# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## EVALUATE JET PUMP OPERABILITY

JPM Number: LOJPM6717

REVISION NUMBER: 001

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 ST-6-043-320-1 Rev: 45

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 2010 RO A1-2 Revised to new template and to align with latest procedure revision. | 08/15/14 |
| 001 | Updated template and KA | 10/31/16 |
| | | |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

The candidate should report the test is UNSAT due to failure on "A" loop drive flow high and "A" loop jet pumps flow low.

## V. INITIAL CONDITIONS:

Plant conditions are as follows:

1. Unit 1 is in OPCON 1
2. An unexpected drop in reactor power occurred
3. An unexplained rise in core flow occurred
4. ON-100, Failure Of A Jet Pump, was entered

## VI. INITIATING CUE:

Perform ST-6-043-320-1, Daily Jet Pump Operability Verification for Two Recirculation Loop Operation, report the results, and (SRO only) any compensatory actions, if 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.**

## VII. PERFORMANCE CHECKLIST:

**JPM Start Time** _____

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:**<br>Provide Candidate with the following:<br>• JPM briefing sheet<br>• Yellow Copy of ST-6-043-320-1<br>• PMS computer screen shots<br>• Calculator<br>• Unit 1 Tech Specs (**SRO Only**) | | | | | |
| * | 1. [ST-6-043-320-1 step 4.3.1.3]<br>Determine if Loop "A" flow is within 10% of the loop flow values on the established pump speed-loop flow characteristic curve | Candidate determines that Loop "A" is NOT within the limits – **UNSAT** | | | |
| * | 2. [ST-6-043-320-1 step 4.3.2.3]<br>Determine if Loop "B" flow is within 10% of the loop flow values on the established pump speed-loop flow characteristics curve. | Candidate determines that loop "B" is within the limits – **SAT** | | | |
| * | 3. [ST-6-043-320-1 step 4.3.3.4]<br>Determine if the value of total core flow is within 10% of the established Total Core Flow value derived from Recirc Loop Flow Measurements | Candidate determines that total core flow is within the limits – **SAT** | | | |
| * | 4. [ST-6-043-320-1 step 4.3.4.4]<br>Determine if Loop "A" Jet Pump diffuser-to-lower plenum differential pressure is within 10% of the established patterns | Candidate determines that the jet pumps on Loop "A" are NOT within the limits - **UNSAT** | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 5. [ST-6-043-320-1 step 4.3.5.4]<br>Determine if Loop "B" Jet Pump diffuser-to-lower plenum differential pressure is within 10% of the established patterns | Candidate determines that all of the jet pumps on Loop "B" are within the limits - **SAT** | | | |
| * | 6. [ST-6-043-320-1 step 4.4.1]<br>Verify at least two of the step combinations are satisfactory:<br>• 4.3.1.3 and 4.3.2.3 (Pump speed vs. drive flow) **UNSAT**<br>• 4.3.3.4 (Total loop flow vs. total core flow) **SAT**<br>• 4.3.4.4 and 4.3.5.4 (Individual JP DP vs. Drive Flow) **UNSAT** | Candidate determines that two of three areas are **UNSAT** and the overall ST results are **UNSAT**<br>Report the unsatisfactory results – The "A" Jet Pumps have failed the surveillance test. | | | |
| **NOTE: This is the termination point for RO's**<br>**CUE: (RO's only) - You have met the termination criteria for this JPM**<br><br>**The remaining portion of this JPM is "SRO's only'** | | | | | |
| * | 7. SRO candidate determines Tech Spec implications of the failed Jet Pump surveillance test | Tech Spec LCO 3.4.1.2 With one or more Jet Pumps inoperable, be in HOT SHUTDOWN within 12 hours | | | |
| **CUE: (SRO) You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:** _____.

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

**JPM Title:** EVALUATE JET PUMP OPERABILITY

**JPM Number:** LOJPM6717 **Revision Number:** 001

**Task Number and Title:** 2000010401 ON-100, Actions For Jet Pump Failure
3410070302 Direct action per T.S. when an LCO is not satisfied

**K/A Number and Importance:** Generic 2.1.19 3.9/3.8
Generic 2.2.40 3.4/4.7

**Safety Function (1-9)** 1

**Admin Category (A1-4)** 1/2 (Conduct of Operations / Equipment Control)

**Level of Difficulty (1-5)** 3

**Suggested Testing Environment:** Classroom

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

**Reference(s):** ST-6-043-320-1, Daily Jet Pump Operability for Two Recirculation Loop Operation, Rev 45

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:**

Plant conditions are as follows:

1. Unit 1 is in OPCON 1
2. An unexpected drop in reactor power occurred
3. An unexplained rise in core flow occurred
4. ON-100, Failure Of A Jet Pump, was entered

**INITIATING CUE:**

Perform ST-6-043-320-1, Daily Jet Pump Operability Verification for Two Recirculation Loop Operation, report the results, and (SRO only) any compensatory actions, if required.

**Document required action(s):**

Exelon Generation

RPV NORMAL | CNTMT NORMAL | RU | RA | CH 1 | PM 47 | RX 0 | FC 2 | T 19 | CW 2 | SS 18 | EL 6

# Group Point Display – Group Data Display on LG1PA

Change Group | Group Definition | List Groups

Group Number: 33 Group Name: DAILY ST PTS (JET PP & DAILY) Group Status: ACTIVE

| | Point ID | Description | Status | Current Value | Engineering Units | Low Plot Limit | High Plot Limit |
|---|---|---|---|---|---|---|---|
| 1 | R033 | DRYWELL EL 330 FT TEMP | NML | 136 | DEGF | 0 | 80 |
| 2 | R036 | DRYWELL EL 260 FT TEMP | NML | 124 | DEGF | 50 | 250 |
| 3 | R037 | DRYWELL EL 260 FT TEMP | NML | 124 | DEGF | 50 | 250 |
| 4 | R034 | DRYWELL EL 320 FT TEMP | NML | 136 | DEGF | 50 | 250 |
| 5 | B018 | (18) REACTOR CORE FLOW | NML | 89.2 | MLB/H | 0.0 | 120.0 |
| 6 | B037 | (19) A RECIRC PMP A1(DRIVE) FLOW | NML | 16.875 | MLB/H | 0.000 | 20.000 |
| 7 | B039 | (21) B RECIRC PMP B1(DRIVE) FLOW | NML | 15.122 | MLB/H | 0.000 | 20.000 |
| 8 | E1266 | A RECIRC PUMP SPEED | NML | 1314 | RPM | 18.000 | 102.000 |
| 9 | E1267 | B RECIRC PUMP SPEED | NML | 1314 | RPM | 18.000 | 102.000 |
| 10 | E050 | D11 4.16 KV SFGD BUS VOLTAGE | NML | 4.31 | KVAC | 0.00 | 4.50 |
| 11 | E052 | D13 4.16 KV SFGD BUS VOLTAGE | NML | 4.31 | KVAC | 0.00 | 4.50 |
| 12 | E051 | D12 4.16 KV SFGD BUS VOLTAGE | NML | 4.31 | KVAC | 0.00 | 4.50 |
| 13 | E053 | D14 4.16 KV SFGD BUS VOLTAGE | NML | 4.31 | KVAC | 0.00 | 4.50 |
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12:54:54 -I- Loading display MGPDFW

MENU | FWD | BWD | FAST

LIMERICK 1

12:55:18

SIM

Exelon Generation

RPV NORMAL | CNTMT NORMAL | E1192FL2 D/W FLR DRN SUMP FLW 2 MIN AVGL NML 0.248 GPM 8.000

# Group Point Display – Group Data Display on LG1PA

Change Group | Group Definition | List Groups

Group Number: 2 Group Name: JET PUMP D/P'S ("Z" SHIFT ST) Group Status: ACTIVE

| | Point ID | Description | Status | Current Value | Engineering Units | Low Plot Limit | High Plot Limit |
|---|---|---|---|---|---|---|---|
| 1 | E1084 | JET PUMP 1 SINGLE TAP DP | NML | 35.529 | % | 0.000 | 100.000 |
| 2 | E1103 | JET PUMP 2 SINGLE TAP DP | NML | 35.424 | % | 0.000 | 100.000 |
| 3 | E1105 | JET PUMP 3 SINGLE TAP DP | NML | 33.156 | % | 0.000 | 100.000 |
| 4 | E1247 | JET PUMP 4 SINGLE TAP DP | NML | 34.552 | % | 0.000 | 100.000 |
| 5 | E1249 | JET PUMP 5 SINGLE TAP DP | NML | 44.395 | % | 0.000 | 100.000 |
| 6 | E1255 | JET PUMP 6 SINGLE TAP DP | NML | 37.797 | % | 0.000 | 100.000 |
| 7 | E1257 | JET PUMP 7 SINGLE TAP DP | NML | 33.784 | % | 0.000 | 100.000 |
| 8 | E1259 | JET PUMP 8 SINGLE TAP DP | NML | 32.039 | % | 0.000 | 100.000 |
| 9 | E1263 | JET PUMP 9 SINGLE TAP DP | NML | 34.901 | % | 0.000 | 100.000 |
| 10 | E1265 | JET PUMP 10 SINGLE TAP DP | NML | 42.502 | % | 0.000 | 100.000 |
| 11 | E1037 | JET PUMP 11 SINGLE TAP DP | NML | 27.541 | % | 0.000 | 100.000 |
| 12 | E1097 | JET PUMP 12 SINGLE TAP DP | NML | 27.704 | % | 0.000 | 100.000 |
| 13 | E1104 | JET PUMP 13 SINGLE TAP DP | NML | 25.119 | % | 0.000 | 100.000 |
| 14 | E1235 | JET PUMP 14 SINGLE TAP DP | NML | 26.724 | % | 0.000 | 100.000 |
| 15 | E1254 | JET PUMP 15 SINGLE TAP DP | NML | 27.187 | % | 0.000 | 100.000 |
| 16 | E1248 | JET PUMP 16 SINGLE TAP DP | NML | 25.055 | % | 0.000 | 100.000 |
| 17 | E1256 | JET PUMP 17 SINGLE TAP DP | NML | 15.519 | % | 0.000 | 100.000 |
| 18 | E1258 | JET PUMP 18 SINGLE TAP DP | NML | 17.021 | % | 0.000 | 100.000 |
| 19 | E1260 | JET PUMP 19 SINGLE TAP DP | NML | 27.541 | % | 0.000 | 100.000 |
| 20 | E1264 | JET PUMP 20 SINGLE TAP DP | NML | 26.680 | % | 0.000 | 100.000 |

06:49:04 PS-PRINT - %SYSTEM-S-NORMAL

LIMERICK 1

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6:50:45

SIM

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## DETERMINE MAXIMUM GENERATOR VARS

JPM Number: LOJPM6719

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 ON-126 | Rev: 14 |
| Procedure E-5 | Rev: 22 |
| 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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
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## 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 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. | 07/25/16 |
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**# Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

Determine the following:

Part 1 - Maximum VARs at 75 psig H2 and 1200 MWe determined to be **400 MVARs**

Part 2 - A power reduction to $\leq$ **1160 MWe** ( $\leq$ 1163 if linear interpretation is used) is required to maintain VARs at **400 MVARs** with Main Generator H2 press at 70 psig.

## V. SIMULATOR SETUP

1. N/A

## VI. INITIAL CONDITIONS:

1. Unit 2 is at 100% power when the PJM issued a Voltage Reduction Alert.
   - The TSO has requested the plant maintain maximum VAR support
   - U2 Generator Real Power is 1200 MWe
   - Current U2 Generator H2 pressure is 75 psig.

## VII. INITIATING CUE:

1. Shift supervision directs you, due to Grid conditions, to respond to the TSOs request, and determine the Maximum VAR output that remains within the capability of the U2 Generator for the current plant conditions, and

## VIII. FOLLOWUP CUE:

2. A leak developed in the generator H2 system that resulted in an unexpected "2 Gen Hydrogen And Seal Oil Sys Trouble" Alarm and uncontrolled Main Generator Hydrogen Pressure drop. The leak has been identified and mitigated, current generator H2 pressure is 70 psig and steady.

The load dispatcher informs you that they are prioritizing VAR support over MWe generation; What additional procedure entry is required and what if any U2 maneuvering is required to maintain the maximum VAR output determined in part 1 above while staying within the U2 Generator Capability?

**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.**

## IX. PERFORMANCE CHECKLIST:

**JPM Start Time** _____

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:** Provide candidate with a copy of the following:<br>• E-5, Grid Emergency | | | | | |
| * | 1. Candidate determines the Maximum VARS at 1200 MWe with H2 press at 75 psig. | Candidate concludes, using E-5 Attachment 2, the maximum VARs with H2 press at 75 psig and at **1200 MWe** determined to be **400 MVARs** | | | |
| **EVALUATORS NOTE:** Once Initiating Cue is compete provide candidate with Followup Cue and upon request for ON-126, Provide candidate with a copy of the following :<br>• ON-126, Uncontrolled Main Generator Hydrogen Depressurization. | | | | | |
| * | 2. Candidate evaluates conditions provided in Follow-up Cue and determines ON procedure entry is required. | Candidate determines that the symptoms for ON-126, Uncontrolled Main Generator Hydrogen Depressurization have been met. | | | |
| * | 3. Candidate determines the requirements for Maximum VAR support when U2 Generator H2 pressure is reduced to 70 psig. | Candidate, using Attachment 1 of ON-126 (OR E-5 Attachment 2) concludes that a power reduction to $\leq$ **1160 MWe** ( $\leq$ 1163 if linear interpretation is used) is required to maintain VARs at **400 MVARs** with Main Generator H2 press at 70 psig. | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____

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

**JPM Title:** DETERMINE MAXIMUM GENERATOR VARS

**JPM Number:** LOJPM6719 **Revision Number:** 000

**Task Number and Title:** 2001110501, ON-126 Actions for Uncontrollable Main Generator Hydrogen Depressurization.

**K/A Number and Importance:** Generic 2.1.25 3.9/4.2

**Safety Function (1-9)** N/A

**Admin Category (A1-4)** 2 (Equipment Control)

**Level of Difficulty (1-5)** 3

**Suggested Testing Environment:** Simulator

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

**Reference(s):** ON-126, Uncontrolled Main Generator Hydrogen Depressurization, Rev 14
E-5, Grid Emergency, Rev 22

**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 2 is at 100% power when the PJM issued a Voltage Reduction Alert.
   - The TSO has requested the plant maintain maximum VAR support
   - U2 Generator Real Power is 1200 MWe
   - Current U2 Generator H2 pressure is 75 psig.

**X. INITIATING CUE:**

1. Shift supervision directs you, due to Grid conditions, to respond to the TSOs request, and determine the Maximum VAR output that remains within the capability of the U2 Generator for the current plant conditions?

**Provide response below:**

## XI. FOLLOWUP CUE:

1. A leak developed in the generator H2 system that resulted in an unexpected "2Gen Hydrogen And Seal Oil Sys Trouble" Alarm and uncontrolled Main Generator Hydrogen Pressure drop. The leak has been identified and mitigated, current generator H2 pressure is 70 psig and steady.

The load dispatcher informs you that they are prioritizing VAR support over MWe generation; What additional procedure entry is required and what if any U2 maneuvering is required to maintain the maximum VAR output determined in part 1 above while staying within the U2 Generator Capability?

Exelon Generation

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## PREPARE A PARTIAL PROCEDURE

JPM Number: LOJPM6777

REVISION NUMBER: 001

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ Date |

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_____ 4. Initial setup conditions are identified.

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_____ 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 ST-6-043-200-1 Rev: 23
Procedure AD-LG-101-1002 Rev: 13
Procedure HU-AA-104-101 Rev: 5
Procedure HU-AA-1212 Rev: 7
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.

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C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 LLOJPM0777 Rev. 1. Revised to new template and aligned with latest procedure revision(s). | 5/31/15 |
| Rev001 | JPM revised to new JPM Template and procedure revisions | 11/03/16 |
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**# Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

Partial procedure, ST-6-043-200-1, Reactor Recirculation System Quarterly Valve Test prepared for PMT of HV-043-1F020, in accordance with plant procedures, AD-LG-101-1002, Temp Changes to Approved Documents and Partial Procedure Use, and HU-AA-104-101, Procedure Use and Adherence.

## V. INITIAL CONDITIONS:

1. Maintenance on HV-043-1F020 is complete per work order C099590301.
2. A PMT is required to determine operability of HV-043-1F020.

## VI. INITIATING CUE:

You are directed to prepare a partial on ST-6-043-200-1 to determine operability for valve HV-043-1F020, following maintenance, and

Document actions and notifications, if any, performed

**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:** If copy of C099590301 requested, inform candidate "Work Order has been evaluated by the WCS".<br>**Provide Candidate with the following:**<br>• JPM briefing sheet<br>• Yellow Copy of ST-6-043-200-1<br>• AD-LG-101-1002, Temporary Changes to Approved Documents and Partial Procedure Use<br>• HU-AA-104-101, Procedure Use and Adherence.<br>• HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review, and Post-Job Review | | | | | |
| | 1. Review ST-6-043-200-1 for determining operability of HV-43-1F020 | Candidate reviews ST-6-043-200-1, Reactor Recirculation System Quarterly Valve Test in preparation of determining operability of HV-43-1F020 | | | |
| | 2. Reference AD-LG-101-1002 section 4.1 "Partial Procedures" and perform the following: | N/A | | | |
| | 2a. [AD-LG-101-1002 step 4.1.1]<br>**IF** performing partial ST or RT, then WRITE **"PARTIAL"** on the first page of ST-6-043-200-1. | **"PARTIAL"** written on the first page of ST-6-043-200-1. (duplicate, critical at step #9) | | | |
| | 2b. [AD-LG-101-1002 step 4.1.2]<br>**COMPLETE** partial performance of procedure per HU-AA-104-101, Procedure Use and Adherence. | Candidate references HU-AA-104-101, Procedure Use and Adherence. | | | |

| ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|
| **EVALUATOR NOTE:** The following steps are directed form HU-AA-104-101, Procedure Use and Adherence, step 4.6.1, whereas "**IF** a portion of a procedure is used in lieu of performing the procedure in its entirety, **THEN** the Work Planner will...<br>Partial procedure development for equipment operating or test procedures should be evaluated for technical human performance error precursors using HU-AA-1212. | | | | |
| 3. [HU-AA-104-101 step 4.6.1.1]<br>**IF** required by HU-AA-1212, **THEN** conduct a prejob brief. | Candidate determines a Pre-job brief is required. | | | |
| 4. [HU-AA-104-101 step 4.6.1.2]<br>**DETERMINE** the steps that are adequate and appropriate to accomplish the desired task. | Candidate determines all steps of ST-6-043-200-1 pertaining to HV-043-1F020 are required. | | | |
| 5. [HU-AA-104-101 step 4.6.1.3]<br>**ENSURE** all applicable Prerequisites, Precautions, and Limitations and Actions are met before performing the associated steps. | Candidate determines all Prerequisites, Precautions, and Limitations and Actions are met before performing the task. | | | |
| 6. [HU-AA-104-101 step 4.6.1.4]<br>**ENSURE** the component/system is returned to a condition normal/ expected for plant conditions at that time. | Candidate verifies "AS LEFT" position of HV-043-1F020 determined by plant conditions as directed by HU-AA-1212, prejob brief | | | |
| 7. [HU-AA-104-101 step 4.6.1.5]<br>**ENSURE** that uncompleted steps will not result in missed acceptance criteria or an incomplete surveillance. | N/A | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:** Candidate may request to write "PARTIAL" on computer generated "Valve Stroke Timing List" **report** RO will obtain the "Timing List" | | | | | |
| * | 8. [HU-AA-104-101 step 4.6.1.6]<br>**WRITE** "PARTIAL" on the first page of the procedure. | "PARTIAL" written on the first page of the ST-6-043-200-1 (performed in step 3a) | | | |
| * | 9. [HU-AA-104-101 step 4.6.1.7]<br>**WRITE** "Reason for Partial Performance" on the first page of the procedure and **INSERT** the reason for partial procedure performance. | "Reason for Partial Performance" i.e. "PMT to determine operability following maintenance" or equivalent, written on the first page of the ST-6-043-200-1 | | | |
| * | 10. [HU-AA-104-101 step 4.6.1.8]<br>**ANNOTATE** steps that are not applicable to HV-043-1F020 PMT before performing a partial procedure with "N/A".<br>• Step 4.5 Check Valve Test | Steps pertaining to Check Valve Test and HV-043-1F019 annotated as "N/A"<br>• Step 4.5 Check Valve Test | | | |
| * | 11. [HU-AA-104-101 step 4.6.1.9]<br>**WRITE** "Partial Procedure Approval" on the first page of the procedure. | "Partial Procedure Approval" written on the first page under "Additional Action/Comments" of the ST-6-043-200-1. | | | |
| * | 12. [HU-AA-104-101 step 4.6.1.10]<br>**AUTHORIZE** use of partial use procedure. | Authorization obtained and documented on the first page under "Additional Action/ Comments" of the ST-6-043-200-1. | | | |
| **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:** Prepare A Partial Procedure

**JPM Number:** LOJPM6777 **Revision Number:** 001

**Task Number and Title:** TCO-2990110301 – Recommend Revisions to Operating Procedures

**K/A Number and Importance:** Generic 2.2.6 Knowledge of the process for making changes to procedures. CFR: 45.13 3.0/3.6

**Level of Difficulty (1-5)** 3

**Safety Function (1-9)** _____

**Admin Category (A1-4)** 2

**Suggested Testing Environment:** Simulator/Classroom

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

**Reference(s):** ST-6-043-200-1, Reactor Recirculation System Quarterly Valve Test, Rev 23.

AD-LG-101-1002, Temp Changes to Approved Documents and Partial Procedure Use, Rev 13.

HU-AA-104-101, Procedure Use and Adherence, Rev 5.

HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review, and Post-Job Review, 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. Maintenance on HV-043-1F020 is complete per work order C099590301.
2. A PMT is required to determine operability of HV-043-1F020.

**INITIATING CUE:**

You are directed to prepare a partial on ST-6-043-200-1 to determine operability for valve HV-043-1F020, following maintenance, and

Document actions and notifications, if any, performed below:

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## ACTIONS REQUIRED FOR SPIKING ARM

JPM Number: LOJPM6728

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 S27.1.A Rev: 21
Procedure S27.10.A Rev: 9
Procedure ARC MCR 109 B-4 Rev: 2
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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 | 11/01/16 |
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**# Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

1. On the Individual Briefing Sheet the following identified:
   a. Location of ARM identified as Unit 1 RHR DIV 2 Rm (Area 16 Elev 201) and
   b. Section 4.3 of S27.1.A to remove Area ARM from service, documented.

## V. SIMULATOR SETUP:

None.

## VI. INITIAL CONDITIONS:

1. Unit 1 is at 100% power.
2. Annunciator 109 B-4 "Reactor Encl Area Hi Radiation", has been received several times this shift
3. Each time it has been determined to be spiking of channel # 9
4. The RP tech has verified that local area readings are normal.

## VII. INITIATING CUE:

1. Shift Supervision directs you to identify the location in the plant monitored by this ARM
2. Identify any compensatory actions required to address this nuisance alarm.
3. Provide your findings on Individual Briefing Sheet.

**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 |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:**<br>Provide Candidate with the following:<br>• Individual Briefing Sheet<br>• ARC 109 RAD B-4, REACTOR ENCL AREA HI RADIATION<br>• S27.10.A, Guidance For Addressing Area Radiation Monitoring Alarms<br>• S27.1.A, Operation of the Area Radiation Monitoring System | | | | | |
| | 1. [ARC MCR 109 B-4]<br>Reference ARC 109 B-4 to identify appropriate channel initiating alarm | Channel # 9 identified per Initial Conditions | | | |
| | 2. [S27.10.A]<br>Using S27.10.A, Guidance For Addressing Area Radiation Monitoring Alarm determine the following: | N/A | | | |
| | 2a. [S27.10.A step 4.2]<br>**IF** a high radiation alarm occurs **AND** Radiation Protection has determined the alarm to be false, **THEN USE** Attachment 1 | S27.10.A Attachment 1 referenced | | | |
| | 2b. [S27.10.A Attachment 1]<br>HP has verified dose rates in area are normal **AND**<br>ARM channel is spuriously spiking | Area dose rates normal and ARM spuriously spiking Identified per Initial Conditions | | | |
| * | 2c. [S27.10.A Attachment 1]<br>T-103 SAMP-2 ARM Channels 1,2,8,9,10,11,21,22 For either Unit 1 or 2 | Candidate determines ARM channel 9 listed and follows **YES** path | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 2d. [S27.10.A Attachment 1]<br>Place ARM in zero. | Candidate determines to place ARM in zero using S27.1.A | | | |
| * | 2e. [S27.10.A Attachment 1]<br>Have HP install a potable ARM in the vicinity of the inoperable monitor. | Candidate requests HP Tech to install potable ARM DIV 2 RHR room (Area 16, Elev 201') | | | |
| | 3. [S27.1.A]<br>Using S27.1.A, Operation of the Area Radiation Monitoring System determine area(s) affected by nuisance alarm. | DIV 2 RHR room (Area 16, Elev 201') identified | | | |
| * | 4. [S27.1.A step 4.3]<br>**ENSURE** mode switch for ARM to "ZERO" position at Aux Equipment Room panel | ARM #9 placed in ZERO | | | |
| * | 5. [S27.1.A step 4.3]<br>**PRESS** RESET button on ARM TRIP UNIT | RESET button depressed on ARM TRIP UNIT | | | |
| | 6. [S27.1.A step 4.3]<br>**HANG** an EST stating "Removed from Service per S27.1.A | EST tag hung on channel #9 ARM | | | |
| | 7. [S27.1.A step 4.3]<br>**VERIFY** applicable "Area Radiation" alarm reset in MCR | "Area Radiation" alarm reset in MCR | | | |
| | 8. [S27.1.A step 4.3]<br>**PRESS** "ACK Alarm" key on recorder RR-M1-0R601 or RR-M1-*R600 | "ACK Alarm" key on recorder RR-M1-*R600 predded | | | |
| | 9. [S27.1.A step 4.3]<br>**VERIFY** LED for associated ARM on recorder RR-M1-0R601 or RR-M1-*R600 is lit | LED for associated ARM on recorder RR-M1-1R600 is lit | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 10. [S27.1.A step 4.3]<br>**VERIFY** "Common Area Rad Monitor" downscale alarm 00-C824/G-5 **OR** "*Unit Area Rad Monitor" downscale *0C-800/A-5 is reset. | "Unit Area Rad Monitor" downscale 10C-800/A-5 is reset. | | | |
| | **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 spiking ARM"**

1. Identify appropriate channel initiating alarm, channel #9 is T-103 / SAMP referenced
2. Area(s) affected by nuisance alarm. - DIV 2 RHR room (Area 16, Elev 201')
3. Have HP install a potable ARM in the vicinity of the inoperable monitor DIV 2 RHR room (Area 16, Elev 201')
4. Place mode switch for ARM to "ZERO" position at Aux Equipment Room
5. Press RESET button on ARM TRIP UNIT

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** ACTIONS REQUIRED FOR SPIKING ARM

**JPM Number:** LOJPM6728 **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)** 9

**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):** ARC 109 RAD B-4, REACTOR ENCL AREA HI RADIATION Rev 2
S27.10.A, Guidance For Addressing Area Radiation Monitoring Alarms Rev 9
S27.1.A, Operation of the Area Radiation Monitoring System Rev 21

**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 at 100% power.
2. Annunciator 109 B-4 "Reactor Encl Area Hi Radiation", has been received several times this shift
3. Each time it has been determined to be spiking of channel # 9
4. The RP tech has verified that local area readings are normal.

**INITIATING CUE:**

1. Shift Supervision directs you to identify what location of the plant that is monitored by this ARM
2. Identify any compensatory actions required to address this nuisance alarm.

**Provide your results below:**

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## DETERMINATION OF ADEQUATE SHIFT STAFFING

JPM Number: LOJPM6712

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 OP-LG-101-111 Rev: 5
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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 LLOJPM0712 Rev. 2. Revised to new template and to align with latest procedure revision. | 11/04/16 |
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# **Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

Determine that shift is below minimum staffing requirements and take appropriate corrective action to ensure adequate shift staffing.

## V. SIMULATOR SETUP:

None

## VI. INITIAL CONDITIONS:

1. Unit 1 is in OPCON 1
2. Unit 2 is in OPCON 4
3. Today's date is 12/25
4. It is night shift 18:00 – 06:00
5. The entire shift has participated in a Christmas meal at @ 0000
6. Initial shift staffing consists of the following;
   - 1 Shift Manager
   - 3 Senior Reactor Operators
   - 3 Reactor Operators
   - 11 Equipment Operators (5 Equipment Operators are Fire Brigade Qualified)

## VII. INITIATING CUE:

At 0130, the Unit 2 Reactor Operator and a Fire Brigade Qualified Equipment Operator complain of severe stomach pain/headache and are unable to perform operator duties.

Determine if staffing requirements for current operating modes are met.

- Include any immediate and long term (greater than 2 hours) corrective actions that are required to ensure adequate shift staffing is met.

**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 |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:**<br>**Provide Candidate with the following:**<br>• JPM Briefing Sheet<br>• 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 | | | |
| * | 2a. **RO** position is not adequately filled, additionally Unit 2 must be staffed with an RO | Determination made that:<br>RO staffing is not adequately filled per OP-LG-101-111 (Minimum required staffing is 3 ROs)<br>An RO is required at the Unit 2 Controls | | | |
| * | 2b. **Fire Brigade** position is not adequately filled | Determination made that Fire Brigade position is not adequately filled per OP-LG-101-111 (Minimum required staffing is 5) | | | |
| | 3. Determine action necessary IAW current shift manning, as follows: | N/A | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:**<br>• With 1 RO unable to perform duties, the shift is below minimum requirements, and Unit 2 must be staffed with an RO<br>• With 1 Fire Brigade qualified EO unable to perform duties the shift is below minimum requirements. | | | | | |
| * | 3a. [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 restore the crew composition for the RO position within 2 hours | | | |
| * | 3b. [OP-LG-101-111 Step 4.1.2.3] States the fire brigades 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 Fire Brigade within 2 hours | | | |
| | 4. Take action to restore minimum shift staffing as follows: | N/A | | | |
| **EVALUATORS NOTE:** Action is required to staff the RO position. This action can include moving one of the 3 SROs into the RO position. | | | | | |
| * | 4a. Take action to restore minimum shift staffing for RO | Perform operator call-in to get RO position manned within 2 hours or move one of the 3 SROs into the PRO/RO position.<br>Have PRO replace Unit 2 RO until replacement arrives or SRO fills in for PRO | | | |
| * | 4b. Take action to restore minimum shift staffing for Fire Brigade | Perform operator call-in to get Fire Brigade qualified EO manned within 2 hours | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** DETERMINATION OF ADEQUATE SHIFT STAFFING

**JPM Number:** LOJPM6712 **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
1. Unit 2 is in OPCON 4
2. Today's date is 12/25
3. It is night shift 18:00 – 06:00
4. The entire shift has participated in a Christmas meal at @ 0000
5. Initial shift staffing consists of the following;
    - 1 Shift Manager
    - 3 Senior Reactor Operators
    - 3 Reactor Operators
    - 11 Equipment Operators (5 Equipment Operators are Fire Brigade Qualified)

**INITIATING CUE:**

At 0130, the Unit 2 Reactor Operator and a Fire Brigade Qualified Equipment Operator complain of severe stomach pain/headache and are unable to perform operator duties.

Determine if staffing requirements for current operating modes are met.

- Include any immediate and long term (greater than 2 hours) corrective actions that are required to ensure adequate shift staffing is met.

**Provide immediate and long term requirements and any corrective actions required below**

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## DETERMINE ACCEPTABILITY OF INSTALLING FUEL POOL GATES

JPM Number: LOJPM6763

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 1GP-6.1 | Rev: 32 |
| Procedure RT-1-053-850-0 | Rev: 7 |
| 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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
| | | | | | |
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## 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 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 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

Determine the heat transfer capability of the Fuel Pool Cooling System is currently insufficient to dissipate the current Decay Heat Load.

## V. SIMULATOR SETUP:

None

## VI. 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 (Joe Rubinaccio) 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 |

## VII. INITIATING CUE:

Shift Supervision directs you to perform GP- 6.1 step 3.12.10, 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.**

## VIII. PERFORMANCE CHECKLIST:

**JPM Start Time** _____

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:**<br>Provide the following to the Candidate:<br>• 1GP-6.1, Shutdown Operations – Refueling, Core Alteration and Core Offloading Pages 97, 98, and 135.<br>• Completed copy of RT-1-053-850-0, Heat Transfer Capability of Fuel Pool Cooling Systems performed on 3/19/16.<br>• Calculator<br>• **Answer Rounding** – Students my round answers provided the rounding does not affect the outcome of the JPM. | | | | | |
| * | 1. [1GP6.1 step 3.12.10.1]<br>**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 3.12.10.2]<br>**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 3.12.10.3]<br>**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 3.12.10.4]<br>**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 3.12.10.5]<br>**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<br>$15.1540845 \times 10^6 \frac{BTU}{Hr} \times 1 \frac{MW}{3.413 \times 10^6 \frac{BTU}{HR}}$<br>$= \underline{4.44}$ MW | | | |
| * | 6. [1GP6.1 step 3.12.10.6]<br>**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)<br>**4.44 MW < 4.56 MW** | | | |
| * | 6a. [1GP6.1 step 3.12.10.6a]<br>**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. | 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 **(Day 13)** (*Candidate may determine to perform 1GP6.1 step 3.12.10.6b which is acceptable)* | | | |
| | **CUE: You have met the termination criteria for this JPM** | | | | |

**JPM Completion Time** _____

## 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:** 000

**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 32

**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 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 (Joe Rubinaccio) 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 3.12.10, Install Reactor Cavity/Spent Fuel Pool Gates.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## CALCULATE THE AVERAGE OFFGAS PRE-TREATMENT RADIOACTIVITY RELEASE RATE

JPM Number: LOJPM6720

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 GP-5 App 1 EOC Rev: 58

Procedure Tech Specs U#1 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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 modifies LLOJPM6760 Rev. 1 to an SRO JPM | 10/31/16 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

**RO:** Determines Radioactive off gas release rate is 14,668 to 15,266 µCi/sec and chemistry sampling is required.

**SRO:** Determines Tech Spec 3.4.5 sampling requirements for DOSE EQUIVALENT I-131: Perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 (At least once per 4 hours) until the specific activity of the primary coolant is restored to within its limit.

