Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

DETERMINING TEMPERATURE EFFECTS ON REACTOR LEVEL INSTRUMENTATION

JPM Number: LOJPM6756

REVISION NUMBER: 000

DATE: 6/23/21 ~~04/01/21~~ JAM 6/23/21

Developed By:	Instructor	6/01/21 Date
Validated By:	SME or Instructor	6/9/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

WH	1.	Task description and number, JPM description and number are identified.
WH	2.	Knowledge and Abilities (K/A) references are included.
WH	3.	Performance location specified. (in-plant, control room, simulator, or other)
WH	4.	Initial setup conditions are identified.
WH	5.	Initiating cues (and terminating cues if required) are properly identified.
WH	6.	Task standards identified and verified by SME review.
WH	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
WH	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure T-291 U/1 Rev: 20 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
WH	10.	Verify cues both verbal and visual are free of conflict.
WH	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
WH	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM	03/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Using T-291, Temperature Effects on Reactor Level Instrumentation, determine that the following RPV level instruments are **usable**:

- LI-42-1R606C (NR, 10C603)
- LR-42-1R615 (FZ, 10C601)

AND

the following RPV level instruments are **un-usable**:

- XR-42-1R623A (WR, 10C601)
- LR-42-1R608 (UR, 10C603)
- LI-42-1R605 (SR, 10C602)

IV. INITIAL CONDITIONS:

1. T-103 has been entered due to elevated temperature in the Unit 1 RWCU Isolation Valve Compartment.

2. An Equipment Operator is stationed in the Unit 1, AER with T-290, “Instrumentation Available for TRIPs and SAMPs.”

3. Fire brigade has been sent out and reports that the Unit 1, RWCU “1C” Pump Room door is hot to the touch and there are indications of a steam leak in the room.

4. Unit 1, RPV level is at -127 inches and steady.

V. INITIATING CUE:

1. The Equipment Operator in the Unit 1 AER reports that the temperature in the RWCU Isolation Valve Compartment 510/522 is 211 ° F and rising slowly. No other areas are above normal values.

2. You have been directed by the CRS to perform T-291 on Unit 1 and determine which affected Reactor level instruments are usable and which of the affected Reactor level instruments are **NOT** usable.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VI. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1	Candidate obtains current revision of T-291 Unit 1, Temperature Effects on Reactor Level Instrumentation. **CUE:** Provide copy of T-291 when candidate demonstrates knowledge of correct location of procedure.	Candidate demonstrates ability (actual or discuss) to locate the current revision of T-291.			
2	Candidate refers to T-291, Attachment 1 or Attachment 2 for a listing of instruments in the 510/522 Room affected by high reactor building temperature. **CUE:** If asked, report that the Equipment Operator in the AER reports 510/522 Room temperature is 212° F and rising slowly.	Candidate assesses temperature effects on the impacted RPV level instruments.			
Note on page 4 of T-291 informs user that if room #510 is inaccessible, then the user should assume the area is greater than MRT. IF the candidate asks whether the #510 room is accessible, respond that the room is accessible. **CUE**: The #510 room is accessible					
*3	Candidate determines if XR-42-1R623A (WR, 10C601) is usable or not usable.	Determines that XR-42-1R623A (WR, 10C601) is **not** usable.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
Evaluator Note: The candidate may indicate the Narrow Range Level Instrument, LI-42-1R606C, will indicate off scale low. It is considered usable as it will indicate correctly should RPV level recover.					
*4	Candidate determines if LI-42-1R606C (NR, 10C603) is usable or not usable.	Determines that LI-42-1R606C (NR, 10C603) **is** usable.			
*5	Candidate determines if LR-42-1R615 (FZ, 10C601) is usable or not usable.	Determines that LR-42-1R615 (FZ, 10C601) **is** usable.			
*7	Candidate determines if LR-42-1R608 (UR, 10C603) is usable or not usable	Determines that LR-42-1R608 (UR, 10C603) is **not** usable			
*8	Candidate determines if LI-42-1R605 (SR, 10C602) is usable or not usable	Determines that LI-42-1R605 (SR, 10C602) is **not** usable			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

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JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: TEMPERATURE EFFECTS ON REACTOR LEVEL INSTRUMENTATION

JPM Number: LOJPM6756 **Revision Number:** 000

Task Number and Title: 2000850501 Temperature Effects on Reactor Level Instrumentation

K/A Number and Importance: Generic 2.1.20 4.6/4.6

Safety Function (1-9) __N/A__

Admin Category (A1-4) _A1_

Level of Difficulty (1-5) _3_

Suggested Testing Environment: Simulator / Classroom

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): T-291, Temperature Effects on Reactor Level Instrumentation, Rev 20

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

Exelon Generation

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. T-103 has been entered due to elevated temperature in the Unit 1 RWCU Isolation Valve Compartment.
2. An Equipment Operator is stationed in the Unit 1, AER with T-290, “Instrumentation Available for TRIPs and SAMPs.”
3. Fire brigade has been sent out and reports that the Unit 1, RWCU Pump Room door is hot to the touch and there are indications of a steam leak in the room.
4. Unit 1, RPV level is at -127 inches and steady.

INITIATING CUE:

1. The Equipment Operator in the Unit 1 AER reports that the temperature in the RWCU Isolation Valve Compartment 510/522 is 211 °F and rising slowly. No other areas are above normal values.
2. You have been directed by the CRS to perform T-291 on Unit 1 and determine which affected Reactor level instruments are usable and which of the affected Reactor level instruments are **NOT** usable.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

DETERMINE DRYWELL VENTING PARAMETERS

JPM Number: LOJPM6755

REVISION NUMBER: 000

DATE: 6/23/21 ~~04/01/21~~ JAM 6/23/21

Developed By:	C. J. Bibb Instructor	6/01/21 Date
Validated By:	W. J. Hu SME or Instructor	6/9/21 Date
Reviewed By:	Jeffrey Miller Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Semeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

WH	1.	Task description and number, JPM description and number are identified.
WH	2.	Knowledge and Abilities (K/A) references are included.
WH	3.	Performance location specified. (in-plant, control room, simulator, or other)
WH	4.	Initial setup conditions are identified.
WH	5.	Initiating cues (and terminating cues if required) are properly identified.
WH	6.	Task standards identified and verified by SME review.
WH	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
WH	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure OT-101 Rev: 39 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
WH	10.	Verify cues both verbal and visual are free of conflict.
WH	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
WH	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

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D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	New JPM	04-01-21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Determine that containment venting is permissible and then calculate the minimum allowable Drywell pressure as value between 0.35 psig and 0.40 psig determined using OT-101 Attachment 6, “Drywell Venting Conditions.

IV. INITIAL CONDITIONS:

1. A loss of Drywell Cooling has resulted in Drywell temperature and pressure rising
2. Initial Drywell pressure was 1 psig and rising
3. Drywell pressure must be lowered
4. RR-26-0R600, "Containment Leak Detector" indicates steady at 115 cpm
5. OT-101, Att. 3, Loss of Drywell Cooling, steps 1-4 were unsuccessful.
6. Containment venting has been directed by the CRS per OT-101 Att. 3, Step 5.
7. Containment parameters are as follows:
    - Suppression Pool Pressure is 0.45 psig
    - Suppression Pool Air Space Temperature is 116°F
    - Drywell Pressure 1.3 psig
    - Drywell Temperature 135 °F

V. INITIATING CUE:

The CRS has directed you to determine if Drywell venting is permissible and determine the lowest permissible pressure per OT-101, Attachment 3 Loss of Drywell Cooling.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

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The JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VI. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
Provide the candidate with a copy of OT-101					
1.	*(OT-101 ATT 3, 5.1)* **DETERMINE** whether Drywell venting is permissible: Using attachment 5 **PERFORM** the following:	N/A			
2.	*(OT-101 ATT 3, 5.1.1)* **RECORD** S/P air temperature _____°F	Records 116°F from Cue sheet.			
3.	*(OT-101 ATT 3, 5.1.2)* **ROUND** S/P air temperature up to the next highest increment on Attachment 5 _____°F	Records 120°F on Attachment 5			
4.	*(OT-101 ATT 3, 5.1.3)* **RECORD** S/P pressure _____.	Records 0.45 psig from Cue sheet.			
5.	*(OT-101 ATT 3, 5.1.4)* **ROUND** S/P pressure down to the next closest increment on Attachment 5 _____.	Records 0.4 psig on Attachment 5			
*6.	*(OT-101 ATT 3, 5.1.5)* **PLOT** the S/P temperature and pressure rounded increments to determine S/P N2 mass: _____ N2 mass	Determines and records S/P mass as 8900 lbs			
7.	*(OT-101 ATT 3, 5.2)* Using attachment 6 **DETERMINE** the following:	N/A			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*8.	*(OT-101 ATT 3, 5.2.1)* **DETERMINE** the N2 mass line that is closest to but not greater than the N2 mass value from step 5.1.5: _____ N2 mass line	Examinee selects 8750 lbs line			
9.	*(OT-101 ATT 3, 5.2.2)* **PLOT** the intersecting point of D/W temperature and D/W pressure.	On Att. 6, point is plotted at intersection of 135°F Drywell Temp line and 1.3 psig Drywell Press. line.			
*10.	*(OT-101 ATT 3, 5.2.3)* **VERIFY** the D/W pressure/temperature intersecting point is below **and** on the safe side of the N2 mass line from step 5.2.1.	Determines that intersecting point is on the safe side of the Suppression Pool N2 mass curve line for 8750 lbs (next lowest value below 8900)			
*11.	*(OT-101 ATT 3, 5.2.5)* **IF** the plotted point is below and on the safe side of the N2 mass line, **THEN** D/W venting is permitted.	Determines D/W venting is permitted.			
12.	*(OT-101 ATT 3, 5.2.6)* **DETERMINE** the lowest D/W pressure venting pressure:	N/A			
13.	*(OT-101 ATT 3, 5.2.6.1)* **MOVE** the plotted D/W pressure and temperature point left along the D/W temperature line until the point intersects with the S/P N2 mass line.	N/A			
*14.	(*OT-101 ATT 3, 5.2.6.2)* **RECORD** the D/W pressure value from this intersecting point _____.	A value within the range of 0.35 psig to 0.4 psig is recorded.			

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
15.	*(OT-101 5.2.6.3)* D/W venting is permissible down to this D/W pressure value.	N/A			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

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JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: DETERMINE DRYWELL VENTING PARAMETERS

JPM Number: LOJPM6755 **Revision Number:** 000

Task Number and Title: 2000380501, Emergency Venting of Containment

K/A Number and Importance: G 2.1.25 IMP 3.9 / 4.2

Safety Function (1-9) __N/A__

Admin Category (A1-4) __1__ *(Admin JPMs only)*

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator

Alternate Path:☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): OT-101, High Drywell Pressure. Rev. 38

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE
INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. A loss of Drywell Cooling has resulted in Drywell temperature and pressure rising
2. Initial Drywell pressure was 1 psig and rising
3. Drywell pressure must be lowered
4. RR-26-0R600, "Containment Leak Detector" indicates steady at 115 cpm
5. OT-101, Att. 3, Loss of Drywell Cooling, steps 1-4 were unsuccessful.
6. Containment venting has been directed by the CRS per OT-101 Att. 3, Step 5.
7. Containment parameters are as follows:
    - Suppression Pool Pressure is 0.45 psig
    - Suppression Pool Air Space Temperature is 116°F
    - Drywell Pressure 1.3 psig
    - Drywell Temperature 135 °F

INITIATING CUE:

The CRS has directed you to determine if Drywell venting is permissible and determine the lowest permissible pressure per OT-101, Attachment 3 Loss of Drywell Cooling.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

REVIEW DRYWELL FLOOR DRAIN SUMP/EQUIPMENT DRAIN TANK LOGS AND DETERMINE COMPLIANCE WITH TS 3.4.3.2

JPM Number: LOJPM6708

REVISION NUMBER: 005

DATE: 6/23/21

Developed By:	Instructor	6/07/21 Date
Validated By:	SME or Instructor	6/9/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

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WH	3.	Performance location specified. (in-plant, control room, simulator, or other)
WH	4.	Initial setup conditions are identified.
WH	5.	Initiating cues (and terminating cues if required) are properly identified.
WH	6.	Task standards identified and verified by SME review.
WH	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
WH	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure ST-6-107-596-1 Rev: 29 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
WH	10.	Verify cues both verbal and visual are free of conflict.
WH	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
WH	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

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C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
Rev001	Revised to new template and to align with latest procedure revision.	06/22/16
Rev002	Revised to incorporate both RO and SRO requirements	9/21/17
Rev003	Cue sheet corrections	9/12/18
Rev004	Revised to meet current procedure revision	9/19/19
Rev005	Revised to remove the SRO portion.	03/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Review the data for Drywell Floor and Equipment Drain Tanks, determine that >2 gpm increase in leakage over a 24 hour period was exceeded on day 5. Recognize that Tech Spec 3.4.3.2; a 2 gpm increase in UNIDENTIFIED LEAKAGE over a 24-hour period, was exceeded

IV. INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 1 has been at 100% power for 179 days
3. FQRSH-61-112 is Operable

V. INITIATING CUE:

Shift Supervision directs you to perform a peer check review for a completed ST-6-107-596-1, “Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3”. Perform this review, document discrepancies, and Tech Spec concerns, if any.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

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The JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VI. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
1	Provide candidate with the following: • Individual Briefing Sheet • Completed ST-6-107-596-1, "Drywell Floor Drain Sump/ Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3" • Calculator	N/A			
2	Candidate reviews ST-6-107-596-1 for compliance	N/A			
3	*(Step 4.1.3)* FQRSH-61-112, (points 3 and 4 Hi alarm setpoints) have been determined available and FI-61-115, FLOOR, FL, and FI- 61-135, EQUIP, FL, are OPERABLE, therefore floor and equipment totalizer readings are available.	Candidate notes that FI-61-115, FLOOR, FL, and FI- 61-135, EQUIP, FL, are OPERABLE			
EVALUATORS NOTE: A math error has occurred on Attachment 2, Day 2. The candidate should identify the error however it will not change the outcome of the test and has no effect on actual drywell leakage.					
4	*(Attachment 2, Day 2 Log)* Total Leakrate is calculated by adding together each of the recorded values on Attachment 2, Table 1 (FI-61-115 Floor and FI-61-135 Equip) AND recorded as Total Leakrate (gpm) on Attachment 2, Table 1	Applicant verifies Total Leakrate calculations are for all Total Leakrate entries *(Candidate notes math error Day 2 Total Leakrate 1.3 gpm vice 2.3 gpm)*			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: Roleplay as unit supervisor and acknowledge applicant report.					
* 5	*(Attachment 2, Day 5 Log)* Perform the following at 08:00, 16:00, **AND** 00:00: **IF** Total Leakrate is ≤ 25 gpm, **AND** FI-61-115 is ≤ 5 gpm **AND** FI-61-115 increase is ≤ 2 gpm from previous 00:00 reading **THEN** ENTER SAT **OTHERWISE** ENTER UNSAT on Attachment 2, Table 1, **AND NOTIFY** SSV	Candidate identifies on Day 5 that the 0800 floor drain reading is now 3.9 gpm. This is an increase of >2 gpm over the last 24 hours. Applicant notes this should not have been marked SAT. Candidate notes that they would notify SSV as Tech Spec actions may be required			
* 6	Recognition that Tech Spec 3.4.3.2 Reactor coolant system leakage exceeds limits.	Candidate recognizes entry into TS 3.4.3.2, Reactor coolant system leakage shall be limited to 2 gpm increase in UNIDENTIFIED LEAKAGE over 24 – hour period has been exceeded			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

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

JPM Number: LOJPM6708 **Revision Number:** 005

Task Number and Title: 2990150101 Perform and Review Weekly Surveillance Logs

K/A Number and Importance: Generic 2.2.12 3.7/4.1

Safety Function (1-9) __N/A__

Admin Category (A1-4) __2__

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator/Classroom

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): NUREG 1123, Rev. 2 Supp. 1
ST-6-107-596-1, Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1,2,3, Rev. 29
LGS Unit 1 TS 3.4.3.2

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __20__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 1 has been at 100% power for 179 days
3. FQRSH-61-112 is Operable

INITIATING CUE:

Shift Supervision directs you to perform a peer check review for a completed ST-6-107-596-1, “Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3”. Perform this review, document discrepancies, and Tech Spec concerns, if any.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

AREA RAD MONITOR(s) FAIL DOWNSCALE

JPM Number: LOJPM6718

REVISION NUMBER: 003

DATE: ~~04/01/21~~ 6/23/21 JAM 6/23/21

Developed By:	C. J. Bihl Instructor	6/01/21 Date
Validated By:	[signature] SME or Instructor	6/9/21 Date
Reviewed By:	Jeffrey Wilson Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Bemeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

WH	1.	Task description and number, JPM description and number are identified.
WH	2.	Knowledge and Abilities (K/A) references are included.
WH	3.	Performance location specified. (in-plant, control room, simulator, or other)
WH	4.	Initial setup conditions are identified.
WH	5.	Initiating cues (and terminating cues if required) are properly identified.
WH	6.	Task standards identified and verified by SME review.
WH	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
WH	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure S27.1.A Rev: 21
Procedure S27.10.A Rev: 11
Procedure ARC-MCR-109 A-5 Rev: 2
Procedure _____ Rev: _____
Procedure _____ Rev: _____

WH	10.	Verify cues both verbal and visual are free of conflict.
WH	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
WH	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM is New	8/01/17
001	Corrected cue sheets	9/12/18
002	Revised for procedural changes	9/20/19
003	Revised to make this RO only version	03/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

The RO candidate identifies the following downscale ARMs including sensor location and actions required:

Channel	Sensor Location	Action
9	RHR Division II Room	Place ARM channel 9 in “ZERO” position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channel 9 in the Aux Equipment Room. Have HP install a potable ARM in the vicinity of the inoperable monitor.
30	Steam Separator Area	**Criticality ARMs** Place ARMs channels 30 and 33 in “ZERO” position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channels 30 and 33 in the Aux Equipment Room. Inform RP to perform ST-0-027-640-1
33	Pool Plug Laydown Area	

IV. SIMULATOR SETUP

N/A

V. INITIAL CONDITIONS:

1. Unit 1 is at 100% power.
2. MCR received the following alarm:
   - ARC 109 RAD A-5, Area Rad Monitors Downscale
3. No maintenance activities are currently being performed

VI. INITIATING CUE:

Shift Supervision directs you to identify which channel(s), channel sensor location(s) are in the downscale condition, and action(s) required for the given condition.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
Lead Evaluator (or designee) Notes: Provide Candidate with the following: • Individual Briefing Sheet, including Attachment #1 • ARC 109 RAD A-5, 1 AREA RAD MONITORS DOWNSCALE • S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms • S27.1.A, Operation Of The Area Radiation Monitoring System					
*1	[ARC 109 RAD A-5] Verify at Recorder RR-M1-1R600 which channel(s) (1-35) is in a downscale condition.	Candidate verifies channel 9, 30 and 33 from recorder are below downscale setpoint of .02 mr/hr.			
2	[ARC 109 RAD A-5] At Recorder RR-M1-1R600 press “ACK Alarm” key AND reset annunciator	ACK Alarm” key at Recorder RR-M1-1R600 pressed and annunciator reset.			
3	[ARC 109 RAD A-5] Refer to S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms	Candidate obtains S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms			
*4	[ARC 109 RAD A-5] **IF** two or more Fuel Pool criticality monitors are inoperable (channels 30, 31, 33), **THEN** have HP perform ST-0-027-640-1	Direct HP to perform ST-0-027-640-1			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
5	[S27.10.A 4.2] **IF** a high radiation alarm occurs, **AND** Radiation Protection has determined the alarm to be false **THEN USE** Attachment 1.	N/A			
6	[S27.10.A 4.3] **IF** downscale alarm occurs that is known to be caused by maintenance activities, **THEN CONSIDER** defeating the alarm per S27.1.A, Operation Of The Area Radiation Monitoring System, procedure.	No maintenance activities currently being performed per Initial Conditions			
7	[S27.10.A 4.3] **IF** other downscale alarm occurs, **THEN USE** Attachment 2.	Candidate references S27.10.A Attachment 2			
*8a	[S27.10.A Att #2] Identify applicable affected “Trip / SAMP ARMS “ ARM Channels: (1, 2, 8, **9**, 10, 11, 21, 22 For Either Unit 1 or 2) and take associated actions.	Candidate directs to place channel 9, in zero and hang EST (blue tag). Candidate directs RP to install a portable ARM in the vicinity of channel 9			
*8b	[S27.1.A Att #1] Identify applicable affected “Trip / SAMP ARMS” ARM Channels: (1, 2, 8, **9**, 10, 11, 21, 22 For either Unit 1 or 2) and determine sensor location.	RHR Division II Room Area			
*9a	[S27.10.A Att #2] Identify affected Criticality ARMs • **RIS 30-M1-*K600** • RIS 31-M1-*K600 • **RIS 33-M1-*K600** and take associated actions.	Candidate directs to place channels 30 and 33 in zero and hang EST (blue tags). Candidate informs RP to perform ST-0-027-640-1			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*9b	[S27.1.A Att #1] Identify affected Criticality ARMs • **RIS 30-M1-*K600** • RIS 31-M1-*K600 • **RIS 33-M1-*K600** and determine sensor locations	Channel 30: Steam Separator Area Channel 33: Pool Plug Laydown Area			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

NRC Answer Summary Page

As a minimum the following conditions should be referenced for the downscale ARMs

Channel	Location	Action
9	RHR Division II Room	Place ARM channel 9 in “ZERO” position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channel 9 in the Aux Equipment Room. Have HP install a potable ARM in the vicinity of the inoperable monitor.
30	Steam Separator Area	**Criticality ARMs** Place ARMs channels 30 and 33 in “ZERO” position in the Aux Equipment Room. Hang Equipment Status Tags (ESTs) (Blue Tag) on channels 30 and 33 in the Aux Equipment Room. Inform RP to perform ST-0-027-640-1
33	Pool Plug Laydown	

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: AREA RAD MONITOR(s) FAIL DOWNSCALE

JPM Number: LOJPM6718 **Revision Number:** 003

Task Number and Title: 2990090301 Apply Radiation and Contamination Safety Procedures
K/A Number and Importance: Generic 2.3.15 2.9/3.1

Safety Function (1-9) __N/A__

Admin Category (A1-4) __3__ *(Radiation Controls)*

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Classroom

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S27.1.A, Operation Of The Area Radiation Monitoring System, Rev 21
S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms, Rev 11
ARC 109 RAD A-5, 1 AREA RAD MONITORS DOWNSCALE, Rev 2

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __20__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 100% power.
2. MCR received the following alarm:
    - ARC 109 RAD A-5, Area Rad Monitors Downscale
3. Attachment #1 contains ARM current and last readings from recorder RR-M1-1R600
4. No maintenance activities are currently being performed

INITIATING CUE:

Shift Supervision directs you to identify which channel(s), channel sensor location(s) are in the downscale condition, and action(s) required for the given condition.

Channel	Location	Action

ATTACHMENT 1

Recorder RR-M1-1R600 last burst AND current values:

Channel	Reading from last burst print (mR/hr)	Readings following MCR alarm (mR/hr)
1	4.22	4.52
2	5.74	4.91
3	8.02	8.76
4	3.25	2.95
5	4.51	5.27
6	6.28	6.54
7	12.76	11.99
8	3.91	3.83
9	2.10	0.01
10	6.77	7.07
11	2.14	2.23
12	0.90	0.79
13	6.75	6.57
14	25.87	24.93
15	13.45	14.32
16	3.29	3.45
17	5.98	5.74
18	10.02	10.52
19	13.04	13.42
20	7.93	8.13
21	8.32	8.54
22	7.58	7.74
23	6.19	6.26
24	5.74	5.31
25	3.05	3.41
26	4.81	4.80
27	7.77	7.21
28	8.18	8.16
29	2.22	2.41
30	1.23	0.00
31	2.57	2.61
32	2.14	2.01
33	1.27	0.01
34	1.23	1.41
35	2.41	2.19

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

DETERMINATION OF ADEQUATE SHIFT STAFFING

JPM Number: LOJPM6757

REVISION NUMBER: 000

DATE: 6/23/21

Developed By:	Instructor	6/21/21 Date
Validated By:	SME or Instructor	6/9/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-JA-150 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure OP-LG-101-111 Rev: 8 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM.	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Determine that shift is below minimum staffing requirements for the following positions: Shift Manger, Shift Communicator, subsequently a SRO and Fire Safe Shutdown NLO.

Take corrective action to immediately replace the Shift Manager and Shift Communicator then within 2 hours staff the SRO and Fire Safe Shutdown positions per OP-LG-101-111.

IV. INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 2 is in OPCON 4 due to an emergent outage to replace a SRV
3. Today's date is 07/14
4. It is night shift 18:00 – 06:00
5. Initial shift staffing consists of the following individuals and their quals:

- Shift Manager (1)
  - SM
  - SRO
  - STA
- U1 CRS (1)
  - SRO
  - I/A
- U2 CRS (1)
  - SRO
  - SM
  - STA
- Floor Supervisor (1)
  - Non Licensed
  - Fire Safe Shutdown (FSSD) Qualified
- Reactor Operators (3)
  - RO
- Equipment Operators (9)
  - EO
  - 5 Equipment Operators are Fire Brigade Qualified

INITIATING CUE:

1. At 2100, an Equipment Operator (NLO) designated as Shift Communicator complains of symptoms resembling COVID-19 and is sent home.

2. At 2130, the Shift Manager learns of a family emergency at his home and must leave immediately.

Determine if staffing requirements for current operating modes are met and whether any corrective actions are required.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

V. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: **Provide Candidate with the following:** • JPM Briefing Sheet • OP-LG-101-111, Shift Staffing Requirements					
1.	Candidate reviews OP-LG-101-111, to determine shift staffing requirements.	N/A			
2.	Determine that shift staffing is in violation of minimum shift staffing requirements per OP-LG-101-111.	N/A			
EVALUATORS NOTE: • Shift Communicator NLO position should be immediately filled with a FSSD or Fire Brigade Member.					
*3.	**Shift Communicator** position is not filled	Determination made Equipment Operator (NLO) position is below min staffing.			
*3a.	[OP-LG-101-111 Step 4.1.2.3] States the fire brigade or FSSD may be less than the minimum requirements for a period not to exceed 2 hrs.	Determination made that action must be taken to restore the crew composition for the FSSD or Fire Brigade within 2 hours			
*3b.	Replace the Shift Communicator with another watch stander	Have 1 FSSD or Fire Brigade NLO assume the duties of Shift Communicator			
*3c.	Take action to restore minimum shift staffing for Non Licensed Operators (NLO) including FSSD and Fire Brigade	Perform operator call-in to get qualified NLO manned within 2 hours			

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: • With SM unable to perform duties, the SM position must be immediately filled. Otherwise shift is below minimum T.S. requirements.					
*4	**SM** position is not adequately filled.	Determination made that: SM position must be immediately filled which will place the SROs below min staffing per OP-LG-101-111 (Minimum required staffing is 3 SROs)			
*4a.	[OP-LG-101-111 Step 4.1.1.4] States except for Shift Manager, shift crew composition may be one less than minimum requirements for up to 2 hours.	Determination made that action must be taken to immediately fill the SM position.			
EVALUATORS NOTE: Action is required to staff the SM position and fill SRO positions					
*4b.	Immediately Fill the Shift Manager position	Have Unit 2 CRS replace Shift Manager and Assume the STA function. Unit 1 CRS assume oversight of both units.			
*4c.	Take action to restore minimum shift staffing for SROs	Perform operator call-in to get 2nd SRO position manned within 2 hours.			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: DETERMINATION OF ADEQUATE SHIFT STAFFING

JPM Number: LOJPM6757 **Revision Number:** 000

Task Number and Title: 3420140302 Manage the Shift Team

3430160302 Assure Adequate Personnel Coverage For All Plant Conditions In Accordance With Overtime Policy.

K/A Number and Importance: Generic 2.1.5 2.9 / 3.9

Safety Function (1-9) __N/A__

Admin Category (A1-4) __1__ **(Conduct Of Operations)**

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Classroom

Alternate Path:☐ Yes ☒ No **SRO Only**: ☒ Yes ☐ No **Time Critical**: ☐ Yes ☒ No

Reference(s): OP-LG-101-111, Shift Staffing Requirements Rev 5

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __30__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 2 is in OPCON 4 due to an emergent outage to replace a SRV
3. Today's date is 07/14
4. It is night shift 18:00 – 06:00
5. Initial shift staffing consists of the following individuals and their quals:
    - Shift Manager (1)
        - SM
        - SRO
        - STA
    - U1 CRS (1)
        - SRO
        - I/A
    - U2 CRS (1)
        - SRO
        - SM
        - STA
    - Floor Supervisor (1)
        - Non Licensed
        - Fire Safe Shutdown (FSSD) Qualified
    - Reactor Operators (3)
        - RO
    - Equipment Operators (9)
        - EO
        - 5 Equipment Operators are Fire Brigade Qualified

INITIATING CUE:

1. At 2100, an Equipment Operator (NLO) designated as Shift Communicator complains of symptoms resembling COVID-19 and is sent home.

2. At 2130, the Shift Manager learns of a family emergency at his home and must leave immediately.

Determine if staffing requirements for current operating modes are met and whether any corrective actions are required.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

DETERMINE ACCEPTABILITY OF INSTALLING FUEL POOL GATES

JPM Number: LOJPM6763

REVISION NUMBER: 004

DATE: 6/23/21 ~~04-01-21~~ JAM 6/23/21

Developed By:	Instructor	6/01/21 Date
Validated By:	SME or Instructor	6/9/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-15-J020 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure 1GP-6.1 Rev: 44 Procedure RT-1-053-850-0 Rev: 7 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____	_____
SME / Instructor	Date
_____	_____
SME / Instructor	Date
_____	_____
SME / Instructor	Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM is new	11/04/16
001	Revised to incorporate procedure revision	10/17/17
002	Revised to incorporate procedure revision and formatting changes	10/3/18
003	Revised to incorporate procedure revision	9/20/19
004	Revised to incorporate procedure revision	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Determine the heat transfer capability of the Fuel Pool Cooling System (4.44MW) is insufficient to dissipate the current Decay Heat Load (4.56 MW). Determine to wait to install gates or elect to install gates and place RHR fuel pool cooling (FPC) assist in service.

IV. SIMULATOR SETUP:

None

V. INITIAL CONDITIONS:

1. Unit 1 is in a Refueling Outage.
2. The reactor was shutdown 11 days ago
3. Refuel Floor Secondary Containment is established.
4. The only Fuel Pool Cooling available is the '2A' and '2B' FPC Pumps with the '2A' and '2B' FPC Heat Exchangers.
5. Reactor Engineering has determined the total decay heat load contained in the Spent Fuel Pools (SFP) to be the following:

Days after Shutdown	SFP Heat Load (cross tied) (MW)
9	4.77
10	4.66
11	4.56
12	4.47
13	4.40
14	4.33
15	4.27

VI. INITIATING CUE:

Shift Supervision directs you to perform 1GP- 6.1 step 3.12.11, Install Reactor Cavity/Spent Fuel Pool Gates.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: Provide the following to the Candidate: • 1GP-6.1, Rev 44, Shutdown Operations – Refueling, Core Alteration and Core Offloading Pages 95, 96 (Section 3.12.11) and page 133 (Attachment 8, "Verification of Adequate FPC Decay Heat Removal"). • Completed copy of RT-1-053-850-0, Attachment 9, Heat Transfer Capability of Fuel Pool Cooling Systems performed on 3/19/16. • Calculator • **Answer Rounding** – Students may round answers provided the rounding does not affect the outcome of the JPM.				
* 1	[1GP6.1 step 3.12.11.1] **OBTAIN** the total decay heat load contained in the spent fuel pools.	Candidate determines the total heat load for day 11 of the refueling outage to be **4.56 MW** from Initial Conditions.			
2	[1GP6.1 step 3.12.11.2] **RECORD** the spent fuel pool decay heat load on step 1 of Attachment #8	Candidate records on 1GP6-1 Attachment #8 Decay Heat Load = 4.56 MW			
3	[1GP6.1 step 3.12.11.3] **DETERMINE** the number of Fuel Pool Cooling Water Pumps **AND** Heat Exchangers that are available	Candidate determines the 2A and 2B Fuel Pool Cooling Pumps with the 2A and 2B FPC Heat Exchangers are available from Initial Conditions.			
* 4	[1GP6.1 step 3.12.11.4] **RECORD** the heat transfer capability shown on Attachment 9 of RT-1-053-850-0 for available FPC Pumps **AND** Heat Exchangers on Step 2 of Attachment #8.	Candidate determines from Attachment #9 of RT-1-053-850-0 the Heat Transfer Capability of the Unit 2 'A' and 'B' FPC Pumps/HTXCH to be **15.1540845 BTU/hr**			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
5	[1GP6.1 step 3.12.11.5] **VERIFY** that the heat transfer capability of the Fuel Pool Cooling System is greater than the decay heat load in the spent fuel pools.	Candidate determines the heat transfer capability of the FPC system using 1GP-6-1, Attachment 8 $15.1540845 \times 10^6 \frac{BTU}{Hr} \times 1 \frac{MW}{3.413 \times 10^6 \frac{BTU}{HR}}$ = 4.44 MW			
*6	[1GP6.1 step 3.12.11.6] **IF** the heat transfer capability of the Fuel Pool Cooling System is less than the decay heat load in the spent fuel pools, **THEN PERFORM** one of the following:	Candidate determines that 4.4 MW (heat transfer capability of the FPC system) is < (less than) the 4.56 MW (decay heat load) **4.44 MW < 4.56 MW**			
*7	[1GP6.1 step 3.12.11.6] **WAIT** to install Reactor Cavity/Spent Fuel Pool Gates until decay heat load in the spent fuel pool is less than or equal to the heat transfer capability of the fuel pool cooling system. **OR** **INSTALL** the Reactor Cavity/Spent Fuel Pool Gates **AND PLACE** RHR FPC Assist in service per S51.8.G RHR System Back Up To Fuel Pool Cooling.	Candidate determines to wait until decay heat load in the spent fuel pool is less than or equal to the heat transfer capability of the fuel pool cooling system. OR Candidate determines to install gates and place RHR FPC Assist in service.			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: DETERMINE ACCEPTABILITY OF INSTALLING FUEL POOL GATES

JPM Number: LOJPM6763 **Revision Number:** 004

Task Number and Title: 2035010401 Monitor Fuel Pool Cooling Operation

K/A Number and Importance: G2.1.40 2.8/3.9

Safety Function (1-9) __N/A___

Admin Category (A1-4) __1___ **(Conduct of Operations)**

Level of Difficulty (1-5) ___5___

Suggested Testing Environment: Classroom

Alternate Path:☐ Yes ☒ No **SRO Only**: ☒ Yes ☐ No **Time Critical**: ☐ Yes ☒ No

Reference(s): RT-1-053-850-0, Heat Transfer Capability of Fuel Pool cooling Systems Rev 7

1GP6.1, Shutdown Operations, Refueling, Core Alteration and Core Offloading Rev 44

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is in a Refueling Outage.
2. The reactor was shutdown 11 days ago
3. Refuel Floor Secondary Containment is established.
4. The only Fuel Pool Cooling available is the '2A' and '2B' FPC Pumps with the '2A' and '2B' FPC Heat Exchangers.
5. Reactor Engineering has determined the total decay heat load contained in the Spent Fuel Pools (SFP) to be the following:

Days after Shutdown	SFP Heat Load (cross tied) (MW)
9	4.77
10	4.66
11	4.56
12	4.47
13	4.40
14	4.33
15	4.27

INITIATING CUE:

Shift Supervision directs you to perform GP- 6.1 step 3.12.11, Install Reactor Cavity/Spent Fuel Pool Gates.

ATTACHMENT 9
Fuel Pool System Heat Transfer Capability Summary

Page 1 of 1

NOTE

1. The heat transfer capabilities specified on Tables 1 through 3 are only valid for uniform train alignments (i.e., "A" Fuel Pool Water Pump/ "A" Fuel Pool Heat Exchanger).
2. The heat transfer capabilities were determined at a Fuel Pool Water temperature of 140° F
   AND Service Water temperature of 93° F. The resultant capabilities may be used to satisfy the requirements of Tech Spec 3.9.11.1 for alternate decay heat removal.
3. The values reported in Tables 1 through 3 may be used to verify adequate decay heat removal capability for Spent Fuel Pool inventory.
4. The heat transfer capabilities reported in Tables 1 through 3 are considered conservative because the calculations were performed assuming the maximum anticipated Service Water inlet temperature to the Fuel Pool Cooling Heat Exchangers.
5. **IF** operating conditions allow for use of Unit 1
   AND Unit 2 Fuel Pool Cooling System trains,
   THEN the total heat transfer capability is the sum of the capabilities of the Unit 1
   AND Unit 2 equipment alignments selected.

	Heat Transfer Capability ($*10^6$ BTU/hr)		
	"A"	"B"	"C"
Unit 1	10.130646	6.2630535	8.0973755
Unit 2	9.020311	6.4182315	8.1464275

Table 1: One Pump/One Heat Exchanger Alignment

	Heat Transfer Capability ($*10^6$ BTU/hr)		
	"A" and "B"	"B" and "C"	"A" and "C"
Unit 1	15.61623385	14.0130675	17.214296
Unit 2	15.1540845	14.3811535	16.681861

Table 2: Two Pump/Two Heat Exchanger Alignment

	Heat Transfer Capability ($*10^6$ BTU/hr)
	"A", "B" and "C"
Unit 1	20.62543 65
Unit 2	20.848189

Table 3: Three Pump/Three Heat Exchanger Alignment

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

REVIEW DRYWELL FLOOR DRAIN SUMP/EQUIPMENT DRAIN TANK LOGS AND DETERMINE COMPLIANCE WITH TS 3.4.3.2

JPM Number: LOJPM6758

REVISION NUMBER: 000

DATE: 6/23/21

Developed By:	C. J. Bibb Instructor	6/01/21 Date
Validated By:	 SME or Instructor	6/4/21 Date
Reviewed By:	 Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Semeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure ST-6-107-596-1 Rev: 29 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM for SRO only based on LOJPM6708	03/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Review the data for Drywell Floor and Equipment Drain Tanks, determine that >2 gpm increase in leakage over a 24 hour period was exceeded on day 5.

Identifies per T.S. 3.4.3.2, source of leakage be identified within 4 hours or to be in Hot S/D within next 12 hrs.

IV. SIMULATOR SETUP

N/A

V. INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 1 has been at 100% power for 179 days
3. FQRSH-61-112 is Operable

VI. INITIATING CUE:

Shift Supervision directs you to perform a SRO review for a completed ST-6-107-596-1, “Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3”.

Review the completed surveillance for compliance with Acceptance Criteria and Document results.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1	Provide candidate with the following: • Individual Briefing Sheet • Completed ST-6-107-596-1, "Drywell Floor Drain Sump/ Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3" • Unit 1 Tech Specs • Calculator	N/A			
2	Candidate reviews ST-6-107-596-1 for compliance	N/A			
3	*(Step 4.1.3)* FQRSH-61-112, (points 3 and 4 Hi alarm setpoints) have been determined available and FI-61-115, FLOOR, FL, and FI- 61-135, EQUIP, FL, are OPERABLE, therefore floor and equipment totalizer readings are available.	Candidate notes that FI-61-115, FLOOR, FL, and FI- 61-135, EQUIP, FL, are OPERABLE			
EVALUATORS NOTE: A math error has occurred on Attachment 2, Day 2. The candidate should identify the error however it will not change the outcome of the test and has no effect on actual drywell leakage.					
4	*(Attachment 2, Day 2 Log)* Total Leak rate is calculated by adding together each of the recorded values on Attachment 2, Table 1 (FI-61-115 Floor and FI-61-135 Equip) AND recorded as Total Leak rate (gpm) on Attachment 2, Table 1	Applicant verifies Total Leak rate calculations are for all Total Leak rate entries *(Candidate notes math error Day 2 Total Leak rate 1.3 gpm vice 2.3 gpm)*			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: Role play as unit supervisor and acknowledge applicant report.					
* 5	*(Attachment 2, Day 5 Log)* Perform the following at 08:00, 16:00, **AND** 00:00: **IF** Total Leakrate is ≤ 25 gpm, **AND** FI-61-115 is ≤ 5 gpm **AND** FI-61-115 increase is ≤ 2 gpm from previous 00:00 reading **THEN** ENTER SAT **OTHERWISE** ENTER UNSAT on Attachment 2, Table 1, **AND NOTIFY** SSV	Candidate identifies on Day 5 that the 0800 floor drain reading is now 3.9 gpm. This is an increase of >2 gpm over the last 24 hours. Applicant notes this should not have been marked SAT. Candidate notes that they would notify SSV as Tech Spec actions may be required			
*6	Tech Spec 3.4.3.2 Reactor coolant system leakage referenced and evaluated.	Candidate recognizes LCO entry into TS 3.4.3.2 **Reactor coolant system leakage shall be limited to 2 gpm increase in UNIDENTIFIED LEAKAGE over 24 – hour period**			
* 7	SRO determines required action for Tech Spec 3.4.3.2 UNIDENTIFIED LEAKAGE	SRO identifies per TS 3.4.3.2 action e. The source of leakage must be identified within 4hrs. or be in HOT SHUTDOWN within next 12 hrs.			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

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

JPM Number: LOJPM6758 **Revision Number:** 000

Task Number and Title: 2990150101 Perform and Review Weekly Surveillance Logs

K/A Number and Importance: Generic 2.2.12 3.7/4.1

Safety Function (1-9) __N/A__

Admin Category (A1-4) __2__

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator/Classroom

Alternate Path:☐ Yes ☒ No **SRO Only**: ☒ Yes ☐ No **Time Critical**: ☐ Yes ☒ No

Reference(s): NUREG 1123, Rev. 2 Supp. 1
ST-6-107-596-1, Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1,2,3, Rev. 29
LGS Unit 1 TS 3.4.3.2

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __25__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 1 has been at 100% power for 179 days
3. FQRSH-61-112 is Operable

INITIATING CUE:

Shift Supervision directs you to perform a SRO review for a completed ST-6-107-596-1, “Drywell Floor Drain Sump/Equipment Drain Tank Surveillance Log/OPCON 1, 2, 3”.

