Job Performance Measure

Evaluate Plant Chemistry Report and Respond

JPM Number: SRO A-1-1

Revision Number: NRC 2009

Date: 5/11/09

Developed By:	**David Molteni**	**5/11/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. __14___ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. Revised conductivity value and eliminated initial condition for chemistry sampling to already be in effect when initial conditions are provided. This was done to exercise Tech Spec requirement for abnormal sampling periodicity.
2. Revised sample conditions for Feedwater sample which includes total metals above action level 1 to exercise Note in GAP-CHE-01 to limit out of spec condition to 24 hours.
3. Deleted element to determine corrective actions. This element is listed as a Chemistry management action and no clear initiating condition was provided to allow the SRO to make this determination.
4. Revised Sulfate level less than Action Level 1 value.

JPM Setup Instructions:

Hand out the following materials

Provide Tech Specs
Provide GAP-CHE-01
Provide copy of ARP K3 4-5

TASK STANDARD:

The applicant should determine GAP-CHE-01 Action Level 1 exceeded for reactor water sulfates and total metals, and that a plant shutdown is required if not corrected in 24 hours. The applicant should also determine that sampling is required every eight hours due to abnormal indications indicated on the continuous conductivity monitor

TASK CONDITIONS:

1. Unit 1 is at 100% power.
2. You are the Unit 1 CRS.
3. At 02:30 Annunciator K3 4-5 "Reactor Water Conductivity High" alarms.
4. The alarm is acknowledged and conductivity recorder CR-350135 is reading 0.55 and rising slowly.
5. Actions 1 and 2 of ARP K3 4-5 have been performed and Chemistry is performing sampling on both Reactor Water and Feedwater
6. At 04:00 Chemistry reports the following sample results:
   - Reactor Water Conductivity = 0.57 υS/cm at 25°C.
   - Sulfates = 3.05 ppb
   - Total Copper = 0.17 ppb
   - Iron (Insoluble) = 9.8 ppb
   - Iron (Soluble) = 0.86 ppb
   - Total Metals = 16.1 ppb
   - Total Zinc = 1.1 ppb
   - Feedwater Conductivity = 0.057 υS/cm at 25°C
7. Nobel Metal Chemical Application (NMCA) is not in service.
8. Weekly integrated values for total Copper and Total Iron will not be available for 4 hours.

INITIATING CUE: Evaluate the 04:00 chemistry sample and perform all required actions.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: Evaluate Plant Chemistry Report and Respond

JPM Number: A1-1 **Revision Number:** NRC 2009

K/A Number and Importance:
K/A 2.1.34 (2.9) (SRO) Ability to maintain the primary and secondary plant chemistry within allowable limits.

Suggested Testing Environment: Classroom

Actual Testing Environment:

Testing Method: Simulate **Faulted:** No

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 10 **Actual Time Used:**_____minutes

References:
1. GAP-CHE-01; Rev. 14; BWR Water Chemistry Operating Limits
2. DER-NM-2004-958, Exceeded GAP-CHE-01 Action Level 1 threshold for sulfates during RWCU maintenance.
3. N1-ARP-K3; Rev. 5; CONTROL ROOM PANEL K3

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

ADMIN JPM #A1-1

Evaluator's Name: _____(Print)

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

Description: Routine shift operations are occurring at night. An alarm is received indicating high reactor coolant conductivity which is validated using the recorder and computer point referenced in the Alarm Response Procedure. The initial actions drive chemistry to perform sampling of the reactor coolant and feedwater is sampled as well. The results of the sample indicate that reactor conductivity is above the alarm setpoint and considered "abnormal" by Tech Spec 3.2.3 which then requires additional sampling to be performed. Additionally, total metals and conductivity are above their Action Level 1 goals based on the sample. Total metals above goal will require the SRO to recognize that they have 24 hours to correct the total metals excursion because it is a fuel warranty parameter and 96 hours to correct the reactor coolant conductivity levels.

JPM is designed to test the ability to utilize both the chemistry operating limits procedure and requirements of Tech Spec 3.2.3 to determine the notifications, sampling requirements and shutdown actions required from this event. The candidate will be provided the initiating cue and will be required to determine the appropriate procedures to enter to assess the impact.

Cue is that a chemistry sample results are in and need to be reviewed for any required actions.

Candidate should identify the procedural and tech spec requirements from the chemistry parameters.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of appropriate references	GAP-CHE-01 Rev. 14 obtained. Tech Specs Obtained			
*2. Evaluate GAP-CHE-01 Enclosure 1, Part I (TECH SPECS) for applicability.	Compares sample results to GAP-CHE-01 Enclosure 1, Part I, for REACTOR CONDITION 3. Determines conductivity **above** ACTION LEVEL 1 limit of 0.19.			
*3. Evaluate GAP-CHE-01 Enclosure 1, Part II (FUEL WARRANTY) for applicability.	Compares sample results to GAP-CHE-01 Enclosure 1, Part II, for REACTOR CONDITION 3. Determines total metals **above** ACTION LEVEL 1 limit of 15.			
*4. Evaluate GAP-CHE-01 Enclosure 1, Part III (EPRI) for applicability.	Compares sample results to GAP-CHE-01 Enclosure 1, Part III (EPRI), for REACTOR CONDITION 3. Determines conductivity **above** ACTION LEVEL 1 limit of 0.30.			
*5. Determine required actions per GAP-CHE-01 and Tech Spec 3.2.3,				
a. Determines time for event time clock to begin.	Notes time that discovered ACTION LEVEL 1 was exceeded.			
*b. Notify the required personnel to notify that chemistry parameters exceeded Action Level 1 limits.	Informs the following the ACTION LEVEL 1, conductivity, sulfate and total metals thresholds are exceeded: - SM - General Supervisor Chemistry - Operations Manager - Plant General Manager - Vessel and Internals Program Mitigation Engineering			
*c. Determine the time allowed to correct the out of spec chemistry values	*Determines that Reactor Water conductivity must be restored within 96 hours. *Determines total metals must be restored within 24 hours due to it being a fuel reliability indicator.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*d. Determine the required Tech Spec surveillance requirements.	*Determines that sampling must take place once per eight hours per Tech spec 3.2.3 due to reactor coolant conductivity.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. **Unit 1 is at 100% power.**
2. **You are the Unit 1 CRS.**
3. **At 02:30 Annunciator K3 4-5 "Reactor Water Conductivity High" alarms.**
4. **The alarm is acknowledged and conductivity recorder CR-350135 is reading 0.55 and rising slowly.**
5. **Actions 1 and 2 of ARP K3 4-5 have been performed and Chemistry is performing sampling on both Reactor Water and Feedwater**
6. **At 04:00 Chemistry reports the following sample results:**
   - **Reactor Water Conductivity = 0.57 υS/cm at 25°C.**
   - **Sulfates = 3.05 ppb**
   - **Total Copper = 0.17 ppb**
   - **Iron (Insoluble) = 9.8 ppb**
   - **Iron (Soluble) = 0.86 ppb**
   - **Total Metals = 16.1 ppb**
   - **Total Zinc = 1.1 ppb**
   - **Feedwater Conductivity = 0.057 υS/cm at 25°C**
7. **Nobel Metal Chemical Application (NMCA) is not in service.**
8. **Weekly integrated values for total Copper and Total Iron will not be available for 4 hours.**

INITIATING CUE: Evaluate the 04:00 chemistry sample and perform all required actions.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Initiate a manual tagging clearance

JPM Number: SRO ADMIN JPM A-1-2

Revision Number: 1

Date: 4 / 23 / 09

Developed By:	**Bernard Litkett**	**4/23/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1.

JPM Setup Instructions:

Hand out the following materials

1. **Manual tagging sheets from CNG-OP-1.01-1007; Clearance and safety tagging. Attachments 6,7,8,9,11 and 12.**
2. **Drawing C-19436-C sheets 1 and sheet 2**
3. **Drawing C-19409-C sheet 1B (maybe)**
4. **Drawing C-18022-C sheet 1 (maybe)**
5. **N1-OP-18; attachment 2**

TASK STANDARD:

EDG -103# is tagged for a scheduled system outage. All required protected equipment signs are posted. The unit is in a 14 day Hot shutdown LCO for T/S 3.6.3.c. Emergency Service Water pump #11 is in service when the pump tripped. Local field reports that a motor short has occurred. The electronic work order system is unavailable. Generate a manual tagging clearance for Emergency Service Water pump #11 and make the tech spec call for this condition

TASK CONDITIONS:

1. Instructor to ask operator for any questions.

INITIATING CUE:

EDG -103# is tagged for a scheduled system outage. All required protected equipment signs are posted. The unit is in a 14 day Hot shutdown LCO for T/S 3.6.3.c. Emergency Service Water pump #11 is in service when the pump tripped. Local field reports that a motor short has occurred. The electronic work order system is unavailable. Generate a manual tagging clearance for Emergency Service Water pump #11 and make the tech spec call for this condition

Information for Evaluator's Use: UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Initiate a manual tagging clearance

JPM Number: SRO ADMIN JPM A-1-2
Revision Number: 1

K/A Number and Importance: K 2.2.13 (SRO) Knowledge of tagging and clearance procedures.

Suggested Testing Environment:

Actual Testing Environment:

Testing Method: **Faulted: No**

Alternate Path: NO

Time Critical: NO

Estimated Time to Complete: 20 min **Actual Time Used:** _____minutes

References:
1. **Manual tagging sheets from CNG-OP-1.01-1007; Clearance and safety tagging. Attachments 6,7,8,9,11 and 12.**
2. **Drawing C-19436-C sheets 1 and sheet 2**
3. **Drawing C-19409-C sheet 1B (maybe)**
4. **Drawing C-18022-C sheet 1 (maybe)**
5. **N1-OP-18; attachment 2**

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

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

Comments:_____
_____
_____
_____
_____
_____
Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (GAP-OPS-O1/Operations Manual.			
2. * ***Note: SRO should reference T/S 3.4.5.e for the ESW pump #11. A 7 day Hot Shutdown LCO. With EDG-103 tagged and a failure of the opposite loop ESW pump does not put the unit into T/S 3.0.3***	**** SRO references T/S 3.4.5.e for the 3.4.5.e for the ESW***			
3. ***Note: SRO may use Print C-19436-C sheets 1 and sheet 2; C-19409-C sht 1B and C-18022-C sht 1 for the selection of blocking points. Should select*** ***1. ESW Pump #11 breaker close fuse (PB168)- pulled*** ***2. ESW pump #11 breaker (PB168); racked out*** ***3. ESW pump #11 breaker trip fuse; pulled*** ***4. ESW pump #11 Control Switch***	*** SRO develops list of suggested blocking points for clearance.** *** Breaker close switch is a critical task** *** Breaker selection is a critical task.** *** Breaker trip fuse is a critical task**			
4. SRO obtains manual clearance sheets from CNG-OP-1.01-1007; attachment 6,7,8,9,11 and 12.	SRO obtains manual clearance sheets from CNG-OP-1.01-1007; attachment 6,7,8,9,11 and 12.			
5. SRO completes the required form per the attached key.	SRO completes the manual clearance forms per the attached key.			

JPM Stop Time _____

Critical Tasks

1. T/S 3.4.5.e is entered for a 7 day Hot shutdown LCO.
2. Breaker close switch is a critical task
3. Breaker selection is a critical task.
4. Breaker trip fuse is a critical task

HANDOUT PAGE

TASK CONDITIONS:

1. Instructor to ask operator for any questions.

INITIATING CUE:

EDG -103# is tagged for a scheduled system outage. All required protected equipment signs are posted. The unit is in a 14 day Hot shutdown LCO for T/S 3.6.3.c. Emergency Service Water pump #11 is in service when the pump tripped. Local field reports that a motor short has occurred. The electronic work order system is unavailable. Generate a manual tagging clearance for Emergency Service Water pump #11 and make the tech spec call for this condition

Nine Mile Point I

Job Performance Measure

Evaluate Surveillance Results and Determine Tech Spec Implications

JPM Number: SRO A-2

Revision Number: 0

Date: _____

Developed By: Hedigan _____ _____
Author **Date**

Validated By: _____ _____
Facility Technical Representative **Date**

Review By: _____ _____
Examiner **Date**

Approved By: _____ _____
Chief Examiner **Date**

ADMIN SRO JPM #A-2

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Nor Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

JPM Setup Instructions:

1. **Provide a copy of Tech Specs for each applicant.**
2. **Applicant is given initial plant conditions and marked up copy of N1-ST-Q2 for review.**
3. **Applicant is required to determine that #12 CRD pump failed the surveillance and applicable tech specs**
   - **TASK STANDARD.**

     Technical Specification 3.0.1 and 3.1.6.

TASK CONDITIONS:

Unit 1 plant conditions are as follows:

- Unit 1 is operating at 100% power.
- Diesel Generator #102 has been removed from service for Maintenance at 0800 June 01, 2009. Technical Specification 3.6.3.c has been entered, and a 14 day clock is in progress.
- At 0515 on Sept. 01, 2009 Control Rod Drive Pumps Flow Rate Test N1-ST-Q2 has been performed for #12 CRD pump. The surveillance needs to be reviewed by the CRS. .

INITIATING CUE:

- As the Control Room Supervisor state what actions, if any, you would be required to take.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The time clock starts when the candidate acknowledges the initiating cue.

ADMIN SRO JPM #A-2

Operator's Name: _____
Job Title: SRO

JPM Title: Evaluate Surveillance Results and Determine Tech Spec Implications

JPM Number: SRO 3 **Revision Number:** 0

K/A Number and Importance: G2.2.40 Ability to apply Technical Specifications for a system. (CFR: 41.7/41.10/43.2/45.13) Importance: SRO 4.7

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top **Faulted: No**

Alternate Path: No

Time Critical: No

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

References: Technical Specifications 3.0.1 and 3.1.6.
N1-ST-Q2 Control Rod Drive Pumps Flow rate Test.

Drawings: C19409C Sht 1, C19436C Sht 1, C19439C sht 1.

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

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

Comments:_____
_____
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_____
_____
Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

ADMIN SRO JPM #A-2

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

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*1. The applicant reviews surveillance and determines that #12 CRD flow is 48 gpm and is inoperable..	CRD flow > or = to 50gpm			
1. The applicant obtains: • Technical Specifications	N/A			
2. The applicant has determined from surveillance that #12 CRD pump is inoperable and determines that Tech. Spec 3.1.6.b is applicable.	Tech. Spec. 3.1.6.b. 7 Day clock for 1 pump inoperable.			
3. The applicant reviews Tech. Spec. 3.0.1 and determines that #11 CRD Pump is inoperable due to the emergency power source being inoperable and the redundant CRD pump #12 is inoperable.	Tech. Spec. 3.0.1			
*4 Determine Tech Spec implications	*Tech. Spec. 3.1.6.c. If specification 3.1.6.a or b are not met, the reactor coolant temperature shall be reduced to 212F or less within ten hours.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. Applicant states that he would perform the following for the #12 CRD pump: • Enter it in the ESL. • Enter any applicable TS LCO's. • Make an entry in the SSS log. • Place a Yellow Caution tag on the component. • Write an ACR. • Notify Manager Operations or designee.	Step 10.2 of N1-ST-Q2 SSS review requires all of these actions for any component that is declared inoperable.			
CUE: (You may stop here. You have reached the termination criteria for this JPM)				

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

Unit 1 plant conditions are as follows:

- Unit 1 is operating at 100% power.
- Diesel Generator #102 has been removed from service for Maintenance at 0800 June 01, 2009. Technical Specification 3.6.3.c has been entered and a 14 day clock is in progress.
- At 1530 on June 03, 2009 Control Rod Drive Pumps Flow Rate Test N1-ST-Q2 has been performed. The surveillance needs to be reviewed by the CRS.

INITIATING CUE:

- As the Control Room Supervisor state what actions, if any you would be required to take.

Job Performance Measure

Determine Radiation Controls

JPM Number: SRO A-3

Revision Number: NRC 2009

Date: _____

Developed By:	**David Molteni**	**05/18/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

ADMIN JPM #A3

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. New JPM.

JPM Setup Instructions:

Hand out the following materials

- Mark-up

TASK STANDARD:

Determine that workers 1 and 2 must have Emergency exposure controls put in place due to anticipated dose during response to emergency conditions.

TASK CONDITIONS:

1. Unit 1 is at 15% power
2. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage
3. Entry is required into the Main Steam Chase to close the outboard MSIV's to prevent event escalation.
4. Two workers are briefed to complete the task
   - Technician 1 – John Technician – Maintenance - SS # 123-45-6789 – TLD # 145678
   - Technician 2 – James Worker – Operations – SS# 987-65-4321 – TLD# 235699
5. During an initial entry under a modified RWP the workers received the following dose:
   - Technician 1 has 900 mR accumulated dose on his Electronic Dosimeter from his first entry and a total exposure of 1678 mR for the year.
   - Technician 2 has 600 mR accumulated dose on his Electronic Dosimeter from his first entry and a total exposure of 1399 mR for the year.
6. The Effective Dose Rate for the entry was determined to be 2 R/hr in the work area
7. The Effective Dose Rate for the entry was determined to be 800 mR/hr in the steam chase areas surrounding the work area
8. The TSC has not been staffed yet and the RAM is in route to the site.
9. Emergency exposure controls have not been implemented.
10. Job conditions and information are as follows:
    - 1.5 man-hrs is required for each individual to finish the task
    - Time in the steam chase to enter the work area: 2 minutes
    - Time in the steam chase to exit the work area: 2 minutes
    - Each worker is expected to receive 500 mR in transit to the Main Steam line access door and the same amount exiting
    - Work is to be performed in the Unit 1 Main Steam Chase against the Containment Wall where both individuals must access the work zone at the same time.

INITIATING CUE:

Using the survey map determine:

1. Anticipated dose to be accumulated by each worker.
2. Authorize work using the appropriate exposure limits to allow completion of the required task

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: **Perform ED Functions**

JPM Number: A4 **Revision Number:** NRC 2009

K/A Number and Importance:
K/A Generic 2.3.1 0

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Simulate **Faulted:** No

Alternate Path: No

Time Critical: No

Estimated Time to Complete:30 **Actual Time Used:** _____minutes

References:
1. RP-XXX; Rad Control
2. EPIP-EPP-15, Rev. 09, Emergency Health Physics Procedure

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

ADMIN JPM #A3

Description:
This JPM is used to test generic knowledge in calculation of overall dose and control mechanisms to allow the selection of individuals to continue or perform work in high dose areas. This JPM tests basic mathematics and understanding of stay times and remaining dose limitations under normal operating conditions given normal quarterly dose limitations.

This is a new JPM.