## V. SETUP INSTRUCTIONS

1. Provide the following:
   - Calculator
   - GP-5 Appendix 1, End of Steady State Operations
   - Placard that is mounted to the 10C600 Panel

| | |
|---|---|
| SUM OF SIX | 139 |
| K "A" | 0.082 |
| K "B" | 0.080 |
| Date: | _____ |

## VI. INITIAL CONDITIONS:

### 1. Initial Conditions

a. Unit 1 is in OPCON 1

b. 1 hour ago

- The average Off-gas pretreatment release rate was 341.2 uCi/sec
- FR-69-115 read 74 scfm

### 2. Current Plant Conditions 1 hour later

a. Unit 1 is in OPCON 1

b. There was an increase in SJAE Discharge Rad Monitor readings, the current readings are:

- RR-26-1R601 "A" SJAE Discharge Rad Monitor reads 2461 mRem/hr
- RR-26-1R601 "B" SJAE Discharge Rad Monitor reads 2534 mRem/hr

c. FR-69-115 reads 74 scfm

## VII. INITIATING CUE:

You are directed to calculate the average offgas pre-treatment radioactivity release rate per GP-5 Appendix 1, End of Steady State Operations, and identify any required actions.

| U/1 OFFGAS | |
|---|---|
| SUM OF SIX | 139 |
| K "A" | 0.082 |
| K "B" | 0.080 |

Date: _____

**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 a copy of current revision of GP-5 Appendix 1, End of Steady State Operations<br><br>**CUE:** Candidate is given a copy of the procedure when knowledge of the correct location of procedure is demonstrated. | Candidate demonstrates ability (actual or discuss) to locate the correct procedure. | | | |
| | 2. CALCULATE Off-gas release rates for the A <u>AND</u> B channels using the following equation:<br><br>RR = RL x F x K<br><br>RR = Release Rate for A(B) (µCi/second)<br>RL = Radiation Level of SJAE as indicated on RR-26-1R601 (mRem/hour)<br>F = Off-gas flow as indicated by FR-69-115 (scfm), Point 2<br>K = Conversion Factor for A(B) data (posted on panel 10C600) | N/A | | | |
| * | 3. **<u>Channel A</u>** (Point 1)<br>RR =____ mRem/hour X ____CFM X __K<br><br>RR = _____ µCi/second | Calculate "A" channel release<br><br>2461 x 74 x 0.082 =<br><u>14,933.3</u> µCi/sec | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 4. **Channel B** (Point 2)<br>RR =____ mRem/hour x ____CFM x __K__<br>RR = _____ µCi/second | Calculate "B" channel release<br>2534 x 74 x 0.080 =<br>15,001.2 µCi/sec | | | |
| * | 5. CALCULATE the average of the A AND B channel values to obtain the average Off-gas pretreatment release rate as follows:<br>ARR = (RR "A") + (RR "B") / 2<br>Where:<br>ARR = Average Off-gas Pretreatment Release Rate (µCi/second)<br>**RR "A"** = Release Rate value for "A" Channel (µCi/second)<br>**RR "B"** = Release Rate value for "B" Channel (µCi/second)<br>ARR = (____) + (____) / 2<br>ARR = _____ µCi/second | Calculate the average release rate<br>ARR = (14,933.3 + 15001.2) / 2<br>ARR=14,967.2 µCi/sec<br>Acceptable band is<br>14,668 to 15,266<br>(14,967 +/- 2%) | | | |
| * | 6. **IF** Off-Gas Release Rate rises by >10,000 µCi/second in 1 hour during steady state operation at release rates <75,000 µCi/second<br>**THEN CONTACT** Chemistry to perform ST-5-041-885-*, Dose Equivalent I-131 Determination | Chemistry notified to perform ST.<br>Cue:<br>Chemistry acknowledges request to complete the ST and will notify the CRS with the results | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 7. **IF** Off-Gas Release Rate rises by more than 50%, **THEN CONTACT** Chemistry to perform ST-5-070-885-*, Isotopic Offgas Analysis<br><br>**CUE:** Chemistry acknowledges request to complete the ST and notifies the CRS with the results<br>**RO ONLY**: You have met the termination criteria for this JPM | Chemistry notified to perform ST. | | | |
| | **SRO ONLY Portion**<br>**EVALUATORS NOTE:** With time compression, Chemistry has completed ST-5-041-885-1 and notifies the CRS with the results.<br>**Provide candidate with final briefing sheet #2**<br>Fill in date and time 15 minutes after sample requested<br>If requested, Chemistry also notifies the CRS that they are still working on ST-5-070-885-1 | | | | |
| * | 8. Based on the results of ST-5-041-885-1 the CRS determines Tech Spec action(s) | In OPERATIONAL CONDITION 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131, **perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 ( at least once per 4 hours)** until the specific activity of the primary coolant is restored to within its limit. | | | |
| | **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:** CALCULATE THE AVERAGE OFFGAS PRE-TREATMENT RADIOACTIVITY RELEASE RATE

**JPM Number:** LOJPM6720 **Revision Number:** 000

**Task Number and Title:** RO: 2730010101, Monitor Process Rad Monitor Operation
**SRO:** 3420030302, Review results of a completed Surveillance Test

**K/A Number and Importance:** Generic 2.3.11 3.8/4.3

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

**Admin Category (A1-4)** N/A

**Level of Difficulty (1-5** 3

**Suggested Testing Environment:** Classroom

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

**Reference(s):** GP-5 App 1 EOC Study State Operations Rev. 058
ST-5-041-885-1 Dose Equivalent I-131 Rev. 021
Technical Specification 3.4.5

**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 - Sheet # 1

**2. Initial Conditions**

a. Unit 1 is in OPCON 1

b. 1 hour ago

- The average Off-gas pretreatment release rate was 341.2 uCi/sec
- FR-69-115 read 74 scfm

**3. Plant Conditions 1 hour later**

a. Unit 1 is in OPCON 1

b. There was an increase in SJAE Discharge Rad Monitor readings, the current readings are:

- RR-26-1R601 "A" SJAE Discharge Rad Monitor reads 2461 mRem/hr
- RR-26-1R601 "B" SJAE Discharge Rad Monitor reads 2534 mRem/hr

c. FR-69-115 reads 74 scfm

## INITIATING CUE

You are directed to calculate the average offgas pre-treatment radioactivity release rate per GP-5 Appendix 1, End of Steady State Operations, and identify any required actions.

The following placard is mounted to the 10C600 panel:

| **U/1 OFFGAS** | |
|---|---|
| SUM OF SIX | 139 |
| K "A" | 0.082 |
| K "B" | 0.080 |

Date: _____

**LIMERICK GENERATING STATION**
**JOB PERFORMANCE MEASURE**
**INDIVIDUAL BRIEFING SHEET (#2)**

## Final Conditions - Sheet # 2

**Chemistry notifies the Control Room Supervisor with the results of**

**ST-5-041-885-1 Dose Equivalent I-131 Determination**

| |
|---|
| I.D.E. Activity (uCi/gm) .3 microcuries per gram |
| Sample Date/Time _____/_____ |

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## ERP CLASSIFICATION AND REPORTING (TIME CRITICAL)

JPM Number: LOJPM3097

REVISION NUMBER: 004

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 EP-AA-1008 Addendum 3 | Rev: 002 |
| Procedure EP-MA-114-100-F-01 | Rev: P |
| Procedure EP-AA-112-100-F-01 | Rev: V |
| Procedure EP-AA-111-F-11 | Rev: A |
| 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. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
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## 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 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 LLOJPM0097 Rev. 10. Revised to new template and to align with latest procedure revision. | 10/15/13 |
| 001 | Added Site Area Emergency declared 10 minutes after initial event due to the fact that original JPM did not provide an initial declaration within the required 15 minutes. This changes the JPM to an escalation. | 10/6/14 |
| 002 | Revised due to new Limerick PAR Flowchart, EP-AA-111-F-11. Sectors expanded for evacuation 2-5 miles. | 06/19/15 |
| 003 | Revised to new template | 10/13/15 |
| Rev004 | Revised JPM to new template and procedural revisions | 11/03/16 |
| | | |

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

## IV. TASK STANDARD:

1. General Emergency (FG1) is declared within 15 minutes of the candidate beginning the classification.

2. Notification form completed and provided to Shift Communicator within 15 minutes of declaring the General Emergency.

## V. SIMULATOR SETUP:

☐ **Use existing IC Met Data**

☐ **Insert the following Met Data values:**

**RZZ002** MET Data Wind Direction (0-360) DEG AZIMUTH Target Value = 311°

**RZZ003** MET Data Wind Speed (0-100) MPH Target Value = 5.0 mph

☐ North Stack WRAM is indicating 2.5E+6 µCi/sec.

☐ Post LOCA Rad Monitors are reading the following:

A - 96 R/hr.

B - 89 R/hr.

C -103 R/hr.

D - 97 R/hr.

## VI. INITIAL CONDITIONS:

Unit 1 is initially at 100% power when the following events occur:

T = 0

- 'A' Steam Line ruptures in the Outboard MSIV Room
- Group 1 Isolation signal is received due to high steam line flow
- A full scram occurs with all rods inserted
- "A" Steam Line Inboard and Outboard MSIVs fail to isolate automatically or manually

T = 5 minutes

- Reactor Coolant Activity starts to rise

T = 10 minutes

- EAL threshold recognized and emergency declaration made

T = 15 minutes

- State and Local notifications complete for emergency declaration
- Shift Communicator has activated the ERO

## VII. CURRENT PLANT CONDITIONS:

- RPV pressure is 850 psig and lowering
- RPV level is +18" and steady
- DW pressure is 0.3 psig
- Reactor Coolant Activity is 370 µCi/gm
- Outboard MSIV Room temperature is 210 degrees F, up slow
- Security personnel confirms a steam release outside secondary containment from blowout panels
- North Stack WRAM is indicating 2.5E+6 µCi/sec.
- Post LOCA Rad Monitors are reading the following:

  A - 96 R/hr.

  B - 89 R/hr.

  C -103 R/hr.

  D - 97 R/hr.

## VIII. INITIATING CUES: This Task is Time Critical

This JPM will start when you tell the evaluator that you are aware of task conditions and are ready to begin.

You are required to make the highest classification based on the given plant conditions and make subsequent call outs. All communications should indicate a drill.

**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.**

## IX. PERFORMANCE CHECKLIST:

JPM Start Time:_____

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | **NOTE TO EVALUATOR//DRIVER:** If JPM is NOT conducted in Simulator: Provide a screen shot of "Meteorological 15 Minute Average Point Data". | | | | |
| | 1. REFER to the appropriate LGS EAL Matrix | N/A | N/A | | |
| | 2. Call for Shift Communicator to report to MCR | Shift Communicator called to report to MCR | | | |
| | 3. Identify the operating MODE for the affected Unit(s) prior to the abnormal condition, and obtain appropriate Matrix. | Matrix obtained:<br>☒ HOT<br>☐ COLD | | | |
| | 4. Review the initiating conditions applicable to the operating MODE. | Use EAL Matrix to classify event | N/A | | |
| * | 5. DECLARE the event | Event Declared:<br>☐ UNUSUAL EVENT<br>☐ ALERT<br>☐ SITE AREA EMERGENCY<br>☒ GENERAL EMERGENCY<br>Declared 15 minutes of the JPM START TIME:<br>DECLARATION TIME: | | | |
| | 6. Direct Shift Communicator to activate the ERO or make management only notifications | N/A<br>(Shift Communicator has activated ERO per Initial Conditions) | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 7. Complete the Event Notification form | At the completion of the JPM the Event Notification Form will be evaluated against the JPM standard located below. | N/A | | |
| | 8. Direct Shift Communicator to perform state and local notifications | Shift Communicator notified to make notifications **within 15** minutes of DECLARATION TIME.<br>Declaration Time:<br>Notification Initiated Time:<br>NOTE: the expectation is notification is initiated **within 9** (nine)minutes of declaration time. Notification times between 9-15 minutes constitutes a pass with comment. | | | |
| | **CUE:** When form has been completed and Shift Communicator informed to process form:<br>"You have met the termination criteria for this JPM" | N/A | N/A | | |
| | **NOTE:** The following steps are performed by the evaluator following the student providing the Notification form to the evaluator. | | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | **EP-MA-114-100-F-01, STATE/LOCAL EVENT NOTIFICATION FORM** | | | | |
| | 9. UTILITY MESSAGE NO. | "2" or equivalent entered | | | |
| | 10. VERIFIED WITH | N/A | N/A | | |
| | 11. EMERGENCY DIRECTOR APPROVAL | Signature entered | | | |
| * | 12. CALL STATUS: | Call Status marked<br>☒ THIS IS A DRILL | | | |
| * | 13. AFFECTED STATION: | Affected Station marked<br>for ☒ LIMERICK | | | |
| * | 14. AFFECTED UNIT(S): | Unit(s) marked<br>☒ ONE ☐ TWO | | | |
| * | 15. CLASSIFICATION: | Classification marked<br>☐ UNUSUAL EVENT<br>☐ ALERT<br>☐ SITE AREA EMERGENCY<br>☒ GENERAL EMERGENCY | | | |
| * | 16. DECLARED AT: | Time entered<br>Date entered | | | |
| | 17. THIS REPRESENTS A/AN: | This Represents marked<br>☐ INITIAL DECLARATION<br>☒ ESCALATION<br>☐ NO CHANGE | | | |
| * | 18. EMERGENCY ACTION LEVEL (EAL) NUMBER: | "FG1" entered<br>Thresholds: FC.1 AND (RC.5 OR RC.4.1 OR RC.4.3) AND (CT.6.1 OR CT.6.3.a) | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 19. A BRIEF NON-TECHNICAL DESCRIPTION OF THE EVENT: | ☐ A- Abnormal Rad Levels/ Radiological Effluent<br>☒ B- Fission Product Barrier Degradation<br>☐ C- System Malfunction<br>☐ D- Hazards and Other Conditions Affecting Plant Safety<br>☐ E- Independent Spent Fuel Storage Installation Malfunction<br>☐ F- Cold Shutdown/Refueling System Malfunctions | | | |
| * | 20. RADIOLOGICAL RELEASE STATUS: | Release Status marked<br>☐ NO RELEASE<br>☒ AIRBORNE<br>☐ LIQUID<br>☐ RELEASE TERMINATED | | | |
| * | 21. METEOROLOGY DATA:<br><br>Cue: Provide MET Attachment only if in location other than simulator | **Simulator Values** match displayed Tower 1 175' using 15 minute average values:<br>Wind Direction: 311.0 (degrees)<br>Wind Speed: 5.0 (MPH)<br>**Attachment Values :**<br>Wind Direction: 311.0 (degrees)<br>Wind Speed: 5.0 (MPH) | | | |
| * | 22. PROTECTIVE ACTION RECOMMENDATION (a or b) : | PAR Recommendation marked<br>☐ NOT Applicable<br>☒ PAR Recommendation | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | **NOTE: IF PAR RECOMMENDATION is required the following items should be marked:**<br><br>[ S / E ] 360 DEGREES FROM **0** MILES (SITE BOUNDARY) TO **2** MILES<br><br>**AND**<br>THE FOLLOWING SECTORS FROM **2** MILES TO **5** MILES:<br>[ S / E ] N [ S / E ] E [ S / E ] S [ S / E ] W<br>[ S / E ] NNE [ S / E ] ESE [ S / E ] SSW [ S / E ] WNW<br>[ S / E ] NE [ S / E ] SE [ S / E ] SW [ S / E ] NW<br>[ S / E ] ENE [ S / E ] SSE [ S / E ] WSW [ S / E ] NNW<br><br>**AND**<br><br>THE FOLLOWING SECTORS FROM **5** MILES TO **10** MILES:<br>[ S / E ] N [ S / E ] E [ S / E ] S [ S / E ] W<br>[ S / E ] NNE [ S / E ] ESE [ S / E ] SSW [ S / E ] WNW<br>[ S / E ] NE [ S / E ] SE [ S / E ] SW [ S / E ] NW<br>[ S / E ] ENE [ S / E ] SSE [ S / E ] WSW [ S / E ] NNW<br><br>**AND**<br><br>Potassium Iodide (KI) be administered to the general public in accordance with state procedures and advise the remainder of the EPZ to Monitor and Prepare.<br><br>**AND**<br><br>This Protective Action Recommendation **[IS] [IS NOT]** the result of a Rapidly Progressing Severe Accident | | | |
| * | 23. UTILITY PAR recommendations | Correct PAR Recommendation marked including required sectors | | | |
| | 24. CONCLUSION | Conclusion marked<br>☒ THIS IS A DRILL<br>(Critical that at least one of the two status blocks on the page is marked correctly and no contradictory info is marked. If contradictory info is marked, then the incorrect step is UNSAT. If one block is blank and the other is correct, then the blank block is N/A) | | | |

**JPM Stop Time:** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** ERP CLASSIFICATION AND REPORTING (TIME CRITICAL)

**JPM Number:** LOJPM3097 **Revision Number:** 004

**Task Number and Title:** 3440070302, Classify Emergency Events Requiring Emergency Plan Implementation

**K/A Number and Importance:** Generic 2.4.41 4.6

**Safety Function (1-9)** N/A

**Admin Category (A1-4)** 4

**Level of Difficulty (1-5)** 3

**Suggested Testing Environment:** Simulator

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

**Reference(s):** EP-AA-1008, LGS EMERGENCY ACTION LEVEL (EAL) MATRIX, Rev 2
EP-MA-114-100-F-01, STATE/LOCAL EVENT NOTIFICATION FORM, Rev P
EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, Rev V
***** EP-AA-111-F-11, Limerick PAR Flowchart, Rev. A

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

**Testing Method:** ☐ Simulate ☒ Perform

**Estimated Time to Complete:** 27 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:**

Unit 1 is initially at 100% power when the following events occur:

T = 0

- 'A' Steam Line ruptures in the Outboard MSIV Room
- Group 1 Isolation signal is received due to high steam line flow
- A full scram occurs with all rods inserted
- "A" Steam Line Inboard and Outboard MSIVs fail to isolate automatically or manually

T = 5 minutes

- Reactor Coolant Activity starts to rise

T = 10 minutes

- EAL threshold recognized and emergency declaration made

T = 15 minutes

- State and Local notifications complete for emergency declaration
- Shift Communicator has activated the ERO

**Current Plant Conditions:**

- RPV pressure is 850 psig and lowering
- RPV level is +18" and steady
- DW pressure is 0.3 psig
- Reactor Coolant Activity is 370 µCi/gm
- Outboard MSIV Room temperature is 210 degrees F, up slow
- Security personnel confirms a steam release outside secondary containment from blowout panels
- North Stack WRAM is indicating 2.5E+6 µCi/sec.
- Post LOCA Rad Monitors are reading the following:

  A - 96 R/hr.

  B - 89 R/hr.

  C -103 R/hr.

  D - 97 R/hr.

**INITIATING CUES: This Task is Time Critical**

This JPM will start when you tell the evaluator that you are aware of task conditions and are ready to begin.

You are required to make the highest classification based on the given plant conditions and make subsequent call outs. All communications should indicate a drill.

# 917 METEOROLOGICAL 15 MINUTE AVERAGE POINT DATA

| | PID | SENSOR | DESCRIPTION | VALUE | EU |
|---|---|---|---|---|---|
| TOWER 1 | **T1DTULFA** | **T1.SP.U** | TOWER 1 270 FT WIND SPEED | 6.7 | **MPH** |
| | T1SPIFA | T1.SP.I | TOWER 1 175 FT WIND SPEED | 5.0 | MPH |
| | T12SPLFA | T1.SP.L | TOWER 1 30 FT WIND SPEED | 7.3 | MPH |
| | T1DRUFA | T1.DR.U | TOWER 1 270 FT WIND DIRECTION | 252.3 | DEG AZ |
| | T1DRIFA | T1.DR.I | TOWER 1 175 FT WIND DIRECTION | 311.0 | DEG AZ |
| | T1DRLFA | T1.DR.L | TOWER 1 30 FT WIND DIRECTION | 257.2 | DEG AZ |
| | T1DTULFA | T1.DT.U-L | TOWER 1 266 - 26 FT DELTA TEMP | -0.3 | DEG F |
| | T1DTILFA | T1.DT.I-L | TOWER 1 171 - 26 FT DELTA TEMP | 0.4 | DEG F |
| | T1ATLFA | T1.AT.L | TOWER 1 26 FT AMBIENT TEMP | 85.2 | DEG F |
| | T1DPLFA | T1.DP.L | TOWER 1 26 FT DEW POINT | 45.00 | DEG F |
| | T1RNFA | T1.RN | TOWER 1 PRECIPITATION | 0.1 | INCHES |
| TOWER 2 | T2DTULFA | T2.SP.U | TOWER 2 304 FT WIND SPEED | 6.8 | MPH |
| | T2SPIFA | T2.SP.I | TOWER 2 159 FT WIND SPEED | 7.3 | MPH |
| | T22SPLFA | T2.SP.L | TOWER 2 30 FT WIND SPEED | 7.8 | MPH |
| | T2DRUFA | T2.DR.U | TOWER 2 304 FT WIND DIRECTION | 251.7 | DEG AZ |
| | T2DRIFA | T2.DR.I | TOWER 2 159 FT WIND DIRECTION | 250.5 | DEG AZ |
| | T2DRLFA | T2.DR.L | TOWER 2 30 FT WIND DIRECTION | 257.6 | DEG AZ |
| | T2DTULFA | T2.DT.U-L | TOWER 2 304 – 26 FT DELTA TEMP | -0.4 | DEG F |
| | T2DTILFA | T2.DT.I-L | TOWER 2 155 – 26 FT DELTA TEMP | 0.6 | DEG F |
| | T2ATLFA | T2.AT.L | TOWER 2 26 FT AMBIEWNT TEMP | 85.0 | DEG F |
| | T2DPLFA | T2.DP.L | TOWER 2 26 FT DEW POINT | 44.81 | DEG F |

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## SCRAM RESET

JPM Number: LOJPM3001

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ Date |

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

## I. JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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_____ 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 GP-11 Rev: 29

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

## II. RECORD OF TEMPORARY CHANGES:

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B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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A. If a Revision affects a Task Performance from VISION Terminal Performance Objectives then the revision must also be made in the VISION database.
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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 | This JPM supersedes LLOJPM0001Rev. 15. Revised to new template and to align with latest procedure revision. | 10/31/16 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

Insert a full reactor scram signal upon recognition that scram will not reset after 2nd attempt.

## 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. Transfer house loads.
3. Place Reactor Mode Switch in "SHUTDOWN".
4. Ensure Rod Drift Alarms are reset.
5. Insert malfunction **MRP028B**, RPS Group 1 Reactor Scram.
6. Acknowledge and clear all spurious alarms.

## VI. INITIAL CONDITIONS:

1. Unit 1 Reactor was scrammed for a planned shutdown.
2. The SDV has been surveyed by Radiation Protection
3. HEPA Filters and Protective Laundry Bags are not required to be installed on 253' Elevation Floor Drains
4. Flushing of the SDV per RT-6-047-600-1 has been determined not to be required after SCRAM reset
5. No HCUs currently have clearances applied
6. All Prerequisites have been met.

## VII. INITIATING CUE:

Shift supervision directs you to perform a Unit 1 RPS scram reset per GP-11.

**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 GP-11, Scram Reset<br><br>**CUE:** Candidate is given a copy of GP-11, Scram Reset when knowledge of the correct location of procedure is demonstrated. | Candidate demonstrates ability (actual or discuss) to locate GP-11, Scram Reset | | | |
| | 2. **REQUEST** Radiation Protection to perform the following: | N/A | | | |
| | 2a. **SURVEY** SDV prior to release of fluid inventory. | Radiation Protection requested to survey SDV | | | |
| | 2b. **EVALUATE** the need for RT-6-047-600-*, Flush of CRD Scram Discharge Volume (SDV)."<br><br>**CUE:** Report that RP has surveyed the SDV and that the RT is not required to be done. | CRD Scram Discharge Volume flush not required per Initial Conditions. | | | |
| | 2c. **IF** time permits **THEN NOTIFY** Rad Pro to install HEPA filters **AND** Protective Clothing Bags over the Reactor Enclosure 253' elevation floor drains per RP-LG-301-2001 prior to scram reset<br><br>**CUE:** Protective bags and HEPA Filters are not required. | Protective bags over floor drains not required per Initial Conditions. | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 3. **PLACE** Scram Discharge Volume High Level Bypass Keylock Switch on *0C603 to "BYPASS". | SDV High Level Bypass Switch in "BYPASS" position. | | | |
| * | 4. **VERIFY** Annunciator Panel *07, REACTOR, Window C-2, "SCRAM DISC VOLUME HI LEVEL SCRAM BYPASSED," is in alarm. | Verify by observation that "SDV HI LEVEL SCRAM BYPASSED", 107 REACTOR (C-2), is lit. | | | |
| | 5. **ENSURE** Annunciator panel *08, REACTOR, Window E-5, "RPIS INOPERATIVE" is clear. | Annunciator panel *08, REACTOR, Window E-5, "RPIS INOPERATIVE" is clear | | | |
| | 6. **IF** Annunciator Panel *08, REACTOR, Window E-4, "RDCS INOPERATIVE," is in alarm, **THEN RESET** the Rod Drive Control System (RDCS) in accordance with S73.0.F, "Resetting the Rod Drive Control System". Otherwise **MARK** this | N/A | | | |
| | 7. **IF** CRD Full Core Display **OR** Process Computer indicates **not** all control rods are fully inserted, **THEN** PERFORM GP-11 Appendix I using Attachment 1. Otherwise **MARK** this step **AND** Appendix 1 Steps 3.1 through 3.2.2 N/A | N/A | | | |
| | 8. **RESET** Alternate Rod Insertion (ARI) at panel *0C603 as follows: | N/A | | | |
| | 8a. **DEPRESS** ARI RESET pushbuttons (1A, 1B, 2A, 2B). | ARI Reset pushbuttons 1A, 1B, 2A, 2B depressed. | | | |
| | 9. **RESET** RPS at panel *0C603 as follows: | N/A | | | |
| * | 9a. **PLACE** Scram Reset switch to "GP 1/4". | Scram Reset Switch taken to GP 1/4 position. | | | |
| * | 9b. **PLACE** Scram Reset switch to "GP 2/3". | Scram Reset Switch taken to GP 2/3 positions. | | | |

**Evaluator Note: Alternate Path begins with the next step. The next step is a failure of the scram to reset.**

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 10. **VERIFY** the eight (8) scram group white lights are Lit for Scram System A **AND** Scram System B on *0C603. | Recognize 1 light for RPS 'A' and 1 light for RPS 'B' did **not** light. | | | |
| | 11. **IF** the eight scram group white lights are **not** lit after initial reset, **THEN VERIFY** proper Reactor Mode Switch position... | Verify Mode switch in "SHUTDOWN". | | | |
| * | 12. **AND REPEAT** step 3.8 one time (Reset RPS) | N/A | | | |
| * | 13. **PLACE** Scram Reset switch to "GP 1/4". | Scram Reset Switch taken to GP 1/4 position. | | | |
| * | 14. **PLACE** Scram Reset switch to "GP 2/3". | Scram Reset Switch taken to GP 2/3 position. | | | |
| * | 15. **VERIFY** the eight (8) scram group white lights are Lit for Scram System A **AND** Scram System B on *0C603. | Recognize 1 light for RPS 'A' and 1 light for RPS 'B' did **not** light. | | | |
| | 16. **IF** the eight scram group white lights are **not** Lit after second reset attempt, **THEN PERFORM** the following: | N/A | | | |
| | 17. **VERIFY** blue lights on Full Core Display are not Lit, unless determined to be expected for clearance application | No HCUs have clearances applied per Initial Conditions. | | | |
| | 18. **IF** blue lights on Full Core Display are Lit **THEN PERFORM** the following: | N/A | | | |
| * | 18a. **INSERT** a full scram signal via Manual Scram Pushbuttons | Manual scram initiated using Manual Scram Pushbuttons | | | |
| * | 18b. **VERIFY** SDV vent **AND** drain valves close | SDV vent and drain valves verified closed. | | | |
| | **CUE: You have met the termination criteria for this JPM** | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** SCRAM RESET

**JPM Number:** LOJPM3001 **Revision Number:** 000

**Task Number and Title:** 2957010401, Reset a Scram

**K/A Number and Importance:** 295006 AA1.01 4.2/4.2

**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):** GP-11 Reactor Protection System – Scram reset Rev 29

**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 Reactor was scrammed for a planned shutdown.
2. The SDV has been surveyed by Radiation Protection
3. HEPA Filters and Protective Laundry Bags are not required to be installed on 253' Elevation Floor Drains
4. Flushing of the SDV per RT-6-047-600-1 has been determined not to be required after SCRAM reset
5. No HCUs currently have clearances applied
6. All Prerequisites have been met.

**INITIATING CUE:**

Shift supervision directs you to perform a Unit 1 RPS scram reset per GP-11.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## RCIC MANUAL SLOW START USING FIC-49-1R600

JPM NUMBER: LOJPM3015

REVISION NUMBER: 002

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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: 42
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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

RCIC 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.

## 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. Align RCIC for automatic operation.

## VI. INITIAL CONDITIONS:

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

## VII. INITIATING CUE STATEMENT (Describe the task clearly):

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

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

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 6. **PERFORM** the following to open HV-055-*F011, "HPCI/RCIC PP. Test Return to C.S.T. (CONDENSATE RETURN)". | N/A | | | |
| * | 6a. **PLACE** HS-55-*11 in OPEN at panel *0C647 | HS-55-111 placed in OPEN | | | |
| | 6b. **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) HS-55-111 placed in STOP. | | | |
| | 7. **START** *0P219, "Barometric Condenser Vacuum Pump" (VACUUM PUMP). | 10P219 Vacuum Pump is running. | | | |
| * | 8. **OPEN** HV-50-*F046, "RCIC Lube Oil Cooling Water Supply" (COOLING WATER). | HV-50-1F046 is open. | | | |
| | 9. **MONITOR** Suppression Pool temperature per ST-6-060-390-*, Suppression Pool Temperature Check. | N/A<br>Per Initial Conditions ST-6-060-390-1 is currently being performed by a second operator. | | | |
| | 10. **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.<br><br>**CUE:** If requested, inform operator Suppression Pool Cooling is not required. | N/A | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 11. **INFORM** HP of changing radiological conditions due to RCIC system start. | HP is informed of Unit 1 RCIC start. | | | |
| | 12. **PLACE** FIC-49-*R600, "RCIC Pump Discharge Flow Controller" (FL), in "MANUAL" **AND SET** to 0%. | FIC-49-1R600 M/A selector switch repositioned to "M".<br>Depress FIC-49-1R600 "CLOSE" detent pushbutton until controller output indicating 0%. | | | |
| * | 13. **OPEN** HV-50-*F045, "RCIC Steam Supply" (INLET). | HV-50-1F045 is OPEN. | | | |
| | 14. **PERFORM** the following to start RCIC turbine: | N/A | | | |
| * | 14a. 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. | | | |
| * | 14b. **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. 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. **IF** HV-49-*F022 will **not** open, **THEN PERFORM** the following:<br>**LOWER** output of FIC-49-*R600, "RCIC Pump Discharge Flow Controller" (FL), to approximately 2500 rpm.<br>**THROTTLE OPEN** HV-49-*F022. | N/A | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **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. Slowly **RAISE** output of FIC-49-*R600 to approximately 600 gpm **AND MATCH** setpoint to actual flow, **THEN PLACE** FIC-49-*R600 in "AUTO". | Depress FIC-49-1R600 "OPEN" detent to achieve 400 to 700 gpm as indicated on FI-49-1R600.<br>Flow controller is adjusted such that when the controller is switched to AUTO, flowrate changes less than 100 gpm.<br>M/A selector switch in AUTO. | | | |
| * | 17. **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. | Maintain 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** _____

## 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:** 002

**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. 42

**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. ST-6-060-390-1 is currently being performed by a second operator
3. S49.9.A, Routine Inspection of RCIC system has been performed
4. Vibration Monitoring System is in service
5. Steam Leak Detection System is not known to be INOP
6. An EO and RP Tech are on station and the Unit 1 RCIC room is posted
7. 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, to obtain discharge pressure at least 70 psig greater than reactor pressure, and a pump flowrate of 600 gpm with the controller in AUTO by the manual slow start method using FIC-49-1R600.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## SHUTDOWN COOLING FLOW ADJUSTMENTS

JPM Number: LOJPM3515

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 S51.8.B Rev: 81
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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 |
| | | |
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| | | |
| | | |

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

## IV. 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

## V. SIMULATOR SETUP:

**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.

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.
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 51-10181 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-43-1F023A, RECIRC SUCTION | HV-43-1F023B, RECIRC SUCTION |
| 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 A |
| HV-51-1F008, SHUTDOWN COOLING SUCTION (OUTBOARD) | HV-51-1F009, SHUTDOWN COOLING SUCTION (INBOARD) |
| HV-51-1F-15A, 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-51-1F006, SUCTION B | |

11. Prepare a copy of S51.8.B marked up completed to step 4.4.30

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%.

## VI. INITIAL CONDITIONS:

1. '1A' RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 125°F as read on XI-36-101 TE-51-1N004A
2. '0A' RHRSW pump is in service providing flow to '1A' RHR Heat Exchanger
3. Reactor level is being maintained at 83" 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

## VII. INITIATING CUE:

The CRS has directed you to continue performing S51.8.B at step number 4.4.30 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.**

## VIII. 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 4.4.30<br><br>**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 4.4.30. | Candidate obtains marked up copy of S51.8.B and determines additional cooling is required. | | | |
| | 2. [4.4.23.6]<br>**IF** additional cooling is required, **THEN** PERFORM the following: | N/A | | | |
| * | 2a. [4.4.23.6.a]<br>**OPEN** HV-C-51-1F048A, HEAT EXCH BYPASS. | **OPEN** HV-C-51-1F048A, red light lit | | | |
| * | 2b. [4.4.23.6.b]<br>**OPEN** HV-51-1F003A, OUTLET. | **OPEN** HV-51-1F003A, red light lit | | | |
| * | 2c. [4.4.23.6.c]<br>**CLOSE** HV-C-51-103A, POS. | **CLOSE** HV-C-51-103A, green light lit | | | |
| **EVALUATORS NOTE: THE <u>ALTERNATE PATH</u> PORTION OF THE JPM BEGINS IN THE NEXT STEP WITH THE FOLLOWING INDICATIONS:**<br>• **Insert MRM019A**, U1 RHR SW Return Hdr Rad Mon fails to 500 cpm<br>• The following steps include actions from the ARC-MCR 011-B-4 Annunciator (RHRSW Hi Radiation) | | | | | |
| | 3. Respond to alarm 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 C667 | Observe RHRSW rad recorder RR-0R615A and determine increasing trend | | | |
| | 5. **IF** an actual high radiation condition is suspected, **THEN:**<br><br>**CUE:** If asked, report Chemistry has confirmed that a hi rad condition exist. | Determine recorder response is due to an actual increasing radiation condition | | | |
| * | 5a. Trip associated RHR pump | '1A' RHR Pump handswitch taken to STOP (Green Flag) | | | |
| * | 5b. **AND** Isolate the shell side of HX by closing HV-51-1F047A or HV-51-182A with HS-51-182A (309/238' U/1) | HV-51-1F047A keylock switch taken to CLOSE, (Green light on, Red light off). | | | |
| * | 5c. **AND** HV-51-1F003A or HV-C-51-103A | HV-51-1F003A keylock switch taken to CLOSE, (Green light on, Red light off). | | | |
| | **CUE: You have met the termination criteria for this JPM** | | | | |

**JPM Completion Time** _____

## 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:** 000

**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 081

ARC-MCR-011-B4, 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:**_____

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**Evaluator's Name:** _____ (Print)

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

**LIMERICK GENERATING STATION**

**JOB PERFORMANCE MEASURE**

**INDIVIDUAL BRIEFING SHEET**

## IX. INITIAL CONDITIONS:

1. '1A' RHR has been placed in service for Shutdown Cooling with Reactor Coolant temperature at 125°F as read on XI-36-101 TE-51-1N004A
2. '0A' RHRSW pump is in service providing flow to '1A' RHR Heat Exchanger
3. Reactor level is being maintained at 83" 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

## X. INITIATING CUE:

The CRS has directed you to continue performing S51.8.B at step number 4.4.30 to provide additional cooling to reactor coolant

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## MAIN TURBINE BYPASS VALVE EXERCISING

JPM Number: LOJPM3083

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 ST-6-001-761-1 Rev: 28
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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
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## 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 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 LLOJPM0083 Rev. 3. Revised to new template and to align with latest procedure revision. | 10/31/16 |
| | | |
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| | | |
| | | |

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

## IV. TASK STANDARD:

Bypass Valve #1 tested successfully as directed by ST-6-001-761-1, Main Turbine Bypass Valve Exercising

## 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.

## VI. INITIAL CONDITIONS:

1. Unit 1 is at 99% power.
2. No other testing is in progress on Unit 1.
3. ST-6-001-761-1, Main Turbine Bypass Valve Exercising is complete up to section 4.3.

