4 | 1. | Transfer house loads            |
|           | 2. | Runback recirc to minimum       |
|           | 3. | Manually SCRAM at 60% core flow |

Failure to manually scram prior to closing MSIVs as directed in SCC/RAD-6, would result in an automatic reactor scram on high pressure, complicate T-103 mitigation strategies, and lead to higher radiation levels in the Secondary Containment.

LGS TRIP Step SCC/RAD-4 directs actions to rapidly, but in a controlled manner, shut down the reactor once it has been determined that the rise in main steam line radiation levels is not the result of Hydrogen Water Chemistry (HWC) System operation.

Subsequent steps in this section of the SCC/RAD flowpath direct closure of the main steam isolation valves (MSIVs). These actions should be performed, however, only after the reactor has been shutdown. Therefore, Step SCC/RAD-4 directs actions to rapidly shutdown the reactor.

The actions specified in Step SCC/RAD-4 are consistent with the guidance provided in GP-4, Rapid Plant Shutdown To Hot Shutdown. The phrase "Runback recirc to minimum" means Reactor Recirculation Pump speed should be runback to the low speed stop.

### **Indications/Cues for Event Requiring Critical Task**

Main Steam Line radiation levels exceed 3 times normal full power background as indicated by receipt of Annunciator 107 (I1), "MAIN STEAM LINE HIGH-HIGH RADIATION," and reading on MCR Instrument RR-41-1R603 (Panel 10C600).

### **Performance Criteria**

Transfer house loads, runback recirc to minimum, and place the Mode Switch in "Shutdown."

### **Performance Feedback**

Reactor shutdown as determined during execution of RC/Q Leg of T-101, "RPV Control."

**2.**

- **Close MSIVs after Manually Scramming the Reactor (T-103 SCC/RAD-6)**

**Safety Significance**

Closure of MSIVs minimizes radiation exposure to the public by limiting offsite release rates, and allows continued access to Reactor Enclosure areas for performance of actions specified in the TRIP procedures.

**Consequences for Failure to Perform Task**

LGS TRIP Step SCC/RAD-6 directs actions to ensure the main steam isolation valves (MSIVs) are closed, but only if they are not required to be open by T-112, Emergency Blowdown, Step EB-16.

The onset of gross fuel failure is indicated when main steam line radiation level reaches 3 times normal full power background and it has been determined that the rise in main steam line radiation levels is not the result of HWC System operation. When these conditions are reached, the MSIVs must be closed to permit continued access to plant areas and to minimize offsite release. Therefore, direction has been provided in Step SCC/RAD-6 to ensure the MSIVs are closed.

The MSIVs should not be closed if alternate RPV depressurization systems located downstream of the MSIVs are being used to emergency depressurize the RPV, as directed by Step EB-16 of T-112. It should be noted, however, that once the RPV has been depressurized, and provided the RPV can be maintained in a “depressurized” state (i.e., RPV pressure within 50 psig of suppression pool pressure), the MSIVs should be closed, to permit continued access to plant areas and to minimize offsite release.

**Indications/Cues for Event Requiring Critical Task**

Main Steam Line radiation levels exceed 3 times normal full power background as indicated by receipt of Annunciator 107 (I1), “MAIN STEAM LINE HIGH-HIGH RADIATION,” and reading on MCR Instrument RR-41-1R603 (Panel 10C600)  
AND reactor manually scrammed.

**Performance Criteria**

At least one MSIV handswitch in each isolable Main Steam Line is placed to close.

**Performance Feedback**

MSIV closed indication for each isolable Main Steam Line

### **3.**

#### **■ Emergency Depressurize RPV (T-112 EB-11)**

##### **Safety Significance**

RPV depressurization places the primary system in its lowest possible energy state, rejects heat to the suppression pool in preference to outside the containment, and reduces the driving head and flow of primary systems that are unisolated and discharging into the Reactor Building.

##### **Consequences for Failure to Perform Task**

The consequences of not depressurizing the RPV under conditions which require emergency RPV depressurization, would result in elevated offsite release rates and significantly challenge Reactor Building integrity.

LGS TRIP Step EB-11 directs actions to open all five Automatic Depressurization System (ADS) safety relief valves (SRVs).

The objective of T-112, Emergency Blowdown, is to depressurize the RPV as rapidly as possible within plant design limits and to maintain it in a “depressurized” state. Two separate aspects must be considered in deciding how these objectives are to be accomplished: the means for releasing the energy from the RPV and the capacity of the heat sink utilized to absorb this energy.

Depressurization of the RPV is most easily and rapidly performed by opening SRVs; thus instructions for operation of these valves are specified first, in preference to steps directing the use of other depressurization systems and mechanisms. Of the SRVs, those dedicated to the ADS function are the most reliable because of their qualifications, pneumatic supply systems, the design and operation of initiation circuitry, and the availability of control power. Additionally, the relative location of their discharge devices uniformly distributes the heat load around the suppression pool.

Concurrent opening of all five ADS valves is within analyzed plant design limits. Other steps in the TRIP procedures provide instructions for maintaining sufficient suppression pool heat capacity to accommodate simultaneous opening of all ADS valves at any RPV pressure.

The reference to LGS TRIP NOTE #5 informs operators that the RPV depressurization performed in accordance with this step may be conducted “regardless of the resulting cooldown rate,” since the need for the rapid depressurization of the RPV takes precedence over normal RPV cooldown rate limits.

##### **Indications/Cues for Event Requiring Critical Task**

An unisolable primary discharge is in progress and T-103 MSO Rad levels  
OR Temperatures exceeded in two or more areas, as determined by performance of T-290, “Instrumentation Available For T-103/SAMP-2.”

##### **Performance Criteria**

Open 5 ADS valves to emergency depressurize the RPV when an unisolable primary discharge is in progress, and T-103 MSO Rad levels or Temperatures exceeded in two or more areas.

### **Performance Feedback**

Verify ADS valves are open by observing red light open indication, acoustic monitor indications, lowering RPV pressure, and T-103 Radiation levels and Temperatures trending downward.

## Scenario Summary and Administration Instructions

The scenario may be terminated when RPV blowdown is in progress, RPV water level can be restored and maintained between +12.5" and +54" in accordance with T-101, and upon direction of the Chief Examiner

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> <li>■ Reset simulator to Scenario _____</li> <li>■ Take out of FREEZE and run scenario file _____, then ensure the following: <ul style="list-style-type: none"> <li>- Reactor Power is 100% with stable reactor water level</li> <li>- 1B RECW Pump in service</li> <li>- 1B Drywell Chiller in service</li> <li>- 0B MCR Chiller and B MCR HVAC in service</li> <li>- A Loop of Drywell Chilled Water supplying cooling to Recirc Pump Motor Air Coolers</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>■ Apply Information Tags on the following components: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>■ Ensure materials for applicants: <ul style="list-style-type: none"> <li>- Markup of ST-6-092-314-1 (complete through step 4.12.3)</li> <li>- Turnover sheet: <ul style="list-style-type: none"> <li>○ 100% power. _____ MWe</li> <li>○ ST-6-092-314-1 complete through step 4.12.3</li> <li>○ Unload and shutdown D14 D/G starting at step 4.12.4 of ST-6-092-314-1</li> </ul> </li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>■ Ensure the following malfunctions are loaded: <ul style="list-style-type: none"> <li>- MVI232F Rx Level Xmtr LT-42-1N080C Fails Low</li> <li>- MRP029A RPS Fails to Scram (Auto only)</li> <li>- VIC105B9 1A Recirc Pump Motor Hi Vib (Pump Imbalance)</li> <li>- MCU194 RWCU Leak with Auto Isolation Failure</li> <li>- MEG095 Auto Voltage Regulator Failure</li> <li>- XXXXXXXX 1A Recirc Pump ASD Controller Fails Upscale</li> <li>- MMS069 SSE Steam Outlet Valve Fails Closed</li> <li>- MED275C Loss of Safeguard Bus D134 (OBE Earthquake)</li> <li>- MRT001B Fuel Cladding Failure</li> <li>- MMS061A Inboard MSIV HV41-1F022A Fails Open</li> <li>- MMS062A Outboard MSIV HV41-1F028A Fails Open</li> <li>- MMS136 MSL Leak in Outboard MSIV Room (518)</li> <li>- MRE001A A SGTS Exhaust Fan Trip / Failure to Start</li> <li>- MRE001B B SGTS Exhaust Fan Trip / Failure to Start</li> <li>- MRE317 OB MSIV Room Leak to Room 510</li> <li>- RRE013 Door 423 Open B/T OB MSIV Room &amp; Corr 506</li> </ul> </li> </ul>



## Scenario Summary and Administration Instructions

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> <li>■ <b>Ensure</b> the following remote functions are loaded: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>■ <b>Ensure</b> the following overrides are loaded: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>■ <b>Ensure</b> the following triggers are built: <ul style="list-style-type: none"> <li>- <b>MRT001B</b> trigger for Fuel Cladding Failure, where the number of failed fuel pins is large enough to cause MSL radiation levels to exceed 3 x NFPB and T-103 MSO radiation levels to be exceeded in two or more areas</li> <li>- <b>MMS061A</b> trigger for Inboard MSIV HV41-1F022A failure, to actuate when MSIVs are taken to close after manually scrambling the reactor at &gt; 3 x NFPB</li> <li>- <b>MMS062A</b> trigger for Outboard MSIV HV41-1F028A failure, to actuate when MSIVs are taken to close after manually scrambling the reactor at &gt; 3 x NFPB</li> <li>- <b>MMS136</b> trigger for MSL Leak in Outboard MSIV Room (518), to actuate 30-45 seconds after failure of the 'A' MSL to isolate (MMS061A &amp; MMS062A)</li> <li>- <b>MRE001A</b> trigger for A SGTS Exhaust Fan Trip / Failure to Start, to actuate approximately 3 minutes after MSL Leak in OB MSIV Room (MMS136)</li> <li>- <b>MRE001B</b> trigger for B SGTS Exhaust Fan Trip / Failure to Start, to actuate approximately 3 minutes after MSL Leak in OB MSIV Room (MMS136)</li> <li>- <b>MRE317</b> trigger for OB MSIV Room Leak to Room 510, to actuate approximately 4 minutes after initiation of MSL Leak in OB MSIV Room (MMS136)</li> <li>- <b>RRE013</b> trigger for Door 423 Open between OB MSIV Room 518 &amp; Corridor 506, to actuate approximately 4 minutes after initiation of MSL Leak in OB MSIV Room (MMS136)</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>■ <b>Reset</b> any annunciators that should not be present</li> </ul>

## Scenario Summary and Administration Instructions

### INSTRUCTIONS FOR SIMULATOR OPERATOR

#### EVENT 1: Shutdown D14 D/G IAW ST-6-092-314-1

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Provide markup of ST-6-092-314-1 (complete through step 4.12.3)
	■ Respond to request for assistance as appropriate

#### EVENT 2: Rx Level Xmtr LT-42-1N080C Fails Low

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When D14 D/G has been unloaded and shutdown, and chief examiner ready to proceed, insert MVI1232F for Rx Level Xmtr LT-42-1N080C Fails Low, and MRP029A for RPS Failure to Auto Scram
	■ When AER operator dispatched to 10C609 to determine the trip unit in alarm and the status of Fuse C71A-F14C, as directed by ARC-MCR-108 B2, report that N080C RPV level instrument indicates tripped on 10C609 and that I&C assistance will necessary to determine the status of the fuse
	■ Respond to request for assistance as appropriate

#### EVENT 3: 1A Recirc Pump Motor Hi Vib (Pump Imbalance)

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once the Half SCRAM has been Manually inserted, Tech Specs addressed, and chief examiner ready to proceed, insert VIC105B9 for '1A' Recirc Pump Motor High Vibration resulting from pump imbalance
	■ '1A' Recirc pump motor vibration alarm will clear after ATC has reduced Rx power approximately 5-7% down to 93-95% RTP
	■ Respond to request for assistance as appropriate

#### EVENT 4: RWCU Leak with Auto Isolation Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once power has been reduced to clear the Recirc pump motor vibration alarm, Tech Specs addressed, and chief examiner ready to proceed, insert MCU194 for RWCU Leak with Auto Isolation Failure
	■ Respond to request for assistance as appropriate

## Scenario Summary and Administration Instructions

### EVENT 5: Main Generator Auto Voltage Regulator Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once RWCU has been manually isolated, Tech Specs addressed, and chief examiner ready to proceed, insert MEG095 for Main Generator Auto Voltage Regulator Failure with High Volts/Hertz condition</li> </ul>
	<ul style="list-style-type: none"> <li>Failure of the voltage regulator results in Volts/Hertz exceeding the alarm setpoint. Generator lockout will occur at 24,240 volts after 45 seconds and at 25,920 volts after 2 seconds. Limit High Volts/Hertz condition to a value that will not challenge the Generator lockout protective feature</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

### EVENT 6: 1A Recirc Pump ASD Controller Fails Upscale

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>Once Main Generator output voltage has been returned to normal using the DC Manual Regulator, and chief examiner ready to proceed, insert XXXXXX for 1A Recirc Pump ASD Controller Fails Upscale</li> </ul>
	<ul style="list-style-type: none"> <li>Limit '1A' Recirc pump speed increase to a reactor power equivalent of 101% RTP. The Recirc pump may reach the high speed limit before the crew understands the cause of the positive reactivity insertion. Manually simulate raising Recirc pump speed (button "pushes"), ensuring power does not exceed 101% in the event the crew does not recognize or fails to take action to place the pump in "Speed Hold"</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