ADMIN JPM #A3

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Determine dose to be received for each worker	N/A			
*2. For each worker:				
2.a Determine anticipated dose from task performance in the work area.	Dose Rate * Time = Task Dose 2000 mR/hr * 1.5 hr = 3000 mR			
2.b Determine anticipated dose from transit to and from the Main Steam chase	Dose To Location + Dose From Location = Travel Dose 500mR + 500 mR = 1000 mR			
2.c Determine anticipated dose from transit to the work area in the steam chase.	Dose Rate * Time = Transit Dose 800 mR/hr * (2 min/60) = 26 mR			
2.d Determine anticipated dose from transit from the work area in the steam chase.	Dose Rate * Time = Task Dose 800 mR/hr * (2 min/60) = 26 mR			
*2.e Determine the total dose for each worker from @a through 2d.	Task Dose + Travel Dose + Transit Dose = Total Dose 3000 + 1000 + (26*2) = 4052 mR			
*3. Determine that task performance is not allowable per normal controls.	*Determines that total dose is greater than the annual 4000 mR administrative limit for radiation exposure per GAP-RPP-07			

4. Determines that emergency exposure controls are required per EPIP-EPP-15.	Evaluates the total expected dose and recognizes that emergency exposure controls are required to raise the limit to 5 R for each individual per EPIP-EPP-15.			
	Cue: Once individual determines that exposure controls are required per EPIP-EPP-15, provide the procedure for execution.			
4.a Implements Attachment 1 of EPIP-EPP-15	Implements Attachment 1 of EPIP-EPP-15 per step 3.1.a			
4.b Verifies workers have not had a previous emergency exposure.	Cue: Neither worker has had a previous emergency exposure.			
4.c Recognizes emergency exposure guidelines are required per Step 1.1	Evaluates Step 1.1 and implements Step 1.1.b.			
4.d Selects emergency exposure limit per Step 1.2.a	Selects a TEDE Limit of 5 Rem from Table in Step 1.2.a			
4.e Selects personnel for Task per Step 1.2.b	Using currently identified workers verifies workers: - are not declared pregnant workers - have not received a previous emergency exposure - have not received a planned special exposure Cue: The selected workers do not meet any of the exclusion criteria.			
4.f Ensure personnel provided proper dosimetry per Step 1.3	Cue: Dosimetry has been selected and distributed to allow monitoring of the anticipated dose rates.			
4.g Inform personnel of their exposure limit per Step 1.4.	Cue: Exposure limits will be provided in the brief by Radiation Protection.			
4.h Determine if exposure limit adjustment is required per Step 1.5	Cue: No significant uptake or internal component is expected to execute this task.			

*5. Completes Attachment 1-1 for Technician 1 to authorize the emergency exposure.	* Completes Attachment 1-1 Section A for Technician 1 per the attached mark-up. Note: The Employer / NMP Dept block is NOT a Critical component of this Step.			
*6. Completes Attachment 1-1 for Technician 2 to authorize the emergency exposure.	* Completes Attachment 1-1 Section A for Technician 2 per the attached mark-up. Note: The Employer / NMP Dept block is NOT a Critical component of this Step.			
(CUE: "You may stop here, you have met the termination criteria for this JPM")	N/A			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is at 15% power
2. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage
3. Entry is required into the Main Steam Chase to close the outboard MSIV's to prevent event escalation.
4. Two workers are briefed to complete the task
   - Technician 1 – John Technician – Maintenance - SS # 123-45-6789 – TLD # 145678
   - Technician 2 – James Worker – Operations – SS# 987-65-4321 – TLD# 235699
5. During an initial entry the workers Maximum Stay Time was reached and the electronic dosimeter accumulated dose set point was not reached
6. The Effective Dose Rate for the entry was determined to be 2 R/hr in the work area
7. The Effective Dose Rate for the entry was determined to be 800 mR/hr in the steam chase
8. Job conditions and information are as follows:
   - Technician 1 has 900 mR accumulated dose on his Electronic Dosimeter from his first
   - entry
   - Technician 2 has 600 mR accumulated dose on his Electronic Dosimeter from his first entry
   - 1.5 man-hrs is required for each individual to finish the task
   - Time in the steam chase to enter the work area: 2 minutes
   - Time in the steam chase to exit the work area: 2 minutes
   - Each worker is expected to receive 500 mR in transit to the Main Steam line access door and the same amount exiting
   - Work is to be performed in the Unit 1 Main Steam Chase against the Containment Wall where both individuals must access the work zone at the same time.

INITIATING CUE:

Using the survey map and provided data determine:

1. Anticipated dose to be accumulated by each worker.
2. Authorize work using the appropriate exposure limits to allow completion of the required task

Job Performance Measure

Perform ED Functions

JPM Number: SRO A-4

Revision Number: NRC 2009

Date: _____

Developed By:	**David Molteni**	**05/08/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

ADMIN JPM #A4

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. Added both the General Emergency declaration and notifications to the JPM to expand the ED's role.

JPM Setup Instructions:

1. **Hand out the following materials**
   - EPIP-EPP-18 – Activation and Direction of the Emergency Plans, Rev. 16
   - EPIP-EPP-18 Attachment 1 mark up

TASK STANDARD:

Completes Declaration of a General Emergency under 3.4.2 and completes PAR Notifications and Directs Exclusion Area Evacuation using appropriate route

TASK CONDITIONS:

1. Plant Conditions are as follows
   - An earthquake was felt in the plant and the NMP-2 seismic instrumentation indicates 0.057 g
   - Drywell rad levels at 3200 R/hr and rising
   - The #11 EC ruptured a tube which resulted in a crack in the EC shell. Steam is being directly released to the stack and Reactor Building
   - The #11 EC can not be isolated due to failures of the isolation valves and inability to access the Reactor Building due to the steam
   - EC Vent rad levels are 1500 mR/hr and rising
   - Both Reactor Building Vent Rad Monitors (RN07A-5 and RN07B-5) are off scale high.
2. Unit 1 scrammed at _____ on _____.
3. Outside weather conditions are normal.
4. Unit 2 is operating at 100% power.
5. The dose assessor has provided the following data
   Elevated Wind Speed – 13 mph
   Ground Wind Speed – 10 mph
   Elevated Wind Direction – 350°
   Ground Wind Direction - 348°
   Stability Class – D

INITIATING CUE:

As the SM/ED, perform all required actions including announcements. This task is time critical.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: **Perform ED Functions**

JPM Number: A4 **Revision Number:** NRC 2009

K/A Number and Importance:
K/A 2.3.11 (4.3); Ability to Control Radiation releases

Suggested Testing Environment: Classroom

Actual Testing Environment:

Testing Method: Simulate **Faulted:** No

Alternate Path: No

Time Critical: YES

Estimated Time to Complete: **15** **Actual Time Used:** _____minutes

References:
1. EPIP-EPP-05C; Section 3.1, and Attachment 1.
2. EPIP-EPP-18; Attachment 1 Figure 1, and Attachment 2.
3. EPIP-EPP-08; Attachment 1 Figure 1.5

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

ADMIN JPM #A4

Evaluator's Name: _____(Print)

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

Description:
A General Emergency classification level has been reached due to fuel damage and an un-isolable tube rupture in the #11 EC. The initial General Emergency declaration or other follow-up actions have not been completed. Additionally the scope and evacuation plans need to be developed and communicated to the state and local agencies. The declaration and release from the stack requires the performance of an Exclusion Area Evacuation. The wind direction from 50 degrees is impacting Emergency Response Planning Areas (ERPAs) to the South and East of the facility. This will require selecting the route headed west into Oswego as the primary evacuation route.

Part of this JPM was used in the 2004 NRC Examination as an SRO JPM under Task number 3410220303. This JPM has added the notification piece to the JPM to ensure that the relationship between the PAR and the evacuation plan are well understood by the SRO when acting in an ED capacity.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Candidate obtains a copy of the SM/ED checklist and EAL Matrix	Candidate obtains EPIP-EPP-01 and EPMP-EPP-0101 for classification AND EPIP-EPP-18 for SM/ED Checklist			

*2. Candidate correctly classifies the Emergency condition.	- An earthquake was felt in the plant and the NMP-2 seismic instrumentation indicates 0.057 g
	  - UE under 8.4.1
	- Both Reactor Building Vent Rad Monitors (RN07A-5 and RN07B-5) are off scale high.
	  - ALERT under 1.4.2
	- EC Vent rad levels are 1500 mR/hr and rising
	  - SAE under 5.1.3
	- Drywell rad levels at 3200 R/hr and rising
	- The #11 EC ruptured a tube which resulted in a crack in the EC shell. Steam is being directly released to the stack and Reactor Building
	- The #11 EC can not be isolated due to failures of the isolation valves and inability to access the Reactor Building due to the steam
	  - **General Emergency under 3.4.2**
	Record Time of Declaration: _____			

3. Candidate recognizes the need to complete State / Local Notifications	Student obtains EPIP-EPP-20 Attachment 1A for notification completion.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4. Completes the Notification form correctly	* Completes the Notification form as follows: Step 2 – Circles "B An Exercise" Step 3 – Circles "D General Emergency" Step 4 – Enters Date and Time provided Step 5 – Checks "C – To Atmosphere" Step 6 – Uses EPIP-EPP-08 Table 1.2 Circles the following ERPA's under Item B 1, 2, 3, 5, 6, 9, 10, 11, 26, 27 Step 7 – Enters EAL 3.4.2 for Unit 1 Step 8 – Enters Unit 1 "B" with date and time provided Enters Unit 2 "A Operating" Step 9 -11 – Enters Provided data			
1. Enters SM Checklist and identifies evacuation announcements to be made	Enters EPIP-EPP-18 Attachment 1 "SM/ED Checklist" and checks off Steps 1, 2 and 7. Circles "This is a drill" for Step 1 Checks off boxes for GE in checklist.			
*4. Utilizes EPIP-EPP-18 to correctly determine the required evacuation.	*Determines that an Exclusion Area Evacuation is required utilizing EPIP-EPP-18 Attachment 1 Figure 1			
5. Obtain a copy of the reference procedure and review/utilize the correct section.	Requests EPIP-EPP-05C as referenced in EPIP-EPP-18 Attachment 1			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. Obtain a copy of the reference procedure and review/utilize the correct section.	Requests EPIP-EPP-08 as referenced in EPIP-EPP-05 Step 3.1.1			
*7. Determines impact of plume based on wind direction and speed.	*Determines plume direction from 350 degrees (based on wind direction) will impact ERPAs 1,2,3,5,6,9,10,11,26,27 could be affected.			
*8. Determine route of travel information to the Offsite Assembly Area based on plume direction.	*References EPIP-EPP-05C, Attachment 2, and determines that the only available evacuation routes is going West through Oswego.			
9. Contact Offsite Agencies on evacuation plans	Simulates contact of Oswego county Emergency Management Office and notify them of evacuation plans CUE: The county emergency management office and other local law enforcement personnel understand your evacuation plans.			
*10. Complete announcement form for emergency Announcement per EPIP-EPP-18 Attachment 2	Complete Attachment 2 per attached form specifically: *1. Write Date and Time *2. Part 3 checks "a", "a drill", "Unit 1" and "GE" and adds reason for GE *3. Part 8 checks "a", Option 1 AND "b" "personnel are to leave the area heading west towards Oswego then head South"			
CUE: "You may stop here, you have met the termination criteria for this JPM"				

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Plant Conditions are as follows
   - An earthquake was felt in the plant and the NMP-2 seismic instrumentation indicates 0.057 g
   - Drywell rad levels at 3200 R/hr and rising
   - The #11 EC ruptured a tube which resulted in a crack in the EC shell. Steam is being directly released to the stack and Reactor Building
   - The #11 EC can not be isolated due to failures of the isolation valves and inability to access the Reactor Building due to the steam
   - EC Vent rad levels are 1500 mR/hr and rising
   - Both Reactor Building Vent Rad Monitors (RN07A-5 and RN07B-5) are off scale high.
2. Unit 1 scrammed at _____ on _____.
3. Outside weather conditions are normal.
4. Unit 2 is operating at 100% power.
5. The dose assessor has provided the following data
   Elevated Wind Speed – 13 mph
   Ground Wind Speed – 10 mph
   Elevated Wind Direction – 350°
   Ground Wind Direction - 348°
   Stability Class – D

INITIATING CUE:

As the SM/ED, perform all required actions including announcements. This task is time critical.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Power PB 16B from PB 16A

JPM Number: S-1

Revision Number: 0

Date: _5_/_6_/_09___

Developed By:	**Hedigan** **Author**	**5/6/09** **Date**
Validated By:	_____ **Facility Representative**	_____ **Date**
Review By:	_____ **Examiner**	_____ **Date**
Approved By:	_____ **Chief Examiner**	_____ **Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Set Simulator to IC 171.

TASK STANDARD:

Successfully complete transferring Power to PB 16B from PB 16A.

TASK CONDITIONS:

1. The plant is at power.
2. The Electric Plant is in a normal line-up.
3. Instructor to ask operator for any questions.

INITIATING CUE:

Power PB 16B from PB 16A so that breaker R1043 can be tagged out of service for maintenance.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Power PB 16B from PB 16A

JPM Number: S-1

Revision Number: 0

K/A Number and Importance: 262001 A4.01 3.7 (SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator **Faulted: No**

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 262001, A4.01, SRO 3.7
2. N1-OP-30 Rev 02100

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

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:_____
_____
_____
_____
_____
_____
Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

Description: This JPM has the operator supply power to PB 16B from PB 16A per N1-OP-30 section H.24. The plant is in a normal electrical lineup.

JPM S-1

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews	Obtains N1-OP-30 section H.24.2			
2. Declares EDG 102 inoperable.	Informs SM that EDG 102 is inoperable.			
3. Place R1022, EDG 102-Output Breaker in Pull To Lock.	Places R1022 in PTL.			
4. Minimize PB 16 and PB 161 loading per SM direction and appropriate operating procedures.	Informs SM that PB 16 and PB 161 need to be minimized. CUE: Tell Operator that loads have been minimized.			
*5. If PB 11 is in the normal lineup, Then perform the following: • Insert Sync Key in Breaker 112 • Turn Synch Key in Breaker 112 to ON • Confirm 345KV and 115KV are in synch • Verify Voltages match utilizing T10 Tap Changer	Verify's PB 11 in normal lineup. Place synch Key in Breaker 112 Turns Synch Key ON Confirms busses in synch Verify's voltages match adjust T10 Tap changer if required			
*6. Place PB16 SUPPLY-BUS TIE BREAKER INTERLOCK BY-PASS SWITCH in BYPASS at panel B5. Note: Expected annunciator A4-4-4.	Places switch to bypass.			
*7. Close R1042, 16 PB Bus Tie Sect A TO Sect B.	Closes R1042			
*8. Open R1043, Supply Bkr To 16 PB (B Section)	Opens R1043			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. Place PB16 SUPPLY-BUS TIE BREAKER INTERLOCK BY-PASS SWITCH in Normal at panel B5.	Places switch to normal.			
10. If PB 11 is in the normal lineup, Then perform the following: • Turn Synch Key in Breaker R112 OFF. • Remove Synch Key in Breaker R112.	Turns synch key off. Removes synch key.			
11. Remove loads on PB 16 and PB 161 per SM direction to maintain supply transformer load less than 962 amps.	Cue: Plant operator reports transformer load at 570 amps and steady.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at power.
2. The Electric Plant is in a normal line-up.
3. Instructor to ask operator for any questions.

INITIATING CUE:

Power PB 16B from PB 16A so that breaker R1043 can be tagged out of service for maintenance.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Notch Control Rod Out During Startup

JPM Number: S-2

Revision Number: 0

Date: _5_/_4_/_09___

Developed By:	**Hedigan** **Author**	**5/4/09** **Date**
Validated By:	_____ **Facility Representative**	_____ **Date**
Review By:	_____ **Examiner**	_____ **Date**
Approved By:	_____ **Chief Examiner**	_____ **Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. NRC 2004

JPM Setup Instructions:

Use a startup IC prior to criticality with control rod withdrawal in progress. First control rod does not withdraw on the first attempt after adjusting drive water pressure to 200 psid. Drive water pressure will be raised 20 psid to 220 psid and then the control rod will not withdraw. Drive water pressure will be raised 20 psid to 240 psid and then the control rod will withdraw. When the control rod is withdrawn the control rod will continue to withdraw and the actions for a control rod drift in the outward direction must be taken.

1. Initialize simulator to IC 172.
2. Verify malfunction RD04R2639 is present.
3. Verify malfunction RD02R2639 is on Trigger 2.
4. Verify Trigger 1 action is "DMF RD04R2639"
5. Verify Trigger 2 condition is "ZDRDUTN==1&&RD_STUCKM(103)==0"
6. Insert Override "13S72DI46710 POS_1 1E69 ROD IN POS A,OFF"

TASK STANDARD:

Successfully insert the drifting rod to 00 per immediate actions of N1-SOP-5.2

TASK CONDITIONS:

1. A reactor startup is in progress.
2. The next rod to be withdrawn is 26-39
3. Control rod 26-39 is entered in the Control Rod Drive Deficiency Log as a control rod which double notches.
4. The CRDDL indicates control rod flow has been adjusted to the point where no further adjustment is available (SOV-120, Directional Control Valve is full closed)
5. The CRDDL indicates the rod has not double notched at reduced drive pressure.
6. Ask the operator for any questions.

INITIATING CUE:

"(Operator's name), withdraw control rod 26-39 to position 04 per N1-OP-5."

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: Notch Control Rod Out During Startup

JPM Number: S-2

Revision Number: 0

K/A Number and Importance: K/A 201003 A2.03 (3.4/3.7) 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: Drifting rod.

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform on simulator **Faulted: Yes**

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete:15 min. **Actual Time Used:**_____minutes

References:
1. NUREG 1123, 201003, A2.03, SRO 3.7
2. N1-SOP-5.2
3. N1-OP-5
4. N1-ARP-F3-2-6

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

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:_____
_____
_____
_____
_____
Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

Description: This JPM starts with directions to notch out a control rod drive during a startup. The CRD is known to be a double notcher. The applicant will attempt to withdraw the rod and it will not move. The applicant will have to increase drive pressure in 20 psid increments to get the rod to move. When the rod does move it will continue to go in the out direction. The applicant will use the emergency in switch to fully insert the CRD to 00 per the immediate actions of N1-SOP-5.2

TASK CONDITIONS:

1. A reactor startup is in progress.
2. The next rod to be withdrawn is 26-39
3. Control rod 26-39 is entered in the Control Rod Drive Deficiency Log as a control rod which double notches.
4. The CRDDL indicates control rod flow has been adjusted to the point where no further adjustment is available (SOV-120, Directional Control Valve is full closed)
5. The CRDDL indicates the rod has not double notched at reduced drive pressure.
6. Ask the operator for any questions.

INITIATING CUE:

"(Operator's name), withdraw control rod 26-39 to position 04 per N1-OP-5."