Review the completed surveillance for compliance with Acceptance Criteria and Document results.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

AREA RAD MONITOR(s) FAIL DOWNSCALE

JPM Number: LOJPM6759

REVISION NUMBER: 000

DATE: ~~03/01/21~~ 6/23/21 JAM 6/23/21

Developed By:	C. J. Bickel Instructor	6/01/21 Date
Validated By:	 SME or Instructor	6/9/21 Date
Reviewed By:	 Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Bennett Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure S27.1.A Rev: 21
Procedure S27.10.A Rev: 11
Procedure ARC-MCR-109 A-5 Rev: 2
Procedure Tech Specs Unit 1 Rev: 186
Procedure _____ Rev: _____

JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM is New from 6718. SRO only	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

1. The SRO candidate identifies the following downscale ARMs including sensor location and actions required:

Channel	Sensor Location	Action
9	RHR Division II Room	Place ARM channel 9 in "ZERO" position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channel 9 in the Aux Equipment Room. Have HP install a potable ARM in the vicinity of the inoperable monitor.
30	Steam Separator Area	**Criticality ARMs** Place ARMs channels 30 and 33 in "ZERO" position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channels 30 and 33 in the Aux Equipment Room. Inform RP to perform ST-0-027-640-1
33	Pool Plug Laydown Area	

2. The SRO candidate Evaluates Tech Spec 3.3.7 for the inoperable Criticality ARMs:

   Determine applicable Tech Spec Action
   LCO 3.3.7.1.b (Table 3.3.7.1-1)
   Table 3.3.7.1-1.2.a Criticality Monitors:

   ACTION 71:
   With one of the required monitor inoperable, assure a portable continuous monitor with the same alarm setpoint is OPERABLE in the vicinity of the installed monitor during any fuel movement. If no fuel movement is being made, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

NOTE: ACTION 71 must be implemented for both ARM 30 and ARM 33.

IV. SIMULATOR SETUP

N/A

V. INITIAL CONDITIONS:

1. Unit 1 is at 100% power.
2. MCR received the following alarm:
   - ARC 109 RAD A-5, Area Rad Monitors Downscale
3. No maintenance activities are currently being performed

VI. INITIATING CUE:

Shift Supervision directs you to identify which channel(s), channel sensor location(s) are in the downscale condition, and action(s) required for the given condition.

Evaluate Tech Specs for applicability.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
Lead Evaluator (or designee) Notes: Provide Candidate with the following: • Individual Briefing Sheet, including Attachment #1 • ARC 109 RAD A-5, 1 AREA RAD MONITORS DOWNSCALE • S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms • S27.1.A, Operation Of The Area Radiation Monitoring System • Unit 1 Tech Specs					
*1	[ARC 109 RAD A-5] Verify at Recorder RR-M1-1R600 which channel(s) (1-35) is in a downscale condition.	Candidate verifies channel 9, 30 and 33 from recorder are below downscale setpoint of .02 mr/hr.			
2	[ARC 109 RAD A-5] At Recorder RR-M1-1R600 press "ACK Alarm" key AND reset annunciator	ACK Alarm" key at Recorder RR-M1-1R600 pressed and annunciator reset.			
3	[ARC 109 RAD A-5] Refer to S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms	Candidate obtains S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms			
*4	[ARC 109 RAD A-5] **IF** two or more Fuel Pool criticality monitors are inoperable (channels 30, 31, 33), **THEN** have HP perform ST-0-027-640-1	Direct HP to perform ST-0-027-640-1			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
5	[S27.10.A 4.2] **IF** a high radiation alarm occurs, **AND** Radiation Protection has determined the alarm to be false **THEN USE** Attachment 1.	N/A			
6	[S27.10.A 4.3] **IF** downscale alarm occurs that is known to be caused by maintenance activities, **THEN CONSIDER** defeating the alarm per S27.1.A, Operation Of The Area Radiation Monitoring System, procedure.	No maintenance activities currently being performed per Initial Conditions			
7	[S27.10.A 4.3] **IF** other downscale alarm occurs, **THEN USE** Attachment 2.	Candidate references S27.10.A Attachment 2			
*8a	[S27.10.A Att #2] Identify applicable affected “Trip / SAMP ARMS “ ARM Channels: (1, 2, 8, **9**, 10, 11, 21, 22 For Either Unit 1 or 2) and take associated actions.	Candidate directs to place channel 9, in zero and hang EST (blue tag). Candidate directs RP to install a portable ARM in the vicinity of channel 9			
*8b	[S27.1.A Att #1] Identify applicable affected “Trip / SAMP ARMS” ARM Channels: (1, 2, 8, **9**, 10, 11, 21, 22 For either Unit 1 or 2) and determine sensor location.	RHR Division II Room Area			
*9a	[S27.10.A Att #2] Identify affected Criticality ARMs • **RIS 30-M1-*K600** • RIS 31-M1-*K600 • **RIS 33-M1-*K600** and take associated actions.	Candidate directs to place channels 30 and 33 in zero and hang EST (blue tags). Candidate informs RP to perform ST-0-027-640-1			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*9b	[S27.1.A Att #1] Identify affected Criticality ARMs • **RIS 30-M1-*K600** • RIS 31-M1-*K600 • **RIS 33-M1-*K600** and determine sensor locations	Channel 30: Steam Separator Area Channel 33: Pool Plug Laydown Area			
*10	Evaluate Tech Spec 3.3.7.1 for Spent Pool Criticality Monitors • **RIS 30-M1-*K600** • **RIS 33-M1-*K600**	Tech Spec 3.3.7.1.b With one or more radiation monitoring channels inoperable, take action 71 requirements: With one of the required monitor inoperable, assure a portable continuous monitor with the same alarm setpoint is OPERABLE in the vicinity of the installed monitor during any fuel movement. If no fuel movement is being made, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

NRC Answer Summary Page

As a minimum the following conditions should be referenced for the downscale ARMs

Channel	Location	Action
9	RHR Division II Room	Place ARM channel 9 in “ZERO” position in the Aux Equipment Room. Hang an Equipment Status Tag (EST) (Blue Tag) on channel 9 in the Aux Equipment Room. Have HP install a potable ARM in the vicinity of the inoperable monitor.
30	Steam Separator Area	**Criticality ARMs** Place ARMs channels 30 and 33 in “ZERO” position in the Aux Equipment Room. Hang Equipment Status Tags (ESTs) (Blue Tag) on channels 30 and 33 in the Aux Equipment Room. Inform RP to perform ST-0-027-640-1
33	Pool Plug Laydown Area	

The SRO candidate Evaluates Tech Spec 3.3.7 for the inoperable Criticality ARMs:

Determine applicable Tech Spec Action 3.3.7.1.b (Table 3.3.7.1-1)
Table 3.3.7.1-1.2.a Criticality Monitors:

ACTION 71:
With one of the required monitor inoperable, assure a portable continuous monitor with the same alarm setpoint is OPERABLE in the vicinity of the installed monitor during any fuel movement. If no fuel movement is being made, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

NOTE: ACTION 71 must be implemented for both ARM 30 and ARM 33.

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: AREA RAD MONITOR(s) FAIL DOWNSCALE

JPM Number: LOJPM6758 **Revision Number:** 000

Task Number and Title: 2990090301 Apply Radiation and Contamination Safety Procedures
K/A Number and Importance: Generic 2.3.15 2.9/3.1

Safety Function (1-9) __N/A__

Admin Category (A1-4) __3__ *(Radiation Controls)*

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Classroom

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☒ Yes ☐ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S27.1.A, Operation Of The Area Radiation Monitoring System, Rev 21
S27.10.A, Guidance for Addressing Area Radiation Monitor Alarms, Rev 11
ARC 109 RAD A-5, 1 AREA RAD MONITORS DOWNSCALE, Rev 2
Unit 1 Tech Specs

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __20__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 100% power.
2. MCR received the following alarm:
    - ARC 109 RAD A-5, Area Rad Monitors Downscale
3. Attachment #1 contains ARM current and last readings from recorder RR-M1-1R600
4. No maintenance activities are currently being performed

INITIATING CUE:

Shift Supervision directs you to identify which channel(s), channel sensor location(s) are in the downscale condition, and action(s) required for the given condition.

Evaluate Tech Specs for applicability.

Channel	Location	Action

ATTACHMENT 1

Recorder RR-M1-1R600 last burst AND current values:

Channel	Reading from last burst print (mR/hr)	Readings following MCR alarm (mR/hr)
1	4.22	4.52
2	5.74	4.91
3	8.02	8.76
4	3.25	2.95
5	4.51	5.27
6	6.28	6.54
7	12.76	11.99
8	3.91	3.83
9	2.10	0.01
10	6.77	7.07
11	2.14	2.23
12	0.90	0.79
13	6.75	6.57
14	25.87	24.93
15	13.45	14.32
16	3.29	3.45
17	5.98	5.74
18	10.02	10.52
19	13.04	13.42
20	7.93	8.13
21	8.32	8.54
22	7.58	7.74
23	6.19	6.26
24	5.74	5.31
25	3.05	3.41
26	4.81	4.80
27	7.77	7.21
28	8.18	8.16
29	2.22	2.41
30	1.23	0.00
31	2.57	2.61
32	2.14	2.01
33	1.27	0.01
34	1.23	1.41
35	2.41	2.19

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

AUTHORIZE THE USE OF KI

JPM Number: LOJPM6733

REVISION NUMBER: 000

DATE: 6/23/21

Developed By:	Instructor	6/01/21 Date
Validated By:	SME or Instructor	6/9/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	EP Representative	06/22/2021 Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-JA-150 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure EP-AA-113 Rev: 15
Procedure EP-AA-113-F-02 Rev: B
Procedure EP-AA-113-F-03 Rev: G
Procedure _____ Rev: _____
Procedure _____ Rev: _____

JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM.	03/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Authorizes the use of Thyroid blocking agent Potassium Iodide (KI) to Bill Guarnere and Denny Wilkinson, who will receive an emergency exposure for life saving purposes. Documents the decision to issue KI by correctly filling out EP-AA-113-F-03, “Thyroid Blocking Agent Authorization” .

IV. INITIAL CONDITIONS:

1. You are the Shift Emergency Director
2. A General Emergency (FG1) has been declared on Unit 2 due to a loss of all 3 fission product barriers.
3. The TSC has not been activated yet.
4. An Emergency Lifesaving operation Must be performed Onsite.
5. The operation will take between 15 and 20 minutes in a 200 R/HR field (CDE).
6. Two individuals must enter the area.
7. Bill Guarnere, Employee ID #666999 and Denny Wilkinson, ID #098765 and Charles Yeager ID #555121 have volunteered
8. None of the volunteers have ever received an emergency exposure
9. Authorized for Emergency Exposure (EP-AA-113-F-02 forms) have been filled out for Bill, Denny and Charles

INITIATING CUE:

Determine if the issuance of KI is authorized and complete required documentation, if any.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

V. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: **Provide Candidate with the following:** • EP-AA-113, Personnel Protective Actions • EP-AA-113-F-02, Authorization for Emergency Exposure (3 Filled Out Forms) • EP-AA-113-F-03, Thyroid Blocking Agent Authorization • List of site individuals with possible adverse reaction to KI					
1.	Candidate determines the need for emergency actions.	N/A Emergency Action is needed per initiating cue			
*2.	Determine if individuals have a potential adverse reaction to KI	Reviews list and determines that Guarnere and Wilkinson do not have known adverse reaction to KI but Yeager has a documented adverse reaction and should not be authorized			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*3.	[EP-AA-113 *4.4.1.1.B, Condition 1 or 2]* Determine that there has been a Loss of the Fuel Clad Barrier (based on initiating cues). Determines from step 4.4.1.1.B <u>Condition 1:</u> Workers will be entering an unknown radiological atmosphere that is suspected to have a high iodine concentration. (Fuel Clad barrier loss is a good indication) OR <u>Condition 2:</u> The calculated iodine thyroid exposure (actual or projected) for emergency workers, base on station Radiation Protection procedures or use of the dose assessment program, will be ≥ 50 Rem Committed Dose Equivalent (CDE).	Determines that there is a potential for high thyroid exposure to radioactive iodine for the 2 workers.			
*4.	[EP-AA-113 4.4.1.3] **If** the condition A and/or B listed above are met **then**, **RECOMMEND** the issuance of one (1) 130 mg KI tablet to each emergency worker affected per day for 10 consecutive days or until directed that the risk **no** longer exists.	Determines that condition 4.4.1.1.B is met. Recommends one (1) 130 mg KI tablet to each emergency worker affected per day for 10 consecutive days or until directed that the risk **no** longer exists. (EP-AA-113-F-03)			
*5.	[EP-AA-113 4.4.2.1] Document the decision to issue KI using "Thyroid Blocking Agent Authorization form (EP-AA-113-F-03)	BOTH individuals being authorized for KI and entering the space must be listed with their correct names and employee numbers: Bill Guarnere 666999 Denny Wilkinson 098765			

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
NOTE: If asked for Radiation Protection Manager to sign and date EP-AA-113-F-03, enter name as "Will Halsey" and todays date in the appropriate blanks					
6.	[EP-AA-113 4.4.2.2] Notify Occupational Health (Medical) Services Department promptly that KI is to be issue to Exelon Nuclear personnel or contractors	Candidate states the he/she would notify OHS			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: AUTHORIZE THE USE OF KI

JPM Number: LOJPM6733 **Revision Number:** 000

Task Number and Title: 3440090302 Direct Emergency Response as the Emergency Director

K/A Number and Importance: Generic 2.4.40 4.5

Safety Function (1-9) __N/A__

Admin Category (A1-4) __1__ **(Conduct Of Operations)**

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Classroom

Alternate Path:☐ Yes ☒ No **SRO Only**: ☒ Yes ☐ No **Time Critical**: ☐ Yes ☒ No

Reference(s): EP-AA-113, Personnel Protective Actions Rev 15
EP-AA-113-F-02, Authorization for Emergency Exposure Rev. B
• EP-AA-113-F-03, Thyroid Blocking Agent Authorization Rev. G

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

Exelon Generation

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. You are the Shift Emergency Director
2. A General Emergency (FG1) has been declared on Unit 2 due to a loss of all 3 fission product barriers.
3. The TSC has not been activated yet.
4. An Emergency Lifesaving operation Must be performed Onsite.
5. The operation will take between 15 and 20 minutes in a 200 R/HR field (CDE).
6. Two individuals must enter the area.
7. Bill Guarnere, Employee ID #666999 and Denny Wilkinson, ID #098765 and Charles Yeager ID #555121 have volunteered
8. None of the volunteers have ever received an emergency exposure
9. Authorized for Emergency Exposure (EP-AA-113-F-02 forms) have been filled out for Bill, Denny and Charles

INITIATING CUE:

Determine if the issuance of KI is authorized and complete required documentation, if any.

LGS WORKERS KI ALLERGYS

Name	Employee ID	KI Allergy
Richard Winters	123456	N
Ed Beach	321987	N
Denny Wilkinson	098765	N
Rich O'Kane	111444	N
Wolfgang Petersen	159753	Y
Bernard Montgomery	009871	Y
Bill Guarnere	666999	N
Herbert Sobel	044561	N
Greg Boyington	990623	N
Charles Yeager	555121	Y

Exelon Nuclear

AUTHORIZATION FOR EMERGENCY EXPOSURE

Name: __**Denny Wilkinson**_____ Date / Time: _DD /_MM_/_YYYY_ _HH:MM_

Employee ID Number: __098765_____ Current Annual Exposure: __25_____ mRem

Reason For Request:

_Onsite Emergency Life Saving operation_____

_____

_____

REQUESTING AUTHORIZATION TO EXCEED:

- ☐ 5 Rem TEDE (Authorized to receive greater than 5 Rem TEDE but less than 10 Rem TEDE)
- ☐ 10 Rem TEDE (Authorized to receive greater than 10 Rem TEDE but less than 25 Rem TEDE)
- ☒ 25 Rem TEDE (Authorized to receive greater than 25 Rem TEDE)

___*Denny Wilkinson*_____ __Date / Time___

* Emergency Worker Signature Date / Time

* Emergency Worker Exposure Limits and Associated Risks (EP-AA-113 Attachment 1) have been reviewed and the potential health affects are understood.

___*Radpro Management*_____ __Date / Time___

Rad. Protection Management (Review) Date / Time

___*Station E. Director*_____ __Date / Time___

Station Emergency Director (Authorization) Date / Time

\# The Shift Manager (Shift Emergency Director) may approve prior to transferring Command and Control to the Station Emergency Director.

Exelon Nuclear

AUTHORIZATION FOR EMERGENCY EXPOSURE

Name: __**Bill Guarnere**___ Date / Time: _DD /_MM_/_YYYY_ _HH:MM_

Employee ID Number: __666999_____ Current Annual Exposure: __25_____ mRem

Reason For Request:

_Onsite Emergency Life Saving operation

REQUESTING AUTHORIZATION TO EXCEED:

- ☐ 5 Rem TEDE (Authorized to receive greater than 5 Rem TEDE but less than 10 Rem TEDE)
- ☐ 10 Rem TEDE (Authorized to receive greater than 10 Rem TEDE but less than 25 Rem TEDE)
- ☒ 25 Rem TEDE (Authorized to receive greater than 25 Rem TEDE)

___*Bill Guarnere*_____ __Date / Time___

* Emergency Worker Signature Date / Time

* Emergency Worker Exposure Limits and Associated Risks (EP-AA-113 Attachment 1) have been reviewed and the potential health affects are understood.

___*Radpro Management*_____ __Date / Time___

Rad. Protection Management (Review) Date / Time

___*Station E. Director*_____ __Date / Time___

Station Emergency Director (Authorization) Date / Time

\# The Shift Manager (Shift Emergency Director) may approve prior to transferring Command and Control to the Station Emergency Director.

Exelon Nuclear

AUTHORIZATION FOR EMERGENCY EXPOSURE

Name: __**Charles Yeager**_____ Date / Time: _DD / _MM_ / _YYYY_ _HH:MM_

Employee ID Number: __555121_____ Current Annual Exposure: __25_____ mRem

Reason For Request:

_Onsite Emergency Life Saving operation_____

_____

_____

REQUESTING AUTHORIZATION TO EXCEED:

- ☐ 5 Rem TEDE (Authorized to receive greater than 5 Rem TEDE but less than 10 Rem TEDE)
- ☐ 10 Rem TEDE (Authorized to receive greater than 10 Rem TEDE but less than 25 Rem TEDE)
- ☒ 25 Rem TEDE (Authorized to receive greater than 25 Rem TEDE)

___*Charles Yeager*_____ __Date / Time___

* Emergency Worker Signature Date / Time

* Emergency Worker Exposure Limits and Associated Risks (EP-AA-113 Attachment 1) have been reviewed and the potential health affects are understood.

___*Radpro Management*_____ __Date / Time___

Rad. Protection Management (Review) Date / Time

___*Station E. Director*_____ __Date / Time___

Station Emergency Director (Authorization) Date / Time

\# The Shift Manager (Shift Emergency Director) may approve prior to transferring Command and Control to the Station Emergency Director.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

START A REACTOR RECIRCULATION PUMP

JPM Number: LOJPM3121

REVISION NUMBER: 003

DATE: 6/23/21

Developed By:	Instructor	2/6-21 Date
Validated By:	SME or Instructor	2-17-21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 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, simulator, or other)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating cues (and terminating cues if required) are properly identified.

_____ 6. Task standards identified and verified by SME review.

_____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_____ 8. If an alternate path is used, the task standard contains criteria for successful completion.

_____ 9. Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure S43.1.A	Rev: 80
Procedure ARC-MCR-111-A-2	Rev: 1
Procedure ARC-MCR-111 A-1	Rev: 1
Procedure OT-101	Rev: 39
Procedure OT-112	Rev: 62
Procedure _____	Rev: _____

_____ 10. Verify cues both verbal and visual are free of conflict.

_____ 11. Verify performance time is accurate

_____ 12. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 13. When JPM is initially validated, sign and date JPM cover page.
Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM.	12/06/16
Rev001	Revised to incorporate procedure revisions	10/18/17
002	Revised to incorporate procedure revisions	9/29/19
003	Revised to incorporate procedure revisions	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. SIMULATOR SETUP INSTRUCTIONS:

1. Reset to single loop IC, with reactor power at ~25%, post Recirculation Pump trip with sufficient Control Rod insertion as necessary to allow for Recirculation Pump restart.
2. Ensure '1A' RRP shutdown IAW S43.2.A, and startup of '1A' RRP complete up to and including step 4.3.6 of S43.1.A. (step prior to placing ASD hand-switch to start)
3. Insert the following malfunctions to trigger when '1A' RRP discharge valve is full open (Green Light turns off):
   a. **MRR433A**, Recirc Pump ‘1A’ Seal No. 1 Failure with a 30 second time delay
   b. **MRR434A**, Recirc Pump ‘1A’ Seal No. 2 Failure with a 1 minute time delay

IV. TASK STANDARD:

Start the '1A' Reactor Recirculation Pump and subsequently trip the pump following confirmation of a dual seal failure. Then hydraulically isolate the pump by closing both suction and discharge valves.

V. INITIAL 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 at ~ 25%, ready for startup of '1A' RRP.
4. S43.1.A, Start Up of Recirculation System, is complete up to and including step 4.4.6.
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.

VI. 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:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: Provide a copy of S43.1.A, Start Up of Recirculation System, completed up to and including step 4.4.6 Step 4.4.7 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 RPM 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 RPM. **NOTE** During the pre-charge cycle MINOR, MAJOR AND TRIP alarms will annunciate but will reset.				
*1	(Step 4.4.7) **PLACE** ASD 'START A' switch to **"START"**	Candidate places ASD 'START A' switch to "START" and observes startup sequence.			
2	(Step 4.4.8) When the pre-charge cycle is complete, **AND** the ASD supply breaker closes, **THEN PERFORM** the following:	Candidate verifies that ASD supply breaker closes			
2a	**VERIFY** the Recirc Pump is ramping up in speed as indicated on XR-043-101A on 10C602 panel	Candidate verifies when ASD supply breaker closes '1A' RRP begins ramping up in speed.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
2b	**VERIFY** either "Pump A RUNNING" light is lit **OR** pump speed is >333 RPMs	Candidate verifies either Pump A RUNNING light lit or pump speed is >333 RPMs			
EVALUATORS NOTE: In the following step, applicant must ensure 5 to 10 seconds have elapsed before next jog, while also ensuring discharge valve is full open before 3 minutes has elapsed; else a pump trip will occur. 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					
*3	(Step 4.4.9) JOG **OPEN** HV-43-1F031A, DISCHARGE, at 10C602 for 1 to 2 seconds allowing 5 to 10 seconds for power **AND** level to stabilize. Repeat as necessary until both the following conditions are met: • Recirc Pp speed is stable at 466 rpms • FI-42-1R611A, "Total Jet Pump Loop Flow" (FL) is approximately 15 lbs/hr X10E6 or higher	Candidate 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.			
EVALUATORS CUE: (If necessary): If the applicant starts to review the position of power to flow map, notify the applicant that "CRS will evaluate the power to flow map and you are directed to proceed with the start-up of '1A' Reactor Recirculation Pump".					
*4	(Step 4.4.10) **ENSURE** HV-43-1F031A is full OPEN.	Candidate ensures full open indication on HV-43-1F031A within 3 minutes of pump start.			
5	(Step 4.4.11) **PRESS** PB-043-107A 'A FAULT RESET' pushbutton twice to clear any resettable HMI alarms	Candidate attempts to reset any HMI alarms that may have come in during the startup cycle			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
6	(Step 4.4.12) **VERIFY** Recirc Pp normal operating conditions per Attachment 4 for Main Control room indications **AND** Attachment 5 for Turbine Enclosure/Reactor Enclosure indications.	Candidate performs Attachment 4 **AND** requests EO to perform Attachment 5			
ALTERNATE PATH BEGINS HERE: **SIMULATOR DRIVER CUE:** Ensure Seal #1 for the '1A' Recirc Pump fails 30 seconds after Discharge Valve is full open and that Seal #2 for the '1A' Recirc Pump fails 1 minute after Discharge Valve is fully open.					
7	Candidate responds to ARC-111-A1, and checks #1 and #2 seal cavity pressures	Candidate determines Seal #1 for the '1A' Recirc Pump has failed (based on indicated pressure dropping to near 0 psi)			
8	Candidate responds to ARC-111-A2, and checks #1 and #2 seal cavity pressures	Candidate determines Seal #2 for the '1A' Recirc Pump has failed (based on indicated pressure dropping to near 0 psi)			
9	Candidate evaluates impact on the plant due to both seals failed for the '1A' Recirc Pump.	Candidate concludes that the failure of the seals has resulted into drywell leakage and enters OT-101, High Drywell Pressure			
10	(OT-101 Step 3.2) **CHECK** the following parameters for adverse trends: • Recirc. Pump seals pressure lowering	Candidate determines that the cause of rising drywell pressure is the failure of both '1A' Recirc Pump seals			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
11	(OT-101 Step 3.3) Based on the parameter trends above, **DIRECT** the appropriate Attachment: • Recirc. Pump seals – Att. 1	Candidate determines Attachment 1 should be performed to address plant condition			
12	(OT-101, Att. 1 steps 1 and 1.1) **IF** both seals on a Recirc. Pump have failed,**THEN PERFORM** the following: **PERFORM** Crew Update for OT-112 entry.	Candidate performs Crew Update for OT-112 entry			
*13	(OT-101, Att. 1 step 1.2) **TRIP** applicable pump.	Candidate Trips the '1A' Recirc Pump by depressing the ASD Trip Pushbutton (PB43-102A) or taking the 13.2 kV Breaker (11-BUS-03) Handswitch to "Stop"			
*14	(OT-101, Att. 1 step 1.3) **CLOSE** pump discharge valve HV-043-*F031A(B), DISCHARGE A(B).	Candidate closes HV-043-1F031A as indicated by Red light off and Green light lit			
*15	(OT-101, Att. 1 step 1.4) **CLOSE** seal purge valve HV-046-*15A(B), SEAL PURGE.	Candidate closes HV-046-115A as indicated by Red light off and Green light lit			
*16	(OT-101, Att. 1 step 1.5) **CLOSE** pump suction valve HV-043-*F023A(B), SUCTION A(B).	Candidate closes HV-043-1F023A as indicated by Red light off and Green light lit			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: START A REACTOR RECIRCULATION PUMP

JPM Number: LOJPM3121 **Revision Number:** 003

Task Number and Title: 2020010101 Place Recirculation System in Service
2020030101 Secure a Recirculation Pump

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

Safety Function (1-9) __1__ *(Reactivity Control)*

Admin Category (A1-4) __N/A__

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator

Alternate Path:☒ Yes ☐ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S43.1.A, Start Up of Recirculation System, Rev 80
ARC-MCR-111 A-1, A RECIRC Pump Seal Stage HI/LO Flow, Rev 1
ARC-MCR-111 A-2, 1A RECIRC Pump Seal Leakage HI Flow, Rev 1
OT-101, High Drywell Pressure, Rev 39
OT-112, Unexpected, Unexplained Change in Core Flow, Rev 62

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __30__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

Exelon Generation

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL 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 at ~ 25%, ready for startup of '1A' RRP.
4. S43.1.A, Start Up of Recirculation System, is complete up to and including step 4.4.6.
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.

INITIATING CUE:

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

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

RCIC MANUAL SLOW START USING FIC-49-1R600

JPM NUMBER: LOJPM3015

REVISION NUMBER: 004

DATE: 6/23/21

Developed By:	C. J. Bold Instructor	2-17-21 Date
Validated By:	Joe Kuhl SME or Instructor	2-17-21 Date
Reviewed By:	Jeffrey Adams Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Semeter Training Department	6/23/21 Date

Exelon Generation

Note: This LGS format satisfies the TQ-AA-150-J020 Format

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 9 through 13 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, simulator, or other)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating cues (and terminating cues if required) are properly identified.

_____ 6. Task standards identified and verified by SME review.

_____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_____ 8. If an alternate path is used, the task standard contains criteria for successful completion.

_____ 9. Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure S49.1.D Rev: 44
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____

_____ 10. Verify cues both verbal and visual are free of conflict.

_____ 11. Verify performance time is accurate

_____ 12. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 13. When JPM is initially validated, sign and date JPM cover page.
Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

I. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM replaces LLOJPM0015 Rev. 7. The purpose of this revision is to reformat in accordance with the new JPM template and to ensure agreement with latest procedure revision.	08/30/13
001	Minor revision for procedural compliance, and remove prerequisite steps from JPM section VIII.	10/20/15
002	Revised to new JPM standard and added prerequisites satisfied	8/04/16
003	Revised for procedure revision and formatting changes	9/29/19
004	Revised for procedure revision and formatting changes	04/01/21

 # Date of Revision - refers to date revision was released for approval

II. TASK STANDARD:

RCIC started using the Manual Slow Start section of S49.1.D and placed in full flow with a discharge pressure at least 70 psig greater than reactor pressure, and a pump flowrate of 600 gpm with the controller in AUTO.

III. SIMULATOR SETUP:

1. Reset simulator to IC-3, or another IC if JPM was validated in the respective IC.

   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. Align RCIC for automatic operation.

IV. INITIAL CONDITIONS:

1. LGS Unit 1 is in OPCON 1
2. A RCIC Full Flow Test is planned for Post-Maintenance testing
3. ST-6-060-390-1, Suppression Pool Temperature Check, is currently being performed by a second operator
4. S49.9.A, Routine Inspection of RCIC System, has been performed
5. Vibration Monitoring System is in service
6. Steam Leak Detection System is not known to be INOP
7. An EO and RP Tech are on station, and the Unit 1 RCIC room is posted
8. S49.1.D, RCIC System Full Flow Functional Test, prerequisites are satisfied

V. INITIATING CUE :

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

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue

VI. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1	1. **OBTAIN** current revision of S49.1.D. **CUE:** Provide M/U copy of S49.1.D to candidate, with prerequisites signed-off.	Current revision of S49.1.D obtained.			
2	2. **VERIFY** all prerequisites satisfied.	Prerequisites are verified and checked off as complete.			
3	3. **VERIFY** procedure being performed on correct unit/train	N/A			
4	4. **IF** Vibration Monitoring System is available, **THEN VERIFY** in service.	N/A			
5	**PERFORM** the following:	N/A			
5a	*S49.1.D, 4.1.4.1* **ENSURE** HV-55-*F071, "HPCI/RCIC Flush Line to "Suppression Pool" (TEST OUTBOARD), closed.	Examinee verifies HV-55-1F071 is closed.			
5b	*S49.1.D, 4.1.4.2* **ENSURE** HV-55-*F008, "Test Loop Shutoff" (TEST ISOL), closed.	Examinee verifies HV-55-1F008 is closed.			
5c	*S49.1.D, 4.1.4.3* **ENSURE** HV-49-*F022, "RCIC Test Loop Isolation" (TEST ISOL), is closed.	Examinee verifies HV-49-1F022 is closed.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
6	*S49.1.D, 4.2.1* **PERFORM** the following to open HV-055-*F011, "HPCI/RCIC PP. Test Return to C.S.T. (CONDENSATE RETURN)".	N/A			
*6a	*S49.1.D, 4.2.1.1* **PLACE** HS-55-*11 in OPEN at panel *0C647	Examinee places HS-55-111 in OPEN			
6b	*S49.1.D, 4.2.1.2* **WHEN** HV-55-*F011 is full open **THEN** **PLACE** HS-55-*11 in STOP.	When HV-55-1F011 indicates full open (red light on, green light off) Examinee places HS-55-111 in STOP.			
7	*S49.1.D, 4.2.2* **START** *0P219, "Barometric Condenser Vacuum Pump" (VACUUM PUMP).	10P219 Vacuum Pump is running as indicated by Red Light lit and Green Light out.			
*8	*S49.1.D, 4.2.3* **OPEN** HV-50-*F046, "RCIC Lube Oil Cooling Water Supply" (COOLING WATER).	Examinee open HV-50-1F046.			
9	*S49.1.D, 4.2.4* **MONITOR** Suppression Pool temperature per ST-6-060-390-*, Suppression Pool Temperature Check.	N/A Per Initial Conditions ST-6-060-390-1 is currently being performed by a second operator.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
10	*S49.1.D, 4.2.5* **IF** required to limit Suppression Pool temperature any time during this procedure, **THEN PLACE** Suppression Pool Cooling Mode of RHR System in service per S51.8.A, Suppression Pool Cooling Operation. **CUE:** If requested, inform operator Suppression Pool Cooling is not required.	N/A			
11	*S49.1.D, 4.2.6* **INFORM** RP of changing radiological conditions due to RCIC system start.	RP is informed of Unit 1 RCIC start.			
*12	*S49.1.D, 4.3.1* **PLACE** FIC-49-*R600, "RCIC Pump Discharge Flow Controller" (FL), in "MANUAL" **AND SET** to 0%.	Examinee positions FIC-49-1R600 M/A selector switch to “M”. Examinee depresses FIC-49-1R600 “CLOSE” detent pushbutton until controller output indicating 0%.			
*13	*S49.1.D, 4.3.2* **OPEN** HV-50-*F045, "RCIC Steam Supply" (INLET).	Examinee opens HV-50-1F045.			
14	*S49.1.D, 4.3.3* **PERFORM** the following to start RCIC turbine:	N/A			
*14a	*S49.1.D, 4.3.3.1* Slowly **RAISE** the output of FIC-49-*R600 until turbine speed begins to raise as indicated on SI-50-*01-1, "Turbine Speed" (S).	FIC-49-1R600 OPEN detent pushbutton is depressed until speed rises as indicated on SI-50-101-1.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
14b *	*S49.1.D, 4.3.3.2* **WHEN** speed begins to increase, **THROTTLE OPEN** HV-49-*F022, "RCIC Full Flow Shutoff" (TEST ISOL).	HV-49-1F022 handswitch is placed in OPEN and then Pull to Stop and repeated until valve indicates desired flow.			
* 14c	*S49.1.D, 4.3.3.3* Slowly **INCREASE** output of FIC-49-*R600, FL, to greater than 2200 rpm as indicated on SI-50-*01-1, "Turbine Speed" (S).	FIC-49-1R600 OPEN detent pushbutton is depressed until speed rises to greater than 2200 rpm as indicated on SI-50-101-1.			
15	*S49.1.D, 4.3.4* **IF** HV-49-*F022 will **not** open, **THEN PERFORM** the following: **LOWER** output of FIC-49-*R600, "RCIC Pump Discharge Flow Controller" (FL), to approximately 2500 rpm. **THROTTLE OPEN** HV-49-*F022.	N/A			
EVALUATORS NOTE: If the candidate is unable to establish 600 GPM due to a partially throttled HV-49-1F022 and the candidate recognizes that the valve needs to be throttled further open and requests permission to do this, it is acceptable to grant permission.					
* 16	*S49.1.D, 4.3.5* Slowly **RAISE** output of FIC-49-*R600 to approximately 600 gpm **AND MATCH** setpoint to actual flow, **THEN PLACE** FIC-49-*R600 in "AUTO".	Examinee depresses FIC-49-1R600 “OPEN” detent to achieve 400 to 700 gpm as indicated on FI-49-1R600. Flow controller is adjusted such that when the controller is switched to AUTO, flowrate changes less than 100 gpm. M/A selector switch in AUTO.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*17	*S49.1.D, 4.3.6* **THROTTLE** HV-49-*F022, "RCIC Full Flow Test" (TEST ISOL) **AND ADJUST** FIC-49-*R600, as necessary, to maintain pump discharge pressure at least 70.3 psig over reactor pressure **AND** pump flow rate of 600 pm.	Examinee maintains pump discharge pressure as indicated on PI-49-1R601 at least 70 psig over reactor pressure as indicated on PI-49-1R602 by adjusting HV-49-1F022 as necessary while maintaining pump flow 550 to 650 gpm on FIC49-1R600.			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

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JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: RCIC MANUAL SLOW START USING FIC-49-1R600

JPM Number: LOJPM3015 **Revision Number:** 004

Task Number and Title: TPO-2170070201 Conduct RCIC System Full Flow Functional Test

K/A Number and Importance:			
	217000	A4.01	3.7/3.7
	217000	A4.03	3.4/3.3
	217000	A4.04	3.6/3.6

Safety Function (1-9) __2___(Reactor Water Inventory Control)

Admin Category (A1-4) __N/A___

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator

Alternate Path:☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S49.1.D, RCIC System Full Flow Functional Test and Turbine Oil Priming, Rev. 44

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 20 minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. LGS Unit 1 is in OPCON 1
2. A RCIC Full Flow Test is planned for Post-Maintenance testing
3. ST-6-060-390-1, Suppression Pool Temperature Check, is currently being performed by a second operator
4. S49.9.A, Routine Inspection of RCIC System, has been performed
5. Vibration Monitoring System is in service
6. Steam Leak Detection System is not known to be INOP
7. An EO and RP Tech are on station, and the Unit 1 RCIC room is posted
8. S49.1.D, RCIC System Full Flow Functional Test, prerequisites are satisfied

INITIATING CUE:

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

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

ROLLING THE MAIN TURBINE

JPM Number: LOJPM3029

REVISION NUMBER: 000

DATE: ~~03/01/21~~ JAM 6/23/21 6/23/21

Developed By:	Instructor	2-17-21 Date
Validated By:	SME or Instructor	2-17-21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JK	1.	Task description and number, JPM description and number are identified.
JK	2.	Knowledge and Abilities (K/A) references are included.
JK	3.	Performance location specified. (in-plant, control room, simulator, or other)
JK	4.	Initial setup conditions are identified.
JK	5.	Initiating cues (and terminating cues if required) are properly identified.
JK	6.	Task standards identified and verified by SME review.
JK	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
JK	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JK	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure 1GP-2 App. 3 Rev: 15 Procedure ARC-MCR-106 B-2 Rev: 2 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JK	10.	Verify cues both verbal and visual are free of conflict.
JK	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
N/A	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM is new	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. SIMULATOR SETUP INSTRUCTIONS:

1. Build an IC with the Main Turbine reset and warmed up on the jack. The turbine should be made ready to roll in all respects such that the next step in 1GP-2 App. 3 is to navigate to the Turbine Speed Control screen and initiate Turbine Startup.

2. Change Ramp rate in DEHC to 60 RPM/min, change Load Limit to 20%

3. Build a trigger to simulate 1B exhaust hood Hi Temp by activating Annunciator 106-B2, “B Exhaust Hood Hi Temp” and overriding MPP1681 to 154°F, MPP1682 to 168°F and MPP1683 to 145°F when Main Turbine speed exceeds 1780 RPM.

4. Ensure TIC-10-124 setpoint lowered to 95°F

5. Change the Turbine speed ramp rate to 60 RPM under custom and Snap the IC

6. Provide the candidate with a marked up copy of 1GP-2 App. 3 completed up to and including 3.4.6.7.k.1.c (sic – procedure typo, should be 3.4.6.7.m.1.c)

IV. TASK STANDARD:

The Main Turbine is started and rolling at 1800 RPM and Turbine Exhaust Hood Spray Bypass valve (HV-005-115) is manually opened with exhaust hood spray initiated due to a valid Exhaust Hood High Temperature Alarm condition.

V. INITIAL CONDITIONS:

1. Unit 1 is at 20% power.
2. Main Turbine is reset and warming complete per 1GP-2, App. 3, “Startup of the Main Turbine”.
3. No internal maintenance has been performed on the Main Turbine and the Turbine Start-up Team has been assembled.
4. All auxiliary systems are in service to support Turbine Startup.
5. Turbine is on the turning gear.
6. All prerequisite steps in sections 3.1, 3.2 and 3.3 have been completed satisfactorily.
7. An EO is stationed at moisture separator controller racks on TB. El 239 with Att. 4.
8. An EO is stationed to check bearing flows per S29.9.A and listen for bearing rubs.

VI. INITIATING CUE:

1. You are directed by Shift Supervision to Roll the Main Turbine to 1800 RPM per 1GP-2, Appendix 3, “Startup of The Main Turbine” to complete the preparation for Startup starting at step 3.4.7.