## VII. INITIATING CUE:

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

**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 M/U copy of ST-6-001-761-Main Turbine Bypass Valve Exercising<br><br>**CUE:** Candidate is given M/U copy of ST-6-001-761-Main Turbine Bypass Valve Exercising | Candidate obtains M/U copy of ST-6-001-761-Main Turbine Bypass Valve Exercising Test<br>. | | | |
| | 2. **RECORD** "AS FOUND" positions of all valves listed in Attachment 1, Independent Verification Of Restoration (IVOR). | Positions of all valves listed in Attachment 1 | | | |
| | 3. **VERIFY** all 9 BPV's are closed. | All 9 BPV's are closed | | | |
| | 4. **PERFORM** the following for Bypass Valve #1 | N/A | | | |
| | 4a. **SELECT** TESTS | TESTS selected | | | |
| | 4b. **SELECT** VALVE TESTS | VALVE TESTS selected | | | |
| | 4c. **SELECT** BPV TESTS | BPV TESTS selected | | | |
| * | 4d. **SELECT** #1 BPV for test at the VALVE TEST SELECTION window. | #1 BPV selected for test at the VALVE TEST SELECTION window. | | | |
| * | 4e. **VERIFY** the correct BPV selected for test is indicated on the test window | #1 BPV selected | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 4f. **DEPRESS** OPEN TREND button, **OR TREND** all 9 BPVs. | OPEN TREND button depressed | | | |
| * | 4g. **DEPRESS** START button to initiate opening test | START button depressed | | | |
| | 4h. **DEPRESS** PAUSE button if necessary, **AND THEN DEPRESS** CONTINUE button to resume test | N/A | | | |
| * | 4i. **VERIFY** #1 Bypass Valve opens **AND** recloses | Candidate verifies #1 Bypass Valve opens and recloses | | | |
| | 4j. **IF** #1 BPV remains opened and fails to reclose, **THEN SELECT** CANCEL **AND VERIFY** Bypass Valve Closes | Candidate verifies #1 Bypass Valve opens and recloses | | | |
| | 4k. **VERIFY** BYPASS VALVE OPEN annunciator on 106 MAIN STEAM clears. | 106 D-4, BYPASS VALVE OPEN, annunciator cleared. | | | |
| | 4l. **SAVE** the Trend file, if required<br><br>**CUE:** Saving the Trend file is not req'd | N/A | | | |
| | 4m. **IF** trend file saved, **THEN ENTER** a comment in the Additional Action/Test Comments section noting the file name **AND** location. | N/A | | | |
| | 4n. **WHEN** plant conditions are stable, **THEN PROCEED** to next BYPASS VALVE. | N/A | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** MAIN TURBINE BYPASS VALVE EXERCISING

**JPM Number:** LOJPM3083 **Revision Number:** 000

**Task Number and Title:** 2480090201 Perform Bypass Valve Exercise Test

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

**Safety Function (1-9)** 3 **(Reactor Pressure 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):** ST-6-001-761-Main Turbine Bypass Valve Exercising, Rev28

**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 at 99% power.
2. No other testing is in progress on Unit 1.
3. ST-6-001-761-1, Main Turbine Bypass Valve Exercising is complete up to section 4.3.

**INITIATING CUE:**

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

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## SUPPLY RECW TO THE DRYWELL COOLERS

JPM Number: LOJPM3028

REVISION NUMBER: 001

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 1. Task description and number, JPM description and number are identified.

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_____ 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 S13.6.D Rev: 15

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence

B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision

C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 |
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**# Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

RECW aligned to Drywell Chilled Water.

## V. SIMULATOR SETUP INSTRUCTIONS:

1. Reset simulator to IC-3
2. Trip '1B' Drywell Chiller
3. Place HS-87-115 and HS-87-116 in BYPASS
4. Trip '1A' RWCU Pump and close the HV-44-1F001 and HV-44-1F004 valves.
5. Build a trigger to toggle Remote Function **RPC306** to CLOSE.

## VI. INITIAL CONDITIONS:

1. A manual scram was inserted due to rising Drywell pressure.
2. The CRS has entered OT-101, and T-102.
3. Drywell pressure is 4 psig and steady.
4. Drywell temperature is 160°F and steady.
5. The Drywell Chilled Water isolation has been bypassed and Chilled Water inlet and outlet valves have been re-opened.
6. '1B' Drywell Chiller has tripped and '1A' Drywell Chiller is unable to be started.
7. Service Water is aligned to the RECW Heat Exchangers.
8. RWCU has been shutdown per S44.2.A, Reactor Water Cleanup Shutdown.
9. Administrative Clearances have been applied for valves in S13.6.D, section 4.2.4.
10. An EO is briefed and in the field with a copy of S13.6.D.

## VII. INITIATING CUE:

Shift Supervision has directed you to supply RECW to the 'A' Drywell Chilled Water 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.**

## VIII. 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.<br><br>**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. **SHUTDOWN** RWCU system per S44.2.A, Reactor Water Cleanup Shutdown. | RWCU shutdown per initial conditions | | | |
| * | 3. **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. **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. Block **CLOSE** the following sample point isolation valves<br>• HV 51 *F080A<br>• HV 51 *F080B<br>• HV 41 *F085<br>• HV 43 *F020<br>• 023-1246<br><br>**CUE:** After 1 minute<br>**report:** EO reports 023-1246 is closed and info tagged. | Candidate verifies Information tags on:<br>• HV 51 1F080A<br>• HV 51 1F080B<br>• HV 41 1F085<br>• HV 43 1F020<br><br>And directs EO to close and Info tag:<br>• 023-1246 | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **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. | | | | | |
| * | 6. **UNLOCK AND CLOSE** the following breakers:<br>• D*14-R-C-15 (124A)<br>• D*14-R-C-19 (124B)<br>• D*14-R-C-16 (125A)<br>• D*14-R-C-20 (125B)<br><br>**CUE:** After confirmation of 124A(B) and 125A(B) closed (Trigger 1 activated) report the following breakers closed:<br>• D114-R-C-15<br>• D114-R-C-19<br>• D114-R-C-16<br>• D114-R-C-20 | Candidate directs EO to close following breakers:<br>• D114-R-C-15<br>• D114-R-C-19<br>• D114-R-C-16<br>• D114-R-C-20 | | | |
| | 7. **ENSURE** indication for the valves is received in MCR | Indication (Green Lights) received for 124A(B) and 125A(B) | | | |
| | 8. **IF** required **THEN BYPASS** isolations per GP-8.5. | N/A | | | |
| * | 9. **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 in RE CLG WTR placed position for LOOP A. | | | |
| | 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** _____

## 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:** 001

**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:** _____

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_____

_____

**Evaluator's Name:** _____ (Print)

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

**LIMERICK GENERATING STATION**

**JOB PERFORMANCE MEASURE**

**INDIVIDUAL BRIEFING SHEET**

**INITIAL CONDITIONS:**

1. A manual scram was inserted due to rising Drywell pressure.
2. The CRS has entered OT-101, and T-102.
3. Drywell pressure is 4 psig and steady.
4. Drywell temperature is 160°F and steady.
5. The Drywell Chilled Water isolation has been bypassed and Chilled Water inlet and outlet valves have been re-opened.
6. '1B' Drywell Chiller has tripped and '1A' Drywell Chiller is unable to be started.
7. Service Water is aligned to the RECW Heat Exchangers.
8. RWCU has been shutdown per S44.2.A, Reactor Water Cleanup Shutdown.
9. Administrative Clearances have been applied for valves in S13.6.D, section 4.2.4.
10. An EO is briefed and in the field with a copy of S13.6.D.

**INITIATING CUE:**

Shift Supervision has directed you to supply RECW to the 'A' Drywell Chilled Water Loop per S13.6.D beginning at step 4.2.2.

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

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## DIESEL GENERATOR FAST START FROM THE MCR

JPM Number: LOJPM3130

REVISION NUMBER: 003

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | N/A EP Representative | N/A Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 ST-6-092-318-1 Rev: 55
Procedure S92.2.N Rev: 34
Procedure ARC MCR 123 D14 D-1 Rev: 0
Procedure ARC BOP 1DC514 D-1 Rev: 2
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. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence

B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision

C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
| | | | | | |
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## 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 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 LLOJPM0130 Rev. 2. Revised to new template and to align with latest procedure revision. Changed from D11 D/G to D14 D/G. | 10/17/13 |
| 001 | Revised to align with latest procedure revisions. Deleted Low Jacket Water Pressure indication from EO field report. Previous revision included both High Jacket Water Temperature indication as well as Low Jacket Water Pressure but did not include any indication of a leak. High Jacket Water Temperature alone is an appropriate reason to secure the Diesel Generator with actual temperature greater than the auto trip setpoint of 195 degrees F. | 1/17/13 |
| 002 | Revised to align with the latest procedure revisions. | 10/11/15 |
| 003 | Aligned to new JPM format and verified procedure revisions and changed alarm condition to Lube Oil Filter dP High. | 10/24/16 |

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

## IV. TASK STANDARD:

D14 DG is synchronized to the bus and secured from service following high Lube Oil Filter Differential Pressure.

## V. SIMULATOR SETUP INSTRUCTIONS:

1. This JPM can be run from any Simulator IC.
2. Build trigger to activate 30 seconds after D14 DG ≥ 200 KVAR to toggle Annunciator 123 D-1, D14 D-G TROUBLE, to ON.

   **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.

3. Start D14 EDG
4. Insert Remote RSW397, "ESW Loop B Service Water Isolated?"
5. Change Service Water Placards for 11-1013 and 11-2013 to indicate closed

## VI. INITIAL CONDITIONS:

1. ST-6-092-318-1, D14 Diesel Generator Fast Start Operability Test Run, is complete up to and including Step 4.5.14.
2. An Equipment Operator is standing by at D14 D/G to support Diesel Generator operation.

## VII. INITIATING CUES:

You are directed by the CRS to continue with ST-6-092-318-1, D14 Diesel Generator Fast Start Operability Test Run.

**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. Provide the candidate with a marked up copy of ST-6-092-318-1 completed up to and including Step 4.5.14 | N/A | | | |
| * | 2. **PLACE** 125-11807/SS, DIESEL GEN 14, SYNC, to "ON," using Sync Switch handle, at Panel 1DC661 | 125-11807/SS, DIESEL GEN 14, SYNC, placed to "ON," using Sync Switch handle, at Panel 1DC661 | | | |
| | 3. **VERIFY** Synchroscope is rotating with both lights Lit fully bright at 180° **AND not** Lit at 0° | Synchroscope S/EAS-4 verified rotating with both lights Lit fully bright at 180° **AND not** Lit at 0° | | | |
| | 4. **OBSERVE** change in D/G frequency by placing 165-DG501/CS, SPEED GOVERNOR, to "RAISE" **AND** to "LOWER | 165-DG501/CS rotated to "RAISE," F/DG501-2 (HERTZ) rises.<br>165-DG501/CS rotated to "LOWER," F/DG501-2 (HERTZ) lowers | | | |
| | 5. **OBSERVE** change in D/G voltage by placing 170-DG502/CS, VOLTAGE REGULATOR, to "RAISE," **AND** to "LOWER." | 170-DG502/CS rotated to "RAISE," V/1-EAS-4 (INCOMING) rises.<br>170-DG502/CS rotated to "LOWER," V/1-EAS-4 (INCOMING) lowers | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 6. **ADJUST** 165-DG501/CS, SPEED GOVERNOR, so Synchroscope is rotating slowly in FAST (CW) direction | 165-DG501/CS, SPEED GOVERNOR adjusted so that Synchroscope S/EAS-4 is rotating slowly in FAST direction | | | |
| * | 7. **ADJUST** 170-DG502/CS, VOLTAGE REGULATOR, so INCOMING Voltage is slightly higher than RUNNING Voltage | 170-DG502/CS, VOLTAGE REGULATOR, adjusted so that V/1-EAS-4 (INCOMING) indicates between 0 to 5 volts greater than V/R-EAS-4 | | | |
| * | 8. **WHEN** Synchroscope is within 3° before 12 o'clock position rotating slowly in FAST (CW) direction, **THEN CLOSE** 152-11807/CS GENERATOR Breaker, at Panel 1DC661 | D14 DG Output Breaker closed | | | |
| | 9. Immediately **RAISE** load to 200 to 300 KW by placing 165-DG501/CS, SPEED GOVERNOR, to "RAISE." | 165-DG501/CS, SPEED GOVERNOR, rotated to "RAISE until W/DG501-2 (AC KILOWATTS) indicates between 200 to 300 KW | | | |
| | 10. **RAISE** reactive load to 100 to 150 KVAR by placing 170-DG502/CS, VOLTAGE REGULATOR, to "RAISE." | 170-DG502/CS, VOLTAGE REGULATOR, rotated to "RAISE" until VAR/DG5012 (AC KILOVARS) indicates between 100 to 150 KVAR | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 11. **PLACE** 125-11807/SS, DIESEL GEN 14, SYNC, to "OFF" | 125-11807/SS, DIESEL GEN 14, SYNC, placed in "OFF." | | | |
| **EVALUATORS NOTE:** 30 seconds after D14 D/G Reactive Load exceeds 200 KVAR, "D14 D-G TROUBLE" will alarm and the alternate path will begin. | | | | | |
| | 12. **RESPOND** to ARC-MCR-123 D14 D1, "D14 D-G TROUBLE" | Annunciator reported to CRS | | | |
| | 12a. **REFER** to ARC-MCR-123 D14 D-1, D14 D-G TROUBLE | ARC-MCR-123 D14 D-1, "D14 D-G TROUBLE" referenced | | | |
| * | 12b. **DISPATCH** Equipment Operator to investigate Trouble Alarm<br><br>**CUE:** Equipment Operator reports local alarm is Lube Oil Filter Differential Pressure Hi, ARC-BOP-1DC514 D1. Current Filter dP Is 16 psid UP SLOW | **DISPATCH** Equipment Operator to investigate Trouble Alarm | | | |
| | 13. **DETERMINE** D14 DG should be shutdown with the given filter dP condition. | Review ARC and execute Operator Action #2, "IF engine is under test, THEN shutdown engine AND investigate cause of high filter dP." | | | |
| **EVALUATORS NOTE**: The following steps may be performed from memory or by performing S92.2.N, Shutdown of Diesel Generators, Section 4.2, Rapid Shutdown Due To Alarm Or Abnormal Condition. | | | | | |
| | 13a. **PLACE** Diesel Generator Breaker to "TRIP" **AND** "PULL-TO-LOCK" | Diesel Generator Breaker placed to "TRIP" **AND** "PULL-TO-LOCK" | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 13b. **PLACE** Diesel Generator Control Switch 101-DG501/CS to "STOP" **AND** "PULL-TO-LOCK" | Diesel Generator Control Switch 101-DG501/CS placed to "STOP" **AND** "PULL-TO-LOCK" | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:** _____

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

**JPM Title:** DIESEL GENERATOR FAST START FROM THE MCR

**JPM Number:** LOJPM3130 **Revision Number:** 003

**Task Number and Title:** TPO-2640020101 Manually Startup, Load and monitor a Diesel Generator

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

**Safety Function (1-9)** 6 **(Electrical)**

**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):** ST-6-092-318-1 D14 Diesel Generator Fast Start Operability Test Run, Rev. 55
S92.2.N, Shutdown of Diesel Generators Rev. 34
ARC MCR 123 D14 D-1, D14 D-G Trouble, Rev 0
ARC BOP 1DC514 D-1, Lube Oil Filter Differential Pressure High, 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. ST-6-092-318-1, D14 Diesel Generator Fast Start Operability Test Run, is complete up to and including Step 4.5.14.
2. An Equipment Operator is standing by at D14 DG to support Diesel Generator operation.

**INITIATING CUE STATEMENT:**

You are directed by the CRS to continue with ST-6-092-318-1, D14 Diesel Generator Fast Start Operability Test Run.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## PLACING SAFEGUARD PIPING FILL SYSTEM IN SERVICE

JPM Number: LOJPM3118

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 S52.1.C Rev: 11

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 | 08/15/16 |
| | | |
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| | | |

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

## IV. TASK STANDARD:

Safeguard Piping Fill System in service with both Fill Pumps and feedwater lines filled

## V. SIMULATOR SETUP

1. Reset the simulator to an IC that does not require feedwater in service, or an 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. Initiate Loss Of Offsite Power **MED261**

3. Ensure all Diesels are running

## VI. INITIAL CONDITIONS:

1. A LOCA/LOOP condition occurred 30 minutes ago.
2. SE-10, LOCA is in progress
3. S52.1.C prerequisites have been performed

## VII. INITIATING CUE:

Shift Supervision directs you to place the Safeguard Piping Fill System in service per S52.1.C, "Operation of Safeguard Piping Fill System" to fill the Feedwater Lines.

**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 M/U S52.1.C, Operation of Safeguard Piping Fill System.<br><br>**CUE:** Candidate is given a copy of S52.1.C, Operation of Safeguard Piping Fill System with prerequisites completed. | Candidate reviews M/U copy of S52.1.C, Operation of Safeguard Piping Fill System. | | | |
| | 2. **VERIFY** all prerequisites satisfied | Prerequisites verified complete. | | | |
| | 3. **VERIFY** procedure being performed on correct unit/train | Candidate verifies procedure being performed on correct unit/train | | | |
| | 4. **IF** required **PERFORM** S52.1.C (COL), Equipment Alignment For Safeguard Fill System For Operation.<br><br>**CUE:** S52.1.C(COL) is not required | N/A | | | |
| * | 5. **ENSURE** the following Core Spray Pump Supp Pool Suct valves are open:<br>• HV-52-1F001A<br>• HV-52-1F001B<br>• HV-52-1F001C<br>• HV-52-1F001D | Core Spray Pump Supp Pool Suction valves HV-52-1F001A thru 1F001D are opened. (Red Light) | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 6. **START** the following pumps. | N/A | | | |
| * | 6a. 1AP256, "Fill Pump A" | Fill Pump A started (Red Light) | | | |
| * | 6b. 1BP256, "Fill Pump B" | Fill Pump B started (Red Light) | | | |
| * | 7. **IF** system is required to fill the feedwater lines, **THEN OPEN** the following valves; as appropriate:<br>• HV-41-130A<br>• HV-41-130B<br>• HV-41-133A<br>• HV-41-133B | Safeguard Piping PCIVs open<br>• HV-41-130A<br>• HV-41-130B<br>• HV-41-133A<br>• HV-41-133B | | | |
| | **CUE: You have met the termination criteria for this JPM** | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:** _____.

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

**JPM Title:** PLACING SAFEGUARD PIPING FILL SYSTEM IN SERVICE

**JPM Number:** LOJPM3118 **Revision Number:** 000

**Task Number and Title:** 2000950501 (SE-10) Actions After a LOCA Signal

**K/A Number and Importance:** 290001 K3.01 4.0/4.1

**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):** S52.1.C, Operation of Safeguard Piping Fill System Rev 011

**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 LOCA/LOOP condition occurred 30 minutes ago.
2. SE-10, LOCA is in progress
3. S52.1.C prerequisites have been performed

**INITIATING CUE:**

Shift Supervision directs you to place the Safeguard Piping Fill System in service per S52.1.C, "Operation of Safeguard Piping Fill System" to fill the Feedwater Lines.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## T-239 DEFEATING HIGH RPV LEVEL INTERLOCKS

JPM Number: LOJPM2273

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 T-239 U/1 | Rev: 0 |
| Procedure T-239 U/2 | Rev: 0 |
| 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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 | 11/01/16 |
| | | |
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**# Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

The high RPV level interlocks defeated for the Unit ____ 'B' RFPT, and the HPCI system per T-239, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks, completed sat.

## V. SIMULATOR SETUP

1. None

## VI. INITIAL CONDITIONS:

1. Unit ___RPV level cannot be determined
2. RPV flooding is required

## VII. INITIATING CUE:

Shift Supervision directs you to defeat the high RPV level interlocks on Unit ___ for the '__B' RFPT, and the HPCI system per T-239, "Defeating RFPT, HPCI and RCIC High RPV Level Interlocks."

**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 |
|---|---|---|---|---|
| *For In-Plant T-200 JPMs, include the following:*<br>**NOTE:**<br>**IF** this JPM is the ***first*** of multiple T-200 series JPMs being performed by a single candidate<br>**THEN** steps #1 and #2 apply.<br>**OTHERWISE** mark steps #1 and #2 as N/A<br>**AND** provide the following to the candidate :<br>a. **INITIATING CUE(S)**<br>b. **CUE:** "You are now in possession of the T-239 equipment container. It contains all tools and equipment required by the procedure. You are to simulate their use during performance of the procedure."<br>c. **PROCEDURE COPY** | | | | |
| 1. Obtain current revision of T-239, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks for Unit # ____.<br><br>**CUE:** Candidate is given a copy of T-239, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks, when knowledge of the correct location of procedure is demonstrated. | Candidate demonstrates ability (actual or discuss) to locate T-239, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks. | | | |
| 2. Obtain required tools.<br>• Insulated screwdriver<br>• Holding screwdriver<br>• Flashlight<br>• Roll of electrical tape<br><br>**CUE:** You have tools identified. | Tools obtained. | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 3. **PERFORM** the following at panel *C612, Bay A (AER) to defeat high RPV level trip of "*B" RFPT (ATTACHMENT 1).<br>• **LIFT**<br>• **AND TAPE** lead connected to FFF5-3<br><br>**CUE:** Lead from FFF5-3 lifted and tapped. | Lead from FFF5-3 lifted and tapped. | | | |
| | 4. **WHEN** the respective RFPT high RPV level trip(s) defeated is complete, **THEN NOTIFY** Main Control Room. | MCR notified the '*B' RFPT high level trip defeated per T-239. | | | |
| * | 5. **PERFORM** the following at panel *C620, (AER) (ATTACHMENT 2).<br>• **LIFT**<br>• **AND TAPE** lead connected to FFF5-2<br><br>**CUE:** Lead from FFF5-2 lifted and tapped. | Lead from FFF5-2 lifted and tapped. | | | |
| | 6. At Panel *0C647, **PRESS** E41A-S25, "RPV High Water Level" (Rx LEVEL HIGH RESET) Reset Pushbutton **AND VERIFY** white Rx LEVEL HIGH RESET light **not** Lit.<br><br>**CUE:** PRO reports "E41A-S25, RPV High Water Level" reset pushbutton and white Rx LEVEL HIGH RESET light **not** Lit. | E41A-S25, "RPV High Water Level" Reset Pushbutton depressed and white Rx LEVEL HIGH RESET light **not** Lit. | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 7. At Panel *0C647, **VERIFY** HPCI TURB TRIP ISOL ENERGIZED DS37 status light **not** lit<br><br>**CUE:** PRO reports "HPCI TURB TRIP ISOL ENERGIZED DS37 status light **not** lit" | DS37 status light **not** lit at panel *0C647 | | | |
| | 8. **WHEN** the HPCI high RPV level trip is defeat is complete, **THEN** NOTIFY Main Control Room. | MCR notified HPCI high level trip defeated per T-239 | | | |
| **CUE:** You have met the termination criteria for this JPM | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:** _____

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

**JPM Title:** T-239 DEFEATING HIGH RPV LEVEL INTERLOCKS

**JPM Number:** LOJPM2273 **Revision Number:** 000

**Task Number and Title:** 2001340401 (T-239) Defeat the RFP, HPCI, RCIC high level trips

**K/A Number and Importance:** 259002 A4.11 3.5/3.3

**Safety Function (1-9)** 2 **(Reactor Water Inventory Control)**

**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-239 U/1, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks Rev 0
T-239 U/2, Defeating RFPT, HPCI and RCIC High RPV Level Interlocks Rev 0

**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 ___RPV level cannot be determined
2. RPV flooding is required

**INITIATING CUE:**

Shift Supervision directs you to defeat the high RPV level interlocks on Unit ___ for the '__B' RFPT, and the HPCI system per T-239, "Defeating RFPT, HPCI and RCIC High RPV Level Interlocks."

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## RESET RDCS

JPM Number: LOJPM2119

REVISION NUMBER: 000

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 S73.0.F Rev: 17

Procedure S73.0.E Rev: 18

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 LOJPM | 08/10/16 |
| | | |
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# **Date of Revision** - refers to date revision was released for approval

## IV. TASK STANDARD:

Unit ___Control Rod 18-31 bypassed from RMCS, and RDCS is reset

## V. SIMULATOR SETUP

1. None

## VI. INITIAL CONDITIONS:

1. Unit ___Control Rod 18-31 has drifted out
2. Unit ___Control Rod 18-31 was fully inserted, and isolated.
3. Tech Spec 3.1.3.1 has been referenced
4. Unit ___Control Rod 18-31 was declared INOP
5. 'RDCS INOP' alarm on ARC MCR *08 E-4 has annunciated
6. The LED for Unit ___HCU 18-31 on The Rod Drive Control System Analyzer - Fault Location Map is lit

## VII. INITIATING CUE:

Shift supervision directs you to reset Unit ___RDCS in accordance with S73.0.F, Operation of the Rod Drive Control System.

**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 S73.0.F, Operation Of The Rod Drive Control System.<br><br>**CUE:** Candidate is given a copy of S73.0.F, Operation Of The Rod Drive Control System when knowledge of the correct location of procedure is demonstrated. | Candidate demonstrates ability (actual or discuss) to locate S73.0.F | | | |
| | 2. Reference section 4.3 'RDCS RESET' of S73.0.F, Operation Of The Rod Drive Control System. | Section 4.3 'RDCS RESET' of S73.0.F referenced | | | |
| | 3. *[S73.0.F 4.3.1]* **IF** immediate reset of RDCS is required as determined by Shift Supervision **THEN** MARK N/A for steps 4.3.2 and 4.3.10<br><br>**CUE:** Immediate reset of RDCS is required | N/A | | | |
| | 4. *[S73.0.F 4.3.3]* **ENSURE** RO has logged RDCS INOP<br><br>**CUE:** RO has logged RDCS INOP | N/A | | | |
| | *5. [S73.0.F 4.3.4]* **OBTAIN** CRS permission to reset RDCS<br><br>**CUE:** Permission given in Initiating Cue. | N/A (given in Initiating Cue) | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 6. *[S73.0.F 4.3.5]* **DEPRESS** RESET for at least two seconds | RESET depressed for at least two seconds | | | |
| **Evaluator Note:** Alternate Path begins with the next step. | | | | | |
| | 7. *[S73.0.F 4.3.6]* **IF** RDCS INOPERATIVE will not clear THEN **PERFORM** the following:<br><br>**CUE:** RDCS Inoperative LED remains lit and the LED for HCU 18-31 on The Fault Location Map remains lit | Candidate verifies RDCS inoperative LED remains lit | | | |
| | 7a. *[S73.0.F 4.3.6.1]* **CONTACT** I&C for troubleshooting | I&C contacted | | | |
| | 7b. *[S73.0.F 4.3.6.2]* **CONSIDER** performing S73.0.E, Bypassing/ Un-bypassing a Control Rod from the Reactor Manual Control System.<br><br>**CUE:** As SSVN, request candidates recommendation on how to proceed, then agree with their recommendation. | Candidate recommends bypassing Control Rod 18-31 from the Reactor Manual Control System. | | | |
| | 8. Candidate obtains 73.0.E, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System<br><br>**CUE:** Candidate is given a copy of S73.0.E, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System. | Candidate obtains copy of S73.0.E. | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATORS NOTE:** Per S73.0.E, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System, Bypassed Rod Identity switches are labeled X4, X3, X2, X1, X0 and Y4, Y3, Y2, Y1, Y0. A switch in UP position corresponds to '1', and DOWN position corresponds to '0' | | | | | |
| * | 9. *[S73.0.E 4.2.1]* **REFER** TO S73.0.E, Attachment 1 **AND PLACE** BYPASSED ROD INENTITY switches in position corresponding to binary coordinates for Control Rod 18-31 at *0C616.<br><br>**CUE:** Switches X2, X1, Y3, Y0 are in UP position, and remaining switches are in the down position. | Binary coordinates for control rod 18-31 identified as:<br>X = 00110 Y = 01001<br>Switches aligned:<br>X4, down Y4, down<br>X3, down Y3, up<br>X2, up Y2, down<br>X1, up Y1, down<br>X0, down Y0, up | | | |
| | 10. *[S73.0.E 4.2.2]* OBTAIN SSV Permission to bypass the Rod<br><br>**CUE:** SSV has granted permission for Control Rod Bypass. | SSV permission requested to bypass Control Rod 18-31. | | | |
| * | 11. *[S73.0.E 4.2.3]* **PLACE** BYPASSED Switch in UP in position at *0C616 panel.<br><br>**CUE:** Switch is in the Up Position | BYPASSED Switch in UP position | | | |
| * | 12. *[S73.0.E 4.2.4]* **IF** RDCS is INOP, as indicated by "INOPERABLE" LED Lit on RDCS Status section at *0C616 **THEN DEPRESS** "RESET" pushbutton in RDCS STATUS section of analyzer card for several seconds **AND RELEASE**.<br><br>**CUE:** RDCS INOP LED and HCU 18-31 LED light both extinguish | "RESET" pushbutton in RDCS STATUS section of analyzer card for several seconds **AND RELEASE**. | | | |

| | ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 13. *[S73.0.E 4.2.5]* **VERIFY** ROD BYPASS light Lit on the RDCS STATUS section of the ROD SELECT MODULE at *0C603 panel<br><br>**CUE:** The RO reports, "The ROD BYPASS light is lit on the *0C603 "Reactor Control Console." | Request from MCR status of ROD BYPASS light Lit on the RDCS STATUS section of the ROD SELECT MODULE at *0C603 panel | | | |
| | 14. *[S73.0.E 4.2.5]* **VERIFY** RDCS INOPERATIVE annunciator clear on *08 REACTOR (E-4) | Candidate calls MCR to verify RDCS INOPERATIVE annunciator clear on *08 REACTOR (E-4) | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** RESET RDCS

**JPM Number:** LOJPM2119 **Revision Number:** 000

**Task Number and Title:** 2140050401, Bypass A ROD From RMCS

**K/A Number and Importance:** 201002 K3.01 3.4/3.4

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

**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):** S73.0.F, Operation Of The Rod Drive Control System, Rev 17
S73.0.E, Bypassing/Unbypassing a Control Rod from the Reactor Manual Control System. Rev 18
ARC-MCR-*08 E-4, RDCS INOPERATIVE

**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 ___Control Rod 18-31 has drifted out
2. Unit ___Control Rod 18-31 was fully inserted, and isolated.
3. Tech Spec 3.1.3.1 has been referenced
4. Unit ___Control Rod 18-31 was declared INOP
5. 'RDCS INOP' alarm on ARC MCR *08 E-4 has annunciated
6. The LED for Unit ___HCU 18-31 on The Rod Drive Control System Analyzer - Fault Location Map is lit

**INITIATING CUE:**

Shift supervision directs you to reset Unit ___RDCS in accordance with S73.0.F, Operation of the Rod Drive Control System.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## MANUALLY INITIATE A CONTROL ROOM CHLORINE / TOXIC CHEMICAL ISOLATION

JPM Number: LOJPM3023

REVISION NUMBER: 001

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 S78.8.A Rev: 17

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 LLOJPM0023 Rev. 10. Revised to new template and to align with latest procedure revision. | 11/04/14 |
| 001 | This JPM revised to new JPM template and procedure changes | 10/28/16 |
| | | |
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**# Date of Revision** - refers to date revision was released for approval

## IV. SIMULATOR SETUP INSTRUCTIONS:

1. Reset the Simulator to IC-3
2. Ensure the "B" CREFAS fan switch is in "AUTO" and the "A" CREFAS fan switch is in "STBY"
3. Ensure the "A" Control Room Supply and Return fans are in "RUN," and the "B" Control Room Supply and Return fans are in "AUTO."

## V. TASK STANDARD:

The Main Control Room HVAC System is operating in the Chlorine/Toxic Chemical Isolation mode with a chlorine/toxic chemical isolation signal present on "B" and "D" isolation channels and no radiation isolation signals present.

## VI. INITIAL CONDITIONS:

1. Main Control Room HVAC System is in the normal operating mode per Section 4.2 of S78.1.A.
2. The Main Control Room Emergency Fresh Air Supply System is lined up for automatic operation per S78.1.B.
3. All prerequisites of S78.8.A are met.

## VII. INITIATING CUE:

You are directed by Shift Supervision to manually initiate a Main Control Room HVAC Chlorine/Toxic Chemical Isolation for maintenance using the "B" subsystem only per S78.8.A, Section 4.5.