### EVENT 7: Steam Seal Evaporator Steam Outlet Valve Fails Closed

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>When power is being maintained at or below the pre-transient power level, the plant stabilized, a determination made regarding whether power exceeded 3515 MWth, and chief examiner ready to proceed, insert MMS069 for Steam Seal Evaporator Steam Outlet Valve Fails Closed</li> </ul>
	<ul style="list-style-type: none"> <li>Respond to request for assistance as appropriate</li> </ul>

## Scenario Summary and Administration Instructions

### EVENT 8: OBE Earthquake with Loss of Safeguard Bus D134

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ Ensure plant equipment / systems aligned as specified above when coming out of freeze, to support Safeguard Bus D134 event</li> </ul>
	<ul style="list-style-type: none"> <li>■ When sealing steam pressure has been restored, the plant stabilized, Tech Specs addressed, and chief examiner ready to proceed, Inform crew that they are experiencing a seismic event (i.e., tremors felt in MCR, etc)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Shortly after experiencing the seismic event, insert MED275C for Loss of Safeguard Bus D134</li> </ul>
	<ul style="list-style-type: none"> <li>■ When Secondary Containment has been re-established, provide confirmation report of OBE Seismic Event as indicated by seismic instrumentation &gt; 0.075g (Information relevant to EAL classification)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

### EVENTS 9 & 10: MSL High Rad (Fuel Failure), 'A' MSL Failure to Isolate, MSL Break in OB MSIV Rm, Trip of Running SGTS Exhaust Fan with Failure of the STBY Fan to Start

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ When Secondary Containment has been re-established, one of the two running SGTS Exhaust Fans placed in STBY, Tech Specs addressed, and chief examiner ready to proceed, insert MRT001B for Fuel Cladding Failure</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ensure number of failed fuel pins simulated is large enough to cause MSL radiation levels to exceed 3 x NFPB and T-103 MSO radiation levels to be exceeded in two or more areas</li> </ul>
	<ul style="list-style-type: none"> <li>■ Drywell radiation levels remain below "Table F1 - Fuel Cladding Loss" values (Table LGS 3-1 Emergency Action Level Matrix)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Insert trigger MMS061A (Inboard MSIV HV-41-1F022A failure) and trigger MMS062A (Outboard MSIV HV-41-1F028A failure) prior to positioning MSIV handswitches to CLOSE after manually scrambling the reactor at &gt; 3 x NFPB</li> </ul>
	<ul style="list-style-type: none"> <li>■ Insert trigger MMS136 for MSL Leak in Outboard MSIV Room (Steam Tunnel), approximately 30-45 seconds after failure of the 'A' MSL to isolate</li> </ul>
	<ul style="list-style-type: none"> <li>■ Insert triggers MRE001A and MRE001B for SGTS Exhaust Fan Trip / Failure to Start, approximately 3 minutes after initiation of MSL Leak in OB MSIV Room (triggers will trip the running SGTS Exhaust Fan and prevent an Auto Start of the standby SGTS Exhaust Fan). Note that SGTS Fan configuration will not be known until conclusion of Event No. 8 (Loss of Safeguard Bus D134), when one of the two fans is placed in STBY after Auto starts of both fans following Manual Initiation of the Reactor Enclosure Secondary Containment Isolation Signal.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Insert trigger MRE317 for OB MSIV Room Leak to RWCU Isolation Valve Compartment Room 510, approximately 4 minutes after initiation of MSL Leak in OB MSIV Room</li> </ul>

## Scenario Summary and Administration Instructions

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> <li>■ Insert trigger RRE013 for Door 423 Open between OB MSIV Room 518 and Corridor 506, approximately 4 minutes after initiation of MSL Leak in OB MSIV Room</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pressures in the OB MSIV Room will increase to the .25 psid setpoint of the panel that relieves from the North wall of the Reactor Enclosure into the Turbine Building. This blowout panel discharges into the Turbine Enclosure at Elevation 253 ft., above one of the Feedwater Heater Rooms. This area communicates directly with the Condenser Compartment. Pressure in the Condenser Compartment will <u>NOT</u> increase to the setpoint of the Condenser Compartment blowout panel, therefore no steam will be directly discharged to the atmosphere outside the Turbine Building. In addition, the Steam Tunnel 0.5 psid panel that relieves directly to the Reactor Enclosure roof, will remain intact. Release Rates will remain below ALERT levels (T-104 entry unnecessary).</li> </ul>
	<ul style="list-style-type: none"> <li>■ Provide report from Rad Pro that numerous ARMs are alarming in the Turbine Building and that steam has been physically observed on 253' elevation above one of the Feedwater Heater Rooms</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ensure that PAM Wide Range Level Transmitters (LT-42-115A/B) are providing valid indication when using the following to determine elevated Reactor Enclosure temperature effects on RPV level instrumentation (<u>CAUTION preceeding T-103 Step SCC/T-1</u>):  SPDS/PMS RPV level validation (#071)  <u>OR</u> reference leg saturation limit curve (SPDS/PMS curve 044 <u>OR</u> T-103 Curve SCC/T-1)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ensure that indicated levels for PAMS Wide Range Level transmitters LT-42-115A/B (1R623A &amp; 1R623B), following insertion of triggers MMS136, MRE317, and RRE013, are above the Minimum Indicated Level (MIL) identified in the applicable T-291 Attachments, so that the ATC can determine they are both <u>Usable</u> based on the Instrumentation usage rule/criteria NOTE pertaining to Step 4.1.1 of T-291. Note that one or more areas of the instrument legs for both PAMS transmitters will be above the Maximum Run Temperatures (MRT) specified in T-291 according to information provided in Attachment 1 (pages 4,5,6) and Attachment 2 (pages 1 and 2). (<u>T-103, Step SCC/T-1</u>)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Respond to request for assistance as appropriate</li> </ul>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 1 Page \_\_\_\_ of \_\_\_\_

Event Description: Shutdown D14 D/G in accordance with ST-6-092-314-1

**Priority:** Unload and secure D14 D/G starting at Step 4.12.4

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Directs BOP to unload and secure D14 D/G per ST-6-092-314-1, "D14 Diesel Generator Slow Start Operability Test Run," continuing in the surveillance at Step 4.12.4</p> <p><b>Evaluator Note:</b> Once the diesel has been unloaded and secured, proceed to next event, Rx Level Transmitter LT-42-1N080C Fails Low with No RPS Signal</p>
	BOP	<p>Unloads and secures D14 D/G in accordance with ST-6-092-314-1:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>CAUTION</b></p> <p>Maintain KVARs less than 75% KW to prevent generator winding overheating  <b>AND</b> exceeding 0.8 rated power factor.</p> </div> <p>(Step 4.12.4) <b>LOWER</b> load to 1400 KW for 5 minutes by adjusting 165-DG501/CS (KW), SPEED GOVERNOR, at panel 1DC661  <b>AND MAINTAIN</b> reactive load below 1050 KVAR using 170-DG502/CS (KVAR), VOLTAGE REGULATOR.</p> <p>(Step 4.12.5) <b>IF</b> performing other plant testing  <b>AND</b> Safeguard Bus needs to be transferred  <b>THEN TRANSFER</b> Safeguard Bus per S92.6.A, Transfer of a 4KV Safeguard Bus from 101 Safeguard Feed to 201 Safeguard Feed and Vice Versa.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>CAUTION</b></p> <p>Avoid Diesel motorizing by keeping KW  <b>AND</b> KVAR above zero.</p> </div> <p>(Step 4.12.6) <b>LOWER</b> KW  <b>AND</b> KVAR to near zero (100 to 300).</p> <p>(Step 4.12.7) <b>WHEN</b> KW  <b>AND</b> KVAR are near zero (100-300)  <b>THEN OPEN</b> 152-11807, GENERATOR breaker.</p> <p>(Step 4.12.8) <b>PLACE</b> 101-DG501/CS, CONTROL, to "STOP"  <b>AND VERIFY</b> D/G shuts down.</p>

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## Scenario Summary and Administration Instructions

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	BOP	<p>(Step 4.12.9) <b>IF</b> 143-AX103 "Tap Changer" (SELECT), is in "MANUAL," <b>THEN PLACE</b> 143-AX103 "Tap Changer" (SELECT), to "AUTO," at panel 1AC661 <u>Otherwise</u>, <b>ENTER</b> N/A in this step.</p> <p>(Step 4.12.10) <b>IF</b> 143-BX103 "Tap Changer" (SELECT), is in "MANUAL," <b>THEN PLACE</b> 143-BX103 "Tap Changer" (SELECT), to "AUTO," at panel 2DC661 <u>Otherwise</u>, <b>ENTER</b> N/A in this step.</p>
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## Scenario Summary and Administration Instructions

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 2 Page \_\_\_\_ of \_\_\_\_

Event Description: Rx Level Transmitter LT-42-1N080C Fails Low with No RPS Actuation Signal

**Priority:** Insert a manual half scram on 'A' RPS side and enter appropriate Tech Spec

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from ATC of Annunciator 107 (H1), "REACTOR WATER BELOW LEVEL 3 TRIP"</p> <p>Receives report from ATC of Annunciator 108 B2, "AUTO SCRAM CHANNEL A2"</p> <p>Receives the following reports from ATC:</p> <ul style="list-style-type: none"> <li>• No Full SCRAM or Half SCRAM has occurred and all scram lights remain lit.</li> <li>• Power, pressure, and level are stable</li> <li>• Reactor Level +35" and no Rx low level condition exists</li> </ul>
	SRO	Determines an RPS level instrument has failed with no RPS actuation, and announces entry into OT-117, "RPS Failures"
	SRO	(OT-117, Step 3.2.1) Directs ATC to INSERT a Manual Half SCRAM on 'A' RPS side
	SRO	Dispatches I&C to investigate the RPS failure and contacts Work Management for support
	SRO	Initiates R.O.G "Significant Event Reporting" procedure due to unexpected Half SCRAM signal
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.3.1:</p> <p>(ACTION 3.3.1.a) With the number of OPERABLE channels in either trip system for one or more Functional Units less than the Minimum OPERABLE Channels per Trip System required by Table 3.3.1-1, within one hour for each affected functional unit either verify that at least one* channel in each trip system is OPERABLE or tripped or that the trip system is tripped, or place either the affected trip system or at least one inoperable channel in the affected trip system in the tripped condition.</p> <p><b>Evaluator Note:</b> Once the Half SCRAM has been Manually inserted and Tech Specs addressed, proceed to next event, '1B' Recirc Pump Motor High Vibration.</p>



## Scenario Summary and Administration Instructions

	ATC	Reports Annunciator 107 (H1), "REACTOR WATER BELOW LEVEL 3 TRIP" alarm and Annunciator 108 B2, "AUTO SCRAM CHANNEL A2" alarm
	ATC	Dispatches AER operator to 10C609 to determine the trip unit in alarm and the status of Fuse C71A-F14C, as directed by ARC-MCR-108 B2
	ATC	<p>When directed by SRO to INSERT a Manual Half SCRAM on 'A' RPS side:</p> <p>(OT-117, Step 3.2.1) Arms <u>AND</u> Depresses RPS Manual Half SCRAM pushbuttons A1 and A2</p> <p><u>AND</u> verifies 'A' RPS channel white lights extinguished</p> <p>Informs SRO that an 'A' RPS side Half SCRAM has been successfully inserted</p>
	ATC	Informs SRO that AER operator reports the N080C RPV level instrument indicates tripped on 10C609

## Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 3 Page \_\_\_\_ of \_\_\_\_

Event Description: '1A' Recirc Pump Motor High Vibration

**Priority:** Reduce power to clear Annunciator 111 D2

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from ATC of Annunciator 111 D2, "1A RECIRC PUMP MOTOR HI VIBRATION," and that Motor vibration levels are rising</p> <p>Informed by ATC that ARC-MCR-111 D2 direction is to reduce the speed of '1A' Recirc pump to clear the annunciator</p> <p>(ARC-MCR-111 D2, Step 1) Directs ATC to monitor vibrations and to reduce the speed of '1A' Recirc pump in accordance with GP5 Appendix 2 and RMSI, to clear the annunciator</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li><b>IF</b> Core Flow is <b>GREATER THAN</b> 60 Milb/hr, <b>THEN REDUCE</b> power as needed with flow until any of the following occur,  <ol style="list-style-type: none"> <li><b>Core Flow reaches 60 Milb/hr</b></li> <li>An <b>"APRM UPSCALE"</b> alarm occurs</li> </ol> <b>OTHERWISE</b> N/A this step. </li> <li><b>IF FLLLP</b> exceeds 1.0 <b>THEN FULLY INSERT</b> control rods from, "Rods required for Stability Rod Line" table to lower FLLLP to less than <b>OR</b> equal to 1.0, <b>OTHERWISE</b> N/A this step.</li> </ol> <p><b>Evaluator Note:</b> <i>Annunciator 111 D2 will clear after power has been reduced by approximately 7% (<math>\leq</math> 93% RTP).</i></p>