2. 1GP-2, App. 3 is complete up to and including step 3.4.6.7.k.1.c.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
Provide a copy of 1GP-2 Appendix 3 marked up though 3.4.6.7.k.1.c to the candidate.					
*1.	(1GP-2 App. 3 step 3.4.7) **ENSURE** LOAD LIMIT is set to 103% at LOAD LIMITER display.	Candidate recognizes that Load Limit is 20% and changes it to **103%**			
2.	**SELECT** FAST 180 RPM/MIN at SPEED CONTROL display, TURBINE SPEED RAMP RATES window.	Candidate selects Speed Control and then selects FAST 180 RPM/MIN			
3.	**ENSURE** all required steps in sections 3.1, 3.2, **AND** 3.3 have been completed satisfactorily.	N/A Given in the initial conditions			
*4.	**ADJUST** TIC-10-124, "Service Water to Main Lube Oil Cooler 1A(B) E111" to 115 °F nominal (actual oil temp. will rise when turbine is rolled) at 10C670.	Candidate adjusts TIC-10-124 to 115°F ±2 °F			
5.	**STATION** an Equipment Operator at moisture separator controller racks EI 239, with Attachment 4 of this procedure	N/A Given in the initial conditions			
The Turbine will start to roll after performing the next step and then selects GO!					
*6.	**SELECT** 1800 RPM at SPEED CONTROL display, TURBINE SPEED TARGETS window	Candidate selects 1800 RPM button			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
7.	**VERIFY** ALL VALVES CLOSED indication is **not** Lit **AND ENSURE** the following: • MSV 2 begins opening. • **WHEN** MSV 2 is 90% open, **THEN ENSURE** MSV 1,3,4 opens slowly.	Candidate **ensures** that: • MSV 2 begins opening. • **WHEN** MSV 2 is 90% open, **THEN ENSURE** MSV 1,3,4 opens slowly.			
*8.	(step 3.4.13.3) **SELECT** GO	Candidate Selects **GO**			
9.	(step 3.4.13.4) **VERIFY** Master Intercept Valves (IV1,3,5) slowly open	Candidate verifies Master Intercept Valves slowly open			
10.	(step 3.4.13.5) **WHEN** valves reach full open, **THEN VERIFY** Slave Intercept Valves (ISV4,2,6) open, respectively.	Candidate verifies Slave Intercept Valves open			
11.	(step 3.4.13.6) **ENSURE** Control Valves crack open **AND** cause unit to roll off Turning Gear.	Candidate **ensures** that Control Valves crack open **AND** cause unit to roll off Turning Gear			
12.	(step 3.4.13.7) **ENSURE** speed is increasing	Candidate **ensures** that speed is increasing			
13.	(step 3.4.14) **CHECK** bearing oil flows per 29.9.A **AND LISTEN** for rubs. **CUE:** EO is stationed and performing required actions.	N/A			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
15.	(step 3.4.16) **WHEN** turbine speed is 100 rpm, **THEN PERFORM** the following: • **MONITOR** TSI instruments **AND** alarms. • **IF** an undesirable thermal **OR** vibration condition occurs, **THEN ADJUST** startup rate accordingly.	Candidate monitors TSI/ Vibration instruments			
15.	**IF** a serious condition occurs, **THEN PRESS** ALL VALVES CLOSED at SPEED CONTROL display, **OR TRIP** Turbine	N/A			
16.	**IF** the Main Turbine is coasting down **AND** must be rapidly decelerated, **THEN OPEN** Condenser Vacuum Breakers as required to lower vacuum to a minimum of 24" Hg.	N/A			
17.	**IF** absolutely necessary to rapidly decelerate Turbine to Turning Gear speed, **THEN BREAK** vacuum as follows, **Otherwise ENTER** N/A for this step:	N/A			
18.	(step 3.4.20) **PERFORM** the following as Turbine accelerates:	N/A			
18a	• **MONITOR** differential expansion on Process Computer, Main Turbine Metal & Shell Expansion Mimic , pt. XT-M2-1DXD (1BOP270).	Candidate monitors turbine metal parameters			
18b.	• **MONITOR** vibration on Process Computer "Main Turb & Gen Vib Mimic", VT-M2-11A through VT-M2-112 (1BOP241 through 1BOP252) **OR** PPC points T043 through T054 **AND VERIFY** under allowable vibration limits	Candidate monitors turbine vibration parameters			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
	•				
18c.	• **MONITOR** Exhaust Hood temperatures on Process Computer "Main Turbine Metal & Shell Expansion Mimic" (TE-002-102A,B,C and TE-002-105A,B,C) **AND VERIFY** less than 200 ºF.	Candidate monitors turbine exhaust hood temperatures			
18d.	• **MONITOR** bearing temperatures on Process Computer "Main Turb Brg Metal Temps Mimic" **AND ENSURE** within 145ºF to 200ºF	Candidate monitors turbine bearing temperatures			
18e.	• **LISTEN** for rubbing **AND IF** serious rubbing develops, **THEN SHUTDOWN** the unit **Cue:** If asked "EO/CMO report no rubbing on turbine startup"	Candidate has field operators monitor for rubbing			
19.	Prior to exceeding 1300 rpm **PERFORM** the following: • **WHEN** main turbine shaft oil pump discharge pressure exceeds 125 psig as indicated on PI-019-130 at panel 10C653 **THEN RESET** ARC-MCR-105, window J-3 alarm	Candidate verifies that 105-J3 clears			
The alternate path portion of the JPM begins with the next step: (Exhaust Hood Hi Temperature – 106 B-2)					
*20.	Respond to Annunciator: • 106 B-2, B EXHAUST HOOD HI TEMP	Candidate references ARC-MCR-106 B-2.			

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
21.	Candidate verifies the condition per the arc by checking PPC points for Exhaust Hood Temperature - TE-002-102A, B, C	Candidate recognizes Hi temperature for 1B Exhaust Hood is high above the alarm setpoint 160°F			
22.	Determine from the plant conditions that exhaust hood spray should be automatically initiated but is not.	Candidate recognizes exhaust hood spray is not initiated			
*23.	(Arc 106-B2 step 2) "If hood spray is **not** on and the conditions for Hood spray are met, THEN open HV-105-115 and establish between 28 and 42 psig on PI-005-115	Candidate opens HV-005-115 and establishes between 28 and 42 psig on PI-005-115			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: ROLLING THE MAIN TURBINE

JPM Number: LOJPM3029 **Revision Number:** 000

Task Number and Title: TPO- 2450010101 Startup the Main Turbine
TPO 2450140101 Operate the Exhaust Hood Spray System

K/A Number and Importance: 241000 A4.19 3.5 / 3.4

Safety Function (1-9) __3___ ***(Reactor Water Inventory Control)***

Admin Category (A1-4) __N/A___

Level of Difficulty (1-5) _3_

Suggested Testing Environment: Simulator

Alternate Path:☒ Yes ☐ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): 1GP-2, Appendix 3, "Startup of The Main Turbine", Rev. 15
ARC-MCR-106 B-2, Rev. 2

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __20__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 20% power.
2. Main Turbine is reset and warming complete per 1GP-2, App. 3, “Startup of the Main Turbine”
3. No internal maintenance has been performed on the Main Turbine and the Turbine Start-up Team has been assembled.
4. All auxiliary systems are in service to support Turbine Startup.
5. Turbine is on the turning gear
6. All prerequisite steps in sections 3.1, 3.2 and 3.3 have been completed satisfactorily.
7. An EO is stationed at moisture separator controller racks on TB. El 239 with Att. 4
8. An EO is stationed to check bearing flows per S29.9.A and listen for bearing rubs.

INITIATING CUE:

1. You are directed by Shift Supervision to Roll the Main Turbine to 1800 RPM per 1GP-2, Appendix 3, “Startup of The Main Turbine” to complete the preparation for Startup.
2. 1GP-2, App. 3 is complete up to and including step 3.4.6.7.k.1.c.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

SHUTDOWN COOLING FLOW ADJUSTMENTS

JPM Number: LOJPM3515

REVISION NUMBER: 002

DATE: 6/23/21

Developed By:	C. J. Bibb Instructor	6/08/21 Date
Validated By:	 SME or Instructor	6/9/21 Date
Reviewed By:	Jeffrey Ulen Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Kemeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-JA-150 Format

I. 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 9 through 13 below.

JDW	1.	Task description and number, JPM description and number are identified.
JDW	2.	Knowledge and Abilities (K/A) references are included.
JDW	3.	Performance location specified. (in-plant, control room, simulator, or other)
JDW	4.	Initial setup conditions are identified.
JDW	5.	Initiating cues (and terminating cues if required) are properly identified.
JDW	6.	Task standards identified and verified by SME review.
JDW	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
JDW	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JDW	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure S51.8.B Rev: 85 Procedure ARC MCR 011 B-4 Rev: 4 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JDW	10.	Verify cues both verbal and visual are free of conflict.
JDW	11.	Verify performance time is accurate
N/A JDW	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JDW	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM supersedes LLOJPM0515 Rev. 9. Revised to new template and to align with latest procedure revision.	10/31/16
Rev001	Revised to incorporate procedure revision	10/18/17
002	Revised to incorporate procedure revision	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Additional cooling provided to the '1A' RHR Heat Exchanger.

Following confirmation of the RHRSW High Radiation alarm, '1A' RHR pump is tripped and '1A' RHR Heat Exchanger is isolated.

IV. SIMULATOR SETUP:

1. Reset the simulator to IC-_____ ('1A' RHR in Shutdown Cooling) and make the manipulations below or reset the simulator to the prepared exam IC and verify the conditions below.

   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. Adjust HV-C-51-103A ('1A' RHR Heat Exchanger Outlet Bypass POS) to 100%
3. Ensure HV-51-1F015A (Shutdown Cooling Return Valve) is full open
4. Close HV-51-1F003A (Heat Exchanger Outlet)
5. Throttle HV-C-51-1F048A (Heat Exchanger Bypass) closed to obtain 9000 gpm flow
6. Verify 51-1031A and 51-1018A Condensate Transfer valves closed
7. Verify HV-51-1F007A, Min Flow Valve is closed and de-energized
8. Verify DAS Screen set to '1A' SDC Loop
9. Verify PMS SDC Monitor is active
10. Apply Robust Barriers (mousetraps) to the following:

HV-43-1F031A, DISCHARGE A	
HV-51-1F027A, SUPP POOL SPRAY	HV-51-1F027B, SUPP POOL SPRAY
HV-51-1F040, LETDOWN TO RW	HV-51-1F049, LETDOWN TO RW
HV-51-1F024A, SUPP POOL CLNG	HV-51-1F006B, SUCTION B
HV-51-1F008, SHUTDOWN COOLING SUCTION (OUTBOARD)	HV-51-1F009, SHUTDOWN COOLING SUCTION (INBOARD)
HV-51-1F015A, SHUTDOWN COOLING INJECTION (OUTBOARD)	HV-51-1F048A. HEAT EXCH BYPASS
1AP202, '1A' RHR Pump Handswitch	0AP506, '0A' RHRSW Pump Handswitch
HV-51-1F014A, RHRSW INLET	HV-51-1F068A, RHRSW OUTLET
HV-51-1F006A, SUCTION A	

11. Prepare a copy of S51.8.B marked up completed up to step 4.4.25.5

12. Establish the Malfunction **MRM019A**, U1 RHR SW Return Hdr Rad Mon fails to 500 cpm on Automatic **Trigger #1** or other available trigger if performing this JPM in an exam set of JPMs. This Trigger will be activated when HIC51-103A Controller Output meter reads less than or equal to 15%.

V. INITIAL CONDITIONS:

1. '1A' RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 125°F as read on TE-51-1N004A
2. '0C' RHRSW pump is in service providing flow to '1A' RHR Heat Exchanger
3. Reactor level is being maintained at ~80" as read on LI-42-1R605
4. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to maintain reactor coolant temperature within the 110°F to 130°F band
5. The Unit 1 Reactor Operator is performing ST-6-107-640-1, Rx Vessel Temperature and Pressure Monitoring
6. RHR flow band is not restricted by GP-6.1

VI. INITIATING CUE:

The CRS has directed you to continue performing S51.8.B, at step number 4.4.25.6, to provide additional cooling to reactor coolant

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	Candidate obtains copy of S51.8.B completed up to and including step 4.4.25.5 **CUE:** Candidate is given a copy of S51.8.B, Shutdown Cooling/Reactor Coolant Circulation Operation Start-Up And Shutdown, marked up completed to and including step 4.4.25.5.	Candidate obtains marked up copy of S51.8.B and determines additional cooling is required.			
2.	[4.4.25.6] **IF** additional cooling is required, **THEN** PERFORM the following:	N/A			
*2a.	[4.4.25.6.a] **OPEN** HV-C-51-*F048A, HEAT EXCH BYPASS.	**OPEN** HV-C-51-1F048A, red light lit, and green light out			
*2b.	[4.4.25.6.b] **OPEN** HV-51-*F003A, OUTLET.	**OPEN** HV-51-1F003A, red light lit, and green light out			
*2c.	[4.4.25.6.c] **CLOSE** HV-C-51-*03A, POS.	**CLOSE** HV-C-51-103A, "0" position indicated			
EVALUATORS NOTE: THE <u>ALTERNATE PATH</u> PORTION OF THE JPM BEGINS IN THE NEXT STEP WITH THE FOLLOWING INDICATIONS: • **Insert MRM019A**, U1 RHR SW Return Hdr Rad Mon fails to 500 cpm • The following steps include actions from the ARC-MCR 011-B-4 Annunciator (RHRSW Hi Radiation)					
3.	Respond to ARC-MCR-011 B-4, SERV WTR B (RHRSW HI RADIATION)	ARC-MCR-011 B-4, SERV WTR B (RHRSW HI RADIATION) referenced.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
4.	Verify the high radiation condition on RR-0R615A panel 10C667	Observe RHRSW rad recorder RR-0R615A and determine increasing trend			
5.	[ARC MCR 011 B-4] **IF** an actual high radiation condition is suspected, **THEN:** **CUE:** If asked, report Chemistry has confirmed that a hi rad condition exist.	Determine recorder response is due to an actual increasing radiation condition			
*6.	[ARC MCR 011 B-4, step 2] Trip associated RHR pump **AND** Isolate the shell side of HX by closing or ensuring closed the following:	'1A' RHR Pump handswitch taken to STOP (Green Flag)			
*7.	HV-51-*F047A	HV-51-1F047A keylock switch taken to CLOSE, (Green light on, Red light off).			
*8.	**AND** HV-51-*F003A	HV-51-1F003A keylock switch taken to CLOSE, (Green light on, Red light off).			
9.	**AND** HV-C-51-*03A	HV-C-51-103A ensured closed (0% OPEN)			
10.	**AND** HV-51-*82A with HS-51-*82A (309/238' U/1)	Operator directed to ensure HV-51-182A closed			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: SHUTDOWN COOLING FLOW ADJUSTMENTS

JPM Number: LOJPM3515 **Revision Number:** 002

Task Number and Title: 2031010101 Place RHR in Shutdown Cooling Operation, Monitor and Secure

K/A Number and Importance: 205000 K1.15 3.5/3.6

Safety Function (1-9) 4 (Heat Removal From the Core)

Admin Category (A1-4) N/A

Level of Difficulty (1-5) 3

Suggested Testing Environment: Simulator

Alternate Path:☒ Yes ☐ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S51.8.B, Shutdown Cooling / Reactor Coolant Circulation Operation Start-up and Shutdown, Rev 085

ARC-MCR-011 B-4, RHRSW Hi Radiation, Rev 004

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. '1A' RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 125°F as read on TE-51-1N004A
2. '0A' RHRSW pump is in service providing flow to '1A' RHR Heat Exchanger
3. Reactor level is being maintained at ~80" as read on LI-42-1R605
4. HV-C-51-103A, RHR Heat Exchanger Outlet Bypass (POS), is full open and additional cooling is required to maintain reactor coolant temperature within the 110°F to 130°F band
5. The Unit 1 Reactor Operator is performing ST-6-107-640-1, Rx Vessel Temperature and Pressure Monitoring
6. RHR flow band is not restricted by GP-6.1

INITIATING CUE:

The CRS has directed you to continue performing S51.8.B, at step number 4.4.25.6, to provide additional cooling to reactor coolant.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

PRIMARY CONTAINMENT VENTING VIA THE HARDENED CONTAINMENT VENT SYSTEM (HCVS)

JPM Number: LOJPM3070

REVISION NUMBER: 000

DATE: ~~04/01/21~~ 6/23/21 JAM 6/22/21

Developed By:	C. A. Bill Instructor	2-17-21 Date
Validated By:	 SME or Instructor	2-17-21 Date
Reviewed By:	Jeffrey R Weaver Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel J Semeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JK	1.	Task description and number, JPM description and number are identified.
JK	2.	Knowledge and Abilities (K/A) references are included.
JK	3.	Performance location specified. (in-plant, control room, simulator, or other)
JK	4.	Initial setup conditions are identified.
JK	5.	Initiating cues (and terminating cues if required) are properly identified.
JK	6.	Task standards identified and verified by SME review.
JK	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JK	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure T-341 Rev: 1 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JK	10.	Verify cues both verbal and visual are free of conflict.
JK	11.	Verify performance time is accurate
N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
N/A	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM is new	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. SIMULATOR SETUP INSTRUCTIONS:

1. Reset the simulator to IC-3 or any full power IC
2. Build a trigger to activate RTR411 to the open position
3. Stage a stopwatch at HCVS panel.

IV. TASK STANDARD:

Hardened Containment Vent System is placed in service with the Rupture Disk breached.

V. INITIAL CONDITIONS:

1. Unit 1 is at 0% power.
2. A LOCA has occurred on Unit 1 and Drywell pressure has risen to 42 PSIG rising slowly
3. The CRS has determined that Drywell Venting is required per T-341.
4. An EO is standing by in the Unit 1 DG corridor.
5. Suppression Pool level is 26 feet
6. Dose Assessment personnel are stationed to monitor the release

VI. INITIATING CUE:

1. You are directed by Shift Supervision to Vent the Drywell per T-341, “PRIMARY CONTAINMENT VENTING VIA THE HARDENED CONTAINMENT VENT SYSTEM (HCVS) per section 4.1.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE:					
1.	Candidate obtains copy of T-341. **CUE:** Candidate is given a copy of T-341, Primary Containment Venting Via Hardened Containment Vent System.	Candidate obtains marked up copy of T-341.			
2.	(T-341, step 4.1.1) **DIRECT** dose assessment personnel to monitor offsite dose. **Cue**: RP and Field monitoring team standing by to monitor offsite dose	N/A Given in initial conditions			
*3.	(step 4.1.2) **DISPATCH** an operator to perform Attachment 2 in Unit 1 D/G corridor to place Argon bottles **AND** Air supply bottles in service. **Cue**: EO standing by in D/G corridor acknowledges	Directs EO to perform Attachment 2 of T-341			
4.	(4.1.3) **WHEN** Attachment 2 has been completed, **THEN CONTINUE**. **CUE: <u>Driver Trigger #1</u>** RTR411 to open the ARGON bottle valves. Then report to candidate, "Attachment 2 has been completed"	N/A			
*5.	(4.1.4) **PLACE** HS-057V-183, "HCVS 125V DC Power Hand Switch" to "ON" at 10-C689.	HS-057V-183 is placed in "ON" position			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
6.	(4.1.5) **IF** HCVS controls do **not** energize, **OR** HCVS **cannot** otherwise be operated from Main Control Room, **THEN GO TO** Section 4.2.	N/A			
7.	(4.1.6) **RECORD** date **AND** time HCVS controls energized in step 4.1.4.	Date and Time recorded			
8.	(4.1.7) Within 24 hours of the time recorded in step 4.1.6, **ENSURE** D124-D-G-11, "HCVS 125 VDC Battery Charger 10-D102," closed. (311B-DG1-217) (Attachment 1)	N/A			
9.	(4.1.8) **ENSURE** Operator stationed in Unit 1 D/G corridor to monitor PI-057V-132, “HCVS Argon Purge Regulator Downstream Pressure	Directs EO to monitor PI-057V-132			
10.	(4.1.9) **When** step 4.1.10 is performed, **THEN OBSERVE** Argon pressure increase and decrease to 0 psig at PI-057V-132 **CUE**: If requested from EO, “Pressure on PI-057V-132 went up and then lowered to 0 psig.”	ensured EO monitored pressure			
11.	(4.1.10.1) If rupture disk has **not** previously been breached, **THEN** perform the following: 1. **START** stopwatch	Stopwatch used to time switch operation			
*12.	(4.1.10.2) 2. **PLACE AND HOLD** HS-057V-182, “HCVS Argon Purge Switch” in “OPEN” for approximately 6 seconds at 10-C689 (Main Control Room)	HS-057V-182, “HCVS Argon Purge Switch” in “OPEN” for approximately 6 seconds			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*13.	(4.1.11) **PLACE** the following in "OPEN" at panel 10-C689 (MCR): • HS-057-180, "HCVS INBD ISOL VLV CONTROL"	HS-057-180 placed in open			
*14.	(4.1.11) HS-057-181, "HCVS OUTBD ISOL VLV CONTROL"	HS-057-181 placed in open			
15.	(4.1.12) **If** valves in 4.1.10 **OR** 4.1.11 do **not** open **THEN DISPATCH** an operator to operate HCVS from the Unit 1 D/G corridor per section 4.2 **CUE:** "I hear pneumatic flow to the valve.	N/A			
16.	(4.1.13) **RECORD** date **AND** time venting commenced.	Records date and time			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: VENT CONTAINMENT USING HCVS

JPM Number: LOJPM3070 **Revision Number:** 000

Task Number and Title: TPO- 2000380501 Emergency Venting of Containment

K/A Number and Importance:

295024 - Containment Atmos. Control: Plant Specific	EA1.19	3.3 / 3.4
223001 - Primary Containment System and Auxiliaries,	A4.07	4.2/4.1

Safety Function (1-9) __5___***(Containment Integrity)***

Admin Category (A1-4) __N/A___

Level of Difficulty (1-5) _3_

Suggested Testing Environment: Simulator

Alternate Path:☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): T-341, "Primary Containment Venting Via The Hardened Containment Vent System Rev. 001

T-102, "Primary Containment Control" Rev.028

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __20__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 0% power.

2. A LOCA has occurred on Unit 1 and Drywell pressure has risen to 42 PSIG rising slowly
3. The CRS has determined that Drywell Venting is required per T-341.
4. An EO is standing by in the Unit 1 DG corridor.
5. Suppression Pool level is 26 feet
6. Dose Assessment personnel are stationed to monitor the release

INITIATING CUE:

1. You are directed by Shift Supervision to Vent the Drywell per T-341, “PRIMARY CONTAINMENT VENTING VIA THE HARDENED CONTAINMENT VENT SYSTEM (HCVS) per section 4.1

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

SCRAM CHANNEL A1 AND A2 FUNCTIONAL TEST

JPM Number: LOJPM3031

REVISION NUMBER: 001

DATE: 6/23/21

Developed By:	Instructor	2-17-21 Date
Validated By:	SME or Instructor	2-17-21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JK	1.	Task description and number, JPM description and number are identified.
JK	2.	Knowledge and Abilities (K/A) references are included.
JK	3.	Performance location specified. (in-plant, control room, simulator, or other)
JK	4.	Initial setup conditions are identified.
JK	5.	Initiating cues (and terminating cues if required) are properly identified.
JK	6.	Task standards identified and verified by SME review.
JK	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
JK	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JK	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure ST-6-071-306-1 Rev: 17 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JK	10.	Verify cues both verbal and visual are free of conflict.
JK	11.	Verify performance time is accurate
JK N/A	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
N/A	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM supersedes LLOJPM0031 Rev. 4. Revised to new template and to align with latest procedure revision.	06/16/16
001	Revised for latest procedure revision and format changes	04-01-21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

ST-6-071-306-1, “Channel A1/A2 RPS Manual Scram Channel Functional Test”, completed satisfactorily.

IV. SIMULATOR SETUP

1. Reset simulator to IC-3, or another IC if JPM was validated in the respective IC.
2. The simulator can be reset to any IC that has RPS reset and the reactor is stable with the Mode Switch in RUN.
3. This JPM requires continuous communication with an EO stationed in the Auxiliary Equipment room (phone or plant page only).
4. A1/A2 day selected under full core display.
5. Provide candidate with a yellow copy of ST-6-071-306-1

V. INITIAL CONDITIONS:

1. All prerequisites of ST-6-071-306-1 are completed
2. Shift Supervision has given permission to perform ST
3. PRO/RO have given permission to perform ST
4. Plant in OPCON 1 with no half scram signals present.
5. EO standing by in AER on mobile phone.
6. Thermography on all scram solenoids on each HCU, completed this shift
7. No other plant testing or plant condition which could interfere with this test is being performed

VI. INITIATING CUE:

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

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
Ensure the Candidate is provided a copy of ST-6-071-306-1, "Channel A1/A2 RPS Manual Scram Channel Functional Test".					
1.	*(Step 4.1.1)* **VERIFY** all prerequisites of Section 2.0 are satisfied.	Candidate verifies all prerequisites of Section 2.0 are satisfied as provided in initial conditions			
2.	*(Step 4.1.2)* **VERIFY** procedure being performed on Unit 1.	Candidate verifies on Unit 1			
3.	*(Step 4.1.3)* **PERFORM** thermography on all scram solenoids on each HCU, not previously electrically disarmed.	Candidate verifies thermography on all scram solenoids on each HCU completed per initial conditions.			
4.	*(Step 4.2.1)* **OBTAIN** SSV permission to start test	Candidate verifies SSV permission to start test as provided in initial conditions			
5.	*(Step 4.2.2)* **OBTAIN** PRO/RO permission to start test	Candidate verifies PRO/RO permission to start test as step 4.4.2 signed/dated			
Section 4.3. A1 Manual Scram					
6.	*(Step 4.3.1)* **VERIFY** the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603:	N/A			
6a.	B1 (DS9D)	B1 (DS9D) Lit			
6b.	B2 (DS9H)	B2 (DS9H) Lit			
6c.	B3 (DS9F)	B3 (DS9F) Lit			
6d.	B4 (DS9B)	B4 (DS9B) Lit			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*7.	*(Step 4.3.2)* **POSITION** CH A1 collar in ARMED, at panel 10C603 **AND**	CH A1 collar in ARMED			
8.	**VERIFY** "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR	"MANUAL SCRAM SWITCH ARMED A, B" Annunciator Lit on 108 Reactor			
*9.	*(Step 4.3.3)* Fully **DEPRESS** CH A1, at panel 10C603	CH A1 Pushbutton fully depressed			
10.	*(Step 4.3.4)* **RELEASE** CH A1 **AND VERIFY** the following at panel 108 REACTOR:	CH A1 Pushbutton released			
10a.	*(Step 4.3.4.1)* MANUAL SCRAM SYSTEM A alarm annunciates.	MANUAL SCRAM SYSTEM A lit			
10b.	*(Step 4.3.4.2)* AUTO SCRAM CHANNEL A1 alarm annunciates	AUTO SCRAM CHANNEL A1 alarm lit			
11.	*(Step 4.3.5)* **VERIFY** the following SCRAM SYSTEM LOGIC lights **not** Lit at panel 10C603:	N/A			
11a.	A1 (DS9C)	A1 (DS9C) not Lit			
11b.	A2 (DS9G)	A2 (DS9G) not Lit			
11c.	A3 (DS9E)	A3 (DS9E) not Lit			
11d.	A4 (DS9A)	A4 (DS9A) not Lit			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
12.	*(Step 4.3.6)* **VERIFY** REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 **not** Lit at panel 10C609 **CUE:** EO in the AER reports the REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 is **not** Lit at panel 10C609	Candidate verifies REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 not Lit at 10C609			
13.	*(Step 4.3.7)* **IF** rod motion occurs, **THEN NOTIFY** Shift Supervision immediately.	N/A			
14.	*(Step 4.3.8)* **IF** any blue scram lights are lit as a result of this test, **THEN NOTIFY** Shift Supervision immediately.	N/A			
15.	*(Step 4.3.9)* **VERIFY** "MANUAL SCRAM SYSTEM A" alarm can be cleared at panel 108 REACTOR	Candidate verifies MANUAL SCRAM SYSTEM A alarm cleared			
16.	*(Step 4.3.10)* **POSITION** CH A1 collar in DISARMED at panel 10C603	Candidate positions CH A1 collar in DISARMED			
17.	**AND VERIFY** "MANUAL SWITCH ARMED A, B" alarm can be cleared at panel 108 REACTOR.	“MANUAL SWITCH ARMED A, B" alarm cleared at panel 108 REACTOR			
18.	*(Step 4.3.11)* **POSITION** "SCRAM RESET" to the following at panel 10C603:	N/A			
*19 a	Group 1/4	Reset Switch taken to Group 1/4			
*19	Group 2/3	Reset Switch taken to Group 2/3			

b					
ELEMENT		**STANDARD**	**SAT**	**UNSAT**	**COMMENT NUMBER**
20.	*(Step 4.3.12)* **VERIFY** "AUTO SCRAM CHANNEL A1" alarm can be cleared at panel 108 REACTOR	Candidate verifies "AUTO SCRAM CHANNEL A1" alarm cleared			
21.	*(Step 4.3.13)* **VERIFY** the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603:	Candidate verifies SCRAM SYSTEM LOGIC lights Lit at panel 10C603			
21a.	A1 (DS9C)	A1 (DS9C) Lit			
21b.	A2 (DS9G)	A2 (DS9G) Lit			
21c.	A3 (DS9E)	A3 (DS9E) Lit			
21d.	A4 (DS9A)	A4 (DS9A) Lit			
22.	*(Step 4.3.14)* **VERIFY** "REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1" Lit at panel 10C609 **CUE:** EO in the AER reports the REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1 is Lit at panel 10C609	Candidate verifies REACTOR AUTO-SCRAM TRIP LOGIC A1 DS1" Lit			
Section 4.4. A2 Manual Scram					
23.	*(Step 4.4.1)* **VERIFY** the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603:	N/A			
24a.	B1 (DS9D)	B1 (DS9D) Lit			
24b.	B2 (DS9H)	B2 (DS9H) Lit			
24c.	B3 (DS9F)	B3 (DS9F) Lit			

24d.	B4 (DS9B)	B4 (DS9B) Lit			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*25.	*(Step 4.4.2)* **POSITION** CH A2 collar in ARMED, at panel 10C603 **AND**	CH A2 collar in ARMED			
26.	**VERIFY** "MANUAL SCRAM SWITCH ARMED A, B" alarm annunciates at panel 108 REACTOR	"MANUAL SCRAM SWITCH ARMED A, B" Annunciator Lit on 108 Reactor			
*27.	*(Step 4.4.3)* Fully **DEPRESS** CH A2, at panel 10C603	CH A2 Pushbutton fully depressed			
28.	*(Step 4.4.4)* **RELEASE** CH A2 **AND VERIFY** the following at panel 108 REACTOR:	CH A2 Pushbutton released			
28a.	*(Step 4.4.4.1)* MANUAL SCRAM SYSTEM A alarm annunciates.	MANUAL SCRAM SYSTEM A lit			
28b.	*(Step 4.4.4.2)* AUTO SCRAM CHANNEL A2 alarm annunciates	AUTO SCRAM CHANNEL A2 alarm lit			
29.	*(Step 4.4.5)* **VERIFY** the following SCRAM SYSTEM LOGIC lights **not** Lit at panel 10C603:	N/A			
30a.	A1 (DS9C)	A1 (DS9C) not Lit			
30b.	A2 (DS9G)	A2 (DS9G) not Lit			
30c.	A3 (DS9E)	A3 (DS9E) not Lit			
30d.	A4 (DS9A)	A4 (DS9A) not Lit			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
31.	*(Step 4.4.6)* **VERIFY** REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2 **not** Lit at panel 10C609 **CUE:** EO in the AER reports the REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2 is **not** Lit at panel 10C609	Candidate verifies REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2 not Lit at 10C609			
32.	*(Step 4.4.7)* **IF** rod motion occurs, **THEN NOTIFY** Shift Supervision immediately.	N/A			
33.	*(Step 4.4.8)* **IF** any blue scram lights are lit as a result of this test, **THEN NOTIFY** Shift Supervision immediately.	N/A			
34.	*(Step 4.4.9)* **VERIFY** "MANUAL SCRAM SYSTEM A" alarm can be cleared at panel 108 REACTOR	Candidate verifies MANUAL SCRAM SYSTEM A alarm cleared			
35.	*(Step 4.4.10)* **POSITION** CH A2 collar in DISARMED at panel 10C603	Candidate positions CH A2 collar in DISARMED			
36.	**AND VERIFY** "MANUAL SWITCH ARMED A, B" alarm can be cleared at panel 108 REACTOR.	"MANUAL SWITCH ARMED A, B" alarm cleared at panel 108 REACTOR			
37.	*(Step 4.4.11)* **POSITION** "SCRAM RESET" to the following at panel 10C603:	N/A			
*37 a	Group 1/4	Reset Switch taken to Group 1/4			
*37	Group 2/3	Reset Switch taken to Group 2/3			

b					
38.	*(Step 4.4.12)* **VERIFY** "AUTO SCRAM CHANNEL A2" alarm can be cleared at panel 108 REACTOR	Candidate verifies "AUTO SCRAM CHANNEL A2" alarm cleared			
39.	*(Step 4.4.13)* **VERIFY** the following SCRAM SYSTEM LOGIC lights Lit at panel 10C603:	Candidate verifies SCRAM SYSTEM LOGIC lights Lit at panel 10C603			
39a.	A1 (DS9C)	A1 (DS9C) Lit			
39b.	A2 (DS9G)	A2 (DS9G) Lit			
39c.	A3 (DS9E)	A3 (DS9E) Lit			
39d.	A4 (DS9A)	A4 (DS9A) Lit			
40.	*(Step 4.4.14)* **VERIFY** "REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2" Lit at panel 10C609 **CUE:** EO in the AER reports the REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2 is Lit at panel 10C609	Candidate verifies REACTOR AUTO-SCRAM TRIP LOGIC A2 DS2" Lit			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: SCRAM CHANNEL A1 AND A2 FUNCTIONAL TEST

JPM Number: LOJPM3031 **Revision Number:** 001

Task Number and Title: 2120010201 Conduct RPS Manual Scram Channel Functional Test

K/A Number and Importance: 212000 K4.05 3.4 / 3.6

Safety Function (1-9) ___1___(Reactivity Control)

Admin Category (A1-4) _____

Level of Difficulty (1-5) __2__

Suggested Testing Environment: Simulator

Alternate Path:☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): ST-6-071-306-1, Channel A1 and A2 RPS Manual Scram Channels Functional Test, Rev 15

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

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LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. All prerequisites of ST-6-071-306-1 are completed
2. Shift Supervision has given permission to perform ST
3. PRO/RO have given permission to perform ST
4. Plant in OPCON 1 with no half scram signals present.
5. EO standing by in AER on mobile phone.
6. Thermography on all scram solenoids on each HCU, completed this shift
7. No other plant testing or plant condition which could interfere with this test is being performed

INITIATING CUE:

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

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

SUPPLY RECW TO THE DRYWELL COOLERS

JPM Number: LOJPM3028

REVISION NUMBER: 002

DATE: 6/23/21

Developed By:	Instructor	6/9/21 Date
Validated By:	SME or Instructor	6/10/21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-JA-150 Format

I. 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 9 through 13 below.

JAM	1.	Task description and number, JPM description and number are identified.
JAM	2.	Knowledge and Abilities (K/A) references are included.
JAM	3.	Performance location specified. (in-plant, control room, simulator, or other)
JAM	4.	Initial setup conditions are identified.
JAM	5.	Initiating cues (and terminating cues if required) are properly identified.
JAM	6.	Task standards identified and verified by SME review.
JAM	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A JAM	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JAM	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure S13.6.D Rev: 15
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____

JAM	10.	Verify cues both verbal and visual are free of conflict.
JAM	11.	Verify performance time is accurate
N/A JAM	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JAM	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM replaces LLOJPM0028 Rev. 0. Revised to new template and to align with latest procedure revision.	10/15/13
001	This SEG is revised to new 3/16 SEG format template, including any procedure revisions.	08/05/16
002	This SEG is revised to include formatting and procedure revisions.	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

RECW aligned to the 'A' Drywell Chilled Water loop per S13.6.D, RECW Operation With Loss Of Drywell Chilled Water.

IV. SIMULATOR SETUP INSTRUCTIONS:

1. Reset simulator to IC-3
2. Scram the Reactor
3. Trip both Recirc Pumps
4. Allow FWLC to transfer to startup level control
5. Shutdown RWCU Per S44.2.A
6. Build a trigger to toggle Remote Function **RPC306** to CLOSE. (closes feed breakers per S13.6.D, step 4.2.5)
7. Hang information tags on the following valves:

- HV-51-1F080A, RHR Sample Line Downstream Isolation (SAMPLE OUTBOARD) ISO
- HV-51-1F080B, RHR Sample Line Downstream Isolation (SAMPLE OUTBOARD) ISO
- HV-41-1F085, Main Steam Line Outboard Sample (DRAIN SAMPLE OUTBOARD) ISO
- HV-43-1F020, Recirc Sample Line Outboard Isolation (SAMPLE) ISO

V. INITIAL CONDITIONS:

1) Unit 1 is in OPCON 3.
2) DW Chilled Water has been lost due to trips on both Drywell Chiller Units.
3) DW temperature is 150°F and rising.
4) The CRS has entered OT-101, and T-102.
5) Maximizing Drywell Cooling is being directed by TRIPS
6) RWCU has been shutdown per S44.2.A, Reactor Water Cleanup Shutdown.
7) Administrative Clearances have been applied for valves in S13.6.D, section 4.2.4.
8) An EO is briefed and in the field with a copy of S13.6.D.

VI. INITIATING CUE:

You are directed by Shift Supervision to align RECW operation to cool the drywell using the 'A' Loop per S13.6.D, beginning at step 4.2.2.

- Locked Valve Log entries have been authorized for required beaker closures

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	Obtain a current revision of S13.6.D, RECW Operation With Loss of Drywell Chilled Water. **CUE:** Candidate is given a copy of S13.6.D, RECW Operation With Loss of Drywell Chilled Water.	Candidate demonstrates ability (actual or discuss) to locate the correct procedure.			
2.	[S13.6.D Step 4.2.1] **SHUTDOWN** RWCU system per S44.2.A, Reactor Water Cleanup Shutdown.	N/A RWCU shutdown per initial conditions			
*3.	[S13.6.D Step 4.2.2] **CLOSE** HV-13-*02, Cooling Water to Reactor Building Isolation (SUPPLY ISOL).	Handswitch for HV-13-102 taken to close and valve verified to close			
4.	[S13.6.D Step 4.2.3] **IF** loss of instrument air prohibits closure of HV-13-*02, SUPPLY ISOL, in step 4.2.2, **THEN CLOSE** 13-*039, "RECW Header Valve to RWCU Non-Regen Heat Exchanger."	N/A			
5.	[S13.6.D Step 4.2.4] Block **CLOSE** the following sample point isolation valves • HV 51 *F080A • HV 51 *F080B • HV 41 *F085 • HV 43 *F020 • 023-1246 **CUE:** Administrative Clearances have been applied for valves requested.	N/A (Info is provided in Initial Conditions)			
EVALUATORS NOTE: When operator requests the breakers in the following step to be closed, activate trigger associated with remote function **RPC306** to close the breakers.					

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*6	[S13.6.D Step 4.2.5] **UNLOCK AND CLOSE** the following breakers: • D*14-R-C-15 (124A) • D*14-R-C-19 (124B) • D*14-R-C-16 (125A) • D*14-R-C-20 (125B) **CUE:** After confirmation of 124A(B) and 125A(B) closed (Trigger 1 activated) report the following breakers closed: • D114-R-C-15 • D114-R-C-19 • D114-R-C-16 • D114-R-C-20	Candidate directs EO to close following breakers: • D114-R-C-15 • D114-R-C-19 • D114-R-C-16 • D114-R-C-20			
7.	[S13.6.D Step 4.2.6] **ENSURE** indication for the valves is received in MCR	Indication (Green Lights) received for 124A(B) and 125A(B)			
8.	[S13.6.D Step 4.2.7] **IF** required **THEN BYPASS** isolations per GP-8.5.	N/A			
*9.	[S13.6.D Step 4.2.8] **PLACE** HSS-87-*21A(B), Loop Drywell Water Source Mode Switch (LOOP), in "RE CLG WTR" for loop to be supplied by RECW AND VERIFY the following:	HSS-87-121A placed in RE CLG WTR position for LOOP A (Momentarily- spring returns to center).			
9a.	Red indicating lights RECW IN **AND** RECW OUT lit.	RECW IN and OUT red lights verified lit			
9b.	Green indicating lights CHLD WTR IN **AND** CHLD WTR OUT lit.	CHLD WTR IN and OUT green lights verified lit			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: SUPPLY RECW TO THE DRYWELL COOLERS

JPM Number: LOJPM3028 **Revision Number:** 002

Task Number and Title: 2080040401, Line Up RECW System to Supply Drywell Chilled Water System

K/A Number and Importance: 400000 A2.01 3.3/3.4

Safety Function (1-9) __5__ ***(Containment Control)***

Admin Category (A1-4) __N/A__

Level of Difficulty (1-5) __3__

Suggested Testing Environment: Simulator

Alternate Path:☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S13.6.D, RECW Operation With Loss Of Drywell Chilled Water, Rev. 15

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1) Unit 1 is in OPCON 3.
2) DW Chilled Water has been lost due to trips on both Drywell Chiller Units.
3) DW temperature is 150°F and rising.
4) The CRS has entered OT-101, and T-102.
5) Maximizing Drywell Cooling is being directed by TRIPS
6) RWCU has been shutdown per S44.2.A, Reactor Water Cleanup Shutdown.
7) Administrative Clearances have been applied for valves in S13.6.D, section 4.2.4.
8) An EO is briefed and in the field with a copy of S13.6.D.

INITIATING CUE:

You are directed by Shift Supervision to align RECW operation to cool the drywell using the 'A' Loop per S13.6.D, beginning at step 4.2.2.

- Locked Valve Log entries have been authorized for required beaker closures

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

STANDBY GAS TREATMENT SYSTEM TRAIN SWAP

JPM Number: LOJPM3531

REVISION NUMBER: 000

DATE: 6/23/21 ~~03-01-21~~ JAM 6/23/21

Developed By:	Instructor	2-17-21 Date
Validated By:	SME or Instructor	2-17-21 Date
Reviewed By:	Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Training Department	6/23/21 Date

A. **Note**: This LGS format satisfies the TQ-AA-150-J020 Format

II. 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 9 through 13 below.

JK	1.	Task description and number, JPM description and number are identified.
JK	2.	Knowledge and Abilities (K/A) references are included.
JK	3.	Performance location specified. (in-plant, control room, simulator, or other)
JK	4.	Initial setup conditions are identified.
JK	5.	Initiating cues (and terminating cues if required) are properly identified.
JK	6.	Task standards identified and verified by SME review.
JK	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A JK	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JK	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure S76.8.C Rev: 7 Procedure ARC-MCR-002 G-1 Rev: 0 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JK	10.	Verify cues both verbal and visual are free of conflict.
JK	11.	Verify performance time is accurate
N/A JK	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
N/A JK	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

III. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM	04/01/21

 # Date of Revision - refers to date revision was released for approval

IV. TASK STANDARD:

'A' SGTS Fan and Filter Train are placed in service and then removed from service due to a trip of the 'A' SGTS Fan. The 'B' SGTS Fan and Filter Train are then placed in service.

V. SIMULATOR SETUP

1. Reset simulator to IC-3, or another IC if JPM was validated in the respective IC.

   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. Insert a Reactor Enclosure Secondary Containment Manual Isolation by arming and depressing both HS76-178A and HS76-178B
3. Ensure "B" SGTS in service with "B" Fan 0BV163, running through the "B" filter train (HV-076-11B AND HV-076-012B open)
4. Ensure "A" SGTS, 0AV163, in STBY (NOT running)
5. Place HS-076-013A in AUTO (HV-076-011A AND HV-076-012A, NOT open).
6. Reset alarms.
7. Build a trigger to trip the A and B SGTS fans using MRE001A and MRE001B with a 20 second activation time when B" SGTS Fan Handswitch, HS-076-040B, for 0B-V163 placed in "STANDBY"
8. Create a SCN file which deactivates the B Fan, MRE001B, malfunction when the switch HS-076-040B is taken to off with a 1 second de-act time. Save the SCN file to a thumbdrive.
9. When malfunction MRE001A and B go active, run the SCN file to enable the reset of the 0B Fan.