**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 copy of S78.8.A, Manual Initiation of Control Room Radiation or Chlorine/Toxic Chemical Isolation. | N/A | | | |
| | 2. **IF** no chemical isolation has been initiated, **THEN ENSURE** alignment as follows: | N/A | | | |
| | 2a. HS-78-010B, " "B" CONT RM EMERG FRESH AIR FAN CONT 0BV127" in AUTO | HS-78-010B, verified in AUTO | | | |
| | 2b. HS-78-010A, " "A" CONT RM EMERG FRESH AIR FAN 0AV127" in STANDBY | HS-78-010A, verified in STANDBY | | | |
| * | 3. **PLACE** Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to RESET. | Reset Keylock switch HS-78-017B (RESET B) is placed in RESET at Panel 00C681. | | | |
| * | 4. **PLACE** Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to RESET. | Reset Keylock switch HS-78-017D (RESET D) is placed in RESET at Panel 00C681. | | | |
| * | 5. **PLACE** Control Room Isolation Valve Trip Switch HSS-78-017B (TRIP B) to CL2. | Switch HSS-78-017B (TRIP B) arming collar is rotated to CL2 at Panel 00C681. | | | |
| * | 6. **PLACE** Control Room Isolation Valve Trip Switch HSS-78-017D (TRIP D) to $CL_2$. | Switch HSS-78-017D (TRIP D) arming collar is rotated to $CL_2$ at Panel 00C681. | | | |

| | *ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| * | 7. **PLACE** Control Room Isolation Valve Reset Keylock switch HS-78-017B (RESET B) to AUTO. | Reset Keylock switch HS-78-017B (RESET B) is placed in AUTO at Panel 00C681. | | | |
| * | 8. **PLACE** Control Room Isolation Valve Reset Keylock switch HS-78-017D (RESET D) to AUTO. | Reset Keylock switch HS-78-017D (RESET D) is placed in AUTO at Panel 00C681. | | | |
| * | 9. **DEPRESS AND RELEASE** pushbutton portion of Trip Switch HSS-78-017B (TRIP B). | Trip Switch HSS-78-017B (TRIP B) pushbutton is depressed and released at Panel 00C681. | | | |
| * | 10. **DEPRESS AND RELEASE** pushbutton portion of Trip Switch HSS-78-017D (TRIP D). | Trip Switch HSS-78-017D (TRIP D) pushbutton is depressed and released at Panel 00C681. | | | |
| **EVALUATORS NOTE:** [4.5.6] CREFAS run time data will be logged by another operator | | | | | |
| | 11. **RECORD** CREFAS run time in appropriate log.<br><br>**CUE:** Another Operator will log the CREFAS Run time data | N/A | | | |
| | 12. **ENSURE** "CHLOR ISLN CHAN B" AND "CHLOR ISLN CHAN D" amber lights are lit. | "CHLOR ISLN CHAN B" AND "CHLOR ISLN CHAN D" amber lights are lit on 00C681. | | | |
| | 13. **VERIFY** "CONTROL ROOM CHLORINE ISOLATION INITIATED" annunciator alarmed at 002 VENT A-2. | Annunciator window A-2, "CONTROL ROOM CHLORINE ISOLATION INITIATED," on 002 VENT, is in alarm. | | | |

| | *ELEMENT | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| | 14. **VERIFY** "CONTROL ROOM ISOLATION NOT COMPLETE" annunciator is **not** alarmed at 002 VENT A-3, after 25 seconds. | Annunciator window A-3, "CONTROL ROOM ISOLATION NOT COMPLETE," on 002 VENT, is not alarmed 25 seconds after the isolation is initiated. | | | |
| | 15. **ENSURE** 0B(A)V127, EMERGENCY AIR FAN B(A), is running. | 0BV127, EMERGENCY AIR FAN B, is running. | | | |
| | 16. **ENSURE** 0A(B)V116, CONTROL ROOM AIR SUPPLY FAN A(B), running. | 0AV116, SUPPLY FAN A, is running. | | | |
| | 17. **ENSURE** 0A(B)V121, CONTROL ROOM AIR RETURN FAN A(B), running. | 0AV121, RETURN FAN A, is running. | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____.

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

**JPM Title:** MANUALLY INITIATE A CONTROL ROOM CHLORINE/TOXIC CHEMICAL ISOLATION

**JPM Number:** LOJPM3023 **Revision Number:** 001

**Task Number and Title:** TPO-2881030401 Manually Initiate Control Room Radiation or Chlorine/Toxic Chemical Isolation

**K/A Number and Importance:** 290003 A3.01 3.3/3.5

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

**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):** S78.8.A, "Manual Initiation of Control Room Radiation or Chlorine / Toxic Chemical Isolation", Rev. 17

**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:**_____

_____

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_____

**Evaluator's Name:** _____ (Print)

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

**LIMERICK GENERATING STATION**

**JOB PERFORMANCE MEASURE**

**INDIVIDUAL BRIEFING SHEET**

**INITIAL CONDITIONS:**

1. Main Control Room HVAC System is in the normal operating mode per Section 4.2 of S78.1.A.
2. The Main Control Room Emergency Fresh Air Supply System is lined up for automatic operation per S78.1.B.
3. All prerequisites of S78.8.A are met.

**INITIATING CUE:**

You are directed by Shift Supervision to manually initiate a Main Control Room HVAC Chlorine/Toxic Chemical Isolation for maintenance using the "B" subsystem only per S78.8.A, Section 4.5. maintenance using the "B" subsystem only per S78.8.A, Section 4.5.

# LIMERICK GENERATING STATION
# JOB PERFORMANCE MEASURE

## START ESW PUMP PER SE-1

JPM Number: LOJPM2258

REVISION NUMBER: 002

DATE: _____

| | | |
|---|---|---|
| Developed By: | _____ Instructor | _____ Date |
| Validated By: | _____ SME or Instructor | _____ Date |
| Reviewed By: | _____ Operations Representative | _____ Date |
| Reviewed By: | _____ EP Representative | _____ Date |
| Approved By: | _____ Training Department | _____ 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.

_____ 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 SE-1 Rev: 73

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

## II. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence
B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision
C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | ILT/LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## 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 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 LLOJPM0258 Rev. 4. Revised to new template and to align with latest procedure revision. This revision changes this JPM to an Alternate Path. | 10/7/13 |
| 001 | Revised to new template and aligned for Equipment Operator use | 10/01/15 |
| 002 | This SEG is revised to new 3/16 SEG format template, including any procedure revisions | 10/24/16 |
| | | |
| | | |
| | | |
| | | |

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

## IV. TASK STANDARD:

'0C' ESW Pump Breaker closed from controls at D23 Switchgear.

## V. INITIAL CONDITIONS:

1. The Main Control Room has been evacuated.
2. SE-1 has been entered and Remote Shutdown Panel transfer switches have been positioned to Emergency
3. D12, D13, D21, D22, and D23 Safeguard Buses are energized from their normal sources.
4. D11 Safeguard Bus is being powered from the D11 Diesel Generator.
5. An Equipment Operator performing running checks for D11 D/G reports that there is no indication of ESW flow through the D11 D/G Heat Exchangers.

## VI. INITIATING CUE:

Shift Supervision has directed you to start '0A' ESW Pump per section 4.5 of SE-1 beginning at step 4.5.3.

**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 SE-1.<br><br>**CUE:** When candidate demonstrates the ability to obtain current revision of procedure, provide a copy of SE-1. | Current revision of SE-1 obtained. | | | |
| | 2. **IF** 'A' ESW Pump is **not** running, **THEN** perform the following | N/A | | | |
| **EVALUATOR NOTE:** Alternate path starts here. 'A' ESW Pump will fail to start from RSP handswitch. | | | | | |
| | 2a. **START** 0AP548, "A" ESW Pump" (PUMP A). | Candidate simulates placing 'A' ESW Pump switch in START. | | | |
| | 2b. **VERIFY** 0AP548, PUMP A, running.<br><br>**CUE:** When 'A' ESW Pump control switch is placed in START, inform the candidate: *"The green light above the switch is on, red light is off."* | Candidate recognizes pump is not running.<br><br>**Note:** Candidate may place handswitch back in Normal after Stop. This is not critical. | | | |
| | 3. **IF** 'A' ESW will not function from the RSP, **THEN PERFORM** the following to start 'C' ESW Pump from D23 Switchgear: | N/A | | | |
| | 3a. **PLACE** 152-11708/CST, "Test Switch" ESW C Pump 0CP548 to "PULL TO LOCK" | Candidate simulates placing 152-11708/CST in PULL TO LOCK | | | |

| ELEMENT | | STANDARD | SAT | UNSAT | COMMENT NUMBER |
|---|---|---|---|---|---|
| **EVALUATOR NOTE:** The GE-75 key required for transfer switch HSS-11-095 is an alternate remote shutdown key on remote shutdown key ring obtained in SE-1. | | | | | |
| * | 3b. **PLACE** HSS-11-095, "Handswitch For MCR or Local Control of '0C' ESW Pump," to "EMERGENCY" | Candidate simulates placing HSS-11-095, "Transfer Switch" to "EMERGENCY" | | | |
| * | 3c. **PLACE** 152-11708/CST, to "CLOSE"<br><br>**CUE:** "Breaker closing sound can be heard, the red light is lit, the green light is out and ammeter indicates starting current value decaying to running value." | Candidate simulates placing 152-11708/CST, to "CLOSE"<br><br>Candidate recognizes that '0C' ESW Pump feeder breaker is closed. | | | |
| **CUE: You have met the termination criteria for this JPM** | | | | | |

**JPM Completion Time** _____

## JPM SUMMARY

**Operator's Name:**_____

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

**JPM Title:** START ESW PUMP PER SE-1

**JPM Number:** LOJPM2258 **Revision Number:** 002

**Task Number and Title:** 2000410501, (SE-1) Control Room Abandonment (RO)
2000160404, Manual S/U of Pumps from Emergency Switchgear Room (EO)

**K/A Number and Importance:** 295016 AA1.04 3.1/3.2

**Safety Function (1-9)** 8 **(Plant Service Systems)**

**Admin Category (A1-4)** _____

**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):** SE-1, Remote Shutdown, Rev. 73

**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. The Main Control Room has been evacuated.
2. SE-1 has been entered and Remote Shutdown Panel transfer switches have been positioned to Emergency.
3. D12, D13, D21, D22, and D23 Safeguard Buses are energized from their normal sources.
4. D11 Safeguard Bus is being powered from the D11 Diesel Generator.
5. An Equipment Operator performing running checks for D11 D/G reports that there is no indication of ESW flow through the D11 D/G Heat Exchangers.

**INITIATING CUE:**

Shift Supervision has directed you to start '0A' ESW Pump per section 4.5 of SE-1 beginning at step 4.5.3.

| | | | |
|---|---|---|---|
| CODE NO: | SEG-5006E | REV NO: | 000 |
| AUTHOR: | T. A. BYERS | APPROXIMATE RUN TIME: | 70 minutes |
| TYPE: | SIMULATOR EVALUATION GUIDE | EFFECTIVE DATE: | |
| PROGRAM: | LICENSED OPERATOR TRAINING | | |
| COURSE: | LICENSED OPERATOR (REQUALIFICATION/INITIAL) TRAINING | | |
| TITLE: | Simulator Evaluation Guide for Individual and Crew Performance | | |

Prepared By:_____ Date:_____
Training Instructor - Signature

Reviewed By:_____ Date:_____
Program (ILT or LOR) Lead - Signature

Reviewed By:_____ Date:_____
EP (as appropriate) - Signature

Reviewed By:_____ Date:_____
RE (as appropriate) - Signature

Approval: _____ Date:_____
OPS Manager - Signature

Approved For Use:_____ Date:_____
Training Manager - Signature

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

Facility: Limerick 1 & 2 Scenario No.: SEG-5006E Rev 0 Op-Test No.: 1 .

Examiners: _____ Operators: _____

_____ _____

_____ _____

_____ _____

**Initial Conditions:**

Unit 1 is at 100 % power. Unit 2 is at 100 % power.

**Turnover:**

Maintain 100% Reactor power

Place '1C' SBLC Pump in Automatic Injection Mode per S48.1.A, Standby Liquid Control System Set-Up For Normal Operation, step 4.7 in preparation of a 1B SLC System Outage Window.

| Event No. | Malfunction Number | Event Type* | Event Description |
|---|---|---|---|
| 1. | MSL198B<br>C41-S1C | N-PRO<br>TS-SRO | Align '1C' SLC Pump for automatic operation |
| 2. | MPR020C | C-RO | #3 APRM fails upscale **(Malfunction)** |
| 3. | MRR430A<br>MRD024 | R-RO<br>C-PRO<br>TS-SRO | '1A' Reactor Recirc Pump shaft seizure resulting in Recirc Pump trip **(Abnormal)** |
| 4. | MFH563C | C-PRO | Low Pressure FWH Level Transient **(Abnormal)** |
| 5. | MFH116C<br>MFH016C<br>MPR003A | C-RO | '6C' FWH Isolation **(Abnormal)**<br>Core Power Oscillations |
| 6. | MFW252A<br>MRR440A | M-ALL | LOCA Inside Containment **(T-111)** |
| 7. | MRC457B | C-PRO | RCIC controller in AUTO failure **(Malfunction)** |
| 8. | MAD148D | C-PRO | '1M' SRV fails to open **(Malfunction)** |

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

# I. QUANTITATIVE ATTRIBUTES

A. ILT

| Target Quantitative Attributes (Per Scenario; See ES-301Section D.5.d) | ACTUAL NUMBER |
|---|---|
| 1. Malfunctions after EOP entry (1-2) | 2 |
| 2. Abnormal events (2-4) | 2 |
| 3. Major transients (1–2) | 1 |
| 4. EOPs entered/requiring substantive actions (1–2) | 2 |
| 5. EOP contingencies requiring substantive actions (0-2) | 2 |
| 6. EOP based Critical tasks (2–3) | 4 |

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

**II. PURPOSE:** Systematically evaluate individual and team performance to identify areas for improvement. Critical Tasks and Assessment Items from this evaluation guide are to be used to assess crew and individual performance and as input into a 4.0 Crew Critique Process.

## III. SIMULATOR EVALUATION GUIDE OBJECTIVES:

A. The following evaluation objectives apply to the Crew (C), Shift Manager (SM), Control Room Supervisor (S), Unit Reactor Operator / Plant Reactor Operator (R), or Incident Assessor / Shift Technical Advisor (A).

1. The general condition for each of the evaluation objectives will be "Given the plant conditions and sequence of events in the Simulator Evaluation Guide (SEG)".
2. The general acceptable evaluation objective criteria for each of the evaluation objectives will be "To perform effectively as an individual and contribute to successful crew performance in accordance with appropriate reference plant procedures and Operations Expectations, Fundamentals and Strategies".
3. Specific UNSAT evaluation objective criteria will be consistent with TQ-AA-155, Conduct of Simulator Training and Evaluation with applicable forms and job aids.
4. During performance of this Simulator Evaluation Guide, the individuals and crew should satisfactorily demonstrate the following overall procedure and plant control objectives:
   - Direct and perform actions per OT-104, Unexpected, Unexplained Positive or Negative Reactivity Insertion
   - Direct and perform actions per OT-112, Unexplained/Unexpected Change in Core Flow
   - Direct and perform actions per T-101, RPV Control
   - Direct and perform actions per OT-101, Drywell High Pressure
   - Direct and perform actions per T-102, Primary Containment Control
   - Direct and perform actions per T-111, Level Restoration/Steam Cooling
   - Direct and perform actions per T-112, Emergency Blowdown

## RECORD OF TEMPORARY CHANGES:

B. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence

C. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision

D. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## IV. 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 (e.g for conversion of LSTS to LLORSEG format).

| Revision Number | Description of Revision and Affect on Training Content | # Date of Revision |
|---|---|---|
| Rev000 | Initial Issue of Simulator Evaluation Guide Template to revised LSES 5006 | 07/15/16 |
| | | |
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**# Date of Revision** - refers to date revision was released for approval

## SCENARIO EVENT AND EVALUATION SUMMARY:

Event One: Shortly after the crew has assumed responsibility, they will be required to align the '1C' SLC Pump for automatic operation, using S48.1.A, Standby Liquid Control System Set-Up For Normal Operation, and remove the '1B' SLC Pump from service.

Evaluation: Evaluate the crew's ability to perform the procedure and place equipment in service and to evaluate the CRSs ability to apply Tech Spec 3.1.5. for the SLC Pump being removed from service.

Event Two: Shortly after the evolution of placing the '1C' SLC Pump in standby service, APRM #3 will fail upscale.

Evaluation: Evaluate the crew's response to the plant for the failed APRM, reference Tech Spec 3.3.1 and place the inoperable APRM in the BYPASS position.

Event Three: After the failed APRM issue is resolved, the '1A' Recirc Pump shaft will seize resulting in a Recirc Pump trip and reduction in core flow and reactor power.

Evaluation: To evaluate the crew's ability to address the sudden change in reactor power by entering and executing OT-104, Unexpected/ Unexplained Positive or Negative Reactivity Insertion, and OT-112, Unexpected/ Unexplained Change In Core Flow, for the tripped Recirc Pump. The crew will isolate the failed Recirc Pump and insert Control Rods to exit the Restricted Region of the Power/Flow Map. The crew will also execute GP-5 to stabilize the plant.

Event Four: and Five: As the crew is recovering from the tripped Recirc Pump and attempting to exit the Restricted Region of the Power/flow Map a low pressure FWH level transient will occur requiring re-entry into OT-104. As the crew addresses the transient another FWH level control problem will result in a $6^{th}$ FWH isolation causing a larger positive reactivity addition and subsequent Thermal Hydraulic Instabilities (THI) .

Evaluation: To evaluate the crew's ability to diagnose the positive reactivity addition from the loss of FWH while in the Restricted Region of the Power/Flow Map and to detect/suppress core THI, by monitoring LPRM, APRM and period meters to detect indications for signs of core THI. The crew will shutdown the plant due to the Thermal Hydraulic Instabilities.

## SCENARIO EVENT AND EVALUATION SUMMARY cont'd

Event Six: After the reactor is shutdown, a Feedwater line break will occur resulting in a loss of all feedwater to the RPV.

Evaluation: To evaluate the crew's ability to take appropriate actions to control RPV level using T-101, RPV Control, and eventually T-111, Level Restoration/Steam Cooling. The crew will start ECCS Pumps in preparation to maintain RPV level following an RPV Emergency Blowdown. Also to maintain Containment parameters, enter T-102, Primary Containment Control and, as RPV level drops due to the loss of high pressure feed, enter T-112, Emergency Blowdown to assure adequate core cooling with the low pressure injection systems.

Event Seven: During reactor RPV level restoration the RCIC flow controller will fail in automatic.

Evaluation: To evaluate the PROs response to the RCIC system failure and diagnose that RCIC is available only when manual control is taken.

Event Eight: As RPV level decreases to -161" the crew performs the T-112, Emergency Blowdown allowing low pressure ECCS systems to maintain RPV level. To accomplish the blowdown, five ADS valves are selected to be opened, however the '1M' SRV will fail to open from the handswitch, and require an alternate SRV be opened to ensure 5 SRVs are opened.

Evaluation: Evaluate the crew's ability to identify failure of the '1M' SRV to open, and open a non-ADS valve to ensure 5 SRV's are open.

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.

## V. REFERENCES

A. Training Procedures
   1. TQ-LG-150, Limerick Operator Training Programs
   2. TQ-AA-151, ILT Certification and NRC Examination Development and Administration
   3. TQ-AA-155, Conduct of Simulator Training and Evaluation

B. Annunciator Response Cards (ARC)
   1. 102 F-1, 1C FEEDWATER HEATER HI LEVEL
   2. 102 F-2, 2C FEEDWATER HEATER HI LEVEL
   3. 102 G-4, F/W HTRS 1&2 HI-HI LEVEL LP HTR STRING ISOLATION
   4. 102 G-3, 6C FEEDWATER HEATER HI LEVEL
   5. 102 G-5, FEEDWATER HEATER 3/4/5/6 HI HI LEVEL ISOLATION
   6. 107 A-3, SLCS PUMP AUTO-START STATUS TROUBLE
   7. 107 H-2, REACTOR HI/LO LEVEL
   8. 107 I-2, VIBRATION ALARM ALERT
   9. 108 A-4, OPRM TRIPS ENABLED
   10. 108 B-3, APRM UPSCALE TRIP/INOP
   11. 108 F-3, ROD OUT BLOCK
   12. 108 B-4, APRM UPSCALE
   13. 108 A-3, OPRM PRE-TRIP
   14. 108 I-1, 1A/1B/1C STANDBY LIQUID PUMP MOTOR OVERLOAD/LOSS OF POWER
   15. 111 B-1, 1A RECIRC ASD TRIPPED
   16. 111 B-2, 1A RECIRC ASD MAJOR FAILURE
   17. 111 D-2, 1A RECIRC PUMP MOTOR HI VIBRATION
   18. 111 E-2, 1A RECIRC ASD 13 KV BKR TRIP

C. System Procedures (S)
   1. S48.1.A, Standby Liquid Control System Set-up For Normal Operation.
   2. S12.1.A, RHR Service Water System Startup.

D. General Procedures (GP)

E. Off Normal Procedures (ON)

F. Operating Transient Procedures (OT)
   1. OT-104, Unexpected, Unexplained Positive or Negative Reactivity Insertion
   2. OT-112, Unexpected/Unexplained Change in Core Flow
   3. OT-101, Drywell High Pressure

G. Event Procedures (E)

H. Special Event Procedures (SE)
   1. SE-10, LOCA

I. Surveillance Test and Routine Test Procedures (ST and RT)

## REFERENCES cont'd

J. Technical Specifications and TRM (TS)
   1. 3.4.1.1.a.
   2. 3.1.5
   3. 3.3.1
   4. 3.3.6
   5. 3.5.1.c.
   6. 3.3.2.1
   7. 3.7.3.a,

K. Transient Response Implementation Procedures (T-100 series)/SAMPs
   1. T-101, RPV Control
   2. T-102, Primary Containment Control
   3. T-111, Level Restoration/Steam Cooling
   4. T-112, Emergency Blowdown

L. TRIP 200 Series Procedures
   1. T-240, Maximizing CRD Flow After Shutdown During Emergency Conditions
   2. T-225, Startup And Shutdown Of Suppression Pool And Drywell Spray Operation

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

N. Administrative Procedures
   1. OP-AA Procedures
      a. OP-AA-1, Conduct of Operations
      b. OP-AA-20, Conduct of Operations Process Description
      c. OP-AA-101-111-1003, Operations Department Standards and Expectations
      d. OP-AA-101-113, Operations Fundamentals
      e. OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
      f. OP-AA-106-101-1006, Operational Decision Making Process
   2. OP-LG Procedures
      a. OP-LG-101-111-1000, Licensed Operator Duties
      b. OP-LG-102-106, Operator Response Time Program at Limerick
      c. OP-LG-103-102-1000, Human Performance Continuing Good Practices
      d. OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
      e. OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

O. Current Shift Night Orders Forced Outage Plan

P. INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER)
   1. IER-L1 11-3, Weaknesses in Operator Fundamentals
   2. SER 3-05, Weakness in Operator Fundamentals
   3. SOER 10-02, Engaged Thinking Organizations
   4. INPO 15-004, Operator Fundamentals

## VI. PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100 % power
Unit 1 is in OPCON 1 at 100 % power

**Specific Plant Conditions are as Follows:**

- None

**Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):**

- None

**Restrictions on Plant Operations:**

- None

**Planned Evolutions:**

- Place '1C' SBLC Pump in Automatic Injection Mode per S48.1.A, Standby Liquid Control System Set-Up For Normal Operation, step 4.7 in preparation of a '1B' SLC System Outage Window

**Documents Provided:**

- S48.1.A, Standby Liquid Control System Set-Up For Normal Operation

## VII. DIRECTIONS FOR EVALUATION PREPARATION

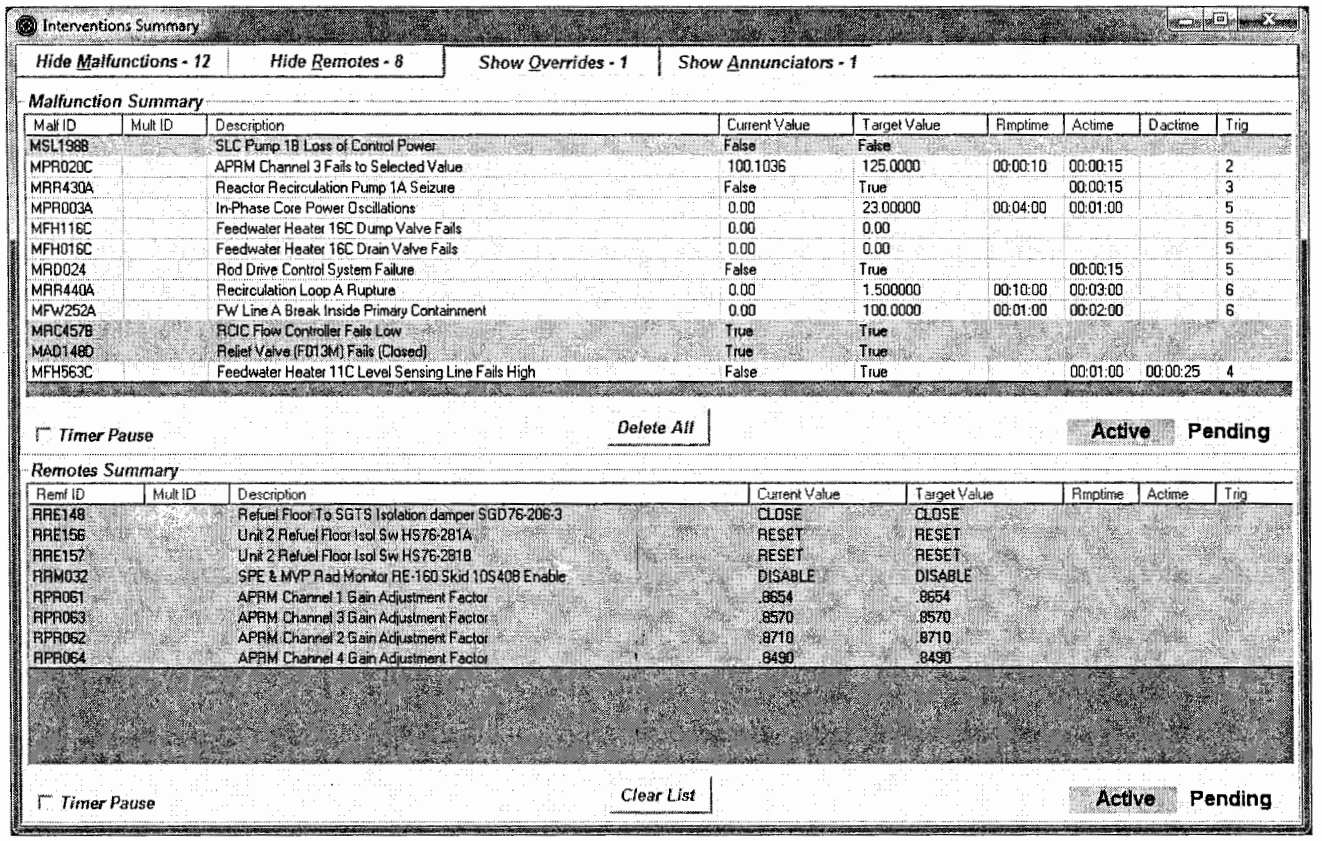
### A. INITIAL PREPARATION

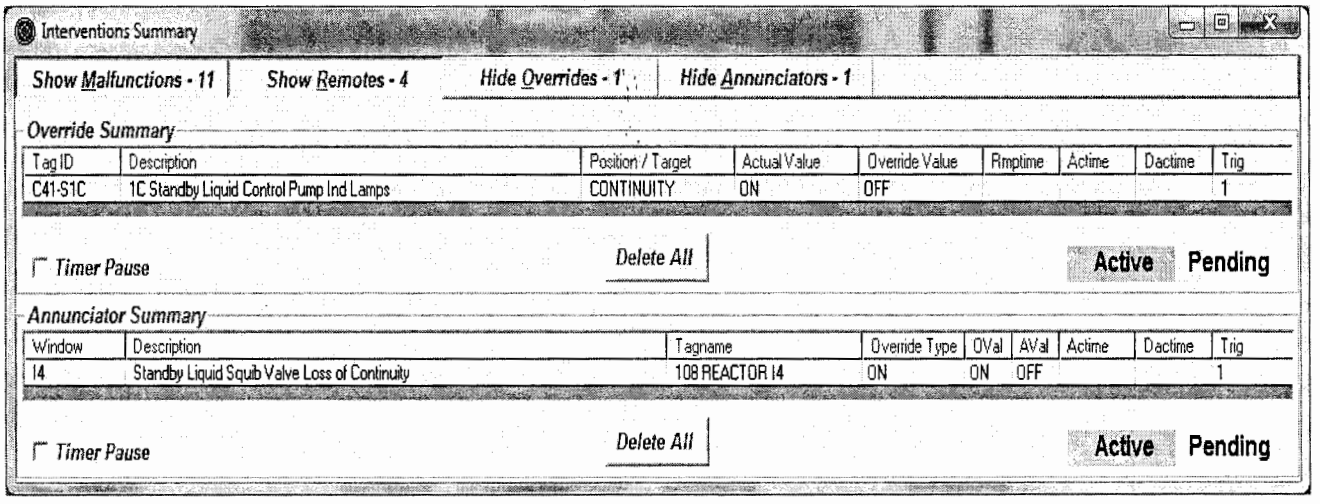
| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete TQ-AA-155, Operator Training Programs Attachment 02, Evaluated Scenario Administration Checklist. |
| | Complete TQ-LG-201-0113, Limerick Training Department Simulator Examination Security Actions Checklist |

### B. SIMULATOR SETUP

| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete Limerick Simulator Pre-Evaluation Checklist |
| | Reset Simulator to the Pre-loaded Cycle **IC** developed for the Evaluation<br>**OR** Reset the simulator to designated base load **IC-3**<br>**AND** Load scenario file **SEG5006E Rev000.scn**<br>• Verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded<br>**OR**<br>• Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Scenario Generator Screen Shots: |
| | Simulator Operator (Driver) perform the following:<br>• Momentarily place simulator in RUN<br>• Acknowledge and clear all spurious alarms<br>• Place the simulator back into FREEZE<br>• Place appropriate tags and equipment in required condition / status. |

## C. MALFUNCTION/REMOTE/OVERRIDE/ANNUNCIATORS FUNCTION TIME TABLE

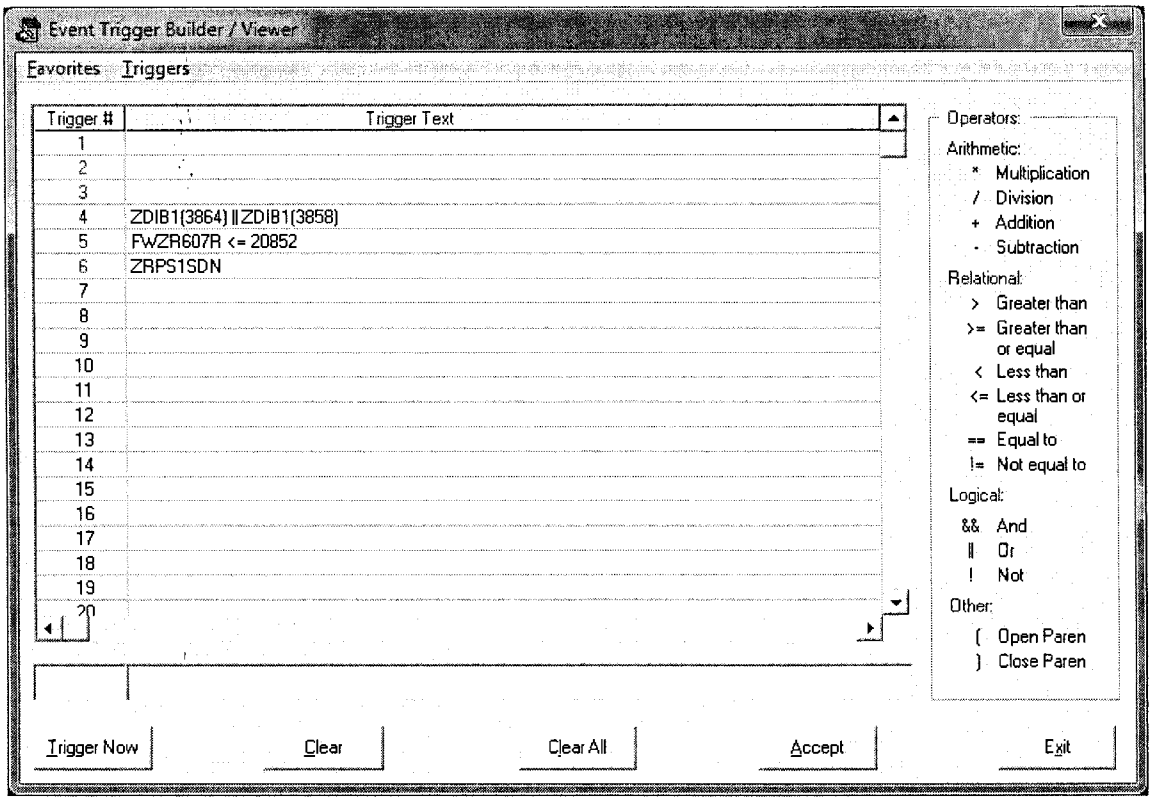


D. EVENT TRIGGERS ASSIGNMENT

1. Timers should be used on event triggers where possible for time validation
2. Timing of event triggers may be altered by the Lead Evaluator (or designee)
3. Verify triggers are actuated automatically as designed or manually initiate the trigger when the initiating action has occurred.
4. Inform Lead Evaluator (or designee) of expected plant response prior to actuation of each trigger.
5. Trigger #1 is manually initiated at Lead Evaluator (or designee) direction after the crew assumes responsibility for operation.

| | TRIGGER / TIME | MALFUNCTION / EVENT | DESCRIPTION |
|---|---|---|---|
| | 1 | Manual | Remove power from XV-48-1F004C |
| | 2 | Manual | Initiates APRM #3 Upscale |
| | 3 | Manual | Initiates '1A' Recirc Pump trip |
| | 4 | Auto / ZDIB1(3864) II ZDIB1(3858) | HV-043-1F031A or 1F023A to Close<br>Initiates Low Pressure FWH Level Transient |
| | 5 | Auto / FWZR607R<=20852 | Total Steam Flow reduced to 10 Mlbm/hr<br>Initiates 6th FWH high level and THI |
| | 6 | Auto / ZRPS1SDN | RMS to SHUTDOWN<br>Initiates Feedwater Line rupture / DW leak |



E. EQUIPMENT REPORTS AND LEAD EVALUATOR (OR DESIGNEE) OPERATIONS

1. Scripted Activity Reports should be followed with adherence to Operations Communication standards of performance.
2. The T-200 procedure reference book should be used for familiarity of reports to aid in operator prompting and expected communications.
3. The Lead Evaluator (or designee) should be informed if any event is not reported as scripted due to lack of Operator request.
4. The Standard Equipment Operator Response Times are per Attachment 1
5. A record of communications from the MCR and to the MCR will be maintained by the Simulator Operator using **Attachment 2.**
6. The OCOEE Simulator Operator Station P&IDs, Floor Plans and Panels should be used by the Simulator Operator as reference information when making reports to the MCR for plant parameters which are not driven by a communications script. Examples include: ARMs, Blowout Panel status, Reactor Building Area Temperatures and Pressures, RMMS, Turbine Enclosure parameters etc.

# X. CREW CRITICAL TASKS

A. Critical Tasks are based on the current Crew Critical Task List revision, NUREG 1021 and TQ-AA-150 requirements.

1. **T-111.4** **Inhibit Automatic ADS**

| | | | |
|---|---|---|---|
| K/A | 218000 | A2.06 | 4.2/4.3 |

Standard: Prevent automatic initiation of ADS prior to exceeding -129" reactor level and ADS logic being completed.

**SAT/UNSAT**

2.a **T-112.1** **Perform emergency blowdown per T-112.**

| | | | |
|---|---|---|---|
| K/A | 295031 | EA1.07 | 3.7/3.7 |
| K/A | 295031 | EA2.04 | 4.6/4.8 |

Standard: When RPV level drops below TAF, open 5 SRV's.

**SAT/UNSAT**

**OR**

2.b **T-102.2** **Perform emergency blowdown per T-112.**

| | | | |
|---|---|---|---|
| K/A | 295024 | EA1.08 | 3.9/3.9 |
| K/A | 295024 | EA2.04 | 3.9/3.9 |

Standard: When Suppression Pool Pressure cannot be maintained below the Pressure Suppression Pressure (PC/P-3) curve and before Drywell pressure exceeds 55 psig, open 5 SRVs.