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of the reference procedure and review/utilize the correct section.	N1-OP-5 obtained. Section H.7 is correct section for referenced conditions.			
2. Reviews CRD Deficiency Log.	Determines per step 7.1.2 that with SOV-120 adjusted full closed, then withdraw per step H.7.2.			
*3. Verifies Control Rod Power On.	Verifies/Turns on Control Rod Power.			
*4. Depress Rod Select pushbutton for Control Rod on Rod Map Display at panel E.	Selects CR 26-39.			
5. Confirm the following: • Rod select pushbutton back-lit on Rod Map Display • Select Light illuminated for Control Rod	Confirm rod select pushbutton back-lit on Rod Display. Confirm SELECT light illuminated for Control Rod.			
6. Verify no other control rods indicate selected at Rod Display or Panel F.	Verify no other control rods indicate selected at Rod Display or Panel F.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7. Adjust Drive water differential pressure to obtain 200 psid.	Adjust Drive water differential pressure to obtain 200 psid. (+ or – 5) using CONTROL ROD DRIVE WATER CONTROL VALVE.			
8. Place 4S1, CONTROL ROD MOVEMENT switch in ROD OUT NOTCH, Until ROD IN light illuminates.	Place 4S1, CONTROL ROD MOVEMENT switch in ROD OUT NOTCH, Until ROD IN light illuminates then release switch. Recognizes light sequence per 7.2.8 Recognizes control rod does not move.			
*9. IF control rod does not withdraw, THEN perform the following: • Raise drive water differential pressure in 20 psid increments to a maximum of 270 psid, AND attempt single notch withdraw of control rod at each increment, UNTIL rod withdrawal is achieved. <u>Booth Operator Note:</u> Following the first attempt to move the rod at elevated drive pressure and after the timer has timed out, delete RD04R2639 by inserting Trigger 1.	Raise drive water differential pressure 20 psid to 220 psid (±5 psid) Place 4S1, CONTROL ROD MOVEMENT switch in ROD OUT NOTCH until ROD IN light illuminates then release switch. Recognize control rod does not withdraw. Raise drive water differential pressure 20 psid to 240 psid (±5 psid) Place 4S1, CONTROL ROD MOVEMENT switch in ROD OUT NOTCH until ROD IN light illuminates then release switch.			
	<u>Confirms the following:</u>			
	➢ ROD IN light ON approx 1 second.			
	➢ ROD OUT light ON approx. 2 seconds after ROD IN light extinguishes.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	➢ ROD OUT SETTLE light on approx. 4 seconds after ROD OUT light OFF.			
	NOTE: A control rod that fails to settle and continues to drive out is indicative of a stuck collet or a failure of SOV-122, CRD Directional Control Valve.			
	Recognizes control rod continues to withdraw in the outward direction.			
10. Identifies which Control Rod is moving and what direction.	N1-SOP-5.2 immediate actions. Note: operator may go to N1-ARP-F3-2-6 for control rod drift per 7.2.9, which directs to perform N1-SOP-5.2.			
11. If more than one rod is drifting, Then manually scram the Reactor and enter N1-SOP-1, Reactor Scram.	Determines only one control rod moving. **Does Not** insert a manual scram.			
*12. Select Drifting Rod and insert to Notch 00 using emergency Rod In.	Apply continuous insert signal using Emergency Rod In control switch.			
	NOTE: After rod is fully inserted and Emergency Rod In is held in, inform the applicant the JPM is complete.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. A reactor startup is in progress.
2. The next rod to be withdrawn is 26-39
3. Control rod 26-39 is entered in the Control Rod Drive Deficiency Log as a control rod which double notches.
4. The CRDDL indicates control rod flow has been adjusted to the point where no further adjustment is available (SOV-120, Directional Control Valve is full closed)
5. The CRDDL indicates the rod has not double notched at reduced drive pressure.
6. Ask the operator for any questions.

INITIATING CUE:

"(Operator's name), withdraw control rod 26-39 to position 04 per N1-OP-5."

Nine Mile Unit 1 Generating Station

Job Performance Measure

Cooling Reactor Building Emergency Ventilation Charcoal Filter

JPM Number: S-3

Revision Number: 0

Date: 5 / 6 / 09

Developed By:	Hedigan	5/6/09
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

Initialize simulator to IC 173. Verify an auto EVS signal is locked in, with EVS 11 running and EVS 12 secured.

TASK STANDARD: Substitute EVS system 12 for the running system and cool the charcoal filter for EVS 11.

TASK CONDITIONS:

1. Reactor is shutdown with all rods in.
2. A steam leak in the reactor building occurred approximately 24 hours ago and caused an auto initiation of EVS from Reactor Building Exhaust High Radiation.
3. EVS 11 is running and EVS 12 was secured per N1-OP-10 H.2.2.1.
4. It has been determined that EVS 11 charcoal filter needs to be removed from service and cooled.
5. Instructor to ask operator for any questions.

INITIATING CUE:

"(Operator's name), Substitute EVS system 12 for the running system and cool the charcoal filter for EVS 11.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: Cooling Reactor Building Emergency Ventilation

JPM Number: S-3

Revision Number: 0

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

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform In Simulator **Faulted: No**

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 261000, A4.03, SRO 3.0
2. N1-OP-10 section H.3.0

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

Description: EVS 11 is running post Steam Leak in the Reactor Building. Task is to swap to EVS 12 and cool the charcoal filter for EVS 11. Auto initiation signal is still present so cooling is performed by section 3.2.2. The path for cooling is to draw air through the filter and exhausting it through the operating loop. Applicant must select correct portion of procedure. If they select section 3.2.1, the jpm will not work because of the auto initiation signal. In that case the filter loop cooling valve will not open because the fan is not in pull to lock.

JPM #S-3

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains applicable procedure.	Reference N1-OP-10 H.3.0			
1. Verify's the following valves closed: • 202-47, EM Ventilation Tie BV • 202-74, EM Ventilation 11 Cooling BV • 202-75, EM Ventilation 12 Cooling BV	Verify's valves closed.			
*3. Placing EVS 12 in service: • Open 202-38, EM Ventilation Loop 12 Inlet BV	Open 202-38			
*4. Start 202-33, EVS Fan 12	Starts Fan			
5. Verify open 202-35, EM Ventilation Exhaust Fan Outlet BV	Verify's 202-35 open			
6. Confirm proper operation of 202-51, EM Vent Exhaust Fan 12 Inlet FCV, by observing indicating lights and flow indication.	Observes indications.			
*7. Stop 202-53, EVS Fan 11	Stops Fan Note: Will need to place in Pull To Lock to stop with auto initiation signal present.			
8. Verify closed 202-34,EM Vent Exhaust Fan 11 Outlet BV	Verify's 202-34 closed.			
9. If an auto initiation signal is NOT present, then perform the following: • Verify 202-37 in AUTO position • Verify closed 202-37 • Open 202-74 • Start EVS 11	Does not perform step 3.2.1 because auto initiation signal is present. Determines step is N/A. If attempts to perform 3.2.1 202-74 will open however it will shut when EVS 11 is taken out of pull to lock.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. If an auto initiation signal is present, then perform the following: • Verify EVS Train 12 is running	Verify's 12 EVS running.			
* 10. Verify 202-53, EVS Fan 11 in Pull To Lock	Verify's 202-53 in Pull To Lock or places in Pull To Lock.			
11. Enter LCO 3.4.4.e (7 day shutdown LCO when one train of EVS is inoperable.)	Informs SM to enter 7 day LCO.			
*12. Open 202-74, EM Ventilation Loop 11 Cooling BV.	Opens 202-74 by taking 202-37 control switch to COOL.			
*13 Open 202-47, EM Ventilation Tie BV	Opens 202-47.			

JPM Stop Time _____

JPM #S-3

HANDOUT PAGE

TASK CONDITIONS:

1. Reactor is shutdown with all rods in.
2. A steam leak in the reactor building occurred approximately 24 hours ago and caused an auto initiation of EVS from Reactor Building Exhaust High Radiation.
3. EVS 11 is running and EVS 12 was secured per N1-OP-10 H.2.2.1.
4. It has been determined that EVS 11 charcoal filter needs to be removed from service and cooled.
5. Instructor to ask operator for any questions.

INITIATING CUE:

"(Operator's name), Substitute EVS system 12 for the running system and cool the charcoal filter for EVS 11.

Job Performance Measure

Core Spray Pump Operation per EOP-1, Attachment 4

JPM Number: SRO S-4

Revision Number: NRC 2009

Date: 5/11/2009

Developed By:	**David Molteni**	**5/1/2009**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JPM #S-4

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. Revised the JPM to swap Core Spray pumps on the same loop instead of swapping from 122 to 111.

JPM Setup Instructions:

1. Hand out the following materials
   - EOP-1, Attachment 4; Rev. 800; Throttling Core Spray complete up through Step 3.3

TASK STANDARD:

Swap from Core Spray Loop 122 to 121 after identification of suction strainer clogging on Core Spray pump 111 and Core Spray Pair 112 being unavailable.

TASK CONDITIONS:

1. Unit 1 has experienced a loss of coolant accident.
2. RPV has been blown down to recover level with Core Spray.
3. Core Spray Jumpers have been installed.
4. EOP-1, Attachment 4 is complete up to Step 3.3.
5. Core Spray Loop 122 has been running for four (4) hours at approximately 75 x 10^4 lbm/hr.
6. Reactor Pressure is approximately 50 psig following the blowdown.
7. Core Spray Topping Pump 112 was blocked out of service for an electrical fault and will be available in 4 hours.

INITIATING CUE:

Operate Core Spray to maintain adequate pump cooling in accordance with EOP-1, Attachment 4.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

JPM #S-4

Operator's Name: _____

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

JPM Title: **Core Spray Pump Operation per EOP-1, Attachment 4**

JPM Number: S-4 **Revision Number:** NRC 2009

K/A Number and Importance:
1. NUREG 1123, 209001, A4.01, RO 3.8, SRO 3.6
2. NUREG 1123, 209001, A4.11, RO 3.7, SRO 3.6

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

Testing Method: Perform **Faulted:** Yes

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: **15** **Actual Time Used:** _____minutes

References:
1. N1-EOP-1, Attachment 4

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

JPM #S-4

Description:

A LOCA has occurred which has required a blowdown to re-establish reactor level using Core Spray. Core Spray Pump 122 with Core Spray Topping Pump 122 currently in service with flow less than 110 x 10^4 lbm/hr. The #112 Core Spray Topping Pump is unavailable due to an electrical fault. The start of the #111 Core Spray Pump will result in a clogged suction strainer which will require securing the Core spray pump and changing required sections of the procedure and swapping between pumps on loop 12. This JPM is designed to test the ability to recognize the clogging of the suction strainer and exercise the swap between two Core Spray pumps on loop 12.

Simulator Setup

1. Initialize the simulator to IC25 or equivalent
2. Insert Malfunction:
   - RR29 at 25% (it may be necessary to adjust the severity to achieve the required Core Spray flow after level recovery)
   - CS01B for Core Spray Pump 112 Trip
   - CS02B for Core Spray Topping Pump 112 Trip
   - CS05A for Core Spray Pump Suction Strainer clogging (set at 100%)
3. Take the simulator out of freeze
4. Perform all necessary EOP actions to get the plant stabilized with level being maintained with Core Spray flow secured or less than 110 x 10^4 lbm/hr.
5. Place all Core Spray Pump Sets in Pull-To-Lock except Core Spray Set 122
6. Place clearance danger tag on Core Spray Pump 112.
7. Place clearance danger tag on Core Spray Topping Pump 112.
8. Place the following Remote Functions on F3 or RDT01:
   - CS01, 40-05 CRS TEST V12 DISC. CAB. TB261, CLOSED
   - CS02, 40-06 CRS TEST V11 DISC. CAB. TB261, CLOSED

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Verify RPV pressure	• Observes pressure on F or E Panels or PPC displays and verifies RPV pressure is less than 265 psig.			
*2. Verifies that Section 3.5 is applicable for continued pump performance	• Verifies the following: - CS Pump 122 has been running 4 hours - CS pump flow has been <110 x10^4 lbm/hr while throttling - Core Spray Set 111 is available for swap. *- Section 3.5 is applicable for swapping			
*3. Dispatch an in-plant operator to energize breakers for 40-06 and 40-05.	***CUE: As in-plant operator, close the disconnects for 40-06 and 40-05 by inserting remote functions: CS01, CLOSED (F3 or RDT01) CS02, CLOSED (F3 or RDT01)** **Call the control room and report that the disconnects have been placed in on.**			
4. Verify the Core Spray isolation valves on Loop 11 are closed prior to pump start (Step 3.5.3)	• Verify valves 40-10 and 40-11, Core Spray 11 inside isolation valves are closed. • Verify that 40-01 and 40-09 are **NOT** verified closed or manipulated during this step.			
5. Review step 3.5.4 requirements.	• Reviews the contingencies in step 3.5.4 and placekeeps the step.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. Identify typographical error in Step 3.5.5	• Candidate identifies that the valve numbers and noun names are reversed in Step 3.5.5 • Candidate notifies SM of error in procedure and identifies the correct valve to manipulate. **CUE: I understand and agree with the identified issue and will have the procedure revised at a later time. Continue with your required actions.**			
*7. Open 40-06, CORE SPR TEST VALVE 11. (Step 3.5.5) Note: The valve identified in this step has the correct noun name and does not match Step 3.5.5 wording.	• Open the following for Core Spray Loop with NO pumps operating: *- 40-06, CORE SPR TEST VALVE 11. *- No other valves are to be opened			
*8. Trip the running Core Spray Topping Pump (122). (Step 3.5.6)	• *Trip the running Core Spray Topping Pump. - CORE SPRAY TOPPING PUMP 122 Place the switch in PTL to prevent auto start of the pump.			
*9. Start Core Spray Pump 111 (Step 3.5.7) **NOTE**: Malfunction CS05A for Core Spray Pump 111 Suction Strainer clogging may **NOT** result in low suction pressure until flow is established in the loop. Steps 9 and 10 may not be performed during this JPM.	• Start a Core Spray Pump corresponding to the loop test valve opened in Step 3.5.5 o Start CS Pump 111 Core Spray Pump 111 will develop low suction pressure and alarm K2 2-6 will alarm as well as computer point C149 CORE SPR PMP 111 SUCT PR.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
10. Start Core Spray Topping Pump 111 (Step 3.5.8)	• Start Core Spray Topping Pump corresponding to the Core Spray Pump started in Step 3.5.7 o Start CS Topping Pump 111			
11. Throttle Core Spray inboard IV's to inject (Step 3.5.9)	• Candidate throttles IV 40-10 and / or 40-11 to establish flow. NOTE: The effects of suction strainer clogging will be evident by this time and the candidate is expected to identify the conditions described in Step 8.			
*12. Recognize the need to secure pump	*The candidate should recognize that Core Spray Pump 11 is not available and must secure the pump. If requested for guidance provide the following cue. **CUE: As the SRO provide your recommendation for Core Spray operation and as the RO execute those recommendations.**			
13. Recognizes the need to place Loop 11 equipment in a safe condition.	• Candidate performs the following items: o Closes inboard IV's opened in step 3.5.9 (IV 40-10 / 40-11) o Closes IV 40-06 o Secure CS Topping Pump 111 o Secures Core Spray Pump 111			
*14. Verify conditions for execution of section 3.6 of Attachment 4	• Verifies the following: - CS Pump 122 has been running 4 hours - CS pump flow has been <110 $x10^4$ lbm/hr while throttling - Core Spray Set 121 is only pump set available for swap.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*15. Start Core Spray Pump 121	• Start the idle Core Spray Pump o Starts CS Pump 121			
*16. Start Core Spray Topping Pump 121.	• Start the idle Core Spray Topping Pump o Starts CS Topping Pump 121			
*17. Verify Core Spray Topping Pump 122 tripped.	• Trip the Core Spray Topping Pump run for the last 4 hrs. - Verify CORE SPRAY TOPPING PUMP 122 remains tripped from pervious step 3.5.6 performance.			
*18. Trip Core Spray Topping Pump 122.	• Trip the Core Spray Pump run for the last 4 hrs. - Trip CORE SPRAY PUMP 122.			
19. Observe Core Spray Loop 12 flow.	Observe flow on FI-81.1-20 at greater than 110 x 10^4 lbm/hr OR Establish a four hour timer for required pump swap.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 has experienced a loss of coolant accident.
2. RPV has been blown down to recover level with Core Spray.
3. Core Spray Jumpers have been installed.
4. EOP-1, Attachment 4 is complete up to Step 3.3.
5. Core Spray Loop 122 has been running for four (4) hours at approximately 75 x 10^4 lbm/hr.
6. Reactor Pressure is approximately 50 psig following the blowdown.
7. Core Spray Topping Pump 112 was blocked out of service for electrical testing and will be available in 4 hours.

INITIATING CUE:

Operate Core Spray to maintain adequate pump cooling in accordance with EOP-1, Attachment 4.

Job Performance Measure

MSIV Stroke Test for PMT

JPM Number: SRO S-5

Revision Number: NRC 2009

Date: 5/11/09

Developed By:	**David Molteni**	**5/1/2009**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JPM #S-5

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. Revised entry conditions to specify PMT testing was initiating event for test
2. Revised valve to be tested to 01-01 MSIV 111.

JPM Setup Instructions:

1. Hand out the following materials
   - N1-ST-Q26, Rev. 6, Feedwater and Main Steam Line Power Operated Isolation Valves Partial Exercise Test and Associated Functional testing of Reactor Protection System Trip Logic

TASK STANDARD:

1. Perform partial closure of 01-01 MSIV 111 per N1-ST-Q26. Ensure correct MSIV is placed in the test condition and closed.

TASK CONDITIONS:

1. Plant is operating at 100% power with no inoperable equipment.
2. Maintenance was performed on the 01-01 MSIV 111 Logic and requires a single partial valve stroke per N1-ST-Q26 to complete the Post Maintenance Testing.
3. All prerequisites for the test are complete.
4. The test has been signed on and is complete up to Section 8.1.

INITIATING CUE:

Perform required portions of surveillance test N1-ST-Q26 for valve 01-01 MSIV 111.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

JPM #S-5

Operator's Name: _____

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

JPM Title: **MSIV** Stroke Test for PMT

JPM Number: S-5 **Revision Number:** NRC 2009

K/A Number and Importance:
1. NUREG 239001 A4.01 RO 4.2 SRO 4.0

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

Testing Method: Perform **Faulted:** No

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____minutes

References:
1. N1-ST-Q26, Rev. 6, Feedwater and Main Steam Line Power Operated Isolation Valves Partial Exercise Test and Associated Functional testing of Reactor Protection System Trip Logic

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

Description:
Maintenance has been performed on the RPS logic from valve MSIV 111. This maintenance requires a PMT to be performed via a single partial valve stroke under test N1-ST-Q26.