VI. INITIAL CONDITIONS:

1. Unit 1 Reactor Enclosure Secondary Containment Isolation has been initiated
2. “0B” SGTS Fan and Filter Train is in service

VII. INITIATING CUE:

Shift Supervision directs you to swap to the ‘A’ SGTS Fan and Filter Train, as directed by section 4.5 of S76.8.C, “Swapping of SGTS and RERS Fans with Secondary Containment Isolation Initiated”.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VIII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	Obtain current revision of S76.8.C, "Swapping of SGTS and RERS Fans With Secondary Containment Isolation Initiated". **CUE:** Candidate is given a copy of S76.8.C, Swapping Of SGTS and RERS Fans With Secondary Containment Isolation Initiated.	N/A			
2.	Candidate references proper section of S76.8.C to swap from the B SGTS Filter Train to the A SGTS Filter Train	Candidate references section 4.5 of S76.8.C			
*3.	*(S76.8.C 4.5.1)* **PLACE** "SGTS Filter Train Handswitch," HS-076-013A to "OPEN" position to manually start the "A" Train.	Candidate places HS-076-013A to the "OPEN" position			
4.	*(4.5.2)* **VERIFY** dampers HV-076-011A AND HV-076-012A, Filter Inlet and Outlet, indicate "OPEN" at panel 00C681.	Candidate verifies HV-076-011A and HV-076-012A OPEN			
*5.	*(4.5.3)* **PLACE** "A" SGTS Fan Handswitch," HS-076-040A, for 0A-V163 to the "AUTO" position at panel 00C681.	Candidate places HS-076-040A in AUTO			

ELEMENT		STANDARD	SAT	UNSAT	COMMENT NUMBER
EVALUATORS NOTE: S76.8.C, Swapping Of SGTS and RERS Fans With Secondary Containment Isolation Initiated, steps 4.5.5 and 4.5.7, both state "**OR** as directed by SSV" If requested, role-play as SSV and state to candidate "Perform the procedure as written"					
6.	*(4.5.4)* **VERIFY** "A" fan starts at panel 00C681.	Candidate verifies "A" SGTS Fan running			
*7.	*(4.5.5)* **PLACE** "B" SGTS Fan Handswitch, HS-076-040B, for 0B-V163 to the "STANDBY" position.	Candidate places HS-076-040B in STANDBY			
8.	*(4.5.6)* **VERIFY** "B" Fan stops at panel 00C681.	Candidate verifies "B" SGTS Fan not running			
EVALUATORS NOTE: 20 seconds after HS-76-004B is taken to STBY, annunciators 002 G-1 "A SGTS EXHAUST FAN OAV163 TROUBLE" 002 H-1 "B SGTS EXHAUST FAN OBV163 TROUBLE" will alarm.					
*9	*(4.5.7)* **PLACE** HS-076-013B to the "AUTO" position.	Candidate places HS-076-013B in "AUTO"			
10.	*(4.5.8)* **VERIFY** "B" SGTS Filter Train Dampers,"HV-076-011B AND HV-076-012B, Filter Inlet and Outlet, indicate "CLOSED" at panel 00C681.	Candidate verifies HV-076-011B and HV-076-012B CLOSED			
EVALUATORS NOTE: Alternate Path begins with this step. **Driver Note**: When MRE001A and MRE001B have gone active, run 0B Reset.scn file.					
11.	Respond to alarm: 002 G-1 "A SGTS EXHAUST FAN OAV163 TROUBLE"	ARC for 002 G-1 referenced.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
12.	Recognize the Trip of 0AV163 SGTS Fan and failure of the 0BV163 Fan to start.	Candidate recognizes the trip of the 0AV163 SGTS Fan and the failure of the standby fan 0B163 to auto start.			
Evaluator Note: The following steps may be performed in any order. The candidate may follow the steps in S76.8.C section 4.4 to place the 0BV163 Fan back into service, or they may take the action from the ARC 002-G1 to reset the 0B fan and place it in service. In either case, the 0BV163 fan control switch must be placed to "OFF" and then to any position to restore flow.					
13.	*(ARC-002-G1, Step 3)* If SGTS is required, **THEN** swap to standby fan. **Cue**: If asked, "SGTS is required"	Candidate determines that "0B" SGTS fan should be started			
14.	*(ARC-002-H1, step 2)* Send appropriate personnel to determine the cause of the trouble alarm **Cue**: The 0B fan has tripped on low flow. No obvious reason for the 0A fan trip	Candidate sends EO or maintenance personnel to determine the cause of the trouble alarm			
*15.	*(S76.8.C 4.4.1)* **PLACE** "SGTS Filter Train Handswitch," HS-076-013B to "OPEN" position to manually start the "B" Train.	Candidate places HS-076-013B to the "OPEN" position			
16.	*(4.4.2)* **VERIFY** dampers HV-076-011B AND HV-076-012B, Filter Inlet and Outlet, indicate "OPEN" at panel 00C681.	Candidate verifies HV-076-11B and HV-076-012B OPEN			
*17.	*(ARC-MCR-002, Step 5)* **PLACE** "B" SGTS Fan Handswitch," HS-076-040B, for 0B-V163 to the "OFF" position at panel 00C681.	Candidate places HS-076-040B in OFF			
*18.	*(4.4.3)* **PLACE** "B" SGTS Fan Handswitch," HS-076-040B, for 0B-V163 to the "AUTO" position at panel 00C681.	Candidate places HS-076-040B to AUTO or ON position			

ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
CUE: You have met the termination criteria for this JPM				

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: STANDBY GAS TREATMENT SYSTEM TRAIN SWAP

JPM Number: LOJPM3531 **Revision Number:** 000

Task Number and Title: 2610040101 Lineup and place SGTS in service

K/A Number and Importance: 261000 A4.03 3.0/3.0

Safety Function (1-9) __9__ *(Radioactivity Release)*

Admin Category (A1-4) __N/A__

Level of Difficulty (1-5) __2.5__

Suggested Testing Environment: Simulator

Alternate Path: ☒ Yes ☐ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): S76.8.C, Swapping Of SGTS and RERS Fans With Secondary Containment Isolation Initiated, Rev 7

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. B Refuel Floor Secondary Containment Isolation has been initiated

2. “B” SGTS Fan and Filter Train is in service

INITIATING CUE:

Shift Supervision directs you to swap to the “A” SGTS Fan and Filter Train, as directed by section 4.5 of S76.8.C, “Swapping Of SGTS and RERS Fans With Secondary Containment Isolation Initiated.”

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

DEFEAT OF HPCI/RCIC TEST RETURN AND INJECTION VALVE ISOLATION LOGIC

JPM Number: LOJPM2275

REVISION NUMBER: 000

DATE: ~~04/01/21~~ 6/23/21 JAM 6/23/21

Developed By:	C. J. Bird Instructor	6/01/21 Date
Validated By:	[signature] SME or Instructor	6/10/21 Date
Reviewed By:	Jeffrey R Ulmer Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel Hemeter Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JAM	1.	Task description and number, JPM description and number are identified.
JAM	2.	Knowledge and Abilities (K/A) references are included.
JAM	3.	Performance location specified. (in-plant, control room, simulator, or other)
JAM	4.	Initial setup conditions are identified.
JAM	5.	Initiating cues (and terminating cues if required) are properly identified.
JAM	6.	Task standards identified and verified by SME review.
JAM	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
N/A JAM	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JAM	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure T-242 (U1) Rev: 10
Procedure T-242 (U2) Rev: 7
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____

JAM	10.	Verify cues both verbal and visual are free of conflict.
JAM	11.	Verify performance time is accurate
N/A JAM	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JAM	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This is a new JPM	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

1. T-242 performed by installing jumpers in *0C620, *0C621 to defeat the HPCI/RCIC Test Return and Injection Valve Isolation Logic.

IV. SIMULATOR SETUP

N/A

V. INITIAL CONDITIONS:

1. Unit ___ Reactor scrammed and the MSIVs have closed
2. HPCI and RCIC are being used for Pressure and Level control
3. Drywell Pressure is 1.1 lbs rising slowly due to a loss of cooling

VI. INITIATING CUE:

The CRS directs you to perform T-242, “Defeat of HPCI/RCIC Test Return and Injection Valve Isolation Logic”.

Information for Evaluator’s Use:

Any **UNSAT** requires written comments on respective step.

*****
Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site’s appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	**Obtain** current revision of T-242, "Defeat of HPCI/RCIC Test Return and Injection Valve Isolation Logic". **CUE:** Candidate is given a copy of T-242, "Defeat of HPCI/RCIC Test Return and Injection Valve Isolation Logic" when knowledge of the correct location of procedure is demonstrated.	Candidate demonstrates ability (actual or discuss) to locate T-242, "Defeat of HPCI/RCIC Test Return and Injection Valve Isolation Logic"			
2.	**Obtain** T-242 Toolbox from the T-200 Cabinet in the OSC **CUE:** You have tools/toolbox identified.	Toolbox and Tools obtained from the T-200 Cabinet			
3.	**PERFORM** the following at *0C620 (Aux Equip Room):	N/A			
*4.	(4.1.1.1) **LIFT** lead (**CG-R2 for Unit 1**) (**CG-R1 for Unit 2**) from DDD8-3 to defeat the auto open signal for HV-055-*F006 **CUE:** The identified lead is lifted	Lead from DDD8-3 to (CG-R2 Unit 1) or (CG-R1 Unit 2) is lifted			
*5.	(4.1.1.2) **INSTALL** jumper from DDD8-3 to DDD5-7. **CUE:** Jumper is installed	Jumper installed from DDD8-3 to DDD5-7.			
*6.	(4.1.1.3) **LIFT** lead CH-R4 from FFF2-3 to defeat auto open signal for HV-055-*F105.	Lead CH-R4 from FFF2-3 is lifted			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
	Cue: Lead is lifted				
*7.	(4.1.1.4) **INSTALL** jumper from FFF2-3 to FFF1-3. **Cue**: Jumper is installed	Jumper installed from FFF2-3 to FFF1-3.			
*8.	(4.1.1.5) **LIFT** lead BW-M3 from CCC5-6 to defeat auto close signal for HV-055-*F008. **Cue:** Lead is lifted	Lead BW-M3 from CCC5-6 lifted			
*9.	(4.1.1.6) **INSTALL** jumper from AAA8-11 to CCC5-1. **Cue**: Jumper is installed	Jumper installed from AAA8-11 to CCC5-1			
*10.	(4.1.1.7) **LIFT** lead CB-M1 only from DDD1-6 to defeat auto close signal for HV-055-*F011 **AND ENSURE** lead EDA-B remains landed on DDD1-6 **Cue:** Lead is lifted	Lead CB-M1 only from DDD1-6 lifted and ensured lead EDA-B remains landed on DDD1-6			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*11.	(4.1.1.8) **LIFT** lead from CCC4-6 to defeat auto close signal for HV-055-*F071 **Cue:** Lead is lifted	Lead from CCC4-6 lifted			
*12.	Step 4.1.2 **PERFORM** the following at *0C621 (Aux Equip Room) (Attachment 2):	N/A			
*13.	(4.1.2.1) **LIFT** lead BBB3-7 from FFF1-11 to defeat auto open signal for HV-049-*F013 **Cue:** Lead is lifted	Lead BBB3-7 from FFF1-11 lifted			
*14.	(4.1.2.2) **INSTALL** jumper from FFF1-11 to BBB3-7 **Cue**: Jumper is installed	Jumper from FFF1-11 to BBB3-7 installed			
*15.	(4.1.2.3) **LIFT** lead DFB-R from EEE9-6 to defeat auto close signal for HV-049-*F022 **Cue:** Lead is lifted	Lead DFB-R from EEE9-6 lifted			
*16.	(4.1.2.4) **INSTALL** jumper from BBB3-12 to EEE9-1 **Cue**: Jumper is installed	Jumper from BBB3-12 to EEE9-1 installed			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: DEFEAT OF HPCI/RCIC TEST RETURN AND INJECTION VALVE ISOLATION LOGIC

JPM Number: LOJPM2275
Task Number and Title: 2000190501 (0T-100) Actions for Low Reactor Water Level

K/A Number and Importance:	206000	A2.16	4.0/4.1
	217000	A2.01	3.8/3.7

Safety Function (1-9) __4__

Admin Category (A1-4) __N/A__

Level of Difficulty (1-5) __3__

Suggested Testing Environment: In-Plant

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): T-242, DEFEAT OF HPCI/RCIC TEST RETURN AND INJECTION VALVE ISOLATION LOGIC

Actual Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: __30__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit ___ Reactor scrammed and the MSIVs have closed
2. HPCI and RCIC are being used for Pressure and Level control
3. Drywell Pressure is 1.1 lbs rising slowly due to a loss of cooling

INITIATING CUE:

The CRS directs you to perform T-242, “Defeat of HPCI/RCIC Test Return and Injection Valve Isolation Logic”.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

MANUAL ISOLATION AND VENT OF THE SCRAM AIR HEADER

JPM Number: LOJPM2210

REVISION NUMBER: 006

DATE: 6/23/21

Developed By:	Instructor	Date: 6/01/21
Validated By:	SME or Instructor	Date: 6/10/21
Reviewed By:	Operations Representative	Date: 6/22/21
Reviewed By:	EP Representative	Date: N/A
Approved By:	Training Department	Date: 6/23/21

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JAM	1.	Task description and number, JPM description and number are identified.
JAM	2.	Knowledge and Abilities (K/A) references are included.
JAM	3.	Performance location specified. (in-plant, control room, simulator, or other)
JAM	4.	Initial setup conditions are identified.
JAM	5.	Initiating cues (and terminating cues if required) are properly identified.
JAM	6.	Task standards identified and verified by SME review.
JAM	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
JAM	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JAM	9.	Verify the procedure(s) referenced by this JPM reflects the current revision:

Procedure T-216 U/1 Rev: 21
Procedure T-216 U/2 Rev: 19
Procedure _____ Rev: _____
Procedure _____ Rev: _____
Procedure _____ Rev: _____

JAM	10.	Verify cues both verbal and visual are free of conflict.
JAM	11.	Verify performance time is accurate
N/A JAM	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JAM	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM replaces LLOJPM0210 Rev. 13. Revised to new template and to align with latest procedure revision.	10/11/14
001	Revision 001 has no description	10/01/16
002	Revised to fix minor typos and to align with latest procedure revision.	10/03/16
Rev003	Revised to align with latest procedure revision	10/3/17
004	Revision for minor format changes and procedure revisions	9-16-18
005	Revision for minor typographical errors	10-7-19
006	Revision for procedure revision	04-01-21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Satisfactorily complete actions dictated by T-216 to isolate and depressurize the Scram air header.

IV. INITIAL CONDITIONS:

1. Unit ____ is in an ATWS.

V. INITIATING CUE:

Shift Supervision, per T-101, directs you to perform T-216 on Unit ___.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VI. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	**Obtain** current revision of T-216, "Manual Isolation and Vent of Scram Air Header", from Unit * T-200 cabinet in OSC. **CUE:** Candidate is given a copy of T-216, "Manual Isolation and Vent of Scram Air Header", when knowledge of the correct location of procedure is demonstrated.	Candidate demonstrates ability (actual or discuss) to locate T-216, "Manual Isolation and Vent of Scram Air Header"			
2.	**Obtain** T-216 Toolbox from the T-200 Cabinet in the OSC **CUE:** You have tools/toolbox identified.	Toolbox and Tools obtained from the T-200 Cabinet			
*3.	*[T-216 4.1]* **CLOSE** 47-*F095, "Air Supply to Scram Vlv Pilot Air Hdr" (402-R15-253/475-R17-253) (ATTACHMENT 1) **CUE:** The handwheel rotates and then comes to a stop	Examinee rotates the handwheel clockwise the air supply valve to the scram air header 47-*F095 handwheel the valve is closed			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*4.	*[T-216 4.2]* **CLOSE** RV-047-*01, "PI-*R013, PT-*N052 CRD SCRAM VALVE PILOT AIR" on East side of instrument rack *0C213 (402-R15-253/475-R17-253) (ATTACHMENT 1 & 2) **CUE:** The handwheel rotates and then comes to a stop)	Examinee rotates the handwheel clockwise the root valve for PT-*N052 and PI-47-*R013 until the valve is closed			
EVALUATORS NOTE: **Steps 4 – 5** are to be completed when performing this JPM on **Unit 1**. **Steps 6 – 7** are to be completed when performing this JPM on **Unit 2**. Steps for the Unit **NOT** selected for this JPM may be marked N/A even though they are marked as critical steps.					
*5.	*[T-216 4.3 U/1]* **UNIT 1 ONLY** **REMOVE** test connection cap from IIV-047-101.1, "PT-1N052 CRD SCRAM VALVE PILOT AIR" on North side of instrument rack 10C213 (402-R15-253) (ATTACHMENT 1 & 2) **CUE**: "The cap rotates until it comes free from the end of the pipe."	Using the adjustable wrench, examinee simulates rotating the cap in the counter-clockwise (CCW) direction and remove the test connection cap downstream of the root valve for PT-1N052			
*6.	*[T-216 4.4 U/1]* **UNIT 1 ONLY** **REMOVE** test connection cap from IIV-047-101.2, "PI-1R013 CRD SCRAM VALVE PILOT AIR" on South side of instrument rack 10C213 (402-R15-253) (ATTACHMENT 1 & 2) **CUE:** "The cap rotates until it comes free from the end of the pipe."	Using the adjustable wrench, examinee simulates rotating the cap in the counter-clockwise (CCW) direction and remove the test connection cap downstream of the root valve for PI-47-1R013			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*7.	*[T-216 4.3 U/2]* **UNIT 2 ONLY** **REMOVE** test connection cap from IIV-047-201.1, "PT-2N052 CRD SCRAM VALVE PILOT AIR" on North side of instrument rack 20C213 (475-R17-253) (ATTACHMENT 1 & 2) **CUE:** "The cap rotates until it comes free from the end of the pipe."	Using the adjustable wrench, examinee simulates rotating the cap in the counter-clockwise (CCW) direction and remove the test connection cap downstream of the root valve for PT-2N052			
*8.	*[T-216 4.4 U/2]* **UNIT 2 ONLY** **REMOVE** test connection cap from IIV-047-201.2, "PI-2R013 CRD SCRAM VALVE PILOT AIR" on South side of instrument rack 20C213 (475-R17-253) (ATTACHMENT 1 & 2) **CUE:** "The cap rotates until it comes free from the end of the pipe."	Using the adjustable wrench, examinee simulates rotating the cap in the counter-clockwise (CCW) direction and remove the test connection cap downstream of the root valve for PI-2R013			
9.	**WHEN** RV-047-*01, "PI-*R013, PT-*N052 CRD SCRAM VALVE PILOT AIR" will be opened, **THEN NOTIFY** MCR that control rod movement should occur **CUE:** As the unit * RO "Understand rod movement is expected"	Examinee simulates contacting MCR that the next step may cause rod movement.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*10.	*[T-216 4.6]* **OPEN** RV-047-*01, "PI-*R013, PT-*N052 CRD SCRAM VALVE PILOT AIR" on East side of instrument rack *0C213 **CUE:** "The handwheel rotates and then comes to a stop. You can hear air escaping from the test connections."	Examinee simulates rotating root valve for PT-__N052 and PI-___ R013 handwheel counter-clockwise (CCW) until the valve is open			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: Manual Isolation and Vent of the Scram Air Header

JPM Number: LOJPM2210 **Revision Number:** 006

Task Number and Title: 2000550501, (T-216) Manually Isolate and Vent Scram Air Header (RO)
2000310504, Perform Manual Isolation and Vent of Scram Air Header (EO)

K/A Number and Importance:	212000	A4.17	4.1/4.1
	295037	EA1.05	3.9/4.0

Level of Difficulty (1-5) 3

Suggested Testing Environment: In-Plant

Alternate Path: ☐ Yes ☒ No **SRO Only**: ☐ Yes ☒ No **Time Critical**: ☐ Yes ☒ No

Reference(s): T-216 Manual Isolation and Vent of Scram Air Header U/1 Rev. 20
T-216 Manual Isolation and Vent of Scram Air Header U/2 Rev. 18

Actual Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: 20 minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE
INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit ____ is in an ATWS.

INITIATING CUE STATEMENT:

Shift Supervision, per T-101, directs you to perform T-216 on Unit ___.

Exelon Generation

LIMERICK GENERATING STATION
JOB PERFORMANCE MEASURE

T-244, BACK-UP DIESEL DRIVEN FIRE PUMP MANUAL START

JPM Number: LOJPM2232

REVISION NUMBER: 003

DATE: 6/23/21

Developed By:	C. J. Bird Instructor	6/01/21 Date
Validated By:	[signature] SME or Instructor	6/10/21 Date
Reviewed By:	[signature] Operations Representative	6/22/21 Date
Reviewed By:	N/A EP Representative	N/A Date
Approved By:	Daniel J Semite Training Department	6/23/21 Date

Note: This LGS format satisfies the TQ-AA-150-J020 Format

I. 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 9 through 13 below.

JAM	1.	Task description and number, JPM description and number are identified.
JAM	2.	Knowledge and Abilities (K/A) references are included.
JAM	3.	Performance location specified. (in-plant, control room, simulator, or other)
JAM	4.	Initial setup conditions are identified.
JAM	5.	Initiating cues (and terminating cues if required) are properly identified.
JAM	6.	Task standards identified and verified by SME review.
JAM	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
JAM	8.	If an alternate path is used, the task standard contains criteria for successful completion.
JAM	9.	Verify the procedure(s) referenced by this JPM reflects the current revision: Procedure T-244 U/1 Rev: 21 Procedure T-244 U/2 Rev: 19 Procedure _____ Rev: _____ Procedure _____ Rev: _____ Procedure _____ Rev: _____
JAM	10.	Verify cues both verbal and visual are free of conflict.
JAM	11.	Verify performance time is accurate
N/A JAM	12.	If the JPM cannot be performed as written with proper responses, then revise the JPM.
JAM	13.	When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

II. REVISION HISTORY:

A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.

B. The description of the Revision should adequately indicate how the training content of the Revision has changed.

C. The description of the Revision should also include previous format reference and number and previous template used (i.e. for conversion to LLOJPM format).

D. For Revision 000, put reason for writing this JPM and for all subsequent revisions, annotate the changes that were made or incorporated.

Revision Number	Description of Revision and Affect on Training Content	# Date of Revision
000	This JPM replaces LLOJPM0232 Rev. 7. Revised to new template and to align with latest procedure revision.	10/11/13
000	Revised to reflect T-244 procedure change, and make common with T-200 EO JPMs	10/19/15
001	Revised to reflect T-244 procedure revisions and JPM format changes	9/13/17
002	Revised to reflect T-244 procedure revisions	9/29/19
003	Revised to reflect template format changes	04/01/21

 # Date of Revision - refers to date revision was released for approval

III. TASK STANDARD:

Backup Diesel Driven Fire Pump is manually started from the "TEST" switch position at 10C096 (Lower Parking Lot Pump Enclosure), and the MCR is notified to commence injection using T-244, "Alternate Injection From the Fire System".

IV. SIMULATOR SETUP

None

V. INITIAL CONDITIONS:

1. Unit __ reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. T-244, step 4.1 and the first two bullets of step 4.2, have been performed in the MCR.
4. The Motor Driven Fire Pump did not start from the Main Control Room.
5. The Diesel Driven Fire Pump did not start from the Main Control Room.

VI. INITIATING CUE:

You are directed by Shift Supervision to perform a manual start of the Motor Driven Fire Pump from the Circ Water Pump House using T-244 on Unit ____, and once running notify the MCR to inject into the RPV.

Information for Evaluator's Use:

Any **UNSAT** requires written comments on respective step.

***** Denotes critical steps

Number any comments in the "Comment Number" column on the following pages. 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, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside 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 JPM Start Time clock starts when the candidate acknowledges the initiating cue.

VII. PERFORMANCE CHECKLIST:

JPM Start Time _____

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
1.	**Obtain** current revision of T-244, "Alternate Injection From the Fire System". **CUE:** Candidate is given a copy of T-244, "Alternate Injection From the Fire System", when knowledge of the correct location of procedure is demonstrated.	Candidate demonstrates ability (actual or discuss) to locate T-244, "Alternate Injection From the Fire System"			
2	[T-244 4.2 bullet 3] **DEPRESS** HS-22-002 at 00C518 (Circ Water Pump House) to start 00P512, "Motor Driven Fire Pump." **CUE:** When HS-22-002 is depressed: "No sound from motor is heard, and the shaft is not spinning".	Examinee simulates depressing HS-22-002.			
NOTE: The following steps are in a bulleted list and the examinee may start the fire pump using "MAN B" first. In this case, JPM steps 3 and 3a should be marked N/A					
3	[T-244 4.2 bullet 4] **PLACE** control switch at 00C519 (Diesel Fire Pump Room) in "MANUAL A" **CUE:** Switch is in "MAN A"	Examinee simulates placing control switch placed in "MAN A" position			
3a	[T-244 4.2 bullet 4] **AND DEPRESS AND HOLD** HS-22-026-2 until diesel starts. **CUE:** Switch is in "START" position and no sound from engine is heard.	Examinee simulates depressing HS-22-026-2 and holds in "START" position.			

	ELEMENT	STANDARD	SAT	UNSAT	COMMENT NUMBER
*4	[T-244 4.2 bullet 5] **PLACE** control switch at 00C519 (Diesel Fire Pump Room) in "MANUAL B" **CUE:** Switch is in “MAN B”.	Examinee simulates placing control switch in "MAN B" position			
*4a	[T-244 4.2 bullet 5] **AND DEPRESS AND HOLD** HS-22-026-2 until diesel starts. **CUE:** Switch is in "START" position and the Diesel Driven Fire Pump has started.	Examinee simulates depressing HS-22-026-2 and holds in "START" position			
4b	**After short time delay:** **CUE:** The diesel engine has stopped, and the pump shaft is no longer turning.	Examinee acknowledges the cue and secures the diesel by taking the control switch to “OFF”			
*5	[T-244 4.2 bullet 6] **PLACE** control switch for 10P402, "Backup Diesel Driven Fire Pump," in "TEST" at 10C096 (Lower Parking Lot Pump Enclosure) **CUE:** Switch is in the "TEST" position and the Backup Diesel Driven Fire Pump has started and remains running.	Examinee simulates places the control switch for 10P402, "Backup Diesel Driven Fire Pump," in “TEST”			
*6	[T-244 4.3] **WHEN** a Fire Pump is running THEN OPEN HV-51-*F017B (Outboard) at *0C601 MCR or via HV-51-*F017B handwheel	MCR notified a Fire Pump has been started and to open HV-51-*F017B (Outboard) at *0C601 MCR			
CUE: You have met the termination criteria for this JPM					

JPM Completion Time _____

Exelon Generation

JPM SUMMARY

Operator's Name:_____.

Job Title: ☐ SED ☐ SM ☐ SRO ☐ RO ☐ STA/IA ☐ EO ☐ OTHER

JPM Title: T-244, DIESEL DRIVEN FIRE PUMP MANUAL START

JPM Number: LOJPM2232 **Revision Number:** 003

Task Number and Title: 2000740501, (T-244) Alternate Injection From the Fire System (RO)
2000500504, Support Alternate Injection From the Fire System (EO)

K/A Number and Importance: 286000 A2.08 3.2/3.3

Safety Function (1-9) __8___

Admin Category (A1-4) __N/A__

Level of Difficulty (1-5) _2_

Suggested Testing Environment: In-Plant

Alternate Path:☒ Yes ☐ No **SRO Only**: ☐ Yes ☒ No **Time Critical**:☐ Yes ☒ No

Reference(s): T-244 U/1, Alternate Injection From The Fire System, Rev. 21
T-244 U/2, Alternate Injection From The Fire System, Rev. 19

Actual Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: __15__ minutes **Actual Time Used**: _____ minutes

EVALUATION SUMMARY:
Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

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

Comments:_____

_____

_____

_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature:_____ **Date**: _____

Exelon Generation

LIMERICK GENERATING STATION

JOB PERFORMANCE MEASURE

INDIVIDUAL BRIEFING SHEET

INITIAL CONDITIONS:

1. Unit __ reactor level is low and injection is being established per T-244.
2. Reactor pressure is 50 psig
3. T-244, step 4.1 has been completed in the field and the first two bullets of step 4.2, have been performed in the MCR.
4. The Motor Driven Fire Pump did not start from the Main Control Room.
5. The Diesel Driven Fire Pump did not start from the Main Control Room.

INITIATING CUE:

You are directed by Shift Supervision to perform a manual start of the Motor Driven Fire Pump from the Circ Water Pump House using T-244 on Unit ____, and once running notify the MCR to inject into the RPV.

Exelon Generation

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

Code No:	SEG-2158E	Rev No:	002
Author:	John Mercurio	Approximate Run Time:	80 minutes
Type:	Simulator Evaluation Guide	Effective Date:	
Program:	Licensed Operator Training		
Course:	Initial Licensed Operator Training		
Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

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Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	John Mercurio /s/ Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	Jeff Weaver /s/ OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Dan Semeter /s/ Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Limerick 1 & 2 Scenario No.: SEG-2158E Rev 2 Op-Test No.: 2021-301

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:

Unit 1 is at 5.0 % power and RPV pressure is 900 psig with a GP-2, "Normal Plant Startup" in progress.

Unit 2 is at 100% power.

Turnover:

GP-2 is complete up to step 3.4.45 ready to raise Rx press from 900 to 960 psig using DEHC, and withdraw control rods to maintain Main Turbine BPVs controlling reactor pressure.

Critical Tasks:

OT-200.1 Insert Control Rods with Alternate Rod Insertion (ARI)
T-102.9 Conduct an Emergency Blowdown due to High Drywell Press

Per NUREG-1021, App. D, If an operator or crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis for a CT identified in the post scenario review

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	R-ATC N-BOP N-SRO	Continue raising reactor power and RPV pressure
2	MRD016D	C-ATC C-SRO	Control Rod (42-43) fails stuck
3	MPC257	C-BOP C-SRO TS	'1D' RHR Pump suction leak
4	MED282A	C-BOP C-SRO TS	Loss of Div 1 DC
5	MRR441	C-BOP C-SRO TS	Small coolant leak in Drywell
6	MRP029C	C-ATC C-SRO	RPS 'A' fails to scram (ARI successful) **(CT-1)**
7	MMS067	M-ALL	Steam leak in the Drywell
8	MPC476	C-BOP C-SRO	Downcomer break results in Suppression Pool pressure equalizing with Drywell pressure requiring blowdown on Pressure Suppression Curve **(CT-2)**
9	MRH600B	C-BOP C-SRO	'1B' RHR Pump trips on overcurrent

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

Simulator Scenario Summary

SEG-2158E

Initial Conditions:
Unit 1 is at 5.0 % power and RPV pressure is 900 psig with a GP-2, "Normal Plant Startup" in progress.
Unit 2 is at 100% power.

Turnover:
GP-2 is complete up to the point to raise RPV pressure from 900 psig to 960 psig using Digital Electro-Hydraulic Control (DEHC), and withdraw control rods to maintain Main Turbine Bypass Valves (BPVs) controlling reactor pressure.

Event 1: When the crew takes the shift, the BOP will raise RPV pressure using DEHC, and continue raising power by withdrawing control rods.

Evaluation: The BOP will use GP-2 to raise RPV Pressure to 960 psig by raising DEHC Target Pressure in accordance with GP-2 Attachment 15, "Adjusting Reactor Pressure". The SRO should direct further rod withdrawal to continue power ascension.

Event 2: As the ATC withdraws control rods, one of the control rods will fail stuck.

Evaluation: During the rod withdrawal the ATC will determine that control rod 42-43 is not moving on demand. The crew will use normal operating procedure S73.1.A, "Normal Operation of the Reactor Manual Control System", section 4.4, "Failure of Control Rod to Withdraw", to attempt to move the stuck control rod. The crew should adjust drive water pressure to free the struck rod and put it in its proper position.

Event 3: Following the stuck control rod event, a leak will develop in the suction line for the '1D' RHR Pump (Tech Spec 3.5.1 LCO entered).

Evaluation: The crew should react to the indications and dispatch a floor operator the location. Upon confirmation of the active leak into the RHR pump room, the crew should enter AOP SE-4, "Flooding", and take action to mitigate/isolate the condition and the degradation of secondary containment.

Event 4: After the RHR leak has been isolated and Tech Spec 3.5.1 LCO entered, a loss of Division 1 DC will occur (TS LCO 3.0.3 entered).

Evaluation: The crew is expected to diagnose a loss of Division 1 DC from the indications in the MCR. Once diagnosed the crew should enter AOP E-1FA, "Loss of Division 1 Safeguard 125V/250V DC Bus 1FA", and take actions as prescribed in the procedure, including placing the MCR HVAC into a Chlorine Isolation, Verify Unit Secondary Containment integrity, hold a crew brief on plant condition and contingencies.

SEG-2158E (continued)

Event 5: After the crew responds to the loss of DC, a small coolant leak will occur in the Drywell. This will require the SRO to evaluate TS 3.4.3.2..

Evaluation: The crew will recognize rising Drywell pressure and enter AOP OT-101, "High Drywell Pressure". The crew will then determine that the Drywell pressure increase is the result of an unidentified coolant leak and the crew will scram the reactor.

Event 6: After the BOP isolates RWCU in response to the increase in Drywell pressure, the ATC will perform a manual scram but 'A' RPS will fail to de-energize.

Evaluation: The ATC will take the reactor mode switch to the shutdown position but 'A' RPS will fail to de-energize. The ATC will use OT-200 Appendix 1, "RO Reactor Scram Hard Card", and manually activate RRCS (Alternate Rod Insertion), which will succeed in inserting the control rods. The crew will continue with post scram actions to stabilize the plant using EOP T-101, "RPV Control".

Event 7: When the Reactor Mode Switch has been placed in Shutdown, the steam leak in the Drywell will increase requiring actions directed by EOP T-102, "Primary Containment Control".

Evaluation: As Drywell pressure begins to rise rapidly, the SRO will enter EOP T-102 at 1.68 psig Drywell pressure and direct actions to initiate suppression pool spray. HPCI will initiate and the ATC and BOP will coordinate securing this injection source. The SRO will evaluate/direct Drywell Sprays when Suppression Pool pressure exceeds 7.5 psig.

Event 8: As the operators attempt to place Drywell Spray in service per T-225, "Startup and Shutdown of Suppression Pool and Drywell Spray Operation", a downcomer break will occur resulting in Suppression Pool pressure rising faster and exceeding the Pressure Suppression Curve.

Evaluation: The SRO will monitor T-102, Pressure Suppression Curve and once it is evident that the unsafe side of the curve cannot be avoided, enter EOP T-112, "Emergency Depressurization", and direct an emergency blowdown of the RPV.

Event 9: When Drywell pressure exceeds 10 psig, the '1B' RHR Pump will trip.

Evaluation: With '1A' RHR not available without DIV 1 DC power, the crew will utilize RHRSW to spray containment using the '1B' loop of RHR per T-225.

Termination: The scenario may be terminated when the reactor level stabilized within required band, emergency RPV depressurization has been completed and Containment Spray is in service per T-225.

QUANTITATIVE ATTRIBUTES

A. ILT

Target Quantitative Attributes (Per Scenario; See ES-301 Section D.5.d)	
1. Malfunctions after EOP entry (1-2): Downcomer break; '1B' RHR Pump Trips on Overcurrent.	2
2. Abnormal events (2-4): Stuck Control Rod, 1D RHR PP Suction Leak, Loss of Div 1 DC, Small Coolant Leak in DW	4
3. Major transients (1–2): Steam Leak in DW	1
4. EOPs entered/requiring substantive actions (1–2): T-101, T-102	2
5. EOP contingencies requiring substantive actions (0-2): T-112	1
6. Critical tasks (2–3): Manually Scram Reactor; Perform Emergency Blowdown.	2

Review TQ-AA-151 attachment 5 and ES-301-5 for individual position requirements for scenario and scenario set

I. Title:

Simulator Evaluation Guide for Individual and Crew Performance

II. Scenario Summary:

Event #	Description
1.	When the crew takes the shift, the ATC will raise Rx pressure using DEHC, and continue raising power by withdrawing control rods.
2.	As the ATC withdraws control rods, one of the control rods will fail stuck.
3.	Following the stuck control rod event, a leak will develop in the suction line for the '1D' RHR Pump (Tech Spec 3.5.1 LCO entered).
4.	After the RHR leak has been isolated and Tech Spec 3.5.1 LCO entered, a loss of Division 1 DC will occur (TS LCO 3.0.3 entered).
5.	After the crew responds to the loss of DC, a small coolant leak will occur in the Drywell. This will require the SRO to evaluate TS 3.4.3.2.
6.	After the BOP isolates RWCU in response to the increase in Drywell pressure, the ATC will perform a manual scram but 'A' RPS will fail to de-energize.
7.	When the Reactor Mode Switch has been placed in Shutdown, the steam leak in the Drywell will increase requiring actions directed by EOP T-102, "Primary Containment Control".
8.	As the operators attempt to place Drywell Spray in service per T-225, "Startup and Shutdown of Suppression Pool and Drywell Spray Operation", a downcomer break will occur resulting in Suppression Pool pressure rising faster and exceeding the Pressure Suppression Curve.
9.	When Drywell pressure exceeds 10 psig, the '1B' RHR Pump will trip.
Termination Point	The scenario may be terminated when the reactor level stabilized within required band, emergency RPV depressurization has been completed and Containment Spray is in service per T-225.

III. Revision History:

Revision Number	Description of Revision and Affect on Training Content	Date of Revision
000	This is a modified version of scenario 3 from ILT09-1 NRC Exam	10/12/14
001	Revised for Use	05/15/15
002	Revised for ILT 20-1 NRC Exam to uses new SEG Template and for EPG/SAG Rev 4 procedure revisions	6/23/21

IV. References

Training Procedures:

- TQ-AA-150, Operator Training Programs
- TQ-AA-151, ILT Certification and NRC Examination Development and Administration
- TQ-AA-155, Conduct of Simulator Training and Evaluation

EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station:

- EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station

OP-AA Procedures:

- OP-AA-1, Conduct of Operations
- OP-AA-20, Conduct of Operations Process Description
- OP-AA-101-111-1001, Operations Standards and Expectations
- OP-AA-101-113, Operations Fundamentals
- OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
- OP-AA-106-101-1006, Operational Decision Making Process

OP-LG Procedures:

- OP-LG-101-111-1000, Licensed Operator Duties
- OP-LG-102-106, Operator Response Time Program at Limerick
- OP-LG-103-102-1000, Human Performance Continuing Good Practices
- OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
- OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER):

- INPO 15-004, Operator Fundamentals
- IER 17-5, Line of Sight to the Reactor Core

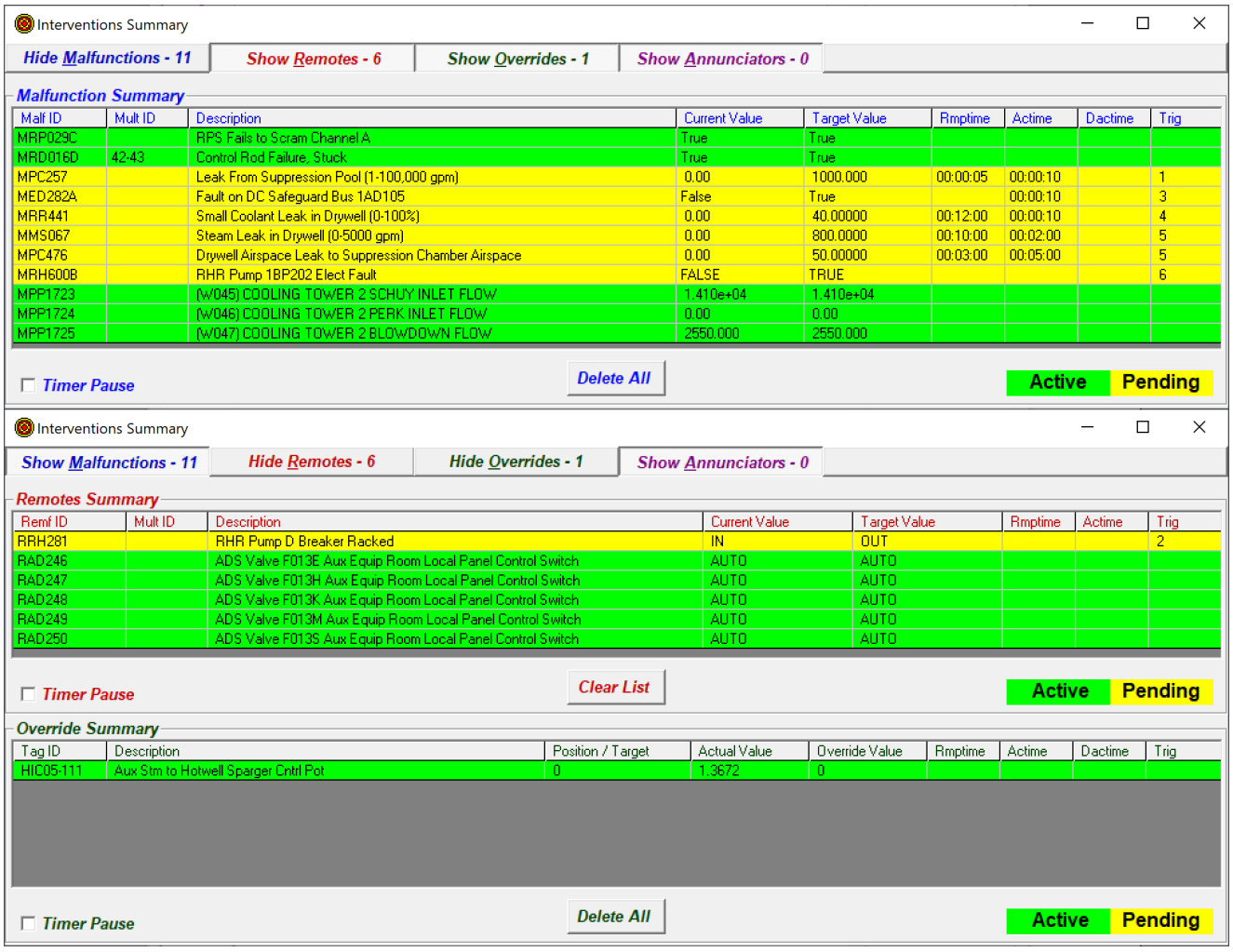
V. Directions To Simulator Driver

Simulator Setup

✔	ITEM / MALFUNCTION / REMOTE FUNCTIONS
	Prepare simulator per TQ-AA-155, Operator Training Programs Attachment 1, Conduct of Simulator Checklist.
	Reset Simulator to the IC developed for the cycle OR Reset the simulator to appropriate Rx Power IC AND • Load scenario file SEG-2158E Rev002.scn, verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded OR • Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Simulator Scenario Intervention Summary Screen Shot and Simulator Event Triggers Table

	Simulator Driver performs the following:
	• Momentarily place simulator in RUN
	• Ensure appropriate Reactor power
	• Acknowledge and clear all spurious alarms
	• Place the simulator back into FREEZE
	• Place appropriate tags and equipment in required condition / status listed below:
	• Provide copies of the following procedure:
	  • GP-2, Normal Plant Startup completed up through step 3.4.45.
	  • Control Rod pull sheet (If using control booth copy - sequence step 26, Group 7 starting with rod 18-43)
	  • S73.1.A, Normal Operation of the Reactor Manual Control System
	  • ST-6-107-730-1, Control Rod Coupling Check
	  • Startup ReMA
	• Ensure Steam Seals and SJAEs are lined up using Main Steam.

