| Job Position<br>SRO / RO | No.<br>JP-ER-831-0001-402 | Revision<br>3 |
|---|---|---|
| JPM Title<br>Request Emergency Offsite Services | Duration<br>20 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / Simulator / **Classroom** Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| 7. | | | | | | | | | | | |
| *** 8.** | | | | | | | | | | | |
| *** 9.** | | | | | | | | | | | |
| | | | | | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

N/A

**Task:**

74001 - Request offsite ambulance/paramedic, fire, or hospital support

**References:** Required (R) / Available (A)

EP-290, Emergency Notifications (R)

EP-29004, Ambulance/ Paramedic Support Request Form (A)

EP-29005, Hospital Support Request Form (A)

EP-29006, Secondary Alarm Station Report (A)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are an extra operator in the Control Room when a major steam leak occurs.
- The steam leak has just been isolated when the control room receives a report that 3 personnel have received life-threatening burns from the steam leak.
- The personnel are in the North Heater Drain Pump Room where radiation levels are not excessive.
- The area surrounding the location of the seriously burned personnel is contaminated.

**Initiating Cue(s):**

- The SM directs you to obtain ambulance and paramedic assistance.
- Inform the SM when the requests for assistance have been made and arrangements for entry of the responding personnel have been completed.

**Terminating Cue(s):**

Offsite assistance has been requested, the hospital has been informed and site entry has been expedited for responding personnel.

**Task Standard:**

Offsite Assistance has been requested from Frenchtown Fire Department, Ambulance and Paramedics per EP 290.

| JPM Title<br>Request Emergency Offsite Services | No.: JP-ER-831-0001-402<br>Revision: 3<br>Page 4 |
|---|---|

**Licensed Operator Exam Information (required for NRC exams)**

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** Generic

**K/A STATEMENT:**

2.4.43 Knowledge of emergency communications systems and techniques. ..... 3.2 / 3.8

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

## PERFORMANCE EVALUATION

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide examinee with Cue Sheet. If asked, provide examinee with a copy of EP-290004.** | |
| **CUE: If requested, SM informs examinee that paramedics should be aware that area around injured personnel as well as personnel themselves might be contaminated. Area radiation levels are not a significant risk.** | |
| 1. Obtain EP-2900004, Ambulance/ Paramedic Support Request Form, and complete appropriate sections. | 1. Obtains and completes EP-290004 as follows:<br>• Checks block for Rescue Squad and ambulance<br>• Fills in Name, Title, and Telephone Number<br>• 3 injured personnel<br>• Seriously Burned<br>• 3 potentially contaminated<br>• Transport to Mercy Memorial |
| **CUE: As Central Dispatch, acknowledge the information provided.** | |
| * 2. Call 734-241-2727 (for urgent medical assistance) to request paramedic and ambulance. | * 2. Calls number, states "This is (name, title, telephone number) calling from Fermi 2. There are injured personnel onsite and your assistance is required immediately."<br>Provides other information previously filled in on form. |
| **CUE: As Central Dispatch, respond that contact name is Robert James.** | |
| * 3. Request contact name from Central Dispatch, and enter date and time. | * 3. Requests contact name from Central Dispatch, and notes it on form along with current date and time. |
| **NOTE: EP-290006 may be completed <u>before</u> EP-290005.** | |
| **CUE: If requested, provide examinee with a copy of EP-290005.** | |
| 4. Obtain EP-290005 and complete the form. | 4. Obtains EP-290005 and completes the form with the previously collected information. |
| * 5. Call 734-240-8477 or 734-240-8488 (Mercy Memorial Hospital) asking for the Charge Nurse and provide the collected information. | * 5. Calls Mercy Memorial, states "This is (name, title, telephone number) calling from Fermi 2. There are injured personnel onsite and the ambulance service has been contacted to transport the victims to you."<br>Provides the other information required, including number of injured personnel (3).<br>States "You are requested to implement your radiological emergency response plan." |

| ELEMENT | STANDARD |
|---|---|
| **CUE: As Charge Nurse, respond that contact name is Samuel Smith.** | |
| * 6. Request contact name from Charge Nurse, and enter date and time. | * 6. Requests contact name from Charge Nurse, and notes it on form along with current date and time. |
| **CUE: If requested, provide examinee with a copy of EP-290006. If asked, SM reports that injured personnel are in the North Heater Bay.** | |
| 7. Obtain EP-290006 and complete the form. | 7. Obtains EP-290006 and completes the form with the required information:<br>• Checks that Fire/Paramedics, Ambulance, and Hospital contacted.<br>• 2 vehicles reporting onsite<br>• 4 personnel reporting onsite<br>• Checks Fermi Drive gate to be used<br>• Injured personnel are in the North Heater Bay |
| * 8. Use Control Room-Security direct line to SAS (Secondary Alarm Station) or call 6-5215, and report required information. | * 8. Contacts Secondary Alarm Station and reports:<br>• Fire/Paramedics, Ambulance, and Hospital contacted.<br>• 2 vehicles reporting<br>• 4 personnel responding<br>• Access is through Fermi Drive gate<br>• Injured personnel are in the North Heater Drain Pump Room (Turbine Building) |
| **CUE: As Security Supervisor, respond that contact name is Joseph Ruger.** | |
| * 9. Request contact name from SAS, and enter date and time. | * 9. Requests contact name from SAS, and notes it on form along with current date and time. |
| **CUE: Terminate JPM when SM is notified that offsite assistance has been requested, the hospital informed, and site entry expedited for responding personnel.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

This JPM may be started at the CRS Desk in the Simulator.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-ER-831-0001-402)**

## Initial Conditions:

- You are an extra operator in the Control Room when a major steam leak occurs.
- The steam leak has just been isolated when the control room receives a report that 3 personnel have received life-threatening burns from the steam leak.
- The personnel are in the North Heater Drain Pump Room where radiation levels are not excessive.
- The area surrounding the location of the seriously burned personnel is contaminated.

## Initiating Cue(s):

- The SM directs you to obtain ambulance and paramedic assistance.
- Inform the SM when the requests for assistance have been made and arrangements for entry of the responding personnel have been completed.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0043-005 | Revision<br>2 |
|---|---|---|
| JPM Title<br>Recovery of RCIC following a Manual Trip | Duration<br>25 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | ***11.** | | | | | | | |
| 2. | | | | ***12.** | | | | | | | |
| *** 3.** | | | | ***13.** | | | | | | | |
| 4. | | | | 14. | | | | | | | |
| 5. | | | | ***15.** | | | | | | | |
| 6. | | | | ***16.** | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| 8. | | | | | | | | | | | |
| 9. | | | | | | | | | | | |
| ***10.** | | | | | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

E5100 - Reactor Core Isolation Cooling System

**Task:**

63607 - Perform a recovery of RCIC following a trip

**References:** Required (R) / Available (A)

23.206, Reactor Core Isolation Cooling System

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Control Room NSO with the reactor shut down following a transient.
- The EOPs have been entered.
- RCIC, SBFW, and CRD pumps were injecting to control reactor water level.
- RCIC was subsequently shutdown using the manual trip pushbutton.
- N2103-F001 (SBFW injection valve) has just failed closed, and the pumps have been shut down.

**Initiating Cue(s):**

The CRS directs you to reset and manually restart RCIC per 23.406 section 7, and restore water level to 173"-214".

**Terminating Cue(s):**

RCIC is injecting into the RPV at approximately 650 gpm.

**Task Standard:**

RCIC has been restarted following a manual trip per 23.206, Reactor Core Isolation Cooling System.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

2-Reactor Water Inventory Control

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 217000 - Reactor Core Isolation Cooling System

**K/A STATEMENT:**

A4. Ability to operate and/or monitor in the control room:

A4.02 Turbine trip throttle valve reset..... 3.9/3.9

**Maintenance Rule Safety Classification:**

E5100-01

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide the examinee with the cue sheet.** | |
| * 1. [7.1.2.1.a] Depress RCIC System Initiate Signal reset pushbutton and verify:<br>• White SEALED IN light goes off<br>• Annunciator 1D24, RCIC SYSTEM ACTUATION, clears. | * 1. Depresses RCIC System Initiate Signal reset pushbutton, and verifies SEALED IN light goes out and 1D24 clears. |
| 2. [7.1.2.1.b] Close or verify closed E5150-F095, RCIC Turb Stm Inlet Byp Vlv. | 2. Verifies E5150-F095 is closed. |
| * 3. [7.1.2.1.c] Close or verify closed the following valves:<br>• E5150-F059, RCIC Turbine Trip Throttle Vlv<br>• E5150-F019, RCIC Min Flow Vlv<br>• E5150-F013, RCIC Disch to FW Inbd Iso Valve<br>• E5150-F045, RCIC Turb Steam Inlet Vlv<br>• E5150-F046, RCIC Oil Clr Clg Water Iso Vlv | * 3. Closes E5150-F059.<br>Verifies E5150-F019 is closed.<br>Verifies E5150-F013 is closed.<br>Closes E5150-F045.<br>Closes E5150-F046. |
| 4. [7.1.2.1.d] Open the following valves:<br>• E5150-F025, RCIC Turb Stm Drn Pot Inbd Iso<br>• E5150-F026, RCIC Turb Stm Drn Pot Otbd Iso<br>• E5150-F005, RCIC Cond To RW Otbd Iso Vlv | 4. Verifies the following valves are open:<br>• E5150-F025<br>• E5150-F026<br>• E5150-F005 |
| **NOTE: RPV Level is >Level 2, and RCIC was tripped manually, so 7.1.2.2 & 7.1.2.3 are NA.** | |
| 5. [7.1.2.4.c] Place RCIC Turbine Trip Pushbutton collar in DISARMED. | 5. Verifies RCIC Turbine Trip PB collar is in DISARMED. |
| 6. [7.1.2.5.c] Close E5150-F059, RCIC Turbine Trip Throttle Vlv, | 6. Verifies E5150-F059 is closed. |
| * 7. [7.1.2.5.d] Open E5150-F059, RCIC Turbine Trip Throttle Vlv, | * 7. Opens E5150-F059. |
| 8. [7.1.2.5.e] Verify annunciator 1D94, RCIC Turbine Tripped is clear. | 8. Verifies 1D94 is clear. |
| **CUE: NO reports that valve stem for E51-F059, RCIC Turbine Inlet Trip Throttle Vlv, is in OPEN.** | |
| 9. [7.1.2.5.f] Verify locally valve stem for E51-F059, RCIC Turbine Inlet Trip Throttle Vlv, is in OPEN. | 9. Directs NO to locally verify valve stem for E51-F059, RCIC Turbine Inlet Trip Throttle Vlv, is in OPEN. |

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **NOTE: Student may restart RCIC using section 5.4 or Enclosure B with all prerequisites met or waived by CRS.** | | | |
| *10.. | [5.4.2.1] Start E5101-C004 RCIC Baro Cndr Vacuum Pump. | *10. | Starts E5101-C004, RCIC Baro Cndr Vacuum Pump. |
| *11. | [5.4.2.2] Open E5150-F046, RCIC Oil Clr Clg Water Iso Vlv. | *11. | Opens E5150-F046. |
| **NOTE: Examinee should make Hi Com announcement and Crew Update "Starting RCIC"** | | | |
| *12. | [5.4.2.3.a] Open E5150-F095, RCIC Turb Stm Inlet Byp Vlv. | *12. | Opens E5150-F095. |
| *13. | [5.4.2.3.b] After approximately 15 seconds, open E5150-F045, RCIC Turb Steam Inlet Vlv. | *13. | After 15 seconds, opens E5150-F045. |
| 14. | [5.4.2.4] Verify the following valves close:<br>• E5150-F025, RCIC Turb Stm Drn Pot Inbd Iso<br>• E5150-F026, RCIC Turb Stm Drn Pot Otbd Iso | 14. | Verifies E5150-F025 and E5150-F026 close. |
| *15. | [5.4.2.6] Open E5150-F013, RCIC Dish To FW Inbd Iso Valve | *15. | Opens E5150-F013. |
| *16. | [5.4.2.7] Adjust flow as necessary with E51-K615, RCIC Discharge Flow Controller. | *16. | Adjusts flow with E51-K615 to maintain RPV Level. |
| **CUE:** | **End JPM when RCIC is injecting with approximately 650 gpm with level increasing.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating __X__ amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:** 20

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N20MF0023 | Heater Feed Pump Trip C | ACTIVE | 0 | 0 |
| N20MF0024 | Heater Feed Pump Trip E | ACTIVE | 0 | 0 |
| N20MF0025 | Heater Feed Pump Trip W | ACTIVE | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Special Instructions:**

1. Initialize the simulator to the desired IC, and place in RUN.
2. Open and Execute lesson **JP0043-005**.lsn, or set the malfunctions listed above.
3. Place Mode Switch in Shutdown.
4. Dial down the RCIC flow controller to 0, and manually trip the RCIC turbine.
5. Verify RPV level about 160”, then place the simulator in FREEZE.

**Cue Sheet: (JP-OP-315-0043-005)**

## Initial Conditions:

- You are the Control Room NSO with the reactor shut down following a transient.
- The EOPs have been entered.
- RCIC, SBFW, and CRD pumps were injecting to control reactor water level.
- RCIC was subsequently shutdown using the manual trip pushbutton.
- N2103-F001 (SBFW injection valve) has just failed closed, and the pumps have been shut down.

## Initiating Cue(s):

The CRS directs you to reset and manually restart RCIC per 23.406 section 7, and restore water level to 173"-214".

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0107-002 | Revision<br>1 |
|---|---|---|
| JPM Title<br>Transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control | Duration<br>15 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | ***11.** | | | | | | | |
| 2. | | | | ***12.** | | | | | | | |
| 3. | | | | 13. | | | | | | | |
| *** 4.** | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| *** 8.** | | | | | | | | | | | |
| 9. | | | | | | | | | | | |
| 10. | | | | | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

N2100 – Reactor Feedwater System

**Task:**

62073 - Transfer from long cycle cleanup to startup level control

**References:** Required (R) / Available (A)

23.107, Reactor Feedwater and Condensate (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Control Room NSO.
- Plant startup is in progress. The reactor is just critical. Pressurization is to begin.
- Feedwater is in Long Cycle Cleanup mode. Chemistry has reported Condensate and Feedwater chemistry is within the administrative limits.

**Initiating Cue(s):**

The CRS directs you to transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control per 23.107.

**Terminating Cue(s):**

Feedwater is in Startup Level Control.

**Task Standard:**

Feedwater Control is transferred from Long Cycle Cleanup to Startup Level Control per 23.107.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-2 – Reactor Water Inventory Control

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 259001 – Reactor Feedwater System

**K/A STATEMENT:**

A4 Ability to manually operate and/or monitor in the control room:

A4.05 Reactor Water Level ..... 4.0 / 3.9

**Maintenance Rule Safety Classification:**

N2100-06

**Maintenance Rule Risk Significant?** (Yes or No)

No

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **NOTE:** | | | |
| **CUE:** | **Provide examinee with Cue Sheet.** | | |
| 1. | [5.1.2.2] Place or verify, RPV Startup LCV Mode Switch in START. If C32-K816, FW & RR Flat Panel Display, is available, verify DCS logic is in START. | 1. | RPV Startup LCV Mode Switch is verified in START.<br>DCS logic is verified in START. |
| 2. | [5.1.2.3.a] Verify Feedwater Logic white POST SCRAM light is OFF. | 2. | Feedwater Logic white POST SCRAM light is verified OFF. |
| 3. | [5.1.2.3.b] Verify Reactor Water Level Set Down white POST SCRAM light is OFF. | 3. | Reactor Water Level Set Down white POST SCRAM light is verified OFF. |
| * 4. | [5.1.2.4] Place or verify C32-R620, N21-F403 RPV Startup LCV Controller, in MANUAL. | * 4. | C32-R620, N21-F403 RPV Startup LCV Controller, is placed in MANUAL. |
| * 5. | [5.1.2.5] Place or verify, Level Control Mode switch in 1 ELEM. If C32-K816, FW & RR Flat Panel Display, is available, verify DCS logic is in 1 ELEMENT. | * 5. | Level Control Mode switch is placed in 1 ELEM. DCS logic is verified in 1 ELEMENT. |
| **NOTE:** | **This step is performed while verifying that N20-F404 throttles. If N20-F404 fails to throttle, N2000-F618 must be manually throttled to maintain proper flow.** | | |
| * 6. | [5.1.2.6] Adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to 0% (COP H11-P603), while maintaining Condensate flow rate at approximately 9000 gpm, as indicated on N20-R815, Cond To Cond F/D's Flow Recorder. | * 6. | Output of C32-R620, N21-F403 RPV Startup LCV Controller, is adjusted to 0% while maintaining Condensate flow rate at approximately 9000 gpm. |
| * 7. | [5.1.2.7] Close N2100-F604, Fw Htr 6N Cond Rtrn to Cndr Vlv, and N2100-F605, Fw Htr 6S Cond Rtrn to Cndr Vlv. | * 7. | N2100-F604 and N2100-F605 are closed. |
| * 8. | [5.1.2.8] Open N2100-F601, Fw Htr 6N Outlet Iso Valve, and N2100-F602, Fw Htr 6S Outlet Iso Valve. | * 8. | N2100-F601 and N2100-F602 are opened. |
| **CUE:** | **Report as NO that disconnect switch MCC 72A-4A Position 4A, is in OFF for N2100-F604.** | | |
| 9. | [5.1.2.9] Place disconnect switch MCC 72A-4A, Position 4A, in OFF for N2100-F604, Fw Htr 6N Cond Rtrn to Cndr Vlv. | 9. | Directs NO to place disconnect switch MCC 72A-4A, Position 4A, in OFF for N2100-F604. |
| **CUE:** | **Report as NO that disconnect switch MCC 72R-2A Position 3C, is in OFF for N2100-F605.** | | |
| 10. | [5.1.2.10] Place disconnect switch MCC 72R-2A, Position 3C, in OFF for N2100-F605, Fw Htr 6S Cond Rtrn to Cndr Vlv. | 10. | Directs NO to place disconnect switch MCC 72R-2A, Position 3C, in OFF for N2100-F605. |

| ELEMENT | STANDARD |
|---|---|
| **NOTE: This step is performed while verifying that N20-F404 throttles. If N20-F404 fails to throttle, N2000-F618 must be manually throttled to maintain proper flow.** | |
| *11. [5.1.2.11] Slowly adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to open N21-F403, RPV Startup LCV, until RPV water level starts to rise, while maintaining Condensate flow rate at approximately 9000 gpm. | *11. Output of C32-R620, N21-F403 RPV Startup LCV Controller, is adjusted until RPV water level starts to rise while maintaining Condensate flow rate at approximately 9000 gpm. |
| *12. [5.1.2.12] **WHEN** desired RPV water level is reached (Level 4 to Level 7), place C32-R620, N21-F403 RPV Startup LCV Controller, in AUTO. | *12. C32-R620, N21-F403 RPV Startup LCV Controller, is placed in AUTO when desired RPV level is reached. |
| 13. [5.1.2.13] Adjust RPV water level setpoint to maintain desired Reactor Water Level (Level 4 to Level 7). | 13. RPV water level setpoint is adjusted to maintain desired Reactor Water Level. |
| **CUE: End JPM when Feedwater is in Startup Level Control.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

## FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-05

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Special Instructions:**

1. Initialize the simulator to IC-05, and place in RUN.
2. If necessary, insert control rods to stabilize power.
3. Verify Long Cycle Cleanup is established.
4. Establish RWCU blowdown flow of about 60 gpm.

**Cue Sheet: (JP-OP-315-0107-002)**

## Initial Conditions:

- You are the Control Room NSO.
- Plant startup is in progress. The reactor is just critical. Pressurization is to begin.
- Feedwater is in Long Cycle Cleanup mode. Chemistry has reported Condensate and Feedwater chemistry is within the administrative limits.