**SAT/UNSAT**

3. **T-111.3** **Maintain RPV level greater than the TAF.**

| | | | |
|---|---|---|---|
| K/A | 295031 | EA1.01 | 4.4/4.5 |
| K/A | 295031 | EA1.02 | 4.5/4.5 |
| K/A | 295031 | EA1.05 | 4.3/4.3 |
| K/A | 295031 | EA1.11 | 4.1/4.1 |
| K/A | 295031 | EA1.12 | 3.9/4.1 |

Standard: Operate injection systems to maintain reactor level greater than the TAF or enter T-112, perform an emergency blowdown, and when pressure permits, inject wit low pressure ECCS to restore RPV level above TAF.

**SAT/UNSAT**

## CREW CRITICAL TASKS cont'd

4. **T-102.1** **Spray the Drywell per T-225.**

| | | | |
|---|---|---|---|
| K/A | 295024 | EA1.11 | 4.2/4.2 |
| K/A | 295028 | EA1.01 | 3.8/3.9 |
| K/A | 295028 | EA1.04 | 3.9/4.0 |

Standard: When Drywell temperature and pressure are on the SAFE side of curve PC/P-2, spray the Drywell before exceeding 340°F or 55 psig.

**SAT/UNSAT**

## XI. ASSESSMENT OF CREW PERFORMANCE DURING CONDUCT OF THE DYNAMIC SIMULATOR EVALUATIONS:

A. Conduct the Simulator Evaluation Session per TQ-AA-155, Conduct of Simulator Training and Evaluation, Attachment 02, Evaluated Scenario Administration Checklist

B. Assessment of Crew and Individual performance shall be consistent with OP-AA-20, Conduct of Operations Process Description

C. Where possible record the time and position responsible for performance of each task or assessment item

D. Items not performed as expected **SHALL** be discussed in the post performance crew critique

E. During the performance of the evaluation, the Simulator Evaluators shall **MAINTAIN** notes of observations and information consistent with the timeline

F. Assessment items with the ⏱ symbol indicate a time critical standard for performance

G. Assessment items with the ⚑ symbol indicate a Probabilistic Risk Assessment (PRA) association with the task

H. The Simulator Operator will respond with scripted or proceduralized responses when requested by the MCR operators with Procedure completion times requested per **Attachment 1**

I. The Simulator Operator will also maintain a timeline and record of all reports and requests issued by the MCR personnel with response provided by the simulator operator using **Attachment 2**

## 1. EVENT – 1 PLACE '1C' SLC PUMP IN AUTOMATIC INJECTION MODE

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

At time __1 min__ when requested to power down the '1B' SLC Pump insert malfunction MSL198B and

**report:** __Feed breaker for '1B' SLC Pump, D124-R-C-34 is opened.__

When requested by RO to remove fuse 2 and fuse 3 from C640 panel per S48.1.A step 4.7.2 and 4.7.3, manually actuate **Trigger #__1__** to remove power to C41-S1C XV-048-1F004C Squib Valve, and alarm 108 I-4, Standby Liquid Squib Valve Loss Of Continuity.

Ensure annunciator 108 I-4, Standby Liquid Squib Valve Loss Of Continuity cleared when fuses re-installed, per step 4.7.10 and 4.7.11 of S48.1.A

When requested by RO to install fuse 2 and fuse 3 from C640 panel per S48.1.A step 4.7.10 and 4.7.11, **DELETE - C41-S1C** '1C' SBLC Pump Indicating Lamps

AND **DELETE** - Annunciator Override 108 Reactor I4 (Standby Liquid Squib Valve Loss of Continuity).

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **1. EVENT – 1 PLACE '1C' SLC PUMP IN AUTOMATIC INJECTION MODE** | | |
| **Lead Evaluator (or designee) Notes:** The crew will be directed to align the '1C' SBLC Pump for automatic injection per S48.1.A, Standby Liquid Control System Set-up For Normal Operation, section 4.7. When the 1B SLC Pump is de-energized, annunciator 108 I-1, 1A/1B/1C STANDBY LIQUID PUMP MOTOR OVERLOAD/LOSS OF POWER will be received. | | |
| | [S48.1.A 4.7.1]<br>Direct EO to open '1B' SLC Pump Feed (D124-R-C-34) | PRO |
| | SRO references Tech Spec 3.1.5 action a for only one pump and corresponding explosive valve OPERABLE | SRO |
| | [S48.1.A 4.7.2/3]<br>**REMOVE** fuse F2 and F3 in panel C640 to disarm XV-48-1F004C | PRO |
| | [S48.1.A 4.7.4/5]<br>**OBTAIN** key for 1CP208 SLC Injection Pump and<br>**PLACE** 1CP208 control switch to "NORM" position | PRO |
| | [S48.1.A 4.7.6]<br>**VERIFY** annunciator 107 A-3 SLCS PUMP AUTO-START STATUS TROUBLE alarmed | PRO |
| | [S48.1.A 4.7.7]<br>**VERIFY** "OVERRIDE (amber) light not Lit | RO |
| | [S48.1.A 4.7.8]<br>**PLACE** SS-48-104C-1 switch to "ENABLE" position | RO |
| | [S48.1.A 4.7.9]<br>**VERIFY** annunciator 107 A-3 SLCS PUMP AUTO-START STATUS TROUBLE clears | RO/PRO |
| | [S48.1.A 4.7.10/11]<br>**INSTALL** fuse F2 and F3 in panel C640 to arm XV-48-1F004C | RO |
| | The CRS References Tech Spec 3.1.5 and determines with 2 pumps and corresponding explosive valves are operable. | SRO |

**2. EVENT – 2 APRM # 3 FAILS UPSCALE (Malfunction)**

**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."

Manually actuate **Trigger _# 3_** when requested by Lead Evaluator, to initiate '1A' Recirc Pump trip.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **2. EVENT – 2 APRM # 3 FAILS UPSCALE (Malfunction)** | | |
| **Lead Evaluator (or designee) Notes:** The RO 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:<br>• 108 B-3, APRM UPSCALE TRIP/INOP<br>• 108 F-3, ROD OUT BLOCK<br>• 108 B-4, APRM UPSCALE | RO/PRO |
| | [ARC MCR 108 B-3]<br>Determine APRM #3 ODA has upscale trip with 'TRIP' message on display header | RO |
| | CRS directs bypassing APRM #3 | SRO |
| | [ARC MCR 108 B-3]<br>RO places #3 APRM in BYPASS | RO |
| | Reference Tech Spec 3.3.1 and 3.3.6 and determines the requirement of 3 is met | SRO |
| | Reset annunciators on panel 108 | RO |

| 3. | EVENT – 3 | '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal) |
|---|---|---|

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

At time 5 min when FSSV or EO directed to respond to investigate '1A' Recirc Pump trip
**report:** The '1A' ASD feed breaker is tripped. There is nothing that is obvious wrong with it.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **3. EVENT – 3 '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal)** | | |
| **Lead Evaluator (or designee) Notes:** The 1A Reactor Recirc Pump will experience a shaft seizure resulting in a trip of the 1A ASD. OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion is normally entered during a reactivity addition event, and directs entry into OT-112, Unexpected/Unexplained Change in Core Flow, due to Recirc Pump trip. | | |
| | Reference ARCs as appropriate:<br>• 111 B-1, 1A RECIRC ASD TRIPPED<br>• 111 B-2, 1A RECIRC ASD MAJOR FAILURE<br>• 111 D-2, 1A RECIRC PUMP MOTOR HI VIBRATION<br>• 111 E-2, 1A RECIRC ASD 13 KV BKR TRIP<br>• 107 H-2, REACTOR HI/LO LEVEL<br>• 107 I-2, VIBRATION ALARM ALERT<br>• 108 A-4, OPRM TRIPS ENABLED | |
| | [OT-104, 3.1]<br>Enter OT-104 Unexpected/Unexplained Positive or Negative, Reactivity Insertion and directs entering OT-112 | SRO |
| | [ARC-MCR 111 B-2/D-2]<br>Enter OT-112, Unexpected/Unexplained Change in Core Flow | SRO |
| | [OT-112, 2.0] Immediate Operator Action<br>**MONITOR** RPV level AND manually CONTROL RPV level, as required | RO |
| | [OT-112, 3.1]<br>**DIRECT** RO to monitor for core THI indications<br>• APRM flux level oscillations<br>• APRM and LPRM signal changes from random to periodic variations<br>• Period meter display strong positive to negative swings | SRO |
| | [OT-112, 3.2]<br>Direct OT-112, Att. 1 | SRO |
| | [OT-112, Att.1 step 5.0]<br>CLOSE HV-043-1F031A, "A Recirc Pump Disch Vlv" (DISCHARGE A)<br>**OR** HV-043-1F023A, "A Recirc Pump Suction Vlv" (SUCTION A) for tripped Recirc Pump. | PRO |
| | [OT-112, Att.1 step 6.0]<br>IF Recirc Pump discharge isolation valve is not required to be closed **AND** approximately 5 minutes have elapsed,<br>**THEN OPEN** HV-043-1F031A, "A Recirc Pump Disch Vlv" (DISCHARGE A)<br>**OR** HV-043-1F023A, "A Recirc Pump Suction Vlv" (SUCTION A) for tripped Recirc Pump | PRO |

| 3. | EVENT – 3 | '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal) |
|---|---|---|

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| 3. | **EVENT – 3 '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal)** | |
| | [OT-112, Att.1 step 7.0]<br>Limit speed of operating Recirc Pump to <1510 rpm | RO |
| | [OT-112, Att.1 step 8.0]<br>IF possible, THEN Maintain flow in operating loop such that total core flow is >40 Mlb/hr | RO |
| | [OT-112, Att.1 step 9.0]<br>**PERFORM** S43.2.A, Shutdown of a Recirculation Pump, to ensure tripped Recirc pump is properly shutdown | RO |
| | [OT-112, Att.1 step 10.0 GP-5 step 3.1.6] (If time permits)<br>**SELECT** the new MCPR limit for SLO using S38.1.L / **ENSURE** Reactor Engineering enters new MCPR limit inti PMS Computer. | RO |
| | [OT-112, Att.1 step 11.0]<br>**NOTIFY** Chemistry that power change of greater than 15% occurred in less than one hour (Tech Spec 3.4.5) | RO |
| | [OT-112, Att.1 step 12] (If time permits)<br>**REQUEST** APRM channels calibrated for SLO | CRS |
| | [OT-112, Att.1 step 15] (If time permits)<br>**ENSURE** ST-6-043-321-1, Daily Jet Pump Operability Verification For Single Recirc Loop Operation, performed | PRO |
| | [OT-112, Att.1 step 16]<br>**ENTER** GP-5, Appendix 3, Unintentional Drop in Power | CRS |
| | [OT-112, 3.2 GP-5 App#3 step 3.1.1.2]<br>**PERFORM** OT-112, Att. 3 to confirm operation in the authorized region of the Power/Flow Map | SRO |
| | [OT-112, 3.3]<br>**DEMAND** a P-1 edit **AND** determine whether a Thermal Limit violation exists | RO/SRO |
| | [OT-112, 3.4]<br>**IF** any Thermal Limit violations exist, **THEN** ENTER GP-14 | SRO |
| | [OT-112, 3.5]<br>**CONSIDER** reportability of Rx power excursion **AND REFER** to Discussion Step 6.17 | SRO |
| | [OT-112, Att. 3, GP-5 App#3 step 3.1.1.5]<br>Direct RO to insert control rods to exit restricted region of power/flow map (~45%) | SRO |

3. EVENT – 3 '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal)

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

Ensure **Trigger # 4** automatically actuates when either HV-043-1F031A or HV-043-1F023A is closed to initiate a low pressure FWH level transient

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **3.** | **EVENT – 3 '1A' REACTOR RECIRC PUMP SHAFT SIEZURE (Abnormal)** | |
| | Insert control rods IAW RMSI to reduce power to exit restricted region | RO |
| | [GP-5 App#3 step 3.1.6.2] (time permitting)<br>**ENSURE,** within 4 hrs. ST-6-107-889-1, Thermal Limits Determination For Single Recirc Loop Operation, has been performed. | SRO |
| | [GP-5 App#3 step 3.1.6.3/4] (time permitting)<br>**ENSURE** ST-6-043-321-1, Daily Jet Pump Operability Verification For Single Recirc Loop Operation, and shiftly check sections of ST-6-107-590-*, Daily Surveillance Log/OPCONS 1, 2, 3, performed. | SRO |
| | Reference Tech Spec 3.4.1.1.a.1 for Single Loop Operations (time permitting)<br>With one reactor coolant system recirculation loop not in operation:<br>1. Within 4 hours:<br>a. Place the recirculation flow control system in the Local Manual mode, and,<br>b. Reduce THERMAL POWER to ≤ 74.9% of RATED THERMAL POWER, and,<br>c. Limit the speed of the operating recirculation pump to less than or equal to 90% of rated pump speed, and<br>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.<br>2. Within 6 hours, change APRM and Rod Block setpoints for Single Loop Ops | SRO |

| 4. | EVENT – 4 | Low Pressure FWH Level Transient |
|---|---|---|

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

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.

Ensure **Trigger # _5_** automatically actuates when reactor power decreased to ~65% as designated by Main Steam Total Flow, to initiate FWH high level, RDCS failure and In-Phase Core Power Oscillations

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4. EVENT – 4 Low Pressure FWH Level Transient** | | |
| **Lead Evaluator (or designee) Notes:** During the power reduction the 1C Low Pressure Feedwater heater (FWH) String will experience a level transient that will cause a temporary high high level condition of the string. This condition will initiate an automatic isolation of the FWH String. The condition will clear and the crew is expected to identify that the isolation is no longer required to go to completion and take actions to stop the closure and re-open the isolation valves. | | |
| | Reference ARCs as appropriate:<br>• 102 F-1, 1C FEEDWATER HEATER HI LEVEL<br>• 102 F-2, 2C FEEDWATER HEATER HI LEVEL<br>• 102 G-4, F/W HTRS 1&2 HI-HI LEVEL LP HTR STRING ISOLATION | PRO |
| | [ARC MCR 102 G-4]<br>Verify L.P. F/W HTR string inlet AND outlet valve HV-06-101C AND HV-06-102C close | PRO |
| | [ARC MCR 102 G-4]<br>**IF** low pressure heater string isolation is occurring **THEN** Enter OT-104, (positive reactivity insertion) and maintain power below pre-transient value. | SRO/RO |
| | [ARC MCR 102 G-4]<br>Attempt to reset alarm on MCR panel 102. | PRO |
| | [ARC MCR 102 G-4]<br>IF alarm clears, AND the MOV's are still in mid position, THEN:<br>a. Pull to stop HS-006-101C AND HS-006-102C.<br>b. Re-open HV-006-101C AND HV-006-102C. | PRO |

**5. EVENT – 5 '6C' FWH ISOLATION WITH THI (Abnormal)**

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

Ensure **Trigger # 5** automatically actuates when reactor power decreased to ~65% as designated by Total Steam Flow, to initiate FWH high level, RDCS failure and In-Phase Core Power Oscillations

Ensure **Trigger # 6** automatically actuates when RMS is taken to SHUTDOWN, to initiate Feedwater Line break and drywell leak.

At time 3 min after FSSV or EO action requested to verify 6C FWH level locally **report:** FWH level indicates high ~ 30" Double Red Dots.

**IMPORTANT NOTE:**

**DELETE** malfunction **MPR003A,** In-Phase Core Power Oscillations, on reactor scram.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **5. EVENT – 5 '6C' FWH ISOLATION WITH THI (Abnormal)** | | |
| **Lead Evaluator (or designee) Notes:** A high level in the '6C' FWH will result due to a malfunction of the FWH level controller. As a result of the high level in the FWH the Feedwater will isolate causing a rise in core reactivity, and a shift in the core power shape. The core is already operating in the RESTRICTED REGION of the Power/Flow Map due to the Recirc Pump trip where there is an increased potential for core THI. The RO will identify indications of THI using LPRM, APRM and SRM period meter indications. | | |
| | Reference ARCs<br>• 102 G-3, 6C FEEDWATER HEATER HI LEVEL<br>• 102 G-5, FEEDWATER HEATER 3/4/5/6 HI HI LEVEL ISOLATION | RO |
| | [ARC MCR 102 G-3]<br>Dispatch operator to verify high level locally | RO |
| | [ARC MCR 102 G-5]<br>Verify extraction steam valve to 6C FWH closed | RO |
| | [ARC MCR 102 G-5]<br>Monitor Feedwater temperature decreasing | RO/PRO |
| | [ARC MCR 102 G-5]<br>Re-Enter OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion, and perform Attachment 3 | SRO |
| | [OT-104 Attach # 3]<br>**DETERMINE** amount of FW inlet temperature reduction by comparing pre-transient and post-transient FW temperature from Core Power And Flow Log **OR** P-1. | SRO/RO |
| | [OT-104 Attach # 3]<br>**IF** transient is due to Feedwater Heating isolation, **THEN MAINTAIN** power level in accordance with Attachment #8 guidelines | SRO |
| | [OT-104 Attach # 3]<br>**IF** FW inlet temperature is **not** in the "Normal Operating Region" of Attachment 2 "Feedwater Inlet Temperature vs Core Thermal Power" in GP-5 Appendix 2,<br>• **REDUCE** Rx power to in accordance with GP-5 Appendix 2, Planned Rx Maneuvering Without Shutdown, Section 3.1, Reducing Rx Power,<br>• **AND** Reactor Maneuvering Shutdown Instructions until FW inlet temperature returns to the "Normal Operating Region". | SRO |

| 5. | EVENT – 5 | '6C' FWH ISOLATION WITH THI (Abnormal) |
|---|---|---|

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

Ensure **Trigger # _5_** automatically actuates when RMS is taken to SHUTDOWN, to initiate Feedwater Line break and drywell leak.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **5. EVENT – 5 '6C' FWH ISOLATION WITH THI (Abnormal)** | | |
| **Lead Evaluator (or designee) Notes:** The OPRM System enabled region is APR Simulated Thermal Power (STP) ≥ 29.5% AND Recirc Drive Flow <60%. The RO will identify indications of THI using LPRM, APRM and/or period meter indications. | | |
| | Reference ARCs<br>• 108 A-4, OPRM TRIPS ENABLED<br>• 108 A-3, OPRM PRE-TRIP<br>• 108 F-3, ROD OUT BLOCK | RO |
| | [OT-104 Attach # 8]<br>RO identifies abnormal swings on APRMs indications due to signal growth by two or more times than initial levels, and with APRM flux level oscillations exceeding 10% peak-to-peak. | RO |
| | Notify CRS THI identified | RO |
| | Direct manual scram | SRO |
| | PLACE Reactor Mode Switch in "SHUTDOWN" | RO |
| | Recognize/report indications for scram;<br>• Scram annunciators for auto RPS actuation<br>• White scram lights extinguished | RO |
| | Enter T-101 | SRO |
| | [T-101 RC-6]<br>Insert SRM and IRM detectors | RO |
| | [T-101 RC/Q-1]<br>Verify all control rods inserted | RO |
| | [T-101 RC/Q-2]<br>Ensure turbine trip and gen lockout | PRO |
| | [T-101 RC/L-7]<br>Restore and maintain RPV level between +12.5" AND +54" | RO |
| | [T-101 RC/L-7]<br>Ensure RCIC start and injection on RPV Level <-38" | PRO |
| | [T-101 RC/P-13]<br>Stabilize RPV press below 1096 psig. | RO |

| 6/7. EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE |
|---|
| **Simulator Operator Instructions:**<br><br>Inform Floor Instructor prior to each event trigger |

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7.** | **EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE** | |
| **Lead Evaluator (or designee) Notes:** After the plant is scrammed a rupture of the 'A' Feedwater line occurs. 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 | RO/PRO |
| | Recognize 'A' FW Line Break | RO |
| | Attempt to isolate 'A' Feedwater Line | RO |
| | Report rising drywell pressure | RO/PRO |
| | Enter and execute OT-101, Drywell High Pressure, as drywell pressure rises | SRO |
| | [OT-101 3.1]<br>**ESTABLISH** Drywell pressure as a Critical Parameter | PRO |
| | Enter T-102, Primary Containment Control, and<br>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" | RO/PRO |
| | Secure from depressurization | PRO |
| | Evaluate closing MSIV's to conserve RPV inventory | SRO |
| | [T-101 RC/L-12]<br>Enter T-111 on lowering RPV level | SRO |
| | [T-111 LR-5]<br>Manually inhibit auto ADS **(Critical Task)** | PRO |
| | [T-111 LR-6]<br>Maximize RPV Injection with CRD per T-240 | RO |
| | [T-111 LR-6]<br>Maximize RPV Injection using RCIC | PRO |
| | Identify RCIC flow controller in AUTO failed | PRO |
| | Direct to operate RCIC in Manual mode | SRO |
| | [T-111 LR-7]<br>Start SLC Pumps | RO |
| | [T-111 LR-8]<br>Start 2 or more subsystems (ie. C & D RHR Pumps) | PRO |
| | Identify RPV level decreasing – approaching LOCA -129" | Crew |

## 6/7. EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE

**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 |
|---|---|---|
| **6/7.** | **EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE** | |
| | Enter SE-10, LOCA when RPV level <-129" | Crew |
| | [SE-10 3.1]<br>**PLACE** the following to "CLOSE"<br>• 52-20224/CS, "D*24 Safeguard L.C. D*24-G-D MCC Bkr" (SAFEGUARDS B), on *BC661<br>• 52-20124/CS, "D*14 Safeguard L.C. D*14-G-D MCC Bkr" (SAFEGUARDS A), on *AC661. | RO |
| | [SE-10 3.2]<br>**PLACE** to "RESET":<br>• 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661<br>• 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661. | RO |
| | Dispatch Equipment Operator to perform SE-10-1 field actions | PRO |
| | [SE-10 4.3]<br>Maintain ECCS for injection<br>**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 | RO |
| | Restart '1A' and '1C' SLC Pumps following LOCA | RO |
| | [T-240 4.2]<br>Fully **OPEN** HV-46-1F003, "Drive Water Pressure Control" (DRIVE WATER PRESSURE), at 10C603 (Main Control Room). [no power available] | RO |
| | [T-240 4.3]<br>**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). | RO |
| | [T-240 4.4]<br>**OPEN** 46-1F045, "CRD Pumps Suction Filter Bypass Valve" (EO) | RO |
| | [T-240 4.5]<br>If additional CRD flow required place second CRD Pump in Service | RO |
| | Trend RPV Level to TAF | RO/PRO |

## 6/7. EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7.** | **EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE** | |
| **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-7]<br>**DIRECT** before Supp Pool pressure reaches 7.5 psig<br>Spray the **Suppression Pool** per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation | SRO |
| | [T-225 4.2.1]<br>**ENSURE** HV-51-1F004A(B), "1A(B) RHR Pump Suction PCIV" (SUCTION A(B)), open | PRO |
| | [T-225 4.2.2]<br>**ENSURE** the following valves closed:<br>• HV-51-1F006A(B), "1A(B) RHR Pp S/D Clg Suct Intertie Vlv"<br>• HV-51-1F015A(B), "1A(B) Shutdown Clg Injection PCIV"<br>• HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV"<br>• HV-51-1F017A(B), "1A(B) RHR LPCI Inj PCIV" | PRO |
| | [T-225 4.2.3]<br>**IF** RHR pump not running **THEN** start 1A(B)P202 "RHR Pump" | PRO |
| | [T-225 4.2.4]<br>**ENSURE** the following valves open:<br>• HV-51-1F047A(B), "1A RHR Htx Shell Side Inlet Vlv" (INLET)<br>• HV-51-1F003A(B), "1A RHR Htx Shell Side Outlet Vlv" (OUTLET)<br>• HV-C-51-1F048A(B), "1A RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS) | PRO |
| | [T-225 4.2.5]<br>**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. | PRO |
| | [T-225 4.2.6]<br>**OPEN** HV-51-1F027A(B), "1A RHR Supp Pool Spray Line PCIV" (SUPP POOL SPRAY). | PRO |
| | [T-225 4.2.8]<br>**PLACE** RHR Service Water Pump for RHR Heat Exchanger to be used in service per S12.1.A, RHR Service Water System Startup. | PRO |

## 6/7. EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7.** | **EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE** | |
| | [T-225 4.2.9]<br>**CLOSE** HV-C-51-1F048A(B), "1A RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS). | PRO |
| | [T-225 4.2.10]<br>**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. | PRO |
| **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]<br>• **OPEN** HV-51-1F014A(B), HEAT EXCHANGER INLET.<br>• Throttle **OPEN** HV-51-1F068A(B) for 18 to 20 seconds. | PRO |
| | [S12.1.A 4.1.6(7) or App1 1.4]<br>**VERIFY** PI-51-105A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig. | PRO |
| | [S12.1.A 4.1.8 or App1 1.4]<br>**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." | PRO |
| | [S12.1.A 4.2.1.1 or App1 1.6]<br>**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. | PRO |
| | [S12.1.A 4.2.1.2 or App1 1.7]<br>**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. | PRO |
| | [S12.1.A 4.2.2 or App1 1.8]<br>**START** 0A(B),(C,D)P506, RHRSW PUMP. | PRO |
| | [S12.1.A 4.2.3 or App1 1.9]<br>**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. | PRO |

| 6/7. EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE |
|---|
| **Simulator Operator Instructions:**<br><br>Inform Floor Instructor prior to each event trigger |

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7.** | **EVENTS 6 - 7 '1A' FEEDWATER LINE RUPTURE / RCIC CONTROLLER FAILURE** | |
| **EVALUATORS NOTE:** The following steps are performed as directed by T-225 section 4.5 to spray the Drywell. | | |
| | [T-225 4.5.3]<br>**IF** RHR pump not running **THEN START** 1A(B)P202 "RHR Pump." | PRO |
| | [T-225 4.5.4]<br>**ENSURE** the following valves open:<br>• HV-51-1F047A(B), "1A(B) RHR Htx Shell Side Inlet Vlv" (INLET)<br>• HV-51-1F003A(B), "1A(B) RHR Htx Shell Side Outlet Vlv" (OUTLET)<br>• HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS) | PRO |
| | [T-225 4.5.5] **TRIP** Reactor Recirc Pumps. | PRO/RO |
| | [T-225 4.5.6]<br>**REMOVE** Drywell Cooling Fans from service by placing all 16 Drywell Cooler Fan switches to "OFF." | PRO/RO |
| | [T-225 4.5.7]<br>**IF** Drywell High Pressure **AND** LOCA signals are present, **THEN GO TO** T-225 step 4.5.11. | PRO |
| | [T-225 4.5.11]<br>**OPEN** HV-51-1F024A(B), "1A(B) RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A(B)), **AND OBTAIN** flow of 9,250 to 10,500 gpm as indicated on FI-51-1R603A(B), FL. | PRO |
| | [T-225 4.5.12] **OPEN** only one loop HV-51-1F021A(B), "1A(B) RHR Cntmt Spray Line Inboard PCIV" (INBOARD). | PRO |
| | [T-225 4.5.13]<br>**REQUEST** SSV verify drywell temperature **AND** drywell pressure are on SAFE side of Drywell Spray Initiation Limit Curve per T-102, Primary Containment Control **OR** SAMP-1, RPV and Primary Containment Flooding Control. | PRO/SRO |
| | [T-102 PC/P-9]<br>**DIRECT** to Spray the **Drywell** per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation **(Critical Task)** | SRO |
| | [T-225 4.5.14]<br>Throttle **OPEN** only one loop HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" (OUTBOARD) to initiate spray **AND OBSERVE** raising flowrate as indicated on FI-51-1R603A(B), FL. | PRO |

| 8. EVENT – 8 '1M' SRV FAILS TO OPEN (Malfunction) |
|---|
| **Simulator Operator Instructions:**<br><br>Inform Floor Instructor prior to each event trigger |

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **8. EVENT – 8 '1M' SRV FAILS TO OPEN (Malfunction)** | | |
| **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 will fail to open. As the crew identifies the failed SRV, another SRV will be opened until a total of 5 SRVs are open. | | |
| | [T-111 LR-10]<br>When RPV level drops to -161 inches, or when the safe side of the PSP curve cannot be maintained enter T-112 **(Critical Task)** | SRO |
| | Enter T-112, Emergency Blowdown | SRO |
| | [T-112 EB-12]<br>**DIRECT** Open all 5 ADS valves | SRO |
| | [T-112 EB-12]<br>**PERFORM** Open all 5 ADS valves **(Critical Task)** | PRO |
| | Recognize that the '1M' SRV failed to open **(Malfunction)** | PRO |
| | The CRS directs to open additional non ADS SRVs until a total of 5 ADS/SRVs are open | SRO |
| | [T-111 LR-20]<br>Maximize RPV injection using all available systems subsystems and alt subsystems EXCEEDING pump NPSH and vortex limits if necessary. | Crew |
| | Restore RPV Level restored above TAF **(Critical Task)** | Crew |
| | [T-111 LR-2]<br>When RPV level above -161" exit T-111 and re-enter T-101 at RC/L-1 | SRO |
| | Restore RPV Level to +12.5" to 54" with ECCS | RO/PRO |

**EVALUATORS NOTE:** 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. After the scenario is terminated, direct the SRO to make the highest EAL classification for the scenario.

EAL: FA-1 declaration due to: (RC.3.1 and RC.3.2)

- Drywell pressure > 1.68 psig

**AND**

- Drywell pressure rise is due to RCS leakage

# 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 |

# Attachment 2
# Communications Log

**CREW:** _____

**DATE:** _____ **LSEG:** _____

**START TIME:** _____ **STOP TIME:** _____

**SM:** _____ **RO:** _____ **WCS:** _____

**CRS:** _____ **PRO:** _____ **FSSV:** _____

| TIME | PERSON CALLING | PERSON BEING CALLED | COMMUNICATION / REQUEST | CALL BACK TIME |
|---|---|---|---|---|
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## XII. CREW PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100 % power
Unit 1 is in OPCON 1 at 100 % power

**Specific Plant Conditions are as Follows:**

- None

**Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):**

- None

**Restrictions on Plant Operations:**

- None

**Planned Evolutions:**

- Place '1C' SBLC Pump in Automatic Injection Mode per S48.1.A, Standby Liquid Control System Set-Up For Normal Operation, step 4.7 in preparation of a '1B' SLC System Outage Window

**Documents Provided:**

- S48.1.A, Standby Liquid Control System Set-Up For Normal Operation

| | | | |
|---|---|---|---|
| CODE NO: | SEG-2007E | REV NO: | 002 |
| AUTHOR: | T. A. BYERS | APPROXIMATE RUN TIME: | 65 minutes |
| TYPE: | SIMULATOR EVALUATION GUIDE | EFFECTIVE DATE: | |
| PROGRAM: | LICENSED OPERATOR TRAINING | | |
| COURSE: | LICENSED OPERATOR (REQUALIFICATION/INITIAL) TRAINING | | |
| TITLE: | Simulator Evaluation Guide for Individual and Crew Performance | | |

Prepared By:_____ Date:_____
Training Instructor - Signature

Reviewed By:_____ Date:_____
LORT Lead Instructor - Signature

Reviewed By:_____ Date:_____
EP (as appropriate) - Signature

Reviewed By: N/A Date: N/A
RE (as appropriate) - Signature

Approval: _____ Date:_____
OPS Manager - Signature

Approved For Use:_____ Date:_____.
Training Manager - Signature

Facility: Limerick 1 & 2 Scenario No.: SEG-2007E Rev 2 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

_____ _____

_____ _____

**Initial Conditions:**

Unit 1 is at 90% power. Unit 2 is at 100% power.

**Turnover:**

Withdraw Control Rods per ReMA and raise Recirc flow to return to 100% Reactor power

'1B' EHC Pump is blocked for pump replacement. Repairs are scheduled to be complete in two (2) hours. Maintain 100% power and support PMT of '1B' EHC pump when it is returned to operations.

| Event No. | Malfunction Number | Event Type* | Event Description |
|---|---|---|---|
| 1. | None | R-RO | Raise Power with Control Rods |
| 2. | MRD016E (46-15) | C-RO TS-SRO | Control Rod (46-15) uncoupled **(Abnormal)** |
| 3. | MAD149E | C-RO C-PRO | '1N' SRV fails open / closes when Rx power lowered to <90 % **(Abnormal)** |
| 4. | MCS183C | C-RO C-PRO TS-SRO | Inadvertent Div 4 LOCA Signal **(Abnormal)** |
| 5. | MRH172D | C-PRO TS-SRO | '1D' RHR Pump fails to auto start **(Malfunction)** |
| 6. | MRR441 | C-PRO | Small leak in Drywell **(Abnormal)** |
| 7. | MMS067 | M-ALL | Large Steam Leak in Drywell |
| 8. | MRH600B | C-PRO | '1B' RHR Pump Trips **(Malfunction)** |
| 9. | MRH573A | C-PRO | HV-51-1F024A Thermal Overload condition **(Malfunction)** |

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

# I. QUANTITATIVE ATTRIBUTES

A. ILT

| Target Quantitative Attributes (Per Scenario; See ES-301Section D.5.d) | ACTUAL NUMBER |
|---|---|
| 1. Malfunctions after EOP entry (1-2) | 2 |
| 2. Abnormal events (2-4) | 4 |
| 3. Major transients (1–2) | 1 |
| 4. EOPs entered/requiring substantive actions (1–2) | 2 |
| 5. EOP contingencies requiring substantive actions (0-2) | 1 |
| 6. EOP based Critical tasks (2–3) | 2 |

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

II. **PURPOSE:** Systematically evaluate individual and team performance to identify areas for improvement. Critical Tasks and Assessment Items from this evaluation guide are to be used to assess crew and individual performance and as input into a 4.0 Crew Critique Process.

## III. SIMULATOR EVALUATION GUIDE OBJECTIVES:

A. The following evaluation objectives apply to the Crew (C), Shift Manager (SM), Control Room Supervisor (S), Unit Reactor Operator / Plant Reactor Operator (R), or Incident Assessor / Shift Technical Advisor (A) as indicated in the following categories.

1. The general condition for each of the evaluation objectives will be "Given the plant conditions and sequence of events in the Simulator Evaluation Guide (SEG)".
2. The general acceptable evaluation objective criteria for each of the evaluation objectives will be "To perform effectively as an individual and contribute to successful crew performance in accordance with appropriate reference plant procedures and Operations Expectations, Fundamentals and Strategies".
3. Specific UNSAT evaluation objective criteria will be consistent with TQ-AA-155, Conduct of Simulator Training and Evaluation with applicable forms and job aids.
4. During performance of this Simulator Evaluation Guide, the individuals and crew should satisfactorily demonstrate the following overall procedure and plant control objectives:
   - Direct and perform actions per ON-104, Control Rod Problems.
   - Direct and perform actions per OT-101, Drywell High Pressure
   - Direct and perform actions per OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion.
   - Direct and perform actions per OT-114, Inadvertent Opening of a Relief Valve
   - Direct and perform actions per SE-10, LOCA
   - Direct and perform actions per OT-101, High Drywell Pressure
   - Direct and perform actions per OT-102, Reactor High Pressure
   - Direct and perform actions per T-112, Emergency Blowdown

## IV. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence

B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision

C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | LORT Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
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## V. 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 (e.g for conversion of LSTS to LLORSEG format).

| Revision Number | Description of Revision and Affect on Training Content | # Date of Revision |
|---|---|---|
| Rev000 | This is a reformat to the new SEG Evaluation template. This replaces LSES2007 Rev 9. Deleted '1N' SRV failing open and added HV-51-1F024A Thermal Overload. | 10/28/13 |
| Rev001 | Revised to new template, and control rod drift | 9/2/15 |
| Rev002 | Revised to new template, changed to control rod uncoupled, and open SRV response | 7/22/16 |
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**# Date of Revision** - refers to date revision was released for approval

## SCENARIO EVENT AND EVALUATION SUMMARY:

Events One and Two: As the crew assumes responsibility for the shift, they are directed to withdraw Control Rods and adjust Recirc flow per the ReMA and return the reactor to 100% power. During the power ascension and as Control Rod 46-15 is being withdrawn, a "Rod Overtravel" alarm will annunciate, and Control Rod 46-15 will become uncoupled.