## Scenario Summary and Administration Instructions

	SRO	<p>References TS 3.4.1.3 for Recirc Loop Flow Mismatch:</p> <p>3.4.1.3 Recirculation loop flow mismatch shall be maintained within:</p> <ol style="list-style-type: none"> <li>5% of each other with core flow greater than or equal to 70% of rated core flow.</li> <li>10% of each other with core flow less than 70% of rated core flow.</li> </ol> <p>With the recirculation loop flows different by more than the specified limits, either of the following ACTIONS would be applicable:</p> <p>(ACTION 3.4.1.3.a) Restore the recirculation loop flows to within the specified limit within 2 hours, or</p> <p>(ACTION 3.4.1.3.b) Shutdown one of the recirculation loops within the next 8 hours and take the ACTION required by Specification 3.4.1.1.</p> <p><b><u>Evaluator Note:</u></b> <i>Once power has been reduced to clear the Recirc pump motor vibration alarm and Tech Specs addressed, proceed to next event, RWCU Leak with Auto Isolation Failure.</i></p>
	ATC	<p>Reports Annunciator 111 D2, "1A RECIRC PUMP MOTOR HI VIBRATION," and that Motor vibration levels are rising</p>
	ATC	<p>Monitors '1A' Recirc pump vibration levels</p> <p>(ARC-MCR-111 D2, Step 1) When directed by SRO, reduces the speed of '1A' Recirc pump in accordance with GP5 Appendix 2 and RMSI, to clear the annunciator:</p> <p><b>DEPRESS</b> 1A Recirc Pump Speed Lower Pushbutton(s) as required</p> <p><b><u>AND VERIFY</u></b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> <i>ASD controller manipulations will likely be performed from memory.</i></p>
	ATC	<p>(ARC-MCR-111 D2, Step 2) Depresses Pump Vibration Reset button at 10C602 for several seconds to reset the vibration switch (allows the annunciator to clear when below the setpoint)</p>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 4 Page \_\_\_\_ of \_\_\_\_

Event Description: RWCU Leak with Auto Isolation Failure

**Priority:** Manually isolate the leak from the MCR

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from BOP of Annunciator 112 (I3), "RWCU HI DIFF FLOW ISLN TIMER INITIATED" and that ARC direction is to isolate RWCU if timer does not clear after 30 seconds</p> <p>Receives report from BOP of rising offsite release rates at the Unit 1 South Stack</p> <p>(ARC-MCR-112-I3, Step 1) Recognizes failure of the leak to isolate and Directs BOP to Manually isolate RWCU</p>
	SRO	<p>Enters T-103, "Secondary Containment Control," if one or more RWCU Area ARMs is in alarm</p> <p><b><u>Evaluator Note:</u></b> Receipt of RWCU Area ARM alarms will be dependent upon timeliness of isolation.</p>
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.3.2 for Isolation Actuation Instrumentation</p> <p><b><u>AND</u></b> Recognizes that the required ACTIONS have been completed since both trip systems are already tripped and the isolation valves are already closed):</p> <p>(ACTION 3.3.2.c) With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within 1 hour and take the ACTION required by Table 3.3.2-1.</p> <p>RWCU <math>\Delta</math> Flow - High, Table 3.3.2-1 (ACTION 23): In OPERATIONAL CONDITION 1 or 2, verify the affected system isolation valves are closed within 1 hour and declare the affected system inoperable. In OPERATIONAL CONDITION 3, be in at least COLD SHUTDOWN within 12 hours.</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Determines that the following TRM Surveillance Requirement is applicable with respect to TRM 4.4.4 for RCS Chemistry:</p> <p>(SR 4.4.4.c) Continuously recording the conductivity of the reactor coolant, or, when the continuous recording conductivity monitor is inoperable, obtaining an in-line conductivity measurement at least once per:</p> <ol style="list-style-type: none"> <li>1. 4 hours in OPERATIONAL CONDITIONS 1, 2, and 3, and</li> <li>2. 24 hours at all other times.</li> </ol>
	SRO	<p>Dispatches I&amp;C to investigate failure of the RWCU Isolation Actuation Instrumentation and contacts Work Management for support</p> <p><b><u>Evaluator Note:</u></b> <i>Once RWCU has been manually isolated and Tech Specs addressed, proceed to next event, Main Generator Voltage Regulator Failure with Volts/Hertz Exceeding Alarm Setpoint.</i></p>
	BOP	<p>Reports Annunciator 112 (I3), "RWCU HI DIFF FLOW ISLN TIMER INITIATED" and that ARC direction is to isolate RWCU if timer does not clear after 30 seconds</p> <p>Reports rising offsite release rates at the Unit 1 South Stack</p>
	BOP	<p>(ARC-MCR-112-I3, Step 1) When directed by SRO, isolates RWCU by Manually closing HV-044-1F004 <u>AND</u> HV-044-1F105</p> <p>Informs SRO that isolation is successful as evidenced by Annunciator 112 (I3) clear and lowering offsite release rates at the Unit 1 South Stack</p> <p><b><u>Evaluator Note:</u></b> <i>Additional actions may be taken to close one or more of the following RWCU valves:</i></p> <p><i>HV-44-1F001</i></p> <p><i>HV-44-1F039</i></p> <p><i>HV-44-1F042</i></p> <p><i>Steps taken to manually isolate RWCU will likely be performed from memory:</i></p>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 5 Page \_\_\_\_ of \_\_\_\_

Event Description: Main Generator Voltage Regulator Failure with Volts/Hertz Exceeding Alarm Setpoint

**Priority:** Take manual action to lower and return generator output voltage to normal using the DC Manual Regulator

Time	Position	Applicant's Actions or Behavior
	SRO	<p><b>Evaluator Note:</b> Failure of the voltage regulator results in Volts/Hertz exceeding the alarm setpoint. Generator lockout will occur at 24,240 volts after 45 seconds and at 25,920 volts after 2 seconds. The high Volts/Hertz condition will be limited to a value that will not challenge the Generator lockout protective feature.</p> <p>Receives report from ATC/BOP of Annunciator 125 (D1), "1 GEN VOLT REG AUTO TRANSFER TO MANUAL"</p> <p>Receives report from ATC/BOP of Annunciator 125 (C4), "1 GEN HI VOLTS/HERTZ"</p> <p>Directs BOP to perform actions of ARC-MCR-125 D1 <b>AND</b> ARC-MCR-125 C4</p>
	SRO	Dispatches Electrical Maintenance to investigate failure of the voltage regulator and contacts Work Management for support
	SRO	<p>Notifies Transmission System Operator (TSO) and Power Team Generation Dispatcher that Main Generator voltage regulator is in Manual and provides expected duration of manual operation (15 minute notifications per ARC-MCR-125 D1)</p> <p><b>Evaluator Note:</b> Once generator output voltage has been returned to normal using the DC Manual Regulator, proceed to next event, '1A' Recirc Pump ASD Controller Fails Upscale.</p>

## Scenario Summary and Administration Instructions

	BOP	<p>(Actions from ARC-MCR-125 D1 <u>and</u> ARC-MCR-125 C4)</p> <p>(ARC-MCR-125 C4, Step 1)</p> <ul style="list-style-type: none"> <li>Verify high generator output voltage against frequency.</li> </ul> <p>(ARC-MCR-125 D1, Step 1)</p> <ul style="list-style-type: none"> <li>Verify the transfer to DC manual regulator has occurred as indicated on MCR panel 10C654.</li> </ul> <p>(ARC-MCR-125 C4, Step 2)</p> <p>(ARC-MCR-125 D1, Step 4)</p> <ul style="list-style-type: none"> <li>Adjust the DC Manual Regulator 70-G103/CS as necessary to maintain proper exciter field voltage.</li> </ul> <p>(ARC-MCR-125 C4, Step 3)</p> <p>(ARC-MCR-125 D1, Step 5)</p> <ul style="list-style-type: none"> <li>Inform SRO to notify the Transmission System Operator (TSO) and Power Team Generation Dispatcher that Main Generator voltage regulator is in Manual and provide expected duration of manual operation (15 minute notifications).</li> </ul> <p>(ARC-MCR-125 D1, Step 2)</p> <ul style="list-style-type: none"> <li>Determine cause of transfer as indicated by the following annunciators on 1AC854: <ul style="list-style-type: none"> <li>a) 1 Exciter Field Overcurrent, annunciator #12</li> <li>b) 1 Exciter Max Excitation Limit, annunciator #13</li> <li>c) 1 Generator Voltage Unbalanced, annunciator #18</li> <li>d) Unit protective relay energized.</li> </ul> </li> </ul> <p>(ARC-MCR-125 C4, Step 4)</p> <ul style="list-style-type: none"> <li>Investigate cause of high Volts/Hertz.</li> </ul> <p>(ARC-MCR-125 D1, Step 6)</p> <ul style="list-style-type: none"> <li>Record date and time in OPS logs that TSO and Power Team Generation Dispatcher were notified that Main Generator Voltage Regulator was in manual.</li> </ul>
	BOP	<p>Informs SRO that Annunciator 125 (C4), "1 GEN HI VOLTS/HERTZ" alarm is clear and generator output voltage has been returned to normal</p>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 6 Page \_\_\_\_ of \_\_\_\_

Event Description: 1A Recirc Pump ASD Controller Fails Upscale

**Priority:** Reduce 1B Recirc Pump speed to maintain Rx power at or below the initial pre-transient level AND place "1A" Recirc Pump ASD Controller in Speed Hold

Time	Position	Applicant's Actions or Behavior
	SRO	<p><b><u>Evaluator Note:</u></b> '1A' Recirc pump speed rises due to the ASD Controller failing high. The Recirc pump may reach its high speed limit before the crew understands the cause of the positive reactivity insertion.</p> <p>Receives report from ATC of rising Rx power and that '1A' Recirc pump speed is increasing</p>
	SRO	<p>Announces entry into OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion"</p> <p>(Step 2.1) Ensures ATC takes the Immediate Operator Action to reduce Rx power and maintain at or below initial pre-transient power level in accordance with GP5 Appendix 2, and RMSI, using the '1B' Recirc pump</p> <p>(Step 3.12.2) Directs ATC to <b>PLACE</b> '1A' Recirc pump ASD Controller in "Speed Hold"</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li>1. <b><u>IF</u></b> Core Flow is <b>GREATER THAN</b> 60 Mlb/hr, <b><u>THEN REDUCE</u></b> power as needed with flow until any of the following occur, C) <b>Core Flow reaches</b> <u>60 Mlb/hr</u> D) An "<b>APRM UPSCALE</b>" alarm occurs <b><u>OTHERWISE</u></b> N/A this step.</li> <li>2. <b><u>IF</u></b> FLLP exceeds 1.0 <b><u>THEN FULLY INSERT</u></b> control rods from, "Rods required for Stability Rod Line" table to lower FLLP to less than <b><u>OR</u></b> equal to 1.0, <b><u>OTHERWISE</u></b> N/A this step.</li> </ol>



## Scenario Summary and Administration Instructions

	SRO	<p>Determines if Rx power exceeded the licensed maximum rated thermal power of 3515 MWth due to the positivity reactivity insertion:</p> <p>(OT-104, Step 3.12.7) <b>IF</b> Rx power is &gt;100% 3515 MWth as indicated by Core Power And Flow Log,  <b>THEN REDUCE</b> Rx power to &lt;100% in accordance with GP-5 Appendix 2, Planned Rx Maneuvering Without Shutdown, Section 3.1, Reducing Rx Power  <b>AND</b> Reactor Maneuvering Shutdown Instructions.</p> <p><b>Evaluator Note:</b> <i>Power reduction to maintain power at or below initial pre-transient power level previously performed per Step 2.1 of OT-104.</i></p> <p>(Step 3.12.8) <b>CONSIDER</b> reportability of Rx power excursion  <b>AND REFER TO</b> Bases (OT-104 Bases)</p> <p>(Step 3.12.9) <b>DEMAND</b> a P-1 edit  <b>AND DETERMINE</b> whether a Thermal Limit violation exists.</p> <p><b>Evaluator Note:</b> <i>P-1 edit generated by ATC will show that Thermal Limits have <u>not</u> been violated).</i></p>
	SRO	<p>Dispatches I&amp;C to investigate failure of the '1A' Recirc pump ASD Controller and contacts Work Management for support</p>
	SRO	<p>References TS 3.4.1.3 for Recirc Loop Flow Mismatch:</p> <p>3.4.1.3 Recirculation loop flow mismatch shall be maintained within:</p> <ul style="list-style-type: none"> <li>a. 5% of each other with core flow greater than or equal to 70% of rated core flow.</li> <li>b. 10% of each other with core flow less than 70% of rated core flow.</li> </ul> <p>With the recirculation loop flows different by more than the specified limits, either of the following ACTIONS would be applicable:</p> <p>(ACTION 3.4.1.3.a) Restore the recirculation loop flows to within the specified limit within 2 hours, or</p> <p>(ACTION 3.4.1.3.b) Shutdown one of the recirculation loops within the next 8 hours and take the ACTION required by Specification 3.4.1.1.</p> <p><b>Evaluator Note:</b> <i>When power is being maintained at or below the pre-transient power level, the plant stabilized, and determination made regarding whether power exceeded 3515 MWth, proceed to next event, Steam Seal Evaporator Outlet Valve Fails Closed.</i></p>