## Initiating Cue(s):

The CRS directs you to transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control per 23.107.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0110-407 | Revision<br>0 |
|---|---|---|
| JPM Title<br>Conduct Control Rod Drive Coupling Integrity Test with Coupling Failure | Duration<br>15 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | 11. | | | | | | | |
| 2. | | | | 12. | | | | | | | |
| 3. | | | | ***13.** | | | | | | | |
| 4. | | | | 14. | | | | | | | |
| 5. | | | | | | | | | | | |
| 6. | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| *** 8.** | | | | | | | | | | | |
| *** 9.** | | | | | | | | | | | |
| ***10.** | | | | | | | | | | | |

| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

## JPM Observation Criteria

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

C1102 – Control Drive and Drive Mechanism

**Task:**

74311 - Perform actions for Control Rod re-coupling not successful OR Control Rod cannot be verified coupled

**References:** Required (R) / Available (A)

AOP 20.106.02 (R)

SOP 23.623 (R)

ARPs 3D76 & 3D80 (A)

**Tools and Equipment Required:**

Marked up 23.623, Attachment 2

**Initial Conditions:**

- A plant startup is in progress.
- Reactor power level is ~55%.
- You are the P603 operator.

**Initiating Cue(s):**

The CRS directs you to continue the reactor startup with rods on Post-LPSP Control Rod Pull Sheet A-9/2, RWM-Step 50, from control rod 14-47. I will act as your Verifier.

**Terminating Cue(s):**

Control Rod 14-47 is disarmed in accordance with 20.106.02.

**Task Standard:**

CRD Coupling Integrity Test is performed in accordance with 23.623. Control Rod 14-47 is disarmed in accordance with 20.106.02.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function/Category:**

1 – Reactivity Control

11 – Abnormal Plant Evolutions

**K/A Reference:**

**K/A SYSTEM:** 201003 - Control Rod and Drive Mechanism

**K/A STATEMENT:**

A2 Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.02 Uncoupled rod . . . . . 3.7 / 3.8

**Maintenance Rule Safety Classification:**

B1100-07

**Maintenance Rule Risk Significant?** (Yes or No)

No

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide examinee with Cue Sheet, Rod Pull Sheet, and marked up 23.623, Attachment 2.** | |
| **NOTE: Rod can be continuously withdrawn using Override vs. notching out.** | |
| *1. Begin withdrawing Control Rod 14-47 from Position 18 to 48 by notching rod, or continuously withdrawing iaw 23.623. | *1. Rod Movement Control taken to OUT NOTCH. When the settle function is complete, this step is repeated until the rod is at Position 48.<br>OR<br>Rod Out Notch Override taken to OVERRD and Rod Movement Control taken to OUT NOTCH. |
| **NOTE: When rod 14-47 reaches Position 48, the Four-Rod Display indicates blank, annunciators 3D76 and 3D80 alarm, and the rod's DRIFT light indicates on the Full Core Display.** | |
| 2. Respond to 3D76 alarm. Inform CRS of rod overtravel past Position 48. | 2. CRS is informed of overtravel. |
| 3. [IR 1.] Verify Control Rod overtravel at 4-Rod Display by checking that no position number is indicated in window and Full Out light on the Full Core Display is out. | 3. 4-Rod Display and Full Core Display is checked for selected rod. |
| 4. [IR 2.] Verify 3D80, CONTROL ROD DRIFT, is received. | 4. 3D80, CONTROL ROD DRIFT, is verified to be in alarm. |
| **CUE: The CRS will direct the performance of AOP 20.106.02, Condition C.** | |
| 5. [IR 3.] Recommend CRS enters 20.106.02. | 5. Recommends entering 20.106.02. |
| **CUE: If asked, the CRS will contact the SNE to evaluate the rod pattern.** | |
| 6. [C.1] Direct the Station Nuclear Engineer to evaluate the effect on Control Rod Pattern. | 6. Station Nuclear Engineer contacted. |
| *7. [C.2.a] Insert CRD in notch mode until nuclear instrumentation indicates Control Rod is being inserted. | *7. Uncoupled rod is inserted one notch at a time until nuclear instrumentation indicates Control Rod is being inserted. |
| **CUE: The SM and SNE give permission to withdraw control rod.** | |
| *8. [C.2.b] Obtain permission from the SM and SNE to withdraw Control Rod. | *8. Requests permission from the SM and SNE to withdraw Control Rod. |
| *9. [C.2.c] Fully withdraw Control Rod in notch mode while observing nuclear instrumentation response. | *9. Rod Movement Control taken to OUT NOTCH. When the settle function is complete, this step is repeated until the rod is at Position 48. |
| **NOTE: The following steps are directed by 20.106.02, step C.2.d, and performed per 23.623.** | |
| *10. [6.1.2.2.a] Attempt to withdraw Control Rod from Position 48 by notching rod. | *10. Rod Movement Control taken to OUT NOTCH. |

| ELEMENT | STANDARD |
|---|---|
| 11. [6.1.2.2.b] Verify Control Rod is coupled as follows:<br>1) Rod settling back to Position 48.<br>2) Annunciator 3D76, CONTROL ROD OVERTRAVEL, does not alarm. | 11. Identifies rod does not settle back to Position 48 and 3D76 alarms. The selected control rod is **NOT** coupled. |
| **CUE: The CRS acknowledges the report, then directs the performance of AOP 20.106.02, Conditions E.2 and E.3.** | |
| 12. Inform CRS that control rod 14-47 re-coupling is not successful. | 12. CRS is informed that control rod 14-47 re-coupling is not successful. |
| *13. [E.2] Fully insert Control Rod. | *13. Control Rod 14-47 is fully inserted. |
| **CUE: Notify Examinee that time compression may be used for activities performed outside of the Control Room. Report that amphenols are disconnected, or C11-F103 and C11-F105 are closed, whichever has been directed.** | |
| 14. [E.3] Disarm affected HCU by one of the following methods:<br>- Disconnect amphenols to directional control valves.<br>OR<br>- Close C11-F103, then C11-F105 | 14. NO directed to disarm HCU 14-47 by one of the following methods:<br>- Disconnect amphenols to directional control valves.<br>OR<br>- Close C11-F103, then C11-F105 |
| **CUE: End the JPM when Control Rod 14-47 is disarmed in accordance with 20.106.02.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Steps**

**Evaluator Notes:**

Provide the examinee the pull sheets for the next control rod to be withdrawn to position 48 (LPSP Pull Sheet A-9/2, RWM-Step: 50, marked with rods pulling from 18 to 48) and 23.623 Attachment 2 marked up with current rod pattern.

This JPM can be performed at low power (startup) or at higher power (control rod pattern adjustment). If this JPM is being performed at low power, provide normal pull sheets; if being performed at high power provide rod pattern adjustment sheets.

You will act as the SNE to verify the correct control rod is selected for movement.

The trainee may jump directly to 20.106.02 vs. reviewing ARP 3D76 or 3D80.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-15

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| C11MF0233 | CONTROL ROD 14-47 UNCOUPLED | ACTIVE | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| C11RF0398 | Re-Initialize NUMAC RWM | RESET | 0 | 0 |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Special Instructions:**

1. Initialize the simulator to IC-15 (or the selected IC), and place the simulator in RUN.
3. Open and Execute Lesson JP0110-407.lsn, or set the malfunctions as indicated above.

**Cue Sheet: (JP-OP-315-0110-407)**

## Initial Conditions:

- A plant startup is in progress.
- Reactor power level is ~55%.
- You are the P603 operator.

## Initiating Cue(s):

The CRS directs you to continue the reactor startup with rods on Post-LPSP Control Rod Pull Sheet A-9/2, RWM-Step 50, from control rod 14-47. I will act as your Verifier.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0139-005 | Revision<br>1 |
|---|---|---|
| JPM Title<br>Manually Isolate HPCI System (Alt Path) | Duration<br>10 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | ***11.** | | | | | | | |
| 2. | | | | ***12.** | | | | | | | |
| *** 3.** | | | | ***13.** | | | | | | | |
| *** 4.** | | | | 14. | | | | | | | |
| *** 5.** | | | | 15. | | | | | | | |
| *** 6.** | | | | 16. | | | | | | | |
| 7. | | | | 17. | | | | | | | |
| *** 8.** | | | | 18. | | | | | | | |
| *** 9.** | | | | ***19.** | | | | | | | |
| ***10.** | | | | | | | | | | | |

| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

E4100 - High Pressure Coolant Injection System

**Task:**

63658 - Start HPCI in the Test Mode

**References:** Required (R) / Available (A)

23.202, High Pressure Coolant Injection System (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Control Room NSO.
- HPCI is to be run in the Test Mode.
- RHR Division 1 is in Torus Cooling.
- Division 1 SGTS is in operation.
- All other prerequisites have been met.

**Initiating Cue(s):**

The CRS directs you to start HPCI in the Test Mode in accordance with 23.202, Section 6.1.

**Terminating Cue(s):**

HPCI System is manually isolated.

**Task Standard:**

HPCI System is shutdown and isolated in accordance with ARP 2D49 and/or 2D53.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-5 Containment Integrity

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 295032 - High Secondary Containment Area Temperature

**K/A STATEMENT:**

EA1. Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: (CFR: 41.7 / 45.6)

EA1.05 Affected systems so as to isolate damaged portions ..... 3.7 / 3.9

**Maintenance Rule Safety Classification:**

E4100-06

**Maintenance Rule Risk Significant?** (Yes or No)

No

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide examinee with Cue Sheet.** | | |
| 1. | [6.1.2.1] Verify or place E41-K820, Test Iso/PCV E41-F011 Ctrlr, in AUTO. | 1. | E41-K820 is verified in AUTO. |
| 2. | [6.1.2.2.a] On E41-K820, depress D button until S comes ON. | 2. | S is verified ON. |
| * 3. | [6.1.2.a.1)] Turn the pulser knob to set the valve position open setpoint to approximately 56.5% on the digital display. | * 3. | Pulser knob is turned until ~56.5 is read on the digital display. |
| * 4. | [6.1.2.2.b] On E41-K820, depress D button until Y comes ON. | * 4. | D button is depressed until Y comes ON. |
| * 5. | [6.1.2.b.1)] If Reactor Pressure is >150 psig, turn the pulser knob to set the discharge pressure setpoint to 250 psi on the digital display. | * 5. | Pulser knob is turned until 250 is read on the digital display. |
| * 6. | [6.1.2.3] Place E4100-M001, HPCI Test Line Iso/PCV E41-F011 Selector Switch, in OPER. | * 6. | E4100-M001 is placed in OPER. |
| 7. | [6.1.2.4] Verify E41-F011, HPCI/RCIC Test Iso/PCV, closed. | 7. | E41-F011 is verified closed. |
| * 8. | [6.1.2.5] Open E4150-F008, HPCI Test Line Iso Vlv. | * 8. | E4150-F008 is opened. |
| * 9. | [6.1.2.6] Open T4600-F406, HPCI to SGTS Iso Vlv. | * 9. | T4600-F406 is opened. |
| *10. | [6.1.2.7] Place E4101-C003, HPCI Baro Cndr Vacuum Pump CMC switch, in RUN, and verify pump starts. | *10. | HPCI Baro Cndr Vacuum Pump CMC switch is placed in RUN, and pump is verified to start. |
| *11. | [6.1.2.8] Open E4150-F003, HPCI Stm Sply Oybd Iso Vlv. | *11. | E4150-F003 is opened. |
| *12. | [6.1.2.9] Open E4150-F059, HPCI Oil Clr Clg Water Iso Vlv. | *12. | E4150-F059 is opened. |
| *13. | [6.1.2.10] Simultaneously:<br>• Place E4101-C005, HPCI Turbine Aux Oil Pump, in RUN, and verify pump starts, AND<br>• Open E4150-F001, HPCI Turb Stm Sply Iso Vlv. | *13. | Simultaneously:<br>• HPCI Turbine Aux Oil Pump is placed in RUN, and pump start verified, AND<br>• E4150-F001 is opened. |
| 14. | [6.1.2.11] Verify HPCI Pump and Turbine starts and speed increases. | 14. | HPCI Pump and Turbine start and speed increase is verified. |

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **Alternate Path begins when HPCI Turbine speed reaches 3000 rpm.** | | | |
| **CUE:** | **As CRS, acknowledge alarm report.** | | |
| 15. | Respond to annunciators 1D70, Steam Leak Detection Diff Temp High, and 1D66, Steam Leak Detection Ambient Temp High. | 15. | Announces the alarms to the CRS, and references the appropriate ARPs. |
| **CUE:** | **If examinee requests H11-P614 information, report that alarmed module is for HPCI Equipment Room, and temperature is reading 155°F.** | | |
| 16. | [1D66/1D70] Direct an operator to RR H11-P614, NSSS Temperature Recording and Leak Detection Cabinet, to determine alarmed module and temperature. | 16. | Directs operator to RR H11-P614, NSSS Temperature Recording and Leak Detection Cabinet, to determine alarmed module and temperature. |
| **CUE:** | **As CRS, acknowledge alarm report.** | | |
| 17. | Respond to annunciators 2D49, HPCI Logic A Isolation Trip Signal Initiated, and 2D53, HPCI Logic B Isolation Trip Signal Initiated. | 17. | Announces the alarms to the CRS, and references the appropriate ARPs. |
| **CUE:** | **If examinee reports the isolation failure and requests direction, direct examinee to manually isolate the HPCI System.** | | |
| 18. | [2D49/2D53] Verify HPCI Turbine has tripped and is isolated. | 18. | Verifies HPCI Turbine has tripped and recognizes system has **NOT** isolated. |
| **NOTE:** | **Closing either E41-F002 or E41-F003 will effectively isolate the HPCI System.** | | |
| *19. | [2D49/2D53] Manually close E41-F002, HPCI Steam Supply Inboard Isolation Valve, and/or E41-F003, HPCI Steam Supply Outboard Isolation Valve. | *19. | Manually closes E41-F002, HPCI Steam Supply Inboard Isolation Valve, and/or E41-F003, HPCI Steam Supply Outboard Isolation Valve. |
| **CUE:** | **End JPM when the HPCI System is manually isolated.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

This is an Alternate Path JPM. The steam supply line will break as speed increases, and the system will fail to automatically isolate.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| E41MF0007 | HPCI Steam Line Break **[NOTE 1]**<br>cd=' H_P602_A137_1 GT 3000' | 20 | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| EOPRF0022 | E41-F002 Isolation Defeat for RPV Venting **[NOTE 2]**<br>cd=' P602_A117_3 EQ 1' | DEFEAT | 0 | 0 |
| EOPRF0023 | E41-F003 Isolation Defeat for RPV Venting **[NOTE 2]**<br>cd=' P602_A117_3 EQ 1' | DEFEAT | 0 | 0 |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**NOTE 1:** Conditional on HPCI Turbine speed >3000 rpm (H_P602_A137_1 GT 3000).
**NOTE 2:** Conditional on HPCI Turbine Aux Oil Pump in RUN (P602_A117_3 EQ 1).

**Special Instructions:**

1. Initialize the simulator to **IC-20** and place in **RUN**.
2. Start SGTS T4600-C003, Div. 1 SGTS Exhaust Fan.
3. Start Div. 1 RHRSW:
   a. Throttle open E4150-F068A for 5 seconds.
   b. Start one RHRSW Pump.
   c. Throttle open E4150-F068A to ~6000 gpm.
   d. Start the second RHRSW Pump.
   e. Fully open E4150-F068A.
4. Start Div. 1 RHR in Torus Cooling:
   a. Open E1150-F028B, Div. 2 Torus Isolation Vlv.
   b. Start one Div. 1 RHR Pump.
   c. Throttle open E1150-F024B, Div. 2 Torus Cooling Vlv, to ~10,000 gpm.
5. Pump down Torus using TWMS to -1 inches.
6. Open and execute lesson **JP0139-005**.lsn.
7. Trigger First Step.

**Cue Sheet: (JP-OP-315-0139-005)**

## Initial Conditions:

- You are the Control Room NSO.
- HPCI is to be run in the Test Mode.
- RHR Division 1 is in Torus Cooling.
- Division 1 SGTS is in operation.
- All other prerequisites have been met.

## Initiating Cue(s):

The CRS directs you to start HPCI in the Test Mode in accordance with 23.202, Section 6.1.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0150-001 | Revision<br>3 |
|---|---|---|
| JPM Title<br>Start up Fuel Pool Ventilation Exhaust Radiation Monitor D11-K609A | Duration<br>5 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: Perform / **Walkthrough** / Discuss Stop Time _____

Location: **Plant** / Simulator / Classroom Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| 5. | | | | | | | | | | | |
| 6. | | | | | | | | | | | |
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**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

D1100 - Radiation Monitoring

**Task:**

62960 - Startup D11-K609A, B, C, D, Div 1 and Div 2 Fuel Pool E and W Vent Exh Duct Rad Monitor

**References:** Required (R) / Available (A)

23.625, Process Gaseous Radiation Monitoring (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Patrol NSO.
- Troubleshooting was performed on Fuel Pool Ventilation Exhaust Radiation Monitor D11-K609A. Troubleshooting is complete.

**Initiating Cue(s):**

- The CRS directs you to place Div I Fuel Pool Ventilation Exhaust Radiation Monitor D11-K609A in service in accordance with 23.625.
- Prerequisites for this procedure have been waived and logged.

**Terminating Cue(s):**

Fuel Pool Vent Exhaust Radiation Monitor D11-K609A is in service per 23.625.

**Task Standard:**

Fuel Pool Vent Exhaust Radiation Monitor D11-K609A has been started up in accordance with 23.625.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-9 Radioactivity Release

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 272000 - Radiation Monitoring System

**K/A STATEMENT:**

A1. Ability to predict and/or monitor changes in parameters associated with operating the RADIATION MONITORING SYSTEM controls including: (CFR: 41.5 / 45.5)

A1.01 Lights, alarms, and indications associated with normal operations. ..... 3.2 / 3.2

**Maintenance Rule Safety Classification:**

D1100-03

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide examinee with Cue Sheet.** | | |
| **CUE:** | **Mode Selector Switch (S1) is in STANDBY.** | | |
| * 1. | [8.2.1.1] At D11-K609A, Div 1 Fuel Pool E Vent Exh Rad Monitor, verify Mode Selector Switch (S1) is in OPERATE. | * 1. | Verifies Mode Selector Switch (S1) position. |
| **CUE:** | **Mode Selector Switch (S1) is in OPERATE.** | | |
| * 2. | [8.2.1.1] Place Mode Selector Switch (S1) in OPERATE. | * 2. | Places Mode Selector Switch (S1) in OPERATE. |
| **CUE:** | **RESET Pushbutton (S2) has been depressed.** | | |
| * 3. | [8.2.1.2] At D11-K609A, Div 1 Fuel Pool E Vent Exh Rad Monitor, depress RESET Pushbutton (S2). | * 3. | Depresses RESET Pushbutton (S2). |
| **CUE:** | **White LOW light (DS-1) is OFF.** | | |
| 4. | [8.2.1.3.a] At D11-K609A, Div 1 Fuel Pool E Vent Exh Rad Monitor, verify white LOW light (DS-1) is OFF. | 4. | Verifies white LOW light (DS-1) is OFF. |
| **CUE:** | **Amber HIGH light (DS-2) is OFF.** | | |
| 5. | [8.2.1.3.b] At D11-K609A, Div 1 Fuel Pool E Vent Exh Rad Monitor, verify amber HIGH light (DS-2) is OFF. | 5. | Verifies amber HIGH light (DS-2) is OFF. |
| **CUE:** | **Alarms 3D27, 3D31, and 3D35 are clear.** | | |
| 6. | [8.2.2] Verify the following alarms are clear:<br>• 3D27, DIV I/II FP VENT EXH RADN MONITOR DNSCL/INOP<br>• 3D31, DIV I/II FP VENT EXH RADN MONITOR UPSCALE<br>• 3D35, DIV I/II FP VENT EXH RADN MONITOR UPSCALE TRIP | 6. | Contacts the Control Room to verify alarms 3D27, 3D31, and 3D35 are clear. |
| **CUE:** | **End JPM when Fuel Pool Vent Exhaust Radiation Monitor D11-K609A is in service.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

Do not permit the examinee to operate any plant equipment. Placing the Mode Selector Switch in any position other than OPERATE will trip RBHVAC.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating __X__ amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-OP-315-0150-001)**

## Initial Conditions:

- You are the Patrol NSO.
- Troubleshooting was performed on Fuel Pool Vent Exhaust Radiation Monitor D11-K609A. The troubleshooting is complete.