Simulator Setup

1. Initialize the simulator to IC-171
2. Take the simulator out of freeze.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N1-ST-Q26 obtained. Precautions & limitations reviewed			
2. Prepare to initiate a half scram on CHANNEL 11.	Verify no RPS Half Scram exists Verify by all scram solenoid lights energized Notify the CSO that the following steps will initiate the half scram on RPS CH 11			
*3. Place Main Steam Isolation Valve 7% Test Switch to the 111 position.	*Test switch is rotated to the 111 position.			
4. Confirm 01-01 MSIV 111 white test light ON.	White test light for MSIV 111 is verified energized.			
NOTE to Evaluator: JPM steps 5 to 8 will occur in rapid sequence, expect annunciators F1-1-7 and F1-2-1.	**CUE: Notify the candidate that you will be monitoring the valve mimic board for MSIV 111.**			
*5. Momentarily place 01-01 MSIV-111 control switch to CLOSE position.	*Rotate switch for MSIV 111 momentarily to CLOSE then release.			
*6. Confirm RPS Channel 11 half scram indications as follows:	*Verify the following: - CH 11 SCRAM SOLENOID GROUPS 1,2,3,4 white light off [WHITE LIGHT OFF] - CH 11 B.U. SCRAM S.D.V. VENT AND DRAIN VALVE red light off [RED LIGHT OFF] - Annunciator F1-1-7, RPS CH 11 MNSM LINE II ISOL Valve CLOSED, alarms. - Annunciator F1-2-1, RPS CH 11 AUTO REACTOR TRIP, alarms.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7. Confirm 01-01, MSIV-111 automatic partial closure indications. **NOTE:** Indications may be monitored by the evaluator as well as the candidate for this step in the procedure.	Verify the following: - 01-01 MSIV-111 Green Light ON - 01-01 MSIV-111 Red Light ON - 01-01 MSIV-111 Mimic Light ON			
8. Confirm 01-01 MSIV-111 automatic opening indications as follows:	Verify the following: - 01-01 MSIV-111 Green Light OFF - 01-01 MSIV-111 Red Light ON - 01-01 MSIV-111 Mimic Light OFF			
*9. Place MSIV 7% Test Switch to the OFF position.	*Rotate Test Switch to OFF. Cue: Inform candidate that another operator has completed the Independent Verification.			
10. Confirm 01-01 MSIV 111 White Test Light OFF.	White Test Light for MSIV-111 is OFF.			
*11. Depress REACTOR TRIP RESET at Panel E. **Note:** F1-2-1 clears	*Depress Rx Trip RESET Button on E-console.			
12. Confirm RPS Channel 11 Half-Scram indications clear.	Verify the following: - CH 11 SCRAM SOLENOID GROUPS 1,2,3,4 white light on [WHITE LIGHT ON] - CH 11 B.U. SCRAM S.D.V. VENT AND DRAIN VALVE red light on [RED LIGHT ON] - Annunciator F1-1-7, RPS CH 11 MNSM LINE II ISOL Valve CLOSED, off. - Annunciator F1-2-1, RPS CH 11 AUTO REACTOR TRIP, off.			
13. Contact Condition Monitoring Group to confirm all scram pilot solenoids are energized by thermography	Proper communications used.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Plant is operating at 100% power with no inoperable equipment.
2. Maintenance was performed on the 01-01 MSIV 111 Logic and requires a single partial valve stroke per N1-ST-Q26 to complete the Post Maintenance Testing.
3. All prerequisites for the test are complete.
4. The test has been signed on and is complete up to Section 8.1.

INITIATING CUE:

Perform required portions of surveillance test N1-ST-Q26 for valve 01-01 MSIV 111.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Place 11 SDC Loop in Service

JPM Number: SRO SIM JPM S-6

Revision Number: 2

Date: 4 / 23 / 09

Developed By:	**Bernard Litkett**	**4/23/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JPM #S-6

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1.

JPM Setup Instructions:

1. Initialize Simulator to IC-176
2. Take Simulator out of Freeze.
3. Remove SDC from service:
   a. Close TCVs
   b. Trip operating SDC pumps
   c. Close SDC IVs
   d. Close loop inlet BVs
4. Verify SDC Pump 13 in PTL and yellow tagged. Verify malf SC01C inserted
5. Verify SDC 13 suction valve is yellow tagged closed.
6. Verify malf SC01A on trigger 1 with 60 sec time delay. Verify trig 1 condition is ZDSCPSTR (1) = =1"
7. Update valve 70-49 & 70-54 status to "4"

TASK STANDARD:

Shutdown Cooling Loop 12 placed in service.

TASK CONDITIONS:

1. Reactor is shutdown with all rods in.
2. Reactor pressure is less than 120 psig.
3. N1-OP-04 has been completed up to and including step E.3.1.
4. RPV level is being monitored by other operators.
5. Instructor to ask operator for any questions.
6. SDC pump 13 is OOS for maintenance

INITIATING CUE:

Place SDC loop 11 in operation.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

JPM #S-6

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

JPM Title: Place Shutdown cooling Loop 11 in service

JPM Number: SRO SIM JPM S-6
Revision Number: 2

K/A Number and Importance: 205000 A04.01 3.6 (RO) 3.2 (SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Unit 1 Simulator **Faulted: No**

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 205000, A04.01, RO 3.6/SRO 3.2
2. N1-OP-04

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

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:_____
_____
_____
_____
_____
_____
Note: Any grade of UNSAT requires a comment.
Evaluator's Name: _____(Print)

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

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (GAP-OPS-O1/Operations Manual)			
*2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N1-OP-04 obtained. Precautions & limitations reviewed & section E.3.0 referenced.			
3. Open: • * 38-03, SDC VALVE 11.	Rotate switch CW to OPEN. Observe red light energized; green light extinguished.			
• * 38-04, SDC VALVE 12.	Rotate switch CW to OPEN. Observe red light energized; green light extinguished.			
• 38-05, SDC VALVE 13. ***Cue: Steps 3.3.1 through 3.3.7.i are complete. Continue at step 3.3.7.j.***	Recognizes valve is tagged closed, N/As step.			
4. * Open 38-02, SDC SYSTEM IN IV 12 (OUTSIDE) ***Cue: Report as Field operator that 38-02 has been opened.***	Rotate switch CW to OPEN. Observe red light on, green light off.			
5. * Open 38-13, SDC SYSTEM OUT IV 1 (INSIDE).	Rotate switch CW to OPEN. Observe red light on, green light off.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. * Open 38-01, SDC SYSTEM IN IV 11 (INSIDE).	Rotate switch CW to OPEN. Observe red light on, green light off.			
Cue: Venting has been completed per steps 3.5 and 3.6.				
7. Verify open: • 38-134, SDC PUMP RECIRC VALVE 11 • 38-131, SDC PUMP RECIRC VALVE 12 • 38-128, SDC PUMP RECIRC VALVE 13	Observe red light energized, green light extinguished. Observe red light energized, green light extinguished. Observe red light energized, green light extinguished.			
8. Verify the following valves are closed: • 38-09, SD Cooling TCV 11 ***Cue: Plant Operator reports 38-09 is closed.***	Observe 0% valve position for 38-09 valve.			
9. * Place SDC PUMP 11 Control Switch in START UNTIL SDC PUMP 11, running light illuminated.	Rotate switch to CW to START. Observe red light energized and green light extinguished. Observe motor amps increasing.			
10. * Open 38-09, SDC Cooling TCV 11, approximately 10%.	Rotate knob on controller 38-09 CW until 10% valve position is observed.			
11. ***NOTE: 1 minute after 11 SDC pump in service, trip 11 SDC pump. Alarm K3-1-1, SDC Pump 11 trip, comes in on the pump trip. The alarm response procedure gives guidance to start an additional pump if needed.***				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Cue: If student does not make a recommendation to Place another SDC pump in service, What would you recommend? ***Role Play: If candidate asks about normalizing SDC loop 11, tell them to leave SDC loop 11 as is.***				
12. Verify the following valves are closed: • 38-10, SD Cooling TCV 12 ***Cue: Plant Operator reports 38-10 is closed.***	Observe 0% valve position for 38-10 valve.			
13. * Place SDC PUMP 12 Control Switch in START UNTIL SDC PUMP 12, running light illuminated.	Rotate switch to CW to START. Observe red light energized and green light extinguished. Observe motor amps increasing.			
14. * Open 38-10, SDC Cooling TCV 12, approximately 10%.	Rotate knob on controller 38-10 CW until 10% valve position is observed.			
15. If reactor water flashing occurs in SDC System, reduce reactor water flow via selected SDC cooling TCV and maximize RBCLC cooling water flow. ***Cue: No flashing observed.***	Pump amp indicator observed as steady.			
15. Adjust SDC COOLING TCV 12 for gradual warmup of the system.	Rotate knob on controller 38-10 CW or CCW as required for a gradual warmup as indicated on 38-136B.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: Operator may choose not to make any further adjustments based on the rate at which the loop is warming up with 38-10 10% open. ***Cue: Tell operator no further adjustments in the system are required.***				
16. Inform SM Shutdown Cooling Loop 12 in service. ***Cue: Acknowledge report.***	Proper communications used.			

Terminating Cue: Shutdown Cooling Loop 12 is in service.

RECORD STOP TIME _____

JPM #S-6

HANDOUT PAGE

TASK CONDITIONS:

1. Reactor is shutdown with all rods in.
2. Reactor pressure is less than 120 psig.
3. N1-OP-04 has been completed up to and including step E.3.1.
4. RPV level is being monitored by other operators.
5. SDC pump 13 is OOS for maintenance

INITIATING CUE:

Place SDC loop 11 in operation.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Vent the Primary Containment (Containment Intergrity)

JPM Number: SRO SIM JPM S-7

Revision Number: 2

Date: 4 / 22 / 09

Developed By:	**Bernard Litkett**	**4/22/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Recommended Start Location: (Completion time based on the start location)

Unit 1 Simulator

Simulator Set-up (if required):

1. Initialize to IC-24 or equivalent
2. Take Simulator out of freeze
3. Place containment Spray in PTL

Directions to the Instructor/Evaluator:

Prior to performance of this JPM, obtain SSS / CSO general permission to open equipment cabinets and inspection covers. If opening the equipment cabinet or inspection cover will affect Tech. Spec. Operability, operational status, or the effects are unknown, obtain specific SSS / CSO permission.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SSS, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

With the exception of accessing panels, NO plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore, it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the independent/peer verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified in grading areas **Pass/Fail**. All steps are sequenced critical unless denoted by a "*".
2. During Evaluated JPM:
   - Self verification shall be demonstrated.
3. During Training JPM:
   - Self verification shall be demonstrated.
   - (Independent/Peer/No other) verification shall be demonstrated.

References:

1. NUREG 1123, 223001 A2.04 3.7/3.8, 223001 A2.05 3.5/3.6
2. N1-EOP-4.1
3. NMP Unit 1 Task Analysis, 2829010101

Tools and Equipment:

1. None

Task Standard:

Vent and purge the Primary Containment

Initial Conditions:

EOP-4 has been entered with drywell hydrogen level above minimum detectable.
Containment Spray is in PTL.
Drywell oxygen concentration is 6.3% and rising.
Torus level is 11.0 ft.
Reactor Building is not accessible.
Offsite release rate is expected to remain below the LCO.
Instructor to ask operator for any questions.

Initiating cues:

"(Operator's name), Vent and purge the Primary Containment

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (GAP-OPS-01/ Standards of Conduct Handbook)			
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	EOP-4.1 obtained. Precautions & limitations reviewed. Identify Step 6.1 cannot be accomplished due to Reactor Building inaccessibility and proceed to Step 6.2.			
Verify that the following valves are closed:	All valves verified closed by verifying position indicating lights as follows:			
3. 201.2-32, DRYWELL N_2 MAKE-UP & BLEED ISOL VALVE 11	Green light on, Red light off.			
4. 201.2-03, DRYWELL N_2 MAKE-UP & BLEED ISOL VALVE 12	Green light on, Red light off.			
5. 201.2-33, TORUS N_2 MAKE-UP & BLEED ISOL VALVE 11	Green light on, Red light off.			
6. 201.2-06, TORUS N_2 MAKE-UP & BLEED ISOL VALV 12	Green light on, Red light off.			
7. 201-11, TORUS/DRYWELL VENT TO CONDENSER	Green light on, Red light off.			
8. 201-18, EM VENTILATION FROM DW & TORUS BV	Green light on, Red light off.			
* 9. Open 201-32, DW N_2 VENT AND PURGE ISOLATION VALVE 11	201-32 Control switch rotated CW to OPEN. Observes Red light on and Green light off.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 10. Open 201-31 DW N_2 VENT AND PURGE ISOLATION VALVE 12	201-31 Control switch rotated CW to OPEN. Observes Red light on and Green light off.			
* 11. Open 201-16, Torus N2 Vent & Purge Isolation Valve 11.	201-16 Control Switch rotated CW to START and observes Red light on, Green light off.			
* 12. Open 201-17, Torus N2 Vent & Purge Isolation Valve 12.	201-17 Control Switch rotated CW to START and observes Red light on, Green light off.			
* 13. Open 201-46, Drywell air vent to atmosphere ***Cue: this step is preformed in the field***	201-46, Drywell air vent to atmosphere is open			
* 14. Open 201-44, Drywell air vent to atmosphere ***Cue: this step is preformed in the field***	201-44, Drywell air vent to atmosphere is open			
* 15. Open 201-10, Drywell Vent and Purge Isolation Valve 11.	201-10, Drywell Vent and Purge Isolation Valve 11 is Open.			
* 16. Open 201-08, Drywell Vent and Purge Isolation Valve 11.	201-08, Drywell Vent and Purge Isolation Valve 11 is Open.			
NOTE: If a loss of offsite power occurs, establish Emergency Power to the Drywell Vent and Purge fan in accordance with EOP-1, Attachment 20.				
* 17. Place 201-35, Drywell and Torus Vent & purge Fan switch to start.	201-35 Control Switch rotated CW to START and observes Red light on, Green light off.			
* 18. Verify 201-21,Drywell & Torus Vent & Purge Fan Inlet BV Opens	201-21,Drywell & Torus Vent & Purge Fan Inlet BV indicates opens			
* 19. Verify 201-22,Drywell & Torus Vent & Purge Fan Inlet BV Opens	201-22,Drywell & Torus Vent & Purge Fan Inlet BV indicates opens			
20. Operator informs SSS that air purge flow to the Drywell and Torus is established.	Proper communication used.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Cue: • *Role Play as SSS for completion report of the task* *Role Play "you have been relieved."*				

Terminating Cue: An air purge of the containment through the containment vacuum breakers is established.

RECORD STOP TIME _____

Hand out page

Initial Conditions:

EOP-4 has been entered with drywell hydrogen level above minimum detectable.
Containment Spray is in PTL.
Drywell oxygen concentration is 6.3% and rising.
Torus level is 11.0 ft.
Reactor Building is not accessible.
Offsite release rate is expected to remain below the LCO.
Instructor to ask operator for any questions.

Initiating cues:

"(Operator's name), Vent and purge the Primary Containment.

Job Performance Measure

Remove RPS Bus Fuses

JPM Number: SRO P-1

Revision Number: NRC 2009

Date: 5/11/09

Developed By:	**David Molteni**	**5/1/2009**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JPM #P-1

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. None

JPM Setup Instructions:

1. Hand out the following materials
   - N1-EOP-3.1, Rev. 500, Alternate Control Rod Insertion

TASK STANDARD:

The candidate will provide an alternate means of Control Rod Insertion. Initially by attempting to de-energize RPS circuitry through fuse removal. The fuse removal can not be accomplished due to cabinet doors being stuck. The alternate path is to vent the scram air header locally.

TASK CONDITIONS:

1. The reactor has received a valid Scram signal.
2. All control rods are not full in and all Scram pilot lights remain lit.
3. EOP-3 has been entered.
4. Both CRD pumps have tripped and are being investigated by maintenance and operations personnel.
5. ARI has been initiated.
6. SCRAM SOLENOID HEADER PRESSURE is unchanged after ARI initiation.
7. Reactor pressure is 300 psi and steady and being controlled with ERV's.

INITIATING CUE:

Provide a full scram per Attachment 1 of EOP-3.1.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

JPM #P-1

Operator's Name: _____

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

JPM Title: Remove RPS Bus Fuses

JPM Number: P-1 **Revision Number:** NRC 2009

K/A Number and Importance:
NUREG 1123, 212000, A4.01, (4.6) Provide manual SCRAM signal(s)

Suggested Testing Environment: Plant

Actual Testing Environment: Plant

Testing Method: Simulate **Faulted:** Yes

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: **15** **Actual Time Used:** _____minutes

References:
1. N1-EOP-3.1, Attachment 1 and Attachment 2
2. O1-OPS-PJE-200-1-2, Rev. 3, Remove RPS Bus Fuses

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

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

Comments:_____
_____
_____
_____
_____
_____

Note: Any grade of UNSAT requires a comment.

JPM #P-1

Evaluator's Name: _____(Print)

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

Description:
A full scram signal was provided and received by RPS but an electrical malfunction has allowed all RPS scram pilot valves to remain energized. This JPM is designed to execute alternate strategy to pull all available RPS fuses and ensure the full scram signal is completed. This will also fail to depressurize the Scram Air Header and venting of the Scram Air Header will be required to complete the SCRAM.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure	N1-EOP-3.1 obtained, and reviewed.			
*2. Remove and install in the OFF the required auxiliary control room fuses identified in Step 3.1 in panel 1S-53	• In 1S-53, BACK UP SCRAM VLV & DUMP TK VENT VLV (CKT 5) 20A **CUE: Fuse is removed and installed in OFF**			
3. Remove and install in the OFF the required auxiliary control room fuses identified in Step 3.1 in panel 1S-55	• In 1S-55, BACK UP SCRAM VLV & DUMP TK VENT VLV (CKT 5) 20A **CUE: The cabinet door is unable to be opened and appears the internal mechanism is broken. No means available to the candidate will provide access to the fuses.**			
4. Communicate with the MCR that Attachment 1 is unable to be completed due to equipment failure.	**CUE: Acknowledge the material condition of the door as the CRS, then ask the following question.** **As the CRS what is your recommendation for completion of the SCRAM given the current conditions?**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5. Candidate recognizes Attachment 2 is best available means to SCRAM plant based on plant conditions.	• Candidate recognizes that the loss of both CRD pumps eliminates Attachments 3 and 6 • Candidate recognizes that Attachments 5 and 7 are for individual rods which will take a significant time to scram all of the rods. • Candidate recognizes that this is an electrical ATWS and scramming rods by repeated manual scram signals will not work, therefore eliminating Attachment 4. • *Candidate recognizes Attachment 2 is available to use to complete the SCRAM.			
6. Verify ARI has been intiated.	• Verify ARI has been initiated per cue sheet			
7. Verify SCRAM Air Header pressure is unaffected by ARI initiation.	• IF ARI cannot be initiated (as indicated by air pressure not decreasing on the SCRAM SOLENOID AIR HDR PRESS recorder on F-panel), perform the following:			
*8. Unlock and close Air supply header isolation valve.	• Unlock and close 113-3091, Scram Air Header Supply Valve. *(Reactor Building, NW stairwell, between Elev. 237' and 261')*			
	Note: The following two steps are bordering a high rad area and a trip sensitive area. Inform the applicant to simulate actions without crossing into these areas.			
*9. Remove the vent pipe cap to allow depressurization.	• Remove the Vent Pipe Cap from 113-230, SCRAM AIR HEADER EMERGENCY VENT VALVE. *(RB El 237', northwest corner of HCU Bank)*			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*10. Open the vent valve to allow depressurization.	• Unlock AND Open 113-230, SCRAM AIR HEADER EMERGENCY VENT VALVE. **CUE: You hear the sound of the header depressurizing and water flow from the accumulators.**			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. The reactor has received a valid Scram signal.
2. All control rods are not full in and all Scram pilot lights remain lit.
3. EOP-3 has been entered.
4. Both CRD pumps have tripped and are being investigated by maintenance and operations personnel.
5. ARI has been initiated.
6. SCRAM SOLENOID HEADER PRESSURE is unchanged after ARI initiation.
7. Reactor pressure is 300 psi and steady and being controlled with ERV's.