## Scenario Summary and Administration Instructions

	ATC	<p><b><u>Evaluator Note:</u></b> '1A' Recirc pump speed rises due to the ASD Controller failing high. The Recirc pump may reach its high speed limit before the crew understands the cause of the positive reactivity insertion.</p> <p>Reports indications of rising Rx power and that '1A' Recirc pump speed is increasing</p>
	ATC	<p>(OT-104, Step 2.1) Takes Immediate Operator Action to reduce Rx power and maintain at or below initial pre-transient power level in accordance with GP5 Appendix 2, and RMSI, using the '1B' Recirc pump</p> <p><b>DEPRESS</b> 1B Recirc Pump Speed Lower Pushbutton(s) as required</p> <p><b><u>AND VERIFY</u></b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>
	ATC	<p>(OT-104, Step 3.13.2) <b>PLACES</b> the A Speed Hold/Reset" Selector Switch, SS-043-104A, "A SPEED HOLD", to "HOLD" at Panel 10C602</p> <p><b>VERIFIES</b> ARC-MCR-111 C3, "1A RECIRC ASD SPEED HOLD" in alarm</p> <p><b>VERIFIES</b> that 'HOLD' is displayed next to the "Speed Demand" indication under the Output Power and Motor on XI-043-103A</p>
	ATC	Generates P-1 edit for SRO to evaluate Thermal Limits

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 7 Page \_\_\_\_ of \_\_\_\_

Event Description: Steam Seal Evaporator Outlet Valve Fails Closed

**Priority:** Reduce power to maintain condenser vacuum AND restore Sealing Steam by opening gland seal regulator backup valve HV07-159

Time	Position	Applicant's Actions or Behavior
	SRO	<p><b><u>Evaluator Note:</u></b> Loss of sealing steam will cause condenser vacuum to degrade. Condenser Low Vacuum Annunciators 104 (E/F/G-5) may alarm if sealing steam is not restored in a timely manner. A rise in Offgas system flow will also be observed.</p> <p>Receives report from BOP of Annunciator 106 A3, "SEALING STEAM LO PRESS"</p> <p>Receives report from BOP of the following annunciators:</p> <ul style="list-style-type: none"> <li>• Annunciator 104 (E-5), "1A CONDENSER LO VACUUM"</li> <li>• Annunciator 104 (F-5), "1B CONDENSER LO VACUUM"</li> <li>• Annunciator 104 (G-5), "1C CONDENSER LO VACUUM"</li> </ul> <p>Receives report from ATC/BOP that Offgas system flow is elevated</p>
	SRO	<p>Announces entry into OT-116, "Loss of Condenser Vacuum," for unexpected drop in vacuum upon receipt of Annunciator(s) 104 (E/F/G-5)</p> <p>(Step 2.1) Ensures ATC takes the Immediate Operator Action to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, until Condenser Vacuum stops dropping, using the '1B' Recirc pump</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li>1. <b><u>IF</u></b> Core Flow is <b>GREATER THAN</b> 60 Mlb/hr, <b><u>THEN REDUCE</u></b> power as needed with flow until any of the following occur,  <ul style="list-style-type: none"> <li>E) <b>Core Flow reaches 60 Mlb/hr</b></li> <li>F) An <b>"APRM UPSCALE"</b> alarm occurs</li> </ul> <b><u>OTHERWISE</u></b> N/A this step. </li> <li>2. <b><u>IF FLLP</u></b> exceeds 1.0 <b><u>THEN FULLY INSERT</u></b> control rods from, "Rods required for Stability Rod Line" table to lower FLLP to less than <b><u>OR</u></b> equal to 1.0, <b><u>OTHERWISE</u></b> N/A this step.</li> </ol>

## Scenario Summary and Administration Instructions

	SRO	<p>Directs BOP to prioritize the actions in ARC-MCR-106 A3 for low sealing steam pressure</p> <p>Briefs crew on expected automatic actions for decreasing vacuum (i.e., Main Turbine Trip, RFPT Trip, MSIV Isolation, and Bypass Valve Closure), operational decision points, and scram actions with MSIVs closed</p>
	SRO	<p><b><u>Evaluator Note:</u></b> <i>During rapid power reductions, a Main Steam Line Rad Monitor Hi alarm may annunciate due to elevated hydrogen concentrations, requiring entry into ON-102.</i></p> <p>(OT-116, Step 3.1) <b><u>IF</u></b> Main Steam Line Rad Monitor Hi alarm annunciates,  <b><u>THEN ENTERS</u></b> T-103, "Secondary Containment Control"  <b><u>AND</u></b> ON-102, "Air Ejector Discharge or Main Steam Line High Radiation"  <b><u>AND EXECUTES</u></b> concurrently</p> <p>(ON-102, Step 2.2) <b><u>IF</u></b> Main Steam Line Rad Hi alarm annunciates,  <b><u>THEN DIRECTS</u></b> ATC to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, to maintain air ejector discharge radiation level below Hi Hi Alarm setpoint (ARC-MCR-109 G1)  <b><u>AND</u></b> Main Steam Line radiation level below 1.5x NFPB</p>
	SRO	<p>Monitors Power/Flow Map to verify plant is operating in an authorized region</p>
	SRO	<p>References TS 3.4.1.3 for Recirc Loop Flow Mismatch since power reduction performed using only the '1B' Recirc pump:</p> <p>3.4.1.3 Recirculation loop flow mismatch shall be maintained within:</p> <ul style="list-style-type: none"> <li>a. 5% of each other with core flow greater than or equal to 70% of rated core flow.</li> <li>b. 10% of each other with core flow less than 70% of rated core flow.</li> </ul> <p>With the recirculation loop flows different by more than the specified limits, either of the following ACTIONS would be applicable:</p> <p>(ACTION 3.4.1.3.a) Restore the recirculation loop flows to within the specified limit within 2 hours, or</p> <p>(ACTION 3.4.1.3.b) Shutdown one of the recirculation loops within the next 8 hours and take the ACTION required by Specification 3.4.1.1.</p> <p><b><u>Evaluator Note:</u></b> <i>When sealing steam pressure has been restored, the plant stabilized, and Tech Specs addressed, proceed to next event, OBE Earthquake with Loss of Safeguard Bus D134.</i></p>

## Scenario Summary and Administration Instructions

	ATC	<p>(OT-116, Step 2.1) Upon receipt of Annunciator(s) 104 (E/F/G-5), takes Immediate Operator Action to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, until Condenser Vacuum stops dropping, using the '1B' Recirc pump</p> <p><b>DEPRESS</b> 1B Recirc Pump Speed Lower Pushbutton(s) as required  <b>AND VERIFY</b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>
	ATC	<p>(ON-102, Step 2.2) <b>IF</b> Main Steam Line Rad Hi alarm annunciates, takes action to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, to maintain air ejector discharge radiation level below Hi Hi Alarm setpoint (ARC-MCR-109 G1)  <b>AND</b> Main Steam Line radiation level below 1.5x NFPB</p> <p><b>DEPRESS</b> desired 1B Recirc Pump Speed Lower Pushbutton as required  <b>AND VERIFY</b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>

## Scenario Summary and Administration Instructions

	BOP	<p><b><u>Evaluator Note:</u></b> <i>Loss of sealing steam will cause condenser vacuum to degrade. Condenser Low Vacuum Annunciators 104 (E/F/G-5) may alarm if sealing steam is not restored in a timely manner. A rise in Offgas system flow will also be observed.</i></p> <p>Reports Annunciator 106 A3, "SEALING STEAM LO PRESS"</p> <p>Reports the following annunciators:</p> <ul style="list-style-type: none"> <li>• Annunciator 104 (E-5), "1A CONDENSER LO VACUUM"</li> <li>• Annunciator 104 (F-5), "1B CONDENSER LO VACUUM"</li> <li>• Annunciator 104 (G-5), "1C CONDENSER LO VACUUM"</li> </ul> <p>Reports that Offgas system flow is elevated as indicated by FR-69-115 point 2</p>
	BOP	<p>(Actions from ARC-MCR-106 A3)</p> <ol style="list-style-type: none"> <li>1. Ensure HV-007-150 AND HV-001-111 open</li> <li>2. Verify steam seal evaporator shell side is pressurized, THEN throttle open steam seal evaporator steam outlet bypass valve HV-07-159 as needed to maintain sealing steam pressure</li> </ol> <p><b><u>Evaluator Note:</u></b> <i>Throttling open bypass valve HV-07-159 restores sealing steam pressure.</i></p>
	BOP	<p>Informs SRO that sealing steam pressure has been restored as indicated by the following:</p> <ul style="list-style-type: none"> <li>• Annunciator 106 A3, "SEALING STEAM LO PRESS" clear</li> <li>• Annunciator 104 (E-5), "1A CONDENSER LO VACUUM" clear</li> <li>• Annunciator 104 (F-5), "1B CONDENSER LO VACUUM" clear</li> <li>• Annunciator 104 (G-5), "1C CONDENSER LO VACUUM" clear</li> <li>• Offgas system flow lowering as indicated on FR-69-115 point 2</li> </ul>

## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 8 Page \_\_\_\_ of \_\_\_\_

Event Description: OBE Earthquake with Loss of Safeguard Bus D134

**Priority:** Manual Initiation of the Reactor Enclosure Secondary Containment Isolation Signal, verification of response, address TS

Time	Position	Applicant's Actions or Behavior
	SRO	<p>MCR experiences symptoms indicative of a seismic event (i.e., tremor felt in MCR, etc)</p> <p>Receives report from BOP of Annunciator 121 B3, "D134 LOAD CENTER XFMR BKR TRIP"</p> <p>Receives report from ATC that power, pressure, and level are stable</p> <p>Enters Transient Alarm Response</p> <p>Announces entry into E-D134, "Loss of D134 Safeguard Load Center"</p> <p>Announces entry into SE-5, "Earthquake"</p> <p>Announces entry into ON-111, "Loss of Secondary Containment"</p> <p>Announces entry into T-103, "Secondary Containment Control" (<u>ON-111 directs entry into T-103 at Step SCC-4</u>)</p> <p>Prioritizes actions of E-D134 and ON-111 over SE-5</p> <p><b><u>Evaluator Note:</u></b> <i>Equipment availability following loss of D134 will lead SRO to prioritize the Loss of Secondary Containment resulting from loss of the Reactor Enclosure (RE) Supply and Exhaust Fans, and the REECE Fans. A Refuel Floor Isolation on Low Zone <math>\Delta P</math>, with both SGTs Fans drawing from the Refuel Floor, will occur several minutes into the event. E-D134 does not address the Refuel Floor Isolation. Crew initial actions from E-D134 will focus on Manual Initiation of the Reactor Enclosure Secondary Containment Isolation Signal and subsequent verification of response. Trip of the '1A' Instrument Air Compressor will not challenge Instrument Air with '1B' Instrument Air Compressor in service. As such, start of the Backup Service Air Compressor will not be an immediate priority.</i></p>
	SRO	Determines that there are NO necessary actions to perform in T-103 for Loss of Secondary Containment resulting from loss of Safeguard Bus D134
	SRO	Receives confirmation report of OBE Seismic Event as indicated by seismic instrumentation > 0.075g

## Scenario Summary and Administration Instructions

SRO	<p>Directs BOP to determine equipment status per E-D134, Step 2.0, Initial Actions:</p> <p>(Step 2.1) <b>ENSURE</b> switches on 10C681 are positioned to Loop A to restore cooling to Recirc Pump Motor Coolers &amp; Equipment Drain Cooler <i>(Switches previously positioned to Loop A; unaffected by loss of D134)</i></p> <p>(Step 2.2) <b>VERIFY</b> 1BP210, "1B RECW Pump" (PUMP), running at 10C655 <i>(1BP210 previously I/S; unaffected by loss of D134)</i></p> <p>(Step 2.3) <b>START</b> 00K400, "Backup Service Air Compressor" per S15.1.B, Normal Starting of Instrument Air, Service Air, or Backup Service Air Compressors," to supply air to refuel floor inflatable seals.</p> <p>(Step 2.4) <b>PERFORMANCE</b> of S44.2.A, "Reactor Water Cleanup Shutdown" <i>(Steps for performing a RWCU Shutdown are not applicable; RWCU was isolated in Event No. 4.</i></p> <p>(Step 2.5) <b>ENSURE</b> adequate DW Area Unit Coolers in service to maintain DW pressure/temperature</p> <p>(Step 2.6) <b>ENSURE</b> 1BK111, "1B Drywell Chiller," in service at 10-C681 per S87.1.A, "Startup Of Drywell Chilled Water System" or S87.1.A App. 1 <i>(1BK111 previously I/S; unaffected by loss of D134)</i></p> <p>(Step 2.7) Consider performing S76.8.B for Initiation of Reactor Enclosure Manual Isolation  <b>AND ENSURE</b> SGTS maintains secondary containment pressure negative when Reactor Enclosure HVAC isolates</p> <p>(Step 2.9) <b>IF</b> required,  <b>THEN PLACE</b> 0B MCR Chiller  <b>AND</b> 'B' MCR HVAC in service per S78.6.A, "Swapping of the Control Enclosure HVAC System Loops and CECW Loops" <i>(0B MCR Chiller and 'B' MCR HVAC previously I/S; unaffected by loss of D134)</i></p> <p>Briefs crew on E-D134, and prioritizes the Loss of Secondary Containment:</p> <p>(E-D134, Step 2.7) Directs BOP to perform S76.8.B for Initiation of Reactor Enclosure Manual Isolation  <b>AND</b> to <b>ENSURE</b> SGTS maintains secondary containment pressure negative when Reactor Enclosure HVAC isolates</p>
SRO	<p>(E-D134, Step 2.8) <b>REFERS</b> to CY-LG-170-301 "Offsite Dose Calculation Manual"</p> <p><b>AND IMPLEMENTS</b> compensatory actions for North Stack as required</p>