## Initiating Cue(s):

- The CRS directs you to place Div I Fuel Pool Ventilation Exhaust Radiation Monitor D11-K609A in service in accordance with 23.625.
- Prerequisites for this procedure have been waived and logged.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0158-402 | | Revision<br>3 |
|---|---|---|---|
| JPM Title<br>Loss 64C and EDG 12 Fails to Start | Duration<br>15 minutes | Page<br>1 | |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| 2. | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| *** 4.** | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
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| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

R1400 - 4160/480V ESF Electrical Distribution

**Task:**

74965 - Restore North RR MG.
64234 - Manually initiate a start of SGTS
64864 - Shift Divisions of CCHVAC

**References:** Required (R) / Available (A)

20.300.64C, Loss of Bus 64C (R)
20.300.72C, Loss of Bus 72C (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the 3rd NSO.
- Reactor Power is at 100%.
- Plant conditions are stable as you see them.

**Initiating Cue(s):**

The CRS has directed you to perform an electrical walkdown.

**Terminating Cue(s):**

AOP 20.300.72C, “Loss of Bus 72C”, Subsequent Actions, Conditions A, B, C & H are complete.

**Task Standard:**

The electrical walkdown will determine that 4160V Bus 64C has tripped and EDG 12 failed to start due to a bus fault. Actions are taken in response to the loss of 480V Bus 72C in accordance with steps A, B, C and H of 20.300.72C, Loss of Bus 72C.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-6 - Electrical

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 262001 - AC Electrical Distribution

**K/A STATEMENT:**

A2. Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.04 Types of loads that, if de-energized, would degrade or hinder plant operation..... 3.8/4.2

**Maintenance Rule Safety Classification:**

R1400-01

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **NOTE:** | **Examinee will announce actions which change plant conditions/alarms with "Crew Update."** | | |
| **CUE:** | **Provide Examinee with CUE SHEET and markup of 23.202.** | | |
| **CUE:** | **Acknowledge the report as CRS. Announce entry into 20.300.72C, Loss of Bus 72C and direct the examinee to perform Conditions A, B, C and H of AOP 20.300.72C.** | | |
| *1. | Perform an electrical walkdown. | *1. | Determines that Bus 64C tripped, breakers B6 and B8 are open indicating a bus fault, and the EDG did not start. |
| 2. | [A.1] Verify MCC 72CF transferred to Alternate (23.321). | 2. | 480V ESF Bus 72F Position 5C verified AUTO CLOSE light ON. |
| *3. | [B.1] Place RR MG North Cooling Fan in OFF/RESET, then in RUN. | *3. | RR MG North Cooling Fan CMC switch placed in OFF/RESET, then in RUN. |
| **CUE:** | **The RTC will brief an operator to take Local Manual control of the North RR MG Set.** | | |
| *4. | [B.2] Take Local Manual control of North RR MG Set (23.138.01). | *4. | Ensures proper communications and actions are being taken to take local manual control of North RR MG Set. |
| *5. | [C.1] Start Div 2 SGTS. | *5. | Div 2 SGTS Exhaust Fan CMC switch placed in RUN. |
| *6. | [H.1] Place Div 1 CCHVAC Mode Select Switch in ALL STOP. | *6. | Div 1 CCHVAC Mode Select Switch placed in ALL STOP. |
| *7. | ]H.2] Place Div 2 CCHVAC Mode Select Switch in ALL AUTO. | *7. | Div 2 CCHVAC Mode Select Switch placed in ALL AUTO. |
| **CUE:** | **End JPM when AOP 20.300.72C, steps A, B, C, and H are completed.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20 or any full power IC.

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| R11MF0055 | EDG-12 Auto Start Failure | ACTIVE | 0 | 0 |
| R11MF0012 | 4160V Bus Trip 64C | ACTIVE | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Special Instructions:**

1. Initialize simulator to selected IC.
2. Place simulator in RUN.
3. Open and execute lesson **JP0158-402**.lsn

# Cue Sheet: (JP-OP-315-0158-402)

**Initial Conditions:**

- You are the 3rd NSO.
- Reactor Power is at 100%.
- Plant conditions are stable as you see them.

**Initiating Cue(s):**

The CRS has directed you to perform an electrical walkdown.

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0166-404 | Revision<br>0 |
|---|---|---|
| JPM Title<br>Perform Div 2 SGTS Filter and Secondary Containment Isolation Damper Operability Test | Duration<br>15 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | **11.** | | | | | | | |
| *** 2.** | | | | **12.** | | | | | | | |
| 3. | | | | 13. | | | | | | | |
| *** 4.** | | | | **14.** | | | | | | | |
| *** 5.** | | | | 15. | | | | | | | |
| *** 6.** | | | | 16. | | | | | | | |
| *** 7.** | | | | ***17.** | | | | | | | |
| *** 8.** | | | | 18. | | | | | | | |
| ***9.** | | | | | | | | | | | |
| 10. | | | | | | | | | | | |

| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

T4600 - Standby Gas Treatment System

**Task:**

77039 – Perform Div 2 SGTS Filter & SC Isolation Damper Operability Test

**References:** Required (R) / Available (A)

24.404.04, "Division 2 SGTS Filter And Secondary Containment Isolation Damper Operability Test" (R)

23.404, "Standby Gas Treatment System" (R)

**Tools and Equipment Required:**

Marked up copy of 24.404.04 to step 5.2.

Stopwatch

**Initial Conditions:**

- You are the Third NSO.
- RBHVAC is operating normally, CCHVAC is in the NORMAL Mode, and Div 1 & 2 SGTS are in standby.
- Maintenance is complete on the T4100-F010 Damper, solenoid replaced.
- The CRS and CRNSO have released partial surveillance 24.404.04.
- The surveillance is scheduled on the POD, to be performed on your shift.
- SPF Form is filled out, approved, and correct.
- The surveillance is complete to Section 5.2.
- A pre-job brief has been conducted with all participants.
- The RB Rounds operator is on the AB 5$^{th}$ Floor, standing by for your direction.

**Initiating Cue(s):**

The CRS directs you to perform 24.404.04, Division 2 SGTS Filter And Secondary Containment Isolation Damper Operability Test, Section 5.2. (**T4100-F010 ONLY**) for you to perform.

**Terminating Cue(s):**

Div 1 SGTS is operating and RB D/P is -0.125 to -0.5 inches wc

**Task Standard:**

Perform Division 2 SGTS Filter And Secondary Containment Isolation Damper Operability Test in accordance with 24.404.04.

**Licensed Operator Exam Information (required for NRC exams)**

**Safety Function/Category:**

SF9 - Radioactivity Release

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM**: 288000 – Plant Ventilation Systems

**K/A STATEMENT**:

A3 - Ability to monitor automatic operations of the PLANT VENTILATION SYSTEMS including:

A3.01 Isolation / Initiation Signals ..... 3.8 / 3.8

**K/A SYSTEM**: 290001 – Secondary Containment

**K/A STATEMENT**:

A4 - Ability to manually operate and/or monitor in the control room:

A4.01 Reactor Building D/P ..... 3.3 / 3.4

A4.12 Surveillance Testing ..... 2.8 / 3.2

**Maintenance Rule Safety Classification:**

T4600-06

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Inform the examinee that all communications will be directed to you and you will provide the necessary information and response. Provide Examinee with CUE SHEET and the marked up copy of 24.404.04.** | | |
| **CUE:** | **Report as RB Rounds that SGTS Totalizer Meter indicates 451 hours.** | | |
| 1. | [5.2.1] Record initial indication on T46-R400B, Div 2 SGTS Elapsed Time Totalizer (T46-P404, AB5-G14). | 1. | Directs RB Rounds to obtain SGTS Totalizer Meter Reading. |
| *2. | [5.2.2] Place collar of Division 2 Manual Isolation TRIP pushbutton in ARMED and verify Annunciator 8D29, DIV II REAC BLDG ISO PB ARMED, alarms. | *2. | Places Div 2 Manual Isolation TRIP pushbutton collar in ARMED. Verifies 8D29, DIV II REAC BLDG ISO PB ARMED, alarms. |
| 3. | [5.2.3] Make the following announcement over the Hi-Com:<br>"Attention all personnel, Division 2 SGTS is now in operation. No use of solvents or painting is permitted in the Reactor Building while SGTS is running." | 3. | Makes Hi-Com announcement and Crew Update. |
| **NOTE:** | **RBHVAC will trip, and Div 2 SGTS will auto start, and CCHVAC will shift to Recirculation Mode.** | | |
| *4. | [5.2.4] Depress Division 2 Manual Isolation TRIP pushbutton, measure stroke time of T4100-F010 to nearest 1/10th second, then record stroke time and verify acceptance criteria met. | *4. | Depresses Division 2 Manual Isolation TRIP pushbutton.<br>Measures and records the stroke time for T4100-F010 damper.<br>Verifies the damper stroke time meets the acceptance criteria. |
| *5. | [5.2.5] Record indication on T46-R800B, Div 2 SGTS Exh Gas Flow Recorder, and start time. | *5. | Records flow on Div 2 SGTS Exh Gas Flow Recorder.<br>Records start time. |
| *6. | [5.2.6] Place all RBHVAC Supply and Exhaust Fan CMC switches in OFF/RESET. | *6. | Places all RBHVAC Supply and Exhaust Fan CMC switches in OFF/RESET. |
| *7. | [5.2.7] Place collar of Division 2 Manual Isolation TRIP pushbutton in DISARMED and verify Annunciator 8D29, DIV II REAC BLDG ISO PB ARMED, clears. | *7. | Places Div 2 Manual Isolation TRIP pushbutton collar in DISARMED, and verifies 8D29, DIV II REAC BLDG ISO PB ARMED, clears. |
| *8. | [5.2.8] Depress Division 2 Manual Isolation RESET pushbutton, and verify Division 2 Reactor Building Isolate RESET light is ON. | *8. | Depresses Div 2 Manual Isolation RESET pushbutton, and verifies Div 2 Reactor Building Isolate RESET light is ON. |

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **NOTE: Steps for placing RBHVAC in the shutdown lineup are in 23.426. All equipment should be in the required condition except the Supply and Exhaust Fan switches.** | | | |
| 9. | [8.1.2.1] Shutdown selected Exhaust Fan. | 9. | Places an RBHVAC Exhaust Fan CMC switch in OFF/RESET. |
| 10. | [8.1.2.2] Verify paired supply fan trips, exhaust dampers close, and supply fan dampers close. | 10. | Verifies paired supply fan tripped, exhaust dampers closed, and supply fan dampers closed. |
| 11. | [8.1.2.3] Place switch for paired supply fan in OFF/RESET. | 11. | Places switch for paired supply fan in OFF/RESET. |
| 12. | [8.1.2.1] Shutdown (other) selected Exhaust Fan. | 12. | Places the remaining RBHVAC Exhaust Fan CMC switch in OFF/RESET. |
| 13. | [8.1.2.2] Verify paired supply fan trips, exhaust dampers close, and supply fan dampers close. | 13. | Verifies paired supply fan tripped, exhaust dampers closed, and supply fan dampers closed. |
| 14. | [8.1.2.3] Place switch for paired supply fan in OFF/RESET. | 14. | Places switch for paired supply fan in OFF/RESET. |
| 15. | [8.1.2.5] Verify T4100-F029, RBHVAC Intake Air Damper, closes when Reactor Building Supply and Exhaust Fans have been shutdown. | 15. | Verifies T4100-F029, RBHVAC Intake Air Damper, closes when Reactor Building Supply and Exhaust Fans have been shutdown. |
| 16. | [8.1.2.6] When Reactor Building Supply and Exhaust Fans have been shutdown, verify the following valves close:<br>• T4100-F010, RBHVAC Sply Otbd Iso Damper<br>• T4100-F011, RBHVAC Sply Inbd Iso Damper<br>• T4100-F009, RBHVAC Exh Inbd Iso Damper<br>• T4100-F008, RBHVAC Exh Otbd Iso Damper | 16. | When Reactor Building Supply and Exhaust Fans have been shutdown, verifies the following valves close:<br>• T4100-F010, RBHVAC Sply Otbd Iso Damper<br>• T4100-F011, RBHVAC Sply Inbd Iso Damper<br>• T4100-F009, RBHVAC Exh Inbd Iso Damper<br>• T4100-F008, RBHVAC Exh Otbd Iso Damper |
| *17. | [8.1.2.7] Place switches for the following in OFF/RESET:<br>• T4100-C015, RB Sample Sink Bstr Exh Fan<br>• T4100-C016, RB CA Equip Room Bstr Exh Fan | *17. | Places switches for the following in OFF/RESET:<br>• T4100-C015, RB Sample Sink Bstr Exh Fan<br>• T4100-C016, RB CA Equip Room Bstr Exh Fan |

| ELEMENT | STANDARD |
|---|---|
| 18. [8.1.2.8] Depress Reactor Building Exhaust Fan Trip Alarm Reset pushbutton, and turn pushbutton collar to OFF to defeat Reactor Building Fifth Floor Loss of Ventilation Alarm (RB5-A15). | 18. Directs RB Rounds to depress Reactor Building Exhaust Fan Trip Alarm Reset pushbutton, and turn pushbutton collar to OFF to defeat Reactor Building Fifth Floor Loss of Ventilation Alarm (RB5-A15). |
| **CUE: Terminate JPM when Div 2 SGTS is operating, and RB HVAC is shut down.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

## FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20 or any full power IC.

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Special Instructions:**

1. Initialize to the desired IC, and place the simulator in **RUN**.

**Cue Sheet: (JP-OP-315-0166-404)**

## Initial Conditions:

- You are the Third NSO.
- RBHVAC is operating normally, CCHVAC is in the NORMAL Mode, and Div 1 & 2 SGTS are in standby.
- Maintenance is complete on the T4100-F010 Damper, solenoid replaced.
- The CRS and CRNSO have released partial surveillance 24.404.04 (T4100-F010 PMT stroke time)for you to perform.
- The surveillance is scheduled on the POD, to be performed on your shift.
- The SPF Form is filled out, approved, and is correct.
- The surveillance is complete to Section 5.2.
- A pre-job brief has been conducted with all participants.
- The RB Rounds operator is on the AB 5$^{th}$ Floor, standing by for your direction.

## Initiating Cue(s):

The CRS directs you to perform 24.404.04, Division 2 SGTS Filter And Secondary Containment Isolation Damper Operability Test, Section 5.2. (**T4100-F010 ONLY**)

| Job Position<br>SRO / RO | No.<br>JP-OP-315-0262-003 | Revision<br>1 |
|---|---|---|
| JPM Title<br>Transfer UPS from Normal to Alternate Power using Static Transfer Switch (Alt Path) | Duration<br>10 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical

Evaluation Method: Perform / **Walkthrough** / Discuss

Location: **Plant** / Simulator / Classroom

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | ***11.** | | | | 21. | | | |
| 2. | | | | 12. | | | | | | | |
| 3. | | | | 13. | | | | | | | |
| 4. | | | | ***14.** | | | | | | | |
| *** 5.** | | | | 15. | | | | | | | |
| 6. | | | | 16. | | | | | | | |
| 7. | | | | ***17.** | | | | | | | |
| 8. | | | | ***18.** | | | | | | | |
| 9. | | | | 19. | | | | | | | |
| 10. | | | | 20. | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

| JPM Title<br>Transfer UPS from Normal to Alternate Power using Static Transfer Switch (Alt Path) | No.: JP-OP-315-0262-003<br>Revision: 1<br>Page 3 |
|---|---|

## JPM Information

**System:**

R3100 - Uninterruptible Power Supply

**Task:**

78271 - Transfer Uninterruptible Power Supply from Normal to Alternate Power using Static Transfer Switch

**References:** Required (R) / Available (A)

23.308.01, Uninterruptible Power Supply (UPS) System (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

You are the extra operator on shift.

**Initiating Cue(s):**

The Control Room NSO directs you to shift UPS A (B) Power Supply from Normal to Alternate using the Static Transfer Switch.

**Terminating Cue(s):**

UPS A(B) has been transferred back to the normal power supply using the Static Transfer Switch.

**Task Standard:**

UPS is in service aligned to the Normal Power Supply in accordance with 23.308.01.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-6 Electrical

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 262002 - Uninterruptable Power Supply (A.C./D.C.)

**K/A STATEMENT:**

A2. Ability to (a) predict the impacts of UPS bus under voltage; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences

A2.01 Under Voltage ..... 2.6 / 2.8

**Maintenance Rule Safety Classification:**

R3100-05

**Maintenance Rule Risk Significant?** (Yes or No)

No

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide Examinee with Cue Sheet.** | | |
| **CUE:** | **Return Mode switch is in MAN.** | | |
| * 1. | [5.1.2.1] Place Return Mode switch in MAN (Mimic Bus). | * 1. | Places Return Mode switch in MAN. |
| **CUE:** | **Sync Switch is in ON.** | | |
| 2. | [5.1.2.2] Verify Sync Switch is in ON. | 2. | Verifies Sync Switch is in ON. |
| **CUE:** | **Retransfer Blocked light is ON.** | | |
| 3. | [5.1.2.3] Verify amber Retransfer Blocked light is ON. | 3. | Verifies amber Retransfer Blocked light is ON. |
| **CUE:** | **Sync Monitor light is OFF.** | | |
| 4. | [5.1.2.4] Verify clear Sync Monitor light is OFF (Mimic Bus). | 4. | Verifies clear Sync Monitor light is OFF. |
| **CUE:** | **Test switch is in ALT LINE.** | | |
| * 5. | [5.1.2.5] Place Test switch to ALT LINE (Mimic Bus). | * 5. | Places Test switch to ALT LINE. |
| **CUE:** | **Alternate Line light is ON.** | | |
| 6. | [5.1.2.6] Verify amber Alternate Line light is ON (Mimic Bus). | 6. | Verifies amber Alternate Line light is ON. |
| **CUE:** | **Inverter light is OFF.** | | |
| 7. | [5.1.2.7] Verify red Inverter light is OFF (Mimic Bus). | 7. | Verifies red Inverter light is OFF. |
| **Alternate Path Begins Here** | | | |
| **CUE:** | **Control Room reports the UPS UNIT A/B TROUBLE alarm (3D22) has been received and requests local status of UPS Unit A(B).** | | |
| **CUE:** | **When examinee requests UPS Unit status, report that amber REGULATOR FAILURE light is ON, and the Static Transfer Switch Output voltage (UPS AC VOLTAGE) is reading 100 VAC.** | | |
| **NOTE:** | **Examinee should recognize failure of Alternate Power Supply. This requires UPS to be transferred back to Normal.** | | |
| **CUE:** | **As Control Room, acknowledge status report. If not recommended by examinee, direct UPS transferred back to NORMAL (per 3D22)** | | |
| 8. | Determine status of UPS Unit A(B). | 8. | Reports UPS Unit status to Control Room. |
| **CUE:** | **Alternate Line light is ON.** | | |
| 9. | [5.2.2.1] Verify amber Alternate Line light is ON (Mimic Bus). | 9. | Verifies amber Alternate Line light is ON. |
| **CUE:** | **Return Mode switch is in MAN.** | | |
| 10. | [5.2.2.2] Verify or place Return Mode switch in MAN (Mimic Bus). | 10. | Verifies Return Mode switch in MAN. |

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Test switch is in CENTER.** | | |
| *11. | [5.2.2.3] Verify or place Test switch in CENTER (Mimic Bus). | *11. | Places Test switch in CENTER. |
| **CUE:** | **Sync Switch is in ON** | | |
| 12. | [5.2.2.4] Verify Sync Switch is in ON. | 12. | Verifies Sync Switch is in ON. |
| **CUE:** | **Sync Monitor light is OFF.** | | |
| 13. | [5.2.2.5] Verify clear Sync Monitor light is OFF (Mimic Bus). | 13. | Verifies clear Sync Monitor light is OFF. |
| **CUE:** | **Reset pushbutton is depressed.** | | |
| *14. | [5.2.2.6] Depress Reset pushbutton (Mimic Bus). | *14. | Depresses Reset pushbutton. |
| **CUE:** | **Red Inverter light is ON.** | | |
| 15. | [5.2.2.7] Verify red Inverter light is ON (Mimic Bus). | 15. | Verifies red Inverter light is ON. |
| **CUE:** | **Alternate Line light is OFF.** | | |
| 16. | [5.2.2.8] Verify amber Alternate Line light is OFF (Mimic Bus). | 16. | Verifies amber Alternate Line light is OFF. |
| **CUE:** | **Return Mode switch is in AUTO.** | | |
| *17. | [5.2.2.9] Place Return Mode switch in AUTO (Mimic Bus). | *17. | Places Return Mode switch in AUTO. |
| **CUE:** | **Alarm Latch Reset pushbutton is depressed.** | | |
| *18. | [5.2.2.10] Depress Alarm Latch Reset pushbutton (Mimic Bus). | *18. | Depresses Alarm Latch Reset pushbutton. |
| **CUE:** | **Retransfer Blocked light is OFF.** | | |
| 19. | [5.2.2.11] Verify amber Retransfer Blocked light is OFF. | 19. | Verifies amber Retransfer Blocked light is OFF. |
| **CUE:** | **Summary Alarm light is OFF.** | | |
| 20. | [5.2.2.12] Verify amber Summary Alarm light is OFF (Mimic Bus). | 20. | Verifies amber Summary Alarm light is OFF. |
| **CUE:** | **The CRS acknowledges the report.** | | |
| 21. | Inform the Control Room that UPS A (B) has been transferred back to the normal power supply using the Static Transfer Switch. | 21. | Informs the Control Room that UPS A (B) is aligned to the normal power supply. |
| **CUE:** | **End JPM when UPS A(B) has been transferred back to the normal power supply using the Static Transfer Switch.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

Start this JPM at the UPS. This JPM can be performed on either UPS.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating __X__ amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

_____

_____

Question: _____

_____

_____

_____

_____

_____

_____

Reference: _____

Response: _____

_____

_____

_____

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_____

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Question: _____

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_____

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Reference _____

Response: _____

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_____

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-OP-315-0262-003)**

## Initial Conditions:

You are the extra operator on shift.