Simulator Scenario Intervention Summary Screen Shot:

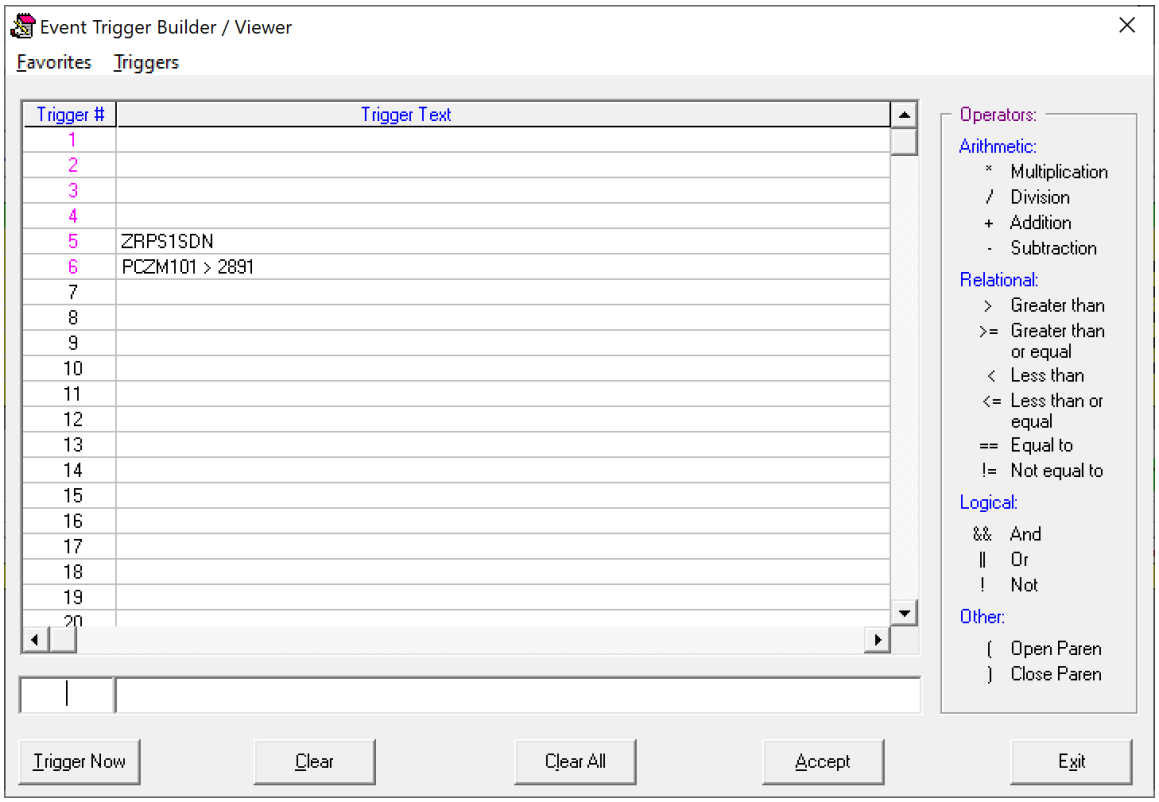


Event Triggers Assignment

- Timers should be used on event triggers where possible for time validation

Simulator Event Triggers Table:

	Trigger #	Malfunction / Event Initiation	Description
	1	Manual	Initiates ‘1D’ RHR Pump room flooding
	2	Manual	Racks ‘1D’ RHR Pump breaker out
	3	Manual	Initiates loss of Div 1 DC
	4	Manual	Initiates small coolant leak in Drywell
	5	ZRPS1SDN	MS to SHUTDOWN Initiates a steam leak in the Drywell and Downcomer Break
	6	PCZM101 > 2891	Drywell Pressure (PI-42-101) > 10 psig Initiates a '1B' RHR Pump trip



Simulator Driver Communications

- The Simulator Driver will respond with scripted or proceduralized responses, when requested by MCR operators, based on the “Simulator Operator Response Times” per Attachment 1 unless otherwise stated in the scripted response
- The Simulator Driver will also maintain a timeline and record of all reports and requests, issued by MCR personnel, using Attachment 2 or equivalent

VI. Crew Critical Tasks

Crew Critical Tasks in Training Scenarios are for the purpose of training operators on expectations for crew performance and evaluation criteria. Crew Critical Tasks are not intended for grading in Simulator Training Scenarios. Critical Tasks are based on the current Crew Critical Task List revision.

OT-200.1	**Insert Control Rods with Alternate Rod Insertion (ARI)**						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
EPE	295037	Redundant Reactivity Control System	EA1.02	Operate the Redundant Reactivity Control System	3.8	4.0	7
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario. Failure to perform this task correctly also represents a degradation of a fission product barrier.						
Initiating Cue	The Reactor Protection System is activated either automatically by exceeding an RPS setpoint, or manually, and the reactor control rods fail to insert to ensure reactor shutdown under all conditions.						
Measurable Performance Standard	**Expected action**	Initiate manual RRCS activation.					
	Safety-significant boundary condition	Prior to requirement for emergency blowdown of RPV.					
Performance Feedback	The scram air header is depressurized, and control rods insert to ensure the reactor is shutdown under all conditions.						
Evaluation	**SAT / UNSAT**						

T-102.9	Conduct an Emergency Blowdown due to High Drywell Press						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
System	223001	PCS Primary Containment System and Auxiliaries	A2.07	High drywell pressure	4.4	4.3	5. Containment Integrity
EPE	295024	High Drywell Pressure	EA2.01	Drywell Pressure	4.4	4.4	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario. Failure to perform this task correctly also represents a degradation of a fission product barrier.						
Initiating Cue	Pri Cont pressure and Supp Pool level cannot be maintained on the safe side of the Pressure Suppression Pressure (PSP) curve limit						
Measurable Performance Standard	**Expected action**	Commence an emergency blowdown in accordance with the RPV Control contingency in effect. If no RPV Control contingency is in effect, commence an Emergency Blowdown in accordance with T-112					
	Safety-significant boundary condition	Prior to exceeding Pressure Suppression Pressure (PSP) Curve.					
Performance Feedback	Lowering RPV pressure.						
Evaluation	**SAT / UNSAT**						

VII. Assessment Of Crew Performance During Conduct Of The Simulator Exercise Guide Training:

- TQ-AA-155-F10, Simulator Training Observation Form, or equivalent, should be used to document crew performance information as required.
- Assessment items with the ⏱ symbol indicate a time critical standard for performance.

1.	Raise Reactor Power with Control Rods

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

The crew will raise Rx pressure using DEHC, and continue withdrawing control rods to raise reactor power.

For **Event 2**, using Control Rod Move Sheet, control rod 42-43 will be stuck.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1.	**Raise Reactor Power with Control Rods**	
EVALUATORS NOTE: The following steps are directed in S73.1.A, Normal Operation Of The Reactor Manual Control System, for **each** Control Rod withdrawn. This SEG uses section 4.2 for single notch withdraw, but Section 4.3 for continuous withdraw may be selected. **NOTE:** Control Rod movement requires a PEER CHECK prior to Control Rod movement.		
	[GP-2 3.4.45] Raise Rx pressure to 960 psig by raising DEHC Target Pressure GP-2 Attachment 13	BOP
	[GP-2 3.4.46] **WHEN** Rx pressure reaches 920 psig, record time	SRO
	Withdraw control rods IAW Control Rod move sheet and S73.1.A, Normal Operation Of The Reactor Manual Control System	ATC
	[S73.1.A 4.2.1] **REVIEW** Attachment 1 **AND VERIFY** the control rod to be withdrawn is not channel distortion susceptible	ATC
	[S73.1.A 4.2.2] **SELECT** next in-sequence Control Rods per rod withdraw sheet	ATC
	[S73.1.A 4.2.3] **VERIFY** correct rod position on Four-Rod-Display	ATC
	[S73.1.A 4.2.4] **ENSURE** drive water pressure is 255 to 265 psid, as indicated on PDI-046-1R602	ATC
	[S73.1.A 4.2.5] **DEPRESS** WITHDRAWAL pushbutton.	ATC
	[S73.1.A 4.2.6] **VERIFY** proper RDCS light sequence. • INSERT light lit and then extinguishes 0.6 sec. • WITHDRAWAL light lit and then extinguishes 1.5 sec. • SETTLE light lit and then extinguishes 6.1 sec.	ATC
	[S73.1.A 4.2.8] VERIFY control rod has been withdrawn one notch position at the Four Rod Display	ATC
	[CR Move Sheet or ST-6-107-730-1 4.3] Perform Coupling Check on each fully withdrawn control rod. (not required)	N/A
	Select next control rod in sequence	ATC

2.	Stuck Control Rod

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

For Event 2, using Control Rod Move Sheet, control rod 42-43 will be stuck.

When requested for Reactor Engineering support to raise Drive Water Pressure:
report: Inadvertent triple notch withdrawal is acceptable.

As directed by Lead Evaluator:
When reactor operator makes several attempts to withdraw the stuck control rod, and has raised CRD Drive Water pressure as directed by S73.1.A, step 4.4.5.3.a
DELETE MRD016D for Control Rod 42-43 allowing control rod movement.

When requested for I&C support, provide assistance responses as necessary.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
2. Stuck Control Rod		
EVALUATORS NOTE: The following steps are directed per S73.1.A, Normal Operation Of The Reactor Manual Control System, for **each** Control Rod withdrawn, and if required, ON-104, Control Rod Problems. **NOTE:** ON-104, Control Rod Problems is entered only if a stuck control rod cannot be moved per S73.1.A. For the stuck control rod, after reactor operator has raised CRD Drive Water Pressure one time per S73.1.A, the simulator will **DELETE MRD016D** for Control Rod 42-43 stuck malfunction allowing control rod movement.		
	Recognize/report inability to withdraw stuck control rod	ATC
	NOTIFY SRO that control rod 42-43 failed to move on a withdraw command	ATC
	SRO evaluates Tech Spec 3.1.3.1 for Inoperable Control Rod. No action necessary.	SRO
	SRO directs ATC to attempt rod withdraw IAW S73.1.A, Normal Operation Of The Reactor Manual Control System, section 4.4	SRO
	[S73.1.A 4.4.1] **VERIFY** no rod block exists	ATC
	[S73.1.A 4.4.4] **ATTEMPT** several single notch withdrawals using WITHDRAW pushbutton	ATC
	[S73.1.A 4.4.5] IF control rod fails to reposition in step 4.4.4. **THEN** perform the following: • **IF** the control rod is capable of performing a triple notch **THEN** Direct Reactor Engineering to perform an evaluation of consequences of an inadvertent triple notch control rod withdrawal.	ATC
EVALUATORS NOTE: If control rod remains stuck and cannot be withdrawn per S73.1.A, Reactor Engineering will be contacted to determine if triple notching the control rod will violate the following: RE will direct no effect for triple notch • Thermal power • Thermal Limit • Banked position withdraw sequence.		

2.	Stuck Control Rod

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

When requested for Reactor Engineering support:
report: Inadvertent triple notch withdrawal is acceptable.

As directed by Lead Evaluator:
When reactor operator attempts to withdraw the stuck control rod, and has raised CRD Drive Water pressure as directed by S73.1.A, step 4.4.5.3.a

DELETE MRD016D for Control Rod 42-43 allowing control rod movement.

When requested for I&C support, provide assistance as necessary.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
2.	**Stuck Control Rod**	
	[S73.1.A Attachment 5] **IF** a control rod will not notch withdraw from 00, **THEN PERFORM** the following (Control rod at position 8)	N/A
	[S73.1.A Step 4.4.5.3] **IF** an inadvertent triple notch control rod withdrawal is permissible **OR IF** control rod is at notch position 46, **THEN PERFORM** the following: a. **RAISE** drive water pressure to 300 to 350 psid, as indicated on PDI-046-*R602, "Drive Water Differential Pressure Indicator." b. **ATTEMPT** several single notch withdrawals using WITHDRAW pushbutton.	ATC
	Verify stuck control rod moves and take to target position (may double notch)	ATC
	[S73.1.A Step 4.4.5.3.d] **ENSURE** drive water pressure is restored to 255 to 265 psid, as indicated on PDI-046-*R602.	ATC
	[S73.1.A Step 4.4.6] **VERIFY** the control rod has moved via Four Rod Display	ATC

EVALUATORS NOTE: The control rod will successfully withdraw after drive water pressure is raised and the scenario may proceed to the next event (RHR Pump Suction leak).

While withdrawing additional control rods an IRM upscale alarm may be encountered. The crew should take action to range up on IRMs as necessary to continue.

After initiation of next malfunction, it will take approximately 2:30 to 3:00 minutes before the first indication is received in the MCR.

3. ‘1D’ RHR Pump Suction Leak

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Manually actuate **Trigger # _1_** when directed by Lead Evaluator to activate leak in the B/D RHR Pump Room.

Drivers Note:

After initiation of malfunction, it takes approximately 2:30 to 3:00 minutes before the first indication is received in the MCR. The RHR pump flood alarm will come in about 5:00 minutes after initiation.

At time _4 min_ When directed to investigate ‘1B/1D’ RHR Pump room flooding alarm,
report: There is approximately 4” of water on the floor. There is water spraying on the ‘1D’ RHR Pump motor it is coming from between the ‘1D’ RHR Pump suction valve and the pump.”

When the crew contacts the Radwaste Control Room, for RE Sump status:
report: Both Unit 1 Reactor Enclosure Floor Drain Sump Pumps are running.

At time _5 min_ If crew requests breaker for ‘1D’ RHR Pump feeder breaker to be racked out, activate **Trigger #_2_** and,
report: ‘1D’ RHR Pump breaker has been racked out.

After the crew has taken action to close the RHR Pump suction valve,
report: The leak appears to have stopped and level in the room is lowering.

After the crew has closed '1D' RHR Pump suction valve to isolate the leak,
DELETE MPC257, 'D' RHR Pump suction leak.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
3.	**'1D' RHR Pump Suction Leak**	
	Respond to alarm: • 127 H-4, REACTOR ENCLOSURE FLOOR DRAIN SUMP HI-HI WATER LEVEL • 115 G-5, 1B-1D RHR PUMP ROOM FLOOD	ATC/BOP
	[ARC-MCR-115 G-5] Dispatch EO/FSSV to 1B / 1D RHR Pump rooms and notify EO to check for indications of leakage around the pump room door before attempting to crack open the door or look for leakage through the floor grating on 201' elevation.	BOP
	[ARC-MCR-115 G-5] Enter SE-4 following report of active leak in the room	SRO
	Enter SE-4-1, Section 2.1, RHR Compartment Flooding, and determine source of flooding	SRO/BOP
	[ARC-MCR-115 G-5] Enter T-103, Secondary Containment Control following report of active leak in the B/D RHR Pump Room	SRO
	Establish Suppression Pool level as critical parameter	SRO
	Establish RHR Room flooding level as critical parameter	SRO
	Monitor Suppression Pool level	BOP
	Determine Suppression Pool level is lowering slowly	BOP
	[T-103, SCC-3] Direct performance of T-290	SRO
	[ARC-MCR-127 H-4] Contact Radwaste Control Room to verify operation of U1 Reactor Enclosure Sump Pumps	BOP
	Re-enter T-103, for Reactor Enclosure Floor Drain alarm	SRO
	[SE-4-1 Att 1, T-103, SCC/L-4] Direct performance of T-250 to isolate systems discharging into the '1D' RHR Pump Room	SRO
	Place HV-51-1F004D key switch to CLOSE as directed by T-250, section 4.7	BOP
	Direct floor personnel to rack out '1D' RHR Pump feeder breaker	Crew
	Evaluate and Enter Tech Spec 3.5.1.b.1 for INOP RHR subsystem (30 day LCO)	SRO
Evaluator Note: The scenario may advance to the next event (Loss of Div 1 DC) after the SRO determines actions for RHR 'D' subsystem inoperability or as determined by the Lead Evaluator.		

4. Loss of Div I DC

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Manually actuate **Trigger # 3** when directed by Lead Evaluator, to insert loss of DIV 1 DC.

At time 5 min after FSSV or EO action requested to investigate loss of DIV 1 DC

report: A fault has occurred in 1AD105 the main fuse panel for Division 1 DC. There is extensive damage inside the panel. There is no smoke or fire.

At time 5 min after FSSV or EO action requested to investigate Steam Flooding Damper Panels 10C234 and 10C245 on loss of DIV 1 DC:

report: On the 10C234 and 10C245 panels, all of the 'A' Steam Flooding Damper lights are off. All of the 'B' Steam Flooding Dampers on both panels indicate open.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**Loss of Div I DC**	
	Reference appropriate ARCs: • 120 G-1, 1 UNIT DIV 1 SFGD BATTERY CHARGERS TROUBLE • 120 G-2, 1DA-1 250V DC MCC UNDERVOLTAGE • 120 G-3, 1PPA1/1PPA3 125VDC DIST PANELS UNDERVOLTAGE • 120 G-4, 1PPA2 125VDC DC DIST PANEL UNDERVOLTAGE • 120 G-5, 1 UNIT DIV 1 SFGD BATTERY GROUND • 120 D-1, D11 TROUBLE • 120 D-2, D11 STANDBY AC POWER SYS OUT OF SERVICE • 120 E-3, DIV 1 MCC SHUNT TRIP COIL AUX CIRCUIT UNDERVOLTAGE • 120 E-4, DIV 1 MCC SHUNT TRIP COIL UNDERVOLTAGE • 120 F-5, 1A RPS & UPS DIST PNL. TROUBLE • 120 A-5, 1A RPS & UPS STATIC INVERTER TROUBLE • 002 F-4 & F-5, RE SFD PNLs 10C245, 10C243 TROUBLE • 002 A-2, CONTROL ROOM CHLORINE ISOLATION INITIATED	
	Recognize/report loss of Div 1 DC	ATC/BOP
	Enter and execute E-1FA, Loss of Division 1 Safeguard 125/250 VDC Bus 1FA	SRO
EVALUATORS NOTE: The following steps are directed in E-1FA, Loss of Division 1 Safeguard 125/250 VDC Bus 1FA.		
	[E-1FA Note 3] Recognize RCIC and DIV 1 ADS unavailable upon loss of DC	SRO/BOP
	[E-1FA 2.1] Direct to Manually **INITIATE** MCR Chlorine Isolation per Attachment 2	SRO
	[E-1FA 2.2] REFER TO Attachment 3, AND VERIFY Reactor Enclosure/Refueling Floor isolations.	BOP
	Verify SBGT and RERS fan start and maintain Secondary Containment due to Reactor Enclosure and Refueling Floor Secondary Containment Isolation	BOP
	[E-1FA 2.3] **REFER** to S94.2.A, By-passing and Removing the 1A RPS / UPS Static Inverter form Service, and remove 1A RPS/UPS Inverter from service	BOP

4.	Loss of Div I DC

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

At time 5 min after FSSV or EO action requested to investigate loss of DIV 1 DC

report: A fault has occurred in 1AD105 the main fuse panel for Division 1 DC. There is extensive damage inside the panel. There is no smoke or fire.

At time 5 min after FSSV or EO action requested to investigate Steam Flooding Damper Panels 10C234 and 10C245 on loss of DIV 1 DC:

report: On the 10C234 and 10C245 panels, all of the 'A' Steam Flooding Damper lights are off. All of the 'B' Steam Flooding Dampers on both panels indicate open.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**Loss of Div I DC**	
	[E-1FA 2.1] Initiate a manual MCR Chlorine Isolation per Attachment 2 - Ensure HS-78-010B in AUTO - Ensure HS-78-010A in STANDBY - Place HS-78-017B in RESET B - Place HS-78-017D in RESET D - Place HSS-78-017B, TRIP B to "Cl2" - Place HSS-78-017D, TRIP D to "Cl2" - Place HS-78-017B in AUTO - Place HS-78-017D in AUTO - Depress and Release HSS-78-017B, TRIP B - Depress and Release HSS-78-017D, TRIP D - Record CREFAS Run time in log - Ensure CHLOR ISLN Channel B, D amber lights are lit - Verify CONTROL ROOM ISOLATION NOT COMPLETE annunciator is <u>not</u> alarmed at 002 VENT A-3, after 25 seconds - Ensure 0B-V127 Emergency Air Fan B is running - Ensure 0B-V116, Control Room Air Supply Fan is running - Ensure 0B-V121, Control Room Air Return Fan is running - Verify PDI-78-054, Control Room Air Inside/Outside ΔPX, is 0 inches water after allowing time for positive pressure to decay **(NOTE: 'A' channel not initiated due to loss of Div 1 DC)** - Place HS-78-017C in RESET C - Place HSS-78-017C, TRIP C to "Cl2" - Place HS-78-017C in AUTO - Depress and Release HSS-78-017C, TRIP C - Ensure CHLOR ISLN Channel C amber light lit - Record CREFAS Run time in log	BOP

4.	Loss of Div I DC
	Simulator Operator Instructions: Respond to request for assistance as appropriate.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**Loss of Div I DC**	
	[E-1FA 2.1] **continued** Initiate a manual MCR Chlorine Isolation per Attachment 2 - Verify CONTROL ROOM CHLORINE ISOLATION INITIATED annunciator is alarmed at 002 VENT A-2 - Ensure 0B-V127 Emergency Air Fan A is running - Ensure 0A-V116, Control Room Air Supply Fan is running - Ensure 0A-V121, Control Room Air Return Fan is running - Verify PDI-78-054, Control Room Air Inside/Outside ΔPX, is 0 inches water, after allowing time for positive pressure to decay	BOP
	[E-1FA 2.3] Direct Floor Personnel to bypass and remove 1AD160, 1A RPS UPS Static Inverter, from service per S94.2.A.	SRO/BOP
	[E-1FA 3.2] NOTIFY I&C, WWM to troubleshoot problem.	SRO
	[E-1FA 3.3] Dispatch EO to Steam Flooding Damper panels 10C234 and 10C245	BOP
	Dispatch EO or Floor Supervisor to investigate loss of DC bus	BOP/ATC
	Enter GP-21, TECH SPEC 3.0.3 GUIDANCE, when TS 3.0.3 entry is recognized.	SRO
	[E-1FA 3.5] CONSIDER using DIV 3 ADS from MCR/AER for SRV activation (Attachment 6)	SRO
	SRO briefs crew on impact of loss of DIV 1DC including inability to remotely or automatically start: • '1A' RHR • '1A' Core Spray • '1A' ADS • RCIC • '0A' ESW • '0A' RHRSW • D11 Diesel Generator	SRO

4.	Loss of Div I DC
	Simulator Operator Instructions: Respond to request for assistance as appropriate.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4. Loss of Div I DC		
EVALUATOR NOTE: The following Tech Specs will be Evaluated as directed by E-1FA, due to loss of DIV 1 DC depending on time allotted:		
	[E-1FA, Attachment 5] SRO enters the following Tech Specs due to loss of DIV 1 DC: **Unit 1** • 3.0.3, condition prohibited by TS (both offsite sources and one D/G). (1 hour action) to commence actions to place unit in an OPCON where specification does not apply. T.S. 3.0.6 may be used per OP-LG-108-115 to not require taking action per T.S. 3.0.3, if the Safety Function can be determined to still exist. • 3.8.2.1 action c, (2 hour action) restore inop battery • 3.8.1.1 action e, (2 hour action) verify one of the required two train systems and two LPCI subsystems are operable and its associated D/G is operable. • 3.6.3 action a, PCIVs (4 hour action) for the following normally open valves; ○ HV-049-1F002 • 3.6.3 action a, single PCIV (12 hour action to Hot S/D) for the following normally open valves; ○ HV-049-1F060 • 3.3.2 action b.1, (6 hour action) to complete Action 23 within 1 hour. (OPCON 3 requirement to be in cold S/D within 12 hrs). RCIC • 3.3.2 action b.1, (6 hour action) to complete action 25 to establish secondary containment integrity with SBGT operating within 1 hour. • 3.8.3.1 action b, (8 hour action) Onsite power distribution • 3.3.4.1 action b, (24 hour action) for ATWS RPT trip instrumentation • 3.3.4.2 action b, (24 hour action) for EOC RPT trip instrumentation • 3.3.3 action c.2, (72 hour action) for ADS • 3.3.4.1 action d, (72 hour action) for ATWS (RRCS) • 3.8.4.3 action a, (72 hour action) RPS power monitoring • 3.6.2.3 action a, (72 hour) for 1A SP cooling • 3.6.2.2 action a, (7 day) for 1A SP spray • 3.5.1 action a.1, (7 day) for 1A loop CS loop • 3.3.7.4 action b, (7 day) for RSP • 3.3.7.1 action 70, (7 day) for MCR normal fresh air rad monitor • 3.3.7.8.1 action a, (7 day) for 0A chlorine detection (TRM) • 3.8.2.1 action a.3, (7 day) for 1A battery charger • 3.1.5 action a, (7 day) for 1A SBLC pump • 3.7.3 action a, (14 days) for RCIC • 3.5.1 action b.1, (30 day) for 1A LPCI • 3.7.1.1 action a.1, (30 days) for A RHRSW • 3.7.1.2 action a.1, (45 day) for A ESW pump **Unit 2** • 3.8.3.1 or 3.8.3.2 action c, Onsite power distribution (declare the following common equipment inop); ○ 3.6.5.3 action a.1, (30 day) for Unit 1 D/G for A SBGT ○ 3.7.2 action a.1, (30 day) for Unit 1 D/G for A CREFAS ○ 3.7.1.1 action a.1, (30 day) for A RHRSW pump ○ 3.7.1.2 action a.1, (45 day) for A ESW pump	SRO
EVALUATOR NOTE: When determined by Lead Evaluator or after the SRO has determined the Div 1 DC Tech Spec implications, the scenario may advance to the next event (Drywell Leak).		

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Manually actuate **Trigger # 4** when directed by Lead Evaluator, to initiate coolant leak in the Drywell.

Note: It takes 2.5 minutes from Trigger 4 initiation to the first alarm.

Ensure **Trigger # 5** automatically actuates, to initiate Steam Leak and Downcomer failure when the RMS is placed in SHUTDOWN.

If requested to perform steps of S44.2.A, “Reactor Water Cleanup Shutdown”, perform sections of S44.2.A, as requested.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	Reference appropriate ARCs: • 115 B-5, DRYWELL COOLER DRAIN FLOW HIGH • 115 E-5, FLOOR DRAIN LEAKAGE HI FLOW • 003 B-2, Unit 1&2 CONTAINMENT LEAK DETECTOR HI RADIATION • 112 C-5, DRYWELL EQUIPMENT DRAIN TANK/FLOOR DRAIN SUMP LEAKAGE HI FLOW • 107 F-2, DRYWELL HI / LO PRESS	ATC/BOP
	Check D/W Cooler Drain flow FI-87-120 at 10C624 panel for high flow.	BOP
	Proceed as directed by ARC using S61.0.A to panel 00C424 to identify leakage (time permitting)	BOP
	Crew recognizes/reports rising Drywell pressure	Crew
	SRO enters OT-101, High Drywell Pressure	SRO
EVALUATOR NOTE: The following steps are directed by OT-101, High Drywell Pressure.		
	[OT-101, 3.1] Establish Drywell pressure as Critical Parameter	SRO
	Notifies ATC of Drywell pressure and when to perform manual scram	SRO
	[OT-101, 3.3] Direct OT-101, High Drywell Pressure Attachment. 4	SRO
	[OT-101, Att. 4] **ENSURE** the following Main Steam Line sample valves closed: • HV-041-*F084, DRAIN SAMPLE INBOARD • HV-041-*F085, DRAIN SAMPLE OUTBOARD **ENSURE** the following Recirc. sample valves closed: • HV-043-*F019, INBOARD • HV-043-*F020, OUTBOARD	BOP
	[OT-101, Att. 4] BOP secures and isolates RWCU (time permitting) **SECURE** operating RWCU pump(s) **ENSURE** the following valves closed: • HV-C-044-1F033 • HV-44-1F001, INBD • HV-44-1F004, OUTBD • HV-44-1F100, BOTTOM HEAD DRAIN • HV-44-1F105, INLET FLOW	BOP

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Ensure **Trigger # 6** actuates to trip '1B' RHR Pump when the Drywell pressure reaches 10 psig.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then **report:** "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then **report:** "We are not able to open HV-51-182A. The hand wheel is frozen in place"

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	[OT-101, Att. 4] Crew recognizes that Drywell pressure continues to rise following RWCU isolation	SRO/ATC
	Evaluate TS 3.4.3.2 for excess unidentified coolant leakage in the DW. Enter LCO 3.4.3.2a (12 Hour S/D) and LCO 3.4.3.2.b (4 hours to reduce leak rate) (As time allows – scenario may progress before SRO has time to evaluate)	SRO
	Direct Scramming the Reactor	SRO
	Manually scram reactor before DW pressure reaches 1.68 psig	ATC
	[OT-200 Appendix 1 1.0] Place Mode Switch in SHUTDOWN	ATC
	[OT-200 Appendix 1 2.2] Arm and depress all RPS Pushbuttons	ATC
	[OT-200 Appendix 1 2.2] Arm and depress RRCS Manual Initiation Pushbuttons **(CT-OT200.1)**	ATC
	[OT-200 Appendix 1 2.2.1] Report to SRO: Reactor Mode Switch is in SHUTDOWN , ALL rods are in, RRCS(ARI) put the rods in	ATC
	[OT-200 Appendix 1 3.0] Lock Rx mode switch in S/D	ATC
	[OT-200 Appendix 1 4.0] Insert SRMs AND IRMs	ATC
	[OT-200 Appendix 12 1.2] Trip Main Turbine ensure Generator Lockout	BOP
EVALUATOR NOTE: Entry into T-100, 'SCRAM/SCRAM Recovery is appropriate only if emergency condition [High DW Pressure (1.68 psig) or Low RPV Level (+12.5 inches)] does not exist. Otherwise T-101 should be entered directly.		
	Enter T-100 on reactor scram.	SRO
	Exit T-100 and Enter T-101, "RPV Control", on Hi Drywell Pressure when DW pressure is > 1.68 psig	SRO
	Enter T-102, "Primary Containment Control", on Hi Drywell Pressure when DW pressure is > 1.68 psig	SRO

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Ensure **Trigger # 6** actuates to trip '1B' RHR Pump when the Drywell pressure reaches 10 psig.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then **report:** "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then **report:** "We are not able to open HV-51-182A. The hand wheel is frozen in place"

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	When Drywell temperature exceeds 145 °F, re-enter T-102	SRO
	[T-102 DW/T-5] Maximize Drywell Cooling bypassing isolations per GP-8 as necessary	BOP
	When Drywell temperature exceeds 145 °F, verify DWCW Head Tank level, then bypass isolations and maximize Drywell cooling	BOP
	Secure Recirculation Pumps running without cooling	BOP
	[T-101 RC/L-1] Verify isolations on 1.68 psig Drywell pressure	BOP/SRO
	Verify HPCI System initiation on 1.68 psig Drywell pressure	ATC/BOP
	If not required for core cooling, minimize HPCI System injection flow	BOP
	Establish Suppression Pool Pressure as a Critical Parameter	SRO
	[T-102 PC/P-5] **DIRECT** Before Supp Pool pressure reaches 7.5 psig Spray the **Suppression Pool** per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation	SRO
EVALUATOR NOTE: The following steps are performed as directed by T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation. **NOTE**: Failure of DIV 1 DC will prevent '1A' RHR Pump and '0A' RHRSW from being placed in service. The crew is expected to perform all RHR functions on the '1B' Loop RHR.		
T-225 Spray Suppression Pool START		
	[T-225 4.2.3] **IF** RHR pump not running **THEN** start 1BP202 "RHR Pump"	BOP

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Ensure **Trigger # 6** actuates to trip '1B' RHR Pump when the Drywell pressure reaches 10 psig.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then **report:** "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then **report:** "We are not able to open HV-51-182A. The hand wheel is frozen in place"

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
EVALUATORS NOTE: Failure of DIV 1 DC will prevent '1A' RHR Pump and '0A' RHRSW from being placed in service. The crew will perform all RHR functions on the 'B' Loop RHR/RHRSW Systems.		
	[T-225 4.2.4] **ENSURE** the following valves open: • HV-51-1F047A(B), "1A(B) RHR Htx Shell Side Inlet Vlv" (INLET) • HV-51-1F003A(B), "1A(B) RHR Htx Shell Side Outlet Vlv" (OUTLET) • HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS)	BOP
	[T-225 4.2.5] **OPEN** HV-51-1F024A(B), "1A(B) RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A(B)) **AND OBTAIN** flow of 8,000 to 8,500 gpm as indicated on FI-51-1R603A(B), FL	BOP
	[T-225 4.2.6] **OPEN** HV-51-1F027A(B), "1A(B) RHR Supp Pool Spray Line PCIV" (SUPP POOL SPRAY)	BOP
	[T-225 4.2.8] **PLACE** RHR Service Water Pump for RHR Heat Exchanger to be used in service per S12.1.A, RHR Service Water System Startup	BOP
EVALUATOR NOTE: The following steps are performed as directed by S12.1.A, RHR Service Water System Startup.		
	[S12.1.A 4.1.4 or App1 1.3] **OPEN** HV-51-*F014B, HEAT EXCHANGER INLET	BOP
	[S12.1.A 4.1.5 or App1 1.3] Throttle **OPEN** HV-51-*F068B for 18 to 20 seconds	BOP

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

Ensure **Trigger # 6** actuates to trip '1B' RHR Pump when the Drywell pressure reaches 10 psig.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then **report:** "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then **report:** "We are not able to open HV-51-182A. The hand wheel is frozen in place"

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. **Small Reactor Coolant Leak in Drywell** **6.** **RPS Failure** **7 - 9.** **Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	[S12.1.A 4.1.6(7) or App1 1.3] **VERIFY** PI-51-*05A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig	BOP
	[S12.1.A 4.2.1 or App1 1.3] **IF** 'B' Loop pump (0B(D)-P506) is to be placed in service, **THEN ENSURE** 0B-V543 OR 0D-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681.	BOP
	[S12.1.A 4.2.2 or App1 1.5] **START** 0B,C,D P506, RHRSW PUMP	BOP
	[S12.1.A 4.2.3 or App1 1.6] **THROTTLE** HV-51-*F068B to the maximum obtainable position without exceeding 11,000 gpm on FI-51-*R602B while maintaining pump discharge pressure (PI-12-001A-1(B)) between 75 psig to 85 psig	BOP
	[T-225 4.2.9] **CLOSE** HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS)	PRO
	[T-225 4.2.10] **IF** more spray flow is required, **THEN REDUCE** flow through Full Flow Test line by throttling closed HV-51-1F024A(B), “1A(B) RHR Pp Full Flow Test Return Vlv“ (SUPP POOL CLG A(B))	BOP/ATC
T-225 Spray Suppression Pool END		
	Recognize Suppression Pool pressure rising at faster rate and determine possible downcommer break	Crew
	Establish Reactor Pressure as a Critical Parameter	SRO
	Close MSIVs prior to exceeding cooldown rate (430 psig)	BOP

5. Small Reactor Coolant Leak in Drywell
6. RPS Failure
7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

At time 10 minutes **Load all SE-10 Floor Actions with time delays scenario,** after Crew requests SE-10 Shunt Trip Resets for DIV 1,3 and 4 loads and
report: The status of individual resets as requested or when all resets are timed out or
report: All SE-10 Floor Actions are complete when all SE-10 timers have expired.

Ensure **Trigger # 6** actuates to trip '1B' RHR Pump when the Drywell pressure reaches 10 psig.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then **report:** "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then
report: "We are not able to open HV-51-182A. The hand wheel is frozen in place"

As directed by the crew open ADS SRVs "from the Aux Equipment Room" by toggling **OPEN**

1) SRV 'K' – RAD-248
2) SRV 'M' – RAD-249
3) SRV 'H' – RAD-247
4) SRV 'E' – RAD-246
5) SRV 'S' – RAD-250

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	[T-102 PC/P-6 & 7, PCC-10] When Suppression Pool Pressure reaches 7.5 psig, Direct Spraying the Drywell per T-225	SRO
	[T-102 PC/P-6 & 7, PCC-10] When '1B' RHR pump trips (10 psig) direct Spraying the Drywell per T-225 with RHRSW.	SRO
EVALUATOR NOTE: Direction to spray the Drywell with RHRSW will require the operator to secure from the Suppression Pool spray lineup first.		
	[T-225 4.12.1.1-3] 1. CLOSE HV-51-1F027B, "1B RHR Supp Pool Spray Line PCIV" (SUPP POOL SPRAY). 2. OPEN HV-C-51-1F048B, "1B RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS). 3. CLOSE HV-51-1F024B, "1B RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG B).	BOP/ATC
T-225 Spray Drywell START		
	[T-225 4.8.1] **ENSURE** 1BP202, "RHR Pump" **not** running.	BOP
	[T-225 4.8.2] **ENSURE** the following valves closed • HV-51-1F004B, 1B RHR Pump suction • HV-51-1F006B, 1B RHR Pp S/D Clg suction • HV-51-1015B, 1B Shutdown Clg Injection PCIV • HV-51-1F016B, 1B RHR Cntmt Spray Line • HV-51-1F017B, 1B RHR LPCI Inj PCIV • HV-51-1F024B, 1B RHR Pp Full Flow Test Return • HV-51-1F027B, 1B RHR Supp Pool Spray • HV-51-1F047B, 1B RHR Htx Shell Side Inlet • HV-C-1F1048B, 1B RHR Htx Shell Side Bypass • 051-1F098, Cond Trans Fill Isol Vlv to 1A & 1B Loops	BOP
	[T-225 4.8.3] Momentarily **PLACE** HV-51-1F021B, (INBOARD) hand switch to "OPEN."	BOP

5. Small Reactor Coolant Leak in Drywell
6. RPS Failure
7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

At time 10 minutes **Load all SE-10 Floor Actions with time delays scenario,** after Crew requests SE-10 Shunt Trip Resets for DIV 1,3 and 4 loads and
report: The status of individual resets as requested or when all resets are timed out or
report: All SE-10 Floor Actions are complete when all SE-10 timers have expired.

If the crew dispatches personnel to align 1C LPCI to Spray per T-225 wait **5 Minutes** then
report: "While performing step 4.4.3 of T-225, breaker D114-R-G-46 did not close, it is trip free and will not reset."

If the crew dispatches personnel to OPEN HV-51-182A, wait **10 Minutes** then
report: "We are not able to open HV-51-182A. The hand wheel is frozen in place"

As directed by the crew open ADS SRVs "from the Aux Equipment Room" by toggling **OPEN**

1) SRV 'K' – RAD-248
2) SRV 'M' – RAD-249
3) SRV 'H' – RAD-247
4) SRV 'E' – RAD-246
5) SRV 'S' – RAD-250

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
	[T-225 4.8.6] **ENSURE** Reactor Recirc Pumps are tripped.	BOP
	[T-225 4.8.7] REMOVE Drywell Cooling Fans 1&2CV212, 1&2DV212, 1&2EV212, and 1&2FV212, from service by Drywell Cooler Fan switches to "OFF."	BOP
	[T-225 4.8.10] Initiate LOCA signal for B Loop	BOP
	[T-225 4.8.11] **OPEN** the following RHR Service Water/RHR Emergency Crosstie Valves at 10C601 (MCR): • HV-51-1F073, "RHR Service Water Crosstie" (CROSSTIE) • HV-51-1F075, "RHR Service Water Crosstie" (CROSSTIE)	BOP
	[T-225 4.8.12] **ENSURE** HV-51-1F021B, "1B RHR Cntmt Spray Line Inboard PCIV" (INBOARD), open.	BOP
	[T-225 4.8.13] Maintain RHRSW discharge pressure 75 to 120 psig by simultaneously closing HV-51-1F068B and throttling fully open HV-51-1F016B	BOP/ATC
	[T-225 4.8.14] **MONITOR** Drywell pressure	BOP/ATC
T-225 Spray Drywell END		
EVALUATORS NOTE: The following steps are directed from T-112, Emergency Blowdown. **NOTE**: Failure of DIV 1 DC will prevent using DIV 1 ADS. The crew will use DIV 3 ADS from the MCR or via communications with the Aux Equipment Room.		
	[T-102 PC/P-8 and 9 When safe side of T-102 PSP CURVE cannot be maintained ENTER T-112	SRO
	[T-112 EB-4] IF low press ECCS auto starts, prevent injection from core Spray and LPCI pumps NOT required for core cooling.	SRO/BOP
	[T-112 EB-7] PERFORM Open all 5 ADS valves using DIV 3 ADS or Keylock switches in the Aux Equipment Room**(CT-T102.9)**	ATC/BOP

5.	**Small Reactor Coolant Leak in Drywell**
6.	**RPS Failure**
7 - 9.	**Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**

Simulator Operator Instructions:

Respond to request for assistance as appropriate.

At time 10 minutes **Load all SE-10 Floor Actions with time delays scenario,** after Crew requests SE-10 Shunt Trip Resets for DIV 1,3 and 4 loads and
report: The status of individual resets as requested or when all resets are timed out or
report: All SE-10 Floor Actions are complete when all SE-10 timers have expired.