## Scenario Summary and Administration Instructions

	SRO	<p>Requests I&amp;C/Electrical Maintenance to investigate loss of Safeguard Bus D134 and contacts Work Management for support</p> <p>References Tech Specs:</p> <ul style="list-style-type: none"> <li>3.7.2, Control Room Emergency Fresh Air Supply System</li> <li>3.8.3, Onsite Power Distribution-Operating</li> <li>3.6.5, Secondary Containment</li> </ul>
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.7.2 for CREFAS:</p> <p>(ACTION 3.7.2.a.1) With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition a.2, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p>
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.8.3 for Onsite Power Distribution-Operating:</p> <p>(ACTION 3.8.3.1.a) With one of the above required Unit 1 A.C. distribution system divisions not energized, reenergize the division within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p>
	SRO	<p>Determines that the following ACTION is applicable with respect to TS 3.6.5 for Secondary Containment:</p> <p>(ACTION 3.6.5.1.1) Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.</p> <p><b><u>Evaluator Note:</u></b> <i>When Secondary Containment has been re-established, one of the two running SGTS Exhaust Fans placed in STBY, and Tech Specs addressed, proceed to next event, Main Steam High Radiation (Fuel Failure), and MSL Line Break in the Main Steam / Feedwater Pipe Chase with Failure of the 'A' Main Steam Line to Isolate.</i></p>
	SRO	Exits T-103 and ON-111 when Secondary Containment has been re-established
	BOP	Reports Annunciator 121 B3, "D134 LOAD CENTER XFMR BKR TRIP" and loss of Safeguard Bus D134

## Scenario Summary and Administration Instructions

	BOP	Dispatches AER operator to determine status of Reactor Enclosure HVAC Fans
	BOP	<p><b><u>Evaluator Note:</u></b> Steps for starting the Backup Service Air Compressor are included below but may not be performed due to prioritization of crew actions.</p> <p>(E-D134, Step 2.3) <b>STARTS</b> 00K400, "Backup Service Air Compressor" per S15.1.B, Normal Starting of Instrument Air, Service Air, or Backup Service Air Compressors</p> <p>(S15.1.B, Step 4.3) <b>ENSURE</b> Compressor Control Switch for B/U S/A Compressor in "OFF" on 10C655</p> <p>(S15.1.B, Step 4.4) <b>ENSURE</b> B/U S/A Compressor crankcase is filled with oil near center of oil level gage (<i>performed in field</i>)</p> <p>(S15.1.B, Step 4.5) <b>PLACE</b> B/U S/A Compressor Local Control Switch in "OFF" (unloaded position) (<i>performed in field</i>)</p> <p>(S15.1.B, Step 4.6) <b>PLACE</b> Compressor Control Switch for B/U S/A Compressor to "ON" at 10C655</p> <p>(S15.1.B, Step 4.7) <b>IF</b> oil pressure is <b>not</b> &gt; 25 psig within 15 seconds,  <b><u>THEN PERFORM</u></b> the following:</p> <p style="padding-left: 40px;">(Step 4.7.1) <b>PLACE</b> B/U S/A Compressor Control Switch in "OFF"</p> <p style="padding-left: 40px;">(Step 4.7.2) <b>NOTIFY</b> Supervision</p> <p>(S15.1.B, Step 4.8) <b>VERIFY</b> cooling water flow indicated on B/U S/A Compressor flow glasses FG-10-045 and FG-10-046 (<i>performed in field</i>)</p>

## Scenario Summary and Administration Instructions

	BOP	<p>(Starting 00K400, "Backup Service Air Compressor" – <b>continued</b>)</p> <p>(S15.1.B, Step 4.9) <b>VERIFY</b> cooling water outlet temperature of B/U S/A Compressor does <b>not</b> exceed 120°F on temperature gauges TI-10-045(046) (<i>performed in field</i>)</p> <p>(S15.1.B, Step 4.13) <b>PLACE</b> B/U S/A Compressor Local Control Switch to either #1 <b>OR</b> #2 (loaded position) on panel 00C185 (<i>performed in field</i>)</p> <p>(S15.1.B, Step 4.17.2) With Unit 1 '1A' Instrument Air Compressor out of service, <b>POSITION</b> HSS-015-017, DISTRIBUTION, to supply Unit 1 on panel 20C655 (<i>performed on Unit 2 panel</i>)</p> <p>(S15.1.B, Step 4.22) <b>VERIFY</b> proper system pressure as follows, in Main Control Room:</p> <ul style="list-style-type: none"> <li>• Instrument Air (85 to 110 psig) on PI-15-120A(B) at 10C655</li> <li>• Service Air (80 to 107 psig) on PI-15-166 at 10C655</li> </ul>
	BOP	<p>(E-D134, Step 2.7) Performs S76.8.B, "Initiation of Reactor Enclosure or Refueling Floor Secondary Containment," to manually initiate the Reactor Enclosure Secondary Containment Isolation Signal, <b>AND ENSURES</b> SGTS maintains secondary containment pressure negative when Reactor Enclosure HVAC isolates:</p> <p><b>Evaluator Note:</b> <i>Initiation of Reactor Enclosure Secondary Containment Isolation Signal may be done in accordance with either Section 4.4, "Reactor Enclosure Secondary Containment Manual Pushbutton Isolation Initiation," OR Section 4.5, "Reactor Enclosure Secondary Containment Manual Low DP Isolation." Using Section 4.4 will cause closure of PCIG Compressor Suction and Discharge Valves. Actions to reset PCIG without resetting Reactor Enclosure HVAC are addressed in Step 4.4.4. Both sections have been provided below.</i></p> <p>(<b>S76.8.B, Section 4.4</b>, "Reactor Enclosure Secondary Containment Manual Pushbutton Isolation Initiation"):</p> <p>(S76.8.B, Step 4.4.2) <b>PLACE</b> HS-76-178A, HVAC ISOLATION A, <b>AND</b> HS-76-178B, HVAC ISOLATION B, to "ISOLATION" <b>AND DEPRESS</b> <b>AND RELEASE</b> pushbuttons at 10C681</p>

## Scenario Summary and Administration Instructions

BOP	<p>(S76.8.B for Manual Initiation of Rx Enclosure Secondary Containment Isolation Signal – <b>continued</b>)</p> <p>(S76.8.B, Step 4.4.3) <b>VERIFY</b> response of Reactor Enclosure Secondary Containment Isolation per S76.9.A, "Verification of Reactor Enclosure Or Refueling Floor Secondary Containment Isolation"</p> <p><b>AND</b> GP-8, "Primary and Secondary Containment Isolation Verification and Reset"</p> <p>(S76.9.A, Step 4.2.1) <b>VERIFY</b> Channel A  <b>AND</b> Channel B Reactor Enclosure Secondary Containment Isolation signals are initiated by assuring the following annunciators have alarmed</p> <p style="padding-left: 40px;">A REAC ENCL ISOLATION SIGNAL INITIATED  B REAC ENCL ISOLATION SIGNAL INITIATED</p> <p>(Step 4.2.2) <b>VERIFY</b> Channel A  <b>AND</b> Channel B Reactor Enclosure HVAC isolation valves have repositioned by assuring following annunciators have not alarmed</p> <p style="padding-left: 40px;">A REAC ENCL ISOLATION NOT COMPLETE  B REAC ENCL ISOLATION NOT COMPLETE</p> <p>(Step 4.2.4) <b>ENSURE</b> both SGTS FANS are running at 00C681</p> <p>(Step 4.2.5) <b>VERIFY</b> Reactor Enclosure secondary Containment pressure is drawn down  <b>AND</b> maintained from negative 0.25 to negative 0.35 inches W.G. on PDI-76-198A, "RX Encl/Outside" (DIV A)  <b>OR</b> PDI-76-198B, "Rx Encl/Outside" (DIV B), at 10C681</p> <p>(Step 4.2.6) <b>WHEN</b> Reactor Enclosure Secondary Containment pressure reaches negative 0.25 inches W.G.,  <b>THEN PLACE</b> HS-76-040A, "Exh Fan A,"  <b>OR</b> HS-76-013B, "Exh Fan B," to "STBY" at 00C681</p> <p>(Step 4.2.7) <b>PLACE</b> HS-76-013A, "Carbon Filter Isol A,"  <b>OR</b> HS-76-013B, "Carbon Filter Isol B," to "AUTO" at 00C681</p> <p>(Step 4.2.8) <b>VERIFY</b> RERS flow by checking PDI-76-189A(B), "Filter Differential Pressure" <math>\geq 3</math> inches W.G. at 10C681  (Normally lineup is one RERS Fan in AUTO and the other fan in STBY)</p> <p>Informs SRO that Secondary Containment pressure is negative 0.25 to negative 0.35 inches W.G.</p>
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## Scenario Summary and Administration Instructions

BOP	<p>(S76.8.B for Manual Initiation of Rx Enclosure Secondary Containment Isolation Signal – <b>continued</b>)</p> <p>(S76.8.B, Step 4.4.4) <b>PERFORM</b> GP-8.2 for HS-76-178A <b>AND</b> HS-76-178B as applicable to reset PCIG without resetting HVAC:</p> <p style="padding-left: 40px;">(GP-8.2, Step 3.1.9 for HS-76-178A) <b>PERFORM</b> the following for Instrument Gas valve isolation reset without resetting HVAC:</p> <p style="padding-left: 40px;">(Step 3.1.9.1) <b>PLACE</b> white handled handswitch on 10C601 to “OPEN” (any one will be sufficient)</p> <p style="padding-left: 40px;">(Step 3.1.9.2) <b>PLACE</b> HS-76-179A on 10C681 to “RESET”</p> <p style="padding-left: 40px;">(Step 3.1.9.3) <b>PLACE</b> HV-59-129A to “CLOSE”</p> <p style="padding-left: 40px;">(Step 3.1.9.4) <b>RETURN</b> HS-76-179A to “AUTO”</p> <p style="padding-left: 40px;">(Step 3.1.9.5) <b>RETURN</b> white handled handswitch to its initial position</p> <p style="padding-left: 40px;">(Step 3.1.9.6) <b>POSITION</b> PCIG valves as desired:</p> <ul style="list-style-type: none"> <li>• HV-59-101, “PCIG Compressor Suction” (INBOARD)</li> <li>• HV-59-129A, “PCIG ‘A’ Header Supply” (DRYWELL A)</li> </ul> <p style="padding-left: 40px;">(GP-8.2, Step 3.1.12 for HS-76-178B) <b>PERFORM</b> the following for Instrument Gas valve isolation reset without resetting HVAC:</p> <p style="padding-left: 40px;">(Step 3.1.12.1) <b>PLACE</b> HV-57-104 <b>OR</b> HV-57-114 to “OPEN”</p> <p style="padding-left: 40px;">(Step 3.1.12.2) <b>PLACE</b> HS-76-179B on 10C681 to “RESET”</p> <p style="padding-left: 40px;">(Step 3.1.12.3) <b>PLACE</b> handswitches for the following valves to “CLOSE”:</p> <ul style="list-style-type: none"> <li>• HV-59-102</li> <li>• HV-59-129B</li> <li>• HV-59-135</li> <li>• HV-59-131</li> </ul> <p style="padding-left: 40px;">(Step 3.1.12.4) <b>RETURN</b> HS-76-179B to “AUTO”</p> <p style="padding-left: 40px;">(Step 3.1.12.5) <b>RETURN</b> HV-57-104 <b>OR</b> HV-57-114 to its initial position.</p>
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**Scenario Summary and Administration Instructions**

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	BOP	<p>(S76.8.B for Manual Initiation of Rx Enclosure Secondary Containment Isolation Signal – <b>continued</b>)</p> <p>(S76.8.B, Step 4.4.4) <b>PERFORM</b> GP-8.2 for HS-76-178A <b>AND</b> HS-76-178B as applicable to reset PCIG without resetting HVAC:</p> <p>(GP-8.2, Step 3.1.12.6) <b>POSITION</b> PCIG valves as desired:</p> <ul style="list-style-type: none"><li>• HV-59-102, “PCIG Compressor Suction” (OUTBOARD)</li><li>• HV-59-129B, “PCIG ‘A’ Header Supply” (DRYWELL B)</li><li>• HV-59-135, “Prim Cont Relief Valves (SUPP POOL)</li><li>• HV-59-131, “PCIG TIP Purge Supply” (TIP PURGE)</li></ul>
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## Scenario Summary and Administration Instructions