## Initiating Cue(s):

The Control Room NSO directs you to shift UPS A (B) Power Supply from Normal to Alternate using the Static Transfer Switch.

| Job Position<br>SRO / RO | No.<br>JP-OP-802-2001-211 | Revision<br>5 |
|---|---|---|
| JPM Title<br>Control Reactor Pressure from the Remote Shutdown Panel (Alt Path) | Duration<br>20 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: Normal **/ Alternate Path /** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| **PERFORMANCE EVALUATION SUMMARY** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| *** 4.** | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| 7. | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| **OPERATOR FUNDAMENTALS OBSERVATION** | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

## JPM Observation Criteria

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

B2104 – Safety and Relief Valves

**Task:**

73750 - Control reactor pressure at the remote shutdown panel by operating SRV A and/or B.

**References:** Required (R) / Available (A)

AOP 20.000.19, Shutdown from Outside the Control Room (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Control Room NSO.
- The control room is being evacuated due to toxic fumes making the control room uninhabitable.
- The East (A) CRD Pump control switch is in the RUN position in the main control room. Division 1 RHR is in its normal standby lineup.
- A Group 1 isolation has occurred.

**Initiating Cue(s):**

- The CRS directs you to control reactor pressure and level in accordance with AOP 20.000.19, Shutdown from Outside the Control Room.
- All prerequisites are complete.
- Conditions A through D have been completed, and you are to begin at Condition E.
- You are to inform the CRS when reactor pressure and level are being controlled.
- You may allow pressure to rise slightly above 1093 psig to allow Low-Low Set SRVs to arm and operate.

**Terminating Cue(s):**

Reactor level and pressure are being controlled in accordance with AOP 20.000.19.

**Task Standard:**

Reactor pressure and reactor water level are maintained within allowable limits from the Remote Shutdown Panel in accordance with 20.000.19 Shutdown from Outside the Control Room.

**Licensed Operator Exam Information (required for NRC exams)**

**Safety Function:**

3 – Reactor Pressure Control

**K/A Reference:** (from NUREG 1123)

K/A SYSTEM: 295016 – Control Room Abandonment

K/A STATEMENT:

AA1 Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : (CFR: 41.7 / 45.6)

AA1.08 Reactor Pressure .....4.0 / 4.0

**Maintenance Rule Safety Classification:**

B2104-03

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide the examinee the Cue Sheet.** | |
| * 1. [E.1] Position CMC switches to match those of the Main Control Room. | * 1. Places the East (A) CRD Pump CMC SWITCH in Run. |
| * 2. [E.2] Place the following transfer switches to ON:<br>a. C3500-M130, Div. 2 DC Transfer Switch<br>b. C3500-M131, BOP Transfer Switch<br>c. C3500-M134, Swing Bus Transfer Switch<br>d. C3500-M132, Div. I DC Transfer Switch<br>e. C3500-M133, Div. I AC Transfer Switch | * 2. Rotates each switch clockwise about 45 degrees to the ON position. |
| * 3. [E.3] Place the RCIC Rm High Temp Isolation Defeat (Logic A) in BYPASS | * 3. Rotates the switch clockwise to the BYPASS position. |
| * 4. [E.4] Place the RCIC Rm High Temp Isolation Defeat (Logic B) in BYPASS. | * 4. Rotates the switch clockwise to the BYPASS position |
| **NOTE: The candidate may decide to control pressure first if level initially appears normal. If so, the candidate will return to this step later.** | |
| * 5. [E.5] Maintain Reactor Water Level between 174 and 214 inches using one of the following:<br>a. RCIC<br>b. CRD | * 5. Depresses and holds RCIC INITIATE pushbutton on the RSD Panel, until flow is indicated on C35-R006, RCIC Pump Discharge Flow Indicator, or<br>Operates the CRD pumps as necessary. |
| **Alternate Path Begins Here** | |
| **NOTE: SRV A has failed closed, and will not operate in Low-Low Set. When the examinee notices that SRV A does not reopen after initial closure, he will be forced to use SRV B to control reactor pressure.** | |
| * 6. [E.6] Maintain Reactor Pressure between 900 and 1050 psig by using B2104-F013A and/or B2104-F013B. | * 6. Allows pressure to rise to observe SRV A operate in Low-Low Set, then determines that BOTH Low-Low Set SRVs have failed.<br>Operates SRV “B” using the open and closed pushbuttons to control reactor pressure.. |
| **CUE: IF asked, inform the examinee that Torus cooling is not required to be placed in service per SM instructions.** | |
| 7. Once pressure and level are being controlled, inform CRS. | 7. Examinee informs CRS that pressure and level are being controlled. |
| **CUE: End JPM when reactor level and pressure is within the proper bands in accordance with AOP 20.000.19.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____*** Critical Step**

**Evaluator Notes:**

The Remote Shutdown Panel in the Simulator will be used to perform this JPM .

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20, or any full power IC.

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| B21MF0102 | Spurious Main Steam Isolation | ACTIVE | 0 | 0 |
| B21MF0023 | Main Steam SRV Failure B2100-F013A | 100 | 4 | 0 |
| B21MF0029 | Main Steam SRV Failure B2100-F013G | 0 | 0 | 0 |
| B21MF0023 | Main Steam SRV Failure B2100-F013A<br>cd='H_P601_C006_1 LT 855' | 0 | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| P603_A048_1 | Reactor Mode Shutdown Handle Pos. | 1 | 1 | 0 |
| P804_A061_2 | Turbine Trip Armed Pos | 1 | 2 | 0 |
| P804_A061_3 | Turbine Trip Trip Switch | 1 | 3 | 0 |
| P601_B220_1 | Low Low Set Div 2 Reset Switch<br>cd='H_P601_C006_1 LT 855' | 1 | 1 | 0 |
| P601_B217_1 | Low Low Set Div 1Reset Switch<br>cd='H_P601_C006_1 LT 855' | 1 | 1 | 0 |
| P601_B220_1 | Low Low Set Div 2 Reset Switch<br>cd='H_P601_C006_1 LT 855' | -1 | 2 | 0 |
| P601_B217_1 | Low Low Set Div 1 Reset Switch<br>cd='H_P601_C006_1 LT 855' | -1 | 2 | 0 |

**Special Instructions:**

1. Initialize simulator to desired IC.
2. If **NOT** in a saved IC for this JPM:
   a. Place simulator in **RUN**
   b. Open and execute Lesson **JP2001-211**.lsn.
   c. When lesson has completed execution, place the simulator in **FREEZE**.
3. When ready to start the JPM, place the simulator in **RUN.**

**Cue Sheet: (JP-OP-802-2001-211)**

## Initial Conditions:

- You are the Control Room NSO.
- The plant is beginning the process of being shutdown from outside the control room due to toxic fumes making the control room uninhabitable.
- The “East” or “A” CRD Pump control switch is in the RUN position in the main control room. Division 1 RHR is in its normal standby lineup.
- A Group 1 Isolation has occurred.

## Initiating Cue(s):

- The CRS directs you to control reactor pressure and level IAW AOP 20.000.19, Shutdown from Outside the Control Room.
- All prerequisites are complete.
- AOP 20.000.19, Conditions A through D have been completed, and you are to begin at E.
- You are to inform the CRS when reactor pressure and level are being controlled.
- You may allow pressure to rise slightly above 1093 to allow Low-Low Set SRVs to arm and operate.

| Job Position<br>SRO / RO | No.<br>JP-OP-802-2104-212 | | Revision<br>4 |
|---|---|---|---|
| JPM Title<br>Respond to Multiple Control Rod Drifts and RPS Failure | Duration<br>3 minutes | Page<br>1 | |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: Normal **/ Alternate Path /** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| **PERFORMANCE EVALUATION SUMMARY** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | | | | | | | | |
| 2. | | | | | | | | | | | |
| ***3.** | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| ***5.** | | | | | | | | | | | |
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| **OPERATOR FUNDAMENTALS OBSERVATION** | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

C1100 – Control Rod Drive Hydraulic System

**Task:**

75357 - Perform Immediate Actions for Control Rod Drift

**References:** Required (R) / Available (A)

3D80, Control Rod Drift (R)

20.106.07, Control Rod Drift (A)

23.106, Control Rod Drive Hydraulic System (A)

ODE-10, Emergency Operating Procedure Expectations (A)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the P603 Operator.
- Plant conditions are as you see them.

**Initiating Cue(s):**

- Respond to conditions in accordance with plant procedures.
- Another operator will address plant alarms **not** associated with this task.

**Terminating Cue(s):**

Mode Switch is in SHUTDOWN, RPS has actuated using Manual Scram pushbuttons and all rods are fully inserted.

**Task Standard:**

Examinee places Mode Switch in Shutdown due to multiple rod drifts. Then he identifies failure of Mode Switch and depresses Manual Scram Pushbuttons resulting in a full scram.

| JPM Title<br>Respond to Multiple Control Rod Drifts and RPS Failure | No.: JP-OP-802-2104-212<br>Revision: 4<br>Page 4 |
|---|---|

**Licensed Operator Exam Information (required for NRC exams)**

**Safety Function/Category:**

7 – Instrumentation

11- Abnormal Plant Evolutions

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 212000 - Reactor Protection System

**K/A STATEMENT:**

A2. Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:

A2.16 Changing mode switch position.....4.0 / 4.1

**Maintenance Rule Safety Classification:**

C7100-02

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide Examinee with CUE SHEET. After examinee states he is ready, inform him he has control, then cue the console operator to trigger the rod drifts.** | | |
| **CUE:** | **As CRS, acknowledge alarm report.** | | |
| 1. | Respond to alarm 3D80, CONTROL ROD DRIFT. | 1. | Calls out alarm and reviews ARP. |
| **CUE:** | **As CRS, acknowledge report. Announce entry into AOP 20.106.07, Control Rod Drift.** | | |
| **NOTE:** | **Actions for single control rod drift need not be completed in their entirety before initiation of multiple rod drifts.** | | |
| 2. | [1.] Verify Rod Drift as follows:<br>• Red Rod Drift light ON at Full Core Display.<br>• Rod moving out or into core.<br>• Nuclear Instrumentation for power changes caused by moving Control Rods. | 2. | Using Full Core Display, identifies drifting rod 10-15.<br>If rod 10-15 is SELECTED, rod is drifting IN.<br>Reports drifting rod to CRS. |
| **CUE:** | **As CRS, acknowledge report. If examinee asks for direction, direct him to perform the required procedural actions.** | | |
| * 3. | Examinee observes and identifies multiple control rods drifting. | * 3. | Examinee identifies and reports multiple control rods are drifting. |
| **Alternate Path Begins Here (RPS Failure)** | | | |
| 4. | [IA.1] Place Reactor Mode Switch in SHUTDOWN. | 4. | Immediate actions to place the mode switch in SHUTDOWN are carried out without direction when required by 20.106.07, Control Rod Drift.<br>Examinee identifies RPS did not actuate. |
| * 5. | [ODE-10] If one or both divisions of RPS fail to actuate after Mode Switch in Shutdown, examinee depresses RPS Manual Scram Pushbuttons and monitors for proper operation of RPS. | * 5. | Manual Scram Pushbuttons are depressed. |
| **CUE:** | **End JPM when RPS has been actuated using Manual Scram pushbuttons, and all rods are fully inserted.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-19 (or any full power IC)

**Malfunctions:**

| Number | Title | Value | Delay | Ramp | Step |
|---|---|---|---|---|---|
| C11MF0109 | Control Rod 10-15 Drift In | ACTIVE | 0 | 0 | 1 |
| C11MF0067 | Control Rod 06-27 Drift In*** See NOTE 1** | ACTIVE | 10 | 0 | 2 |
| C11MF0283 | Control Rod 18-27 Drift In*** See NOTE 1** | ACTIVE | 13 | 0 | 2 |
| C11MF0661 | Control Rod 34-39 Drift In*** See NOTE 1** | ACTIVE | 16 | 0 | 2 |
| C11MF0859 | Control Rod 42-51 Drift In*** See NOTE 1** | ACTIVE | 19 | 0 | 2 |
| C11MF1039 | Control Rod 54-27 Drift In*** See NOTE 1** | ACTIVE | 22 | 0 | 2 |
| C11MF0109 | Control Rod 10-15 Drift In | CLEAR | 0 | 0 | 3 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp | Step |
|---|---|---|---|---|---|
| N/A | | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp | Step |
|---|---|---|---|---|---|
| P603_A048_4 | Reactor Mode Run Handle Pos | 1 | 0 | 0 | 1 |

*** NOTE 1 - Conditional on P603_A071_1 EQ 1 (Rod Drift Reset Switch in RESET)**

**Special Instructions:**

1. Initialize the simulator to the desired IC and place in **RUN**.
2. Open and execute Lesson **JP2104-212**.lsn, or load the malfunctions/overrides as listed above.
3. Trigger the first control rod drift when cued by examiner.
4. Trigger "Disarm CR 10-15" when cued by examiner.

**Cue Sheet (JP-OP-802-2104-212)**

## Initial Conditions:

- You are the P603 Operator.
- Plant conditions are as you see them.

## Initiating Cue(s):

- Respond to conditions in accordance with plant procedures.
- Another operator will address plant alarms **not** associated with this task.

| Job Position<br>SRO / RO | No.<br>JP-OP-802-3006-321 | | Revision<br>3 |
|---|---|---|---|
| JPM Title<br>Defeat RBCCW/EECW to Drywell Isolations | Duration<br>25 minutes | Page<br>1 | |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: Perform / **Walkthrough** / Discuss

Location: **Plant** / Simulator / Classroom

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2**. | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
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| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

P4400 - EECW / RBCCW

**Task:**

51995 - Defeat RBCCW/EECW Cooling Water to Drywell Isolations

**References:** Required (R) / Available (A)

29.ESP.23, Defeat of RBCCW/EECW to Drywell (R)
ODE-14, Attachment 9, Energized Equipment Work Permit (A)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the Control Room NSO.
- EOP flowcharts direct defeat of RBCCW/EECW Isolations.

**Initiating Cue(s):**

The CRS directs you to defeat RBCCW/EECW Isolations per 29.ESP.23.

**Terminating Cue(s):**

RBCCW/EECW Isolation is defeated per 29.ESP.23.

**Task Standard:**

RBCCW/EECW Isolation is defeated per 29.ESP.23.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

SF-8 Plant Service Systems

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 295024 - High Drywell Pressure

**K/A STATEMENT:**

EA1. Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE:
EA 1.07PCIS/NSSSS..... 3.8 / 3.9

**Maintenance Rule Safety Classification:**

P4400-01

**Maintenance Rule Risk Significant?** (Yes or No)

Yes

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **NOTE:** | **Cues are indicated on the line above (just prior to) the step for which they are/may be required.** | | |
| **CUE:** | **Provide examinee with Cue Sheet. After SM EOP Locker is opened, provide examinee with copy of 29.ESP.23 and ODE-14, Attachment 9.** | | |
| * 1. | [1.1] Retrieve EOP Defeat Package from SM EOP Locker. | * 1. | EOP Defeat Package retrieved from SM EOP Locker. |
| **NOTE:** | **While working in the Relay Room panels, all conductive jewelry should be removed, and safety glasses and 100% cotton long sleeves should be worn.** | | |
| **CUE:** | **The Lead at Terminal B-171 is lifted.** | | |
| * 2. | [2.1] At RR H11-P857, lift lead at Terminal B-171 (Division 1). | * 2. | Lead at Terminal B-171 lifted. |
| **CUE:** | **The Lead at Terminal E-191 is lifted.** | | |
| * 3. | [2.2] At RR H11-P870, lift lead at Terminal E-191 (Division 2). | * 3. | Lead at Terminal E-191 lifted. |
| **CUE:** | **End JPM when RBCCW/EECW Isolation is defeated per 29.ESP.23.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

Ensure SM informed of JPM walkthrough in relay room and cabinet doors opened for walkthrough of this task.

**Stop** the JPM if, at any time, this JPM interferes with plant operation.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating __X__ amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

**System Specific Notes and Cues:**

ESP Defeats are installed either by installing a jumper, lifting leads, or removing a plug-in relay or fuse.

**Installing Jumpers:**

- Ensure the operator goes to the SM and obtains the key to the EOP cabinet.
- Upon unlocking the cabinet, the operator finds the correct package and ensures the proper equipment is in the package.
- Per the attached drawing, locate the panel and verify the panel opened is correct and the operator has opened the correct side door.
- Within the panel, locate the proper terminal strip and verify that the proper terminal number is selected.
- Using proper safety techniques, a jumper is landed on each terminal ensuring that no other terminal is touched or cabinet ground is touched with the free end.
- Repeat until all jumpers are installed per the package.
- For some cabinets, the terminals are separated load to source side of the terminal point by a Knife Switch. In these cabinets the direction of the ESP has the knife switch screw unlocked and opened prior to installing the defeat. This will be spelled out and then the same rules as above apply.

- When both ends are safely landed on all jumpers per the package in the proper location, the operator calls the control room and informs them that the defeat is installed.

**Lifting Leads:**

- Ensure the operator goes to the SM and obtains the key to the EOP cabinet.
- Upon unlocking the cabinet, the operator finds the correct package and ensures the proper equipment is in the package.
- Per the attached drawing, locate the panel and verify the panel opened is correct and the operator has opened the correct side door.
- Within the panel, locate the proper terminal strip and verify that the proper terminal number is selected.
- Using the proper safety techniques, remove the locking screw and remove the wire from the terminal point keeping it from making contact with the other cabinet wiring or cabinet sides.
- Tape the wire electrical end or install the boot provided.
- For some terminal points, more than one wire will be terminated at the proper point. For these, the instruction will read " Lift and separate leads". This means remove the leads safely and place each into boots or tape separately.
- For some cabinets, the terminals are separated load to source side of the terminal point by a Knife Switch. In these cabinets the direction of the ESP has the knife switch screw unlocked and opened prior to installing the defeat. This will be spelled out and then the same rules as above apply.
- When all leads are removed per the package in the proper location, the operator calls the control room and informs them that the defeat is complete.