As directed by the crew open ADS SRVs “from the Aux Equipment Room” by toggling **OPEN**

1) SRV ‘K’ – RAD-248
2) SRV ‘M’ – RAD-249
3) SRV ‘H’ – RAD-247
4) SRV ‘E’ – RAD-246
5) SRV ‘S’ – RAD-250

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. Small Reactor Coolant Leak in Drywell **6. RPS Failure** **7 - 9. Steam Leak in Drywell/Downcomer Break / '1B' RHR Pump Trips on Overcurrent**		
EVALUATORS NOTE: The following steps are from SE-10, LOCA and are performed at the SAFEGUARDS PANEL (Diesel Panel). **NOTE**: Failure of DIV 1 DC will prevent closing the 52-20124/CS, "D*14 Safeguard L.C. D114-G-D MCC Bkr" (SAFEGUARDS A), on 1AC661		
	Recognize LOCA signal when RPV pressure drops below 455 psig	Crew
	Enter SE-10, LOCA	Crew
	[SE-10 3.1] PLACE the following to "CLOSE" • 52-20224/CS, "D124 Safeguard L.C. D124-G-D MCC Bkr" (SAFEGUARDS B), on *BC661	ATC
	[SE-10 3.2] PLACE to "RESET": • 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661 • 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661.	ATC
	Dispatch Equipment Operator to perform SE-10-1 field actions	BOP
	Restart CRD and SLC after LOCA signal (if required)	ATC
	[SE-10 4.3] Maintain ECCS for injection IF Low Pressure ECCS is not required to restore RPV level, THEN ALIGN per SSV direction	BOP
	Direct RPV level band of +12.5” to +54” using LP ECCS.	SRO
	Control LP ECCS injection to raise and maintain RPV level in required band.	ATC/BOP
The scenario may be terminated when the reactor level stabilized within required band, emergency RPV depressurization has been completed and Containment Spray is in service per T-225, or at Lead Evaluator Discretion.		

Attachment 1
Simulator Operator Response Times

Procedure	Performance	Response Time (Minutes)
T-209	Injection from the Standby Liquid Control Storage Tank with the RCIC System	45
T-212	Bypassing SQUIB Valves for SLC Injection	19
T-215	De-energization of Scram Solenoids	7
T-216	Manual Isolation and Vent of Scram Air Header	7
T-217	RPS/ARI Reset and Backup Method of Draining Scram Discharge Volume	17
T-219	Maximizing CRD Cooling Water Header Flow during ATWS Conditions	23
T-221	MSIV Isolation Bypass Procedure	11
T-225	Startup and Shutdown of Suppression Pool and Drywell Spray Operations	8
T-240	Maximizing CRD flow after Shutdown During Emergency Conditions	8
T-245	RPV Injection from RHR S/D Cooling	12
T-248	Injection from SLC Test Tank to RPV	15
T-251	Establish a HPCI Injection flow Path VIA Feedwater Only	6
T-270	Terminate and Prevent Injection into the RPV	7
T-290	Instrumentation Available for T-103 SAMP-2	5
S46.7.A (4.2.1)	Control Rod Drive Hydraulic System Operation Following Reactor Scram (Securing CRD flow to the Reactor - Close 46-1F060, CRD Water Pressure Control Station Inlet Valve)	7
SE-10-1 Resets and Floor action	Breaker Reset Following LOCA (Also reset ARMs, RHRSW Rad Monitor and RDCS)	10
Open 006-1007A	Manual Operation of Large Min Flow block Valve	5

Attachment 2
Communications Log

CREW: _____ **DATE:** _____ **SEG:** _____

SRO: _____ **ATC:** _____ **BOP:** _____

START TIME: _____ **STOP TIME:** _____

TIME	PERSON CALLING	PERSON BEING CALLED	COMMUNICATION / REQUEST	CALL BACK TIME

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CREW PREBRIEF INSTRUCTIONS

- Unit 1 is in OPCON 2 at ~5% power with startup in progress
- Unit 2 is in OPCON 1 at 100% power

Specific Plant Conditions are as Follows:

GP-2, Normal Plant Startup, complete up to step 3.4.45 with conditions as follows;

- Two Condensate Pumps are is service
- RFP(s) maintaining RPV level
- Main Turbine BPVs controlling Rx pressure
- HPCI and RCIC are operable and in surveillance
- Offgas Recombiner is in service
- Main Turbine is reset and Chest warmed
- The OOM has been contacted and Start-Up Review is completed in preparation of going to "RUN"
- Control Rod Notching is complete and conditions for continuous withdrawal of control rods from 12 to 48 are satisfied.

Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):

- None

Restrictions on Plant Operations:

- None

Planned Evolutions:

- GP-2, step 3.4.46, Raise Rx pressure to 960 psig by raising DEHC and,
- GP-2, step 3.4.46, Continue withdrawing Control Rods per reactor move sheets in preparation for entering OPCON 1.
- Reactor Engineering has determined there are no known Channel Distorted Control Rods

Documents Provided:

- GP-2, Normal Plant Startup completed up through step 3.4.45.
- Control Rod pull sheets
- S73.1.A, Normal Operation of the Reactor Manual Control System
- ST-6-107-730-1, Control Rod Coupling Check
- Startup ReMA

Exelon Generation

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

Code No:	SEG-5006E	Rev No:	002
Author:	John Mercurio	Approximate Run Time:	70 minutes
Type:	Simulator Evaluation Guide	Effective Date:	
Program:	Licensed Operator Training		
Course:	Initial Licensed Operator Training		
Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

Code No:	SEG-5006E	Rev No:	002
Author:	John Mercurio	Approximate Run Time:	70 minutes
Type:	Simulator Evaluation Guide	Effective Date:	6/23/21
Program:	Licensed Operator Training		
Course:	Initial Licensed Operator Training		
Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	John Mercurio /s/ Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	Jeff Weaver /s/ OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Dan Semeter /s/ Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Limerick 1 & 2 Scenario No.: SEG-5006E Rev 2 Op-Test No.: 2021-301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
Unit 1 is at 100 % power.
Unit 2 is at 100 % power.

Turnover:
- Maintain 100% Reactor power
- Perform ST-6-077-310-1, "Drywell Unit Cooler Hydrogen Mixing System Operability Test Run."

Critical Tasks:
T-101.2 Inhibit Auto ADS due to Low RPV Level
T-101.5 Conduct an Emergency Blowdown due to Low RPV Level

Per NUREG-1021, App. D, If an operator or crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis for a CT identified in the post scenario review

Event No.	Malfunction Number	Event Type*	Event Description
1.	N/A	N-BOP N-SRO	Perform Drywell Mixing Fan ST-6-077-310-1, '1A1' ASD coolant pump trip
2.	HS26-190A/C	TS	Containment Leak Detector Inadvertent Isolation
3.	MPR020C	I-ATC I-SRO	#3 APRM fails upscale
4.	MFH563C	R-ATC C-SRO	Low Pressure FWH Level Transient
5.	MRR209A1 MRR209A2	C-ATC C-BOP C-SRO TS	Loss of '1A' ASD Cooling
6.	MRR430B	C-ATC C-SRO	1B Reactor Recirc Pump Trip
7.	MFW252A MRR440A	M-ALL	Loss of High Pressure Injection / LOCA Inside Containment **(CT-1, CT-2)**
8.	MRC460	~~C-BOP~~ C-ATC C-SRO	RCIC discharge valve fails to Auto Open
9.	MAD151M	C-ATC C-SRO	'1M' Tailpipe break with 50% flow into SP airspace **(CT-2 continued)**

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

Simulator Scenario Summaries

SEG-5006E

Initial Conditions:
Unit 1 is at 100% power.
Unit 2 is at 100% power.

Turnover:
- Maintain 100% Reactor power
- Perform ST-6-077-310-1, “Drywell Unit Cooler Hydrogen Mixing System Operability Test Run.”

Event 1: When the crew has assumed responsibility, they will perform ST-6-077-310-1, “Drywell Unit Cooler Hydrogen Mixing System Operability Test Run.” While the crew is performing the ST, the #1 cooling pump on the 1A ASD will trip. The standby pump will start.

Evaluation: The crew executes the ST procedure. When the cooling pump trips, crew should take ARC actions and discuss actions for total loss of cooling water.

Event 2: Shortly after the Drywell Cooler ST has been performed, an inadvertent isolation of the Unit 1 Containment Leak Detector occurs.

Evaluation: The crew determines that the Unit 1 Containment Leak Detector is isolated and after referencing the Alarm Response Card (ARC), will dispatch floor operators to investigate. The SRO will evaluate Tech Specs and enter LCO 3.4.3.1, Containment Leak, and direct Chemistry to sample.

Event 3: Following the isolation of the Containment Leak Detector, APRM #3 fails upscale.

Evaluation: The ATC determines a failure of the APRM #3. After referencing the Alarm Response Card (ARC), and Tech Specs, the Crew places APRM #3 in bypass.

Event 4: After the crew takes action to bypass the #3 APRM, an isolation of one LP Feedwater Heater String occurs forcing the crew to reduce Rx Power.

Evaluation: The crew identifies the isolation of the ‘1C’ LP Feedwater Heater String and enters AOP OT-104, “Reactivity Addition”. The ATC reduces Reactor power to maintain less than 100%. The crew further reduces power to meet feedwater inlet temperature constraints.

SEG-5006E (continued)

Event 5: As the crew is recovering from the low pressure FWH level transient, the remaining '1A' ASD cooling pump will trip requiring trip of the ASD and entry into single loop operations.

Evaluation: The crew identifies the loss of cooling to the '1A' ASD. The crew will reference S43.1.F, "Responding to Alarms at ASD HMI" which will direct a trip of the ASD when both coolant pumps trip. If the crew delays, cell temperature alarms will occur on the '1A' ASD, and the crew will trip the ASD and enter AOP OT-112, "Unexpected/Unexplained Change in Core Flow". The SRO enters GP-15, "Single Recirc Loop Operation" and directs actions for single loop operations. The SRO then evaluates and enters Tech Spec 3.4.1.1.a.1 for single loop operation.

Event 6: When the actions for the tripped ASD are completed, the 1B Rx Recirc Pump (RRP) ASD will trip on overcurrent. This will place the plant in a loss of both Recirc pumps and AOP OT-112 will direct a unit scram

Evaluation: The Crew diagnosis a trip of the second ASD and the ATC will insert a scram based on previous direction from the SRO. The SRO enters EOP T-101, "RPV Control", and the ATC and BOP perform their scram actions using OT-200 Appendix 1, "RO Reactor Scram Hard Card", and OT-200 Appendix 12 "PRO Reactor Scram Hard Card" respectively.

Event 7: Following the reactor shutdown, a Feedwater line break inside primary containment occurs resulting in a loss of all feedwater to the RPV followed by a progressively worsening RPV coolant leak into the drywell.

Evaluation: The crew identifies rising DW pressure and enters EOP T-102 "Primary Containment Control". The ATC recognizes the feedwater line break and actions are taken to isolate the feedwater. The crew then takes action to identify HP injection sources and primary containment controls (Drywell and Suppression pool sprays).

Event 8: When RCIC is initiated, the pump discharge valve (PCIV) will fail to open automatically.

Evaluation: The BOP determines that RCIC is not injecting due to the closed PCIV valve and manually opens the valve from the handswitch.

Event 9: As RPV level decreases, prior to level dropping below -186”, the crew performs an Emergency Depressurization per T-112, “Emergency Blowdown”, allowing low pressure ECCS systems to restore and maintain RPV level.

Evaluation: During the emergency depressurization the ‘1M’ SRV is identified as having a broken tailpipe. The operator closes the ‘1M’ SRV and opens an additional SRV to satisfy the RPV T-112 depressurization requirements.

Termination: The scenario may be terminated when the Emergency Blowdown is complete, RPV level is restored to normal band with ECCS systems and Containment Spray is in service.

QUANTITATIVE ATTRIBUTES

A. ILT

Target Quantitative Attributes (Per Scenario; See ES-301 Section D.5.d)	
1. Malfunctions after EOP entry (1-2): RCIC discharge valve fails Auto Open; '1M' Tailpipe break with 50% flow into SP airspace	2
2. Abnormal events (2-4): Low Pressure FWH Level Transient; Loss of '1A' ASD Cooling pumps; APRM #3 failure; '1B' Reactor Recirc Pump Trip	4
3. Major transients (1–2): Loss of High Pressure Injection / LOCA Inside Containment	1
4. EOPs entered/requiring substantive actions (1–2): T-101, T-102	2
5. EOP contingencies requiring substantive actions (0-2): T-112	1
6. Critical tasks (2–3): Inhibit ADS, Perform Emergency Blowdown	2

Review TQ-AA-151 attachment 5 and ES-301-5 for individual position requirements for scenario and scenario set

I. Title:

Simulator Evaluation Guide for Individual and Crew Performance

II. Scenario Summary:

Event #	Description
1	When the crew has assumed responsibility, they will perform ST-6-077-310-1, "Drywell Unit Cooler Hydrogen Mixing System Operability Test Run." While the crew is performing the ST, the #1 cooling pump on the 1A ASD will trip. The standby pump will start.
2	Shortly after the Drywell Cooler ST has been performed, an inadvertent isolation of the Unit 1 Containment Leak Detector occurs.
3	Following the isolation of the Containment Leak Detector, APRM #3 fails upscale.
4	After the crew takes action to bypass the #3 APRM an isolation of one LP Feedwater Heater String occurs forcing the crew to reduce reactor power.
5	As the crew is recovering from the low pressure FWH level transient, the remaining '1A' ASD cooling pump will trip requiring trip of the ASD and entry into single loop operations. The '1A' Reactor Recirc Pump discharge valve will fail to close, requiring closure of the suction valve.
6	When the actions for the tripped ASD are completed, the '1B' Rx Recirc Pump (RRP) ASD will trip on overcurrent. This will place the plant in a loss of both Recirc pumps and AOP OT-112 will direct a unit scram.
7	Following the reactor shutdown, a feedwater line break inside primary containment occurs resulting in a loss of feedwater and condensate to the RPV followed by a progressively worsening RPV coolant leak into the drywell.
8	When RCIC is initiated, the pump discharge valve (PCIV) will fail to open automatically.
9	As RPV level decreases, prior to level dropping below -186", the crew performs an Emergency Depressurization per T-112, "Emergency Blowdown", allowing low pressure ECCS systems to restore and maintain RPV level.
Termination Point	The scenario may be terminated when the Emergency Blowdown is complete, RPV level is restored to normal band with ECCS systems and Containment Spray is in service.

III. Revision History:

Revision Number	Description of Revision and Affect on Training Content	Date of Revision
000	Initial Issue of Simulator Evaluation Guide Template to revised LSES	07/15/16
001	This SEG was reformatted to incorporate revisions to Critical Tasks, and format changes in SEG development.	10/19/17
002	Revised for ILT 20-1 NRC Exam, for new SEG format and implementation of EPG/SAG Rev 4 TRIPs	6/23/21

IV. References

Training Procedures:

- TQ-AA-150, Operator Training Programs
- TQ-AA-151, ILT Certification and NRC Examination Development and Administration
- TQ-AA-155, Conduct of Simulator Training and Evaluation

EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station:

- EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station

OP-AA Procedures:

- OP-AA-1, Conduct of Operations
- OP-AA-20, Conduct of Operations Process Description
- OP-AA-101-111-1001, Operations Standards and Expectations
- OP-AA-101-113, Operations Fundamentals
- OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
- OP-AA-106-101-1006, Operational Decision Making Process

OP-LG Procedures:

- OP-LG-101-111-1000, Licensed Operator Duties
- OP-LG-102-106, Operator Response Time Program at Limerick
- OP-LG-103-102-1000, Human Performance Continuing Good Practices
- OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
- OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER):

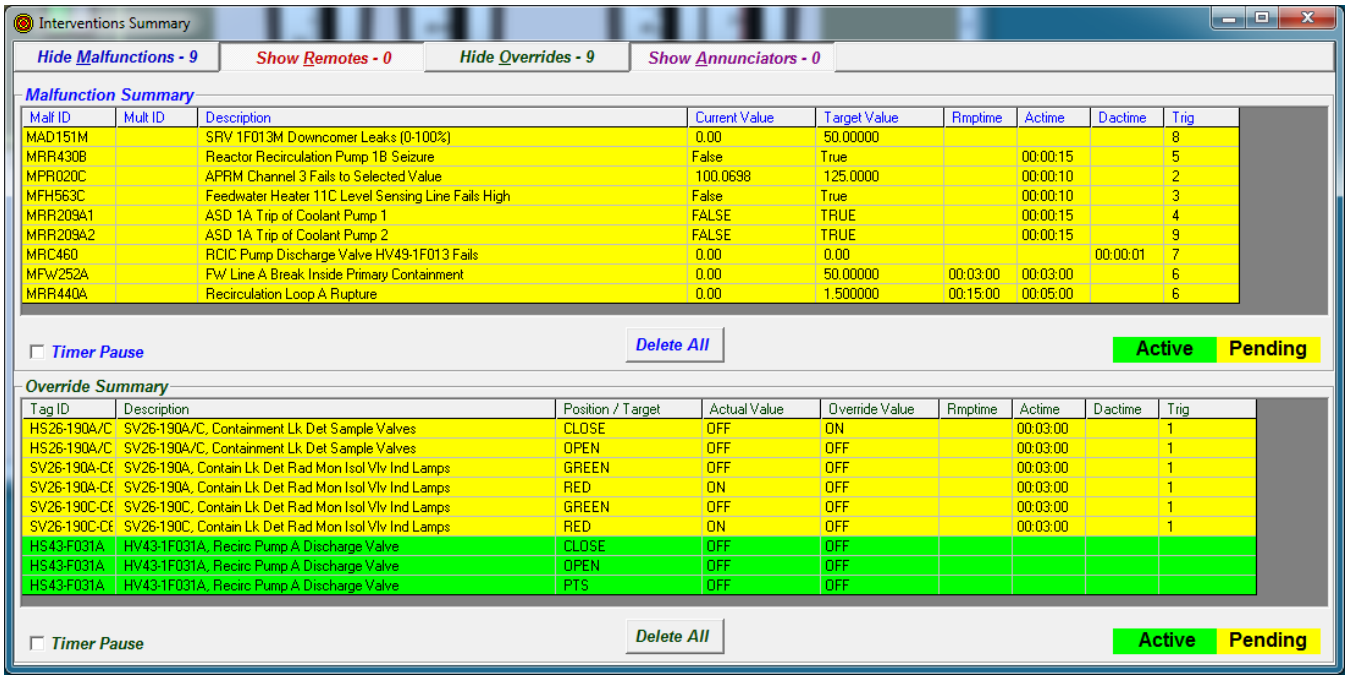
- SOER 10-02, Engaged Thinking Organizations
- INPO 15-004, Operator Fundamentals
- IER 17-5, Line of Sight to the Reactor Core

V. Directions To Simulator Driver

Simulator Setup

✔	ITEM / MALFUNCTION / REMOTE FUNCTIONS
	Prepare simulator per TQ-AA-155, Operator Training Programs Attachment 1, Conduct of Simulator Checklist.
	Reset Simulator to the IC developed for the cycle OR Reset the simulator to appropriate Rx Power IC AND • Load scenario file SEG-5006E Rev002.scn, verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded OR • Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Simulator Scenario Intervention Summary Screen Shot and Simulator Event Triggers Table
	Simulator Driver performs the following: • Momentarily place simulator in RUN • Ensure appropriate Reactor power • Acknowledge and clear all spurious alarms • Place the simulator back into FREEZE • Place appropriate tags and equipment in required condition / status listed below: None

Simulator Scenario Intervention Summary Screen Shot:

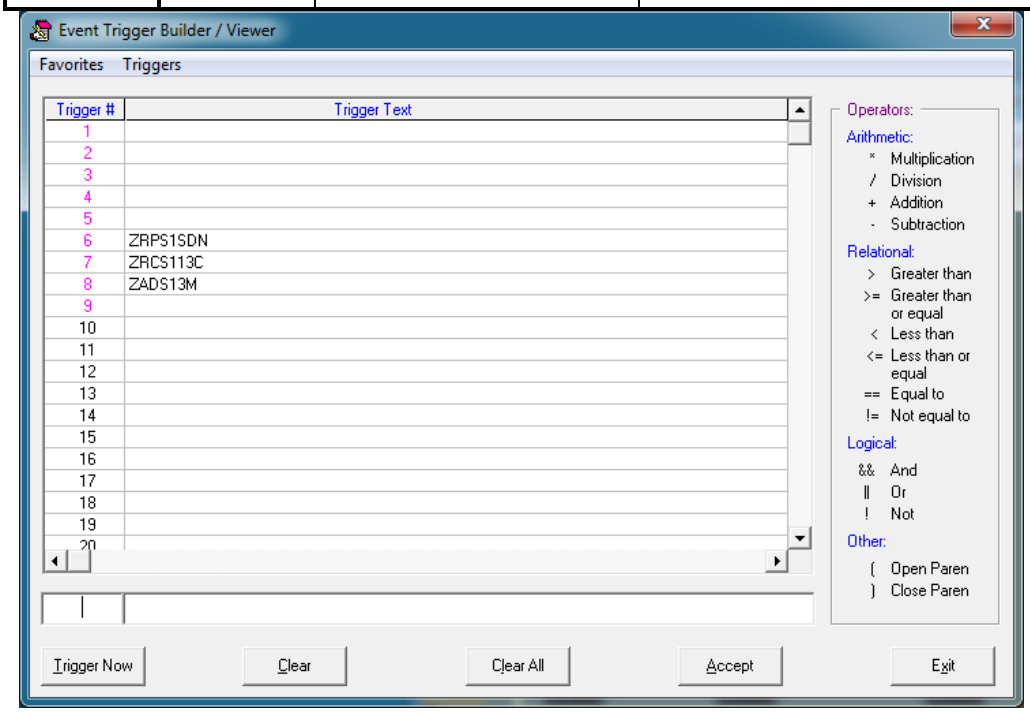


Event Triggers Assignment

- Timers should be used on event triggers where possible for time validation

Simulator Event Triggers Table:

	Trigger #	Malfunction / Event Initiation	Description
	1	Manual	Isolation of Containment Leak Detector
	2	Manual	Initiates APRM #3 Upscale
	3	Manual	Initiates '11C' FWH Hi Hi Level – '1C' LP FW String Isolation
	4	Manual	Initiates trip of the '1A1' ASD cooling pump.
	5	Manual	Initiates Trip of '1B' ASD on Overcurrent.
	6	ZRPS1SDN	Reactor Mode Switch to SHUTDOWN Initiates Feedwater Line rupture Initiates Reactor Recirc Loop Rupture
	7	ZRCS113C	Deactivate failure of HV-49-1F013 to open automatically Initiates when valve manually opened.
	8	ZADS13M	Failure of tailpipe for '1M' SRV (50%) Initiates when '1M' SRV HS is taken to open
	9	Manual	Initiates trip of the '1A2' ASD cooling pump.



Simulator Driver Communications

- The Simulator Driver will respond with scripted or proceduralized responses, when requested by MCR operators, based on the “Simulator Operator Response Times” per Attachment 1 unless otherwise stated in the scripted response
- The Simulator Driver will also maintain a timeline and record of all reports and requests, issued by MCR personnel, using Attachment 2 or equivalent

VI. Crew Critical Tasks

Crew Critical Tasks in Training Scenarios are for the purpose of training operators on expectations for crew performance and evaluation criteria. Crew Critical Tasks are not intended for grading in Simulator Training Scenarios. Critical Tasks are based on the current Crew Critical Task List revision.

T-101.2	**Inhibit Auto ADS due to Low RPV Level**						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
System	218000	ADS Automatic Depressurization System	A2.06	ADS initiation signals present	4.5	4.3	3. Reactor Pressure Control
EPE	295031	Reactor Low Water Level	EA2.01	Reactor water level	4.7	4.6	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario.						
Initiating Cue	Mode switch in shutdown and either: 1. RPV level cannot be maintained above -129”						
Measurable Performance Standard	**Expected action**	Inhibit auto ADS by placing ADS Auto Inhibit switches B21C-S15A and B21C-S15C in the inhibit position					
	Safety-significant boundary condition	Prior to automatic ADS initiation (5 open SRVs)					
Performance Feedback	ADS Auto Inhibit switches B21C-S15A and B21C-S15C in the inhibit position						
Evaluation	**SAT / UNSAT**						

T-101.5	Conduct an Emergency Blowdown due to Low RPV Level						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
System	218000	ADS Automatic Depressurization System	A2.02	Loss of coolant accident	4.2	4.1	3. Reactor Pressure Control
EPE	295031	Reactor Low Water Level	EA2.03	Reactor pressure	4.2	4.0	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario. Failure to perform this task correctly also represents a degradation of a fission product barrier.						
Initiating Cue	Mode switch in shutdown with RPV level unable to be restored and maintained above -161”						
Measurable Performance Standard	**Expected action**	1. Commence an emergency blowdown per T-112 to restore core cooling 2. Open an additional non-ADS SRV due to tailpipe failure of 1M SRV					
	Safety-significant boundary condition	Before RPV level reaches Minimum Steam Cooling RPV Water Level (MSCRWL) (-186”)					
Performance Feedback	Lowering RPV pressure.						
Evaluation	**SAT / UNSAT**						

VII. Assessment Of Crew Performance During Conduct Of The Simulator Exercise Guide Training:

- TQ-AA-155-F10, Simulator Training Observation Form, or equivalent, should be used to document crew performance information as required.
- Assessment items with the ⏱ symbol indicate a time critical standard for performance.

1. Perform Drywell Mixing Fan ST-6-077-310-1, '1A1' ASD coolant pump trip

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

There are no driver actions for ST performance.

Respond to requests as necessary.

At Lead Evaluator instruction activate **Trigger #_4_** initiate the trip of the '1A1' ASD coolant pump.

At Lead Evaluator instruction activate **Trigger #_1_** initiate an inadvertent isolation of the Unit 1 Containment Leak Detector.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1. Perform Drywell Mixing Fan ST-6-077-310-1, '1A1' ASD coolant pump trip		
Lead Evaluator (or designee) Notes: The crew has been directed to execute ST-6-077-310-1 and during its execution, the '1A1' ASD cooling pump will trip. **NOTE:** The Primary Plant Computer (PPC) will alarm as DW Fans are secured.		
	[ST-6-077-310-1] PERFORM the following at panel 10C681: PLACE 1A1V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1A2V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1A2V212 to "RUN"	BOP
	[ST-6-077-310-1] PLACE 1B1V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1B2V212 to "OFF "	BOP
	[ST-6-077-310-1] PLACE 1B2V212 to "RUN"	BOP
	[ST-6-077-310-1] PLACE 1G1V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1G2V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1G2V212 to "RUN"	BOP
	[ST-6-077-310-1] PLACE 1H1V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1H2V212 to "OFF"	BOP
	[ST-6-077-310-1] PLACE 1H2V212 to "RUN"	BOP
Lead Evaluator (or designee) Notes: Advise the Simulator driver to initiate trip of '1A1' ASD cooling pump with **trigger 4**.		

1. Perform Drywell Mixing Fan ST-6-077-310-1, '1A1' ASD coolant pump trip

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

There are no driver actions for ST performance.

Respond to requests as necessary.

At Lead Evaluator instruction activate **Trigger #_4_** initiate the trip of the '1A1' ASD coolant pump.

At Lead Evaluator instruction activate **Trigger #_1_** initiate an inadvertent isolation of the Unit 1 Containment Leak Detector.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1.	**Perform Drywell Mixing Fan ST-6-077-310-1, '1A1' ASD coolant pump trip**	
	Reference appropriate ARC: 111 B-3, 1A RECIRC ASD MINOR FAILURE	BOP
	[S43.1.F 4.2] At *0-C626 PRESS the "FAULTS AND ALARMS" section on XI-043-*03A(B), "ASD *A(B) MCR HMI" to expand the Faults and Alarms section.	BOP
	[S43.1.F 4.2] PRESS the RED alarm locations on the ACTIVE NXG (indicated by words "Control A Alarms/Faults NXG A(B) Active" in upper left corner of alarm status window.)	BOP
	[S43.1.F 4.2] REFER to Attachment 1 for the cause(s) AND PERFORM the associated actions.	BOP
	Determine the trip of the '1A1' coolant pump, and dispatch an operator to investigate.	BOP
	[S43.1.F 4.2] DEPRESS PB-043-*07A(B), "A(B) FAULT RESET" pushbutton at *0-C602 to acknowledge the alarm.	BOP
	[S43.1.F 4.2] WHEN the condition is clear THEN DEPRESS PB-043-*07A(B) a second time to reset the alarm.	BOP
Lead Evaluator (or designee) Notes: When ready to continue with Event 2 notify the simulator driver to continue with **trigger# 1** (**3 Minute delay from trigger# 1 activation until first indication**.)		

2.	Containment Leak Detector Inadvertent Isolation

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Respond to requests as required.

At Lead Evaluator instruction activate **Trigger #_1_** initiate an inadvertent isolation of the Unit 1 Containment Leak Detector.

At Time 5 minutes after dispatched to investigate Containment Leak Detector skid (10S182), **report: "There is no indication of flow through the containment leak detector skid."**

After taking actions for the containment leak detector isolation, at the Lead Evaluator's instruction activate **Trigger #_2_** to initiate failure of #3 APRM Upscale.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
2.	**Containment Leak Detector Inadvertent Isolation**	
	Reference appropriate ARC: • 003 B-4, UNITS 1 & 2 CONTAINMENT LEAK DETECTOR HI/LOW FLOW	BOP
	[ARC-MCR-003-B4] Verify flow path through SV-026-190A,B,C,D on panel 10C655.	BOP
	[ARC-MCR-003-B4] Identify valves SV-026-190A,C have lost indication on 10C655	BOP
	[ARC-MCR-003-B4] Identify on PPC Isolation Screen MSP 106(Group 6C isolation valve status) valves indicate closed, without an isolation signal present.	Crew
	[ARC-MCR-003-B4] Request support from WWM / I&C to troubleshoot the problem	SRO
	[ARC-MCR-003-B4] Evaluate Tech. Spec. 3.4.3.1a and enter: Action A. With the primary containment atmosphere gaseous radioactivity monitoring system inoperable, analyze grab samples of primary containment atmosphere at least once per 12 hours AND restore primary containment atmosphere gaseous radioactivity monitoring system to OPERABLE status within 30 days.	SRO
	[ARC-MCR-003-B4] Direct Chemistry to sample per ST-5-026-560-1, “Unit 1 Primary Containment Leak Detection System Inop Monitor”, to meet first part of Action A.	SRO/BOP
Lead Evaluator (or designee) Notes: When ready to continue with event 3 notify the simulator driver to continue with **trigger 2**		

3.	**APRM # 3 Fails Upscale**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger #_2_** when requested by Lead Evaluator, to initiate APRM #3 Upscale

At time _5 min_ after FSSV or EO action requested to investigate #3 APRM failure, **report:** "Unit 1, APRM #3 shows an internal failure on the ODA."

Once responding to Aux Equipment Room, if requested to determine Voter Status,
If NOT Bypassed **report:** "All Unit 1 voters show one vote."
If Bypassed **report:** "All Unit 1 voters show no votes."

Manually actuate **Trigger _#_3_** when requested by Lead Evaluator, to initiate '1C' LP Feedwater Heater String Isolation.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
3. APRM # 3 Fails Upscale		
Lead Evaluator (or designee) Notes: The ATC will identify APRM #3 fails upscale as the annunciator alarms. THE ODA on 10C603 panel will show APRM #3 upscale with all other APRMs reading normal.		
	Reference appropriate ARC: • 108 B-3, APRM UPSCALE TRIP/INOP • 108 F-3, ROD OUT BLOCK • 108 B-4, APRM UPSCALE	ATC/BOP
	Direct EO/FSSV to investigate APRMs in Aux Equipment Room	BOP
	[ARC MCR 108 B-3] Determine APRM #3 ODA has upscale trip with 'TRIP' message on display header	ATC
	SRO directs bypassing APRM #3	SRO
	[ARC MCR 108 B-3] ATC places #3 APRM in BYPASS	ATC
	Evaluate Tech Spec 3.3.1 and 3.3.6 and determines that the requirement of 3 APRMs is met and no LCO entry is required.	SRO
	Reset annunciators on panel 108	ATC
Lead Evaluator (or designee) Notes: When ready to continue with event 4 notify the simulator driver to continue with **trigger 3**		

4.	Low Pressure FWH Level Transient

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger # 3** when requested by Lead Evaluator, to initiate '1C' LP Feedwater Heater String Isolation.

At time 5 min when FSSV or EO directed to respond to investigate '1C' and '2C' Feedwater Heater High Level
report: The '1C' Low Pressure FWH Levels have returned to normal.

Manually actuate **Trigger # 9** when requested by Lead Evaluator, to initiate loss of cooling to the '1A' ASD.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4. Low Pressure FWH Level Transient		
Lead Evaluator (or designee) Notes: The 1C Low Pressure Feedwater heater (FWH) String will experience a level transient that will cause a high-high level condition of one LP Heater. This condition will initiate an automatic isolation of the FWH String.		
	Reference ARCs as appropriate: • 102 F-1, 1C FEEDWATER HEATER HI LEVEL • 102 F-2, 2C FEEDWATER HEATER HI LEVEL • 102 G-4, F/W HTRS 1&2 HI-HI LEVEL LP HTR STRING ISOLATION	BOP
	[ARC MCR 102 G-4] Verify L.P. F/W HTR string inlet AND outlet valve HV-06-101C AND HV-06-102C close	BOP
	[ARC MCR 102 G-4] **IF** low pressure heater string isolation is occurring **THEN** Enter OT-104, (positive reactivity insertion) and maintain power below pre-transient value.	SRO/ATC
	[OT-104 IOA] Reduce reactor power to below pre-transient value per RMSI and GP-5, App. 2 Planned Maneuvering Without Shutdown	ACT
	[OT-104 3.1] Enter and execute OT-104 Att# 3	SRO
	[OT-104 Att# 3] **IF** transient due to FWH isolation, maintain power within Att #8 guidelines. Direct ATC to reduce power to 60%	SRO
	[GP-5 App 2, Attachment 1] Evaluate FW temperature is in normal operating range.	SRO
	[OT-104 3.3] Perform Att# 4 to determine location on correct Power/Flow Map (Any Feedwater Heater Out Of Service)	SRO
	[OT-104 3.6] Demand P-1 edit and determine whether a Thermal Limits violation exists.	ATC
	[GP-5, App. 2/ GP-5, App. 3] Enter Planned Maneuvering Without Shutdown	SRO
	[GP-5, App. 2/ GP-5, App. 3] Notify TSO and Generation Dispatch of power reduction	Crew

4.	Low Pressure FWH Level Transient

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger # 3** when requested by Lead Evaluator, to initiate '1C' LP Feedwater Heater String Isolation.

At time 5 min when FSSV or EO directed to respond to investigate '1C' and '2C' Feedwater Heater High Level
report: The '1C' Low Pressure FWH Levels have returned to normal.

Manually actuate **Trigger # 9** when requested by Lead Evaluator, to initiate loss of cooling to the '1A' ASD.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**Low Pressure FWH Level Transient**	
	[OT-104 Att# 3] Refer to Tech Spec 3.2.3.b to determine if MCPR is > MCPR limit as determined by the P-1	ATC/SRO
	Reduce core flow and insert control rods to reduce reactor power to nominal 60%.	ATC
	Contact WWM for I&C/Maint support	BOP
Lead Evaluator (or designee) Notes: When ready to continue with event 5 notify the simulator driver to continue with **trigger 4**		

5.	**'1A' Loss of ASD Cooling**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger # 9** when requested by Lead Evaluator, to initiate loss of cooling to the '1A' ASD.

At time 5 min when FSSV or EO directed to respond to investigate
IF ASD NOT tripped report: "Neither '1A' ASD coolant pumps are not running and I am unable to get one started.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5. '1A' Loss of ASD Cooling		
Lead Evaluator (or designee) Notes: The '1A' ASD experiences a loss of cooling resulting in a trip of the '1A' ASD. OT-104, "Unexpected/Unexplained Positive or Negative Reactivity Insertion" is entered, and directs entry into OT-112, "Unexpected/Unexplained Change in Core Flow", due to Recirc Pump trip. It takes about 2 minutes to see high cell temperatures on the ASD. The ASD will auto trip at 2.5 minutes.		
	Reference ARCs as appropriate: • 111 B-2, 1A RECIRC ASD MAJOR FAILURE • 111 B-3, 1A RECIRC ASD MINOR FAILURE	BOP
	Determine loss of cooling to '1A' ASD	BOP
	Dispatch floor operator to investigate	BOP
	Direct tripping of '1A' ASD if High Cell Temperatures are exhibited on HMI	SRO
	Trip '1A' ASD	BOP
	[OT-104, 3.1] Enter OT-104 Unexpected/Unexplained Positive or Negative, Reactivity Insertion and directs entering OT-112	SRO
	[ARC-MCR 111 B-2/D-2] Enter OT-112, Unexpected/Unexplained Change in Core Flow	SRO
	[OT-112, 3.1] Direct **IF** both Reactor Recirc Pumps trip, **THEN** manually **SCRAM** the reactor	ATC
	[OT-112, 3.2] **DIRECT** ATC to monitor for core THI indications • APRM flux level oscillations • APRM and LPRM signal changes from random to periodic variations • Period meter display strong positive to negative swings	SRO
	[OT-112, 3.5] Perform OT-112, Att. 1 for trip of a Recirc Pump	BOP
	[OT-112, Att.1 step 2.0] CLOSE HV-043-1F031A, "A Recirc Pump Disch Vlv" (DISCHARGE A) **OR** HV-043-1F023A, "A Recirc Pump Suction Vlv" (SUCTION A) for tripped Recirc Pump.	BOP
	Recognize the HV-043-1F031A, "A Recirc Pump Disch Vlv" does not close. Close HV-043-1F023A, "A Recirc Pump Suction Vlv", and notify SRO	BOP

5.	‘1A’ Loss of ASD Cooling
	Simulator Operator Instructions: Inform Floor Instructor prior to each event trigger Manually actuate **Trigger_# 5_** when requested by Lead Evaluator, to initiate Overcurrent Trip of the ‘1B’ ASD.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5.	**'1A' Loss of ASD Cooling**	
	[OT-112, Att.1 step 3.0] IF Recirc Pump discharge isolation valve is not required to be closed **AND** approximately 5 minutes have elapsed, **THEN OPEN** HV-043-1F031A, "A Recirc Pump Disch Vlv" (DISCHARGE A) **OR** HV-043-1F023A, "A Recirc Pump Suction Vlv" (SUCTION A) for tripped Recirc Pump	BOP
	[OT-112, Att.1 step 4.0] Limit speed of operating Recirc Pump to <1510 rpm	ATC
	[OT-112, Att.1 step 5.0] **IF** possible, **THEN** Maintain flow in operating loop such that total core flow is >40 Mlb/hr	ATC
	[OT-112, Att.1 step 6.0] (If time permits) **PERFORM** S43.2.A, Shutdown of a Recirculation Pump, to ensure tripped Recirc pump is properly shutdown	BOP
	[OT-112, Att.1 step 8.0] **NOTIFY** Chemistry that power change of greater than 15% occurred in less than one hour (Tech Spec 3.4.5)	ATC
	[OT-112, 3.9] **ENTER** GP-5, Appendix 2, Rx Maneuvering Without Shutdown	SRO
	Enter GP-15, Single Loop Operations	SRO
	[OT-112, 3.6] **PERFORM** OT-112, Att. 3 to confirm operation in the authorized region of the Power/Flow Map	SRO
	[OT-112, 3.7] **DEMAND** a P-1 edit **AND** determine whether a Thermal Limit violation exists	ATC/SRO
	[OT-112, 3.8] **IF** any Thermal Limit violations exist, **THEN** ENTER GP-14	SRO
	[OT-112, 3.11] **CONSIDER** reportability of Rx power excursion **AND REFER** to Discussion Step 6.17	SRO

5.	‘1A’ Loss of ASD Cooling

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger # 5** when requested by Lead Evaluator, to initiate Overcurrent Trip of the ‘1B’ ASD.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5.	**'1A' Loss of ASD Cooling**	
	[OT-112, Att. 3] Direct ATC to insert control rods to exit restricted region of power/flow map (~45%)	SRO
	Insert control rods IAW RMSI to reduce power to exit restricted region	ATC
	[OT-112 3.10.1] (time permitting) **ENSURE,** within 4 hrs. ST-6-107-889-1, Thermal Limits Determination For Single Recirc Loop Operation, has been performed.	SRO
	Evaluate Tech Spec 3.4.1.1.a for Single Loop Operations With one reactor coolant system recirculation loop not in operation: 1. Within 4 hours: a. Place the recirculation flow control system in the Local Manual mode, and, b. Reduce THERMAL POWER to ≤ 74.9% of RATED THERMAL POWER, and, c. Limit the speed of the operating recirculation pump to less than or equal to 90% of rated pump speed, and d. Verify that the differential temperature requirements of Surveillance Requirement 4.4.1.1.5 are met if THERMAL POWER is ≤ 30% of RATED THERMAL POWER or the recirculation loop flow in the operating loop is ≤ 50% of rated loop flow, or suspend the THERMAL POWER or recirculation loop flow increase. 2. Within 6 hours, change APRM and Rod Block setpoints for Single Loop Ops	SRO
Lead Evaluator (or designee) Notes: When ready to continue with event 6 notify the simulator driver to continue with **trigger 5**		

6.	1B Reactor Recirc Pump Trip

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger # 5** when requested by Lead Evaluator, to initiate Overcurrent Trip of the '1B' ASD.