BOP	<p>(S76.8.B for Manual Initiation of Rx Enclosure Secondary Containment Isolation Signal – <b>continued</b>)</p> <p><b>(S76.8.B, Section 4.5, "Reactor Enclosure Secondary Containment Manual Low DP Isolation"):</b></p> <p>(S76.8.B, Step 4.5.1) <b>IF</b> a Secondary Containment Low dP Isolation is to be initiated,  <b>THEN PERFORM</b> the following:</p> <p style="padding-left: 40px;">(Step 4.5.1.1) <b>PLACE</b> HS-76-179A, "'A' Rx Encl. HVAC Isln. Vlvs. Reset" (HVAC RESET A), to "RESET"</p> <p style="padding-left: 40px;">(Step 4.5.1.2) <b>PLACE</b> HS-76-179B, "'B' Rx Encl. HVAC Isln. Vlvs. Reset" (HVAC RESET B), to "RESET"</p> <p>(Step 4.5.5) <b>IF</b> "A" Channel Isolation is to be initiated,  <b>THEN ENSURE</b> HV-57-160A, "N2 Isol" (A), closed</p> <p>(Step 4.5.6) <b>IF</b> "B" Channel Isolation is to be initiated,  <b>THEN ENSURE</b> HV-57-160B, "N2 Isol" (B), closed</p> <p>(Step 4.5.7) <b>IF</b> "A" Channel Isolation is to be initiated,  <b>THEN ENSURE</b> HV-57-260A, "N2 Isol" (A), closed  <i>(performed by Unit 2 operator)</i></p> <p>(Step 4.5.) <b>IF</b> "B" Channel Isolation is to be initiated,  <b>THEN ENSURE</b> HV-57-260B, "N2 Isol" (B), closed  <i>(performed by Unit 2 operator)</i></p> <p>(Step 4.5.10) Place the following switches to TEST  <b>AND</b> channel to bypass the 50 minute Low <math>\Delta</math>P Isolation Timer:</p> <ul style="list-style-type: none"> <li>- HSXX-076-198A-5 at 0AC124 <i>(performed locally)</i></li> <li>- HSXX-076-198B-5 at 0BC124 <i>(performed locally)</i></li> </ul> <p>(Step 4.5.11) <b>IF</b> it is desired to equalize RERS fan run times  <b>THEN PERFORM</b> the following:</p> <ol style="list-style-type: none"> <li>1. PLACE HS-76-193B (FAN &amp; FILTER B) to "AUTO"</li> <li>2. PLACE HS-76-193A (FAN &amp; FILTER A) to "STBY"</li> </ol> <p>(Step 4.5.12) Place the following switches to TEST  <b>AND</b> channel to bypass the 50 minute Low <math>\Delta</math>P Isolation Timer:</p> <ul style="list-style-type: none"> <li>- HS-76-179A, HVAC RESET A</li> <li>- HS-76-179B, HVAC RESET B</li> </ul>
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## Scenario Summary and Administration Instructions

BOP	<p>(S76.8.B for Manual Initiation of Rx Enclosure Secondary Containment Isolation Signal – <b>continued</b>)</p> <p>(S76.8.B, Step 4.5.15) <b>VERIFY</b> response of Reactor Enclosure Secondary Containment Isolation per S76.9.A, "Verification of Reactor Enclosure Or Refueling Floor Secondary Containment Isolation"</p> <p><b>AND</b> GP-8, "Primary and Secondary Containment Isolation Verification and Reset"</p> <p>(S76.9.A, Step 4.2.1) <b>VERIFY</b> Channel A</p> <p><b>AND</b> Channel B Reactor Enclosure Secondary Containment Isolation signals are initiated by assuring the following annunciators have alarmed</p> <p style="padding-left: 40px;">A REAC ENCL ISOLATION SIGNAL INITIATED</p> <p style="padding-left: 40px;">B REAC ENCL ISOLATION SIGNAL INITIATED</p> <p>(Step 4.2.2) <b>VERIFY</b> Channel A</p> <p><b>AND</b> Channel B Reactor Enclosure HVAC isolation valves have repositioned by assuring following annunciators have not alarmed</p> <p style="padding-left: 40px;">A REAC ENCL ISOLATION NOT COMPLETE</p> <p style="padding-left: 40px;">B REAC ENCL ISOLATION NOT COMPLETE</p> <p>(Step 4.2.4) <b>ENSURE</b> both SGTS FANS are running at 00C681</p> <p>(Step 4.2.5) <b>VERIFY</b> Reactor Enclosure secondary Containment pressure is drawn down</p> <p><b>AND</b> maintained from negative 0.25 to negative 0.35 inches W.G. on PDI-76-198A, "RX Encl/Outside" (DIV A)</p> <p><b>OR</b> PDI-76-198B, "Rx Encl/Outside" (DIV B), at 10C681</p> <p>(Step 4.2.6) <b>WHEN</b> Reactor Enclosure Secondary Containment pressure reaches negative 0.25 inches W.G.,</p> <p><b>THEN PLACE</b> HS-76-040A, "Exh Fan A,"</p> <p><b>OR</b> HS-76-013B, "Exh Fan B," to "STBY" at 00C681</p> <p>(Step 4.2.7) <b>PLACE</b> HS-76-013A, "Carbon Filter Isol A,"</p> <p><b>OR</b> HS-76-013B, "Carbon Filter Isol B," to "AUTO" at 00C681</p> <p>(Step 4.2.8) <b>VERIFY</b> RERS flow by checking PDI-76-189A(B), "Filter Differential Pressure" <math>\geq 3</math> inches W.G. at 10C681</p> <p>(Normally lineup is one RERS Fan in AUTO and the other fan in STBY)</p> <p>Inform SRO that Secondary Containment pressure is negative 0.25 to negative 0.35 inches W.G.</p>
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## Scenario Summary and Administration Instructions

### Appendix D

### Required Operator Actions

Form ES-D-2

Op-Test No.: \_\_\_\_\_ Scenario No.: 4 Event No.: 9, 10 Page \_\_\_\_ of \_\_\_\_

Event Description: Main Steam Line High Radiation (Fuel Failure), 'A' MSL Break in Outboard MSIV Room, Failure of the 'A' MSL to Isolate, Trip of Running SGTS Exhaust Fan with Failure of the Standby SGTS Exhaust Fan to Auto Start (Recoverable), Emergency Depressurization

★ Contains action items to complete critical task 1, Initiate a Manual Scram when MSL Rad Level reaches 3 x NFPB (T-103 SCC/RAD-4)

● Close MSIVs after Manually Scramming the Reactor (T-103 SCC/RAD-6)

■ Emergency Depressurize RPV (T-112 EB-11)

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Receives report from BOP of rising MSL and SJAE Discharge radiation levels</p> <p>Receives report from BOP of the following annunciators:</p> <ul style="list-style-type: none"> <li>Annunciator 109 (F-1), "1 MAIN STEAM LINE DIVISION 1 RAD MONITOR HI/DOWNSCALE"</li> <li>Annunciator 109 (F-2), "1 MAIN STEAM LINE RAD MON C/D HI/DOWNSCALE"</li> <li>Annunciator 109 (G-1), "1 AIR EJECTOR OFFGAS DISCHARGE HI-HI RADIATION"</li> <li>Annunciator 003 (B-2), "UNITS 1 &amp; 2 CONTAINMENT LEAK DETECTION HI RADIATION"</li> </ul> <p>Enters Transient Alarm Response</p> <p>Announces entry into ON-102, "Air Ejector Discharge or Main Steam Line High Radiation"</p> <p>Announces entry into T-103, "Secondary Containment Control," for Outboard MSIV Room radiation level &gt; MNO value</p>

## Scenario Summary and Administration Instructions

	SRO	<p>(ON-102, Step 2.1) Directs ATC to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, to maintain air ejector discharge radiation level below Hi Hi Alarm setpoint (ARC-MCR-109 G1)</p> <p><b>AND</b> MSL radiation level below 1.5 x NFPB (ARC-MCR-109 F1/F2), using the '1B' Recirc pump</p> <p>Briefs crew that when MSL radiation levels reach 3 x NFPB, actions per T-103 are to transfer house loads, run Recirc to minimum, manually scram the unit at 60% core flow, enter T-101, and close the MSIVs</p> <p>RMSI:</p> <ol style="list-style-type: none"> <li><b>IF</b> Core Flow is <b>GREATER THAN</b> 60 Mlb/hr, <b>THEN REDUCE</b> power as needed with flow until any of the following occur, A) <b>Core Flow reaches</b> <u>60 Mlb/hr</u> B) An <b>"APRM UPSCALE"</b> alarm occurs <b>OTHERWISE</b> N/A this step.</li> <li><b>IF FLLLP</b> exceeds 1.0 <b>THEN FULLY INSERT</b> control rods from, "Rods required for Stability Rod Line" table to lower FLLLP to less than <b>OR</b> equal to 1.0, <b>OTHERWISE</b> N/A this step.</li> </ol>
	SRO	Monitors Power/Flow Map to verify plant is operating in an authorized region
	SRO	Verifies containment radiation increasing, and containment pressure and temperature not increasing
	SRO	(T-103 SCC-6) Directs BOP to monitor MSL Rad levels and implement T-290, "Instrumentation Available For T-103/SAMP-2"
	SRO	(T-103 SCC/RAD-3) Receives report from BOP of Annunciator 107 (I1), "Main Steam Line High-High Radiation," indicating MSL Rad levels have reached 3 x NFPB, and continues on to SCC/RAD-4
	SRO	(T-103 SCC/RAD-4) Directs BOP to transfer house loads
	SRO	(T-103 SCC/RAD-4) Directs ATC to runback '1B' Recirc pump to minimum
	★SRO	<p><b>(T-103 SCC/RAD-4) Directs ATC to manually scram the reactor at 60% core flow by placing the Mode Switch in Shutdown</b></p> <p><b>Evaluator Note:</b> Core flow may be above 60% with the '1B' Recirc pump at minimum speed ('1A' Recirc pump ASD Controller failed to maximum output). ATC will scram the plant when '1B' Recirc pump is at minimum if above 60% core flow.</p>
	SRO	(T-103 SCC/RAD-5) Announces entry into T-101, "RPV Control" and executes concurrently
	SRO	(T-101 RC-5) Ensures SCRAM / 13 KV transfer
	SRO	(T-101 RC-6) Directs ATC to insert SRMs and IRMs

## Scenario Summary and Administration Instructions

	SRO	(T-101 RC/Q-3) Announces exit of RC/Q of T-101
	SRO	(T-101 RC/L-4) Directs BOP to maintain RPV level between +12.5" <u>AND</u> +54" using HPCI/RCIC
	●SRO	<p><b>(T-103 SCC/Rad-6) Directs ATC to close MSIVs</b></p> <p><b>Evaluator Note:</b> 'A' MSL will fail to isolate after MSIV handswitches for HV-41-1F022A and HV-41-1F028A are placed to the CLOSE position.</p>
	SRO	(T-101 RC/P-11) Directs BOP to stabilize RPV pressure below 1096 psig using Non-ADS SRVs; establishes initial pressure band (i.e., 800-1000 psig, etc)
	SRO	Receives report from ATC that 'A' MSL failed to isolate
	SRO	<p>Receives report from BOP of numerous annunciators, including the following:</p> <ul style="list-style-type: none"> <li>Annunciator 107 (F-5), "DIV 1 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (G-5), "DIV 2 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (H-5), "DIV 3 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (I-5), "DIV 4 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 114 (C-3), "STEAM TUNNEL HI TEMP"</li> <li>Annunciator 002 (F-4), "REAC ENCL STEAM FLOODING DAMPERS PNL 10C245 TROUBLE"</li> <li>Annunciator 002 (F-5), "REAC ENCL STEAM FLOODING DAMPERS PNL 10C234 TROUBLE"</li> <li>Annunciator 109 (B-4), "REACTOR ENCL AREA HI RADIATION"</li> </ul> <p><b>Evaluator Note:</b> MSL Leak in Outboard MSIV Room (518), to actuate 30-45 seconds after failure of the 'A' MSL to isolate.</p>
	SRO	<p>Announces re-entry into T-103 on:</p> <ul style="list-style-type: none"> <li>Steam Leak Detection alarm conditions for DIV I, II, III and IV</li> <li>Outboard MSIV Room temperature &gt; MNO value in Table SCC-1 (143 °F)</li> <li>RE Steam Flooding Damper Actuation</li> </ul>
	SRO	<p>(T-103 SCC-3) Directs BOP/ATC to read RPV pressure <u>AND</u> level ONLY on:</p> <ul style="list-style-type: none"> <li>PAMS</li> <li>Fuel Zone Level</li> <li>EQ PMS parameters</li> </ul>