**Remove Plug-in Relay or Fuse:**

- Ensure the operator goes to the SM and obtains the key to the EOP cabinet.
- Upon unlocking the cabinet, the operator finds the correct package and ensures the proper equipment is in the package.
- Per the attached drawing, locate the panel and verify the panel opened is correct and the operator has opened the correct side door.
- Locate the plug-in relay or fuse and verify the defeat package to the relay, or fuse in question, labels.
- Plug-in relays have seismic clips which need to be removed first and then grasped on either side and pulled straight back out of the cabinet.
- Fuses need to be grasped by fuse pullers and pulled out evenly and in one motion. There is a fuse identifier mylar cover on some fuses which needs to be removed to reach the fuse.
- The one exception is the Main Turbine Bypass Dump System fuses which set in the H11P632 cabinet in a fuse block. FS59 & FS60 are contained in a block that can be pulled out much like the plug-in relay without the seismic clip.
- When all steps are complete, contact the control room and announce that the defeat is completed.

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-OP-802-3006-321)**

## Initial Conditions:

- You are the CRNSO.
- EOP flowcharts direct defeat of RBCCW/EECW Isolations.

## Initiating Cue(s):

The CRS directs you to defeat RBCCW/EECW Isolations per 29.ESP.23.

| Job Position<br>SRO / RO | No.<br>JP-OP-802-3006-401 | | Revision<br>0 |
|---|---|---|---|
| JPM Title<br>Perform Torus Water Average Temperature Calculation | Duration<br>10 minutes | Page<br>1 | |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / Simulator / **Classroom** Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| *** 4.** | | | | | | | | | | | |
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| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

T5000 – Primary Containment Monitoring System

**Task:**

52016 - Calculate Torus Water Average Temperature

**References:** Required (R) / Available (A)

29.ESP.01, Supplemental Information, Section 15, Torus Water Temperature Calculation (R)

**Tools and Equipment Required:**

Calculator

**Initial Conditions:**

- You are an extra person on shift.
- Primary Containment Control EOP has been entered due to Drywell Temperature of 147°F.

**Initiating Cue(s):**

The CRS directs you to calculate Torus Water Average Temperature in accordance with 29.ESP.01.

**Terminating Cue(s):**

Torus Water temperature has been determined by calculation.

**Task Standard:**

Perform Torus Water Average Temperature Calculation in accordance with 29.ESP.01, Section 15.0.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function/Category:**

10 - Emergency Plant Evolutions

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** 295026 - Suppression Pool High Water Temperature

**K/A STATEMENT:**

EA2. Ability to determine and/or interpret the following as they apply to Suppression Pool High Water Temperature:

EA2.01 Suppression Pool Water temperature.....4.1 / 4.2

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide examinee with Cue Sheet.**<br>**After the examinee demonstrates/explains how he would obtain a controlled copy of the procedure, hand the examinee a copy of 29.ESP.01.**<br>**Controlled procedure copies are located in the Tagging Center. Other procedures are located in remote locations.**<br>**Procedures may be obtained and/or verified current electronically using Automated Record Management System (ARMS). "Current" status is coded "AFC".** | | |
| **CUE:** | **If asked, Torus water level indicates 0 inches.** | | |
| * 1. | [15.0 CAUTION] Determine if Torus water level is less than -11 inches. | * 1. | Determines Torus water level. |
| **CUE:** | **If asked, report that no SRV has actuated in the past 48 hours.** | | |
| * 2. | [15.0 NOTE (1/2)] Determine if an SRV has actuated. | * 2. | Determines that an SRV has NOT actuated. |
| **CUE:** | **When asked for the instrument point readings, provide the examinee with the Data Sheet.** | | |
| * 3. | Determine T23-R800, Torus Water Temperature Recorder, instrument point readings. | * 3. | T23-R800 instrument point readings determined. |
| * 4. | Calculate Average Torus Water Temperature. | * 4. | Calculates Average Torus Water Temperature. **(93.4°F)** |
| **CUE:** | **End JPM when Torus Water temperature has been determined by calculation.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

## Data Sheet: (JP-OP-802-3006-401)

### T23-R800, Torus Water Temperature Recorder, Instrument Point Readings

| | |
|---|---|
| **Pt. 1 = 96°F** | **Pt. 5 = 90°F** |
| **Pt. 2 = 98°F** | **Pt. 6 = 88°F** |
| **Pt. 3 = 91°F** | **Pt. 7 = INOP** |
| **Pt. 4 = 89°F** | **Pt. 8 = 97°F** |

# Cue Sheet: (JP-OP-802-3006-401)

## Initial Conditions:

- You are an extra person on shift.
- Primary Containment Control EOP has been entered due to Drywell temperature of 147°F.

## Initiating Cue(s):

The CRS directs you to calculate Torus Water Average Temperature in accordance with 29.ESP.01.

| Job Position<br>SRO | No.<br>JP-OP-802-4101-102 | Revision<br>1 |
|---|---|---|
| JPM Title<br>Evaluate Degraded Power Sources | Duration<br>15 minutes | Page<br>1 |

Examinee: _____ SRO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical  Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss  Stop Time _____

Location: Plant / Simulator / **Classroom**  Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
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| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS**  _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

N/A

**Task:**

76034 - Implement Technical Specification/Technical Requirements Manual actions

**References:** Required (R) / Available (A)

Tech Specs 3.8.1, AC Sources - Operating (R)

**Tools and Equipment Required:**

None

**Initial Conditions:**

- You are the CRS.
- Ten (10) minutes ago, ITC was performing troubleshooting activities when 345kV breakers BM & DF opened on fault. All attempts to reclose the breakers have failed.
- All other 345kV / 120kV breakers are in the normal position.
- No other plant equipment is out of service.

**Initiating Cue(s):**

The SM directs you to evaluate this malfunction for potential Tech Spec impact, and document accordingly.

**Terminating Cue(s):**

Required actions listed under Tech Spec 3.8.1, Condition D, have been identified, and the LCO documented using MOP05003.

**Task Standard:**

Required actions of Tech Spec 3.8.1, Condition D, have been identified, and the LCO Sheet is completed correctly per MOP05003.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** GENERIC

**K/A STATEMENT:**

2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. (CFR 41.10 / 43.2 / 45.13) ..... 3.1 / 4.2

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide examinee with Cue Sheet.** | | |
| * 1. | Review initial conditions to determine which Tech Spec LCO is impacted. | * 1. | Determines that, with the BM & DF breakers open, **an offsite circuit must be declared inoperable** (loss of main generator could lead to loss of offsite circuit). |
| * 2. | Review Tech Spec LCO 3.8.1 to determine which Condition(s) apply to the malfunction. | * 2. | Determines that **Condition D applies** to one offsite circuit inoperable. |
| * 3. | Review LCO 3.8.1, Action D.1 to determine its applicability. | * 3. | Determines that **SR 3.8.1** for operable offsite circuit must be completed. |
| 4. | Review LCO 3.8.1, Action D.2 to determine its applicability. | 4. | Determines that Action D.2 is **NOT** required. |
| * 5. | Review LCO 3.8.1, Action D.3 to determine its applicability. | * 5. | Determines that the offsite circuit must be restored to operable status within **72 hours**. |
| **CUE:** | **If asked, the LCO Sheet cannot be generated electronically and must be documented on paper. Provide the examinee with a copy of MOP05003.** | | |
| * 6. | Document the operability determination. | * 6. | Operability determination documented on LCO Sheet. |
| **CUE:** | **End JPM when required actions listed under Tech Spec 3.8.1, Condition D, have been identified, and LCO is documented on MOP05003.** | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

This JPM may be started at the CRS desk in the simulator.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-OP-802-4101-102)**

## Initial Conditions:

- You are the CRS.
- Ten (10) minutes ago, ITC was performing troubleshooting activities when 345kV breakers BM & DF opened on fault. All attempts to reclose the breakers have failed.
- All other 345kV / 120kV breakers are in the normal position.
- No other plant equipment is out of service.

## Initiating Cue(s):

The SM directs you to evaluate this malfunction for potential Tech Spec impact, and document accordingly.

| Job Position<br>SRO / RO | No.<br>JP-OP-802-4101-413 | Revision<br>3 |
|---|---|---|
| JPM Title<br>Calculate Stay time and determine if dose extension is needed. | Duration<br>20 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical  Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss  Stop Time _____

Location: Plant / Simulator / **Classroom**  Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
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| OPERATOR FUNDAMENTALS OBSERVATION | | | | |
|---|---|---|---|---|
| Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation. | | | | |
| **Operator Fundamental** | **Meets all Expectations** | **Opportunity for Improvement** | **Does not meet Expectations** | **Comment Number** |
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

N/A

**Task:**

73443 - SOER 01-1 Rec. 5 - Radiation protection training and retraining for plant personnel should include a review of selected industry events involving large, unplanned exposures and the responsibility of individuals for the prevention of such events.

**References:** Required (R) / Available (A)

MRP12, Authorization To Exceed Dose Control Thresholds (R)

**Tools and Equipment Required:**

Survey Map for N. RWCU Room

**Initial Conditions:**

- An NSO must enter the N. RWCU Pump Room to perform an investigation of G33-F012A, North RWCU Pump Discharge Isolation Valve.
- The estimated time necessary to perform the inspection is 6 minutes.
- The NSO's exposure for the year is 753 mrem TEDE.
- The situation is **NOT** an emergency, but there is no alternative to performing the inspection.

**Initiating Cue(s):**

Determine what requirements must be met, if any, to allow the NSO to perform this inspection.

**Terminating Cue(s):**

Candidate informs SM that dose extension must be obtained.

**Task Standard:**

Determination is made that authorization to exceed Fermi 2 Administrative Guidelines must be obtained in accordance with MRP 12.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** GENERICS

**K/A STATEMENT:**

2.3.4 Knowledge of Radiation exposure limits and contamination control including permissible levels in excess of those authorized. .....2.5 / 3.1

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide candidate with Cue Sheet. If asked, provide candidate with Survey Map of N. RWCU Pump Room.** | | |
| **CUE:** | **If asked, the radiation level in the area of the valve to be inspected is 6 Rem/hr.** | | |
| * 1. | Determine that RWP survey results are needed for estimation of radiation dose. | * 1. | Determines radiation level in the area of the valve is 6 Rem/hr. |
| * 2. | Calculate dose. | * 2. | Dose =<br>6/60 hr * 6 Rem/hr =<br>0.1 hr * 6000 mr/hr = 600 mr<br>600 mr + 753 mr = 1353 mr = 1.353 R<br>(Fermi Admin Guideline = 1 REM/yr TEDE) |
| **CUE:** | **As SM, acknowledge the report.** | | |
| * 3. | Inform SM that dose will exceed Fermi 2 administrative guidelines, and a dose extension will be required. | * 3. | Informs SM that dose will exceed Fermi 2 administrative guidelines, and a dose extension is necessary. |
| **CUE: End JPM when SM has been informed that a dose extension is necessary.** | | | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

| JPM Title<br>Calculate Stay time and determine if dose extension is needed. | No.: JP-OP-802-4101-413<br>Revision: 3<br>Page 5 |
|---|---|

**Evaluator Notes:**

The Plant can be in any mode of operation to conduct this JPM.

This JPM may be started at the CRS Desk in the Simulator.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| None | | | | |

**Special Instructions:**

**Cue Sheet: (JP-OP-802-4101-413)**

## Initial Conditions:

- An NSO must enter the N. RWCU Pump Room to perform an investigation of G33-F012A, North RWCU Pump Discharge Isolation Valve.
- The estimated time necessary to perform the inspection is 6 minutes.
- The NSO's exposure for the year is 753 mrem TEDE.
- The situation is **NOT** an emergency, but there is no alternative to performing the inspection.

## Initiating Cue(s):

Determine what requirements must be met, if any, to allow the NSO to perform this inspection.

| Job Position<br>SRO | No.<br>JP-OP-802-4101-419 | | Revision<br>4 |
|---|---|---|---|
| JPM Title<br>Perform a CRS Short Term Relief | Duration<br>20 minutes | Page<br>1 | |

Examinee: _____ SRO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical  Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss  Stop Time _____

Location: Plant / **Simulator** / Classroom  Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS**  _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

| JPM Title<br>Perform a CRS Short Term Relief | No.: JP-OP-802-4101-419<br>Revision: 4<br>Page 3 |
|---|---|

## JPM Information

**System:**

N/A

**Task:**

76128 - Provide Short Term Relief

**References:** Required (R) / Available (A)

- MOP07, Shift Turnover (R)
- MOP01003, CRS Shift Relief Checklist (R)

**Tools and Equipment Required:**

Unit Log for previous 24 hours

Urgent Required Reading Book

LCO book

**Initial Conditions:**

- You are an extra SRO assigned to the shift.
- You attended the shift turnover meeting this morning.
- Plant conditions are stable and as you see them.

**Initiating Cue(s):**

- The SM directs you to provide a Short Term Relief with the CRS.
- All prerequisites are complete.

**Terminating Cue(s):**

Short Term Relief has been completed in accordance with MOP07.

**Task Standard:**

Conduct a CRS Short Term Relief in the Control Room in accordance with MOP07.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** Generic

**K/A STATEMENT:**

2.1.3 Knowledge of shift or short-term relief turnover practices. (CFR 41.10/45.13)..... 3.7 / 3.9

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide examinee with Cue Sheet. If asked, provide the examinee with the CRS Shift Relief Checklist (attached).** | |
| **NOTE: Examiner is to perform as the CRS being relieved.** | |
| **CUE: When asked, provide the examinee with the Unit Log for the past 24 hours (attached).** | |
| * 1. Review Unit Log and abnormal events that have occurred in the last 24 hours. | * 1. Reviews Unit Log, and initials MOP01003. |
| **CUE: A few hours ago power was raised from 82% to 100%. Power had been reduced to perform Turbine Valve testing. The Reactor Building Rounds NO is monitoring and adjusting Recirc MG Set oil temperatures as necessary.**<br>**HPCI was tagged out to perform corrective maintenance on the Aux Oil Pump, and HPCI has been restored to operable status.** | |
| * 2. Review General Plant Status by discussing operating condition, special limitations, bands and ranges. | * 2. Reviews General Plant Status with CRS by discussing operating condition, special limitations, bands and ranges, and initials MOP01003. |
| **CUE: If asked, there are no outstanding LCOs.** | |
| * 3. Review LCOs. | * 3. Reviews LCO log book or discusses with CRS, and initials MOP01003. |
| 4. Read Urgent Required Reading. | 4. Verifies no Urgent Required Reading present (red binder). |
| **CUE: Alarm 1D34 is in due to a faulty conductivity cell E11-N001A. There has been a CARD written to address the problem. Conductivity is currently normal, and Chemistry is checking the conductivity each shift.**<br>**Alarm 4D78 is in due to a broken level switch N30-N095. There has been a CARD written to address the problem. The tank level is currently normal, and the Turbine Building Rounds NO is checking the level twice per shift.** | |
| **CUE: SM acknowledges report of the problem with HPCI, and directs the examinee to complete the turnover. The concern with HPCI will be addressed when turnover is complete.** | |
| * 5. Walk down COPs, and discuss any off-normal condition, status of ESF equipment, reasons for lit annunciators, and IPCS alarms. | * 5. Walks down COPs, and discusses any off-normal condition, status of ESF equipment, reasons for lit annunciators, and IPCS alarms, and initials MOP01003.<br>• Asks reasons for alarms 1D34 & 4D78.<br>• Determines HPCI Aux Oil Pump CMC is improperly positioned and informs SM/CRS. |
| **CUE: Currently, there are no "non-triggered" situation surveillances required.** | |
| * 6. Discuss "non-triggered" situational surveillance requirements. | * 6. Discusses "non-triggered" situational surveillance requirements, and initials MOP01003. |

| ELEMENT | STANDARD |
|---|---|
| * 7. Verify qualification for position. | * 7. Verifies qualifications listed in the Qualification Reporting Tool, and initials MOP01003. |
| **CUE: End JPM when the items noted by an asterisk on the Shift Relief Checklist are completed.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

This JPM should be started at the CRS Desk in the Simulator.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| C97MF0048 | 01D034 RHR HX Water Conductivity High | 1 | 0 | 0 |
| C97MF0709 | 04D078 Seal Oil Reservoir Tank Level Low | 1 | 0 | 0 |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

1. Initialize the simulator and place in RUN.
2. Open and execute lesson 802_4101_419.lsn, or insert the malfunctions listed above.
3. Place E4101-C005, HPCI Turbine Aux Oil Pump, CMC switch in OFF RESET.
4. Acknowledge all alarms, and ensure plant conditions are stable.
5. Ensure the following items are available:
   - CRS shift Relief Checklist - MOP01003
   - Previous 24 hours unit log (attached to JPM)
   - **Required reading books**
   - **LCO book**

**Cue Sheet: (JP-OP-802-4101-419)**

## Initial Conditions:

- You are an extra SRO assigned to the shift.
- You attended the shift turnover meeting this morning.
- Plant conditions are stable and as you see them.

## Initiating Cue(s):

- The SM directs you to provide a Short Term Relief with the CRS.
- All prerequisites are complete.