Evaluation: To evaluate the crews ability to raise Recirc flow and withdraw Control Rods per a ReMA, and when the 'Rod Overtravel' alarms, identify an uncouple Control Rod, implement ON-104, Control Rod Problems, and OT-104, Unexpected/ Unexplained Positive or Negative Reactivity Insertion, isolate the Control Rod (46-15) and evaluate Tech Specs for the INOP Control Rod.

Event Three: When the Control Rod has been fully inserted as directed by the ON procedure, and Tech Specs are evaluated for the Control Rod being INOP, the '1N' SRV will inadvertently open. The SRV will close when reactor power is lowered to ~90%.

Evaluation: To evaluate the crews' response to an open SRV. The crew will enter and execute OT-114, Inadvertent Opening Of A Relief Valve. The crew will identify that when reducing reactor power to ~90%, per the OT procedure, the SRV closes. The crew will then evaluate the plants response to the now closed SRV.

Event Four: After the SRV is closed, an inadvertent Division 4 LOCA signal will occur.

Evaluation: To evaluate the crews response to use MCR instrumentation and determine the Division 4 LOCA signal is inadvertent. The crew will identify the cause of the Division 4 LOCA signal to be an excess flow check valve actuation. The crew will recognize a reactor power increase and that HPCI is running and injecting into the RPV, and isolate the HPCI system. The crew will also identify the D14 EDG running unloaded, and a Core Spray Pump running. The CRS will determine the required Tech Spec Actions for systems that are unavailable due to the LOCA signal.

Event Five: During the inadvertent Division 4 LOCA signal, the '1D' RHR Pump will fail to auto start.

Evaluation: To evaluate the crews response to the failure to auto start of the '1D' RHR Pump. Identify the Tech Spec requirements for an RHR system that failed to auto start.

## SCENARIO EVENT AND EVALUATION SUMMARY cont'd:

Events Six and Seven: When actions for the inadvertent LOCA signal are complete, a gradually increasing coolant leak in the drywell will develop requiring the plant to shutdown. Following Plant shutdown a large steam leak into the Drywell will occur which will eventually require a T-112, Emergency Blowdown be performed.

Evaluation: To evaluate the crews response to increasing drywell pressure and temperature, including the initial execution of OT-101, Drywell High Pressure, and eventually a plant shutdown and execution of T-101, RPV Control, and T-102, Primary Containment Control.

Event Eight and Nine: The '1B' RHR Pump, which was placed in service when the SRV opened, trips on a time delay after the plant is shutdown, and when the crew transitions to the 'A' Loop of RHR for containment cooling, the HV-51-1F024A, 'A' Loop RHR Test Return Valve, will trip on a Thermal Overload condition.

Evaluation: To evaluate the crew's response to the tripped '1B' RHR Pump and to transition the '1A' RHR Pump when directed to re-direct from Suppression Pool Spray to Drywell Spray. As the crew re-directs to 'A' RHR for Drywell Spray they will manually open the HV-51-1F024A valve when a thermal overload trip is identified.

Termination Point: The scenario may be terminated when an Emergency Depressurization has been performed, Drywell Spray is in service, control rods inserted and reactor level is restored.

## VI. REFERENCES

A. Training Procedures
   1. TQ-LG-150, Limerick Operator Training Programs
   2. TQ-AA-151, ILT Certification and NRC Examination Development and Administration
   3. TQ-AA-155, Conduct of Simulator Training and Evaluation

B. Annunciator Response Cards (ARC)
   1. 002 D-4, B CONTROL STRUCTURE CHILLER OUT OF SERVICE
   2. 002 A-1, CONTROL ROOM RADIATION ISOLATION
   3. 004 B-1, B DRYWELL CHILLER TRIP/FAILED TO START
   4. 004 B-4, DIV I/II RRCS CHANNEL ACTIVATED
   5. 103 B-3 DRYWELL FLOOR DRAIN HI LEVEL
   6. 107 H-2, REACTOR HI/LO LEVEL
   7. 107 F-2, DRYWELL HI / LO PRESS
   8. 108 F-5, ROD OVERTRAVEL
   9. 110 B-1, SRV/HEAD VENT VALVE LEAKING
   10. 110 B-2, SAFETY RELIEF VALVE OPEN
   11. 112 H-1, RWCU PUMP SUCTION LO FLOW
   12. 112 C-5, DRYWELL EQUIP DRN TK/FLR DRN SUMP LEAKAGE HI FLOW
   13. 112 E-5, EXCESS FLOW CHECK VALVE OPERATED 10C218
   14. 113 B-5, CORE SPRAY LINE INTERNAL BREAK
   15. 114 C-2, REACTOR LO-LO LEVEL
   16. 114 D-1, DIV 4 NSSSS MSIV INITIATED
   17. 114 C-2, REACTRO LO-LO LEVEL
   18. 114 D-1, DIV 4 NSSSS MSIV INITIATED
   19. 115 H-3, REACTOR LO-LO-LO LEVEL
   20. 115 I-1, DIV 4 RHR AUTO START
   21. 115 D-1, DIV 4 CORE SPRAY AUTO START
   22. 115 B-5, DRYWELL COOLER DRAIN FLOW HIGH
   23. 118 C-2, 1B INSTRUMENT AIR HDR LO PRESS

C. System Procedures (S)
   1. S73.1.A, Normal Operation of the Reactor Manual Control system
   2. S51.8.A App. 1, Placing RHR SP Cooling in Service During a Plant Event
   3. S12.1.A App. 2, RHR Service Water System Dual Loop Startup Hard Card
   4. S78.7.A, Control Room HVAC System Restoration from an Isolation
   5. S87.1.A App. 1, Startup of Standby/Tripped Drywell Chiller Hard Card
   6. S91.6.B App. 1, Transferring House Loads to S/U Buses Hard Card

D. General Procedures (GP)
   1. GP-3, Normal Plant Shutdown
   2. GP-4, Rapid Plant Shutdown to Hot Shutdown

E. Off Normal Procedures (ON)
   1. ON-104, Control Rod Problems

F. Operating Transient Procedures (OT)
   1. OT-101, High Drywell Pressure

**REFERENCES cont'd**

2. OT-104, Unexpected/Unexplained Positive or Negative Reactivity Addition
3. OT-114, Inadvertent Opening of a Relief Valve

G. Event Procedures (E)

H. Special Event Procedures (SE)
1. SE-10, LOCA

I. Surveillance Test and Routine Test Procedures (ST and RT)

J. Technical Specifications and TRM (TS)
1. 3.1.3.1, Control Rod Operability
2. 3.1.3.6, Control Rod Drive Coupling
3. 3.3.3, Emergency Core Cooling System Actuation Instrumentation 3.5.1, ECCS – Operating
4. TRM 3.4.4, Reactor Coolant System – Chemistry
5. 3.4.3, Reactor Coolant System – Leakage Detection Systems
6. 3.5.1, Emergency Core Cooling Systems

K. Transient Response Implementation Procedures (T-100 series)/SAMPs
1. T-101, RPV Control
2. T-102, Primary Containment Control
3. T-112, Emergency Blowdown

L. TRIP 200 Series Procedures
1. T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation

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

N. Administrative Procedures
1. OP-AA Procedures
   a. OP-AA-1, Conduct of Operations
   b. OP-AA-20, Conduct of Operations Process Description
   c. OP-AA-101-111-1003, Operations Department Standards and Expectations
   d. OP-AA-101-113, Operations Fundamentals
   e. OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
   f. OP-AA-103-102-1001, Strategies For Successful Transient Mitigation
   g. OP-AA-106-101-1006, Operational Decision Making Process
2. OP-LG Procedures
   a. OP-LG-101-111-1000, Licensed Operator Duties
   b. OP-LG-102-106, Operator Response Time Program at Limerick
   c. OP-LG-103-102-1000, Human Performance Continuing Good Practices
   d. OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
   e. OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

O. Current Shift Night Orders Forced Outage Plan

P. INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER)
1. IER-L1 11-3, Weaknesses in Operator Fundamentals
2. SER 3-05, Weakness in Operator Fundamentals
3. SOER 10-02, Engaged Thinking Organizations
4. INPO 15-004, Operator Fundamentals

## VII. PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100% power

Unit 1 is in OPCON 1 at 90% power

**Specific Plant Conditions are as Follows:**

- Reactor power reduced to 90% due to Control Rod pattern adjustment

**Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):**

- '1B' EHC pump is blocked for replacement
- Repairs are scheduled to be complete in 2 hours

**Restrictions on Plant Operations:**

- None

**Planned Evolutions:**

- Raise Reactor power to 100%
- Continue replacement of '1B' EHC pump and perform PMT when complete

**Documents Provided:**

- ReMA and Control Rod Move Sheet (with control rod steps 1-16 signed off )
- GP-5 Attachment 1 (signed off to step 2.6)
- S73.1.A, Normal Operation of the Reactor Manual Control System

## VIII. DIRECTIONS FOR EVALUATION PREPARATION

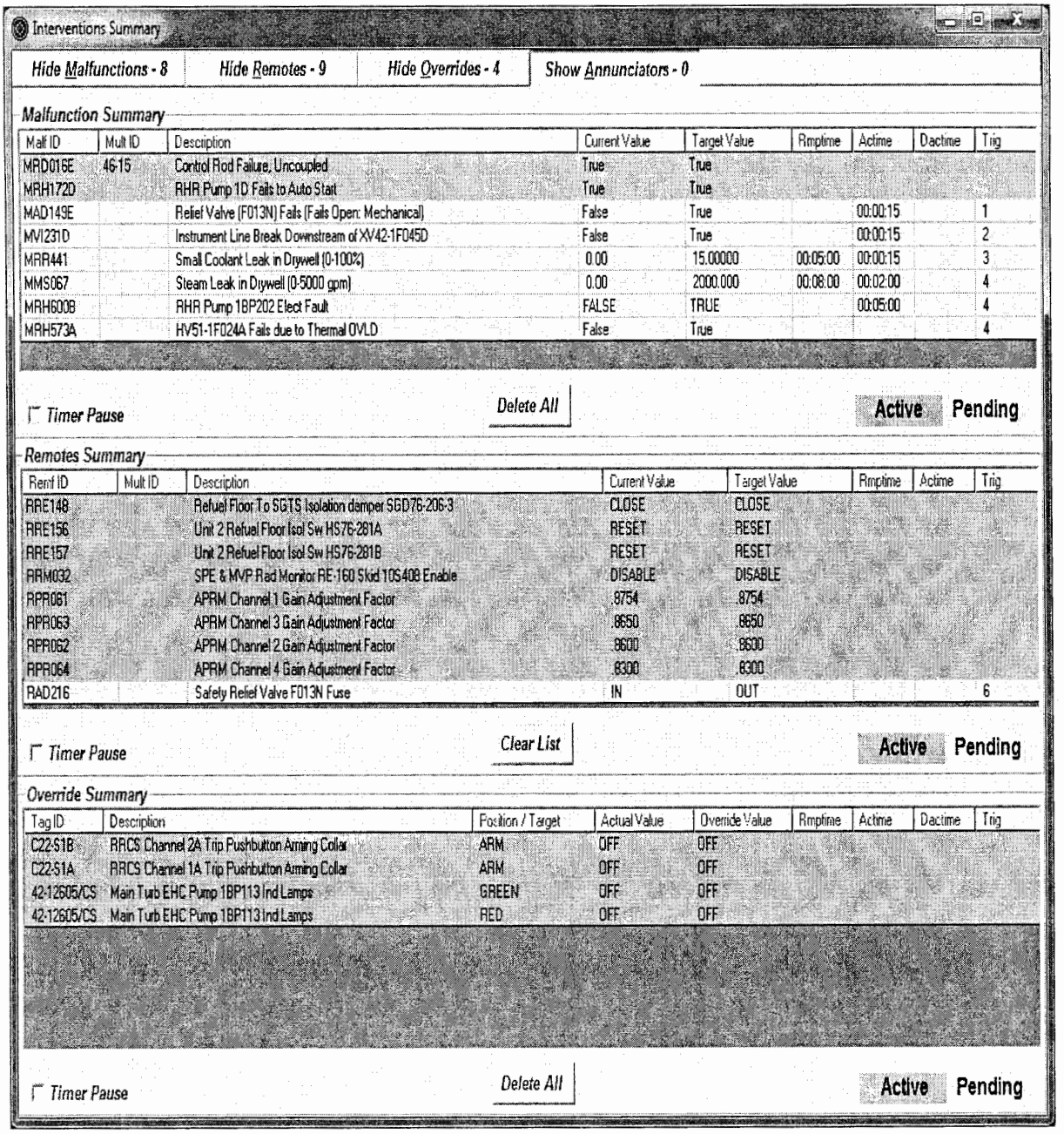
### A. INITIAL PREPARATION

| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete TQ-AA-155, Operator Training Programs Attachment 02, Evaluated Scenario Administration Checklist. |
| | Complete TQ-LG-201-0113, Limerick Training Department Simulator Examination Security Actions Checklist |

### B. SIMULATOR SETUP

| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete Limerick Simulator Pre-Evaluation Checklist |
| | Reset Simulator to the Pre-loaded Cycle **IC** developed for the Evaluation<br>OR Reset the simulator to designated base load **IC-3**<br>AND Load scenario file **SEG2007E Rev002.scn**<br>• Verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded<br>**OR**<br>• Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Scenario Generator Screen Shots: |
| | Simulator Operator (Driver) perform the following:<br>• Momentarily place simulator in RUN<br>• Ensure reactor power is at 90%<br>• Acknowledge and clear all spurious alarms<br>• Place the simulator back into FREEZE<br>• Place INFO tag on '1B' EHC Pump with handswitch in PTL |

## C. MALFUNCTION/REMOTE/OVERRIDE/ANNUNCIATORS FUNCTION TIME TABLE



Interventions Summary

Hide Malfunctions - 8 | Hide Remotes - 9 | Hide Overrides - 4 | Show Annunciators - 0

**Malfunction Summary**

| Malf ID | Mult ID | Description | Current Value | Target Value | Rmptime | Actime | Dactime | Trig |
|---|---|---|---|---|---|---|---|---|
| MRD016E | 46-15 | Control Rod Failure, Uncoupled | True | True | | | | |
| MRH172D | | RHR Pump 1D Fails to Auto Start | True | True | | | | |
| MAD149E | | Relief Valve (F013N) Fails (Fails Open: Mechanical) | False | True | | 00:00:15 | | 1 |
| MVI231D | | Instrument Line Break Downstream of XV42-1F045D | False | True | | 00:00:15 | | 2 |
| MRR441 | | Small Coolant Leak in Drywell (0-100%) | 0.00 | 15.00000 | 00:05:00 | 00:00:15 | | 3 |
| MMS067 | | Steam Leak in Drywell (0-5000 gpm) | 0.00 | 2000.000 | 00:08:00 | 00:02:00 | | 4 |
| MRH600B | | RHR Pump 1BP202 Elect Fault | FALSE | TRUE | | 00:05:00 | | 4 |
| MRH573A | | HV51-1F024A Fails due to Thermal OVLD | False | True | | | | 4 |

Timer Pause | Delete All | Active | Pending

**Remotes Summary**

| Remf ID | Mult ID | Description | Current Value | Target Value | Rmptime | Actime | Trig |
|---|---|---|---|---|---|---|---|
| RRE148 | | Refuel Floor To SGTS Isolation damper SGD76-206-3 | CLOSE | CLOSE | | | |
| RRE156 | | Unit 2 Refuel Floor Isol Sw HS76-281A | RESET | RESET | | | |
| RRE157 | | Unit 2 Refuel Floor Isol Sw HS76-281B | RESET | RESET | | | |
| RRM032 | | SPE & MVP Rad Monitor RE-160 Skid 10S408 Enable | DISABLE | DISABLE | | | |
| RPR061 | | APRM Channel 1 Gain Adjustment Factor | .8754 | .8754 | | | |
| RPR063 | | APRM Channel 3 Gain Adjustment Factor | .8650 | .8650 | | | |
| RPR062 | | APRM Channel 2 Gain Adjustment Factor | .8600 | .8600 | | | |
| RPR064 | | APRM Channel 4 Gain Adjustment Factor | .8300 | .8300 | | | |
| RAD216 | | Safety Relief Valve F013N Fuse | IN | OUT | | | 6 |

Timer Pause | Clear List | Active | Pending

**Override Summary**

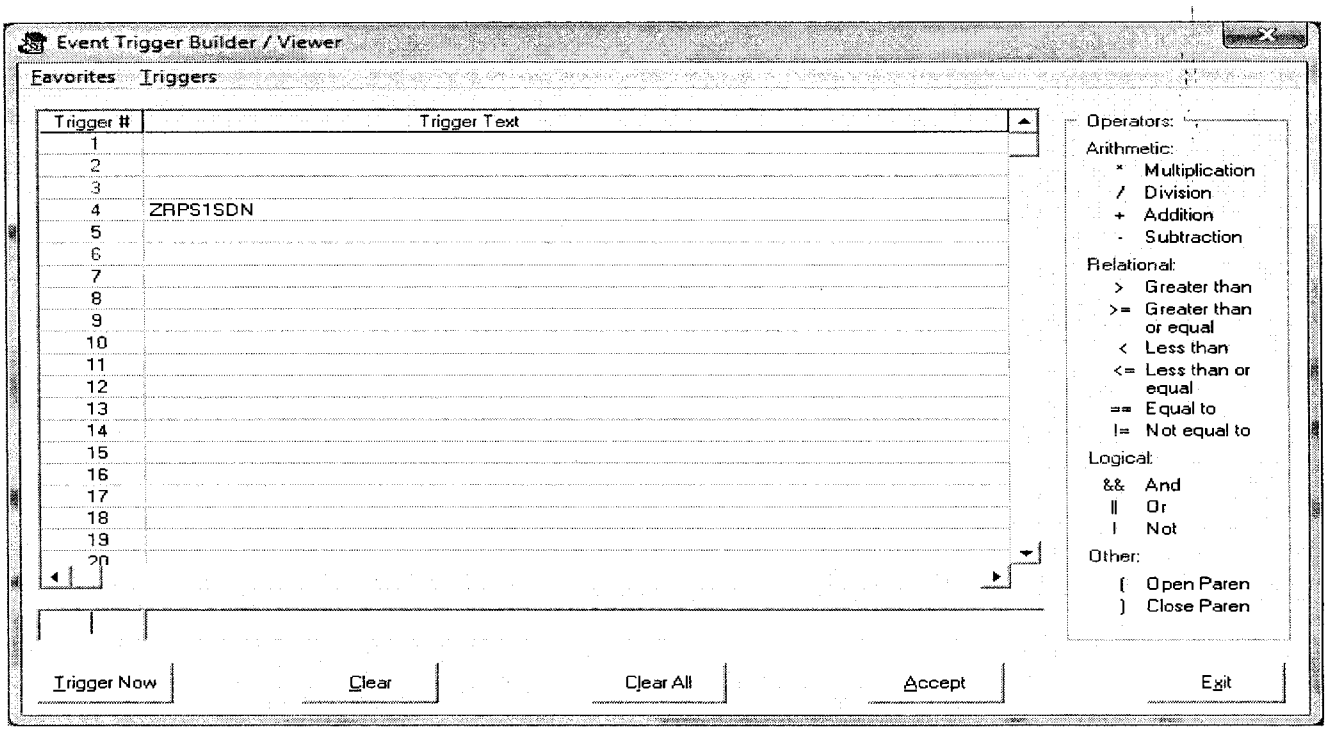
| Tag ID | Description | Position / Target | Actual Value | Override Value | Rmptime | Actime | Dactime | Trig |
|---|---|---|---|---|---|---|---|---|
| C22-S1B | RRCS Channel 2A Trip Pushbutton Arming Collar | ARM | OFF | OFF | | | | |
| C22-S1A | RRCS Channel 1A Trip Pushbutton Arming Collar | ARM | OFF | OFF | | | | |
| 42-12605/CS | Main Turb EHC Pump 1BP113 Ind Lamps | GREEN | OFF | OFF | | | | |
| 42-12605/CS | Main Turb EHC Pump 1BP113 Ind Lamps | RED | OFF | OFF | | | | |

Timer Pause | Delete All | Active | Pending

## D. EVENT TRIGGERS ASSIGNMENT

1. Timers should be used on event triggers where possible for time validation
2. Timing of event triggers may be altered by the Lead Evaluator (or designee)
3. Verify triggers are actuated automatically as designed or manually initiate the trigger when the initiating action has occurred.
4. Inform Lead Evaluator (or designee) of expected plant response prior to actuation of each trigger.
5. Trigger #1 is manually initiated at Lead Evaluator (or designee) direction after the crew assumes responsibility for operation.

| | TRIGGER / TIME | MALFUNCTION / EVENT | DESCRIPTION |
|---|---|---|---|
| | 1 | Manual | Initiates '1N' Safety Relief Valve fails open |
| | 2 | Manual | XV-42-1F045D Instrument Line break / '1D' RHR Pump failure to Auto Start |
| | 3 | Manual | Small coolant leak in Drywell |
| | 4 | Auto / ZRPS1SDN | RMS to SHUTDOWN<br>Initiates Drywell Steam Leak / '1B' RHR pp trip |
| | 5 | N/A | N/A |
| | 6 | Manual | '1N' Safety Relief Valve Fuse removed |



E. EQUIPMENT REPORTS AND LEAD EVALUATOR (OR DESIGNEE) OPERATIONS

1. This table section is moved and now integrated with Assessment of Crew Performance to facilitate simulator Operator and Instructor observation of crew activities related to simulator operation and instructor intervention.
2. Scripted Activity Reports should be followed with adherence to Operations Communication standards of performance.
3. The T-200 procedure reference book should be used for familiarity of reports to aid in operator prompting and expected communications.
4. The Lead Evaluator (or designee) should be informed if any event is not reported as scripted due to lack of Operator request.
5. The Standard Equipment Operator Response Times are per **Attachment 1**
6. A record of communications from the MCR and to the MCR will be maintained by the Simulator Operator using **Attachment 2.**
7. The OCOEE Simulator Operator Station P&IDs, Floor Plans and Panels must be used by the Simulator Operator as reference information when making reports to the MCR for plant parameters which are not driven by a communications script. Examples include: ARMs, Blowout Panel status, Reactor Building Area Temperatures and Pressures, RMMS, Turbine Enclosure parameters etc.

## IX. CREW CRITICAL TASKS

A. Critical Tasks are based on the current Crew Critical Task List revision, NUREG 1021 and TQ-AA-150 requirements.

1. **T-102.1** **Spray the Drywell per T-225.**

| | | | |
|---|---|---|---|
| K/A | 295024 | EA1.11 | 4.2/4.2 |
| K/A | 295028 | EA1.01 | 3.8/3.9 |
| K/A | 295028 | EA1.04 | 3.9/4.0 |

Standard: When Drywell temperature and pressure are on the SAFE side of curve PC/P-2, spray the Drywell before exceeding 340°F or 55 psig.

**SAT/UNSAT**

2. **T-102.2** **Perform emergency blowdown per T-112.**

| | | | |
|---|---|---|---|
| K/A | 295024 | EA1.08 | 3.9/3.9 |
| K/A | 295024 | EA2.04 | 3.9/3.9 |

Standard: When suppression Pool Pressure cannot be maintained below the Pressure Suppression Pressure (PC/P-3) curve and before Drywell pressure exceeds 55 psig, open 5 SRVs.

**SAT/UNSAT**

3. **OT-114.1** **Close the stuck open relief valve.**

| | | | |
|---|---|---|---|
| K/A | 239002 | A2.03 | 4.1/4.2 |

Standard: Direct closure of the stuck open SRV by removing fuses or reducing turbine inlet pressure per OT-114.

**SAT/UNSAT**

## X. ASSESSMENT OF CREW PERFORMANCE DURING CONDUCT OF THE DYNAMIC SIMULATOR EVALUATIONS:

A. Conduct the Simulator Evaluation Session per TQ-AA-155, Conduct of Simulator Training and Evaluation, Attachment 02, Evaluated Scenario Administration Checklist

B. Assessment of Crew and Individual performance shall be consistent with OP-AA-20, Conduct of Operations Process Description

C. Where possible record the time and position responsible for performance of each task or assessment item

D. Items not performed as expected **SHALL** be discussed in the post performance crew critique

E. During the performance of the evaluation, the Simulator Evaluators shall **MAINTAIN** notes of observations and information consistent with the timeline

F. Assessment items with the ⏱ symbol indicate a time critical standard for performance

G. Assessment items with the ⚑ symbol indicate a Probabilistic Risk Assessment (PRA) association with the task

H. The Simulator Operator will respond with scripted or proceduralized responses when requested by the MCR operators with Procedure completion times requested per **Attachment 1**

I. The Simulator Operator will also maintain a timeline and record of all reports and requests issued by the MCR personnel with response provided by the simulator operator using **Attachment 2**

J. Shaded items do not require assessment for ILT Evaluations; The CRS may be requested to complete the Shift ED forms and determine the EAL classification at the completion of the scenario.

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## 1/2. EVENTS 1 – 2 RAISE POWER / CONTROL ROD UNCOUPLED (Abnormal)

**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 |
|---|---|---|
| **1/2.** | **EVENTS 1 – 2 RAISE POWER / CONTROL ROD UNCOUPLED (Abnormal)** | |
| | **Lead Evaluator (or designee) Notes:** As the RO withdraws control rods per the ReMA "Rod Overtravel" will alarm indicating a control rod has failed its coupling check. ON-104 will be referenced and the operator will perform a second attempt to verify the coupling check. When the second attempt fails the control rod will be declared Inoperable, fully inserted and isolated.<br>**Note:** [ST-6-107-730-1 4.3.4] If a coupling check is signed off in ReMA/Control Rod Move Sheets, **THEN** copy of ReMA is normally attached to ST-6-107-730-1 | |
| | Withdraw control rods IAW ReMA and S73.1.A | RO |
| | [S73.1.A 4.3.3]<br>**SELECT** the control rod to be withdrawn | RO |
| | [S73.1.A 4.3.4]<br>**VERIFY** correct rod position on four rod display | RO |
| | [S73.1.A 4.3.7]<br>Simultaneously **DEPRESS** Withdraw and Continuous Withdraw pushbuttons to withdraw control rod | RO |
| | [S73.1.A 4.3.8]<br>**VERIFY** proper RDCS light sequence for control rod withdraw | RO |
| | [S73.1.A 4.3.10]<br>**WHEN** control rod is located two notches before target position RELEASE Withdraw and Continuous Withdraw pushbuttons<br>(Note: Student may hold continuous withdraw to notch position 48 as permitted by Note 4 on Page 8 of S73.1.A) | RO |
| | [S73.1.A 4.3.11]<br>**VERIFY** the SETTLE light Lit AND THEN extinguishes after ~ 6.1.sec. | RO |
| | [S73.1.A 4.3.12]<br>**IF** control rod settles short of target position, **THEN PLACE** the control rod in target position using single notch withdraw per Section 4.2 | RO |
| | [S73.1.A 4.3.13]<br>**VERIFY** control rod has been withdrawn to target position at Four Rod Display | RO |
| | [S73.1.A 4.3.14]<br>**IF** control rod is positioned to notch position 48, THEN **PERFORM** an overtravel check per ST-6-107-730-1, Control Rod Coupling Check | RO |
| | Select next rod in sequence, repeat previous steps | RO |

## 1/2. EVENTS 1 – 2 RAISE POWER / CONTROL ROD UNCOUPLED (Abnormal)

**Simulator Operator Instructions:**

Inform Floor Instructor prior to each event trigger.

Respond to request for assistance as appropriate.

If RE's contacted for support for uncoupled control rod:
**report:** "A Reactor Engineer is on the way to assist with a Recovery ReMA".

At time 5 min after floor personnel are dispatched to isolate HCU (46-15),
**DELETE malfunction MRD016E for (46-15)** and
**report:** Valves 047-1-03-46-15 and 047-1-05-46-15 valves are closed for HCU (46-15).
OR
**report:** ON-104 step 2.5.6.5 is complete for Unit 1 HCU 46-15.

Manually actuate **Trigger #** 1 when directed by Lead Evaluator, to initiate '1N'SRV to fail open.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **1/2.** | **EVENTS 1 – 2 RAISE POWER / CONTROL ROD UNCOUPLED (Abnormal)** | |
| | Respond to<br>• 108 F-5, ROD OVERTRAVEL | RO |
| | Report alarm and notify SRO that control rod (46-15) may be uncoupled | RO |
| | Enter ON-104, Control Rod Problems **(Abnormal)** | SRO |
| | [ON-104 2.5.6]<br>**IF** reactor power is greater than 25%, then perform the following:<br>- Insert the rod to position 46<br>- Withdraw the control rod to 48 and attempt a coupling check | RO |
| | [ON-104 2.5.6.3]<br>**IF** coupling check unsuccessful **DECLARE** control rod INOP and continue | RO |
| | [ON-104 2.5.6.4]<br>Fully continuously **INSERT** the control rod and **MAINTAIN** insert signal for 10 seconds | RO |
| | [ON-104 2.5.6.5]<br>**DISARM** directional control valves by closing 047-1-03-46-15 and 047-1-05-46-15 vlvs | RO |
| | Demand P-1 Edit (after rod settles at 00) | RO |
| | Contact RE for assistance | SRO |
| | Enter T.S. 3.1.3.6 – Control Rod Drive Coupling<br>and<br>T. S. 3.1.3.1 – Control Rod Operability for Control Rod (46-15) | SRO |

## 1/2. EVENTS 1 – 2 RAISE POWER / CONTROL ROD UNCOUPLED (Abnormal)

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

Manually actuate **Trigger #** _1__ when directed by Lead Evaluator, to initiate '1N'SRV to fail open.

**IMPORTANT**
**DRIVER NOTE:** When Reactor power reduction initiated
Manually **DELETE MAD149E** at <90% APRM power, to simulate closure of the '1N' SRV.