## Scenario Summary and Administration Instructions

	SRO	<p>(T-103 SCC-6) Directs BOP to hand off performance of T-290, "Instrumentation Available For T-103/SAMP-2," to the ATC</p> <p>(T-103 SCC-6, Note #12) Makes the determination that personnel should be evacuated from the Reactor Enclosure due to high temperature / radiation conditions and announces entry into SE-24, "Inplant Evacuations."</p>
	SRO	<p><b>Evaluator Note:</b> <i>Fire Alarm Annunciator 006 (F-5-U), "REAC I EL 283 NW AREA," will alarm due to the high temperature condition in the Outboard MSIV Room. The SRO may enter SE-8, "Fire," and have the Fire Brigade and Rad Pro respond to elevation 283 RE, NW Area. Alternately, the SRO may elect not to dispatch the Fire Brigade and Rad Pro due to the high radiation condition in the steam tunnel and receipt of steam leak detection annunciators for all four divisions.</i></p> <p>Receives report from ATC of Annunciator 006 (F-5-U), "REAC I EL 283 NW AREA"</p> <p>Dispatches Fire Brigade and Rad Pro to elevation 283 RE, NW Area</p>
	SRO	Directs BOP to place two loops of Suppression Pool Cooling in service
	SRO	Announces entry in to T-102, "Primary Containment Control," should Suppression Pool Temperature exceed 95 °F
	SRO	<p>Receives report from ATC that the running SGTS Exhaust Fan has tripped and that the standby SGTS Exhaust Fan did not Auto Start</p> <p>Directs ATC to manually start the standby SGTS Exhaust Fan</p> <p><b>Evaluator Note:</b> <i>Trip of the running SGTS Exhaust Fan and subsequent failure to start of the standby SGTS Exhaust Fan, will occur approximately 3 minutes after the MSL Leak in the Outboard MSIV Room is initiated. Attempt to manually start the standby SGTS Exhaust Fan will be successful.</i></p>
	SRO	(T-103 SCC-7) Executes SCC/T, SCC/RAD, AND SCC/L concurrently
	SRO	(T-103 SCC/T-1) Directs ATC to implement T-291, "Temperature Effects on Reactor Level Instrumentation" to determine available instrumentation
	SRO	<p>Addresses CAUTION preceeding Step SCC/T-1 to determine elevated Reactor Enclosure temperature effects on RPV level instrumentation:</p> <p>Determines that PAM Wide Range Level Transmitters (LT-42-115A/B) are providing valid indication based on use of:</p> <p>SPDS/PMS RPV level validation (#071)  <b>OR</b> reference leg saturation limit curve (SPDS/PMS curve 044 <b>OR</b> T-103 Curve SCC/T-1)</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Receives report from ATC that values recorded per T-290 indicate the following:</p> <ul style="list-style-type: none"> <li>• RWCU Isolation Valve Compartment Room 510 temperature &gt; MNO value in Table SCC-1 (114 °F)</li> <li>• RWCU HTX Area radiation level &gt; MNO value in Table SCC-1 (Hi Alarm)</li> <li>• RWCU Pump Area radiation level &gt; MNO value in Table SCC-1 (Hi Alarm)</li> <li>• Outboard MSIV Room temperature &gt; MSO value in Table SCC-2 (145 °F)</li> </ul> <p><b>Evaluator Note:</b> ATC may also report Area radiation levels for HPCI/RCIC &gt; MNO value in Table SCC-1 (Hi Alarm), depending on system usage for level control.</p>
	SRO	<p>Announces re-entry into T-103 on RWCU Pump and HTX Area radiation levels &gt; MNO value in Table SCC-1 (Hi Alarm)</p> <p><b>AND</b> RWCU Isolation Valve Compartment Room 510 temperature &gt; MNO value in Table SCC-1 (114 °F)</p>
	SRO	Receives report from BOP of Annunciator 109 B5, "TURBINE ENCL AREA HI RADIATION"
	SRO	Receives report from Rad Pro that numerous ARMs are alarming in the Turbine Building and that steam has been physically observed on 253' elevation above one of the Feedwater Heater Rooms
	SRO	Determines that entry into T-104, "Radioactivity Release Control," is not required based on North Stack offsite release rates lower than ALERT threshold value specified in Table LGS 3.1 Emergency Action Level Matrix
	SRO	<p>Briefs crew that inability to isolate the 'A' MSL has resulted in an unisolable steam leak in the Outboard MSIV Room that is discharging to the Turbine Building and also communicating directly with RWCU Isolation Valve Compartment Room 510. T-290 readings indicate that temperatures and radiation levels have exceeded T-103 Table SCC-1 MNO values in at least two Areas</p> <p><b>AND</b> Table SCC-2 MSO values for Outboard MSIV Room radiation (3 x NFPB) and temperature (145 °F) have already been exceeded.</p> <p>Briefs crew that an Emergency Depressurization will be performed on either temperature or radiation exceeding the MSO values in two or more areas.</p> <p><b>Evaluator Note:</b> SRO does not direct implementation of T-250, "Remote Manual Primary Containment Isolations," per Steps SCC/T-6 or SCC/RAD- 7, on the basis that the leak has been determined to be unisolable.</p>

## Scenario Summary and Administration Instructions

	SRO	<p>Receives report from ATC that values recorded per T-290 indicate the following:</p> <ul style="list-style-type: none"> <li>• RWCU Isolation Valve Compartment Room 510 temperature &gt; MSO value in Table SCC-1 (135 °F)</li> <li>• RWCU HTX Area radiation level &gt; MSO value in Table SCC-2 (10,000 mr/hr)</li> <li>• RWCU Pump Area radiation level &gt; MSO value in Table SCC-2 (10,000 mr/hr)</li> </ul> <p><b>Evaluator Note:</b> ATC may also report Area radiation levels for HPCI/RCIC &gt; MSO value in Table SCC-2 (10,000 mr/hr), depending on system usage for level control.</p>
	SRO	<p>(T-103, SCC/T-11 <b>AND/OR</b> SCC/RAD-13)</p> <p>Determines that temperatures <b>AND/OR</b> radiation levels have exceeded the MSO values for two or more Areas in Table SCC-2</p>
	SRO	<p>(T-103, SCC/T-12 <b>AND/OR</b> SCC/RAD-14)</p> <p>Announces entry into T-112, "Emergency Blowdown"</p>
	■SRO	<b>(T-112 EB-11) Directs BOP to open 5 ADS valves</b>
	SRO	<p>(T-101 RC/L-4) Once rapid depressurization has begun, directs BOP to restore and maintain level between +12.5" and +54" using Condensate</p>
	SRO	<p>Receives report from ATC that PAM Wide Range Level Transmitters LT-42-115A/B (1R623A &amp; 1R623B) are providing valid indication and are <u>Usable</u> based on performance of T-291, "Temperature Effects on Reactor Level Instrumentation"</p> <p><b>Evaluator Note:</b> Although areas of the instrument legs for both transmitters are above the Maximum Run Temperature (MRT), indicated RPV level for each transmitter is above the Minimum Indicated Level (MIL), satisfying the "Usable" criteria provided in T-291.</p> <p><b>Evaluator Note:</b> The scenario may be terminated when RPV blowdown is in progress, and RPV water level can be restored and maintained between +12.5" and +54" in accordance with T-101, RC/L-4.</p>

## Scenario Summary and Administration Instructions

ATC	<p>(ON-102, Step 2.1) Upon receipt of Annunciator(s) 109 (F1/F2/G1), takes action to reduce Rx power in accordance with GP5 Appendix 2, and RMSI, to maintain air ejector discharge radiation level below Hi Hi Alarm setpoint (ARC-MCR-109 G1)</p> <p><b>AND</b> MSL radiation level below 1.5 x NFPB (ARC-MCR-109 F1/F2), using the '1B' Recirc pump</p> <p><b>DEPRESS</b> 1B Recirc Pump Speed Lower Pushbutton(s) as required</p> <p><b>AND VERIFY</b> proper response:</p> <ul style="list-style-type: none"> <li>• LOWER 30 RPM</li> <li>• LOWER 5 RPM</li> <li>• LOWER 1 RPM</li> </ul> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>
ATC	<p>(T-103 SCC/RAD-4) Takes actions to run '1B' Recirc pump to minimum:</p> <p>Depress Recirc Runback Low Limit (28%) Pushbutton on 10C603</p> <p><b><u>Evaluator Note:</u></b> ASD controller manipulations will likely be performed from memory.</p>
★ATC	Places Mode Switch in SHUTDOWN at 60% core flow and informs SRO
ATC	<p>Inserts SRM/IRM:</p> <ul style="list-style-type: none"> <li>• Depresses 'Power On' pushbutton</li> <li>• Depresses 'Select' Pushbuttons for all SRM and IRM</li> <li>• Depresses 'Drive In' Pushbutton</li> <li>• Monitors SRM/IRM indication for verification of instruments driving in</li> </ul>

## Scenario Summary and Administration Instructions

	●ATC	<p><b>Places the MSIV handswitches to CLOSE:</b></p> <ul style="list-style-type: none"> <li>• PLACE HV-041-1F022A, 1A Main Steam Line Inboard Isol Vlv Handswitch" (INBOARD A), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F022B, 1B Main Steam Line Inboard Isol Vlv Handswitch" (INBOARD B), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F022C, 1C Main Steam Line Inboard Isol Vlv Handswitch" (INBOARD C), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F022D, 1D Main Steam Line Inboard Isol Vlv Handswitch" (INBOARD D), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F028A, 1A Main Steam Line Outboard Isol Vlv Handswitch" (OUTBOARD A), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F028B, 1B Main Steam Line Outboard Isol Vlv Handswitch" (OUTBOARD B), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F028C, 1C Main Steam Line Outboard Isol Vlv Handswitch" (OUTBOARD C), to "CLOSE" at panel 10C601</li> <li>• PLACE HV-041-1F028D, 1D Main Steam Line Outboard Isol Vlv Handswitch" (OUTBOARD D), to "CLOSE" at panel 10C601</li> </ul> <p><b><u>Evaluator Note:</u></b> 'A' MSL will fail to isolate after MSIV handswitches for HV-41-1F022A and HV-41-1F028A are placed to the CLOSE position.</p>
	ATC	<p>Informs SRO that 'A' MSL failed to isolate</p>
	ATC	<p>Takes over performance of T-290, "Instrumentation Available For T-103/SAMP-2," from the BOP (BOP responsible for RPV level and pressure control)</p>
	ATC	<p><b><u>Evaluator Note:</u></b> Fire Alarm Annunciator 006 (F-5-U), "REAC I EL 283 NW AREA," will alarm due to the high temperature condition in the Outboard MSIV Room. The SRO may enter SE-8, "Fire," and have the Fire Brigade and Rad Pro respond to elevation 283 RE, NW Area. Alternately, the SRO may elect not to dispatch the Fire Brigade due to the high radiation condition in the steam tunnel and receipt of steam leak detection annunciators for all four divisions.</p> <p>Reports Annunciator 006 (F-5-U), "REAC I EL 283 NW AREA," AND dispatches Fire Brigade and Rad Pro to elevation 283 RE, NW Area, at SRO's direction</p>



## Scenario Summary and Administration Instructions

	ATC	<p>Reports that the running SGTS Exhaust Fan has tripped and that the standby SGTS Exhaust Fan did not Auto Start</p> <p>Manually starts the standby SGTS Exhaust Fan per 76.8.A, "Manual Startup and Shutdown of SGTS":</p> <p>(76.8.A, Step 4.4) <b>PLACES</b> HS-76-040B(A), "SGTS Exhaust Fan" (EXH FAN B)(A), to "RUN" at 00C681 to start SGTS Exhaust Fan</p> <p><b>Evaluator Note:</b> <i>Action to manually start the standby SGTS Exhaust Fan will likely be performed from memory.</i></p> <p><i>Trip of the running SGTS Exhaust Fan and subsequent failure to start of the standby SGTS Exhaust Fan, will occur approximately 3 minutes after the MSL Leak in the Outboard MSIV Room is initiated. Attempt to manually start the standby SGTS Exhaust Fan will be successful.</i></p>
	ATC	<p>Informs SRO that the standby SGTS Exhaust Fan has been successfully placed in service</p>
	ATC	<p>Reports that values recorded per T-290 indicate the following:</p> <ul style="list-style-type: none"> <li>• RWCU Isolation Valve Compartment Room 510 temperature &gt; MNO value in Table SCC-1 (114 °F)</li> <li>• RWCU HTX Area radiation level &gt; MNO value in Table SCC-1 (Hi Alarm)</li> <li>• RWCU Pump Area radiation level &gt; MNO value in Table SCC-1 (Hi Alarm)</li> <li>• Outboard MSIV Room temperature &gt; MSO value in Table SCC-2 (145 °F)</li> </ul> <p><b>Evaluator Note:</b> <i>ATC may also report Area radiation levels for HPCI/RCIC &gt; MNO value in Table SCC-1 (Hi Alarm), depending on system usage for level control.</i></p>
	ATC	<p>Reports that values recorded per T-290 indicate the following:</p> <ul style="list-style-type: none"> <li>• RWCU Isolation Valve Compartment Room 510 temperature &gt; MSO value in Table SCC-1 (135 °F)</li> <li>• RWCU HTX Area radiation level &gt; MSO value in Table SCC-2 (10,000 mr/hr)</li> <li>• RWCU Pump Area radiation level &gt; MSO value in Table SCC-2 (10,000 mr/hr)</li> </ul> <p><b>Evaluator Note:</b> <i>ATC may also report Area radiation levels for HPCI/RCIC &gt; MSO value in Table SCC-2 (10,000 mr/hr), depending on system usage for level control.</i></p>