**TRAINING USE ONLY**

**Fermi 2 Control Room Log**

| Date | Entry | User |
|---|---|---|
| Yesterday 07:02 | G. Neco relieved R. Valor as CRNSO, T. Sword relieved R. Kitchen as P603, P. Crabbe relieved A. Nightlight as CRS, M. L. Hopwick relieved J. Konners as STA Mode: 1 Reactor Power: 82 % 2807MWt Recirc Speeds: A: 62 % B: 63 % Core Flow: 77 MLB/HR RPV Pressure: 1001 PSIG RPV Level: 197 IN Torus Temp: 79 DEGF Torus Level: -0.6 IN DW Temp: 129 DEGF DW Press: 0.4 PSIG Condenser Pressure: 1.07 PSIA Generator Output: 923 MWe | e52xxx |
| Yesterday 15:42 | N3000 Added hydrogen to the generator IAW 23.122 section 11.0, Initial pressure 70 PSIG Final Pressure 75 PSIG | e51xxx |
| Yesterday 18:30 | Rel - S.Floyd relieved J.Koch as Radwaste Operator Assigned. Also Fred Seever is U.I. for ROA | e50xxx |
| Yesterday 19:05 | R. Valor relieved G. Neco as CRNSO, R. Kitchen relieved T. Sword as P603, A. Nightlight relieved P. Crabbe as CRS, J. Konners relieved M. L. Hopwick as STA Mode: 1 Reactor Power: 82 % 2808MWt Recirc Speeds: A: 62 % B: 63 % Core Flow: 77 MLB/HR RPV Pressure: 1002 PSIG RPV Level: 197 IN Torus Temp: 80 DEGF Torus Level: -0.6 IN DW Temp: 129 DEGF DW Press: 0.4 PSIG Condenser Pressure: 1.06 PSIA Generator Output: 924 MWe | e56xxx |
| Yesterday 19:20 | Started P4100C011 CW RESERVOIR WEST MAKEUP PUMP in accordance with 23.131 section 6.8 - CW Reservoir Makeup Pump Operation | e56xxx |
| Yesterday 19:25 | M. Adore relieved G. Almos as Shift Manager Shift assignments are in accordance with the shift assignment sheet. | e57xxx |
| Yesterday 20:32 | N3033 Added water to Stator Water Head Tank IAW 23.120 section 6.4 | e56xxx |
| Yesterday 21:43 | Stopped P4100C010 CW RESERVOIR EAST MAKEUP PUMP in accordance with 23.131 section 6.8 - CW Reservoir Makeup Pump Operation | e56xxx |
| Yesterday 23:28 | N3000 Added hydrogen to the generator IAW 23.122 section 11.0, Initial pressure 70 PSIG Final Pressure 75 PSIG | e58xxx |
| Today 01:42 | Started a planned reactivity change from 82% to 100% reactor power using a combination of Flow and Rods for Rod Pattern Adjustment Initial Recirc Speeds: A 62.00 B 63.00 Initial Core Flow is 77 | e59xxx |
| Today 02:32 | Started P4100C010 CW RESERVOIR EAST MAKEUP PUMP in accordance with 23.131 section 6.8 - CW Reservoir Makeup Pump Operation | e58xxx |
| Today 04:39 | N3000 Added hydrogen to the generator IAW 23.122 section 11.0, Initial pressure 71 PSIG Final Pressure 75 PSIG | e58xxx |
| Today 04:45 | Verified reactor power at 95% is within 3% (of rated) of the value indicated in the Power vs. Steam Flow graph IAW 22.000.03 | e59xxx |
| Today 05:08 | Stopped P4100C011 CW RESERVOIR WEST MAKEUP PUMP in accordance with 23.131 section 6.8 - CW Reservoir Makeup Pump Operation | e58xxx |
| Today 05:38 | Completed a planned reactivity change from 82% to 100% reactor power using Recirc Flow. Final Recirc Speeds: A 70.2 B 70.2 Final Core Flow is 84.8 Contacted CSS (Mitchell) and MOC (Scott). | e55xxx |
| Today 06:18 | Completed licensed operator walkdown and returned HPCI Aux Oil Pump to service. | e59xxx |
| Today 06:20 | E4101 - Exit LCO 09-0573 for HPCI Aux Oil Pump Inoperable. | e59xxx |
| Today 06:30 | Rel - J. Koch relieved S. Floyd as Radwaste Operator Assigned. | e55xxx |
| Today 06:55 | R. Valor relieved G. Neco as CRNSO, R. Kitchen relieved T. Sword as P603, A. Nightlight relieved P. Crabbe as CRS, J. Konners relieved M. L. Hopwick as STA Mode: 1 Reactor Power: 99.5% 3430 MWt Recirc Speeds: A: 70.25% B: 70.25% Core Flow: 84.8 MLB/HR RPV Pressure: 1030 PSIG RPV Level: 197 IN Torus Temp: 78.8 DEGF Torus Level: 0.12 IN DW Temp: 135.5 DEGF DW Press: 0.52 PSIG Condenser Pressure: 1.36 PSIA Generator Output: 1153 MWe | e56xxx |

| Job Position<br>SRO / RO | No.<br>JP-OP-802-4101-421 | Revision<br>2 |
|---|---|---|
| JPM Title<br>Verify Offsite Electrical Lineup | Duration<br>10 minutes | Page<br>1 |

Examinee: _____ SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | ***11.** | | | | | | | |
| *** 2.** | | | | ***12.** | | | | | | | |
| *** 3.** | | | | ***13.** | | | | | | | |
| *** 4.** | | | | 14. | | | | | | | |
| *** 5.** | | | | 15. | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| *** 8.** | | | | | | | | | | | |
| *** 9.** | | | | | | | | | | | |
| ***10.** | | | | | | | | | | | |

**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

| JPM Title<br>Verify Offsite Electrical Lineup | No.: JP-OP-802-4101-421<br>Revision: 2<br>Page 3 |
|---|---|

## JPM Information

**System:**

S2000/S4000 – 120/345KV Switchyards

**Task:**

57520 - Perform Control Room - Mode 1, 2, 3 Surveillances

**References:** Required (R) / Available (A)

24.000.01, Situational Surveillances/LCO Action Tracking, Attachment 28b (R)

**Tools and Equipment Required:**

Marked up 24.000.01, Attachments 28a & 28b

**Initial Conditions:**

- You are the CRNSO.
- The current time is 0500.
- EDG-11 is out of service for maintenance.
- The CRS has entered LCO 3.8.1 Action A.

**Initiating Cue(s):**

The CRS directs you to perform 24.000.01, Attachment 28b.

**Terminating Cue(s):**

24.000.01 Attachment 28b is completed.

**Task Standard:**

24.000.01, Attachment 28b, is completed correctly.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** GENERIC

**K/A STATEMENT:**

2.1.29 Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc. (CFR 41.10 / 45.1 / 45.12)..... 4.1 / 4.0

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or No)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | | STANDARD | |
|---|---|---|---|
| **CUE:** | **Provide examinee with Cue Sheet and marked up 24.000.01 Attachments 28a & 28b.** | | |
| * 1. | [1.1.1] Record Bus 101 voltage. | * 1. | Records 120V Bus 101 voltage. |
| * 2. | [1.1.2] Verify indicated voltage is approximately 120 VAC. | * 2. | Records initials verifying voltage is ~120 VAC. |
| * 3. | [1.1.3] If indicated bus voltage is <116 VAC, notify the SM, otherwise NA. | * 3. | Records NA in the initials block. |
| **CUE:** | **If asked, inform examinee that Breaker GD was opened mid-shift at ITC's request.** | | |
| * 4. | [1.1.4] Verify one the following lineups is met:<br>• For Shoal Line supplying, Breaker GD is CLOSED.<br>• For Radka Line supplying, Breaker GK and GH are CLOSED.<br>• For Swan Creek Line Supplying, Breakers GM and GH are CLOSED. | * 4. | Checks off the following boxes, and initials that at least one of the lineups is correct:<br>• For Radka Line supplying, Breaker GK and GH are CLOSED.<br>• For Swan Creek Line Supplying, Breakers GM and GH are CLOSED. |
| * 5. | [1.1.5] Verify the following breakers are CLOSED:<br>• TRANS 1 DEC POS A BKR CONTROL<br>• SS TRANS 64 PRI POS D BKR CONTROL | * 5. | Checks off each box and initials that breakers are CLOSED. |
| * 6. | [1.2] For Bus 102 supplying SST 64, perform the following: | * 6. | This section is NA, therefore examinee records NA on steps 1.2.1 through 1.2.5. |
| * 7. | [1.3] Verify at least one of the two conditions is met:<br>• Steps 1.1.2, 1.1.4, and Step 1.1.5 were completed satisfactorily.<br>or<br>• Steps 1.2.2, 1.2.4, and Step 1.2.5 were completed satisfactorily. | * 7. | Places a check mark next to step 1.3.1 and initials the Acceptance Criteria. |
| * 8. | [1.4.1] Record Bus 301 voltage. | * 8. | Records 120V Bus 301 voltage. |
| * 9. | [1.4.2] Verify indicated voltage is approximately 120 VAC. | * 9. | Records initials verifying voltage is ~120 VAC. |
| *10. | [1.4.3] If indicated bus voltage is <118.1 VAC, notify the SM, otherwise NA | *10. | Records NA in the initials block. |

| ELEMENT | STANDARD |
|---|---|
| *11. [1.4.4] Verify one the following lineups is met:<br>• For BRTN 2 Line supplying, Breaker DF is CLOSED.<br>• For BRTN 2 Line supplying, Breakers DM, CM, and CF are CLOSED with Main Generator off line.<br>• For BRTN 3 Line, Breaker BM is CLOSED<br>• For BRTN 3 Line, Breakers BT, CM and CF are CLOSED with Main Generator off line. | *11. Checks off the following boxes, and initials that at least one of the lineups is correct:<br>• For BRTN 2 Line supplying, Breaker DF is CLOSED.<br>• For BRTN 3 Line, Breaker BM is CLOSED |
| *12. [1.4.5] Breakers 65E-E6 and 65F-F6 are closed. | *12. Initials that Breakers 65E-E6 and 65F-F6 are closed. |
| *13. [1.5] Verify Step 1.4.2 **and** Step 1.4.4 **and** 1.4.5 were completed satisfactorily. | *13. Records initials the Acceptance Criteria block. |
| 14. [1.6] Sign for completed and record Name, Initials and Signature | 14. Records date and time of completion, and records Name, Initials and Signature. |
| 15. Document on Attachment 28a that Action 2 was performed by recording Date, Time, Initials and ID number. | 15. Records Date and Time performed, Initials and enters ID number on Attachment 28a, Action 2. |
| **CUE: Terminate JPM when 24.000.01, Attachment 28b, is completed.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

This JPM can be performed in the Simulator or the Control Room.

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

IC-20 or any full power IC.

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| R30RF0009 | EDG 11 Control Mode Switch | MPO | 0 | 0 |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

1. Initialize to desired IC, and place the simulator in **RUN**.
2. Open Shoal Line Breaker GD.
3. Insert the remote function listed above.
4. Silence and acknowledge all alarms, and place the simulator in **FREEZE**.

**Cue Sheet: (JP-OP-802-4101-421)**

## Initial Conditions:

- You are the CRNSO.
- The current time is 0500.
- EDG-11 is out of service for maintenance.
- The CRS has entered LCO 3.8.1 Action A.

## Initiating Cue(s):

The CRS directs you to perform 24.000.01, Attachment 28b.

| Job Position<br>SRO / RO / NO | No.<br>JP-OP-802-4101-441 | Revision<br>1 |
|---|---|---|
| JPM Title<br>Identify the Isolation Boundaries for a Clearance to Replace a Pump Impeller | Duration<br>20 minutes | Page<br>1 |

Examinee: _____ SRO / RO / NO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / Simulator / **Classroom**

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| 1. | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| 3. | | | | | | | | | | | |
| *** 4.** | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
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**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

## JPM Information

**System:**

N/A

**Task:**

20993 Perform Protective tagging as the Shift Foreman (Determines the limits of protection necessary and proper tag locations required to protect all aspects of the work).

**References:** Required (R) / Available (A)

MOP12, Tagging and Protective Barrier System (R)

23.120, Stator Water Cooling (A)

M-5717-4, Generator Stator Winding Cooling System Functional Operating Sketch (A)

I-2341-24 Schematic Diagram, Stator Coolant Pump East & West (A)

**Tools and Equipment Required:**

Mechanical Piping Diagram, Electrical Diagram

**Initial Conditions:**

- You are the Control Room NSO.
- A tagout has been requested to permit replacement of the East Stator Water Cooling Pump impeller.
- The E-Tagging system is not available.

**Initiating Cue(s):**

In preparation for initiating a Safety Tagging Record (STR) to replace the impeller on the East Stator Water Cooling Pump, determine the limits of protection necessary and proper tag locations required to protect all aspects of the work order.

**Terminating Cue(s):**

The applicant provides the component isolation boundaries.

**Task Standard:**

The component isolation boundaries are identified per MOP12.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** Generic/Equipment Control

**K/A STATEMENT:** 2.2.13 Knowledge of tagging and clearance procedures (4.1/4.3)

**Maintenance Rule Safety Classification:**

N/A

**Maintenance Rule Risk Significant?** (Yes or **No**)

N/A

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **CUE: Provide the applicant with a blank Safety Tagging Record to document his findings. If requested, provide copy of MOP12 and/or ODE-19.**<br>**NOTE: The applicant is not being graded on completion of the form, only that the required boundaries and tag locations are identified.**<br>**NOTE: If hard copies of the mechanical/electrical drawings are unavailable, a Fermi computer may be used to access the drawings (M-5717-4 or I-2341-24) as needed.** | |
| 1. Using the associated electrical drawing, identify the electrical isolation boundary. | 1. Identifies the Power Supply Breaker as the electrical isolation boundary. |
| *2. Identify the proper tag location for each component identified in the previous step. | * 2. Identifies **Bus 72A Pos 4C**, N3033C047 East Stator Water Cooling Pump breaker should be in the **disconnect** position and RED TAGGED. |
| 3. Using the associated mechanical drawing, identify the mechanical isolation boundaries. | 3. Identifies the following mechanical isolation boundaries:<br>• Suction Valve, **N3033-F089A**<br>• Discharge Valve, **N3033-F070A**<br>• Vent Valve, **N3033-F907A**<br>• Drain Valve, **N3033-F067A** |
| *4. Identify the required position of the Suction Valve. | *4. Identifies the Suction Valve N3033-F089A should be **Closed** and RED TAGGED. |
| *5. Identify the required position of the Discharge Valve. | *5. Identifies the Discharge Valve N3033-F070A should be **Closed** and RED TAGGED. |
| *6. Identify the required position of the Drain Valve. | *6. Identifies the Drain Valve N3033-F067A should be **Open** and RED TAGGED. |
| *7. Identify the required position of the Vent Valve. | *7. Identifies the Vent Valve N3033-F907A should be **Open** and RED TAGGED. |
| **CUE:** The JPM may be terminated when the applicant provides the component isolation boundaries. | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**Simulator Setup**

**IC#:**

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|

**Special Instructions:**

**Cue Sheet: (JP-OP-802-4101-441)**

## Initial Conditions:

- You are the CRNSO.
- A tag out has been requested to permit replacement of the East Stator Water Cooling Pump impeller.
- The E-Tagging system is not available

## Initiating Cue(s):

In preparation for initiating a Safety Tagging Record (STR) to replace the impeller on the East Stator Water Cooling Pump, determine the limits of protection necessary and proper tag locations required to protect all aspects of the work order.

| Job Position<br>**SRO** | No.<br>JP-OP-802-4101-443 | Revision<br>0 |
|---|---|---|
| Activate ECOS in accordance with EP-290 | Duration<br>15 minutes | Page<br>1 |

Examinee: _____ SRO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / Simulator / **Classroom**

Start Time _____

Stop Time _____

Total Time: _____

| PERFORMANCE EVALUATION SUMMARY | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Element | S | U | Comment | Element | S | U | Comment | Element | S | U | Comment |
| *** 1.** | | | | | | | | | | | |
| *** 2.** | | | | | | | | | | | |
| *** 3.** | | | | | | | | | | | |
| *** 4.** | | | | | | | | | | | |
| *** 5.** | | | | | | | | | | | |
| *** 6.** | | | | | | | | | | | |
| *** 7.** | | | | | | | | | | | |
| *** 8.** | | | | | | | | | | | |
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**OPERATOR FUNDAMENTALS OBSERVATION**

Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.

| Operator Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations | Comment Number |
|---|---|---|---|---|
| **Monitoring** | | | | |
| **Control** | | | | |
| **Conservatism** | | | | |
| **Teamwork** | | | | |
| **Knowledge** | | | | |

**OVERALL EVALUATOR COMMENTS:**

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ / _____

**JPM Observation Criteria**

| Fundamental | Meets all Expectations | Opportunity for Improvement | Does not meet Expectations |
|---|---|---|---|
| **Monitoring** | Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical. | Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring. | Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status. |
| **Control** | Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained. | Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response. | No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters. |
| **Conservatism** | Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety. | Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects. | Proceeds even when unsure with unanswered questions. High threshold for problem conditions. |
| **Teamwork** | Routinely communicates system status changes to the team. Communicates actions before taking them. | Communicated most status and actions. Some improvement would be warranted. | Routinely takes action without informing the team. |
| **Knowledge** | Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response. | Plant, system, or generic fundamental knowledge has some gaps. | Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge. |

| JPM Title<br>Activate ECOS in accordance with EP-290 | No.: JP-OP-802-4101-443<br>Revision: 0<br>Page 3 |
|---|---|

## JPM Information

**System:**

N/A

**Task:**

73999 - Activate the Emergency Call Out System (ECOS)

**References:** Required (R) / Available (A)

EP-290, Emergency Notifications (R)

**Tools and Equipment Required:**

Unplugged Telephone

**Initial Conditions:**

- You are the Work Control Supervisor.
- It is back shift on a Saturday night.
- A Site Area Emergency has been declared and you have reported to the Main Control Room as requested by the Shift Manager.
- Initial notifications to County, State, and Ontario Provence have been completed.

**Initiating Cue(s):**

Activate ECOS using a phone in accordance with Enclosure E, of EP-290, Emergency Notifications.

**Terminating Cue(s):**

ECOS is activated.

**Task Standard:**

ECOS is activated using a phone in accordance with EP-290, Enclosure E.

## Licensed Operator Exam Information (required for NRC exams)

**Safety Function:**

N/A

**K/A Reference:** (from NUREG 1123)

**K/A SYSTEM:** Generic

**K/A STATEMENT:**

2.4.43 – Knowledge of emergency communication systems and techniques. ..... 3.2 / 3.8

**Maintenance Rule Safety Classification:**

No

**Maintenance Rule Risk Significant?** (Yes or No)

No

**PERFORMANCE EVALUATION**

Start Time _____

| ELEMENT | STANDARD |
|---|---|
| **NOTE: An unplugged telephone available for examinee's use will allow more effective simulation of ECOS activation by SM phone.** | |
| **CUE: Provide the examinee with the Cue Sheet. If necessary, provide the examinee with a current copy of EP-290.** | |
| * 1. [3.1.1] Have ready the applicable *Scenario ID Number* from Table 1-1 for the corresponding classification. | * 1. Determines correct *Scenario ID Number* from Table 1-1 is **3**. |
| * 2. [3.1.2] Call the Remote Scenario Activation phone number (800) 380-0407 or (615) 844-5611. | * 2. Dials [800] 380-0407 or [615] 986-3719. |
| **CUE:** After the phone number has been dialed, state "**Welcome, enter your User ID Number followed by the # sign.**" | |
| * 3. [3.1.3] At the prompt for User ID, enter **65235**, then press **#**. | * 3. Enters **65235**, followed by **#**. |
| **CUE:** After the User ID and # have been entered, state "**Enter your Security PIN number, followed by the # sign.**" | |
| **CUE:** If asked, the Security PIN number is **12345**. | |
| * 4. [3.1.4] At the prompt for Security PIN, enter the confidential PIN number, then press #. | * 4. Enters **12345**, followed by **#**. |
| **CUE**: After the Security PIN and # have been entered, state "**Enter the Scenario ID Number followed by the # sign.**" | |
| * 5. [3.1.5] At the prompt for Scenario ID, enter the associated Scenario ID from Table 1-1, and then press #. | * 5. Enters **3**, followed by **#**. |
| **NOTE**: The system will go through a list of options from the program menu. | |
| **CUE**: After the Scenario ID and # have been entered, state "**Listen to the following Options then press the appropriate number on the phone key pad:**<br>**Press 1** - to listen to the current scenario message [pre-recorded messages designed for Fermi 2 ERO] - or -<br>**Press 2** - to re-record the scenario message. The system will give instructions on how to record and verify your message. - or -<br>**Press 3** - to start the scenario. When you hear the response, "The scenario is building", exit the program by pressing #. - or -<br>**Press 4** - to return to the main menu." | |
| * 6. [3.1.6] Press the appropriate number on the phone key pad. | * 6. Presses **3**. |
| **CUE:** After the number 3 has been entered, state "**The Scenario is building.**" | |
| * 7. [3.1.6] When the system reports that the scenario is building exit the program by pressing the # sign. | * 7. Presses **#**, and hangs up the phone. |

| JPM Title<br>Activate ECOS in accordance with EP-290 | No.: JP-OP-802-4101-443<br>Revision: 0<br>Page 5 |
|---|---|

| ELEMENT | STANDARD |
|---|---|
| **NOTE:** ECOS is programmed to immediately call [734] 586-5235 at the Shift Manager's desk for "emergency" or "test" activations. | |
| **CUE**: After the phone has been hung up, state "**The phone is ringing.**"<br>When the applicant answers the phone, states "**Enter the last 5 digits of your SAP Employee Number.**" | |
| * 8. [4.2] Answer the call, and when prompted for the last five digits of your SAP Employee Number, enter **11111**, then press **#**. | * 8. Enters **11111**, followed by **#**. |
| **CUE**: After 11111 and # have been entered, state "**ECOS is activated.**" | |
| **CUE:** End JPM when ECOS is activated**.** | |

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

**Evaluator Notes:**

**ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.**

**Generic Notes and Cues:**

None

**System Specific Notes and Cues:**

None

**Task Performance and Cues:**

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

**Critical Steps:**

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

**FOLLOW-UP DOCUMENTATION QUESTIONS**

Reason for follow-up question(s):

_____

_____

Question: _____

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Reference: _____

Response: _____

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Question: _____

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Reference _____

Response: _____

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**Simulator Setup**

**IC#:**

N/A

**Malfunctions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Remote Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Override Functions:**

| Number | Title | Value | Delay | Ramp |
|---|---|---|---|---|
| N/A | | | | |

**Special Instructions:**

N/A

**Cue Sheet: (JP-OP-802-4101-443)**

## Initial Conditions:

- You are the Work Control Supervisor.
- It is back shift on a Saturday night.
- A Site Area Emergency has been declared and you have reported to the Main Control Room as requested by the Shift Manager.
- Initial notifications to County, State, and Ontario Provence have been completed.