Ensure **Trigger # 6** automatically actuates when RMS is taken to SHUTDOWN, to initiate Feedwater Line break and drywell leak.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6. 1B Reactor Recirc Pump Trip		
Lead Evaluator (or designee) Notes: OT-112 directs the ATC to scram in reactor in the event a second RRP trips. Event 5 resulted in a Trip of the '1A' ASD/RRP and so the ATC should have been given that direction. When '1B' ASD/RRP trips the ATC should scram the reactor once the trip of 1B is announced. Once the Reactor is scrammed the FW Line break in primary containment will start in 3 minutes.		
	Reference ARCs • 112 B-1, 1B RECIRC ASD TRIPPED • 112 B-2, 1B RECIRC ASD MAJOR FAILURE • 112 D-2, 1B RECIRC PUMP MOTOR HI VIBRATION • 112 E-2, 1B RECIRC ASD 13 KV BKR TRIP • 107 H-2, REACTOR HI/LO LEVEL	BOP
	Diagnose and announce trip of 1B ASD	BOP
	[OT-200 Appendix 1 1.0] Place Mode Switch in SHUTDOWN	ATC
	Enter T-101 on RPV level of <12.5 inches reactor water level	SRO
	[OT-200 Appendix 1 2.0] CHECK reactor power and control rod status.	ATC
	[OT-200 Appendix 1 2.1] Report to SRO: Reactor Mode Switch is in SHUTDOWN , ALL rods are in.	ATC
	[OT-200 Appendix 1 3.0] Lock Rx mode switch in S/D	ATC
	[OT-200 Appendix 1 4.0] Insert SRMs AND IRMs	ATC
	[OT-200 Appendix 12 1.0] CHECK reactor power and control rod status.	BOP
	[OT-200 Appendix 12 1.2] Trip Main Turbine ensure Generator Lockout	BOP
	[T-101 RC/L-5] Restore and maintain RPV level between +12.5" AND +54"	ATC
	[T-101 RC/P-5] Stabilize RPV press below 1096 psig.	ATC

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
8.	**RCIC discharge valve fails to Auto Open**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment**	
8.	**RCIC discharge valve fails to Auto Open**	
Lead Evaluator (or designee) Notes: After the plant is scrammed a rupture of the 'A' Feedwater line occurs followed by a progressively rising RPV coolant leak into the drywell. The operator will identify the Feedwater line break as RPV level decreases and Primary Containment pressure rises.		
	Recognize RPV level decreasing and Drywell pressure increasing	ATC/BOP
	Report rising drywell pressure, and RPV level lowering	ATC/BOP
	Recognize 'A' FW Line Break and announce to crew	ATC
	Isolate HP Feedwater per OT-200 appendix 2, "Feedwater Isolation Hard Card".	ATC
	Isolate HPCI per OT-200 appendix 9, "HPCI Isolation Hard Card"	BOP
	Enter and execute OT-101, Drywell High Pressure, as drywell pressure rises	SRO
	[OT-101 3.1] **ESTABLISH** Drywell pressure as a Critical Parameter	BOP
	Enter T-102, Primary Containment Control, and Re-enter T-101, Reactor Control, on 1.68# Drywell Pressure	SRO
	Verify Isolations complete for >1.68 psig drywell press. and RPV level <12.5"	Crew
	[T-101 RC/L-5] Direct BOP/ATC to take level control with RCIC	SRO
	[T-101 RC/L-5] Maximize RPV Injection with CRD per T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions	ATC
	[T-101 RC/L-6] Augment RPV level control as required using any Alternate Injection Systems: SLC per S48.1.B App1	SRO
	[T-101 RC/L-9] Manually inhibit auto ADS **(Critical Task T-101.2)**	BOP
	[T-101 RC/L-5] Maximize RPV Injection using RCIC	BOP/ATC
	Evaluate closing MSIV's to conserve RPV inventory	SRO
	Identify RCIC Discharge valve (HV-49-1F013) failed to open automatically on RCIC initiation, and OPEN it manually.	~~BOP~~ ATC
	Identify RPV level decreasing – approaching LOCA -129"	Crew

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
8.	**RCIC discharge valve fails to Auto Open**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

At time _8 min___ after FSSV or EO action requested for T-240 field actions (Insert **RCR019** to open 'B' CRD Pump discharge valve) and
report: __Field actions for T-240 are complete and standby pump ready for start._

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment**	
8.	**RCIC discharge valve fails to Auto Open**	
	Enter SE-10, LOCA when RPV level <-129”	Crew
	[SE-10 3.1] **PLACE** the following to "CLOSE" • 52-20224/CS, "D*24 Safeguard L.C. D*24-G-D MCC Bkr" (SAFEGUARDS B), on *BC661 • 52-20124/CS, "D*14 Safeguard L.C. D*14-G-D MCC Bkr" (SAFEGUARDS A), on *AC661.	BOP
	[SE-10 3.2] **PLACE** to "RESET": • 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661 • 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661.	BOP
	Dispatch Equipment Operator to perform SE-10-1 field actions	BOP
	[SE-10 4.3] Maintain ECCS for injection **IF** Low Pressure ECCS is not required to restore RPV level, **THEN ALIGN** per SSV direction.	SRO
	Re-start of ‘1A’ CRD Pump following LOCA and maximize using T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions	ATC
	Restart '1A' and '1B' SLC Pumps following LOCA	ATC
	[T-240 4.2] Fully **OPEN** HV-46-1F003, "Drive Water Pressure Control" (DRIVE WATER PRESSURE), at 10C603 (Main Control Room). [identify no power available]	ATC
	[T-240 4.3] **OPEN** FV-C-46-1F002A(B), "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(B), "CRD Pump Discharge" (252-T6-200).	ATC
	[T-240 4.4] **OPEN** 46-1F045, “CRD Pumps Suction Filter Bypass Valve” (EO)	ATC
	[T-240 4.5] If additional CRD flow required place second CRD Pump in Service	ATC
	Trend RPV Level	ATC/BOP

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
8.	**RCIC discharge valve fails to Auto Open**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment** **8. RCIC discharge valve fails to Auto Open**	
EVALUATORS NOTE: The following steps are directed from T-102 to address the rise in Containment pressure. T-225, Startup and Shutdown of Suppression Pool (Section 4.2) and Drywell Spray Operation (Section 4.5), is used to control containment pressure.		
	[T-102 PC/P-6] **DIRECT** before Supp Pool pressure reaches 7.5 psig Spray the **Suppression Pool** per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation	SRO
	[T-225 4.2.1] **ENSURE** HV-51-1F004A(B), "1A(B) RHR Pump Suction PCIV" (SUCTION A(B)), open	BOP
	[T-225 4.2.2] **ENSURE** the following valves closed: • HV-51-1F006A(B), "1A(B) RHR Pp S/D Clg Suct Intertie Vlv" • HV-51-1F015A(B), "1A(B) Shutdown Clg Injection PCIV" • HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" • HV-51-1F017A(B), "1A(B) RHR LPCI Inj PCIV"	BOP
	[T-225 4.2.3] **IF** RHR pump not running **THEN** start 1A(B)P202 "RHR Pump"	BOP
	[T-225 4.2.4] **ENSURE** the following valves open: • HV-51-1F047A(B), "1A RHR Htx Shell Side Inlet Vlv" (INLET) • HV-51-1F003A(B), "1A RHR Htx Shell Side Outlet Vlv" (OUTLET) • HV-C-51-1F048A(B), "1A RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS)	BOP
	[T-225 4.2.5] **OPEN** HV-51-1F024A(B), "1A RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A **AND OBTAIN** flow of 8,000 to 8,500 gpm as indicated on FI-51-1R603A, FL.	BOP
	[T-225 4.2.6] **OPEN** HV-51-1F027A(B), "1A RHR Supp Pool Spray Line PCIV" (SUPP POOL SPRAY).	BOP
	[T-225 4.2.8] **PLACE** RHR Service Water Pump for RHR Heat Exchanger to be used in service per S12.1.A, RHR Service Water System Startup.	BOP

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
8.	**RCIC discharge valve fails to Auto Open**
	Simulator Operator Instructions: Inform Floor Instructor prior to each event trigger

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment**	
8.	**RCIC discharge valve fails to Auto Open**	
	[T-225 4.2.9] **CLOSE** HV-C-51-1F048A(B), "1A RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS).	BOP
	[T-225 4.2.10] **IF** more spray flow is required, **THEN REDUCE** flow through Full Flow Test line by throttling closed HV-51-1F024A(B), "1A RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A.	BOP
EVALUATORS NOTE: The following steps are performed as directed by S12.1.A, RHR Service Water System Startup.		
	[S12.1.A 4.1.4/5 or App1 1.3] • **OPEN** HV-51-1F014A(B), HEAT EXCHANGER INLET. • Throttle **OPEN** HV-51-1F068A(B) for 18 to 20 seconds.	BOP
	[S12.1.A 4.1.6(7) or App1 1.4] **VERIFY** PI-51-105A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig.	BOP
	[S12.1.A 4.1.8 or App1 1.4] **IF** the HI RAD AND/OR HI Pump Discharge pressure trips need to be bypassed **AND** the required actions of ODCM Part 1 Control 3.1.1 have been met for the INOPERABLE RHRSW Radiation Monitor, **THEN PLACE** HSS-12-002A(B), PUMP TRIP BYPASS, in "BYPASS."	BOP
	[S12.1.A 4.2.1.1 or App1 1.6] **IF** 'A' Loop pump (0A(C)-P506) is to be placed in service, **THEN ENSURE** 0A-V543 OR 0C-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681.	BOP
	[S12.1.A 4.2.1.2 or App1 1.7] **IF** 'B' Loop pump (0B(D)-P506) is to be placed in service, **THEN ENSURE** 0B-V543 OR 0D-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681.	BOP
	[S12.1.A 4.2.2 or App1 1.8] **START** 0A(B),(C,D)P506, RHRSW PUMP.	BOP
	[S12.1.A 4.2.3 or App1 1.9] **THROTTLE** 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.	BOP

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
8.	**RCIC discharge valve fails to Auto Open**
	Simulator Operator Instructions: Inform Floor Instructor prior to each event trigger

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment**	
8.	**RCIC discharge valve fails to Auto Open**	
EVALUATORS NOTE: The following steps are performed as directed by T-225 section 4.7 to spray the Drywell.		
	[T-225 4.7.1] **ENSURE** HV-51-1F004A(B), "1A(B) RHR Pump Suction PCIV" (SUCTION A(B)), open	BOP
	[T-225 4.7.2] **ENSURE** the following valves closed: • HV-51-1F006A(B), "1A(B) RHR Pp S/D Clg Suct Intertie Vlv" • HV-51-1F015A(B), "1A(B) Shutdown Clg Injection PCIV" • HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" • HV-51-1F017A(B), "1A(B) RHR LPCI Inj PCIV"	BOP
	[T-225 4.7.3] Momentarily **PLACE** only <u>one loop</u> HV-51-1F021A(B), (INBOARD) hand switch to "OPEN."	BOP
	[T-225 4.7.4] **<u>IF</u>** RHR pump not running **<u>THEN</u> START** 1A(B)P202 "RHR Pump."	BOP
	[T-225 4.7.5] **ENSURE** the following valves open: • HV-51-1F047A(B), "1A(B) RHR Htx Shell Side Inlet Vlv" (INLET) • HV-51-1F003A(B), "1A(B) RHR Htx Shell Side Outlet Vlv" (OUTLET) • HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS)	BOP
	[T-225 4.7.7] REMOVE Drywell Cooling Fans 1&2CV212, 1&2DV212, 1&2EV212, and 1&2FV212, from service by Drywell Cooler Fan switches to "OFF." PRO/RO	BOP/ATC
	[T-225 4.7.12] **OPEN** HV-51-1F024A(B), "1A(B) RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A(B)), **<u>AND</u> OBTAIN** flow of 9,250 to 10,500 gpm as indicated on FI-51-1R603A(B), FL.	BOP
	[T-225 4.7.13] **OPEN** only one loop HV-51-1F021A(B), "1A(B) RHR Cntmt Spray Line Inboard PCIV" (INBOARD).	BOP
	[T-225 4.7.14] Throttle **OPEN** only one loop HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" (OUTBOARD) to initiate spray **<u>AND</u> OBSERVE** raising flowrate as indicated on FI-51-1R603A(B), FL.	BOP

7.	**Loss of High Pressure Injection / LOCA Inside Containment**
9	**'1M' Tailpipe break with 50% flow into SP airspace**
	Simulator Operator Instructions: Inform Floor Instructor prior to each event trigger

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
7.	**Loss of High Pressure Injection / LOCA Inside Containment**	
9.	**1M' Tailpipe break with 50% flow into SP airspace**	
Lead Evaluator (or designee) Notes: As RPV level drops to -161" the crew will enter and execute T-112, Emergency Blowdown to rapidly depressurize the RPV. SRVs are the preferred mechanism to discharge steam. As the operator opens 5 SRVs the '1M' SRV tailpipe will experience a mechanical failure, resulting in steam discharging into the suppression pool airspace and a rapid pressure rise in containment pressure. As the crew identifies the failed SRV tailpipe, that SRV will be closed and another SRV will be opened until a total of 5 SRVs are open.		
	[T-101 RC/L-15] When RPV level cannot be maintained above -161 inches and before RPV level reaches -186 inches, enter T-112 **(Critical Task T-101.5)**	SRO
	[T-101 RC/L-16] Enter T-112, Emergency Blowdown	SRO
	[T-112 EB-12] **DIRECT** Open all 5 ADS valves	SRO
	[T-112 EB-12] **PERFORM** Open all 5 ADS valves **(Critical Task T-101.5)**	BOP
	Recognize the '1M' SRV tailpipe break in the Suppression Pool airspace.	BOP
	Close the '1M' SRV.	BOP
	The BOP opens additional non ADS SRVs until a total of 5 ADS/SRVs are open **(Critical Task T-101.5)**	BOP
	Restore RPV Level to +12.5" to 54" with ECCS	ATC/BOP
EVALUATORS NOTE: The scenario may be terminated when the Emergency Blowdown is complete, and RPV level is restored to normal band with ECCS systems		

Attachment 1
Simulator Operator Response Times

Procedure	Performance	Response Time (Minutes)
T-209	Injection from the Standby Liquid Control Storage Tank with the RCIC System	45
T-212	Bypassing SQUIB Valves for SLC Injection	19
T-215	De-energization of Scram Solenoids	7
T-216	Manual Isolation and Vent of Scram Air Header	7
T-217	RPS/ARI Reset and Backup Method of Draining Scram Discharge Volume	17
T-219	Maximizing CRD Cooling Water Header Flow during ATWS Conditions	23
T-221	MSIV Isolation Bypass Procedure	11
T-225	Startup and Shutdown of Suppression Pool and Drywell Spray Operations	8
T-240	Maximizing CRD flow after Shutdown During Emergency Conditions	8
T-245	RPV Injection from RHR S/D Cooling	12
T-248	Injection from SLC Test Tank to RPV	15
T-251	Establish a HPCI Injection flow Path VIA Feedwater Only	6
T-270	Terminate and Prevent Injection into the RPV	7
T-290	Instrumentation Available for T-103 SAMP-2	5
S46.7.A (4.2.1)	Control Rod Drive Hydraulic System Operation Following Reactor Scram (Securing CRD flow to the Reactor - Close 46-1F060, CRD Water Pressure Control Station Inlet Valve)	7
SE-10-1 Resets and Floor action	Breaker Reset Following LOCA (Also reset ARMs, RHRSW Rad Monitor and RDCS)	10
Open 006-1007A	Manual Operation of Large Min Flow block Valve	5

Attachment 2
Communications Log

CREW: _____ **DATE:** _____ **SEG:** _____

SRO: _____ **ATC:** _____ **BOP:** _____

START TIME: _____ **STOP TIME:** _____

TIME	PERSON CALLING	PERSON BEING CALLED	COMMUNICATION / REQUEST	CALL BACK TIME

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CREW PREBRIEF INSTRUCTIONS

Unit 1 is in OPCON 1 at 100% power
Unit 2 is in OPCON 1 at 100% power

Specific Plant Conditions are as Follows:

- Maintain 100% Reactor power
- Operation per GP-5, Steady State Operations

Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):

- None

Restrictions on Plant Operations:

- None

Planned Evolutions:

- Perform ST-6-077-310-1, “Drywell Unit Cooler Hydrogen Mixing System Operability Test Run.”

Documents Provided:

- ST-6-077-310-1, “Drywell Unit Cooler Hydrogen Mixing System Operability Test Run.”

Exelon Generation

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

Code No:	SEG-6215E	Rev No:	002
Author:	John Mercurio	Approximate Run Time:	70 minutes
Type:	Simulator Evaluation Guide	Effective Date:	
Program:	Licensed Operator Training		
Course:	Initial Licensed Operator Training		
Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

LIMERICK GENERATING STATION
INITIAL LICENSED OPERATOR TRAINING
SIMULATOR EVALUATION GUIDE

Code No:	SEG-6215E	Rev No:	002
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Course:	Initial Licensed Operator Training		
Title:	Simulator Evaluation Guide for Individual and Crew Performance		
Prepared By:	John Mercurio /s/ Training Instructor - Signature	Date:	6/17/2021
Approval:[1]	Jeff Weaver /s/ OPS Manager or Designee - Signature	Date:	6/22/21
Approved For Use:	Dan Semeter /s/ Training Manager or Designee - Signature	Date:	6/23/21

[1] N/A for minor revisions

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Limerick 1 & 2 Scenario No.: SEG-6215E Rev 2 Op-Test No.: 2021-301

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:

Unit 1 is at 94% power for rod recovery following on-line HCU maintenance.
Unit 2 is at 100% power
Reactor Services personnel are loading spent fuel into shipping casks.
Refuel Floor Secondary Containment is established.

Turnover:

The crew is expected to withdraw the 2 maintenance rods per the ReMA (Reactivity Maneuver Approval) and restore power to 100% with Recirc flow as required.

Critical Tasks:

T-117.1 Inhibit Auto ADS due to Low RPV Level.
T-117.3 Control Reactor Power by Controlling RPV Injection.
T-117.6 Insert Control Rods.

Per NUREG-1021, App. D, If an operator or crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may for the basis for a CT identified in the post scenario review

Event No.	Malfunction Number	Event Type*	Event Description
1	N/A	R-ATC	Withdraw control rods and restore power to 100%
2	MPR011B	I-ATC I-SRO	'1B' RBM fails INOP
3	MED014 MED015H MDG420D	C-BOP C-SRO TS	Loss of D14 Bus
4	MCR547 MRC016C	C-ATC C-SRO TS	CRD pump trip due to clogged suction strainer with multiple HCU accumulator trouble alarms.
5	MVI232F MRP029A	C-ATC C-SRO TS	"1C" RPS RPV Level Transmitter Fails Low with a Failure to Half Scram / OT-117
6	MRD556 MSL559	M-ALL	Hydraulic ATWS and SLC Line rupture (**CT- T117.1, CT-T117.3, CT- T117.6)**
7	MRD024	C-BOP C-SRO	B Loop RHRSW pump trips
8	MMT100 MEH108	C-BOP C-SRO	Turbine high vibration requiring manual turbine trip / Bypass Valves fail closed
*	**(N)ormal,**	**(R)eactivity,**	**(I)nstrument,** **(C)omponent,** **(M)ajor**

SEG-6215E

Initial Conditions:
Unit 1 is at 94% power for rod recovery following on-line HCU maintenance.
Unit 2 is at 100% power.
Reactor Services personnel are loading spent fuel into shipping casks.
Refuel Floor Secondary Containment is established.

Turnover:
The crew is expected to withdraw the 2 maintenance rods per the ReMA (Reactivity Maneuver Approval) and restore power to 100% with Recirc flow as required.

Event 1: When the crew takes responsibility, the ATC is directed to withdraw control rods per the provided ReMA and restore power to 100% with Recirc flow.

Evaluation: The crew takes action to withdraw the control rods using the ReMA and normal operating procedure S73.1.A, "Normal Operation of the Rx Manual Control System", while monitoring control rod drive parameters and Reactor Power. A coupling check is performed for each control rod withdrawn.

Event 2: When the 2nd control rod is selected, the '1B' RBM fails INOP and generates a control rod block requiring a Tech Spec evaluation.

Evaluation: The ATC will determine the rod block condition and the crew will determine that the '1B' Rod Block Monitor has failed. After referencing Tech Specs, and thermal limits the crew determines that it is permissible to bypass the RBM and continue with recovering the control rod.

Event 3: Once both maintenance rods have been withdrawn and Reactor power has been restored to 100% with Recirc, the safeguard Division 4 AC D14 Bus trips.

Evaluation: Using the indication in the MCR, the crew determines the trip of D14 Bus and enters AOP E-D14, "Loss of D14 Safeguard Switchgear". From the procedure the crew makes various callouts to the field. The crew restores power to the bus by either manually starting the D14 DG or closing in the alternate offsite source both of which failed to actuate automatically. The crew also recognizes a loss of Drywell cooling and enters AOP OT-101, "High Drywell Pressure". The crew addresses the loss of Drywell cooling by starting the standby Drywell Chiller to restore Drywell cooling.

Event 4: After the D14 Bus trip has been addressed, the running control rod drive (CRD) pump trips due to a clogged common suction strainer causing multiple HCU accumulators to alarm below TS minimum pressure.

Evaluation: The crew enters AOP ON-107, "Control Rod Drive System Problems". During execution of the procedure the crew bypasses the strainer, and starts a CRD pump. SRO determines TS implications of multiple HCU accumulator alarms.

SEG-6215E (continued)

Event 5: After the crew has restarted a CRD pump, the "1C" RPS RPV Level transmitter will fail downscale causing a RPV Water Low, Level 3 Trip alarm. A RPS half scram is not received requiring the crew to enter OT-117, "RPS Failures".

Evaluation: The SRO directs the performance of OT-117 to insert a half scram on channel A1(2). When this fails, a full scram is inserted by placing the mode switch to shutdown and 10 rods insert.

Event 6: When the mode switch is placed in shutdown, a hydraulic ATWS occurs with 175 control rods failing to scram. Complicating the event, the SLC injection line ruptures inside the Drywell.

Evaluation: The SRO enters EOP T-101, "RPV Control". The ATC and BOP execute OT-200 appendices 1, "RO Rx Scram Hard Card" and 12, "PRO Rx Scram Hard Card", respectively. The ATC performs the first RPV lowering below -50 inches. The failure of SLC is identified and procedure T-209, "Inject SLC from RCIC", is called out to be performed. Two RHRSW pumps are then started in preparation for placing two loops of suppression pool cooling in service. The SRO directs performance of T-221, "MSIV Isolation Bypass, To Keep the MSIVs Open", and T-217, "RPS/ARI Reset", to insert control rods.

Event 7: Complicating the event, when the BOP places RHRSW in service, the B Loop pump will trip on Overcurrent several minutes later.

Evaluation: The BOP recognizes the trip of the running pump and starts the other B loop pump.

Event 8: After Reactor level has been lowered to less than -50", the Main Turbine experiences high vibration which requires a turbine trip. When Bypass valves are controlling pressure, the Turbine Bypass Valves will fail to control pressure, forcing pressure control with SRVs and heat addition to containment. Additionally, the Rod Worth Minimizer will fail to bypass preventing Rod insertion by the ATC when power is less than 14%.

Evaluation: The crew identifies that the Main Turbine vibrations are rising and briefs a pressure control contingency to trip it. Once the Main Turbine is tripped, the crew recognizes the DEHC Bypass Valve malfunction and establishes pressure control with SRVs. The crew must enter T-102, "Primary Containment Control" at 95°F and when Suppression Pool temperature reaches 110°F, the crew performs a controlled lowering to below top of active fuel (-161"). At this point the rods will be inserted and the crew slowly recovers level to the normal band (+12.5" to +54") to mitigate RPV cooldown.

Termination: The scenario may be terminated when all control rods have been inserted and RPV level has been stabilized above top of active fuel.

QUANTITATIVE ATTRIBUTES

A. ILT

Target Quantitative Attributes (Per Scenario; See ES-301 Section D.5.d)	
1. Malfunctions after EOP entry (1-2): Turbine high vibration requiring manual turbine trip / Bypass Valves fail closed; B Loop RHRSW pump trips	2
2. Abnormal events (2-4): Rob Block Monitor INOP, Loss of D14 Bus; CRD pump trip due to clogged suction strainer; Failure to scram	4
3. Major transients (1–2): Hydraulic ATWS and SLC Line rupture	1
4. EOPs entered/requiring substantive actions (1–2): T-101, T-102	2
5. EOP contingencies requiring substantive actions (0-2): T-117	1
6. Critical tasks (2–3): Inhibit ADS, Control Power by Controlling Injection, Insert Control Rods	3

Review TQ-AA-151 attachment 5 and ES-301-5 for individual position requirements for scenario and scenario set

I. Title:

Simulator Evaluation Guide for Individual and Crew Performance

II. Scenario Summary:

Event #	Description
1	When the crew takes responsibility, the ATC is directed to withdraw control rods per the provided ReMA and restore power to 100% with Recirc flow.
2	When the 2nd control rod is selected, the '1B' RBM fails INOP and generates a control rod block requiring a Tech Spec evaluation.
3	Once both maintenance rods have been withdrawn and Reactor power has been restored to 100% with Recirc, a loss of the safeguard bus D14 occurs (201-D14 breaker trip) without auto closure of the 101-D14 or auto start of the D14 DG.
4	After the loss of the D14 Bus has been addressed, the running control rod drive (CRD) pump trips due to a clogged common suction strainer causing multiple HCU accumulators to alarm below TS minimum pressure.
5	After the crew has restarted a CRD pump, the "1C" RPS RPV Level transmitter will fail downscale causing a RPV Water Low, Level 3 Trip alarm. A RPS half scram is not received requiring the crew to enter OT-117, "RPS Failures".
6	When the mode switch is placed in shutdown, a hydraulic ATWS occurs with 175 control rods failing to scram. Complicating the event, the SLC injection line ruptures inside the Drywell.
7	Complicating the event, after suppression pool cooling is established, the running 'B' loop RHRSW Pump trips on overcurrent.
8	After Reactor level has been lowered to less than -50", the Main Turbine experiences high vibration which requires a turbine trip. When Bypass valves are controlling pressure, the Turbine Bypass Valves will fail to control pressure, forcing pressure control with SRVs and heat addition to containment. Additionally, the Rod Worth Minimizer will fail to bypass preventing Rod insertion by the ATC when power is less than 14%.
Termination Point	The scenario may be terminated when all control rods have been inserted and RPV level has been stabilized above top of active fuel.

III. Revision History:

Revision Number	Description of Revision and Affect on Training Content	Date of Revision
000	This is a modified version of scenario 3 from the 2005 NRC Exam	10/12/14
001	Revised for 2015 CERT.	05/15/15
002	Revised for ILT 20-1 NRC Exam, using new SEG Template and for EPG/SAG rev 4 TRIP implementation	6/23/21

IV. References

Training Procedures:

- TQ-AA-150, Operator Training Programs
- TQ-AA-151, ILT Certification and NRC Examination Development and Administration
- TQ-AA-155, Conduct of Simulator Training and Evaluation

EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station:

- EP-AA-1008, Limerick, Radiological Emergency Plan Annex for Limerick Generating Station

OP-AA Procedures:

- OP-AA-1, Conduct of Operations
- OP-AA-20, Conduct of Operations Process Description
- OP-AA-101-111-1001, Operations Standards and Expectations
- OP-AA-101-113, Operations Fundamentals
- OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
- OP-AA-106-101-1006, Operational Decision Making Process

OP-LG Procedures:

- OP-LG-101-111-1000, Licensed Operator Duties
- OP-LG-102-106, Operator Response Time Program at Limerick
- OP-LG-103-102-1000, Human Performance Continuing Good Practices
- OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
- OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER):

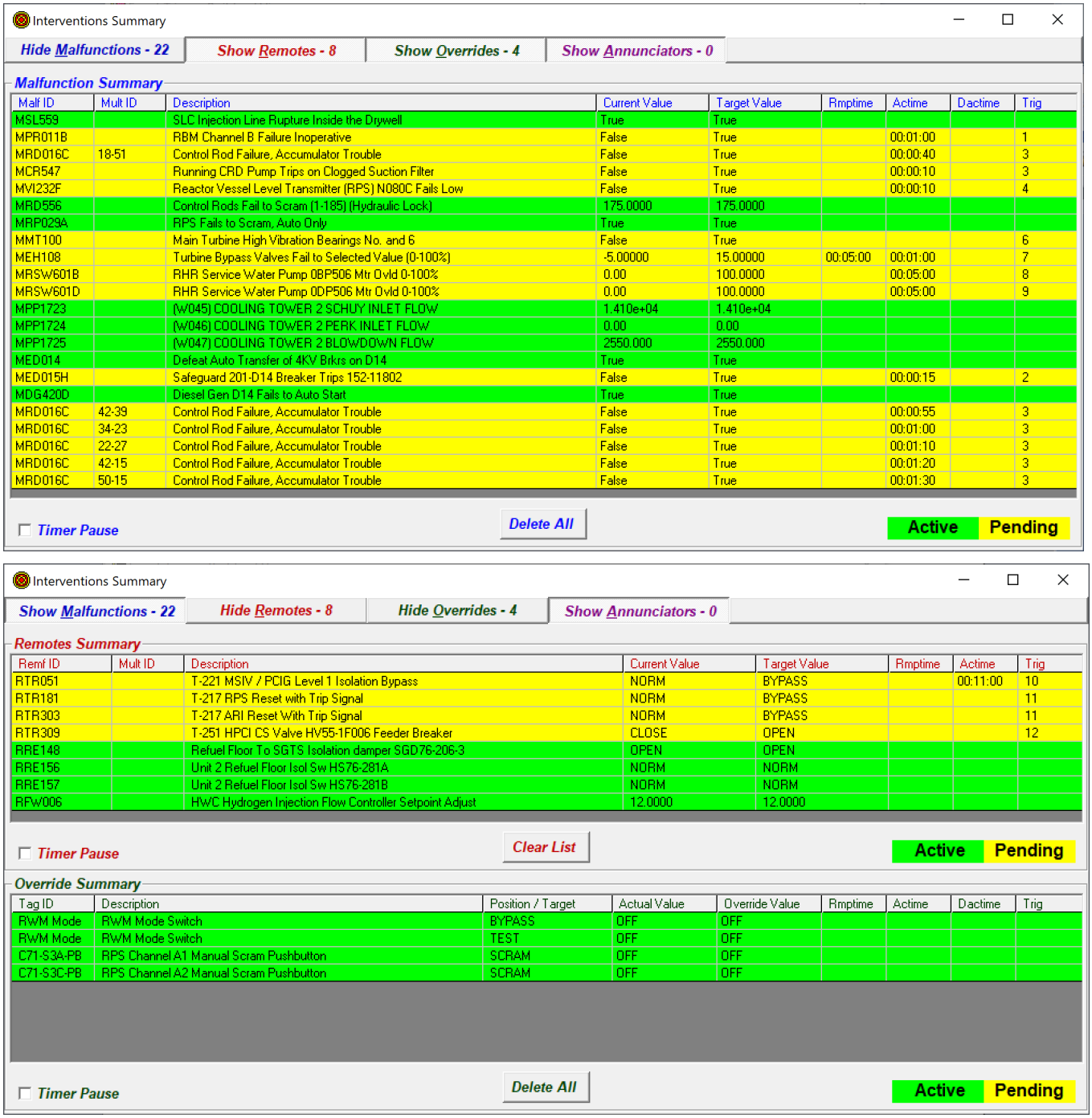
- SOER 10-02, Engaged Thinking Organizations
- INPO 15-004, Operator Fundamentals
- IER 17-5, Line of Sight to the Reactor Core

V. Directions To Simulator Driver

Simulator Setup

✔	ITEM / MALFUNCTION / REMOTE FUNCTIONS
	Prepare simulator per TQ-AA-155, Operator Training Programs Attachment 1, Conduct of Simulator Checklist.
	Reset Simulator to the IC developed for the cycle OR Reset the simulator to appropriate Rx Power IC AND • Load scenario file SEG-6215E Rev002.scn, verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded OR • Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Simulator Scenario Intervention Summary Screen Shot and Simulator Event Triggers Table
	Simulator Driver performs the following: • Momentarily place simulator in RUN • Ensure appropriate Reactor power • Acknowledge and clear all spurious alarms • Place the simulator back into FREEZE • Place appropriate tags and equipment in required condition / status listed below: 1. Ensure the following –control rods inserted and reactor at 94% power: • 30-47 • 42-55 2. Ensure Staged: • A marked-up GP-5, Attachment 1, Section 1.0 • ReMA, S73.1.A, ST-6-107-730-1 3. Ensure ‘1B’ DW Chiller in Service 4. RF aligned for Secondary Containment being established. 5. Trip of 1st B Loop RHRSW Pump to be started after 5 minutes. a. Create Trigger 8 for B RHRSW Pump red light on (ZSWLRPBR) b. Create Trigger 9 for D RHRSW Pump red light on (ZSWLRPDR) c. MRSW601B and MRSW601D

Simulator Scenario Intervention Summary Screen Shot:



Interventions Summary

Hide Malfunctions - 22 | Show Remotes - 8 | Show Overrides - 4 | Show Annunciators - 0

Malfunction Summary

Malf ID	Mult ID	Description	Current Value	Target Value	Rmptime	Actime	Dactime	Trig
MSL559		SLC Injection Line Rupture Inside the Drywell	True	True				
MPR011B		RBM Channel B Failure Inoperative	False	True		00:01:00		1
MRD016C	18-51	Control Rod Failure, Accumulator Trouble	False	True		00:00:40		3
MCR547		Running CRD Pump Trips on Clogged Suction Filter	False	True		00:00:10		3
MVI232F		Reactor Vessel Level Transmitter (RPS) N080C Fails Low	False	True		00:00:10		4
MRD556		Control Rods Fail to Scram (1-185) (Hydraulic Lock)	175.0000	175.0000				
MRP029A		RPS Fails to Scram, Auto Only	True	True				
MMT100		Main Turbine High Vibration Bearings No. and 6	False	True				6
MEH108		Turbine Bypass Valves Fail to Selected Value (0-100%)	-5.00000	15.00000	00:05:00	00:01:00		7
MRSW601B		RHR Service Water Pump 0BP506 Mtr Ovld 0-100%	0.00	100.0000		00:05:00		8
MRSW601D		RHR Service Water Pump 0DP506 Mtr Ovld 0-100%	0.00	100.0000		00:05:00		9
MPP1723		(W045) COOLING TOWER 2 SCHUY INLET FLOW	1.410e+04	1.410e+04				
MPP1724		(W046) COOLING TOWER 2 PERK INLET FLOW	0.00	0.00				
MPP1725		(W047) COOLING TOWER 2 BLOWDOWN FLOW	2550.000	2550.000				
MED014		Defeat Auto Transfer of 4KV Brkrs on D14	True	True				
MED015H		Safeguard 201-D14 Breaker Trips 152-11802	False	True		00:00:15		2
MDG420D		Diesel Gen D14 Fails to Auto Start	True	True				
MRD016C	42-39	Control Rod Failure, Accumulator Trouble	False	True		00:00:55		3
MRD016C	34-23	Control Rod Failure, Accumulator Trouble	False	True		00:01:00		3
MRD016C	22-27	Control Rod Failure, Accumulator Trouble	False	True		00:01:10		3
MRD016C	42-15	Control Rod Failure, Accumulator Trouble	False	True		00:01:20		3
MRD016C	50-15	Control Rod Failure, Accumulator Trouble	False	True		00:01:30		3

Timer Pause | Delete All | Active | Pending

Interventions Summary

Show Malfunctions - 22 | Hide Remotes - 8 | Hide Overrides - 4 | Show Annunciators - 0

Remotes Summary

Remf ID	Mult ID	Description	Current Value	Target Value	Rmptime	Actime	Trig
RTR051		T-221 MSIV / PCIG Level 1 Isolation Bypass	NORM	BYPASS		00:11:00	10
RTR181		T-217 RPS Reset with Trip Signal	NORM	BYPASS			11
RTR303		T-217 ARI Reset With Trip Signal	NORM	BYPASS			11
RTR309		T-251 HPCI CS Valve HV55-1F006 Feeder Breaker	CLOSE	OPEN			12
RRE148		Refuel Floor To SGTS Isolation damper SGD76-206-3	OPEN	OPEN			
RRE156		Unit 2 Refuel Floor Isol Sw HS76-281A	NORM	NORM			
RRE157		Unit 2 Refuel Floor Isol Sw HS76-281B	NORM	NORM			
RFW006		HWC Hydrogen Injection Flow Controller Setpoint Adjust	12.0000	12.0000			

Timer Pause | Clear List | Active | Pending

Override Summary

Tag ID	Description	Position / Target	Actual Value	Override Value	Rmptime	Actime	Dactime	Trig
RWM Mode	RWM Mode Switch	BYPASS	OFF	OFF				
RWM Mode	RWM Mode Switch	TEST	OFF	OFF				
C71-S3A-PB	RPS Channel A1 Manual Scram Pushbutton	SCRAM	OFF	OFF				
C71-S3C-PB	RPS Channel A2 Manual Scram Pushbutton	SCRAM	OFF	OFF				

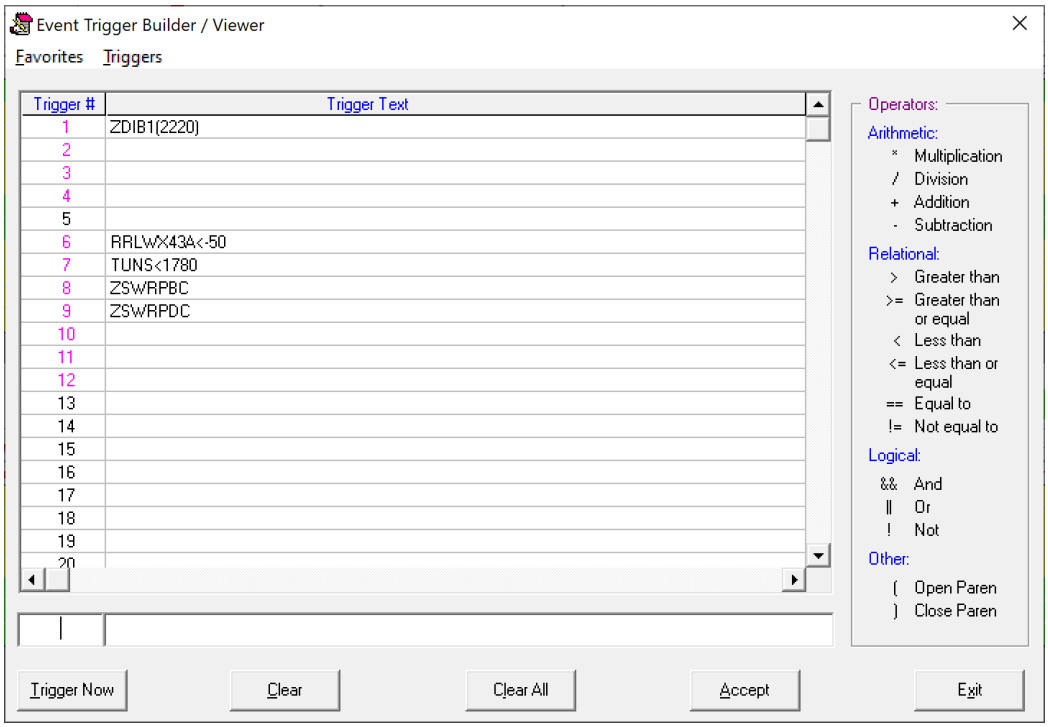
Timer Pause | Delete All | Active | Pending

Event Triggers Assignment

- Timers should be used on event triggers where possible for time validation

Simulator Event Triggers Table:

	Trigger #	Malfunction / Event Initiation	Description
	1	ZDIB1[2220]	Control Rod 42-55 selected Initiates 'B' RBM failure
	2	Manual	Initiates a loss of the D14 Bus, with a failure of the 101-D14 to auto close and the failure of the D14 DG to auto start.
	3	Manual	Initiates trip of running CRD pump due to clogged suction filter and 6 HCU Accumulator trouble alarms.
	4	Manual	Initiates RPV RPS Level fails low
	6	RRLWX43A<-50	Wide Range RPV Level <-50 inches Initiates Turbine vibration
	7	TUNS<1780	Main Turbine Speed less than 1780 RPM initiates Bypass Valve failure
	8	ZSWRPBC	B RHRSW Pump red light on Initiates trip of B RHRSW Pump after 5 Minutes
	9	ZSWRPDC	D RHRSW Pump red light on Initiates trip of D RHRSW Pump after 5 Minutes
	10	Manual	Implements T-221
	11	Manual	Implements T-217
	12	Manual	Implements T-251



Simulator Driver Communications

- The Simulator Driver will respond with scripted or proceduralized responses, when requested by MCR operators, based on the “Simulator Operator Response Times” per Attachment 1 unless otherwise stated in the scripted response
- The Simulator Driver will also maintain a timeline and record of all reports and requests, issued by MCR personnel, using Attachment 2 or equivalent

VI. Crew Critical Tasks

Crew Critical Tasks in Training Scenarios are for the purpose of training operators on expectations for crew performance and evaluation criteria. Crew Critical Tasks are not intended for grading in Simulator Training Scenarios. Critical Tasks are based on the current Crew Critical Task List revision.

T-117.1	**Inhibit Auto ADS due to Low RPV Level**						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
System	218000	ADS Automatic Depressurization System	A2.06	ADS initiation signals present	4.5	4.3	3. Reactor Pressure Control
EPE	295031	Reactor Low Water Level	EA2.01	Reactor water level	4.7	4.6	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario.						
Initiating Cue	ATWS condition						
Measurable Performance Standard	**Expected action**	Inhibit auto ADS by placing ADS Auto Inhibit switches B21C-S15A and B21C-S15C in the inhibit position					
	Safety-significant boundary condition	Prior to automatic ADS initiation (5 open SRVs)					
Performance Feedback	ADS Auto Inhibit switches B21C-S15A and B21C-S15C in the inhibit position						
Evaluation	**SAT / UNSAT**						

T-117.3	Control Reactor Power by Controlling RPV Injection						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			K/A		Importance		Safety Function (for Systems)
System/EPE/APE	Number	Title	Number	Ability	RO	SRO	
EPE	295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	EA2.01	Reactor power	4.3	4.7	N/A
EPE	295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	EA2.02	Reactor Water Level	4.3	4.4	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario. Failure to perform this task correctly also represents a degradation of a fission product barrier and incorrect reactivity control.						
Initiating Cue	With mode switch in shutdown, Reactor power above 4%, RPV level between TAF (-161") and -50", Supp Pool temperature above 110 °F, and either an SRV open or drywell pressure above 1.68 psig						
Measurable Performance Standard	Expected action	Control RPV injection to lower RPV level until reactor power is <4%, RPV level reaches TAF (-161"), or all SRVs are closed with drywell pressure less than 1.68 psig.					
	Safety-significant boundary condition	Prior to exceeding Heat Capacity Temperature Limit (HCTL)					
Performance Feedback	RPV level restored and maintained in a band between -186" and the level to which it was lowered.						
Evaluation	**SAT / UNSAT**						

T-117.6	Insert Control Rods						
K/A information obtained from NUREG-1123 Revision 3							
Identifier			**K/A**		**Importance**		**Safety Function (for Systems)**
System/EPE/APE	**Number**	**Title**	**Number**	**Ability**	**RO**	**SRO**	
System	201001	CRDH Control Rod Drive Hydraulic System	A2.04	SCRAM conditions	4.7	4.2	1. Reactivity Control
EPE	295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	EA2.05	Control rod position	4.2	4.5	N/A
Safety Significance	Correct performance of this action prevents a significant reduction of safety margin beyond that irreparably introduced by the scenario. Failure to perform this task correctly is also representative of incorrect reactivity control.						
Initiating Cue	ATWS condition						
Measurable Performance Standard	**Expected action**		Insert control rods with a strategy appropriate to conditions, using T-210, T-214, T-215, T-216, T-213, T-219, T-217, or T-218 based on ATWS conditions.				
	Safety-significant boundary condition		Prior to exceeding Heat Capacity Temperature Limit (HCTL)				
Performance Feedback	All rods inserted to or beyond Maximum Subcritical Bank Withdrawal Position (MSBWP), or all rods fully inserted except one.						
Evaluation	**SAT / UNSAT**						

VII. Assessment Of Crew Performance During Conduct Of The Simulator Exercise Guide Training:

- TQ-AA-155-F10, Simulator Training Observation Form, or equivalent, should be used to document crew performance information as required.
- Assessment items with the ⏲ symbol indicate a time critical standard for performance.