## Scenario Summary and Administration Instructions

	ATC	<p>Implements T-291, "Temperature Effects on Reactor Level Instrumentation":</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p>Instrumentation usage rule/criteria:</p> <p><b>IF</b> the entire instrument leg is below MRT  <b>OR</b> indicated RPV level is above MIL,  <b>THEN</b> RPV level indication may be used (less than MRT  <b>OR</b> greater than MIL: Usable).</p> <p><b>IF</b> any area of an instrument leg is above MRT,  <b>AND</b> indicated RPV level is below MIL,  <b>THEN</b> RPV level indication is <b>not</b> valid  <b>AND</b> should <b>not</b> be used (greater than MRT  <b>AND</b> less than MIL: <b>Not</b> usable).</p> </div> <p>(T-291, Step 4.1.1) Using Attachments 1 and 2, determines that areas of the instrument legs for PAM Wide Range Level Transmitters LT-42-115A/B (1R623A &amp; 1R623B), are above the Maximum Run Temperature (MRT), <b>AND</b> that indicated RPV level for these transmitters is above the Minimum Indicated Level (MIL)</p> <p>Informs SRO that PAM Wide Range Level Transmitters are <u>Usable</u> based on the Instrumentation usage rule/criteria NOTE pertaining to Step 4.1.1</p>
	BOP	<p>Reports rising MSL and SJAE Discharge radiation levels</p> <p>Reports the following annunciators:</p> <ul style="list-style-type: none"> <li>• Annunciator 109 (F-1), "1 MAIN STEAM LINE DIVISION 1 RAD MONITOR HI/DOWNSCALE"</li> <li>• Annunciator 109 (F-2), "1 MAIN STEAM LINE RAD MON C/D HI/DOWNSCALE"</li> <li>• Annunciator 109 (G-1), "1 AIR EJECTOR OFFGAS DISCHARGE HI-HI RADIATION"</li> <li>• Annunciator 003 (B-2), "UNITS 1 &amp; 2 CONTAINMENT LEAK DETECTION HI RADIATION"</li> </ul>
	BOP	<p>Monitors MSL Rad levels and implements T-290, "Instrumentation Available For T-103/SAMP-2," for Area Temperature Monitoring, Area Radiation Monitoring, and Area Water Level Monitoring</p>
	BOP	<p>Reports Annunciator 107 (I1), "Main Steam Line High-High Radiation," indicating that MSL Rad levels have reached 3 x NFPB</p>

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## Scenario Summary and Administration Instructions

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BOP	<p>Transfers house loads using S91.6.B Appendix 1, "Transferring House Loads To S/U Buses Hard Card"</p> <p>(Step 1.0) <b>PLACE</b> "BKR SYNC" switch, in "ON" for the selected 11 Aux Bus Start-up feeder breaker</p> <p>(Step 2.0) <b>ENSURE INCOMING</b> <b>AND</b> RUNNING voltmeter read less than 8 volts difference</p> <p>(Step 3.0) <b>CLOSE</b> the selected 11 Aux Bus Start-up feeder breaker</p> <p>(Step 4.0) <b>VERIFY</b> the associated Aux feeder BKR is tripped</p> <p>(Step 5.0) <b>PLACE</b> "BKR SYNC" switch in "OFF"</p> <p>(Step 6.0) <b>FLAG</b> 11 Aux Bus BKR control switches to correspond to actual Brk position.</p> <p>(Step 7.0) <b>PLACE</b> "BKR SYNC" switch in "ON". for the selected 12 Aux Bus Start-up feeder breaker</p> <p>(Step 8.0) <b>ENSURE INCOMING</b> <b>AND</b> RUNNING voltmeter read less than 8 volts difference</p> <p>(Step 9.0) <b>CLOSE</b> the selected 12 Aux Bus Start-up feeder BKR</p> <p>(Step 10.0) <b>VERIFY</b> the associated Aux feeder BKR is tripped</p> <p>(Step 11.0) <b>PLACE</b> "BKR SYNC" switch in "OFF"</p> <p>(Step 12.0) <b>FLAG</b> 12 Aux Bus BKR control switches to correspond to actual Brk position</p> <p>(Step 13.0) <b>WHEN</b> conditions permit, <b>THEN COMPLETE</b> the full system operating procedure as required</p>
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## Scenario Summary and Administration Instructions

	BOP	<p>Restores <u>AND</u> maintains RPV level between +12.5" AND +54" using HPCI/RCIC per SRO direction:</p> <p><b><u>Evaluator Note:</u></b> <i>Manual actions to initiate and control RCIC will likely be performed from memory.</i></p> <p><b>ARM <u>AND</u> DEPRESS</b> Manual Initiation push button to start RCIC</p> <ul style="list-style-type: none"> <li>Control injection using FIC-49-1R600, "RCIC Pump Discharge Flow Controller" (FL) to restore <u>AND</u> maintain RPV level between +12.5" AND +54"</li> </ul> <p><b><u>Evaluator Note:</u></b> <i>Manual actions to initiate and control HPCI will likely be performed from memory.</i></p> <p><b>ARM <u>AND</u> DEPRESS</b> Manual Initiation push button to start HPCI</p> <ul style="list-style-type: none"> <li>Control injection using FIC-55-1R600, "HPCI Pump Discharge Flow Controller" (FL) to restore <u>AND</u> maintain RPV level between +12.5" AND +54"</li> </ul>
	BOP	<p>Stabilizes RPV pressure below 1096 within established pressure band (i.e., 800-1000 psig, etc) by individually cycling <b>Non-ADS SRV</b> control switches located on 10C626, using the opening sequence specified on the control panel (ensures uniform distribution of heat to the suppression pool)</p>
	BOP	<p>Reports the following annunciators:</p> <ul style="list-style-type: none"> <li>Annunciator 107 (F-5), "DIV 1 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (G-5), "DIV 2 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (H-5), "DIV 3 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 107 (I-5), "DIV 4 STEAM LEAK DET SYS HI TEMP / TROUBLE"</li> <li>Annunciator 114 (C-3), "STEAM TUNNEL HI TEMP"</li> <li>Annunciator 002 (F-4), "REAC ENCL STEAM FLOODING DAMPERS PNL 10C245 TROUBLE"</li> <li>Annunciator 002 (F-5), "REAC ENCL STEAM FLOODING DAMPERS PNL 10C234 TROUBLE"</li> <li>Annunciator 109 (B-4), "REACTOR ENCL AREA HI RADIATION"</li> </ul> <p><b><u>Evaluator Note:</u></b> <i>MSL Leak in Outboard MSIV Room (518), to actuate 30-45 seconds after failure of the 'A' MSL to isolate.</i></p>
	BOP	<p>Hands off performance of T-290, "Instrumentation Available For T-103/SAMP-2," to ATC when directed by SRO</p>

## Scenario Summary and Administration Instructions

BOP	<p>Places Suppression Pool Cooling in service using S51.8.A Appendix 1 Hard Card:</p> <p>(S51.8.A Appendix 1, Step 1.1) <b>START</b> selected RHR Service Water loop per S12.1.A Appendix 1, "RHR Service Water System Startup Hardcard"</p> <p>(S12.1.A Appendix 1, Step 1.2) <b>PERFORM</b> the following:</p> <ul style="list-style-type: none"> <li>• <b>OPEN</b> HV-51-1F014A(B), HEAT EXCHANGER INLET</li> <li>• Throttle <b>OPEN</b> HV-51-1F068A(B) for 18 to 20 seconds</li> </ul> <p>(Step 1.3) <b>VERIFY</b> PI-51-105A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig</p> <p>(Step 1.4) <b>IF</b> desired,  <b>THEN PERFORM</b> the following to bypass the HI RAD  <b>AND/OR</b> HI Pump Discharge pressure trips:</p> <p style="padding-left: 40px;">(Step 1.4.1) <b>ENSURE</b> the required actions of ODCM Part 1 Control 3.1.1 have been met for the INOPERABLE RHRSW Radiation Monitor</p> <p style="padding-left: 40px;">(Step 1.4.2) <b>PLACE</b> HSS-12-002A(B), PUMP TRIP BYPASS, in "BYPASS"</p> <p>(Step 1.5) <b>IF</b> 'A' Loop pump (0A(C)-P506) is to be placed in service,  <b>THEN ENSURE</b> 0A-V543  <b>OR</b> 0C-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681</p> <p>(Step 1.6) <b>IF</b> 'B' Loop pump (0B(D)-P506) is to be placed in service,  <b>THEN ENSURE</b> 0B-V543  <b>OR</b> 0D-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681</p> <p>(Step 1.7) <b>START</b> 0A(B,C,D)P506, RHRSW PUMP</p> <p>(Step 1.8) <b>THROTTLE</b> HV-51-1F068A(B) to the maximum obtainable position without exceeding 11,000 gpm on FI-51-*R602A(B) while maintaining pump disch pressure (PI-12-001A-1(B)) between 75 psig to 85 psig</p> <p><i>(Steps repeated for subsequent RHRSW pump)</i></p> <p>(S51.8.A Appendix 1, Step 1.4) <b>START</b> 1A(B)P202, RHR Pump (PUMP)</p> <p>(Step 1.5) <b>OPEN</b> HV-51-1F024A(B), "RHR Pump Full Flow Test Return" (SUPP POOL CLG),  <b>AND MAINTAIN</b> flow indicated on FI-51-1R603A(B), "RHR Loop Flow," between 8000 to 8500 gpm</p> <p>(Step 1.6) <b>CLOSE</b> HV-C-51-1F048A(B), HEAT EXCH BYPASS</p> <p><i>(Steps repeated for subsequent loop)</i></p>
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## Scenario Summary and Administration Instructions

	BOP	Reports Annunciator 109 B5, "TURBINE ENCL AREA HI RADIATION"
	■BOP	<b>When directed to open all ADS valves, places PSV-41-1F013E, K, H, M, and S "AUTO-OPEN" control switches located on 10C626 to the "OPEN" position, and verifies valve function by acoustic monitors and lowering RPV pressure</b>
	BOP	<p>Restores and maintains RPV level between +12.5" and +54" using Condensate per S06.2.C U/1, "Removing the Reactor Feed Pumps From Service to a Standby Condition":</p> <p><b><u>Evaluator Note:</u></b> <i>The following manipulations will likely be performed from memory.</i></p> <p>(S06.2.C U/1, Step 4.5.2.5) <b><u>WHEN</u></b> RPV pressure is at <b><u>OR</u></b> below 410 psig, <b><u>THEN CONTINUE.</u></b></p> <p>(Step 4.5.2.6) <b>ENSURE</b> LIC-M1-1R600, "Reactor Level Controller" (MASTER, LV), set at 35 inches.</p> <p>(Step 4.5.2.7) <b>ENSURE</b> LIC-006-120, "Reactor Feed Pumps Bypass Cont Vlv" (PUMP BYPASS, LV), in "AUTO."</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p>LIC-006-120, "Reactor Feed Pumps Bypass Cont Vlv" (PUMP BYPASS, LV), output signal indication corresponds to position of HV-006-120, "RFP Byp Vlv" (i.e., 0% output is full closed, 100% output is full open)</p> <p>HV-006-120, "RFP Byp Vlv" position indication is available on screen FWLC_01, Process Overview, at FWLCS Operator Station.</p> </div> <p>(Step 4.5.2.8) <b><u>IF</u></b> LIC-006-120, "Reactor Feed Pumps Bypass Cont Vlv" (PUMP BYPASS, LV), is controlling RPV level <b><u>AND</u></b> HV-006-120, "Reactor Feedpump Bypass Valve," is fully open, <b><u>THEN THROTTLE</u></b> HV-006-108A(B,C), "1A(B,C) RFP Disch Vlv" (FEED, DISCH A(B,C)), at panel 10C651 as required, to maintain RPV level.</p> <p>(Step 4.5.2.9) <b><u>WHEN</u></b> HV-006-108A(B,C), "1A(B,C) RFP Disch Vlv" (FEED, DISCH A(B,C)), is no longer required to maintain RPV level <b><u>THEN ENSURE</u></b> HV-006-108A(B,C), "1A(B,C) RFP Disch Vlv" (FEED, DISCH A(B,C)), is closed at panel 10C651.</p>
		<b><u>Evaluator Note:</u></b> <i>The scenario may be terminated when RPV blowdown is in progress, and RPV water level can be restored and maintained between +12.5" and +54" in accordance with T-101, RC/L-4.</i>

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## Scenario Summary and Administration Instructions

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**POST SCENARIO:** Have the applicant in the CRS position identify the highest EAL classification for the combination of events experienced during the scenario.

Applicable classifications: **FS1**, **HA5**, and **RU3** based upon Table LGS 3-1 of EP-AA-1008 (Revision 20)

### **FS1:** Loss Two Barriers (SAE)

Loss of Primary Containment Barrier based on 3.d.3:

UNISOLABLE primary system leakage outside drywell resulting in Secondary Containment area temperatures or area radiation levels **> T-103 / SAMP Max Safe Op Value (MSO)**.

### **AND**

Loss of RCS barrier based upon criteria 2.d.1: UNISOLABLE Main Steam Line (MSL) Break.

### **AND**

Loss of RCS barrier based upon criteria 2.d.2.a: High MSL Flow and High Steam Tunnel Temperature alarms.

### **HA5:** Natural and Destructive Phenomena Affecting the Plant VITAL AREA (ALERT)

#### **EAL Threshold Values:**

1. a. Seismic event **>** Operating Basis Earthquake (OBE) as indicated by seismic instrumentation **> 0.075 g.**

### **AND**

- b. Confirmed by **EITHER:**
  - Earthquake felt in plant.
  - National Earthquake Center.

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## Scenario Summary and Administration Instructions

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**RU3:** Fuel Clad Degradation (UE)

**EAL Threshold Values:**

1. VALID Air Ejector discharge radiation monitor (RISH 26 1(2)K601A, B) **Hi-Hi alarm**.