## Initiating Cue(s):

Activate ECOS using a phone in accordance with Enclosure E, of EP-290, Emergency Notifications.

**Facility:** Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

**Examiners:** C. Moore, D. McNeil, C. Phillips **Operators:** _____

**Initial Conditions:** IC-20, MOL, 100% Rx. Power

**Turnover:** The plant has been operating at 100 % Reactor power for the last 205 days. #2 GSW is OOS for motor replacement. Expected return to service is two weeks. "B" CRD Pump is OOS for oil replacement on gear reducer. Return to service is expected tomorrow.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | NGADN302<br>1C002TVSP | C(BOP)<br>C(SRO) | #2 TCV Unitized Actuator Failure (Oil Leak) – 4D2 |
| 2 | | R(ATC)<br>R(SRO) | Reduce Reactor Power < 93% to lock down #2 TCV |
| 3 | | N(BOP)<br>N(SRO) | Lock Down #2 TCV - 23.109, Main Turbine |
| 4 | C11MF1106 | C(ATC)<br>C(SRO) | CR 58-39 Individual SCRAM from half scram during #2TCV lockdown and blown fuse. Disarm CR due to badly damaged fuse clip.<br>CRS enter TS 3.1.3, Control rod operability – one rod inop and inserted. |
| 5 | C93RF0001<br>C97MF1087 | NA | Earthquake - AOP 20.000.01 – AOP Actions |
| 6 | E51MF0010<br>EOPRF0024<br>EOPRF0025 | C(All) | RCIC Steam Leak. Auto Isolation Fails. Manual isolation Successful. EOP 29.100.01 Sheet 5 **(CT 1)**<br>CRS enter TS 3.5.3, RCIC |
| 7 | N20MF0023<br>N20MF0024<br>N20MF0025 | M(All) | Loss of Feedwater – AOP 20107.01 – Mode Switch to S/D<br>EOP 29.100.01 Sheet 1 - RPV Control |
| 8 | E41MF0011<br>N21MF0011<br>N21MF0038 | C(All) | Loss of High Pressure Feed Sources – Lower RPV pressure to feed with HFP.<br>Inhibit ADS **(CT -2)** |

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

**Facility:** Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

**Examiners:** C. Moore
D. McNeil
B. Palagi

**Operators:**

**Initial Conditions:** IC-20, MOL, 100% Rx. Power

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 9 | B31MF0066 | M(All) | Leak in drywell – EOP 29.100.01 Sheet 2 – Primary Containment Control<br>Emergency Depressurization EOP 29.100.01 Sheet 3 – **(CT-3)** |
| 10 | E21RF0005 | C(BOP)<br>C(SRO) | Auto Start Failure – Div. 1 Core Spray |
| 11 | E11MF0016 | C(ATC)<br>C(SRO) | Containment Spray Valve Failure E1150-F016A<br>Spray Drywell **(CT 4)** |
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* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

**Facility:** Fermi 2 **Scenario No.** 2 **Op-Test No:** 2013-2

**Examiners:** C. Moore
D. McNeil
C. Phillips

**Operators:** _____
_____
_____

**Initial Conditions:** IC-15 (55% Power)

**Turnover:** _ Reactor power is 55%. A plant startup is in progress following a planned shutdown for repairs to Main Transformer 2A. The startup is currently on hold, awaiting chemistry results on heater drains. CW Pump #5 is OOS for motor replacement

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | C102C11_PS_N001A_STFCLOSE<br>C11MF1117 | C(ATC)<br>C(SRO) | Trip of A CRD Pump (B CRD Fails) AOP 20.106.01 - restart A CRD.<br>TS 3.1.5 |
| 2 | TEAJSPECIFIC_F788753TFF | C(BOP)<br>C(SRO) | High Vibration/High Amps #6 Drywell Cooling Fan – 8D45 – Shutdown Fan |
| 3 | B21MF0025 | C(All) | C SRV Open – AOP 20.000.25 - SRV closes when fuses pulled<br>TS 3.4.3 |
| 4 | | N(BOP)<br>N(SRO) | Torus Cooling - 23.205 |
| 5 | NMRDFU_11CC | M(All) | Loss of Steam Jet Air Ejectors/Loss of Vacuum – AOP 20.125.01<br>Mode Switch to Shutdown |
| 6 | C11MF0001<br>C71MF0006 | M(All) | ATWS – EOP 29.100.01 Sheet 1 and 1A<br>Inhibit ADS **(CT 1)**<br>Terminate and Prevent **(CT 2)** |
| 7 | C41MF0003<br>C41MF0004 | C(ATC)<br>C(SRO) | SLC Pumps Trip<br>29.ESP.02 – Alternate Boron Injection |
| 8 | EOPRF0007 thru EOPRF0014 | NA | Insert Control Rods **(CT 3)**<br>29.ESP.10<br>29.ESP.11 |
| 9 | B21MF0028 | C(All) | F SRV fails Open - EOP 29.100.01Sheet 2 – High Torus Temp |

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

**Facility:** Fermi 2 **Scenario No.** 3 **Op-Test No:** 2013-3

**Examiners:** C. Moore
D. McNeil
C. Phillips

**Operators:** _____
_____
_____

**Initial Conditions:** IC-13, MOL, 25% Rx. Power

**Turnover:** Reactor power is currently about 25% Power. The plant startup is on hold due to an oil leak on A Core Spray Pump. A Core Spray Pump is OOS for repair. Return to service is expected late this afternoon. Following A Core Spray Pump RTS the startup will continue. _

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | C51MF0003 | C(ATC)<br>C(SRO) | APRM Downscale – Bypass APRM 3<br>TS 3.3.1.1 Tracking |
| 2 | P42MF0005 | C(BOP)<br>C(SRO) | RBCCW Pump Trip - AOP 20.127.01 – Start Standby RBCCW Pump |
| 3 | B21MF004 | C(BOP)<br>C(SRO) | Drywell Pressure Transmitter Failure<br>TS 3.3.1.1, 3.3.6.1, 3.3.6.2, 3.3.7.1( Drywell Pressure Instrumentation) |
| 4 | N30MF0038<br>N30MF0039 | M(All) | MTLO Pump Failures – Trip Main Turbine – AOP 20.109.01 |
| 5 | C11MF0004 | C(ATC)<br>C(SRO) | A CRD Flow Control Failure – AOP 20.106.03 |
| 6 | E41MF0007<br>E41RF0033 | M(All) | HPCI Steam Leak – Failure to isolate – E4150-F600 Breaker Trips<br>EOP 29.100.01 Sheet 5, Secondary Containment - >MSO Temperature – Mode Switch to Shutdown **(CT 1)**<br>EOP 29.100.01 Sheet 1 RPV Control |
| 7 | NA | N(SRO)<br>N(ATC) | Torus Cooling |
| 8 | TA20TEN2 06ZOUT | M(All) | Two Areas > MSO Temperature due to HPCI watertight door not closed – EOP 29.100.01 Sheet 3 – Emergency Depressurization **(CT 2)** |
| 9 | B21MF0030 | C(BOP)<br>C(SRO) | SRV H Failure during ED – Open One other SRV |
| 10 | E41RF0033 | NA | Energize MOV/close E41-F600 – isolate steam leak **(CT 3)** |

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

Op-Test No.: 2013-1 Scenario No.: 1 Event No.: N/A Page 1 of 9

Event Description: Overview

***Initial Conditions:***

The plant has been operating at 100 % Reactor power for the last 205 days. #2 GSW is OOS for motor replacement. Expected return to service is two weeks. B CRD Pump is OOS for oil replacement on gear reducer. Return to service is expected tomorrow. Plans for the shift are to maintain full power.

***The objectives of this scenario are to:***

1. Recognize, respond to, and take the required actions for an instrument / equipment failures requiring the use of operator and Tech Spec actions.
2. Recognize and respond to a Unitized Actuator Failure.
3. Recognize and respond to a Seismic Event.
4. Recognize and respond to a RCIC Steam Leak
5. Recognize and respond to Loss of High Pressure Feed Sources
6. Recognize and respond to LOCA conditions.
7. Operate RHR in all modes for Primary Containment Control.
8. Execute steps in Primary Containment Control and operate the RHR System to control Drywell and Torus Temperature and Pressure.
9. Execute the steps of RPV Control for level (L) and pressure (P).
10. Direct and supervise the Shift team during Normal, Abnormal, and Emergency operations.

***The crew will be required to respond to the following order of events:***

- Failure #2 TCV Unitized Actuator - Oil leak
- Reactor Power reduction to <93% Power
- Individual Control Rod Scram
- Earthquake
- RCIC Steam Leak
- Loss of Feedwater/Loss of High Pressure Feed Sources
- Leak in Drywell

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Event Description: #2 HPCV Unitized Actuator Failure

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+1m | | **MALF: NG12N3021LSEN236BTFCLOSE #2 TCV UA LL Alarm** |
| | SRO | • Respond to 4D2, Unitized Actuator Throttle Vlv Fault<br>• Briefs crew on actions for UA Failure<br>• Briefs Power Reduction to lock-down UA. |
| | ATC | • Monitors plant conditions. |
| | BOP | • Respond to 4D2, Unitized Actuator Throttle Vlv Fault<br>• Direct operator to investigate #2 HPCV Unitized Actuator<br>• **ROLE PLAY: Report leak inside UA enclosure. Cannot see where leak is coming from, oil spray obscuring window. No leakage outside UA enclosure. Standing by in low dose area.**<br>• **ROLE PLAY: if update requested, report conditions unchanged** |

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Event Description: Power Reduction to <93%

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+5m | | |
| | SRO | • Directs power reduction to <93% per SOP 23.109 prerequisite for closing #2 HPCV.<br>• Monitors power reduction to <93%<br>• Plant announcement of power reduction. |
| | ATC | • Monitors plant conditions.<br>• Lower reactor power by reduction of reactor recirculation pump speed per SOP 23.138.01.<br>• Reports power less than 93% when completed.<br>• May request rounds operator monitor Recirc oil temperatures |
| | BOP | • Monitors plant conditions<br>• Brief lockdown of #2 HPCV per 23.109<br>• Brief Shutdown of Unitized Actuator per 23.110 |

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Event Description: CR 58-39 Individual SCRAM

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+15m | | **MALF: C11MF1106 Scram CR 58-39** |
| | SRO | • Direct #2 HPCV Lockdown<br>• Direct Shutdown of #2 HPCV UA<br>• Brief actions for individual rod scram<br>• Contact SNE about individual rod scram<br>• Direct CR 58-39 disarmed after fuse clip damage reported.<br>• Enter TS 3.1.3, Control Rod Operability. |
| | ATC | • Monitors plant conditions.<br>• Reports half scram, rod drift alarm and individual rod scram CR 58-39<br>• Dispatch operator to check HCU 58-39.<br>• **ROLE PLAY: Rounds operator reports both Scram Valves open at HCU 58-39. Nothing else is abnormal.**<br>• Dispatch operator to check fuses for CR 58-39.<br>• **ROLE PLAY: Report blown fuse and severely damaged and charred fuse clips on A side for 58-39**<br>• Reset half scram and verifies scram signal clears.<br>• Directs rounds operator to disarm CR 58-39 per 23.106 |
| | BOP | • Monitors plant conditions.<br>• Perform #2 HPCV lock-down per 23.109<br>• Perform #2 HPCV UA shutdown per 23.110<br>• Directs rounds operator to close TBCCW Valve for shutdown UA<br>• **ROLE PLAY: Rounds operator reports TBCCW valve to #2 HPCV Unitized Actuator closed**<br>• May dispatch RTC to assist rounds operator to check fuses. |

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Event Description: Seismic Event

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+35m | | **MALF: C97MF1087 CD69 - Seismic System Event/Trouble (Earthquake)**<br>**MALF: C93RF0001 Earthquake Sound** |
| | SRO | • Responds to Seismic Event and enters 20.000.01, Acts of Nature.<br>• Briefs Crew on Seismic event.<br>• Makes Hi-Com announcement of event<br>• Directs Monitoring the following for abnormal values:<br>□ Reactor Vessel Level.<br>□ Reactor Vessel Pressure.<br>□ Reactor Power.<br>□ Drywell Pressure.<br>□ Torus Water Level.<br>□ Drywell Unidentified Leakage.<br>□ Process Radiation Monitors.<br>□ Spent Fuel Pool Water Level.<br>□ Spent Fuel Pool Temperature.<br>• Directs seismic event actions for Condition AC.<br>• May contact offsite agencies to confirm Earthquake<br>• **ROLE PLAY: if contacted as offsite agency, confirm earthquake at 0.02G horizontal and vertical.** |
| | ATC | • Monitors Power, Pressure and Level as directed by SRO for the seismic event.<br>• May dispatch operators to perform visual inspection of plant systems |
| | BOP | • Responds to alarm 6D69, Seismic Event/Trouble<br>• Dispatches an operator to the relay room to check status of Seismic Panel indications (RR H11-P831) per 23.612<br>• **ROLE PLAY: Operator reports from the relay room that seismic event has occurred with an indication of 0.02 G Horizontal and 0.02G Vertical**<br>• Reports Relay Room indications of 0.02 G. horizontal and 0.02G vertical.<br>• Starts all RHRSW MDCT Fans and checks for proper |

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Event Description: Seismic Event

| | | |
|---|---|---|
| | | running indications.<br>• **ROLE PLAY: When directed, report satisfactory operation of MDCT fans following start.**<br>• Directs rounds operator to reset D1 and D2 CCHVAC Purge Compressors.<br>• **ROLE PLAY: When directed, after about 5 min, report D1 and D2 CCHVAC Purge Compressors are reset.**<br>• May dispatch operators to perform visual inspection of plant systems<br>• **ROLE PLAY: As part of seismic walk down prior to triggering steam leak, Rounds Operator report 1 foot steam plume from packing gland area of E5150-F045.** |

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Event Description: RCIC Steam Leak.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+45m | | **MALF: E51MF0010, RCIC Steam Leak** |
| | SRO | • Respond to 1D66<br>• Respond to 1D70<br>• Enter 29.100.01 Sheet 5<br>• Determine rising room temperature in RCIC/Core Spray room.<br>• Enter 29.100.01 Sheet 5, Secondary Containment Control<br>• May direct RCIC isolation.<br>• Validate isolation of leak by monitoring for lowering room temperatures<br>• Enter TS 3.5.3 RCIC |
| | ATC | • Monitors plant conditions. |
| | BOP | • Respond to 1D66<br>• Respond to 1D70<br>• Monitor RCIC system and determine RCIC Automatic isolation did **NOT** occur.<br>• Manually isolate RCIC System by closing E5150-F007 and E5150-F008 (**CT-1)**<br>• Validate isolation of leak by monitoring for lowering room temperatures |

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Event Description: Loss of Feedwater

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+55m | | **MALF: N20MF0023 C HFP Trip**<br>**MALF: N20MF0024 E HFP Trip**<br>**MALF: N20MF0025 W HFP Trip** |
| | SRO | • Directs Mode Switch to Shutdown per AOP 20.107.01<br>• Directs Scram reports from ATC and BOP.<br>• Enters EOP 29.100.01, Sheet 1, RPV Control<br>• Establishes Level band of 173 to 214 inches and pressure band of 900 to 1050 psig. |
| | ATC | • Places Reactor Mode Switch in Shutdown<br>• Provides Scram report.<br>• Verifies all control rods are fully inserted. |
| | BOP | • Provides scram report.<br>• May dispatch operator to HFP's to investigate<br>• **ROLE PLAY: If dispatched to HFP, after about 3 min, report nothing visible with HFP's.** |

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Event Description: Loss of High Pressure Feed Sources

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+55m | | **MALF: E41MF0011, HPCI Exhaust Check Valve Failure**<br>**MALF: N21MF0011, A SBFW Pump Trip**<br>**MALF: N21MF0038, B SBFW Pump Shaft Shear** |
| | SRO | • Directs ATC to perform Scram Procedure AOP 20.000.21<br>• Expands Level band to 0 to 214 inches<br>• Directs ADS inhibited<br>• Briefs crew on options and intended course of action<br>• Directs start of SLC Pump<br>• Directs attempted restart of HFPs<br>• Directs RPV pressure lowered with Bypass Valves or Pressure Regulator to feed with W HFP |
| | ATC | • May report HPCI unavailable due to isolation<br>• Starts A or B SLC Pump<br>• Attempts HFPs start, W HFP starts<br>• Lowers RPV pressure with Bypass Valves or Pressure Regulator to feed with W HFP |
| | BOP | • Reports Both SBFW Pumps unavailable<br>• Reports HPCI unavailable due to isolation<br>• Inhibits ADS **– (CT-2)**<br>• Attempts HFPs start, W HFP starts<br>• Lowers RPV pressure with Bypass Valves or Pressure Regulator to feed with W HFP<br>• May dispatch operator to SBFW Pumps<br>• **ROLE PLAY: If dispatched to SBFW pumps, after about 3 min, report nothing visible with A or B SBFW Pump.** |

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Event Description: Recirculation Loop Rupture, ED, Level recovery

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| **T+65m** | | **MALF: B31MF0066, Recirc Loop Rupture A**<br>**MALF: E21RF0005, Auto Start Failure – Div. 1 CS** |
| | SRO | • Enters EOP 29.100.01 Sheet 2, Primary Containment Control<br>• Establishes Level band of 173 to 214 inches, expands band to 0 to 214 inches.<br>• Conduct EOP Brief<br>• Conduct Brief for Emergency Depressurization<br>• Enter 29.100.01, Sheet 3, Emergency Depressurization<br>• At TAF, Direct 5 ADS SRVs opened. – (**CT-3)**<br>• Directs placing RHR in Torus Cooling and Torus Spray.<br>• Directs level band of 173 to 214 following ED |
| | ATC | • Reports rising Drywell Pressure<br>• Coordinate with BOP to shutdown/operate LP Pumps to restore and maintain RPV water level 173 to 214 inches<br>• Places RHR in Torus Cooling and Torus Spray as directed<br>• **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.** |
| | BOP | • Reports rising Drywell Pressure<br>• Reports unable to maintain RPV level with available high pressure sources.<br>• Reports Division 1 Core Spray Pumps failed to start, manually starts/align Division 1 Core Spray Pumps<br>• Opens 5 SRVs as directed– (**CT-3)**<br>• Coordinate with ATC to shutdown/operate LP Pumps to restore and maintain RPV water level 173 to 214 inches<br>• **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.** |

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Event Description: Containment Cooling and Failures

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| T+75m | | **MALF: E11MF0016 - Containment Spray Valve Failure E1150-F16A** |
| | SRO | • Directs placing RHR in Torus Cooling and Torus Spray.<br>• When Torus Pressure reached 9 psig directs Drywell Spray after securing the A Recirc Pump and stopping all Drywell Cooling Fans**– (CT-4)**<br>• Directs securing Drywell and Torus Sprays before Drywell and Torus Pressure reach 0 psig,<br>• Monitors DWSIL curve prior to spraying drywell<br>• Directs Drywell Spray on Division 2 RHR |
| | ATC | • Shuts down the A Reactor Recirc pump<br>• Shuts down all drywell cooling fans<br>• Places RHR in Torus Cooling and Torus Spray<br>• Reports failure of E11-F016A<br>• Places RHR D2 in Drywell Spray– (**CT-4)**<br>• Secures Torus and Drywell Sprays before Drywell and Torus pressure reach 0 psig.<br>• **ROLE PLAY If dispatched to E1150-F16A breaker, after 3 min report, acrid burned insulation smell near MCC (72C-3A-5D)**<br>• **ROLE PLAY If dispatched, after 3 min report, report D 1(D2) Radiation Monitor Sample Pump in service.** |

| | | |
|---|---|---|
| | BOP | • Places RHR in Torus Cooling and Torus Spray.<br>• Reports failure of E11-F016A<br>• Places RHR Div. 2 in Drywell Spray– (**CT-4)**<br>• Secures Torus and Drywell Sprays before Drywell and Torus pressure reach 0 psig.<br>• **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.** |

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: N/A Page 1 of 8

Event Description: Overview

***Initial Conditions:***

Reactor power is 55%. A plant startup is in progress following a planned shutdown for repairs to Main Transformer 2A. The startup is currently on hold, awaiting chemistry results on heater drains. CW Pump #5 is OOS for motor replacement. The refurbished motor arrived on-site yesterday and is currently being installed. RTS is expected late tomorrow.