****** OT-114 directs a GP-4 Shutdown if SRV remains open at 85% power ******

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **3.** | **EVENT - 3 '1N' SRV INADVERTENTLY OPEN (Abnormal)** | |
| **Lead Evaluator (or designee) Notes:** The '1N' SRV will inadvertently open. The crew will enter and execute OT-114 for the open SRV. Two loops of Suppression Pool Cooling will be placed in service (Six minute requirement per OP-LG-102-108) and reactor power will be reduced to 85%. Since the SRV closes prior to reaching 85% reactor power, a GP-3 Shutdown will be performed. | | |
| | Reference ARCs<br>• 110 B-1, SRV/HEAD VENT VALVE LEAKING<br>• 110 B-2, SAFETY RELIEF VALVE OPEN | RO/PRO |
| | Recognize '1N' SRV open (confirming indications) | PRO |
| | Enter OT-114, Inadvertent Opening Of A Relief Valve, and perform Immediate Operator Actions **(Abnormal)** | SRO |
| | [OT-114 IOA]<br>Place both loops Suppression Pool Cooling in service | PRO |
| | [S51.8.A App. 1 1.1]<br>**START** selected RHRSW loop per S12.1.A | PRO |
| | [S12.1.A App.2 1.3]<br>• **OPEN** HV-51-1F014A, HEAT EXCHANGER INLET<br>• Throttle **OPEN** HV-51-1F068A for 18 to 20 seconds | PRO |
| | [S12.1.A App.2 1.4]<br>• **OPEN** HV-51-1F014B, HEAT EXCHANGER INLET<br>• Throttle **OPEN** HV-51-1F068B for 18 to 20 seconds | PRO |
| | [S12.1.A App.2 1.5]<br>**VERIFY** PI-51-105A-1, HX DISCH, indicates system static pressure greater than or equal to 15 psig | PRO |
| | [S12.1.A App.2 1.6]<br>**VERIFY** PI-51-105B, HX DISCH, indicates system static pressure greater than or equal to 15 psig | PRO |
| | [S12.1.A App.2 1.8]<br>**ENSURE** 0A-V543 OR 0C-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681. | PRO |
| | [S12.1.A App.2 1.9]<br>**ENSURE** 0B-V543 OR 0D-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681. | PRO |
| | [S12.1.A App.2 1.10]<br>**START** 0A(C)P506, RHRSW PUMP | PRO |

## 3. EVENT - 3 '1N' SRV INADVERTENTLY OPEN (Abnormal)

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

At time 5 min if requested to pull fuses per OT-114, Attachment 1:
Manually actuate **Trigger #6** to remove fuses for '1N' SRV

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **3.** | **EVENTS - 3 '1N' SRV INADVERTENTLY OPEN (Abnormal)** | |
| | [S12.1.A App.2 1.11]<br>**THROTTLE** HV-51-1F068A to the maximum obtainable position without exceeding 11,000 gpm on FI-51-*R602A(B) while maintaining pump disch pressure (PI-12-001A-1) between 75 psig to 85 psig | PRO |
| | [S12.1.A App.2 1.12]<br>**START** 0B(D)P506, RHRSW PUMP | PRO |
| | [S12.1.A App.2 1.13]<br>**THROTTLE** HV-51-1F068B to the maximum obtainable position without exceeding 11,000 gpm on FI-51-*R602A(B) while maintaining pump disch pressure (PI-12-001B) between 75 psig to 85 psig | PRO |
| | [S51.8.A App.1 1.4] (Repeated for A Loop and B Loop)<br>**START** 1A(B) P202 RHR Pump | PRO |
| | [S51.8.A App.1 1.5] (Repeated for A Loop and B Loop)<br>Throttle **OPEN** HV-51-1F024A(B) "RHR Pump Full Flow Test Return" AND **MAINTAIN** flow indicated on FI-51-1R603A(B) between 8000 to 8500 gpm | PRO |
| | [S51.8.A App.1 1.6] (Repeated for A Loop and B Loop)<br>**CLOSE** HV-C-51-1F048A(B) HEAT EXCH BYPASS | PRO |
| | [OT-114 3.1]<br>**DISPATCH** EO to attempt SRV closure by pulling fuses using OT-114 Attachment 1 for PSV-41-1F013N | PRO |
| | [OT-114 3.2]<br>**REDUCE** Reactor power to 85% per RMSI | RO |
| | [OT-114 3.3]<br>Establish Suppression Pool Temperature as Critical Parameter | SRO |
| | CRS briefs stuck open SRV and contingency plans | SRO |
| | Crew trends Suppression Pool temperatures | PRO |
| | Crew identifies '1N' SRV closed during power reduction | PRO/RO |
| | CRS directs to perform a GP-3 Plant shutdown | SRO |

## 4/5. EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS

**Simulator Operator Instructions**

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 for SE-10 Floor Actions
Load **All SE-10 Floor Actions with Time Delays Scenario** and
**report:** "SE-10 Floor Actions for Div 4 are complete"

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4/5. EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS** | | |
| **Lead Evaluator (or designee) Notes:** An instrument line downstream of excess flow check valve XV-42-1F045D breaks resulting in a DIV 4 LOCA signal. As a result DIV 4 ECCS will start on reactor level low signal. HPCI will also start and inject into the vessel, and D14 EDG will start, but the output breaker will not close. Also, all DIV 4 shunt trips will result in trips of various BOP systems. | | |
| | Reference appropriate ARC:<br>• 002 A-1, CONTROL ROOM RADIATION ISOLATION<br>• 002 D-4, B CONTROL STRUCTURE CHILLER OUT OF SERVICE<br>• 004 B-1, B DRYWELL CHILLER TRIP/FAILED TO START<br>• 004 B-4, DIV I/II RRCS CHANNEL ACTIVATED<br>• 107 H-2, REACTOR HI/LO LEVEL<br>• 112 H-1, RWCU PUMP SUCTION LO FLOW<br>• 112 E-5, EXCESS FLOW CHECK VALVE OPERATED 10C218<br>• 113 B-5, CORE SPRAY LINE INTERNAL BREAK<br>• 114 C-2, REACTOR LO-LO LEVEL<br>• 114 D-1, DIV 4 NSSSS MSIV INITIATED<br>• 115 I-1, DIV 4 RHR AUTO START<br>• 115 D-1, DIV 4 CORE SPRAY AUTO START<br>• 115 H-3, REACTOR LO-LO-LO LEVEL<br>• 118 C-2, 1B INSTRUMENT AIR HDR LO PRESSURE | PRO/RO |
| | Recognize Div 4 LOCA signal | PRO |
| | Enter SE-10, LOCA **(Abnormal)** | SRO |
| | [SE-10 3.2]<br>**PLACE** to "RESET":<br>• 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661. | PRO |
| | Dispatch Equipment Operator to perform SE-10-1 field actions | PRO |
| | Recognize/report HPCI running and injecting | PRO |
| | Enter OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion. **(Abnormal)** | SRO |
| | [OT-104 IOA]<br>Reduce power to pre-transient power levels or below per OT-104 | RO |
| | [OT-104 Attach #2]<br>Recognize power rise due to HPCI injection and is NOT required | PRO |
| | [OT-104 Attach #2]<br>TRIP HPCI per S55.2.A | PRO |

## 4/5. EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

At time _5 min_ after requested to respond to Excess Flow Check Valve Panel 10C218, and **report:** _At panel 10C218, Excess Flow Check Valve XV-42-1F045D is indicating CLOSED. All other Excess Flow Valves indicate open.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4/5.** | **EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS** | |
| | [ARC MCR 112 E-5]<br>Recognize excess flow check valve actuated and send an operator to investigate 10C218 panel | PRO/RO |
| | [ARC MCR 002 A-1]<br>Recognize partial CR HVAC RAD isolation and reset the isolation per S78.7.A | PRO |
| | [S78.7.A 4.3.1]<br>**PLACE** the desired following Control Room Isolation Valve Reset Keylock Switches to "RESET"<br>• HS-78-017D, RESET D | PRO |
| | [S78.7.A 4.3.2]<br>**ENSURE** the desired following Control Room Isolation Valve Trip Switches to "NOR"<br>• HSS-78-017D, TRIP D | PRO |
| | [S78.7.A 4.3.3]<br>**PLACE** the desired Control Room Isolation Valve Reset Keylock Switches to "AUTO"<br>• HS-78-017D, RESET D | PRO |
| | Recognize D14 D/G is running and send an EO to perform running checks | PRO |
| | [ARC MCR 004 B-1]<br>Recognize loss of '1B' Drywell Chiller | PRO |
| | Enter OT-101 on rising Drywell Pressure | SRO |
| | [OT-101, 3.1]<br>**ESTABLISH** Drywell pressure as a Critical Parameter | Crew |
| | [OT-101 Att 3 2]<br>**IF** the Drywell Chiller is tripped<br>**PLACE** a Drywell Chiller in-service using S87.1.A Appendix 1. | PRO |
| | [S87.1.A App1 2.1]<br>**PLACE** 1BK111 Drywell Chiller (CHILLER) to STOP (Green Flagged). | PRO |
| | [S87.1.A App1 2.2 and 2.3]<br>**PLACE** DW Chilled water pumps 1A-P161 and 1B-P161 to OFF. | PRO |
| | [S87.1.A App1 4.0]<br>**PLACE** 1BK111, "D/W Chiller" (CHILLER) for oncoming Drywell Chiller in "START." | PRO |

## 4/5. EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

Manually actuate **Trigger # 3** when directed by Lead Evaluator, to initiate Small Coolant Leak in the Drywell.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4/5.** | **EVENTS 4 – 5 INADVERTANT DIV 4 LOCA SIGNAL / '1D' RHR PUMP FAILS** | |
| | [S87.1.A App1 4.0]<br>**ENSURE** 1A-P161 and 1B-P161 in RUN. | PRO |
| | [ARC MCR 115 I-1]<br>Recognize '1D' RHR Pump failed to Auto start on LOCA signal | PRO |
| | Manually start of '1D' RHR Pump **(Malfunction)** | PRO |
| | Recognize RWCU is Out of Service and contact Chemistry to perform conductivity sampling per TRM 3.4.4 | PRO |
| | Direct Chemistry to perform sampling for Containment Leak Detector INOP | PRO |
| | Determine Tech Spec LCO's:<br>3.5.1.c.2 HPCI and '1D' LPCI (8 hours)<br>3.4.3.1.a Cont. Leak Detector (12 hours sampling/restore within 30 days)<br>TRM 4.4.4.c RWCU (4 hour sampling)<br>3.3.3 for Div 4 ECCS instrumentation | SRO |

## 6/7. EVENTS 6 - 7 STEAM LEAK IN THE DRYWELL

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

Manually actuate **Trigger # 3** when directed by Lead Evaluator, to initiate Small Coolant Leak in the Drywell.

Ensure **Trigger # 4** automatically actuates when RMS taken to SHUTDOWN, to initiate Steam Leak in the Drywell

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7. EVENTS 6 - 7 STEAM LEAK IN THE DRYWELL** | | |
| **EVALUATORS NOTE:** A coolant leak will develop in the Drywell. The coolant leak will result in a plant shutdown. Once the reactor is shutdown the operators will continue to address the containment parameters. | | |
| | Reference ARCs:<br>• 112 C-5, DRYWELL EQUIP DRN TK/FLR DRN SUMP LEAKAGE HI FLOW<br>• 115 B-5, DRYWELL COOLER DRAIN FLOW HIGH<br>• 107 F-2, DRYWELL HI / LO PRESS | RO/PRO |
| | Re-enter and execute OT-101 on rising Drywell pressure | RO |
| | [OT-101 3.1]<br>ESTABLISH Drywell pressure as a Critical Parameter | SRO |
| | [OT-101 3.3]<br>Perform OT-101 Attach #4 | PRO |
| | [OT-101, Att. 4]<br>**ENSURE** Main Steam Line sample valves closed HV-041-(1F084 and 1F085) | PRO |
| | [OT-101, Att. 4]<br>**ENSURE** Recirc sample valves closed HV-043-(1F019 and 1F020) | PRO |
| | [OT-101, Att. 4]<br>PRO secures and isolates RWCU (time permitting)<br>• **SECURE** operating RWCU pump(s) (Already secured)<br>• **ENSURE** the following valves closed:<br>  • HV-C-044-1F003<br>  • HV-44-1F001, INBD<br>  • HV-44-1F004, OUTBD<br>  • HV-44-1F100, BOTTOM HEAD DRAIN<br>  • HV-44-1F105, INLET FLOW | PRO |
| | Direct GP-4 rapid plant shutdown (time permitting) | SRO |
| | Transfer House Loads per S91.6.B (time permitting) | PRO |
| | Reduce Recirc Flow to Minimum (time permitting) | RO |
| | Manually scram reactor before DW pressure reaches 1.68 psig | RO |
| | Place Mode Switch to Shutdown | RO |
| | [T-101 RC-6]<br>Insert SRMs AND IRMs | RO |

## 6/7. EVENTS 6 - 7 STEAM LEAK IN THE DRYWELL

**Simulator Operator Instructions**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

Ensure **Trigger_# 4_** automatically actuates when RMS taken to SHUTDOWN, to initiate Steam Leak in the Drywell

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/7. EVENTS 6 - 7 STEAM LEAK IN THE DRYWELL** | | |
| **EVALUATORS NOTE:** When the plant is shutdown a steam leak into the drywell occurrs. The crew will enter and execute T-102, Primary Containment Control and utilize RHR system to spray the Suppression Pool and Drywell. | | |
| | Enter/Re-enter T-102 and T-101 when Drywell pressure exceeds 1.68 psig | SRO |
| | [OT-101 3.5]<br>Trip both Recirc pumps when Drywell pressure exceeds 1.68 psig | RO |
| | [T-101 RC/Q-2]<br>Ensure Turbine trip and Gen lockout | PRO |
| | [T-101 RC/L-7]<br>Restore and maintain RPV level between +12.5" and +54" | PRO |
| | [T-101 RC/P-1]<br>Stabilize RPV pressure below 1096 psig | PRO |
| | [T-101 RC-5]<br>Verify isolations for RPV level <+12.5" and >1.68 psig Drywell pressure | PRO/RO |
| | Verify HPCI System initiation on 1.68 psig Drywell pressure (already running from DIV 4 LOCA signal) | PRO |
| | Establish Suppression Pool Temperature as a Critical Parameter | CRS |
| | CRS directs depressurizing reactor to 600 psig to reduce leak input | SRO |
| | [OT-200 Att. 11]<br>Depressurizes to 600 psig using EHC | RO |
| | [T-102 DW/T-5]<br>When Drywell temperature exceeds 145 °F, verify DWCW Head Tank level, then bypass isolations and maximize Drywell cooling (time permitting) | PRO |

## 8/9. EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

At time 5 min after requested to investigate the trip of the '1B' RHR Pump **report:** "The '1B' RHR Pump breaker has tripped on 'B' Phase Overcurrent."

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **8/9.** | **EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD** | |
| **EVALUATOR NOTE:** The following steps are performed as directed by T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation. | | |
| | [T-102 PC/P-5]<br>**BEFORE** Supp Pool pressure reaches 7.5 psig<br>Spray the Suppression Pool per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation | PRO |
| | Recognize '1B' RHR pump trips **(Malfunction)** | PRO |
| | Investigate trip of '1B' RHR pump | PRO |
| | [T-225 4.2.4]<br>**ENSURE** the following valves open:<br>• HV-51-1F047A(B), "1A(B) RHR Htx Shell Side Inlet Vlv" (INLET)<br>• HV-51-1F003A(B), "1A(B) RHR Htx Shell Side Outlet Vlv" (OUTLET)<br>• HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS) | PRO |
| | [T-225 4.2.5]<br>**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 | PRO |
| | Recognize HV-51-1F024A, "1A RHR Pp Full Flow Test Return Vlv" tripped on thermals and requires to be manually opened | PRO |
| | Override HV-51-1F024A thermals by holding handswitch in OPEN **(Malfunction)** | PRO |
| | [T-225 4.2.6]<br>**OPEN** HV-51-1F027A(B), "1A(B) RHR Supp Pool Spray Line PCIV" (SUPP POOL SPRAY) | PRO |
| **EVALUATOR NOTE:** The following steps are normally performed as directed by S12.1.A, RHR Service Water System Startup as directed from T-225. For this scenario RHRSW should have been placed in service for the open SRV (Event 2). If required reference page 23 of this SEG for RHRSW being placed in service. | | |

## 8/9. EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **8/9.** | **EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD** | |
| **EVALUATOR NOTE:** The following steps are normally performed as directed by S12.1.A, RHR Service Water System Startup as directed from T-225. For this scenario RHRSW should have been placed in service for the open SRV (Event 2). If required reference page 23 of this SEG for RHRSW being placed in service. | | |
| | [T-225 4.2.8]<br>**PLACE** RHR Service Water Pump for RHR Heat Exchanger to be used in service per S12.1.A, RHR Service Water System Startup | PRO |
| | [T-225 4.2.9]<br>**CLOSE** HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS) | PRO |
| | [T-102 PC/P-12]<br>WHEN SAFE side of the Pressure Suppression Pressure (PSP) curve (Curve PC/P-3) cannot be maintained, enter T-112 | CRS |
| | [T-112 EB-12]<br>**DIRECT** Open all 5 ADS valves | CRS |
| | [T-112 EB-12]<br>**PERFORM** Open all 5 ADS valves **(Critical Task)** | RO/PRO |
| | [T-102 PC/P-10] –or- [T-102 DW/T-8]<br>Spray the **Drywell** per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation | PRO |
| | [T-225 4.5.1]<br>**ENSURE** HV-51-1F004A(B), "1A(B) RHR Pump Suction PCIV" (SUCTION A(B)), open | PRO |
| | [T-225 4.5.2]<br>**ENSURE** the following valves closed:<br>• HV-51-1F006A(B), "1A(B) RHR Pp S/D Clg Suct Intertie Vlv" (SUCTION A(B))<br>• HV-51-1F015A(B), "1A(B) Shutdown Clg Injection PCIV" (OUTBOARD A(B))<br>• HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" (OUTBOARD A(B))<br>• HV-51-1F017A(B), "1A(B) RHR LPCI Inj PCIV" (OUTBOARD A(B)) | RO/PRO |

## 8/9. EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD

**Simulator Operator Instructions**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **8/9.** | **EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD** | |
| | [T-225 4.5.4]<br>**ENSURE** the following valves open:<br>• HV-51-1F047A(B), "1A(B) RHR Htx Shell Side Inlet Vlv" (INLET)<br>• HV-51-1F003A(B), "1A(B) RHR Htx Shell Side Outlet Vlv" (OUTLET)<br>• HV-C-51-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Vlv" (HEAT EXCH BYPASS) | PRO |
| | [T-225 4.5.5]<br>**TRIP** Reactor Recirc Pumps | PRO |
| | [T-225 4.5.6]<br>**REMOVE** Drywell Cooling Fans from service by placing all 16 Drywell Cooler Fan switches to "OFF" | PRO |
| | [T-225 4.5.7]<br>**IF** Drywell High Pressure **AND LOCA** signals are present, THEN GO TO step 4.5.11 | PRO |
| | [T-225 4.5.11]<br>**OPEN** HV-51-1F024A(B), "1A(B) RHR Pp Full Flow Test Return Vlv" (SUPP POOL CLG A(B)), AND OBTAIN flow of 9,250 to 10,500 gpm as indicated on FI-51-1R603A(B), FL | PRO |
| | [T-225 4.5.12]<br>**OPEN** only one loop HV-51-1F021A(B), "1A(B) RHR Cntmt Spray Line Inboard PCIV" (INBOARD) | PRO |
| | [T-225 4.5.13]<br>**REQUEST** SSV verify drywell temperature AND drywell pressure are on SAFE side of Drywell Spray Initiation Limit Curve per T-102, Primary Containment Control OR SAMP-1, RPV and Primary Containment Flooding Control | PRO |
| | [T-225 4.5.14]<br>Throttle **OPEN** only one loop HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" (OUTBOARD) to initiate spray AND OBSERVE raising flowrate as indicated on FI-51-1R603A(B), FL. | PRO |
| | [T-225 4.5.15]<br>**MONITOR** Drywell pressure. | PRO |
| | [T-225 4.5.16] **(Critical Task)**<br>Throttle **OPEN** HV-51-1F016A(B), "1A(B) RHR Cntmt Spray Line Outboard PCIV" (OUTBOARD) AND Fully CLOSE HV-51-1F024A(B),"1A(B) RHR Pp Full Flow Test Return Vlv", (SUPP POOL CLG A(B)) AND OBTAIN flow of 9,250 to 10,500 gpm as indicated on FI-51-1R603A(B), FL | PRO |

## 8/9. EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD

**Simulator Operator Instructions**

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 for SE-10 Floor Actions
Load **All SE-10 Floor Actions with Time Delays Scenario** and
**report:** The status of individual resets as requested **OR** when all resets are timed out
**report:** All SE-10 Floor Actions are complete

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **8/9.** | **EVENTS 8 – 9 '1B' RHR PUMP TRIP / HV-51-1F024A THERMAL OVERLOAD** | |
| | [T-225 4.5.18]<br>**CLOSE** HV-C-1F048A(B), "1A(B) RHR Htx Shell Side Bypass Valve" (HEAT EXCHANGER BYPASS). | PRO |
| **EVALUATORS NOTE:** The following steps are from SE-10, LOCA. | | |
| | Recognize LOCA signal when RPV pressure drops below 455 psig | Crew |
| | Enter SE-10, LOCA | Crew |
| | [SE-10 3.1]<br>**PLACE** the following to "CLOSE"<br>• 52-20224/CS, "D*24 Safeguard L.C. D*24-G-D MCC Bkr" (SAFEGUARDS B), on *BC661<br>• 52-20124/CS, "D*14 Safeguard L.C. D*14-G-D MCC Bkr" (SAFEGUARDS A), on *AC661. | RO |
| | [SE-10 3.2]<br>PLACE to "RESET":<br>• 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661 | RO |
| | Dispatch Equipment Operator to perform SE-10-1 field actions | PRO |
| | Restore RPV Level to +12.5" to 54" with Condensate and/or Low Pressure ECCS | RO/PRO |
| **EVALUATORS NOTE:** The scenario may be terminated when an Emergency Depressurization has been performed, Drywell Spray is in service, control rods inserted and reactor level is restored. After the scenario is terminated, direct the SRO to make the highest EAL classification for the scenario.<br><br>EAL: FA-1 declaration due to: (RC.3.1 and RC.3.2)<br>• Drywell pressure > 1.68 psig<br>**AND**<br>• Drywell pressure rise is due to RCS leakage | | |

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| | Rough Log(s) Maintained by the crew with the following items noted:<br>• Rod (46-15) uncoupled<br>• '1N' SRV<br>• DIV 4 LOCA<br>• '1D' RHR Pump failed to auto start<br>• Reactor Scram<br>• ATWS<br>• 1.68 Drywell Pressure<br>• RPV Level < +12.5" and Drywell Pressure > 1.68 psig Isolations verified<br>• HV-51-1F024A thermal overload<br>• '1B' RHR Pump Trip<br>• FA-1 declaration due to: (RC.3.1 and RC.3.2)<br>  • Drywell pressure > 1.68 psig<br>  **AND**<br>  • Drywell pressure rise is due to RCS leakage | Crew |
| | Critique any instances where fundamentals were not properly adhered to, and whether in-the-moment coaching was provided by Supervision. Provide examples of effective Leadership and areas for improvement. | SM |

# 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 |

# Attachment 2
# Communications Log

**CREW:** _____

**DATE:** _____ **LSEG:** _____

**START TIME:** _____ **STOP TIME:** _____

**SM:** _____ **RO:** _____ **WCS:** _____

**CRS:** _____ **PRO:** _____ **FSSV:** _____

| TIME | PERSON CALLING | PERSON BEING CALLED | COMMUNICATION / REQUEST | CALL BACK TIME |
|---|---|---|---|---|
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## XI. CREW PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100% power
Unit 1 is in OPCON 1 at 90% power

**Specific Plant Conditions are as Follows:**

- Reactor power reduced to 90% due to Control Rod pattern adjustment

**Inoperable/Out of Service Equipment and Estimated Time of Return (ETR):**

- '1B' EHC pump is blocked for replacement
- Repairs are scheduled to be complete in 2 hours

**Restrictions on Plant Operations:**

- None

**Planned Evolutions:**

- Raise Reactor power to 100%
- Continue replacement of '1B' EHC pump and perform PMT when complete

**Documents Provided:**

- ReMA and Control Rod Move Sheet
- GP-5 Attachment 1
- S73.1.A, Normal Operation of the Reactor Manual Control System

| | | | |
|---|---|---|---|
| CODE NO: | SEG-7016E | REV NO: | 002 |
| AUTHOR: | T. A. BYERS | APPROXIMATE RUN TIME: | 75 minutes |
| TYPE: | SIMULATOR EVALUATION GUIDE | EFFECTIVE DATE: | |
| PROGRAM: | LICENSED OPERATOR TRAINING | | |
| COURSE: | LICENSED OPERATOR (REQUALIFICATION/INITIAL) TRAINING | | |
| TITLE: | Simulator Evaluation Guide for Individual and Crew Performance | | |

Prepared By:_____ Date:_____
Training Instructor - Signature

Reviewed By:_____ Date:_____
LORT Lead Instructor - Signature

Reviewed By:_____ Date:_____
EP (as appropriate) - Signature

Reviewed By:_____ Date:_____
RE (as appropriate) - Signature

Approval: _____ Date:_____
OPS Manager - Signature

Approved For Use:_____ Date:_____
Training Manager - Signature

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

Facility: Limerick 1 & 2 Scenario No.: SEG-7016E Rev 002 Op-Test No.: 1

Examiners: _____ Operators: _____

**Initial Conditions:**

Unit 1 is at 100% power. Unit 2 is at 100% power.

**Turnover:**

None

| Event No. | Malfunction Number | Event Type* | Event Description |
|---|---|---|---|
| 1. | MFW001 | R-RO<br>C-PRO<br>TS-SRO | HWC System Failure **(Abnormal)** |
| 2. | VIC104C8<br>MFW250A<br>MFW246A | C-RO<br>C-PRO | '1C' RFP Min Flow Valve fails open **(Abnormal)** |
| 3. | MCW481A<br>MCW486B | C-PRO | '1A' TECW Pump trip<br>'1B' TECW fails to auto start **(Abnormal)** |
| 4. | MVI234C | C-RO<br>TS- SRO | Reactor High Pressure Transmitter Failure **(Abnormal)** |
| 5. | MRP029D<br>MSL559<br>MRP407C | M-ALL | ATWS<br>The ATWS is mitigated by the insertion of control rods via T-215. **(Major)** |
| 6. | MRD024 | C-RO | RDCS Inoperative after reactor shutdown **(Malfunction)** |
| 7. | MMT002<br>MEH108 | C-PRO<br>C-RO | Turbine Trip / Bypass Valves Fail Closed **(Malfunction)** |
| 8. | MRSW600A<br>MRSW600C | C-PRO | '0A' or '0C' RHRSW Pump Trips **(Malfunction)** |

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

# I. QUANTITATIVE ATTRIBUTES

A. ILT

| Target Quantitative Attributes (Per Scenario; See ES-301Section D.5.d) | ACTUAL NUMBER |
|---|---|
| 1. Malfunctions after EOP entry (1-2) | 2 |
| 2. Abnormal events (2-4) | 4 |
| 3. Major transients (1–2) | 1 |
| 4. EOPs entered/requiring substantive actions (1–2) | 2 |
| 5. EOP contingencies requiring substantive actions (0-2) | 1 |
| 6. EOP based Critical tasks (2–3) | 4 |

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

**II. PURPOSE:** Systematically evaluate individual and team performance to identify areas for improvement. Critical Tasks and Assessment Items from this evaluation guide are to be used to assess crew and individual performance and as input into a 4.0 Crew Critique Process.

## III. SIMULATOR EVALUATION GUIDE OBJECTIVES:

A. The following evaluation objectives apply to the Crew (C), Shift Manager (SM), Control Room Supervisor (S), Unit Reactor Operator / Plant Reactor Operator (R), or Incident Assessor / Shift Technical Advisor (A) as indicated in the following categories.

1. The general condition for each of the evaluation objectives will be "Given the plant conditions and sequence of events in the Simulator Evaluation Guide (SEG)".
2. The general acceptable evaluation objective criteria for each of the evaluation objectives will be "To perform effectively as an individual and contribute to successful crew performance in accordance with appropriate reference plant procedures and Operations Expectations, Fundamentals and Strategies".
3. Specific UNSAT evaluation objective criteria will be consistent with TQ-AA-155, Conduct of Simulator Training and Evaluation with applicable forms and job aids.
4. During performance of this Simulator Evaluation Guide, the individuals and crew should satisfactorily demonstrate the following overall procedure and plant control objectives:
   - Direct and perform actions per ON-102, Air Ejector Discharge or Main Steam Line High Radiation.
   - Direct and perform actions per ON-117, Loss of TECW
   - Direct and perform actions per OT-100, Reactor Low Level
   - Direct and perform actions per OT-104, Unexpected-Unexplained Positive or Negative Reactivity Insertion.
   - Direct and perform actions per OT-117, RPS Failures
   - Direct and perform actions per GP-5, App. 2, Planned Rx Maneuvering Without Shutdown.
   - Direct and perform actions per T-270, Terminate And Prevent Injection Into The RPV
   - Direct and perform actions per T-101, RPV Control
   - Direct and perform actions per T-102, Primary Containment Control
   - Direct and perform actions per T-117, Level/Power Control

## IV. RECORD OF TEMPORARY CHANGES:

A. Approval of Pen & Ink Changes will be by the ILT or LORT Lead Instructor with OTM concurrence

B. All Pen & Ink Changes are to be tracked in ILT or LOR Program Action Tracking for Next Revision

C. All Pen & Ink Changes shall be in accordance with TQ-AA-223

| Temp Change # | Date of Change | Purpose of Change | Lead Approval | Action Tracking | Revision Date |
|---|---|---|---|---|---|
| | | | | | |
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## V. 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 (e.g for conversion of LSTS to LLORSEG format).

| Revision Number | Description of Revision and Affect on Training Content | # Date of Revision |
|---|---|---|
| Rev000 | This was originally used as 2012 ILT Cert Scenario #3 (This scenario was designated as the spare and was not used). | 8/12/13 |
| Rev001 | Revised to template with changes including RPS Pressure transmitter failure and RHRSW Pumps trip | 8/15/15 |
| Rev002 | Revised to new template, removed APRM failure, added TECW Pump failure(s), reordered first 4 events, and changed initial power from 80% to 100%. | 10/08/16 |
| | | |

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

## SCENARIO EVENT AND EVALUATION SUMMARY:

Event One: Shortly after the crew has taken responsibility of the shift, the HWC system will fail such that the Hydrogen Flow Controller output will rise and the PLC will lock up. The MSL Rad Monitor alarms will be received due to excess Hydrogen injection.

Evaluation: Evaluate the crews' response to the HWC malfunction including actions taken per ON-102, Air Ejector Discharge Or Main Steam Line High Radiation and T-103, Secondary Containment Control. The crew will reduce power and will trip the HWC System as well as reference Tech Specs due to excessive H2 injection.

Event Two: After the crew has taken Tech Spec actions for HWC, the '1C' RFP Min Flow Valve will fail open causing '1C' RFP injection rate to lower and the '1A' and '1B' RFPs to increase injection to the vessel.

Evaluation: Evaluate the crew's response to the '1C' RFP Min Flow Valve failing open and to secure the '1C' RFP, and isolate the minimum flow valve. The crew will execute OT-104, Unexpected/ Unexplained Positive or Negative Reactivity Insertion and reduce total Feedwater less than 13 Mlb/hr per GP-5.

Event Three: After the '1C' RFP is secured and reactor power lowered, the in-service '1A' TECW Pump will inadvertently trip, with the '1B' TEWC Pump failing to auto start.

Evaluation: Evaluate the crew's response to identify the TECW Pump failure, enter and execute ON-117, Loss of TECW, manually start the '1B' TECW Pump, and monitor Condensate Pump and Air Compressor temperatures.

Event Four: and Five: After the crew has started the '1B' TECW Pump a RPS reactor pressure transmitter fails upscale. The failed RPS instrument will result in a failed RPS channel (Will fail to de-energize. As a result of the RPS channel failure a manual full scram is required. On the scram the Control Rods will fail to insert, resulting in an ATWS.

Evaluation: Evaluate the crews' ability to address the failed pressure transmitter and implement OT-117, RPS Failures, and respond to a failure of the reactor to manually scram, and subsequent ATWS. The crew will be evaluated on their ability to implement T-101, RPV Control and T-117, Level/Power Control, and the initial level lowering per T-270, Terminate And Prevent Injection Into The RPV. Complicating the event, the SLC discharge line will rupture in the DW.

## SCENARIO EVENT AND EVALUATION SUMMARY: cont'd

Event Six: After the Mode Switch is taken to shutdown, RDCS will become inoperative and prevent manual insertion of control rods.

Evaluation: Evaluate the crew's ability to recognize the failure of RDCS and call out for floor assistance in resetting RDCS in the AER. Once RDCS is reset, the crew is expected to manually insert control rods to help mitigate the ATWS condition.

Event Seven: After level is lowered and pressure has been stabilized, the Main Turbine will begin to experience vibration caused by bearing failure. The excess vibration will eventually cause a MT trip. Along with the Turbine trip, the Bypass Valves will fail to maintain RPV pressure, resulting in a rise in Suppression Pool temperature.

Evaluation: Evaluate the crews' ability to respond to a Main Turbine trip while maintaining reactor pressure control by manual operation of SRVs. The crew will perform a second lowering of reactor level per T-270, to less than –161" and maintain level between –186" to –161" as Suppression Pool temperature exceeds 110 deg F.

Event Eight: Also, after the Main Turbine Trip, the first started '0A' Loop RHRSW Pump will fail to start from the MCR.

Evaluation: To identify the trip of the lead RHRSW Pump and place the alternate pump in service in the '0A' RHRSW loop.

Termination Criteria: The scenario is terminated when RPV level has been maintained –186" to –161", followed by Control Rods inserted per T-215, De-energizing Of Scram Solenoids.

## VI. REFERENCES

A. Training Procedures
   1. TQ-LG-150, Limerick Operator Training Program
   2. TQ-AA-151, ILT Certification and NRC Examination Development and Administration
   3. TQ-AA-155, Conduct of Simulator Training and Evaluation

B. Annunciator Response Cards (ARC)
   1. 101 E-5, CONDENSATE FILTERDEMIN TROUBLE
   2. 104 D-4, CONDENSATE PUMPS DISCHARGE HEADER LO PRESS
   3. 104 D-5, CONDENSATE PUMPS DISC SAMPLE STATION TRB
   4. 107 I-1, MAIN STEAM LINE HIGH-HIGH RADIATION
   5. 107 D-5, FWLCS Trouble
   6. 107 G-1, REACTOR HIGH PRESSURE TRIP
   7. 107 I-2, VIBRATION ALARM ALERT
   8. 107 I-3, VIBRATION ALARM DANGER
   9. 108 E-4, RDCS INOPERATIVE
   10. 109 F-1, 1 MAIN STEAM LINE DIV 1 RAD MONITOR HI/DNSC
   11. 109 F-2, 1 MAIN STEAM LINE DIV II RAD MONITOR HI/DNSC
   12. 109 B-5, TURBINE ENCL AREA HI RADIATION
   13. 118 G-3, TURB BLDG COOLING WATER HTX OUT LO PRESS
   14. 118 A-1, SERVICE AIR COMPRESSOR TROUBLE
   15. 118 B-1, 1A INST AIR COMPRESSOR TROUBLE
   16. 118 C-1, 1B INST AIR COMPRESSOR TROUBLE
   17. 127 I-1, 1 UNIT HWC SYSTEM TROUBLE

C. System Procedures (S)
   1. S12.1.A, RHR Service Water System Startup
   2. S51.8.A, Placing RHR Suppression Pool Cooling in service

D. General Procedures (GP)
   1. GP-5, Steady State Operations
   2. GP-5 Appendix 2, Planned Reactor Maneuvering Without Shutdown

E. Off Normal Procedures (ON)
   1. ON-102, Air Ejector or Main Steam Line High Radiation
   2. ON-117 Loss Of TECW

F. Operating Transient Procedures (OT)
   1. OT-104, Unexpected-Unexplained Positive or Negative Reactivity Insertion
   2. OT-117, RPS Failures
   3. OT-100, Reactor Low Level

G. Event Procedures (E)

H. Special Event Procedures (SE)
   1. SE-10, LOCA

I. Surveillance Test and Routine Test Procedures (ST and RT)

**REFERENCES cont'd**

J. Technical Specifications and TRM (TS)
   1. TS 3.11.2.6

K. Transient Response Implementation Procedures (T-100 series)
   1. T-101, RPV Control
   2. T-102, Primary Containment Control
   3. T-103, Secondary Containment Control
   4. T-117, ATWS Level Control

L. TRIP 200 Series Procedures
   1. T-215, De-energization of Scram Solenoids
   2. T-221, MSIV Isolation Bypass Procedure
   3. T-251, Establish a HPCI Injection Path Via Feedwater Only
   4. T-270, Terminate and Prevent Injection into the RPV
   5. T-290, Instrumentation Available For T-103/SAMP-2

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

N. Administrative Procedures
   1. OP-AA Procedures
      a. OP-AA-1, Conduct of Operations
      b. OP-AA-20, Conduct of Operations Process Description
      c. OP-AA-101-111-1003, Operations Department Standards and Expectations
      d. OP-AA-101-113, Operations Fundamentals
      e. OP-AA-101-113-1006, 4.0 Crew Critique Guidelines
      f. OP-AA-106-101-1006, Operational Decision Making Process
   2. OP-LG Procedures
      a. OP-LG-101-111-1000, Licensed Operator Duties
      b. OP-LG-101-111-1002, Time Critical Operator Actions
      c. OP-LG-103-102-1000, Human Performance Continuing Good Practices
      d. OP-LG-103-102-1002, Strategies for Successful Transient Mitigation
      e. OP-LG-108-101-1001, Simple Quick Acts / Transient Acts

O. Current Shift Night Orders Forced Outage Plan

P. INPO Significant Operating Experience Reports (SOER), Significant Event Reports (SER) and INPO Event Reports (IER)
   1. IER-L1 11-3, Weaknesses in Operator Fundamentals
   2. SER 3-05, Weakness in Operator Fundamentals
   3. SOER 10-02, Engaged Thinking Organizations
   4. INPO 15-004, Operator Fundamentals

## VII. PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100% power

Unit 1 is in OPCON 1 at 100% power

**Specific Plant Conditions are as Follows:**

- 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:**

- Maintain 100%.