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1.	**Withdraw Control Rods and Restore Power to 100%**
2.	**'1B' RBM fails INOP**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

Ensure **Trigger #_1_** automatically activates when control rod 42-55 is selected to initiate '1B' RBM failure.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1.	**Withdraw Control Rods and Restore Power to 100%**	
2.	**'1B' RBM fails INOP**	
EVALUATORS NOTE: Scenario will advance to next event, '1B' RBM INOP failure, after control rod 42-55 is selected. If notch position 48 is the target position, then it is acceptable to hold CONTINUOUS WITHDRAW until position 48 is displayed. Reference S73.1.A, Normal Operation of the Reactor Manual Control System, Section 4.3, for the following.		
	Directs ATC and BOP to raise reactor power, using ReMA, via control rod withdrawal and flow.	SRO
	Reference S73.1.A, Normal Operation of RMCS, Section 4.3, Continuous Withdraw (Non Channel Distortion Rod)	ATC
	[S73.1.A 4.3.1] Review Attachment 1, and determines that no rods are channel distortion susceptible.	ATC
	[S73.1.A 4.3.2] Verify drive water pressure is 255 to 265 psid, as indicated on PDI-46-1R602, "Drive Water Differential Pressure Indicator."	ATC
	[S73.1.A 4.3.3] Select the control rod to be withdrawn at 10C603, "Reactor Control Console."	ATC
	[S73.1.A 4.3.4] Verifies correct rod position is indicated on the Four Rod Display.	ATC
	[S73.1.A 4.3.5] Informs peer checker of target position (48) and obtains peer checker concurrence.	ATC
	[S73.1.A 4.3.6] Informs peer checker of notch position that the WITHDRAW and CONTINOUS WITHDRAW push buttons will be released (48) and obtains peer checker concurrence	ATC
	[S73.1.A 4.3.7] Simultaneously depresses WITHDRAW and CONTINUOUS WITHDRAW pushbuttons at 10C603.	ATC
EVALUATORS NOTE: ATC is expected to observe APRMs for proper NI response and monitor RBM indicated levels and rod position indication change to ensure proper rod motion. ATC may receive an RBM rod block due to local power change around withdrawing control rod. If this happens, ATC will communicate to SRO, and deselect/reselect the desired control rod to re-initialize the RBM and continue with control rod withdrawal.		

1.	**Withdraw Control Rods and Restore Power to 100%**
2.	**'1B' RBM fails INOP**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1.	**Withdraw Control Rods and Restore Power to 100%**	
2.	**'1B' RBM fails INOP**	
	[S73.1.A 4.3.8] Verifies proper RDCS light sequence, and releases WITHDRAW and CONTINUOUS WITHDRAW pushbuttons when control rod reaches position 48. • INSERT light Lit **AND THEN** extinguishes after approximately 0.6 seconds. • WITHDRAW **AND** CONTINUOUS WITHDRAW lights it.	ATC
	[S73.1.A 4.3.10] When control rod is located two notches before target position, **THEN** RELEASE WITHDRAW and CONTINUOUS WITHDRAW pushbuttons.	ATC
	[S73.1.A 4.3.11] Verifies SETTLE light lit and then extinguishes after approximately 6.1 seconds	ATC
	[S73.1.A 4.3.13] Verifies that the control rod has been withdrawn to target notch position (48) at Four Rod Display	ATC
	[S73.1.A 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	ATC
EVALUATORS NOTE: Reference ST-6-107-730-1, Control Rod Coupling Check for the following: (ST-6-107-730-1, 4.3.2) will be repeated for subsequent rods until RBM INOP failure begins Event 2		
	[ST-6-107-730-1, 4.3.2] (if used) When a control rod is withdrawn to FULL OUT position, the notch withdraw or continuous withdraw selected rod at panel 10C603	ATC
	[ST-6-107-730-1, 4.3.3] (if used) Verifies the following: • ROD OVERTRAVEL annunciator remains clear at panel 108 REACTOR • Individual rod selected indicates 48 on Four Rod Display (ROD HEIGHT) at panel 10C603 • Individual rod selected RED out light is lit at the Full Core Display at panel 10C649	ATC
	[ST-6-107-730-1, 4.3.4] (if used) Documents successful completion of coupling check for selected control rod	ATC

1.	**Withdraw Control Rods and Restore Power to 100%**
2.	**'1B' RBM fails INOP**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

.

If directed to investigate RBM failure in Unit 1 Aux Equipment Room, after 5 minutes **report:** The '1B' RBM has an INOP indication we will contact I&C to investigate to the MCR.

Ensure **Trigger 1** goes active when control rod 42-55 is selected.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
1.	**Withdraw Control Rods and Restore Power to 100%**	
2.	**'1B' RBM fails INOP**	
	Reference ARC's: • 108 D-3, RBM UPSCALE/INOP • 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/SRO
	SRO refers to Tech Specs 3.1.4.3 and 3.3.6, notes no required actions due to power >90% and MCPR >1.40 [3.1.4.3 APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 30% of RATED THERMAL POWER and less than 90% of RATED THERMAL POWER with MCPR less than 1.70, or THERMAL POWER greater than or equal to 90% of rated with MCPR less than 1.40.]	SRO
	Run P1 to verify thermal limits	ATC
	Declares '1B' RBM Inoperable and recognizes the failed RBM should be bypassed.	SRO
	Briefs crew on plant status and directs bypassing '1B' RBM May contact RE to obtain concurrence to continue with rod withdrawal with RBM bypassed and direct ATC to continue rod withdrawal	SRO
	Places BLOCK CH BYPASS joystick down to 'B' position	ATC
	Verifies following alarms clear: • 108 D-3 RBM UPSCALE/INOPERATIVE • 108 F-3 ROD OUT BLOCK	ATC
	Report '1B' RBM bypassed to SRO	ATC
	Contacts WWM to investigate failure of '1B' RBM	CREW
EVALUATORS NOTE: Once '1B' RBM has been bypassed and Tech Specs referenced (or at discretion of chief examiner, control rod withdrawn), proceed to next event (Loss of D14 bus).		

3. Loss of D14 Bus

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

Manually activate **Trigger # 2** to initiate trip of 201-D14 breaker and failure of 101-D14 breaker to close and D14 EDG to start when directed by Lead Evaluator.

At time 3 min when dispatched to investigate 201-D14 breaker ,
report: The breaker for 201-D14 is open and there are no protective relays actuated on the D14 Bus. There is no indication of any problem at the 101-D14 breaker.
If asked about the status of the D14 DG breaker:
report: There is no indication of a problem.

At time 5 min if dispatched to investigate D14 DG start failure ,
report: There are no indications of any problems at the D14 DG.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
3. Loss of D14 Bus		
EVALUATORS NOTE: The crew will identify and dispatch personnel to investigate the cause of the trip of the bus.		
	Report status of Power / RPV Level / and RPV Pressure to SRO	ATC
	Identify trip of 201-D14 breaker and loss of D14 Bus	BOP
	Enter E-D14	BOP
	[E-D14] NOTIFY Chemistry to perform compensatory sampling per TRM 4.4.4. for RWCU pump trip.	BOP

	[E-D14]
	DETACH Attachment 5 AND ENTER Date and Time on Attachment 5.
	Evaluate Tech Specs:
	UNIT 1
	• 3.0.3, condition prohibited by TS (both offsite sources and one D/G). (1 hour action) to commence actions to place unit in an OPCON where specification does not apply.
	• 3.3.3 action 36 & 37, (immediately) take action required by 3.8.1.1 (3.0.3 for both offsite sources and one D/G)
	• 3.3.2 action c, (1 hour action) to complete action 23 within 1 hour. WRAM
	• 3.8.1.1 action e, (2 hour action) verify one of the required two train systems and two LPCI subsystems are operable and its associated D/G is operable.
	• 3.6.3 action a, PCIV's (4 hour action) for the following normally open valves;
	• HV-055-1F002, HV-055-1F095, HV-013-108, HV-013-111, HV-059-151B
	• TRM 4.4.4.c, (4 hour grab samples) Reactor coolant conductivity
	• 3.3.2 action b.1, (6 hour action) to complete action 25 to establish secondary containment integrity with SBGT operating within 1 hour.
	• 3.3.2 action b.1, (6 hour action) to complete action 23 within 1 hour. (OPCON 3 requirement to be in cold S/D within 12 hrs).
	• 3.6.3 action a, single PCIV's (12 hour action to Hot S/D) for the following normally open valves;
	• HV-051-1F004D, HV-051-105B, HV-052-1F001D, HV-042-147D
	• 3.8.3.1 action a, (24 hour action) Onsite power distribution
	• 3.3.7.1 action71, (24 hour action) Criticality rad monitors, area surveys once per 24 hrs (portable during fuel movement)
	• 3.7.1.1 action a.3, (72 hour) for 1B RHRSW loop
	• 3.5.1 action a.1, (7 day) for 1B loop CS loop
	• 3.7.2 action a.1, (7 day) for B CREFAS
	• 3.3.7.1 action 70, (7 day) for MCR normal fresh air rad monitor
	• 3.3.7.8.1 action a, (7 day) for 0D Chlorine detection (TRM)
	• 3.8.2.1 action a.3, (7 day) for 1D battery charger
	• 3.5.1 action b.1, (30 day) for 1D LPCI
	UNIT 2
	• 3.8.3.1 or 3.8.3.2 action c, Onsite power distribution (declare the following common equipment inop);
	  • 3.7.2 action a.2, (7 day) for B CREFAS
	  • 3.7.2 action a.1, (30 day) for Unit 1 D/G for B CREFAS
	(Note: Above listing is taken from E-D14 attachment 5)
		SRO

3. Loss of D14 Bus

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

At time 3 min after EO dispatched to swap DW chillers,
report: On station for swap from '1B' DW Chiller to '1A' DW Chiller.

When requested to ensure open 010-1110A
report: 010-1110A is open.

After '1A' DW Chiller is started:
report: '1A' DW Chiller has started and is running normally.

Respond as necessary to requests.

Manually activate **Trigger #_3_** to initiate CRD pump trip due to clogged suction strainer when directed by Lead Evaluator.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
3. Loss of D14 Bus		
	Perform GP-22, Appendix 16, and hang Equipment Status Tags on appropriate valve switches. (1 hour to complete) (as time permits)	BOP
	Identify the failure of the 101-D14 Bus breaker to auto close	BOP/SRO
Evaluator's Note: The next step will succeed and repower D14 Bus.		
	Close the 101-D14 breaker: • Place the 101-D14 Synch Selector Switch to "ON" • Place 101-D14 Breaker Switch to "CLOSE"	BOP
	Identify the failure of the D14 DG to auto start	BOP/SRO
Evaluator's Note: The next step will succeed and repower D14 Bus if it is de-energized after D14 DG starts and comes up to speed (3 minutes), otherwise D14 DG will just start and remain unloaded.		
	Start D14 DG by taking D14 DG switch to "START"	BOP
Evaluator's Note: Loss of D14 Bus will cause the '1B' DW chiller to trip on loss of control power. This is not explicitly called out for in the procedure. The Crew should notice DW Pressure going up or find the chiller not running on panel walkdown.		
	[E-D14] Determine loss of DW cooling due to 1B DW chiller trip. Enter OT-101, " High Drywell Pressure	Crew
	[OT-101] Establish Critical parameter for DW Pressure and scram threshold.	SRO
	[OT-101] Perform OT-101 attachment 3 for loss of DW cooling.	BOP
	[OT-101 Attachment 3] PLACE a (1A or 1B) Drywell Chiller in-service using S87.1.A Appendix 1.	BOP

3. Loss of D14 Bus

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

At time 3 min after EO dispatched to swap DW chillers,
report: On station for swap from '1B' DW Chiller to '1A' DW Chiller.

When requested to ensure open 010-1110A
report: 010-1110A is open.

After '1A' DW Chiller is started:
report: '1A' DW Chiller has started and is running normally.

Respond as necessary to requests.

Manually activate **Trigger #_3_** to initiate CRD pump trip due to clogged suction strainer when directed by Lead Evaluator.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
3.	**Loss of D14 Bus**	
	[S87.1.A Appx 1] • PLACE *A(B)K111 Drywell Chiller (CHILLER) to STOP (Green Flagged). • PLACE DW Chilled water pump 1A-P161 to OFF. • PLACE DW Chilled water pump 1B-P161 to OFF	BOP
	[S87.1.A Appx 1] • PLACE *B(A)K111, "D/W Chiller" (CHILLER) for oncoming Drywell Chiller in "START." • VERIFY HV-087-*02B(A), "CHILLER Discharge," opens • ENSURE *A-P161 in RUN. • ENSURE *B-P161 in RUN.	BOP
	[S87.1.A Appx 1] After 50 seconds has elapsed, VERIFY the following at Main Control Room Panel *0C681 for oncoming Drywell Chiller: • Red "Compressor Motor" (COMPR MOTOR) light is illuminated • Motor amps are rising	BOP
	[S87.1.A Appx 1] Direct Monitoring of Motor Bearing Temperatures	BOP

4.	**CRD pump trip due to clogged suction strainer with multiple HCU accumulator trouble alarms**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Manually activate **Trigger #_3_** to initiate CRD pump trip due to clogged suction strainer when directed by Lead Evaluator.

Respond to request for assistance as appropriate.

If requested to investigate accumulator trouble alarms, after **3 Minutes**
report: "Accumulator pressures are as follows:
18-51 – 935 psig
22-27 – 925 psig
34-23 - 900 psig
42-39 – 960 psig
42-15 - 950 psig
50-15 – 910 psig"

If EO/FSSV directed to bypass CRD Suction filter:
At Time **5 Minutes** or as directed by Lead Evaluator.
DELETE MCR547 and
report: "CRD suction filter bypass is open per ON-107 Attachment 2 step 2a."

After CRD pump is started:
DELETE
MRD016C 18-51
MRD016C 22-27
MRD016C 34-23
MRD016C 42-39
MRD016C 42-15
Note: 1 Accumulator (50-15) will not clear.

If requested to investigate accumulator for HCU 50-15 after CRD pump start.
report: "Accumulator for 50-15 reads 965 psig."

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**CRD pump trip due to clogged suction strainer with multiple HCU accumulator trouble alarms**	
Lead Evaluator (or designee) Notes: The running CRD Pump trips as a result of a clogged suction filter, and a CRD accumulator trouble is received. The crew will recognize and respond to the tripped CRD Pump. The crew is expected to execute ON-107, Control Rod Drive System Problems, and take actions required by Tech Spec 3.1.3.5.		
	Reference appropriate ARC: • 108 G-1, 1A/1B CRD WATER PUMP TRIP • 108 G-3, 1A/1B CRD PUMP SUCTION LO PRESS • 108 H-3, CRD PUMP SUCTION FILTER HI DP • 108 H-4, CRD CHARGING WATER LO PRESS • 107 I-2, VIBRATION ALERT • 107 I-3, VIBRATION DANGER	ATC /BOP
	Determine '1A' Control Rod Drive Pump tripped on low suction pressure	ATC
	[ARC-MCR-108 G-1] Enter ON-107, Control Rod Drive System Problems.	SRO/ ATC
	[ARC-MCR-108 G-3] Refer to ON-107, Control Rod Drive System Problems and verify suction valve line-up per S46.1.A	SRO/ ATC
	[ON-107 Att #2 step 2.a.] Direct field EO to **OPEN** 046-1F045 "Pump Suction Filter Bypass"	SRO/ ATC
	Reference appropriate ARC: • 108 F-1, CRD ACCUMULATOR TROUBLE	ATC /BOP
	Acknowledge alarm and report six (6) Accumulator Trouble Alarms to SRO	ATC
	[ARC 108 Reactor F-1] Dispatch an EO to investigate HCUs with low accumulator trouble alarms.	ATC/BOP
	Evaluate Tech Spec 3.1.3.5 for inoperable HCU Accumulators Determine the following apply to the current condition: 3.1.3.5.2.a.1 restore a CRD pump to operation within 20 minutes or place the reactor mode switch in shutdown.	SRO
	[ON-107 Att #2 step 2.b.] **START** a CRD Pump.	ATC

4.	**CRD pump trip due to clogged suction strainer with multiple HCU accumulator trouble alarms**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Manually activate **Trigger # 3** to initiate CRD pump trip due to clogged suction strainer when directed by Lead Evaluator.

Respond to request for assistance as appropriate.

If requested to investigate accumulator trouble alarms, after **3 Minutes**
report: "Accumulator pressures are as follows:
18-51 – 935 psig
22-27 – 925 psig
34-23 - 900 psig
42-39 – 960 psig
42-15 - 950 psig
50-15 – 910 psig"

If EO/FSSV directed to bypass CRD Suction filter:
At Time **5 Minutes** or as directed by Lead Evaluator.
DELETE MCR547 and
report: "CRD suction filter bypass is open per ON-107 Attachment 2 step 2a."

After CRD pump is started:
DELETE
MRD016C 18-51
MRD016C 22-27
MRD016C 34-23
MRD016C 42-39
MRD016C 42-15
Note: 1 Accumulator (50-15) will not clear.

If requested to investigate accumulator for HCU 50-15 after CRD pump start.
report: "Accumulator for 50-15 reads 965 psig."

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
4.	**CRD pump trip due to clogged suction strainer with multiple HCU accumulator trouble alarms**	
Lead Evaluator (or designee) Notes: Procedure S46.1.A, Control Rod Drive Hydraulic System Startup, will be used to verify CRD parameters.		
	ENSURE FI-046-1R605, "Cooling Water Flow" (FL), from 50 to 63 gpm.	ATC
	VERIFY PDI-046-1R603, "Cooling Water Differential Pressure" (Delta PX) from 10 to 25 psi.	ATC
	ENSURE PDI-046-1R602, "Drive Water Differential Pressure" (Delta PX) from 255 to 265 psi.	BOP/ATC
	VERIFY the following parameters of started Rod Drive Pump: • 108 REACTORG-3, 1A/1B CRD PUMP SUCTION LO PRESS, alarm cleared • Normal pump motor running current on A/11803-2 (A/11703-2), "Rod Drive Pump Ammeter," (AM) at 10-C603	ATC
	[ARC 108 Reactor F-1] Dispatch an EO to investigate HCU 50-15 with low accumulator trouble alarm still locked in after CRD pump start.	ATC/BOP
	[ARC 108 Reactor F-1] When report is given that HCU 50-15 accumulator pressure is below the alarm setpoint, direct performance of S47.8.B	ATC/BOP
	Contact Work Week Manager for support	SRO
Lead Evaluator (or designee) Notes: The scenario may proceed to the next event (“1C” RPS Rx Level Transmitter Fails Low with a Failure to Half Scram / OT-117) after the CRD Pump is re-started and the SRO has determined Tech Spec implications.		

5. "1C" RPS Rx Level Transmitter Fails Low with a Failure to Half Scram / OT-117

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

Manually activate **Trigger # 4** to initiate '1C' RPS RPV level transmitter fails low with a failure to half scram when directed by Lead Evaluator.

At time 5 min after FSSV or EO action requested to investigate RPS Level Trip units in AER,
report: LIS-042-1N680C is indicating downscale.

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp.

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.
When T-221 is active,
report: T-221 is complete on Unit 1

At time 7 min after FSSV or EO action requested for implementation of T-270
Manually perform T-270: **Toggle** Remote Functions **RTR220 through RTR227** to "**TEST**"
OR load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and
report (via phone): Section 4.7 of T-270 is complete

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
5.	**"1C" RPS Rx Level Transmitter Fails Low with a Failure to Half Scram / OT-117**	
Lead Evaluator (or designee) Notes: RPS reactor level transmitter (LIS-042-1N680A) fails downscale. The failed RPS instrument will result in a failed RPS channel (Will fail to de-energize until the Reactor Mode Switch is taken to SHUTDOWN).		
	Reference appropriate ARC: • 107 H-1, REACTOR WATER BELOW LEVEL 3 TRIP	ATC
	Verify Rx level normal with RPS low level transmitter alarm	ATC
	Recognize failure to ½ scram on 'A2' RPS and inform SRO	ATC
	Dispatch an EO to investigate the Rx level transmitter	BOP/ ATC
	Evaluate Tech Specs: Determine entry to Tech Spec LCO 3.3.1.a and 3.3.1.b applicable. LCO 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 or in accordance with the Risk Informed Completion Time Program*** 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. LCO 3.3.1.b. With the number of OPERABLE channels in either trip system less than the Minimum OPERABLE Channels per Trip System required by Table 3.3.1-1, place either the inoperable channel(s) or the affected trip system** in the tripped conditions within 12 hours or in accordance with the Risk Informed Completion Time Program***.	SRO
	Enter OT-117, RPS Failures, for failure to ½ scram on 'A' RPS	SRO
	[OT-117 3.2.1] **DIRECT** Insert manual ½ scram on 'A' Side	SRO
	PERFORM Arm and depress 'A1(2)' RPS	ATC
	[OT-117 3.2.1.1] Recognize SCRAM lights on 'A' RPS remain on	ATC
	Direct ATC to Scram the Reactor	SRO
	Place the Reactor Mode Switch in Shutdown	ATC

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp.

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.

When T-221 is active,
report: T-221 is complete on Unit 1

At time 6 min after FSSV/EO action requested for implementation of T-251.
Request MCR: Verify HV-55-1F006 is closed.
Once closure of the valve is acknowledged
Manually activate **Trigger # 12** to initiate T-251.
report: T-251 is complete on Unit 1

After FSSV or EO action requested for implementation of T-270
Manually perform T-270: load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and when last remote is completed:
report (via phone): Section 4.5 of T-270 is complete

At time 5 min If FSSV or EO action requested to report SLC tank level,
report: Unit 1 SLC tank level is 3700 gallons and steady.

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6	**ATWS/SLC Line Rupture (Major)**	
7	**B Loop RHRSW Pump Trips**	
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
EVALUATORS NOTE: When the crew attempts to shutdown the Rx, a high power ATWS with a failure of the SLC System results. The Main Turbine trip, bypass valves will gradually fail closed resulting in a gradual heatup of the Suppression Pool due to manual control of pressure with SRVs.		
	[FAILURE TO SCRAM]	
	Recognize control rods failed to insert on the scram	ATC
	[OT-200 App 1] • Arm and depress RPS and RRCS pushbuttons • Report mode switch in shutdown, ATWS, % Power, RPS and RRCS have been initiated.	ATC
	Enter T-101 on Rx power > 4% w/scram condition	SRO
	[T-101 RC-5] Direct performance of Initial ATWS Actions	SRO
	[OT-200 App 1] Call out for EO to report SLC Tank Level	ATC
	[OT-200 App 1] Start SLC pumps	ATC
	Recognize SLC running with low discharge pressure	ATC
	Secure SLC pumps and report to SRO	ATC
	[OT-200 App 1] Lock Mode Switch in shutdown.	ATC
	[OT-200 App 1] Insert SRM's and IRM's	ATC
	Recognize manual control of feedwater is required to bypass Post Scram Level Control	ATC
	[OT-200 App 12] Inhibit Auto ADS (**CT-T117.1)**	BOP
	Insert control rods to reduce reactor power (**CT-T117.6)**	ATC
	Use NORMAL INSERT pushbutton to continue to insert control rods	ATC
	[START T-270 TERMINATE AND PREVENT INJECTION]	

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

****

DRIVER NOTE: After start of 1st B Loop RHRSW, **DELETE MRSW601B(D)** for pump **NOT** started. This will allow second pump to run after started.

****

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.

When T-221 is active,
report: T-221 is complete on Unit 1

At time 6 min after FSSV/EO action requested for implementation of T-251.
Request MCR: Verify HV-55-1F006 is closed.
Once closure of the valve is acknowledged
Manually activate **Trigger # 12** to initiate T-251.
report: T-251 is complete on Unit 1

After FSSV or EO action requested for implementation of T-270
Manually perform T-270: load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and when last remote is completed:
report (via phone): Section 4.5 of T-270 is complete

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

At time 5 min If FSSV or EO action requested to report SLC tank level,
report: Unit 1 SLC tank level is 3700 gallons and steady.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6 7 8	**ATWS/SLC Line Rupture (Major)** **B Loop RHRSW Pump Trips** **Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	[OT-200 App 12] Callout for performance of T-270 section 4.5 and T-221 MSIVs Open	BOP
	[OT-200 App 12] Commence T-270, Isolate HPCI	BOP
	[OP-LG-103-102-1002] Place 2 Loops of RHRSW in service	BOP
	[START TWO LOOPS OF RHRSW]	
	START selected RHR Service Water Pump loop per S12.1.A, RHR Service Water System Startup	BOP
	[S12.1.A 4.1.4 or App #2 1.3/1.4] OPEN HV-51-1F014A(B), HEAT EXCHANGER INLET	BOP
	[S12.1.A 4.1.5 or App #2 1.3/1.4] Throttle OPEN HV-51-1F068A(B) for 18 to 20 seconds	BOP
	[S12.1.A 4.1.6(7) or App #2 1.5/1.6] VERIFY PI-51-105A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig	BOP
	[S12.1.A 4.2.1 or App #2 1.8 / 1.9] START 0A(B,C,D)V543 Spray Pond Room Fan	BOP
	[S12.1.A 4.2.2 or App #1 1.10/1.12] START 0A(B,C,D)P506, RHRSW PUMP	BOP
	[S12.1.A 4.2.3 or App #1 1.11/1.13] THROTTLE HV-51-1F068A(B) to the maximum obtainable position without exceeding 11,000 gpm on FI-51-1R602A(B) while maintaining pump disch pressure (PI-12-001A-1(B)) between 75 psig to 85 psig	BOP
	[END TWO LOOPS OF RHRSW]	

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

****

DRIVER NOTE: After start of 1st B Loop RHRSW, **DELETE MRSW601B(D)** for pump **NOT** started. This will allow second pump to run after started.

****

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.

When T-221 is active,
report: T-221 is complete on Unit 1

At time 6 min after FSSV/EO action requested for implementation of T-251.
Request MCR: Verify HV-55-1F006 is closed.
Once closure of the valve is acknowledged
Manually activate **Trigger # 12** to initiate T-251.
report: T-251 is complete on Unit 1

After FSSV or EO action requested for implementation of T-270
Manually perform T-270: load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and when last remote is completed:
report (via phone): Section 4.5 of T-270 is complete

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6 **7** **8**	**ATWS/SLC Line Rupture (Major)** **B Loop RHRSW Pump Trips** **Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	[T-270] FEEDWATER ENSURE HV-06-138A, 1A RFP BPV (BYPASS) closed at panel 10C651	ATC
	[T-270] ENSURE LIC-06-138, A Feedwater Startup Level Control, (LV STARTUP BYPASS) in manual and set to 0% at panel 10C603	ATC
	[T-270] ENSURE LIC-06-120, Reactor Feed pumps Bypass Cont Valve, (PUMP BYPASS) in manual and set to 0% at panel 10C603	ATC
	[T-270] DEPRESS EMERGENCY STOP pushbutton for all three RFPTs at panel 10C603	ATC
	[T-270] **WHEN** the emergency stop light goes out, **THEN DEPRESS** AUTO START pushbutton for **ALL** AVAILABLE RFPTs	ATC
	[T-270 **CLOSE** HV-06-108A, “1A RFP Discharge”	ATC
	[T-101 RC-5] Stabilize RPV Level below -50” with RFPs	ATC
	[END T-270 TERMINATE AND PREVENT INJECTION]	
	[TRIP OF B LOOP RHRSW PUMP]	
	Reference appropriate ARC: • 011 A-3/B-3, B/D RHRSW PUMP MOTOR OVERCURRENT.	BOP
	Recognize Trip of running B Loop RHRSW Pump	BOP
	Start other B Loop RHRSW Pump	BOP
	THROTTLE HV-51-1F068B as necessary to the maximum obtainable position without exceeding 11,000 gpm on FI-51-1R602B while maintaining pump disch pressure (PI-12-001B) between 75 psig to 85 psig	BOP
	[END TRIP OF B LOOP RHRSW PUMP]	

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

****

DRIVER NOTE: After start of 1st B Loop RHRSW, **DELETE MRSW601B(D)** for pump **NOT** started. This will allow second pump to run after started.

****

DRIVER NOTE: **Adjust BPV malfunction (MEH108) value, with Lead Evaluator permission as necessary to meet the scenario objectives.**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.

When T-221 is active,
report: T-221 is complete on Unit 1

At time 6 min after FSSV/EO action requested for implementation of T-251.
Request MCR: Verify HV-55-1F006 is closed.
Once closure of the valve is acknowledged
Manually activate **Trigger # 12** to initiate T-251.
report: T-251 is complete on Unit 1

After FSSV or EO action requested for implementation of T-270
Manually perform T-270: load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and when last remote is completed:
report (via phone): Section 4.5 of T-270 is complete

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

At 100ºF in the SP

When FSSV or EO action requested for T-217, and when RPV level is below -50 inches:
Manually activate **Trigger # 11** to initiate T-217.and
report (via phone): Steps 4.1.1 thru 4.1.7 of T-217 have been completed in the Auxiliary Equipment Room. We are ready for the MCR to perform Steps 4.1.8 through 4.1.10.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6	**ATWS/SLC Line Rupture (Major)**	
7	**B Loop RHRSW Pump Trips**	
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	[T-101 RC -5] Direct level band of -60" to -100"	SRO
	[T-101 RC -5] Calculate HSBW and CSBW values	SRO
	[T-101 RC -6] Exit T-101 and enter T-117	SRO
	[T-117 LQ/Q-9] Direct Insert rods manually with RWM bypassed per T-210	SRO
	Recognize that the RWM cannot be bypassed when reactor power below RWM LPSP (~16% Steam Flow (2.4M lb/hr.))	ATC
	[T-117 LQ/Q-10] Direct performance of T-217	SRO
	[T-117 LQ/Q-14] Direct performance of T-209, Injection From SBLC Storage Tank	SRO
	Direct performance of T-251, Establish a HPCI Flow Path via FW Only	SRO
	Receive report that initial field actions for T-217 are complete	ATC
	[T-217 4.1.8 – 4.1.10] Perform MCR portions of T-217 to insert control rods • Reset scram placing reset switch in Group 1/4 and 2/3 and verify all white RPS lights lit • Depress ARI reset pushbuttons • VERIFY SDV vents AND drains open **(CT-T117.6)**	ATC
	Report that initial MCR actions for T-217 are complete	ATC

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

DRIVER NOTE: Adjust BPV malfunction (MEH108) value, with Lead Evaluator permission as necessary to meet the scenario objectives.

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

Ensure **Trigger# 6** automatic actuates, when RPV level is lowered below -50", to initiate Main Turbine vibrations.

Ensure **Trigger# 7** automatic actuates, when Main Turbine speed is <1780 RPM, to fail BPVs closed on a 5 minute ramp

Manually activate **Trigger # 10** to initiate T-221 with 11 minute time delay when requested by the crew.

When T-221 is active,
report: T-221 is complete on Unit 1

At time 6 min after FSSV/EO action requested for implementation of T-251.
Request MCR: Verify HV-55-1F006 is closed.
Once closure of the valve is acknowledged
Manually activate **Trigger # 12** to initiate T-251.
report: T-251 is complete on Unit 1

After FSSV or EO action requested for implementation of T-270
Manually perform T-270: load the 7-minute T-270 file from the Ops Training Scenarios\Remotes folder and when last remote is completed:
report (via phone): Section 4.5 of T-270 is complete

At time 5 min If FSSV or EO action requested to investigate SLC,
report: No sign of leakage on 253' or 283' elev at SLC skid.

When FSSV or EO action requested for T-217, and when RPV level is below -50 inches:
Manually activate **Trigger # 11** to initiate T-217.and
report (via phone): Steps 4.1.1 thru 4.1.7 of T-217 have been completed in the Auxiliary Equipment Room. We are ready for the MCR to perform Steps 4.1.8 through 4.1.10.

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6	**ATWS/SLC Line Rupture (Major)**	
7	**B Loop RHRSW Pump Trips**	
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	[MAIN TURBINE VIBRATIONS]	
	Reference appropriate ARC: • 107 I-2 VIBRATION ALARM ALERT • 107 I-3 VIBRATION ALARM DANGER	BOP
	Recognize rising vibrations on Main Turbine	BOP
	Establish critical parameter and Turbine trip threshold	SRO
	Trend time to reach trip threshold	BOP/SRO
	Recognize reactor power level is low enough for BPVs to accommodate steam flow from turbine trip.	BOP
	Manually Trip main turbine prior to exceeding 12 mils vibration level on the Bentley Nevada system	BOP
	Recognize BPVs failing closed.	CREW
	[T-117 RC/P-5] Open SRVs manually to stabilize reactor pressure below 1096 psig	BOP
	Assign Pressure control with SRV with 990 psig to 1096 psig	SRO
	Enter T-102, Primary Containment Control on Suppression Pool Temp > 95°F	SRO
	[MAIN TURBINE VIBRATIONS]	
EVALUATORS NOTE: RHRSW should have already been placed in service at the onset of the ATWS. If It was not then it will be place in service before executing the following steps..		
	[PLACING SUPPRESSION POOL COOLING IN SERVICE]	
	[S51.8.A App #1 step 1.4] **START** 1A(B)P202, RHR Pump (PUMP)	BOP
	[S51.8.A App #1 step 1.5] OPEN HV-51-1F024A(B) “RHR Pump Full Flow Test Return” (SUPP POOL CLG), AND MAINTAIN flow indicated on FI-51-1R603A(B), “RHR Loop Flow” between 8000 to 8500 gpm	BOP
	[S51.8.A App #1 step 1.6] CLOSE HV-C-51-1F048A(B), HEAT EXCH BYPASS	BOP
	[END PLACING SUPPRESSION POOL COOLING IN SERVICE]	

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

DRIVER NOTE: Adjust BPV malfunction (MEH108) value, with Lead Evaluator permission as necessary to meet the scenario objectives.

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

At time 10 min after FSSV or EO action requested to perform SE-10 Floor Actions
Load **All SE-10 Floor Actions with Time Delays** Scenario and,
report: "All SE-10 Floor Actions are complete."

After reactor water level has been lowered to < -161 inches RX water level,
DELETE Malfunction **MEH108** to restore bypass valves to normal operation;

Perform second part of T-217 after lowering with RPV level -161" to -186"

When directed by Lead Evaluator to insert control rods:
Verify SDV Level is less than **25 gallons** indicated level in the simulator,
report (via phone): Step 4.1.12 of T-217, all SDV level indications are less than 62% and Step 4.2.1 is complete. We are continuing with Step 4.2.2 of T-217. Expect control rod motion.

Insert Control Rods As Follows:

Delete Malfunction **MRD556**
Delete Malfunction **MRP029A**

AND Toggle Remote Function **RTR181 to "Normal"** (control rods will insert).

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6 **7** **8**	**ATWS/SLC Line Rupture (Major)** **B Loop RHRSW Pump Trips** **Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	Isolations verified for +12.5" and -38"	BOP
	[SECOND LOWERING]	
	When SP temperature reaches 110 deg F **DIRECT** a controlled lowering of RPV level to a level band of –161 to -186, or until SRV closed or <4% power	SRO
	Perform controlled RPV lowering until level reaches –161", SRV closed or <4% power **(CT- T117.3)**	BOP/ATC
	Re-inject with Feedwater when RPV level is < -161" (TAF) and stabilize level between -186" and -161" **(CT- T117.3)**	ATC
	[SE-10 LOCA ACTIONS]	
	[SE-10 3.1] **PLACE** the following to "CLOSE" • 52-20224/CS, "D*24 Safeguard L.C. D*24-G-D MCC Bkr" (SAFEGUARDS B), on *BC661 • 52-20124/CS, "D*14 Safeguard L.C. D*14-G-D MCC Bkr" (SAFEGUARDS A), on *AC661.	ATC
	[SE-10 3.2] **PLACE** to "RESET": • 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661 • 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661.	ATC

6	**ATWS/SLC Line Rupture (Major)**
7	**B Loop RHRSW Pump Trips**
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**

Simulator Operator Instructions:

DRIVER NOTE: Adjust BPV malfunction (MEH108) value, with Lead Evaluator permission as necessary to meet the scenario objectives.

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

At time 10 min after FSSV or EO action requested to perform SE-10 Floor Actions
Load **All SE-10 Floor Actions with Time Delays** Scenario and,
report: status of individual resets as requested or when all resets are timed out **OR**
report: "All SE-10 Floor Actions are complete."

After reactor water level has been lowered to < -161 inches RX water level,
DELETE Malfunction **MEH108** to restore bypass valves to normal operation;

Perform second part of T-217 after lowering with RPV level -161" to -186"

When directed by Lead Evaluator to insert control rods:
Verify SDV Level is less than **25 gallons** indicated level in the simulator,
report (via phone): Step 4.1.12 of T-217, all SDV level indications are less than 62% and Step 4.2.1 is complete. We are continuing with Step 4.2.2 of T-217. Expect control rod motion.

Insert Control Rods As Follows:

Delete Malfunction **MRD556**
Delete Malfunction **MRP029A**

AND Toggle Remote Function **RTR181 to "Normal"** (control rods will insert).

TIME	ASSESSMENT ITEMS AND TASK PERFORMANCE	POSITION
6	**ATWS/SLC Line Rupture (Major)**	
7	**B Loop RHRSW Pump Trips**	
8	**Main Turbine High Vibration Requiring Manual Turbine Trip / Bypass Valves Fail Closed**	
	Dispatch Equipment Operator to perform SE-10-1 field actions	BOP
	Secure SLC Pumps that restart on LOCA Signal	ATC
	Ensure ECCS Pumps other than '1A' and '1B' RHR remain shutdown	BOP
	[SE-10 LOCA ACTIONS END]	
	When report receive from AER operator that SDV is drained MCR provides direction to continue in T-217 to remove jumpers (4.2.2 through 4.2.5) to insert control rods. (**CT-T117.6**)	ATC
	Exit T-117 when all Control Rod in	SRO
	Isolations verified for -129” RPV level	BOP
	Stabilize level with the core covered after rod insertion to maintain the cooldown rate	ATC
	Slowly raise Reactor Level Band 12.5” to 54”	ATC
Evaluator’s Note: The scenario may be terminated when, RPV level has been intentionally lowered and is being maintained above –161" and control rods are inserted per T-217		

Attachment 1
Simulator Operator Response Times

Procedure	Performance	Response Time (Minutes)
T-209	Injection from the Standby Liquid Control Storage Tank with the RCIC System	45
T-212	Bypassing SQUIB Valves for SLC Injection	19
T-215	De-energization of Scram Solenoids	7
T-216	Manual Isolation and Vent of Scram Air Header	7
T-217	RPS/ARI Reset and Backup Method of Draining Scram Discharge Volume	17
T-219	Maximizing CRD Cooling Water Header Flow during ATWS Conditions	23
T-221	MSIV Isolation Bypass Procedure	11
T-225	Startup and Shutdown of Suppression Pool and Drywell Spray Operations	8
T-240	Maximizing CRD flow after Shutdown During Emergency Conditions	8
T-245	RPV Injection from RHR S/D Cooling	12
T-248	Injection from SLC Test Tank to RPV	15
T-251	Establish a HPCI Injection flow Path VIA Feedwater Only	6
T-270	Terminate and Prevent Injection into the RPV	7
T-290	Instrumentation Available for T-103 SAMP-2	5
S46.7.A (4.2.1)	Control Rod Drive Hydraulic System Operation Following Reactor Scram (Securing CRD flow to the Reactor - Close 46-1F060, CRD Water Pressure Control Station Inlet Valve)	7
SE-10-1 Resets and Floor action	Breaker Reset Following LOCA (Also reset ARMs, RHRSW Rad Monitor and RDCS)	10
Open 006-1007A	Manual Operation of Large Min Flow block Valve	5

Attachment 2
Communications Log

CREW: _____ **DATE:** _____ **SEG:** _____

SRO: _____ **ATC:** _____ **BOP:** _____

START TIME: _____ **STOP TIME:** _____

TIME	PERSON CALLING	PERSON BEING CALLED	COMMUNICATION / REQUEST	CALL BACK TIME

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CREW PREBRIEF INSTRUCTIONS

Unit 1 is in OPCON 1 at 94% power
Unit 2 is in OPCON 1 at 100% power

Specific Plant Conditions are as Follows:

- Power is lowered for maintenance rod recovery
- Reactor Services personnel are loading spent fuel into shipping casks
- Refuel Floor Secondary Containment established

Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):

- None

Restrictions on Plant Operations:

- None

Planned Evolutions:

- Withdraw 2 control rods that were inserted for Online HCU maintenance per ReMA
- Raise power to 100% with Recirc per GP-5, Att. 1, per ReMA direction

Documents Provided:

- ReMA
- S73.1.A, Normal Operation of the Reactor Manual Control System
- ST-6-107-730-1, Control Rod Coupling Check
- GP-5, Steady State Operations; with Attachment 1, Planned Reactor Power Maneuvers Between 80% and 100% marked up.