INITIATING CUE:

1. Provide a full scram per Attachment 1 of EOP-3.1.

Nine Mile Unit 1 Generating Station

Job Performance Measure

Loss of 115KV Power In Plant Load Reductions

JPM Number: P-2

Revision Number: 0

Date: _5_/_4_/_09___

Developed By:	**Hedigan** **Author**	**5/4/09** **Date**
Validated By:	_____ **Facility Representative**	_____ **Date**
Review By:	_____ **Examiner**	_____ **Date**
Approved By:	_____ **Chief Examiner**	_____ **Date**

JPM #P-2

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. N/A

TASK STANDARD:

Successfully complete the load reduction actions specified in Attachment 2 of N1-SOP-33A.1

TASK CONDITIONS:

1. The plant has experienced a loss of both Line 1 and Line 4.
2. The reactor has scrammed.
3. Both Emergency Diesel Generators are operating and supplying power to their respective busses.
4. I&C Bus 130 has been transferred to it's maintenance supply.
5. Instructor to ask operator for any questions.

INITIATING CUE:

"(Operator's name), perform load reduction actions of Attachment 2 of N1-SOP-33A.1, revision 1."

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Loss of 115 KV Power In Plant Load Reductions

JPM Number: P-2

Revision Number: 0

K/A Number and Importance: 262001 A2.03 4.3 (SRO)

Suggested Testing Environment: In Plant

Actual Testing Environment:

Testing Method: Simulate Actions **Faulted: No**

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 30 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 262001, A2.03, SRO 4.3
2. N1-SOP-33A .1 Attachment 2

Tools and Equipment:
1. Kirk Key

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

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:_____
_____
_____
_____
_____
_____
Note: Any grade of UNSAT requires a comment.

JPM #P-2

Evaluator's Name: _____(Print)

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

Description: This JPM has the operator perform In Plant Load Reductions after the plant has experienced a loss of 115KV Power per N1-SOP-33A .1 Attachment 2.

JPM #P-2

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N1-SOP-33A.1 obtained. Attachment 2 referenced			
	Note: The next step is performed in the SE corner of TB elevation 305.			
*2. Powerboard 1671 • Verify OPEN all section B breakers except TRANS 1671 DIST PANEL (breaker 1671/C05A)	Rotate switches counter-clockwise. Observe "B" section breakers in OFF except as indicated			
	Note: The next step is performed in the Screenwell.			
*3. At Powerboard 176 (sections B and C) • Verify all breakers open except Diesel FIRE PUMP TRANSFER OIL PUMP • Verify A-B Tie Bkr. Open (requires Kirk Key) • Verify B-C Tie Bkr. Closed (requires Kirk Key)	*Identify location of Powerboard 176 from inside the RCA CUE: Point to the location of Powerboard 176 without exiting the RCA			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. In the Security UPS Room at the Security Battery Charger Panel • Open CB-301 (SEC/REM Norm Supply)	Locates Security UPS Room on TB elevation 250. **CUE: If the candidate brings up that he can not get into the room unless he has security and shift manager permission, then ask candidate what are the requirements to enter.** **Direct the candidate to take you to the door to the room, then inform him that another operator will perform the operation.**			
*5. In the Rad Protection Storeroom • Place in OFF, NDS-1, disconnect switch (TSC Emergency Power)	Locates and identifies proper disconnect switch. Knife switch type action, "down" to open.			
6. Notify the Control Room that load reductions are completed.	Communications			

JPM Stop Time _____

JPM #P-2

HANDOUT PAGE

TASK CONDITIONS:

1. The plant has experienced a loss of both Line 1 and Line 4.
2. The reactor has scrammed.
3. Both Emergency Diesel Generators are operating and supplying power to their respective busses.
4. I&C Bus 130 has been transferred to it's maintenance supply.

INITIATING CUE:

"(Operator's name), perform load reduction actions of Attachment 2 of N1-SOP-33A.1, revision 1."

Nine Mile Unit 1 Generating Station

Job Performance Measure

Pull ERV Fuses in the Plant

JPM Number: SRO PLANT P-3

Revision Number: 3

Date: 4 / 23 / 09

Developed By:	**Bernard Litkett**	**4/23/09**
	Author	**Date**
Validated By:	_____	_____
	Facility Representative	**Date**
Review By:	_____	_____
	Examiner	**Date**
Approved By:	_____	_____
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Operator's Name: _____

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

JPM Title: Pull ERV Fuses in the Plant

JPM Number: SRO PLANT P-3 **Revision Number:** 3

K/A Number and Importance: 239002, A2.03, RO 4.1, SRO 4.2

Suggested Testing Environment:

Actual Testing Environment: Simulate only

Testing Method: **Faulted: No**

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 10 min **Actual Time Used:** _____minutes

References:

1. NUREG 1123 239002, A2.03, 4.1/4.2
2. N1-SOP-1.4

EVALUATION SUMMARY:

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

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

Comments:_____

_____

_____

_____

_____

_____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _____(Print)

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

Recommended Start Location: (Completion time based on the start location)

Rx Bldg. El. 261'; at Turbine Bldg Airlock

Simulator Set-up (if required):

None

Directions to the Instructor/Evaluator:

Prior to performance of this JPM, obtain SSS / CSO general permission to open equipment cabinets and inspection covers. If opening the equipment cabinet or inspection cover will affect Tech. Spec. Operability, operational status, or the effects are unknown, obtain specific SSS / CSO permission.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SSS, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

With the exception of accessing panels, NO plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore, it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the independent/peer verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified in grading areas **Pass/Fail**. All steps are sequenced critical unless denoted by a "*".
2. During Evaluated JPM:
   - Self verification shall be demonstrated.
3. During Training JPM:
   - Self verification shall be demonstrated.
   - (Independent/Peer/No other) verification shall be demonstrated.

References:

1. NUREG 1123, 239002, A2.03, 4.1/4.2
2. N1-SOP-1.4
3. Chapter 20 of the electrical safety manual

Tools and Equipment:

1. Fuse Pullers
2. Leather Gloves
3. Safety Glasses (eye protection)
4. Lab coat

Task Standard: 125 VDC Fuses pulled for ERV 111 and ERV 111 is closed.

Initial Conditions:

1. The plant is operating at 100%.
2. Annunciator H3-4-5, "Press Safety/Relief Valves Flow" is in alarm.
3. ERV 111 has been verified open via the Acoustic Monitor Panel.
4. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name), pull the In-Plant Control Power Fuses for ERV-111 IAW N1-SOP-1.4."

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1/Operations Manual)			
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N1-SOP-1.4 obtained.			
3. ***Cue: Safety equipment is not required to be obtained. However the required equipment should be discussed during the performance of the JPM.***	**Lab coat, fuse pullers, leather gloves and safety glasses are required IAW Chapter 20 of the electrical safety manual.**			
4. * At Rx Bldg, El. 237' (at West side cabinet, "ERV Op Ch 11", by HCUs on South wall) 5. * Pull fuses F-1 and F-2 for ERV 111 (JB 11, Att. 5). ***Cue: Fuses F1 and F2 are pulled.***	Fuses F1 and F2 are pulled using fuse pullers, located 237 West side cabinet ERV.			
6. Notify Control Room that ERV 111 fuses have been pulled from cabinet JB 11 on RB 237'. ***Cue: Role play as CSO and acknowledge fuses pulled. Notify Operator "ERV 111 indicates closed."***	Proper communications used for Repeat Back (GAP-OPS-01).			

Terminating Cue: ERV 111 is closed by pulling 125 VDC Fuses.

RECORD STOP TIME _____

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

HANDOUT

Initial Conditions:

1. The plant is operating at 100%.
2. Annunciator H3-4-5, "Press Safety/Relief Valves Flow" is in alarm.
3. ERV 111 has been verified open via the Acoustic Monitor Panel.

Initiating Cues:

"(Operator's name), pull the In-Plant Control Power Fuses for ERV-111 IAW N1-SOP-1.4"

-

SCENARIO SUMMARY

1. Start second condensate pump per N1-OP-15A .

2. Initial condition. 15% Mode switch has just been placed in run. Continue in startup procedure at step 5.1 to withdraw control rods until 4 bypass valves are open.

3. Verify steps 5.2 to 5.5 are complete. Turnover was that they have been verified.

4 Stack rad Monitor 12 fails. TS call (ODCM).

5 Reactor Water Cleanup PCV 33-39 fails open. System trips on high pressure but fails to isolate.

6 APRM fails upscale TS call.

7 Fuel Failure Rad monitors start to increase. Enter N1-SOP-25.2 Fuel Failure or High Reactor Coolant Activity or Offgas

8 Main Steam rad monitor 11 and 12 in alarm and greater than 3.75 X NFPB. Scram Per N1-SOP-1 and Initiate manual isolation and execute N1-SOP-40.2.

9 Turbine building fan trips, starts the other fan and trips after 1 minute.

10 MSIV's in one line fail to close. MSIV, 111, 112. MSL Break In Turbine Building.

11 Enter secondary Containment Control. Will get direction that 15 mr/hr at boundary. Turbine building fan trips, 2nd fan trips 1 minute later.

12 Enter Rad Control EOP above alert. Offsite dose above 10 mr/hr.

13 Enter RPV control and Blowdown prior to GE levels. ERV 112 and 122 fail closed.

INITIAL SIMULATOR SETUP

A. IC Number: IC 162

B. Presets/Function Key Assignments

Malfunctions:

a. RM64A, PRM Stack Gas Rad Mon Ch 2 – Norm Malfunction, FV=0 TRG 1

b. CU05, CU HP PCV (PCV 33-39) Fails Open TRG 2

c. CU12, CU Isolation Failure PRESET

d. NM19A, APRM Channel 11 Failure – Upscale TRG 3

e. RX01, Fuel Cladding Failure, FV=7 TRG 4

f. MS13A, MSIV Fails Open MS01-01(111), FV=50 PRESET

g. MS13C, MSIV Fails Open MS01-03(112), FV=50 PRESET

h. MS01, Steam Line Break Outside PC Area, IV=12, RT=2:00, FV=5 TRG 5

i. AD07B, ERV 112 Fails Closed (Burned Out Solenoid) PRESET

j. AD07E, ERV 122 Fails Closed (Burned Out Solenoid) PRESET

2. Remotes:

a. None

3. Overrides:

a. OVR-9A14P1DI51614, SET 6K21/1J37B MAN, FV=null PRESET

b. OVR-11S30DI54110, POS_1 1L9/203-01A POS A, FV=null TRG 6

c. OVR-11S30DI54111, POS_2 1L9/203-01A POS C, FV=null TRG 6

d. OVR-11S31DI54112, POS_1 1L9/203-01A POS A, DT=30, FV=null TRG 7

e. OVT-11S31DI54113, POS_2 1L9/203-01A POS C, DT=30, FV=null TRG 7

4. Annunciators:

a. K3-4-4, Clean-Up System Isolation, FV=100 PRESET

5. Triggers:

a. TRG 7 – Trips TB Exhaust Fan 12 30 seconds are it starts

i. Event Action: zdhvtbft(6)==0

ii. Command: None

b. TRG 30 – Deletes overridden RWCU isolation annunciator when pressure lowers after isolation

i. Event Action: hzacum84<0.95&&hzlcumovr(9)==0

ii. Command: None

c. TRG 29 – Re-insert fuel failure at slightly higher value after scram

i. Event Action: zdrpstdn==1

ii. Command: imf rx01 (0 0) 9

C. Equipment Out of Service
   1. None
D. Support Documentation
   1. N1-OP-43A marked up to appropriate step for startup
   2. N1-OP-15A marked up to step F.2.5
   3. Reactivity Maneuver Instruction for plant power ascension with control rods
   4. Control Rod Movement Instructions marked up to current rod
E. Miscellaneous
   1. Ensure TB Exhaust Fan 11 is running with 12 secured.
   2. Ensure RWCU PCV 33-39 is in service in AUTO or BAL.

II. SHIFT TURNOVER INFORMATION

OFF GOING SHIFT: □ N ■ D DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, RO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM, CRS, STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM, CRS, STA, RO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (RO)

Evolutions/General Information/Equipment Status:

Plant startup in progress from a refuel outage.

Plant is at approximately 15% power.

PART III: Remarks/Planned Evolutions:

1. Start Condensate Pump 13 per N1-OP-15A, starting at step F.2.5.
2. Pull control rods to obtain 4-6 Turbine Bypass Valves open.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Plant Startup **Step:** 7

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes_____ No__√___ (check)
If YES above, RE presence not required for steps _____

Initial conditions to be verified prior to initiation of step: 1

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
Core Flow	38-43 Mlbm/hr				

Description of Step:
Withdraw control rods in accordance with attached rod movement sheets.

Critical parameters to be monitored DURING Step: 2
Critical parameters not used must be deleted OR marked N/A

Core Flow	38-43 Mlbm/hr	RO	During rod moves	Adjust core flow as necessary to stay in band
Margin to Rod Blocks	3%	RO	During rod moves	Stop rod movement

RMI evaluated against approved power profile: □. N/A ■

Other Comments: Continuous rod movement allowed from position 12 to 48.

Step Prepared by: Alex Reed / Today
RE/STA Date

Step Reviewed by: Jake Darrow / Today
RE/STA/SRO Date

Approval to perform Step Joe Allen / Today
Shift Manager Date

Step Completed by: _____ / _____
SRO Date

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Start second condensate pump

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Per section 2.0 of N1-OP-15a respond for equipment operators during condensate pump start.
	■ Respond to request for assistance as appropriate.

EVENT 2: Raise Power by withdrawing controls rods to get 4 bypass valves open.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

EVENT 3: Stack Rad Monitor 12 INOP

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 1 after 4th bypass valve open.
	■ Respond to request for assistance as appropriate.

EVENT 4 : PCV 33-39 Fails Open

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 2 after TS call has been made.
	■ Respond to request for assistance as appropriate.

EVENT 5: APRM Fails High

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 3 after Cleanup System has been isolated and depressurized.
	■ Respond to request for assistance as appropriate

EVENT 6: Fuel Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 4 after half scram has been reset.
	■ Respond to request for Chemistry sample.
	■ Respond to request to close Turbine Building vents and doors.
	■ If requested to manually shut MSIV 111 and 112, Respond that will obtain briefing for entering area.
	■ Respond to request for assistance as appropriate

EVENT 7: MSL Break In Turbine Building.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 5 after Operator determines that MSIV's failed to close.
	■ Wait 5 minutes after steam leak is inserted, then report to CRS that dose at the site boundary is 15 mr/hr TEDE and rising.
	■ Activate trigger 6, Turbine building ventilation trip, about 2 minutes after EOP-6 is entered. Verify trigger 7 activates 30 seconds after start of second fan.
	■ Respond to request for assistance as appropriate.

EVENT 8: Blowdown Prior to GE. ERV 112 fails closed.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Wait 5 minutes after second TBVS fan trips, then report to SRO that External exposure rate at site boundary is 800mr/Hr TEDE and rising rapidly.
	■ If SRO asks for an update, then report External exposure rate at site boundary is 950 mr/Hr.
	■ If SRO does not determine he is approaching GE and blowdown, after 15 minutes of last dose projection, call SRO and report that External exposure rate at the site boundary is 1200 mr/Hr and rising rapidly.
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. EOP-6 Scram the reactor

   Standard: 1. Expected when both Main steam Line rad Monitors reach 3.75 X NFPB, then scrams reactor and isolates the vessel.
   2. Failure criteria, before the offsite release rate reaches the E-Plan General Emergency Level, Verify Reactor Scram.

   Basis : The scram reduces the rate of energy production and thus the rate of radioactivity release. EOP-6 Basis for step RR-1.

2. EOP-6 Perform emergency blowdown.

   Standard: Before the offsite release rate reaches the Emergency Plan "General Emergency" level (EPIP-EPP-1): Blowdown per EOP-8 , open 3 ADS valves.

   Basis : An offsite release rate above the General Emergency level is an indication of Degrading conditions and presents a more immediate threat to the health and safety of the public. If a primary system is discharging outside the primary and secondary containments, a blowdown is performed before the release reaches the General Emergency level to reduce the discharge rate. EOP-6 Basis for step RR-1.

Op-Test No.: 1 Scenario No.: 2 Event No.: 1

Event Description: Start second condensate pump

Time	Position	Applicant's Actions or Behavior
	CRS	Directs BOP to start 13 condensate pump per section F of N1-OP-15A.
		Note : Procedure marked up as complete through F.2.5.
	BOP	Coordinate with equipment operator to monitor pump pressure during start.
	BOP	Coordinate with operator to observe pump start.
	BOP	Start Condensate Pump 13 by placing pump to start.
	BOP	Verify open 49-92, BV-O2 Injection to Cond Pump 13 strainer.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Raise Power by withdrawing controls rods to get 4 bypass valves open.