**Documents Provided:**

- None

## VIII. DIRECTIONS FOR EVALUATION PREPARATION

### A. INITIAL PREPARATION

| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete TQ-AA-155, Operator Training Programs Attachment 02, Evaluated Scenario Administration Checklist. |
| | Complete TQ-LG-201-0113, Limerick Training Department Simulator Examination Security Actions Checklist |

### B. SIMULATOR SETUP

| ✔ | ITEM / MALFUNCTION / REMOTE FUNCTIONS |
|---|---|
| | Complete Limerick Simulator Pre-Evaluation Checklist |
| | Reset Simulator to the Pre-loaded Cycle **IC** developed for the Evaluation<br>OR Reset the simulator to designated base load IC-3<br>AND Load scenario file **SEG7016E Rev002.scn**<br>• Verify that all Malfunctions, Remotes, Overrides, Annunciators and Triggers are properly loaded<br>**OR**<br>• Manually enter the Malfunctions, Remotes, Overrides, Annunciators and Triggers per the Scenario Generator Screen Shots: |
| | Simulator Operator (Driver) perform the following:<br>• Momentarily place simulator in RUN<br>• Acknowledge and clear all spurious alarms<br>• Place the simulator back into FREEZE<br>• Place appropriate tags and equipment in required condition / status. |

## C. MALFUNCTION/REMOTE/OVERRIDE/ANNUNCIATORS FUNCTION TIME TABLE

Interventions Summary

Hide Malfunctions - 15 | Hide Remotes - 8 | Show Overrides - 0 | Show Annunciators - 0

*Malfunction Summary*

| Malf ID | Mult ID | Description | Current Value | Target Value | Rmptime | Actime | Dactime | Trig |
|---|---|---|---|---|---|---|---|---|
| MFW001 | | HWC System Excess H2 Injection and PLC Lockup | False | True | | | | 1 |
| MFW250A | | Reactor Feedpump C Min Flow Recirc Valve Fails Open | False | True | | 00:00:15 | | 2 |
| MFW246A | | Reactor Feedpump C Trip | False | True | | 00:10:00 | | 2 |
| MCW486B | | TECW Pump B Fails to Auto Start | Fails | Fails | | | | |
| MCW481A | | TECW Pump A Trips (Magnetic Overload) | False | True | | 00:00:15 | | 3 |
| MVI234C | | Reactor Vessel Pressure Transmitter (RPS) N078B Fails High | False | True | | 00:00:15 | | 4 |
| MRD024 | | Rod Drive Control System Failure | False | True | | 00:06:30 | | 5 |
| MMT002 | | TBWD Turbine Thrust Failure - MILS | 8.999948 | 50.00000 | 00:04:00 | 00:11:00 | | 5 |
| MRP029D | | RPS Fails to Scram Channel B | True | True | | | | |
| MSL559 | | SLC Injection Line Rupture Inside the Drywell | True | True | | | | |
| MRP407C | | BOTH RRCS Divisions ARI Fails to Initiate | True | True | | | | |
| MEH108 | | Turbine Bypass Valves Fail to Selected Value (0-100%) | -5.00000 | 20.00000 | 00:05:00 | 00:16:00 | | 5 |
| MRSW600A | | RHR Service Water Pump 0AP506 Elect Fault | FALSE | TRUE | | | 00:00:01 | 6 |
| MRSW600C | | RHR Service Water Pump 0CP506 Elect Fault | FALSE | TRUE | | | 00:00:01 | 7 |
| VIC104C8 | | 1C RFPT Pump Imbalance at Probe 104C08 | 2.900000 | 10.00000 | 00:08:00 | 00:00:15 | | 2 |

Timer Pause | Delete All | Active | Pending

*Remotes Summary*

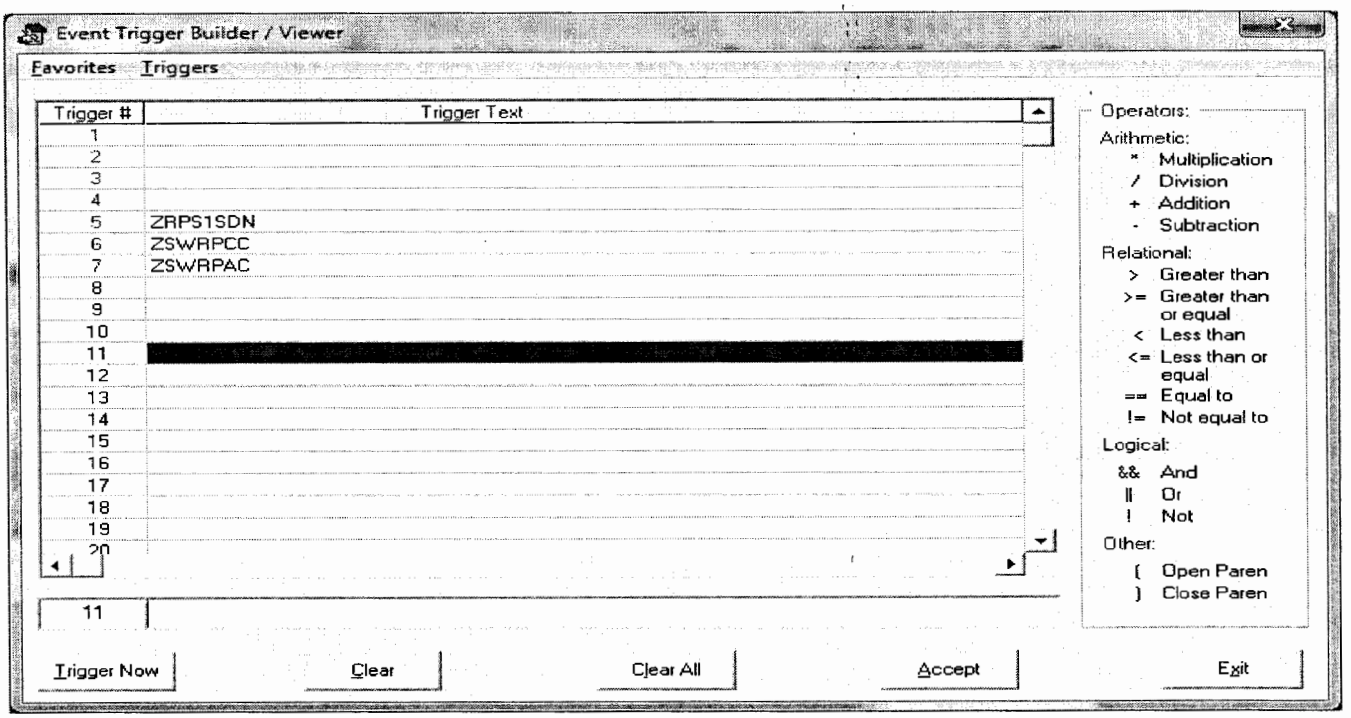
| Remf ID | Mult ID | Description | Current Value | Target Value | Rmptime | Actime | Trig |
|---|---|---|---|---|---|---|---|
| RRE148 | | Refuel Floor To SGTS Isolation damper SGD76-206-3 | CLOSE | CLOSE | | | |
| RRE156 | | Unit 2 Refuel Floor Isol Sw HS76-281A | RESET | RESET | | | |
| RRE157 | | Unit 2 Refuel Floor Isol Sw HS76-281B | RESET | RESET | | | |
| RRM032 | | SPE & MVP Rad Monitor RE-160 Skid 105408 Enable | DISABLE | DISABLE | | | |
| RPR061 | | APRM Channel 1 Gain Adjustment Factor | .8654 | .8654 | | | |
| RPR063 | | APRM Channel 3 Gain Adjustment Factor | .8570 | .8570 | | | |
| RPR062 | | APRM Channel 2 Gain Adjustment Factor | .8710 | .8710 | | | |
| RPR064 | | APRM Channel 4 Gain Adjustment Factor | .8490 | .8490 | | | |

Timer Pause | Clear List | Active | Pending

D. EVENT TRIGGERS ASSIGNMENT

1. Timers should be used on event triggers where possible for time validation
2. Timing of event triggers may be altered by the Lead Evaluator (or designee)
3. Verify triggers are actuated automatically as designed or manually initiate the trigger when the initiating action has occurred.
4. Inform Lead Evaluator (or designee) of expected plant response prior to actuation of each trigger.
5. Trigger #1 is manually initiated at Lead Evaluator (or designee) direction after the crew assumes responsibility for operation.

| | TRIGGER / TIME | MALFUNCTION | DESCRIPTION |
|---|---|---|---|
| | 1. | Manual | Initiates HWC system lockup |
| | 2. | Manual | Initiates '1C' RFP Min Flow Valve opens |
| | 3. | Manual | Initiates'1A' TECW Pump trip |
| | 4. | Manual | Initiates Rx Pressure Transmitter Failure |
| | 5. | Auto / ZRPS1SDN | RMS TO SHUTDOWN<br>Initiates TBWD failure and RDCS failure |
| | 6. | Auto / ZSWRPCC | 'C' RHRSW Pump CS to START<br>Deactivates 'A' RHRSW failure |
| | 7. | Auto / ZSWRPAC | 'A' RHRSW Pump CS to START<br>Deactivates 'C' RHRSW failure |



## E. EQUIPMENT REPORTS AND SIMULATOR INSTRUCTOR OPERATIONS

1. Scripted Activity Reports should be followed with adherence to Operations Communication standards of performance.
2. The T-200 procedure reference book should be used for familiarity of reports to aid in operator prompting and expected communications.
3. The Lead Evaluator (or designee) should be informed if any event is not reported as scripted due to lack of Operator request.
4. The Standard Equipment Operator Response Times are per Attachment 1
5. A record of communications from the MCR and to the MCR will be maintained by the Simulator Operator using **Attachment 2.**
6. The OCOEE Simulator Operator Station P&IDs, Floor Plans and Panels should be used by the Simulator Operator as reference information when making reports to the MCR for plant parameters which are not driven by a communications script. Examples include: ARMs, Blowout Panel status, Reactor Building Area Temperatures and Pressures, RMMS, Turbine Enclosure parameters etc.

## IX. CREW CRITICAL TASKS

A. Critical Tasks are based on the current Crew Critical Task List revision, NUREG 1021 and TQ-AA-150 requirements.

**1. T-117.1 Inhibit automatic ADS**

| | | | |
|---|---|---|---|
| K/A | 295037 | EA2.06 | 4.04.1 |
| K/A | 218000 | EA4.04 | 4.1/4.1 |

Standard: Prevent automatic initiation of ADS

**SAT/UNSAT**

**2. T-117.12 Terminate and prevent injection into the RPV.**

| | | | |
|---|---|---|---|
| K/A | 295037 | EK1.02 | 4.1/4.3 |
| K/A | 295037 | EK3.03 | 4.1/4.5 |
| K/A | 295037 | EA2.02 | 4.1/4.2 |

Standard: RPV level deliberately lowered by Terminating and Preventing injection into the RPV per LQ-11 when conditions of step LQ-14 are met.

**SAT/UNSAT**

**3. T-101.5 Implement T-215 to insert control rods.**

| | | | |
|---|---|---|---|
| K/A | 295037 | EA1.05 | 3.9/4.0 |
| K/A | 295037 | EA2.05 | 4.2/4.3 |

Standard: Direct the performance of T-215 to operations personnel located outside the control room.

**SAT/UNSAT**

**4. T-117.8 Maintain RPV level between -186 inches and the level to which it was intentionally lowered.**

| | | | |
|---|---|---|---|
| K/A | 295037 | EA2.01 | 4.2/4.3 |
| K/A | 295037 | EA2.02 | 4.1/4.2 |

Standard: RPV level maintained between -186 inches and -161 inches after initially raising RPV level into the required band. Any deviations from the RPV level band DO NOT require an Emergency Blowdown per T-117.

**SAT/UNSAT**

## X. ASSESSMENT OF CREW PERFORMANCE DURING CONDUCT OF THE SIMULATOR EVALUATION GUIDE TRAINING:

A. Conduct the Simulator Evaluation Session per TQ-AA-155, Conduct of Simulator Training and Evaluation, Attachment 02, Evaluated Scenario Administration Checklist

B. Assessment of Crew and Individual performance shall be consistent with OP-AA-20, Conduct of Operations Process Description

C. Where possible record the time and position responsible for performance of each task or assessment item

D. Items not performed as expected **SHALL** be discussed in the post performance crew critique

E. During the performance of the evaluation, the Simulator Evaluators shall **MAINTAIN** notes of observations and information consistent with the timeline

F. Assessment items with the ⏱ symbol indicate a time critical standard for performance

G. Assessment items with the ⚑ symbol indicate a Probabilistic Risk Assessment (PRA) association with the task

H. The Simulator Operator will respond with scripted or proceduralized responses when requested by the MCR operators with Procedure completion times requested per **Attachment 1**

I. The Simulator Operator will also maintain a timeline and record of all reports and requests issued by the MCR personnel with response provided by the simulator operator using **Attachment 2**

J. Shaded items do not require assessment for ILT Evaluations. The CRS may be requested to complete the Shift ED forms and determine the EAL classification at the completion of the scenario

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| 1. | EVENT - 1 | HYDROGEN WATER CHEMISTRY FAILURE | (Abnormal) |
|---|---|---|---|

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger #_1_** when directed by Lead Evaluator to initiate HWC PLC Lockup

At time __5 min__ after FSSV or EO action requested to investigate HWC Panel 10C177,
**report:** _The local alarm is HYDROGEN FLOW TO SETPOINT ERROR.

Manually actuate **Trigger #_2_** when directed by Lead Evaluator to initiate '1C' RFP Min Flow Valve to fail open

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| 1. | **EVENT - 1 HYDROGEN WATER CHEMISTRY FAILURE (Abnormal)** | |
| **Lead Evaluator (or designee) Notes:** A HWC flow control valve failure causes H2 flow to increase into the suction of the RFPs and result in a lockup of the HWC system. The crew will identify the increased H2 flow and isolate the system by depressing HS-06-154 on the C673 panel. | | |
| | Reference appropriate ARCs<br>• 109 F-1, 1 MAIN STEAM LINE DIV 1 RAD MONITOR HI/DNSC<br>• 109 F-2, 1 MAIN STEAM LINE DIV II RAD MONITOR HI/DNSC<br>• 109 B-5, TURBINE ENCL AREA HI RADIATION<br>• 127 I-1, 1 UNIT HWC SYSTEM TROUBLE<br>• 107 I-1, MAIN STEAM LINE HIGH-HIGH RADIATION | RO/PRO |
| | Dispatch EO to 10C177 panel to investigate H2 system | PRO |
| | [ARC MCR 109 F-2/107 I-1]<br>Enter and execute ON-102, Air Ejector Discharge Or Main Steam Line High Radiation | SRO |
| | [ARC MCR 109 F-2/107 I-1]<br>Enter T-103, Secondary Containment Control | RO/PRO |
| | [T-103 SCC-6]<br>Direct performance of T-290 for available instrumentation | SRO |
| | [ON-102 2.2]<br>**Direct** power reduction IAW GP-5, App.2 and RMSI to maintain air ejector discharge rad below HI HI Alarm setpoint and Main Steam Line Rad less than 1.5 X NFPB | SRO |
| | **Perform** power reduction IAW GP-5, App.2 and RMSI to maintain air ejector discharge rad below HI HI Alarm setpoint and Main Steam Line Rad less than 1.5 X NFPB **(Reactivity)** | RO |
| | Verify proper H2 and O2 flows and Offgas indications | PRO |
| | [ON-102 2.2]<br>Trip HWC by depressing HS-06-154 on the C673 panel. | PRO |
| | Contact WWM for assistance | SRO |
| | [ON-102 2.2]<br>Notify Chemistry for sampling | PRO |
| | Verify Rad Levels Dropping in Offgas and MS Lines after HWC Trip | RO |
| | Reference TS 3.11.2.6 when Offgas H2 is >4% | SRO |

**2. EVENT - 2 '1C' RFP MIN FLOW VALVE FAILS OPEN (Abnormal)**

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate

Inform Floor Instructor prior to each event trigger

At time _3 min___ after FSSV or EO action requested to close 006-1007C
**report:** We can't get the '1C' RFP Min Flow Recirc Isolation valve closed. We have four operators attempting to close it now and it will not move even with wrenches.

Manually actuate **Trigger #_3_** when directed by Lead Evaluator to initiate TECW Pump trip.

**DELETE** malfunction **VIC104C8** '1C' RFPT vibration when '1C' RFP is tripped.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| 2. | **EVENT - 2 '1C' RFP MIN FLOW VALVE FAILS OPEN (Abnormal)** | |
| | **Lead Evaluator (or designee) Notes:** As the '1A' RFP Min Flow Recirc Vlv fails open, the DFWLCS will respond to a reduction in FW flow to the RPV and lower RPV level which raises speed of the RFPTs to control RPV level. The RO will identify '1A' RFP flow is lower than the other RFPs and identify the Min Flow Recirc Valve opened. | |
| | Reference appropriate ARCs:<br>• 107 D-5, FWLCS Trouble<br>• 101 E-5, CONDENSATE FILTERDEMIN TROUBLE<br>• 104 D-4, CONDENSATE PUMPS DISCHARGE HEADER LO PRESS<br>• 104 D-5, CONDENSATE PUMPS DISC SAMPLE STATION TRB | RO/PRO |
| | Identify '1C' feedflow lowering on FI-06-1R604C | RO |
| | Recognize unexpected/unexplained drop in RPV level – enter OT-100, Reactor Low Level | SRO |
| | Recognize and report '1C' RFP Min Flow Valve is Open | RO |
| | [OT-100 step 2.2 IOA]<br>Reduce Rx power per GP-5, App. 2, section 3.1 and RMSI until Reactor Level is restored | RO |
| | Direct EO to close 06-1007C, '1C' RFP min flow manual isolation valve | RO |
| | Direct '1C' RFP be secured when the manual isolation valve cannot be closed **(Malfunction)** | SRO |
| | Recognize vibration on '1C' RFP rising | RO |
| | Trip '1C' RFP | RO |
| | Close the '1C' RFP Suction Valve **(Malfunction)** | RO |
| | Direct Rx power reduction per RMSI until Total FW flow is <13Mlbm/hr **(Reactivity)** | RO |
| | [OT-100 ATT 1]<br>Reduce Total FW flow <13Mlbm/hr per RMSI, if > 13Mlbm/hr | RO |
| | Contact Work Week Manager to investigate RFP Min Flow Valve going open | SRO |
| | Perform S06.2.A to Shutdown the '1C' RFP | RO |
| | Notify TSO and Power Team of power changes | SRO |
| | Notify Chemistry that GEZIP is OOS and surveillance required for power reduction | PRO |

| 3. | EVENT – 3 | '1A' TECW PUMP TRIP / '1B' TECW PUMP FAILS IN AUTO (Abnormal) |
|---|---|---|

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger #_3_** when directed by Lead Evaluator to initiate TECW Pump trip.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **3. EVENT – 3 '1A' TECW PUMP TRIP / '1B' TECW PUMP FAILS IN AUTO (Abnormal)** | | |
| **Lead Evaluator (or designee) Notes:** The PRO will respond to alarm and identify the '1A' TECW Pump has tripped and the '1B' TECW Pump has failed to start in AUTO. If the PRO immediately manually starts the '1B' TECW Pump the air compressor Hi temperature alarms will not occur. | | |
| | Reference appropriate ARC:<br>• 118 G-3, TURB BLDG COOLING WATER HTX OUT LO PRESS<br>• 118 A-1, SERVICE AIR COMPRESSOR TROUBLE<br>• 118 B-1, 1A INST AIR COMPRESSOR TROUBLE<br>• 118 C-1, 1B INST AIR COMPRESSOR TROUBLE | RO/PRO |
| | [ARC MCR 118 G-3]<br>Verify low TECW header pressure using PI-14-106 at C655 panel | PRO |
| | [ARC MCR 118 G-3]<br>Verify standby TECW Pump failed to auto start on lo header pressure | PRO |
| | [ARC MCR 118 G-3]<br>Enter ON-117, Loss Of TECW | SRO |
| | [ON-117 2.1]<br>Place alternate TECW Pump in service | PRO |
| | [ON-117 2.6]<br>**DISPATCH** an operator to monitor Instrument and Service Air Compressor temperatures | PRO |
| | [ON-117 2.8]<br>**MONITOR** Condensate Pump bearing temperatures on PMS points | PRO |

**4 / 5 EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)**

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

Manually actuate **Trigger #_4_** at Lead Evaluators discretion to initiate RPS instrument failure.

At time _5 min__ after FSSV or EO action requested to investigate RPS Pressure Trip units in AER,
**report:** PIS-042-1N678B is indicating upscale.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4 / 5** | **EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)** | |
| | Reference appropriate ARC:<br>• 107 G-1, REACTOR HIGH PRESSURE TRIP | RO |
| | Verify Rx pressure normal with high RPS pressure transmitter alarm | RO |
| | Recognize failure to ½ scram on B RPS and inform CRS | RO |
| | Dispatch an EO to investigate the Rx pressure transmitter | PRO/RO |
| | Enter OT-117, RPS Failures, for failure to ½ scram on B RPS | SRO |
| | [OT-117 3.2.1]<br>**Direct** inserting manual ½ scram on 'B' Side | SRO |
| | **Perform** Arm and depress 'B1' RPS | RO |
| | Recognize failure to ½ SCRAM on 'B' RPS | RO |
| | [OT-117 3.2.1]<br>**Direct** Arm and depress 'B2' | SRO |
| | **Perform** Arm and depress 'B2' RPS | RO |
| | [OT-117 3.2.1]<br>**Direct** manual scram | SRO |
| | Insert 'A' Side RPS Manual SCRAM signals | RO |
| | Place the Reactor Mode Switch in SHUTDOWN | RO |
| | Recognize failure to scram | RO |
| | Enter T-101 on SCRAM condition with power above 4% | SRO |
| | [T-101 RC-6]<br>Insert SRMs/IRMs | RO |
| | [T-101 RC/Q-5]<br>Initiate RRCS **(Malfunction)** | RO |
| | Verify after 118 seconds after RRCS initiation SLC pumps start and inject | RO |
| | Manually attempt SLC injection including '1C' SLC Pump | RO |
| | Recognize/report SLC low discharge pressure | RO |
| | **Direct** securing SLC | SRO |
| | Secure SLC pumps | RO |

**4 / 5 EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)**

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

At time _11 min__ after FSSV or EO action requested for T-221, perform the following:
**Toggle** Remote Function **RTR051** to "**BYPASS**" and
**report (via phone):** _T-221 is complete on Unit 1.

At time _7 min_ **OR** immediately if pre-staged for at least 7 minutes_ after FSSV or EO action requested for T-270, manually perform T-270 as follows:
**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 4.6 of T-270 is complete

At time _6 min__ after FSSV or EO action requested for implementation of T-251;
**contact MCR:** and have Operators verify that HV-055-1F006 indicates closed in the MCR
**AND** perform the following: **Toggle** Remote Function **RTR309** to "**OPEN**" and
**report:** T-251 is complete in the field

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4 / 5** | **EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)** | |
| | [T-101 RC/Q-8]<br>Runback Recirc pumps to minimum with 28% runback pushbutton | RO |
| | [T-101 RC/Q-10]<br>Trip both Recirc pumps at least 10 seconds apart | RO |
| | [T-101 RC/Q-12]<br>Insert control rods manually with RWM bypassed | RO |
| | [T-101 RC/Q-13]<br>Direct performance of T-213 to personnel outside Main Control Room (MCR) | SRO |
| | [T-101 RC/Q-5]<br>Direct performance of T-214 to personnel outside Main Control Room (MCR) | SRO |
| | [T-101 RC/Q-13] (**Critical Task)**<br>Direct performance of T-215 to personnel outside Main Control Room (MCR) | SRO |
| | [T-101 RC/Q-13]<br>Direct performance of T-216 to personnel outside Main Control Room (MCR) | SRO |
| | [T-101 RC/Q-19] **(Critical Task)**<br>Inhibit Auto ADS | PRO |
| | [T-101 RC/Q-20]<br>Direct performance of T-209 | SRO |
| | Stabilize RPV pressure | PRO |
| | Enter and execute T-117 | SRO |
| | [T-101 RC/P-11]<br>Direct performance of T-221 w/MSIVs open | SRO |
| | [T-117 LQ/7]<br>**Direct** establish RPV level < –50 inches performing T-270 | SRO |
| | **Direct** performance of Section 4.6 of T-270 to personnel outside Main Control Room (MCR) **(Critical Task)** | PRO |
| | [T-270 4.2.1]<br>**IF** HPCI initiation signal is present, **AND CANNOT** be reset, **THEN SHUTDOWN** 10S211, "HPCI Turbine" as follows:<br>**DEPRESS AND RELEASE** "Pushbutton For Manual Isolation", and **ENSURE** HV-55-1F003 closed | PRO |

**4 / 5 EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)**

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

When requested to perform **T-221,** toggle remote function **RTR051** to **BYPASS** on an **11 minute delay.** When time has expired, call and report as complete.

At time _7 min_ **OR** immediately if pre-staged for at least 7 minutes_ after FSSV or EO action requested for T-270, manually perform T-270 as follows:
**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 4.6 of T-270 is complete

At time _6 min__ after FSSV or EO action requested for implementation of T-251;
**contact MCR:** and have Operators verify that HV-055-1F006 indicates closed in the MCR
**AND** perform the following: **Toggle** Remote Function **RTR309** to "**OPEN**" and **report:** T-251 is complete in the field

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| 4 / 5 | **EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)** | |
| | [T-270 4.2.2]<br>**IF** HPCI initiation signal is not present, **THEN SHUTDOWN** 10S211, "HPCI Turbine" as follows:<br>Simultaneously **DEPRESS AND HOLD** HS-056-161, "Pushbutton for HPCI Turbine Trip (E41A-S19) (TURBINE TRIP)<br>AND **CLOSE** HV-55-1F003, "HPCI Main Steam Supply Outbd PCIV (OUTBOARD) | PRO |
| | [T-270 4.4.1]<br>**ENSURE** HV-06-138A, (BYPASS) is closed | RO |
| | [T-270 4.4.2]<br>**ENSURE** LIC-06-138, (STARTUP BYPASS) in Manual and set to 0% | RO |
| | [T-270 4.4.3]<br>**ENSURE** LIC-06-120, (PUMP BYPASS) in Manual and set to 0% at | RO |
| | [T-270 4.4.4]<br>**ENSURE** FIC-M1-1R601A, B, C "A,B,C RFPT Speed Controller in Manual for all three RFPTs | RO |
| | [T-270 4.4.5]<br>**DEPRESS** EMERGENCY STOP pushbutton for ALL AVAILABLE RFPTs at panel 10C603 | RO |
| | [T-270 4.4.6]<br>**WHEN** the emergency stop light goes out, **THEN DEPRESS** AUTO START pushbutton for **ALL** AVAILABLE RFPTs | RO |
| | [T-270 4.4.7]<br>**CLOSE** HV-06-108A, "1A RFP Discharge" | RO |
| | [T-270 4.4.8]<br>**CLOSE** HV-06-108B, "1B RFP Discharge" | RO |
| | [T-270 4.4.9]<br>**CLOSE** HV-06-108C, "1C RFP Discharge" | RO |
| | Stabilize RPV level between -60" and -100" | RO |
| | [T-101 RC-5]<br>Isolations verified for +12.5" and -38" | PRO |
| | [T-117 LQ/18]<br>Direct performance of T-251 | SRO |

| 4 / 5 EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major) |
|---|
| **Simulator Operator Instructions:**<br><br>Respond to request for assistance as appropriate.<br><br>Inform Floor Instructor prior to each event trigger |

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **4 / 5** | **EVENTS 4 - 5 RPS HIGH PRESSURE TRANSMITTER FAILURE / ATWS (Major)** | |
| **EVALUATORS NOTE:** The crew, if permitted, during a high power ATWS, is expected to place RHRSW in service. The following steps are directed by S12.1.A, RHR Service Water System Startup followed by, S51.8.A, Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control. | | |
| | **START** selected RHR Service Water Pump loop per S12.1.A, RHR Service Water System Startup | PRO |
| | [S12.1.A 4.1.4 or App #1 1.3]<br>**OPEN** HV-51-1F014A(B), HEAT EXCHANGER INLET | PRO |
| | [S12.1.A 4.1.5 or App #1 1.3]<br>Throttle **OPEN** HV-51-1F068A(B) for 18 to 20 seconds | PRO |
| | [S12.1.A 4.1.6(7) or App #1 1.4]<br>**VERIFY** PI-51-105A-1(B), HX DISCH, indicates system static pressure greater than or equal to 15 psig | PRO |
| | [S12.1.A 4.1.8 or App #1 1.5]<br>**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" | PRO |
| | [S12.1.A 4.1.10 or App #1 1.6 / 1.7]<br>**START** 0A(B,C,D)V543 Spray Pond Room Fan | PRO |
| | [S12.1.A 4.2.2 or App #1 1.8]<br>**START** 0A(B,C,D)P506, RHRSW PUMP | PRO |
| | [S12.1.A 4.2.3 or App #1 1.9]<br>**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 | PRO |

## 6/8 EVENTS 6 – 8 RDCS INOP/TURBINE TRIP/A LOOP RHRSW INOP (Malfunction)

**Simulator Operator Instructions:**

Respond to request for assistance as appropriate.

Inform Floor Instructor prior to each event trigger

At time _5 min__ after FSSV or EO action requested to reset RDCS
**DELETE MRD024** and toggle **RRD001** to **RESET** and
**report:** "RDCS has been reset in the AER"

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| **6/8** | **EVENTS 6 – 8 RDCS INOP/TURBINE TRIP/A LOOP RHRSW INOP (Malfunction)** | |
| **EVALUATORS NOTE:** When reactor power is lowered a RDCS failure will prevent control rod insertion. | | |
| | Reference appropriate ARC:<br>• 107 I-2, VIBRATION ALARM ALERT<br>• 107 I-3, VIBRATION ALARM DANGER<br>• 108 E-4, RDCS INOPERATIVE | PRO |
| | Respond to High (Main Turbine)Vibration alarms | PRO |
| | Recognize/report Main Turbine Hi Vibration | PRO |
| | Trip the Main Turbine due to high vibration | PRO |
| | [T-101 RC/P-1]<br>Stabilize Rx pressure with SRVs, 990-1096 psig **(Malfunction)** | PRO |
| | If RPV pressure rises above 1096 psig, re-enter T-101 | SRO |
| | [T-101 RC/P-13]<br>RFPTs are used to consume additional Steam. (108 valve closed with elevated Feedpump RPM) **(Malfunction)** | RO |
| | Recognize and report RDCS INOP alarm | RO |
| | Direct RDCS Reset in AER **(Malfunction)** | RO |
| | When RDCS Reset in the MCR manually inset control rods | RO |
| | Enter T-102, Primary Containment Control on Suppression Pool Temp > 95°F | SRO |
| | Establish Suppression Pool Temperature as a Critical Parameter | SRO |
| | [T-102 SP/T-2]<br>Place Two Loops of Suppression Pool Cooling in service per S51.8.A | PRO |
| | [S51.8.A App #1 step 1.4]<br>**START** 1A(B)P202, RHR Pump (PUMP) | PRO |
| | [S51.8.A App #1 step 1.5]<br>**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 | PRO |
| | [S51.8.A App #1 step 1.6]<br>**CLOSE** HV-C-51-1F048A(B), HEAT EXCH BYPASS | PRO |
| | Recognize failure of either '0A' or '0C' RHRSW pump to Start **(Malfunction)** | PRO |
| | Start other RHRSW pump in 'A' loop | PRO |
| | When SP temperature reaches 110 deg F **DIRECT** perform T-270 to lower level until –161, SRV closed or <4% power | SRO |
| | **Perform** T-270 to lower level until –161, SRV closed or <4% power **(Critical Task)** | PRO/RO |

## 6/8 EVENTS 6 – 8 RDCS INOP/TURBINE TRIP/A LOOP RHRSW INOP (Malfunction)

**Simulator Operator Instructions:**

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."

**Perform T-215 following T-270 second lowering with RPV level -161" to -186"**

**Control Rods to be inserted by T-215 as follows:** When directed by Lead Evaluator Call MCR and notify MCR control rod movement should occur and **DELETE MRP029D**

The **PURPOSE** of this SEG is to get to the T-270 second lowering. With Lead Evaluators permission, vary Bypass Valve malfunction **MEH108** so the crew achieves their objective.

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| 6/8 | **EVENTS 6 – 8 RDCS INOP/TURBINE TRIP/A LOOP RHRSW INOP (Malfunction)** | |
| | Re-perform T-270 steps to Emergency Stop Reactor Feed Pumps | RO |
| | Re-inject with Feedwater when RPV level is < -161" (TAF) and stabilize level between -186" and -161" | RO |
| | [SE-10 3.1]<br>**PLACE** the following to "CLOSE"<br>• 52-20224/CS, "D*24 Safeguard L.C. D*24-G-D MCC Bkr" (SAFEGUARDS B), on *BC661<br>• 52-20124/CS, "D*14 Safeguard L.C. D*14-G-D MCC Bkr" (SAFEGUARDS A), on *AC661. | RO |
| | [SE-10 3.2]<br>**PLACE** to "RESET":<br>• 43-22322/CS, "Div. III Non SFGD Instr. Panel" (INST AC 201 CONTROL PNL), on *CC661<br>• 43-22422/CS, "Div. IV Non SFGD Instr. Panel" (INST AC 202 CONTROL PNL), on *DC661. | RO |
| | Dispatch Equipment Operator to perform SE-10-1 field actions | PRO |
| | Ensure ECCS Pumps other than '1A' and '1B' RHR remain shutdown | PRO |
| | RPV level restored and stabilized between –186 and –161 inches **(Critical Task)** | RO |
| | MCR notified of expected control rod movement and recognize all rods in due to T-215, De-energization Of Scram Solenoids **(Critical Task)** | RO |
| | Secure SLC Pumps that restart on LOCA Signal | RO |
| | Exit T-117 when all Control Rod in | SRO |
| | Isolations verifed for -129" RPV level | PRO |
| | Stabilize level with the core covered after rod insertion to maintain the cooldown rate | RO |
| | Slowly raise Reactor Level Band 12.5" to 54" | RO |

**EVALUATORS NOTE:** The scenario is terminated when RPV level has been maintained –186" to –161", followed by Control Rods inserted per T-215, De-energizing Of Scram Solenoids. After the scenario is terminated, direct the SRO to make the highest EAL classification for the scenario.

EAL: **Alert (MA3)** due to:

1. Automatic or manual scram did **not** shutdown the reactor as indicated by Reactor Power **> 4%.**

**AND**

2. Manual / ARI actions taken at the Reactor Console are **not** successful in shutting down the reactor as indicated by Reactor Power **> 4%.**

| TIME | ASSESSMENT ITEMS AND TASK PERFORMANCE | POSITION |
|---|---|---|
| | • Rough Log(s) Maintained by the crew with the following items noted:<br>• '1C' RFP Min Flow Valve fails open<br>• '1C' RFP manually tripped<br>• ON-102 entry<br>• HWC tripped<br>• RPV High Pressure Trip with failure to scram<br>• OT-117 entry<br>• ATWS<br>• T-101 entry<br>• T-200 Callouts:<br>  • T-209<br>  • T-213<br>  • T-214<br>  • T-215<br>  • T-216<br>  • T-221<br>  • T-251<br>  • T-270<br>• T-117 entry<br>• Main Turbine Vibration/Trip<br>• BPV failure<br>• A or C RHRSW Pump Trip<br>• LOCA signal<br>• SE-10 entry/floor actions<br>• Isolations verified for +12.5", -38", -129"<br>• All rods in<br>• Level restored above TAF<br>• Alert (MA3) declaration due to ATWS with failure of auto and manual RPS and RRCS | Crew |

# 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 |

## Attachment 2

## Communications Log

**CREW:** _____

**DATE:** _____ **LSEG:** _____

**START TIME:** _____ **STOP TIME:** _____

**SM:** _____ **RO:** _____ **WCS:** _____

**CRS:** _____ **PRO:** _____ **FSSV:** _____

| TIME | PERSON CALLING | PERSON BEING CALLED | COMMUNICATION / REQUEST | CALL BACK TIME |
|---|---|---|---|---|
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## XI. CREW PREBRIEF INSTRUCTIONS

Unit 2 is in OPCON 1 at 100% power
Unit 1 is in OPCON 1 at 100% power

**Specific Plant Conditions are as Follows:**

- 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:**

- Maintain 100%.

**Documents Provided:**

- None