***The objectives of this scenario are to:***

1. Recognize, respond to, and take the required actions for an instrument / equipment failures requiring the use of operator and Tech Spec actions.
2. Recognize and respond to a CRD Pump Trip.
3. Recognize and respond to a failure of #6 Drywell Cooling Fan.
4. Recognize and respond to a failure of SRV and F
5. Recognize and respond to a Loss of Vacuum due to loss of all SJAE.
6. Recognize and respond to ATWS conditions.
7. Execute steps in Primary Containment Control and operate the RHR System to control Torus Temperature and Pressure.
8. Execute the steps of RPV Control-ATWS for level (L) pressure (P),and power(Q)
9. Direct and supervise the Shift team during Normal, Abnormal, and Emergency operations.

***The crew will be required to respond to the following order of events:***

- CRD pump trip.(AOP 20.106.01)
- #6 DWC Fan Failure
- SRV C Fails Open (AOP 20.000.02)
- Loss of SJAE/loss of Vacuum (AOP 20.125.01)
- ATWS (EOP 29.100.01 Sheet 1 and 1A) Both SLC Pumps Trip
- Terminate and Prevent
- SRV F fail open - EOP 29.100.01 Sheet 2 High Torus Temperature

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: 1 Page 2 of 8

Event Description: CRD Hydraulic Pump Trips

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +2 min | | **MALF: C102C11_PS_N001A_STFCLOSE, CRD Pump A Trip** |
| | SRO | • Enters AOP 20.106.01, CRD Hydraulic System Failure<br>• Briefs crew on CRD Pump Trip<br>• Enters TS 3.1.5, Control Rod Scram Accumulators, Condition B<br>• Directs restart of A CRD pump |
| | ATC | • Places CRD Flow Controller in MANUAL<br>• Closes CRD Flow Control Valve<br>• Closes CRD Pressure Control Valve<br>• Reports failure of B CRD Pump<br>• Re-starts A CRD Pump<br>• Adjusts CRD flow and pressure to 37-63 gpm and differential pressure to 255-265 psid.<br>• Places CRD flow controller in auto<br>• May direct operators to investigate CRD pump trip<br>• **ROLE PLAY: When dispatched to pump, after 3 min, (check current status on panel display) report nothing abnormal at A CRD Pump, report motor rotating on B CRD, pump is not rotating.**<br>• **ROLE PLAY: At A CRD Pump, report good start when pump re-started.** |
| | BOP | • Monitors plant conditions.<br>• May direct operators to investigate CRD pump trip.<br>• **ROLE PLAY: ROLE PLAY: When dispatched to pump, after 3 min, (check current status on panel display) report nothing abnormal at A CRD Pump, report motor rotating on B CRD, pump is not rotating.**<br>• May direct operator to Relay Room to C11-R018, CRD Temperature Recorder, (RR H21-P007) to check for high temperatures and clear alarm 3D13. |

| | | |
|---|---|---|
| | | • **ROLE PLAY: Report that several CRDMs (38-31, 26-27, 34-43) were in alarm (>300 deg. F) but that all temperatures are now trending down.** |

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: 2 Page 3 of 8

Event Description: High Vibration/High Amps #6 Drywell Cooling Fan

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +15 min | | **MALF: TEAJSPECIFIC_F788753TFF, #6 Drywell Cooling Fan vibration alarm** |
| | SRO | • Respond to 8D45, Div 1 Drywell Fan Brg Vib High<br>• Briefs crew on intended actions<br>• Directs BOP to shutdown #6 Drywell Cooling Fan |
| | ATC | • Monitors plant conditions. |
| | BOP | • Respond to 8D45, Div 1 Drywell Fan Brg Vib High<br>• Reports High Vibration Alarm (8D45) and high amps on #6 DWC fan.<br>• Shutdown #6 Drywell Cooling Fan |

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Event Description: C SRV Failure

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +25 min | | **MALF: B21MF00 – C SRV Fails Open** |
| | SRO | • Respond to 1D61, SRV OPEN<br>• Enter AOP 20.000.25, Failed Safety Relief Valve<br>• Conduct AOP Brief<br>• Direct fuses for SRV C pulled<br>• Direct RHR placed in Torus Cooling<br>• Enter TS 3.4.3, SRV, One valve inoperable |
| | ATC | • Monitors plant conditions.<br>• May direct operator to monitor SRV Tailpipe temperatures at B21-R614 (RR H11-P614)<br>• **ROLE PLAY: When dispatched, after about 3 min, report (if SRV still open) C SRV tailpipe temperature is 320 degrees, (if SRV closed) report SRV C tailpipe temperature is 275 degrees and slowly lowering.**<br>• Report plant conditions indicate SRV closed |
| | BOP | • Respond to 1D61, SRV OPEN<br>• Depress OPEN pushbutton, and then CLOSE pushbutton. Report SRV still open.<br>• Dispatch operator to pull fuses for SRV C per Enclosure A in AOP 20.000.25.<br>• Place RHR in Torus Cooling<br>• **ROLE PLAY: if dispatched, after about 5 min, report standing by to pull fuses for SRV C.**<br>• Direct operator to pull fuses for SRV C<br>• **ROLE PLAY: (trigger step) report fuses for SRV C removed.**<br>• Report plant conditions indicate SRV closed. |

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Event Description: Loss of SJAE/Loss of Vacuum.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +35 min | | **MALF: NMRDFU_11CC, Loss of Steam Jet Air Ejectors – Fuse Failure** |
| | SRO | • Respond to numerous alarms on H11-P806 panel<br>• Enter AOP 21.125.01, Loss of Condenser Vacuum<br>• Direct attempt to restart any Steam Jet Air Ejectors<br>• Announce event over Hi-Com<br>• Conduct AOP Brief<br>• Direct Mode Switch to Shutdown prior to 2.8 psia |
| | ATC | • Monitors plant conditions<br>• Place Mode Switch in Shutdown |
| | BOP | • Respond to numerous alarms on H11-P806 panel<br>• Reports SJAE have tripped<br>• Attempt to restore SJAE<br>• Report SJAE will not start<br>• Reports vacuum degrading |

Op-Test No.:2013-2 Scenario No.: 2 Event No.: 5,6 Page 6 of 8

Event Description: ATWS.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +45min | | **MALF: C11MF0001, Rods Stuck**<br>**MALF: C71MF0006, Total Scram Failure**<br>**MALF: C41MF0003, A SLC Pump Trip**<br>**MALF: C41MF0004, B SLC Pump Trip** |
| | SRO | • Directs Scram reports from ATC and BOP.<br>• Enters EOP Sheet 1, RPV Control and Sheet 1A RPV Control – ATWS<br>• Directs FS/Q 1 thru 8<br>• Directs ADS inhibited **(CT-1)**<br>• Directs SLC injection<br>• Directs Alternate Boron Injection (29.ESP.02)<br>• Directs 29.ESP.11 and bypass and restore DW Pneumatics<br>• Directs 29.ESP.10 and insert rods with 29.ESP.03 **(CT-3)**<br>• Directs Terminate and Prevent for level **(CT-2)**<br>• Directs RPV water level band of 50 to 100 inches<br>• Conducts EOP Brief |
| | ATC | • Reports failure to scram<br>• Verifies Mode Switch in Shutdown<br>• Depress manual scram pushbuttons<br>• Provides Scram report.<br>• Perform FS/Q 1 thru 8<br>• Reports FS/Q 1 thru 8 complete<br>• Reports both SLC Pumps tripped and RWCU isolated<br>• Directs operators to perform 29.ESP.02<br>• Directs 29.ESP 10 and inserts rods with 29.ESP.03**(CT-3)**<br>• **ROLE PLAY: When dispatched (trigger step), after about 10 min, report 29.ESP.10 is complete**. |

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Event Description: ATWS.

| | | |
|---|---|---|
| | BOP | • Provides scram report.<br>• Inhibits ADS **(CT-1)**<br>• Directs operators to perform 29.ESP.11<br>• Bypass/restore DW Pneumatics<br>• **ROLE PLAY: When dispatched (trigger step), after about 10 min, report 29.ESP.11 is complete**.<br>• Performs Terminate and Prevent for level **(CT-2)**<br>• Maintains RPV water level band of 50 to 100 inches |

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Event Description: Containment Cooling

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +60 min | | **MALF: B21MF0028, SRV F Open** |
| | SRO | • Enters - EOP 29.100.01Sheet 2 – High Torus Temperature<br>• Directs placing RHR in Torus Cooling<br>• May direct Drywell Cooling Fans restarted<br>• Directs RPV water level Band at 173 to 214 inches after all rods in<br>• May direct ATC to AOP 20.000.21 Reactor Scram<br>• Direct fuses removed for SRV F |
| | ATC | • Continues Control Rod insertion per 29.ESP.03<br>• When 29.ESP.10 is complete, lines up to drain SDV<br>• When SDV drained, re-initiate ARI<br>• Reports all rods in<br>• Perform 20.000.21 if directed<br>• May places RHR in Torus Cooling |
| | BOP | • Places RHR in Torus Cooling<br>• Maintains RPV level band 50 to 100 inches<br>• Restore RPV water level to 173 to 214 inches after rods in<br>• Direct operator remove fuses for SRV F<br>• **ROLE PLAY: if dispatched, after about 5 min, report standing by to pull fuses for SRV F.**<br>• Directs operator to pull fuses<br>• **ROLE PLAY: (trigger step) report fuses for SRV F removed.**<br>• Plant conditions indicate SRV closed **(fuses pulled)**<br>• Reports SRV F Closed (closes when RPV pressure <900psig) |

Op-Test No.: 2013-3 Scenario No.: 3 Event No.: N/A Page 1 of 8

Event Description: Overview

***Initial Conditions:***

Reactor power is currently about 25% Power. The plant startup is on hold due to an oil leak on A Core Spray Pump. A Core Spray Pump is OOS for repair. Return to service is expected late this afternoon. Following A Core Spray Pump RTS the startup will continue.

***The objectives of this scenario are to:***

1. Recognize, respond to, and take the required actions for an instrument / equipment failures requiring the use of operator and Tech Spec actions.
2. Recognize and respond to an APRM Downscale.
3. Recognize and respond to an RBCCW Pump Trip.
4. Recognize and resond to a Drywell Pressure Instument Failure.
5. Recognize and respond to a MTLO Pump Failure/Trip of MainTurbine
6. Recognize and respond to a CRD Flow Control Valve Failure
7. Recognize and respond to HPCI Steam Leak/Failure to Isolate.
8. Recognize and respond to SRV Failure
9. Execute the steps of RPV Control for level (L) and pressure (P).
10. Execute the steps of Secondary Containment Control for Area Temperatures
11. Direct and supervise the Shift team during Normal, Abnormal, and Emergency operations.

***The crew will be required to respond to the following order of events:***

- APRM downscale (TS 3.3.1.1)
- RBCCW Pump Trip
- Drywell Pressure Instrument Failure (TS 3.3.1.1,3.3.6.1,3.3.6.2, 3.3.7.1)
- MTLO Pump Failure – Trip Main Turbine.
- CRD Flow Control Valve Failure
- HPCI Steam Leak – Failure to Isolate - >MSO Temp - Scram
- Two Areas >MSO Temperature – ED
- SRV H Failure to open

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Event Description: APRM downscale

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +2 min | | **MALF: C51MF0003, APRM Downscale** |
| | SRO | • Respond to 3D98<br>• Enter TS 3.3.1.1 Tracking<br>• Direct APRM 3 bypassed |
| | ATC | • Respond to 3D98<br>• Report APRM 3 reading downscale<br>• Bypass APRM 3<br>• Dispatch operator to Relay Room to check APRM 3<br>• **ROLE PLAY: Report APRM 3 reading downscale, nothing else abnormal.** |
| | BOP | • Monitors plant conditions.<br>• May direct operator to Relay Room to Check APRM 3<br>• **ROLE PLAY: Report APRM 3 reading downscale, nothing else abnormal.** |

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Event Description: RBCCW Pump Trip

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +10 min | | **MALF: P42MF0005, RBCCW Pump Trip** |
| | SRO | • Respond to 2D104,2D119<br>• Enter AOP 20.127.01, Loss of RBCCW<br>• Direct Start of Standby RBCCW Pump<br>• Direct EECW restored to Standby |
| | ATC | • Monitors Power, Pressure and Level<br>• May dispatch operator to check C RBCCW Pump<br>• May dispatch operator to check C RBCCW Breaker(72F-2D)<br>• **ROLE PLAY: When dispatched to pump, after about 3 min, report nothing abnormal at C RBCCW pump. Report good start on South Pump**<br>• **ROLE PLAY: When dispatched to breaker (72F-2D), after about 3 min, report breaker tripped on overload.** |
| | BOP | • Respond to 2D104,2D119<br>• Reports C RBCCW Tripped<br>• Start Standby RBCCW Pump<br>• Dispatch operator to check C RBCCW Pump<br>• Dispatch operator to check C RBCCW Breaker(72F-2D)<br>• Restore EECW to Standby per SOP<br>• **ROLE PLAY: When dispatched to pump, after about 3 min, report nothing abnormal at C RBCCW pump. Report good start on South Pump.**<br>• **ROLE PLAY: When dispatched to breaker (72F-2D), after about 3 min, report breaker tripped on overload.** |

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Event Description: Drywell Pressure Instrumentation Failure

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +30 min | | **MALF: B21MF0004 Drywell Pressure Transmitter Failure** |
| | SRO | • Respond to 3D81<br>• Enter TS 3.3.1.1, 3.3.6.1, 3.3.6.2,3.3.7.1 9 (Drywell Pressure Instrumentation)<br>• Brief crew on TS impact |
| | ATC | • Respond to 3D81<br>• Monitors Power, Pressure and Level<br>• May dispatch operator to Testability Cabinets to check drywell pressure instrumentation.<br>• **ROLE PLAY: When dispatched to Testability, after about 3 min, report C71-N650A reading downscale, all other channels reading normal.** |
| | BOP | • Respond to 3D81<br>• Monitor drywell pressure<br>• Will dispatch operator to Testability Cabinets to check drywell pressure instrumentation.<br>• **ROLE PLAY: When dispatched to Testability, after about 3 min, report C71-N650A reading downscale, all other channels reading normal.** |

Op-Test No.:2013-1 Scenario No.: 3 Event No.: 4 Page 5 of 8

Event Description: . MTLO Pump Failures/Trip MainTurbine

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +40 min | | **MALF: N30MF0038, Trip A MTLO Pump**<br>**MALF: N30MF0039, Trip B MTLO Pump** |
| | SRO | • Respond to multiple alarms on H11P804<br>• Directs check of bearing oil pressure<br>• Directs Main Turbine tripped.<br>• Enter AOP 20.109.01, Main Turbine Trip<br>• Direct S MTLO pump shutdown<br>• Plant announcement of Main Turbine trip<br>• Direct shutdown procedure per SOP 23.109 |
| | ATC | • Monitor plant conditions<br>• May make plant announcement of Main Turbine trip |
| | BOP | • Respond to multiple alarms on H11P804<br>• Report N MTLO Pump has tripped. S MTLO Running with high fluctuating amps, Emergency Pump also running.<br>• Reports bearing oil pressure<br>• Trip Main Turbine<br>• Shutdowns S MTLO pump.<br>• Perform turbine shutdown procedure per SOP 23.109<br>• **ROLE PLAY: When dispatched to MTLO Pumps, after about 3 min, report North Pump is OFF, motor very warm. South Pump vibrating**<br>• **ROLE PLAY: When dispatched to MTLO Pump Breakers** |

Op-Test No.:2013-1 Scenario No.: 3 Event No.: 5 Page 6 of 9

Event Description: . CRD Flow Control Valve Failure

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +50 min | | **MALF: C11MF0004, A CRD Flow Control Valve Failure** |
| | SRO | • Respond to alarms on H11P603<br>• Enter AOP 20.106.03<br>• Conducts AOP Brief<br>• Directs swap to B FCV |
| | ATC | • Respond to alarms on H11P603<br>• Report A CRD failed closed<br>• Directs operator to A FCV<br>• **ROLE PLAY: When dispatched, after about 3 mins, report broken air line on A FCV.**<br>• Directs operator thru each step in AOP for swap to B FCV<br>• **ROLE PLAY: When directed perform steps and report steps during swap over to B FCV**<br>• Report B FCV in service<br>• Direct operator to monitor CRD temps (3D13)<br>• **ROLE PLAY: When dispatched, after about 3 min, report 2 CRDM (26-31 and 38-27) >250F (peaked at 295F), now below 250F. Ready to reset alarm???** |
| | BOP | • Monitor plant conditions<br>• May direct operator to CRD FCV<br>• May direct operator to RR to monitor CRD temps |

Op-Test No.:2013-1 Scenario No.: 3 Event No.: 6 Page 7 of 8

Event Description: HPCI Steam Leak/Failure to Isolate.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +65 min | | **MALF: E41MF0007, HPCI Steam Leak**<br>**MALF: E41MF0008, Failure E41-F002**<br>**MALF: E41RF0033 E41-F600 Breaker Trip** |
| | SRO | • **ROLE PLAY: Report 1 foot steam plume from packing gland on E4150-F001.**<br>• Respond to 1D66, 1D70<br>• Enter 29.100.01 Sheet 5, Secondary Containment Control<br>• Directs Isolation of HPCI<br>• Brief Actions for Steam Leak/Scram.<br>• Direct Mode Switch to Shutdown prior to MSO Temperature.**(CT-1)**<br>• Directs Scram report from ATC and BOP<br>• Enter 29.100.01 Sheet 1, RPV Control<br>• Direct 173 to 214 inches level band and 900 to 1050 psig pressure band<br>• May direct ATC to perform AOP 20.000.21 |
| | ATC | • Places Reactor Mode Switch in Shutdown when directed (**CT 1)**<br>• Provides Scram report.<br>• Verifies all control rods are fully inserted.<br>• Perform actions in AOP 20.000.21 |
| | BOP | • Respond to 1D70, 1D66<br>• Reports failure of HPCI to isolate – E41-F600 failed to close<br>• Provides scram report.<br>• Dispatch operator to check MCC for E41-F600.(2PB1-1C)<br>• Maintains level and pressure as directed |

Op-Test No.:2013-1 Scenario No.: 3 Event No.: 7,8.9,10 Page 8 of 8

Event Description: >MSO temperature 2nd Area, ED, Isolate Steam Leak.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| +75 min | | **MALF: TA20TEN206ZOUT, Leak to 2nd Area**<br>**MALF: B21MF0030, SRV H Failure** |
| | SRO | • Brief for rising temperature in second area<br>• From 29.100.01 Sheet 5, Directs Open 5 SRVs ADS preferred(**CT-2)**<br>• Direct RHR in Torus Cooling<br>• Confirm leak isolation by observing lowering room temperatures **(CT 3)** |
| | ATC | • May report rising temperature in second area<br>• Place RHR in Torus Cooling<br>• May confirm lowering temperatures after E41-F600 closed |
| | BOP | • May report rising temperature in second area<br>• Opens 5 SRVs. Reports SRV H did not open. One other SRV opened. **(CT 2)**<br>• Place RHR in Torus Cooling<br>• **ROLE PLAY: When dispatched to E41-F600, report (after ED) that fuses are blown, getting new fuses.**<br>• **ROLE PLAY: After blown fuse report, wait 3 min and report new fuses installed standing by to close breaker for E41-F600.**<br>• Direct operator to close breaker for E41-F600<br>• **ROLE PLAY: (trigger step) report breaker closed.**<br>• Report E41-F600 closed – leak isolated **(CT 3)**<br>• May confirm lowering temperatures after E41-F600 closed |