Time	Position	Applicant's Actions or Behavior
	CRS	If not already performed, CRS conducts reactivity brief on withdrawing control rods per N1-OP-43A step 5.1. Reviews Reactor Engineering provided Reactivity Maneuver Instruction form, if not previously performed.
	CRS	CRS directs ATC to withdraw rods per N1-OP-5 section F until 4-6 bypass valves are open. Provides Reactivity SRO monitoring.
	ATC	RO withdraws rods until 4-6 bypass valves are open per the maneuvering sheet. • Verify Control Rod Power is On • Depress Rod Select pushbutton for control rod to be withdrawn on Rod Map Display at Panel E. • If performing continous rod withdrawal then place and hold 4S3, Control Rod Override Switch to Notch Override posiition and while still holding, place and hold 4S1 Control Rod Movement switch to the rod out notch position. Note : Operator will withdraw 3-4 control rods to get the 4th bypass valve open.
	BOP	Monitors plant for correct response as power is raised.
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: **Stack rad Monitor 12 failure**

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to alarm H1-3-8 Stack gas Monitoring trouble.
	BOP	Confirms on plant computer that stack Monitor 12 is alarming.
	BOP	On Panel J confirms that stack Monitor 12 is downscale (RN-10B).
	BOP	Notify Chemistry to execute N1-CSP-V309, Stack Monitor Alarm Response.
	CRS	Makes Tech Spec call for inoperable stack monitor. ODCM 3.6.14 With one high range inoperable, releases may continue if the non functional channel is placed in the tripped condition or Vent and Purge valves are closed and administratively controlled. May call WEC/FIN to request a tagout on Vent and Purge valves.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: PCV 33-39 Fails Open

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to alarm K3-2-4 Cleanup System High Pressure and K3-4-4 Cleanup System Isolation. • Determines that cleanup has not isolated on high pressure and should have isolated. • Closes 33-01R, 33-02R, 33-04R • Trips operating cleanup pumps • References N1-OP-3 H.11 for Rapid System Isolation
	CRS	May depressurize Cleanup system by performing section H.11.0 of N1-OP-3 if system pressure remains high.
	BOP	May depressurize cleanup per section H.11.0 • Opens 33-10 or 33-11 • Opens 33-41 • Adjust 33-165 to reduce pressure
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: APRM Fails High

Time	Position	Applicant's Actions or Behavior
	ATC	Responds to alarms F1-1-1, F1-2-1, F2-1-6, and F3-4-4. Identifies that APRM Channel 11 is failed high.
	CRS	Directs RO to bypass APRM and reset half Scram
	RO	RO Bypasses APRM and resets the half scram.
	CRS	Make Tech Spec call for failed APRM 3.6.2a and 3.6.2g.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: **Fuel Failure**

Time	Position	Applicant's Actions or Behavior
	Crew	Observe rising rad monitor levels. Respond to Offgas high rad alarm, followed by Main Steam Line high radiation. Stack isolates after time delay.
	BOP	Enters N1-SOP-25.2 Fuel Failure or High Activity in Rx Coolant or Offgas, based on Offgas high radiation alarm.
	CRS	Direct actions per N1-SOP-25.2.
		Note : If both main steam rad monitors are in alarm and reach 3.75 X NFPB then N1-SOP-25.2 directs : 1. Scram the reactor 2. Initiate Manual Vessel Isolation and execute N1-SOP-40.2.
	BOP	Direct Chemistry to take a offfgas and reactor coolant sample for gross activity.
	BOP	Direct Turbine Building Operator to close Turbine Building roof vents, roll doors and side wall vents.
	CRS	Directs ATC to reduce power per N1-SOP-1.1 as necessary to control radiation levels.
	ATC	RO inserts rods as directed by CRS. • Verify Control Rod Power is On • Depress Rod Select pushbutton for control rod to be inserted on Rod Map Display at Panel E. • Inserts CRAM rods as necessary using continous rod in to 00 per Cram Rod Sequence Sheet.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: **Fuel Failure**

Time	Position	Applicant's Actions or Behavior
CT	**CRS**	**Observes that main steam radiation levels are approaching 3.75 X NFPB and directs to scram the reactor per N1-SOP-1.** Directs to Initiate Manual Vessel Isolation and execute N1-SOP-40.2.
	ATC	Scrams reactor per N1-SOP-1. Performs Immediate actions for scram. Confirms all rods are inserted beyond to 04 or beyond.
	BOP	Restore RPV level to 53 inches-95 inches by controlling injection.
	BOP	Performs manual vessel Isolation. Reports that MSIV 111 and 112 indicate mid position.
	CRS	Directs equipment operators to manually close MSIV 111 and 112.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 7

Event Description: **MSL Break In Turbine Building.**

Time	Position	Applicant's Actions or Behavior
	CREW	Respond to annunciators F1-2-2, F2-3-2, and F4-2-7 for main steam tunnel high temperature.
	CRS	Directs response to annunciator.
	ATC	Evacuates Turbine Building.
	BOP	Verifies CREVS initiation.
	CRS	Receives report that dose rates at site boundary are 15 mr/hr TEDE and rising. Determines that meets entry condition for EOP-6. Enters EOP-6. May perform anticipatory depressurization of RPV per EOP-2.
	BOP	Responds to Turbine Building fan trip (L1-3-1 TB/ATM Differential Pressure). Starts second fan.
	BOP	Responds to second Turbine Building fan trip.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 8

Event Description: Report to SRO that External dose at site boundary is 800mr/Hr and rising rapidly.

Time	Position	Applicant's Actions or Behavior
	CRS	Receives report that External dose at site boundary is 800mr/Hr and rising rapidly. Determines that above SAE for EAL and trending towards GE.
CT	**CRS**	Directs actions per EOP-6 Verify Reactor Scram **Executes RPV Blowdown per EOP-8.** Directs initiate ECs **Directs open 3 ERVs**
CT	**BOP**	Initiate ECs **Opens 3 ERVs.** **Determines that 2 ERVs fail to open. Reports to SRO and opens an additional ERVs to achieve 3 open.**
	BOP	Maintains level 53" – 95" per EOP-2.

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **Blowdown has been performed per EOP-8 and reactor level is being maintained in band.**

POST-SCENARIO :

HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO (SAE 3.4.1 for MSIV isolation failure with leak, SAE 5.2.4 for offsite release rate).

SCENARIO SUMMARY

Shift orders are to shift TBCLC pumps from TBCLC 12 to 11 per OP-24 section F.1.2.

As part of turnover crew is directed to lower power to 95% using recirc flow.

Level Transmitter 36-03D will fail low. Level instrument LI-36-10 will indicate low bringing in a half scram. Tech Spec call.

#13 Recirc pump will oscillate. Operators will take manual control of #13 recirc pump.

Recirc #13 motor overheats. Power will be lowered per procedure and then recirc pump will be removed from service. Alternatively, the applicants may trip the recirc pump and then enter N1-SOP-1.3.

A medium sized LOCA will begin and progress. Drywell temperature and pressure will be rising requiring a manual scram. Electrical ATWS, however ARI will be successful.

When the reactor scram is succesful, PB11 will fail to auto transfer to offsite source of power. The operators will be able to restore PB11, however Feed pump 11 will trip on overload when restarted. That combined with the FP12 being out of service will cause level to lower but pressure to stay high, requiring a blowdown to inject with low pressure systems.

When drywell pressure reaches 13 psig, the drywell sprays will be initiated, however if pump 111 and 122 are selected (preferred pumps), then they will trip. Containment Spray 121 and 112 will run.

Core spray loop 12 valves 40-01 and 40-09 fail to open, the operator should attempt to open. They will not open. The operator will have to control level using core spray loop 11.

The scenario will be terminated when reactor level is being controlled in band using core spray pumps.

INITIAL SIMULATOR SETUP

A. IC Number: IC 163

B. Presets/Function Key Assignments

1. Malfunctions:

a. FW03B, Feedwater Pump Trip 12	PRESET
b. RD35B, CRD Hydraulic Pump 12 Trip	PRESET
c. RP11B, RPV LT 36-03D Failed Low	TRG 1
d. RR65C, RR Pump 13 Tachometer Failure, FV=oscillate	TRG 2
e. RR09C, RR Pump 13 MG Slot Temperature Increase, FV=60	TRG 3
f. RR29, RR Loop Rupture on Pump 15 Suction Line (LOCA), IV=3, FV=5, RT=10:00	TRG 4
g. RP05A, Reactor Protection System Failure to Scram CH11	PRESET
h. ED26, PB 11 Auto Transfer Failure	PRESET
i. FW03A, Feedwater Pump Trip 11, DT=30	TRG 5
j. FW06, Shaft Driven Feedwater Pump Clutch Fails – Disengage, DT=30	TRG 5
k. CT01A, CT Pump 111 Trip	PRESET
l. CT01D, CT Pump 122 Trip	PRESET
m. CS03C, CS Inboard Injection Valve 40-01 (121) Failure to Open	PRESET
n. CS03D, CS Inboard Injection Valve 40-09 (122) Failure to Open	PRESET

2. Remotes:

a. RRXX, Recirc pump to local lock	
b. FW24, Removal of HPCI Fuses FU9/FU9, FV=pulled	TRG 24

3. Annunciators:

a. None

4. Triggers:

a. TRG 5 – Initiates FWP 11 trip when R-112 is closed and FWP 11 is re-started

i. Event Action: hzled531c==1&&hzlfwfpr(1)==1

ii. Command: None

b. TRG 28 – Deletes RRP 13 oscillation when the M/A station is taken to manual

i. Event Action: zdrrmam(3)==1

ii. Command: dmf rr65c

c. TRG 29 – Raises leak rate when mode switch is taken to SHUTDOWN

i. Event Action: zdrpstdn==1

ii. Command: imf rr29 (0 0) 9

d. TRG 30 – Raises leak rate when R-112 is closed

i. Event Action: hzled531c==1

ii. Command: imf rr29 (0 0) 14 3:00 9

C. Equipment Out of Service

1. CRD pump 12 in PTL with yellow tag applied
2. FW pump 12 in PTL with yellow tag applied
3. FW pump 12 blocking valve closed with yellow tag applied

D. Support Documentation

1. N1-OP-24 section F.1.2
2. RMI to lower power to 90% with recirc
3. N1-OP-43B marked up to step F.2.8

E. Miscellaneous

1. Place protected signs on the following equipment:
   - FW pump 11
   - CRD pump 11
   - Powerboards 11, 16A and 16B, EDG 102
     - R-113
     - R-111
     - R-1041
     - R-1043
     - R-1022
     - EDG 102 control switch
2. Update divisional status board:
   - CRD 11 – red
   - CRD 12 – green
   - EDG 102 - green

SHIFT TURNOVER INFORMATION

OFF GOING SHIFT: ☐ N ■ D DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, RO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM, CRS, STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM, CRS, STA, RO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (RO)

Evolutions/General Information/Equipment Status:

Plant is at 100% power.

Feedwater pump 12 is out of service for planned maintenance (Day 1 of planned 1 day LCO).

CRD pump 12 is out of service due to a motor fault (Day 1 of unplanned entry into 7 day LCO).

PART III: Remarks/Planned Evolutions:

1. Start TBCLC pump 11 and secure TBCLC pump 12 for equipment rotation in accordance with N1-OP-24.

2. Lower power to 95% in accordance with N1-OP-43B and RMI.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Downpower to 95% **Step:** 1

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes_____ No__√___ (check)
If YES above, RE presence not required for steps _____

Initial conditions to be verified prior to initiation of step: 2

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
CTP	1845-1850 MWth		Load Line	100-108%	

Description of Step:
Lower recirculation flow to lower power to 95% (1730-1760 MWth).

Critical parameters to be monitored DURING Step: 0
Critical parameters not used must be deleted OR marked N/A

RMI evaluated against approved power profile: □. N/A ■

Other Comments:

Step Prepared by: Alex Reed / Today
RE/STA Date

Step Reviewed by: Jake Darrow / Today
RE/STA/SRO Date

Approval to perform Step Joe Allen / Today
Shift Manager Date

Step Completed by: _____ / _____
SRO Date

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Shift TBCLC Pumps

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If requested to vent TBCLC pump, then report after 2 minutes that the pump is vented.
	■ Respond to request for assistance as appropriate.

EVENT 2: Lower power to 95% using recirc flow.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

EVENT 3: Level inst failure. Half scram. TS

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 1 when directed.
	■ Report Level transmitter 36-03D is failed downscale and the gross failure light is on at the ATS cabinet.
	■ Respond to request for assistance as appropriate.

EVENT 4: Recirc #13 Oscillates.. Take manual control 13 Recirc flow control.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 2 when directed.
	■ Activate Trigger 25 if requested to take RRMG 13 to local lock.
	■ Respond to request for assistance as appropriate.

EVENT 5: Recirc #13 motor overheats, lower power remove from service.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 3 when directed.
	■ If requested to check Turbine Building Ventilation, and MG set ventilation, report back in 3 minutes that everything is normal with ventilation. The RRMG 13 generator end is very hot to the touch.
	■ If Ops manager is requested for guidance on high slot temperatures, then direct to remove from service.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If applicants are not making progress in securing the RRMG, then as directed by lead examiner, trip the RRMG.
	■ Respond to request for assistance as appropriate.

EVENT 6: Medium LOCA ATWS, ARI works.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 4 when directed.
	■ Respond to request for assistance as appropriate.

EVENT 7: PB 11 failure to auto transfer.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

EVENT 8: FP 11 trips on overload after restart.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Verify Trigger 5 goes active 30 seconds after FWP 11 re-starts.
	■ If requested to investigate trip of FWP 11, wait 2 minutes and report breaker tripped on overload.
	■ Respond to request for assistance as appropriate.

EVENT 9: Core Spray Isolation Valves Fails to open.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. N1-EOP-3 Initiate ARI

   Standard: After it is determined that the reactor has not manually scrammed, ARI is initiated per N1-SOP-1 or N1-EOP-3. The failure criteria would be if the applicant does not successfully scram the reactor.

   Basis : The Initiate ARI step in the Power branch provides redundant and an independent method of inserting control rods. If these actions are successful and all control rods are inserted to at least position 04, then EOP-3 may be exited.

2. N1-EOP-2 Perform emergency blowdown per N1-EOP-8.

   Standard: After it is determined that level can not be restored and maintained above -84 inches, CRS assesses conditions and enters N1-EOP-8 before RPV level drops to -109 inches and then orders a blowdown by opening 3 ERVs.

   Basis : If an injection source is available but the decreasing RPV water level trend cannot be reversed before RPV water level drops to the Minimum Steam Cooling RPV Water Level, a blowdown is performed to permit injection from low head systems, maximize flow from available injection sources, and minimize the flow through any primary system break.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Shift from 11 TBCLC pump to 12 pump

Time	Position	Applicant's Actions or Behavior
	CRS	Gives order to operator to shift TBCLC pumps per OP-24 section F.1.2.
		Shift from TBCLC 12 to 11.
	BOP	Starts 11 TBCLC pump May direct operator to vent 11 TBCLC pump. When system pressure and amps are stable stop 12 TBCLC and place its control switch in Auto Start.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2

Event Description: Lower Reactor Power to 95% using recirc flow.

Time	Position	Applicant's Actions or Behavior
	CRS	Conducts reactivity brief for power reduction, if not previously performed. Reviews Reactivity Maneuver Instruction Form, if not previously performed. Directs ATC to lower power to 95% using recirculation flow in accordance with the RMI and N1-OP-43B. Note : Procedure is marked up to F.2.8 Provides Reactivity SRO monitoring
	ATC	Acknowledges direction from CRS Obtains copy RMI form Begins lowering Master Recirculation Flow Controller while monitoring APRM and Total Recirculation Flow indications Reports to SRO when power maneuver is complete.
	BOP	Monitors individual RRP for response • Individual M/A-Speed Control stations trending uniformly • Individual RRP indications trending normally for speed increase Monitors feed water controls for proper response • RPV Water Level remains within program band (65" - 75")
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 3 Event No.: 3

Event Description: LT 36-03D fails low causing half scram.

Time	Position	Applicant's Actions or Behavior
	Crew	Respond to the following annunciators : F4-1-6 RPS CH12 Reactor Level Low F4-2-8 RPS CH12 Auto Reactor Trip
	BOP	Observes and reports that LI-36-10 on F Panel indicates full downscale. Dispatches operator to check local indications.
	ATC	Reports group solenoids for trip channel 12 are de-energized resulting in a half scram.
	CRS	Consults TS for Inoperable instrument. Table 3.6.2a and 3.6.2k. Contacts WWM/FIN. Channel is inoperable however can continue to operate with half scram.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 3 Event No.: 4

Event Description: #13 recirc pump Oscillates. Take manual control #13 Recirc.

Time	Position	Applicant's Actions or Behavior
	Crew :	Diagnose #13 recirc pump Oscillating. APRMs, MWth and MWe, RPV Level, and RPV pressure will all be oscillating.
	CRS	May direct entry into N1-SOP-1.5 Unexplained Power Change. Directs operator to take manual control of #13 recirc pump controller. May direct entry into N1-OP-1 section H Recirc System Failures.
	ATC	Recognize and report APRM power is oscillating.
	BOP	Executes N1-SOP-1.5 Unplanned Power Changes. Recognizes and reports 13 Recirc pump is oscillating. Places 13 recirc pump in Manual.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Recirc #13 motor overheats, lower power remove from service.

Time	Position	Applicant's Actions or Behavior
	Crew	Responds to annunciator F2-2-3, React Recirc MG Set #13. Observes process computer point A094 and B331, RRMG 13 Gen Slot Temp in high alarm. If alarm due to high slot temperature: Verify Proper operation of MG set area ventilation, including Turbine Building Truck Bay and roll door positions. If area ventilation is operating normally, then reduce loading on affected MG by lowering power per N1-OP-43. If high temperature can not be corrected remove MG from service.
	CRS	Possibly directs response per N1-OP-1 F 4.0 maintaining Reactor recirc MG set generator slot temperature settings. .
	CRS	As slot temperature approaches 120C, reduces load on RRMG by lowering power per N1-OP-43B. May direct trip of RRMG set and entry into N1-SOP-1.3.
	ATC	Lowers Power using recirc flow as directed by CRS.
	CRS	Removes #13 MG set from service per N1-OP-1 H 1.0, if not previously tripped.

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Recirc #13 motor overheats, lower power remove from service.

Time	Position	Applicant's Actions or Behavior
	BOP	If directed to shutdown RRMG : • Places RR #13 speed control in balance and nulls out deviation meter. • Places RR #13 speed control auto/bal/man switch to manual. • Verify open RR #13 bypass valve. • Reduce flow on #13 RR to 8 x 10exp6 lbm/hr. • Close RR #13 discharge valve. • When valve is closed, place #13 RR MG set switch to stop. • Hold discharge valve in open position for 2 to 3 seconds. If directed to trip RRMG : • Places control switch to trip • Notifies CRS that APRMs are inop • Closes RRP discharge valve • Gives RRP discharge valve a 2-3 second open signal • Notifies CRS that APRMs are operable
	CRS	Directs aligning system for 4 loop operation per N1-OP-1 Section H 2.0. Idle loop does not require isolation. • Verify 4 Loop Thermal Limits. TS call for 4 loops – TS 3.1.7.e.
	ATC	Verifies open in idle loop : • Suction valve • Discharge Bypass
	CRS	Verify P/F map on E Panel updated to 4 loop requirements.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: Medium LOCA ATWS, ARI works.

Time	Position	Applicant's Actions or Behavior
	Crew	Recognizes/reports containment parameters degrading : DWFD leakage rising (Annunciator H2-4-7) DW humidity rising. DW pressure rising
	CRS	May direct a further emergency power reduction. May enter N1-SOP-8.1 for containment leakage. Briefs crew on plans to manual scram. Directs RO to place mode switch in shutdown.
	ATC	Places mode switch to shutdown. Reports failure to scram.
		Note : ATC may immediately initiate ARI per guidance in N1-SOP-1. Alternatively, the crew may enter N1-EOP-3 prior to initiating ARI.
	CRS	May enter N1-EOP-3 Failure to Scram May directs bypass ADS and Prevent Core Spray Injection (EOP-1 Att4). May direct initiation of ARI.
	BOP	May bypass ADS.
	BOP	May prevent Core Spray injection (EOP-1 Att4).
CT	**ATC**	**Manually Initiate ARI. Reports that ARI has initiated and rods are moving in. Reports that all rods are fully inserted.**

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: Medium LOCA ATWS, ARI works.

Time	Position	Applicant's Actions or Behavior
	CRS	Exits N1-EOP-3 and Enters N1-EOP-2, if N1-EOP-3 entered.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 3 Event No.: 7

Event Description: PB 11 failure to auto transfer

Time	Position	Applicant's Actions or Behavior
	CRS	Enters EOP-4 when DWP reaches 3.5 psig.
	ATC	Provides scram report. Performs actions of SOP-1 Scram Procedure. Inserts SRM & IRM detectors Downranges IRM's as necessary.
	BOP	Perform initial level control actions at F panel. Reports loss of FWP 11. Recognizes that PB 11 did not auto transfer. Reports to SRO.
	CRS	Directs PB 11 re-energized per N1-SOP-30.1
	BOP	Performs actions from SOP-30.1 Verify Service Water Pump 12 running Verify IAC 12 and or 13 running. Verify TBCLC pump 12 running. Verify RBCLC running. Determines PB 11 can be restored because no annunciators in alarm. Open R113. Close R112 to energize PB11. Close R111 to energize downstream PB's. Reports PB re-energized.
	CRS	Directs RPV water level between +53 and + 95 inches., using feedwater.
PROCEED TO NEXT EVENT		

Op-Test No.: 1 Scenario No.: 3 Event No.: 8

Event Description: FP 11 trips on overload after restart.

Time	Position	Applicant's Actions or Behavior
	BOP	Starts FW 11 and Pump trips after about 30 seconds. Reports FW 11 tripped on overload. May attempt second start of FW pump 11. Responds to annunciator H3-1-7 Reactor Feedwater Pump 11 Trip Overload Suction. May maximize CRD injection per N1-OP-5.
	CRS	Determines that can not maintain level > 53 inches. Directs to maintain above -84 inches (TAF) and may direct use of of alternate injection systems
	CRS	May direct MSIV closure and pressure control with ECs. May direct Liquid Poison injection. Directs ADS bypassed once transitions to Alternate Level Control leg of N1-EOP-2. Directs verification that EC's are initiated.
	CRS	EOP-4, If containment spray has not initiated, then lockout all containment spray pumps except ones used for Torus cooling. If containment spray has started, verify proper operation EOP-1 Att 17.
	ATC	Either locks out containment spray or secures when reaches 3.5 psig.
	CRS	When Torus Pressure exceeds 13 psig or drywell temperature approaches 300 F., directs to operate containment sprays.

Op-Test No.: 1 Scenario No.: 3 Event No.: 8

Event Description: FP 11 trips on overload after restart.

Time	Position	Applicant's Actions or Behavior
	ATC	Verifies all Recirc Pumps Tripped. Verifies all drywell fans tripped. Operates Containment Sprays. (EOP-1 Att17)
	ATC	Operates Containment Sprays. (EOP-1 Att17) • Starts 2 containment spray pumps (111 and 122 willl not start). Without 111 or 122 running performs step 3.2.7 • Opens 80-44 CS Bypass BV 112 • Opens 80-41 CS Bypass BV 121
	BOP	Verifies that Core Spray Loop #11 and 12 are running and lined up.
CT	**CRS**	**Waits until level drops to -84 inches,** **Before level drops to -109, enters N1-EOP-8, RPV Blowdown.** Directs EC initiation. **Directs opening 3 ERVs.**
CT	**BOP**	**Opens 3 ERV's.**
	CRS	Directs to restore and maintain RPV level above -84 using core spray EOP-1 att 4, or Cond/FW Att 25 & 26.
PROCEED TO NEXT EVENT		

Op-Test No.: 1 Scenario No.: 3 Event No.: 9

Event Description: Core Spray isolation valve fail to open in Loop 11

Time	Position	Applicant's Actions or Behavior
	CRS	Directs to Inject liquid poison injection per EOP-1 att 13, if not previously initiated.
	ATC	Injects liquid poison per EOP-1 att 13, if not previously initiated.
	BOP	Operator Observes that Core spray valves 40-01 and 40-09 fail to open at 365 psig. Operator attempts to open valves manually.
	CRS	Directs to restore and maintain RPV level above -84 inches using core spray and or Cond/FW.
	BOP	Operator controls level using the loop 11 core spray system and or condensate and feedwater. Installs N1-EOP-1 attachment 4 jumpers to control core spray valves. May direct operator to pull HPCI fuses.

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- RPV level is being controlled above -84 inches using Core Spray and or Condensate.

POST-SCENARIO :

HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO (Alert 2.2.1 for ATWS and 3.1.1 for Drywell pressure).

SCENARIO SUMMARY

The crew will perform EC valve testing, then perform a control rod sequence exchange. Then a RPV pressure instrument will fail downscale, followed by a loss of 115 KV Line #1 and a failure of an EDG to autostart. A loss of main condenser vacuum leads to a manual scram. Upon the Reactor being taken to shutdown a small break LOCA will occur, with a failure of HPCI and Core Spray to auto initiate. The leak will begin to degrade slowly over time where the need to blowdown and reflood will be required.

Major Procedures: N1-ST-Q4, N1-OP-5, N1-SOP-25.1, N1-SOP-1, N1-EOP-2, N1-EOP-4, N1-EOP-8

Crew Turnover

Complete briefings for N1-ST-Q4 and rod sequence exchange prior to entering the simulator.
N1-ST-Q4 is complete up to step 8.1.5
Nine Mile Unit #1 is at 50% power for waterbox cleaning and rod sequence exchange. CRD pump #11 is tagged out for maintenance. Day 2 of 3 day planned outage. #11 Feedwater pump is tagged for an oil change. Day 1 of 1 day planned outage. MOD-8106 is tagged for maintenance. Day 1 of 1 day planned outage.
Once turnover is completed perform EC valve surveillance Loop 11 per N1-ST-Q4 and then continue with rod sequence exchange.

INITIAL SIMULATOR SETUP

A. IC Number: IC 164

B. Presets/Function Key Assignments

1. Malfunctions:

a.	RD35A, CRD Hydraulic Pump 11 Trip	PRESET
b.	FW03A, Feedwater Pump Trip 11	PRESET
c.	EC08B, EC Loop 11 Stem IV Fail to Close 112, FV=50	PRESET
d.	RR58, Rx Vessel Press Transmitter Fails - Low	TRG 1
e.	ED01B, 115KV Line 4 (JAF) Bus Fault between R10/MOD 168	TRG 2
f.	DG04A, DG 102 Failure to Auto Start	PRESET
g.	MC01, Main Condenser Air Inleakage, FV=12.5	TRG 3
h.	FW28B, HPCI Mode Failure to Initiate 12	PRESET
i.	RR29, RR Loop Rupture on Pump 15 Suction Line, IV=10, RT=180, FV=14	TRG 4
j.	CS06, CS Pumps Failure to Auto Start	PRESET

2. Remotes:

a.	ED10A, PB13A NC Supply Breaker, FV=open	TRG 27
b.	ED10C, PB 13 NO Bus Tie Breaker Section A-B, FV=close, DT=1	TRG 27
c.	ED11A, PB14A NC Supply Breaker, FV=open	TRG 28
d.	ED11C, PB 14 NO Bus Tie Breaker Section A-B, FV=close, DT=1	TRG 28
e.	ED12A, PB15A NC Supply Breaker, FV=open	TRG 29
f.	ED12C, PB 15 NO Bus Tie Breaker Section A-B, FV=close, DT=1	TRG 29

3. Overrides:

a.	OVR-9S2DI505 POS_3 2K8/39-07A POS C, FV=off	PRESET

4. Annunciators:

a. None

5. Triggers:

a. TRG 5 – Re-inserts leak at higher value over a ramp time

i. Event Action: None

ii. Command: imf rr29 (0 0) 24 180 14

C. Equipment Out of Service

1. Feedwater pump 11 control switch in PTL with yellow tag applied
2. CRD pump 11 control switch in PTL with yellow tag applied

3. MOD 8106 open with yellow tag applied

D. Support Documentation

1. N1-ST-Q4 marked up to step 8.1.5.
2. RMI and Control Rod Movement Sheet for Control Rod Sequence Exchange.

E. Miscellaneous

1. Update Divisional Status board:
   - Control Rod Drive 11 – Red
   - Control Rod Drive 12 - Green
   - EDG 103 - Green
2. Place protected signs on the following equipment:
   - Feedwater pump 12
   - CRD pump 12
   - Power Board 12, 17B, 103 and EDG 103
3. Verify computer point C875 has been refreshed on G display
4. Verify computer point J370 is displayed on LVD in place of D373

II. SHIFT TURNOVER INFORMATION

OFF GOING SHIFT: ☐ N ■ D DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, RO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM, CRS, STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM, CRS, STA, RO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (RO)

Evolutions/General Information/Equipment Status:

Plant is at approximately 50% power for water box cleaning and a Control Rod Sequence exchange

Feedwater pump 11 is out of service for maintenance (Day 1 of planned 1 day LCO).

CRD pump 11 is out of service for maintenance (Day 2 of planned 3 day LCO).

MOD 8106 is tagged open for maintenance.

PART III: Remarks/Planned Evolutions:

1. Perform N1-ST-Q4 for Emergency Condenser 11 isolation valves.
2. Perform Control Rod Sequence exchange.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Control Rod Pattern Adjustment **Step:** 2

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes_____ No__√___ (check)
If YES above, RE presence not required for steps _____

Initial conditions to be verified prior to initiation of step: 1

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
CTP	<1350 MWth				

Description of Step:
Withdraw control rods on attached control rod movement sheet using notch withdrawal.

Critical parameters to be monitored DURING Step: 0
Critical parameters not used must be deleted OR marked N/A

RMI evaluated against approved power profile: □. N/A ■

Other Comments: Allow Reactor power to rise with rod pulls. Expected power rise is up to 10%.

Step Prepared by: *Alex Reed* / *Today* Step Reviewed by: *Jake Darrow* / *Today*
RE/STA Date RE/STA/SRO Date

Approval to perform Step *Joe Allen* / *Today* Step Completed by: _____ / _____
Shift Manager Date SRO Date

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Perform EC Valve Surveillance Loop 11 per N1-ST-Q4.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.
	■ If requested to look at valve locally, wait 2 minutes and report valve is 50% open.
	■ Secure EC 11 Keepfull system if requested.

EVENT 2: Perform rod sequence exchange.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

EVENT 3: RPV pressure instrument fails downscale.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 1 following completion of control rod withdrawals or when directed by Chief Examiner.
	■ If requested to investigate, wait 2 minutes and report that from the ATS cabinet, pressure transmitter PT-36-07B is failed downscale and the gross failure light is on
	■ Respond to request for assistance as appropriate.

EVENT 4: Loss of Line 1

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Inserted trigger 2 after SRO makes Tech Spec call for the pressure transmitter.
	■ If requested to investigate R10 trip, wait 2 minutes and report lockout flags are present for R10.
	■ If requested to investigate SFP alarms, acknowledge requests and delay action.
	■ Respond to request for assistance as appropriate.

EVENT 5: Failure of EDG 102 to start

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If requested to investigate as Operator, wait 1 minute and report that EDG 102 appears to be in the standby lineup, and nothing else appears abnormal
	■ If requested to investigate as maintenance, wait 5 minutes and report that nothing appears abnormal with EDG 102 and it is available for use.

EVENT 6: Loss of condenser vacuum

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 3 after PB 102 is powered by EDG 102.
	■ Respond to request for assistance as appropriate.

EVENT 7: Failure of HPCI to Auto Initate

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If requested to cross tie powerboards 13, 14, and/or 15, insert triggers 27, 28 and/or 29, respectively
	■ Respond to request for assistance as appropriate.

EVENTS 8, 9, 10: Recirculation Loop Rupture, Failure of Core Spray to Start

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 4 after crew has stabilized the plant following scram, started Service Water pump 12, and restored Reactor Building D/P, or as directed by Chief Examiner
	■ Insert trigger 5 after Containment Spray has been initiated, Containment pressure has lowered to 10 psig or less, Core Spray has been manually started, and crew has stabilized level with Feedwater pump 12, or as directed by Chief Examiner.
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. Start EDG 102.

Standard: Start EDG 102 given an undervoltage on PB 102 and a failure of the auto-start.

Basis: With EDG 102 auto-start failure not recognized, half of ECCS systems would be unavailable. As the LOCA degrades all available ECCS will be required for injection following the ADS blowdown.

2. Initiate Containment Spray.

Standard: Initiate Containment Spray.

Basis: With Containment parameters approaching PSP, Containment Spray initiation is required to maintain Containment integrity.

3. Perform emergency blowdown per N1-EOP-8.

Standard: After it is determined that RPV level can not be restored and maintained above -84 inches, or when Pressure Suppression Pressure (PSP) is exceeded, CRS assesses conditions and enters N1-EOP-8 before RPV level drops to -109 inches or when Containment pressure exceeds PSP, respectively, and then orders a blowdown by opening 3 ERVs.

Basis: If an injection source is available but the decreasing RPV water level trend cannot be reversed before RPV water level drops to the Minimum Steam Cooling RPV Water Level, a blowdown is performed to permit injection from low head systems, maximize flow from available injection sources, and minimize the flow through any primary system break.

If containment sprays cannot be initiated or are ineffective in controlling primary containment pressure, a blowdown is required. The blowdown is performed to limit further release of energy into the primary containment and to ensure that the RPV is depressurized while pressure suppression capability is still available.

Op-Test No.: 4 Scenario No.: 4 Event No.: 1

Event Description: Perform EC Valve surveillance Loop 11 per N1-ST-Q4. IV 112 in Loop 11 will fail to close.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct BOP to complete N1-ST-Q4, Section 8.1.5
	BOP	Step 8.1.5 Cycle 39-09R and record stroke times.
	BOP	Step 8.1.6 Close 39-07R. Note : The valve will only close 50% and will have dual indication.
	SRO	Acknowledge 39-07R has dual indication when performing open to close stroke test and contact FIN Team or maintenance. May also have NLO look at valve position locally. Note : *Per N1-ST-Q4, 4.4.e, the valve must be declared inoperable immediately. No retest is allowed* . TS call SRO
	SRO	Enter Tech Spec 3.2.7.b. A valve in the line must be closed within 4 hours or commence shutdown within 1 hour.
	SRO	May direct removal of EC 11 from service per N1-OP-13 H.8.1. Enters Tech Spec 3.1.3.b 7 day LCO.

Op-Test No.: 4 Scenario No.: 4 Event No.: 1

Event Description: Perform EC Valve surveillance Loop 11 per N1-ST-Q4. IV 112 in Loop 11 will fail to close.

Time	Position	Applicant's Actions or Behavior
	BOP	8.1 IF removing EC System 11 from service, THEN perform the following: 8.1.1 Declare EC System 11 inoperable 8.1.2 Secure EC Keepfull System per Section G.2.0. Directs operator to remove EC 11 keepfull from service. 8.1.3 Verify closed the following isolation valves: 05-11, EMERG COND VENT ISOLATION VALVE 112 05-01R, EMERG COND VENT ISOLATION VALVE 111 39-11R, EMERG CONDSR STM SUPPLY DRAIN IV 111 39-12R, EMERG CONDSR STM SUPPLY DRAIN IV 112 39-09R, EC STM ISOLATION VALVE 111 39-05 EMERG CNDSR COND RET ISOLATION VALVE
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 4 Scenario No.: 4 Event No.: 2

Event Description: Perform Control Rod Sequence Exchange

Time	Position	Applicant's Actions or Behavior
	SRO	☐ Conducts reactivity brief for power restoration, if not previously performed. ☐ Reviews Reactivity Maneuver Instruction Form, if not previously performed. ☐ Directs RO to withdraw control rods in accordance with, N1-OP-5 and Control Rod Sequence, and provides Reactivity SRO monitoring.
		Note: Chief Examiner may move to the next event once sufficient action is observed on the reactivity manipulation.
	RO	☐ Acknowledges direction from SRO ☐ Obtains copy of RMI form and rod movement sheets ☐ Begins withdrawing control rods ☐ while monitoring APRM indications ☐ Reports to SRO when rod withdrawals are complete
	BOP	☐ Monitors feed water controls for proper response ☐ RPV Water Level remains within program band (65" - 75")
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 4 Scenario No.: 4 Event No.: 3

Event Description: RPV pressure instrument fails downscale.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Responds to the following Alarms PANEL / WINDOW / ENGRAVING **F4 / F4-4-2 / RPS CH 12 REACTOR PRESS LOW** **F4 / F4-4-7 / RPS CH 12 MAIN STEAM ISOLATION AUTO OPERATE** Verifies RPV pressure stable on redundant instruments Dispatches operator to investigate Reports field operator findings to SRO
	SRO	References TS Table 3.6.2.a. Determines that with the pressure instrument failed low, it would not perform the function of initiating a Rx Scram. Determines note O applies, requiring half scram on RPS channel 12 within 12 hours.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 4 Event No.: 4 and 5

Event Description: Loss of Line 1 and Failure of EDG 102 to Start

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes/reports loss of Line 1 Recognizes/reports failure of EDG 102 to start Responds to annunciators : • A4-1-6, Power Bd 102 Bus Voltage Low o Starts EDG 102 • H1-3-1, Reactor Bldg Cool Pump 13 Trip-V-Suct o Starts additional RBCLC pump, if required • L1-4-5, Fuel Pool Annunciator o Dispatches operator to investigate o May enter N1-SOP-6.1 • K3-4-3, Power Board 16 Bkr Lockout Relay 86-16 o Resets 86-16 • H3-3-2, Condensate Transfer Pump Header Pres Low o Starts a Condensate Transfer pump
	SRO	Directs annunciator response and prioritization Directs start of EDG 102 Briefs crew on extent of electrical loss Reviews Tech Specs Determines TS 3.6.3 applies due to loss of Line 1 and failure of EDG autostart, 24 hour LCO
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 4 Scenario No.: 4 Event No.: 6

Event Description: Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
	Crew	Diagnose that condenser vacuum is lowering.
	SRO	Enters N1-SOP-25.1 Unplanned Loss of Condenser Vacuum. Orders RO to lower power as required to stabilize vacuum, as time permits.
	RO	Lowers power by inserting CRAM rods to stabilize vacuum, as time permits.
	SRO	Before Condenser vacuum reaches 22.1 inches Hg, Scram the reactor.
	RO	Scrams the reactor per N1-SOP-1.

PROCEED TO THE NEXT EVENT.

Op-Test No.: 4	Scenario No.: 4	Event No.: 7
Event Description:	HPCI fails to initiate on low level	
	Crew	Confirms annuciator F4-4-1, HPCI MODE AUTO INITIATE is alarmed Recognizes HPCI has failed to initiate Recognizes low RPV water level
	BOP	Manually controls FW pump 12 flow control valve and/or low flow control valve to maintain RPV water level
	Crew	Recognize Powerboard 11 is lost on Scram due to unavailability of Line 1 Enter N1-SOP-30.1 for loss of Powerboard 11 Start Service Water pump 12 Cross-tie Powerboard 16A May dispatch operators to cross-tie Powerboards 13, 14, and 15
	SRO	Enters N1-EOP-5 on low Reactor Building D/P • May enter N1-EOP-4 on high Drywell temperature
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 4 Event No.: 8, 9, 10

Event Description: Recirculation loop Rupture and Core Spray fails to auto-start

	CREW	Recognizes/reports containment parameters degrading : • DW Humidity rising • DWFD leakage rising • DW pressure rising Recognize/report failure of Core Spray to start As the LOCA begins to degrade, the crew recognizes the inability to maintain RPV level.
	CRS	Enters N1-EOP-2 and N1-EOP-4 Directs Containment Spray pumps in PTL Directs start of Core Spray pumps Transitions to Alternate Level Control: • Directs ADS bypassed • Directs EC initiation • Directs MSIVs closed • Directs injection with FW, LP and CRD When either Torus pressure exceeds 13 psig or Drywell temperature approaches 300 degrees: • Direct DW cooling fans tripped • Verifies Recirc pumps tripped • Directs Containment Spray initiation per EOP-1 att 17 When RPV water level drops below -84 inches or PSP is exceeded, directs RPV Blowdown: • Directs EC initiation • Directs 3 ERVs opened • Directs RPV level restoration above -84 inches using Feedwater (EOP-1 att 25/26), Core Spray (EOP-1 att 4), CRD, and/or Liquid Poison

	BOP / ATC	Places Containment Spray pumps in PTL Manually starts Core Spray pumps Monitors EDG 102 loading Bypasses ADS Initiates ECs Closes MSIVs Maximizes CRD injection Injects Liquid Poison When either Torus pressure exceeds 13 psig or Drywell temperature approaches 300 degrees. • Trips Drywell cooling fans • Verifies Recirc Pumps tripped • Initiates Containment Spray pumps per EOP-1 att 17 When Blowdown is directed : • Initiates ECs • Opens 3 ERVs Restores and maintains RPV level above -84" Inserts Core Spray IV jumpers and throttles Core Spray IVs

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **Reactor Level is being maintained above -84 inches.**

RPV Blowdown is in progress.

Have SRO determine highest appropriate EAL classification (Alert 3.1.1).

SCENARIO SUMMARY

Unit 1 Reactor starts the scenario at 90% power with five (5) recirc pumps in service. The #112 Containment Spray Pump is blocked out of service for maintenance and will be returned to operations in four (4) hours. The crew has been requested to swap CRD pumps and perform the required surveillance test per N1-ST-Q2 on the #11 CRD pump only. The pump swap can be completed and no additional actions are required.

After completion of the pump swap the #135 FWH will develop a large tube leak which quickly overwhelms the drain system. This will result in a loss of feedwater heating from the #3 FWH string and will require a power reduction to maintain power less than 100% rated thermal power. This will also help maintain Feedwater temperature per N1-SOP-16.1. The #135 FWH will need to be isolated per N1-OP-16. Entry into N1-SOP-1.5 may be required due to power changes seen during the loss of feedwater heating transient.

With the final adjustment to recirc flow for the required drop in power from the FWH tube leak, the recirc master controller will fail to minimum and drive the reactor into the restricted region of operation. The failure of the master controller will result in each of the individual recirc pump controllers failing downscale. The ATC and SRO are to recognize that core flow can not be raised with recirc flow and commence driving rods to exit the restricted region.

After a 10-15% power change the running CRD pump will trip. Three accumulator pressure alarms will come in within 1-2 minutes following the CRD pump trip. The crew is expected to enter N1-SOP-5.1 and determine that they are on a 20 minute clock to trip the unit if a CRD pump can no be started. Reports from the field will confirm low accumulator pressures and #12 CRD pump will not be available to start if requested prior to start. The #12 CRD pump will also trip immediately if started. The #12 CRD pump fault will be diagnosed by the field immediately following the SCRAM and #12 CRD can be restarted.

During the required SCRAM, rods will fail to SCRAM and remain patially withdrawn. This will require entry into EOP-3 for Failure to SCRAM. Additionally, during the SCRAM the CRD pump will be returned to service and allow the ATC to drive rods. The reactor will not be able to be depressurized during the ATWS.

After the ATWS is exited, the SDV will develop a fault which will grow with time and require entry into EOP-5. The SCRAM signal will not be able to be reset this will continue to feed the leak in the SDV.

The SDV leak will progress until two areas are above Max Safe Values and a blowdown is required per N!-EOP-8. Torus cooling will be started and 80-45 will be failed open.

Major Procedures:
N1-OP-5, N1-ST-Q2, N1-OP-16, N1-SOP-16.1, N1-SOP-1.5, N1-SOP-1.1, N1-SOP-31.1; N1-OP-43C; N1-SOP-1; N1-EOP-3; N1-EOP-8

INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Apply Red Tags on the following components: - #112 Containment Spray Pump - Inoperable due to maintenance.
	■ Reset simulator to Scenario IC and ensure the following: - Reactor Power is 90% - All other equipment is OPERABLE.
	■ **Ensure** the following malfunctions are loaded: - FW22 – Feedwater heater tube leak - RR27 – Master Recirc Flow Controller Failure - Low - RD35A – CRD Hydraulic Pump Trip (11) - RD35B – CRD Hydraulic Pump Trip (12) - RD03 – Control Rod XX-YY Failure – Accumulator Trouble o RD03R4239 o RD03R2203 o RD03R5035 - RD06 – Control Rod XX-YY Failure – SCRAMMED (5 Rods) - RD3CHydraulic ATWS - RD41- SCRAM Discharge Volume Rupture - **NEW** – Valve 80-45 fails to close from MCR
	■ **Ensure** the following remote functions are loaded: - FW22 - FW HEATER 135 ISOL VALVES - RD05 - CRD FLOW CONTROL VALVE ISOL - RR03A RR PUMP 11 SCOOP TUBE LOCAL CONTROL STPT(0%) - RR03B RR PUMP 12 SCOOP TUBE LOCAL CONTROL STPT(0%) - RR03C RR PUMP 13 SCOOP TUBE LOCAL CONTROL STPT(0%) - RR03D RR PUMP 14 SCOOP TUBE LOCAL CONTROL STPT(0%) - RR03E RR PUMP 15 SCOOP TUBE LOCAL CONTROL STPT(0%)
	■ **Ensure** the following triggers are built: - FW22 – Feedwater heater tube leak (TRG1) - RR27 – Master Recirc Flow Controller Failure - Low (TRG 2) - RD035A - CRD Hydraulic Pump Trip (11) (TRG 3) - RD03R4239 - Control Rod 42-39 Failure -- Accumulator Trouble (TRG 4) - RD03R2203 - Control Rod 22-03 Failure -- Accumulator Trouble (TRG 5) - RD03R5035 - Control Rod 50-35 Failure -- Accumulator Trouble (TRG 6) - RD36 – CRD Flow Control Valve Failure -- Closed (TRG 7) - RD41- SCRAM Discharge Volume Rupture (TRG 8) - RR03A, B, C, D, E – RR Pump Scoop Tube Local Control (TRG 9) - RD06 - Rod XX-YY Failure – SCRAMMED (5 Rods) (TRG 10) - Override for scram reset.
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Swap CRD pumps and perform PMT per N1-OP-5 and N1-ST-Q2.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.
	■ If contacted indicate that #11 CRD Pump is ready for start and all conditions at the pump appear normal
	■ Contact control room and indicate that backfill has been shifted per N1-OP-58 after approximately 10 min.

EVENT 2: Respond to FWH Tube Leak

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate
	■ Activate TRG1 when pump swap is complete per N1-OP-5 Section 3.0
	■ All requests for FWH level will indicate that level is offscale high and valve appears to be full open if requested to examine locally.
	■ If an operator is dispatched, 2 minutes later report that the operator hears a loud rumble from feedwater heater room.
	■ If contacts OPS manager, give direction to isolate heater.
	■ Support Isolation of the 135 FWH by pulling fuses and closing manual valves - ***remote functions MS03 and FW22***

EVENT 3: Recirc Master controller fails to minimum during adjustments.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate TRG2 when target power is achieved for the feedwater temperature and RPV level below 74".
	■ If an operator is dispatched to manually control MG speed, wait 2 minutes and report back that they cannot take any MG to manual.
	■ Respond to request for assistance as appropriate.

EVENT 4: CRD Pump Trip After 10-15% power drop with rods

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ .Activate Trigger 3 when power has been reduced between 10 -15 percent with rods.
	■ Respond to conditions at the #11 CRD pump indicating there is the smell of burnt insulation in the air and the motor has a small flash mark on the motor housing.
	■ If asked about #12 CRD pump **PRIOR** to pump start, indicate that oil level for the pump is out of sight low and there is oil on the pedestal. Oil will need to be added prior to start and maintenance has been contacted to determine the cause of the leak. It will be at least an hour before anything can be determined or fixed.
	■ If 12 CRD pump is started without field checks then indicate that the pump trip is being investigated by Ops and maintenance. It will be at least an hour before anything can be determined or fixed. Indicate that oil level for the pump is out of sight low and there is oil on the pedestal.

EVENT 5: Three accumulator pressures drop below required values

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Triggers 4, 5 and six over a two minute time span.
	■ If asked to read local pressures provide the following values - HCU 42-39 - 970 psi and dropping slowly - HCU 22-03 – 930 psi and dropping slowly - HCU 50-35 – 890 psi and dropping fast
	■ Notify the MCR that you are commencing press-up of the accumulators that are less than 940 psi.

EVENT 6: On plant SCRAM 12 rods fail to SCRAM and an ATWS is identified.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.
	■ Remove malfunction RD35B for #12 CRD pump and notify room that #12 CRD pump is ready for restart after oil addition.
	■ Insert TRG 10 to maintain 5 rods in the scrammed condition in preparation for CRD pump restart and attempted SCRAM reset.

EVENT 7:

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ .
	■ Respond to request for assistance as appropriate.

EVENT 8: A rupture in the SDV starts following the SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Report that the entire East side of the Reactor Building elevation is full of steam and condensation and you can hear the sound of a steam leak on the east side of the reactor building but can not identify the leak. You and RP are backing out of the area.
	■ For operator dispatched to field report temperatures as determined by computer.
	■ Respond to request for assistance as appropriate.

EVENT 9: Effects of the secondary containment leak spread into a second area and require a blowdown per EOP-8

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. **Reactor is scrammed at or before the 20 minute clock expires with no CRD pumps running and two HCU's below their Tech Spec minimum pressures.**

   Standard – Reactor is scrammed at or before the expiration of the 20 minute allotted time with no CRD pumps running and HCU accumulator pressures less than the minimum required per N1-SOP-5.1.

   Basis - The 20 minute completion time was selected to provide a reasonable time to place a CRD pump in service to restore charging header pressure and recognizes the ability of Reactor pressure of greater than 900 psig alone to fully insert all control rods. Failure to provide a reactor scram increases the risk of rods not being fully inserted during conditions that require a reactor scram condition to be completed.

2. **Reactor Pressure emergency blowdown is executed with a primary system discharging and two areas above the Maximum Safe value.**

   Standard - A reactor blowdown is performed when two areas in secondary containment are above the maximum safe operating value for the same parameter and the source of the parameter excursion is a primary system per EOP-5.

   Basis - A parameter above the Maximum Safe Value in two separate areas is indicative of a wide-spread problem posing a direct and immediate threat to secondary containment, equipment in the secondary containment, and safe operation of the plant. The blowdown minimizes flow through the break, rejects heat to the suppression pool in preference to outside the containment, and places the primary system in the lowest possible energy state. (Ref. NER-1M-095, REV 2)

Op-Test No.: 1 Scenario No.: 5 Event No.: 1

Event Description: Swap CRD pumps and perform PMT per N1-OP-5

Time	Position	Applicant's Actions or Behavior
	SRO	Direct BOP to swap CRD pumps per N1-OP-5 and prepare for routine performance of N1-ST-Q2
	BOP	Obtains N1-OP-5 and determines Section 3.0 is applicable. Contacts Field Operator to support CRD pump swap
	BOP	Verifies Charging Water between 1390 and 1510 psig and directs field operator to adjust VLV-28-34 as necessary.
	BOP	- Places Control Rod Drive Pump 11 control switch to start - Places Control Rod Drive Pump 12 control switch to stop - Directs performance of N1-OP-58 to shift backfill.
	BOP	Notifies CRS that CRD pumps are swapped and #11 CRD pump is in-service.
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 5 Event No.: 2

Event Description: Respond to FWH Tube Leak

Time	Position	Applicant's Actions or Behavior
	BOP ATC	- Acknowledges alarm for FWH High and High-High Alarms (H3-3-4 and H3-3-5)
	BOP	- Contacts field operator to investigate level controller and alarm conditions - Monitors Feedwater temps on computer points A390, A392, A393, A394 and A395 - Recognizes when feedwater temperatures are not within 3 degrees of one another and recommends entry into N1-SOP-16.1 per ARP - Identifies drain valve operation is correct - Coordinates with field operator and isolates 135 FWH per N1-OP-16 Section H ▪ Notifies SRO that power must be reduced below 80% to isolate the FWH
	ATC	- Monitors Reactor Power due to change in feedwater heating - Identifies change in reactor power and feedwater temperatureand the need to enter N1-SOP-1.5 - Reduces power to maintain <1850 MWth using the recirc master flow controller - Reduces power less than 80% to allow for #135 FWH isolation.
	SRO	- Enters N1-SOP-1.5 for unplanned power change (positive change) - Enters N1-SOP-16.1 for feedwater heater failure ▪ Directs taking manual control of 135 FWH drain valve per N1-OP-16 Section H ▪ Directs isolation of the 135 FWH per N1-OP-16 Section H ▪ Directs lowering power below 80% to isolate FWH ▪ Verifies position on power to flow map ▪ Contacts Reactor Engineering Supervisor
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 3

Event Description: Recirc Master controller fails to minimum.

Time	Position	Applicant's Actions or Behavior
	BOP	- Attempts to locks any Recirc pump scoop tube available to mitigate transient
	ATC	- Identifies Reactor power dropping as part of routine panel monitoring. - Identifies that Recirc Master Controller has run to minimum. - Drives rods to target power inserting CRAM rods to 00
	SRO	- Re-enters N1-SOP-1.5 for unplanned power change (negative change) ▪ Determines current position on power to flow map and identifies that unit is in the restricted region. ▪ Directs exit form the restricted region using control rods with a target power of _____% ▪ Enters N1-OP-1 Section H5 and executes concurrently. ▪ Contacts Reactor Engineering Supervisor.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 4

Event Description: CRD Pump Trip After 10-15% power drop with rods

Time	Position	Applicant's Actions or Behavior
	BOP ATC	Respond to the following alarms: ▪ F3-1-2 – Control Rod Drive Pump 11 Trip-Vib ▪ F3-1-5 – CRD Charging Wtr Pressure High/Low
	SRO	- Enters N1-SOP-5.1 Loss of Control Rod Drive ▪ Directs start of the #12 CRD pump to restore CRD ▪ Enters 7 day action under Tech Spec 3.1.6 with one pump inoperable ▪ Recognizes both CRD pumps are inoperable under Tech Spec 3.1.6 and shutdown action is required after second pump trip
	BOP	▪ Places Control Rod Drive Pump #12 control switch to start ▪ Places Control Rod Drive Pump #11 control switch to stop ▪ Recognizes #12 CRD pump trip ▪ Notifies SRO that both CRD pumps are tripped
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 5

Event Description: Three accumulator pressures drop below required values which place the Unit on a 20 minute clock to SCRAM.

Time	Position	Applicant's Actions or Behavior
	Crew	Acknowledges annunciator F3-2-5 for CRD Accumulator Level High Press Low for the following HCU's - 42-39 - 22-03 - 50-35
	BOP	- Directs field operator to verify the cause of the three alarms - Communicates the pressures of the three HCU accumulators to the SRO ▪ HCU 42-39 - 970 psi and dropping slowly ▪ HCU 22-03 – 930 psi and dropping slowly ▪ HCU 50-35 – 890 psi and dropping fast - Communicates to SRO that #12 CRD pump tripped which is being investigated by operations and maintenance and it will be at least an hour before there are any repairs.
	SRO	- Recognizes that HCU's 22-03 and 50-35 are below the Tech Spec minimum pressures and must be declared inoperable. - SRO enters Tech Spec 3.1.1.d for Control Rod Accumulators being below required values and recognizes the required actions. - Enters time for 20 minute clock to have a CRD pump running _____ (time)
	SRO	At the conclusion of the 20 minute clock or after the field report , directs the reactor to be scrammed per N1-SOP-5.1 **(CRITICAL TASK)**
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1	Scenario No.: 5	Event No.: 6
Event Description:	On plant SCRAM rods fail to SCRAM and an ATWS is identified.	
	SRO	Enters EOP-2, RPV Level Control until report on ATWS is received Enters EOP-3 , Failure to SCRAM - Directs Bypass of ADS - Directs preventing Core Spray Injection per EOP-1, Att. 4 Level Leg - Verifies Isolations, EC's and HPCI initiation - Directs bypass of MSIV isolation per EOP-1, Att 2 - Does **NOT** lower level - Directs level maintained -109 to 95 with Cond / Feedwater using EOP-1 Att. 24, 25 and / or 26 and CRD Pressure Leg - Directs pressure to be stabilized using bypass valves Power Leg - Directs / verifies mode switch in shutdown - Verifies ARI initiated - Executes EOP-3.1 concurrently and directs control rods be inserted per Attachment 3. - Records Liquid Poison tank level - Directs liquid poison to be injected - Directs / Verifies MSIV's are open and directs the low-low RPV water level MSIV isolation to be defeated per EOP-1, Att. 2
	ATC	Bypasses ADS Prevents Core Spray injection per EOP-1 Att. 4 by: - Places jumpers 17, 18, 19, 24, 25 and 26 inside panel N Bypasses MSIV Isolations by EOP-1, Att. 2 - Places jumpers 1, 2, 8 and 9 inside panel N Supports EOP-3.1 Attachment 3 by installing jumpers 5, 6, 12 and 13 in panel N
	ATC	Places Mode Switch in Shutdown Recognizes that all rods are not fully inserted and notifies SRO Initiates ARI Inserts rods per EOP-3.1 Attachment 4 - Overrides ARI by placing ARI OVERRIDE switch to override - Defeat RPS logic by installing jumpers - Resets the SCRAM - Verifies open 44-167 - When SDV drained then initiate manual scram. - Repeats reset and scram until all rods are inserted

Op-Test No.: 1	Scenario No.: 5	Event No.: 6
Event Description:	On plant SCRAM rods fail to SCRAM and an ATWS is identified.	
	BOP	Control Feedwater per EOP-1, Att. 25 - Select Manual on 13 FWP Valve Control Selector Switch - Turn 13 Feedwater FCV counterclockwise to close Feedwater 13 FCV - Place LVL SETPOINT SETDOWN to OVERRIDE - Turn 13 Feedwater FCV (knurled knob) clockwise to open Feedwater FCV - Position 13 Feedwater FCV as necessary to maintain required level
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 7

Event Description: After plant SCRAM the CRD pump is returned to service.

Time	Position	Applicant's Actions or Behavior
	ATC	- Receives notice from field that #12 CRD pump is ready for restart. ▪ Communicates to SRO that #12 CRD pump is ready for start ▪ Starts #12 CRD pump by NOP-5 Attachment H.1 by placing CONTROL ROD DRIVE PUMP 12 control switch in START - Restarts #12 CRD pump and recognizes system parameters are normal . - Drives any rods still beyond 00 to 00. - Notifies SRO when all rods are at or beyond 04
	SRO	Directs restarting CRD pump.
	SRO	Exits EOP-3 Directs Liquid Poison to be secured if it was running Returns to EOP-2
	BOP	Secures Liquid Poison by NOP-12 Section G - Places pump control switch to OFF if it was running
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 8

Event Description:

A rupture in the SDV starts following the SCRAM and drives entry into EOP-5.

	BOP	Responds to radiation, temperature and fire alarms from initial leak from SDV
	SRO	Enters EOP-5 when area temperature or radiation exceed the alarm setpoint - Using indications of rad and temperature and field reports, determines that a primary system is discharging into secondary containment. - Sends operator to field to determine max safe temperatures.
	SRO	After exiting EOP-3, attempts to depressurize reactor to limit energy input into secondary containment
	BOP	Coordinates activities with field operators for fire fighting and data gathering Makes evacuation announcements due to steam leak
	SRO	Directs evacuation of the reactor building and / or RCA due to steam leak
	SRO	Attempts to reset the SCRAM on the HCU's which remain scrammed to isolate the leak
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 5 Event No.: 9

Event Description:
Effects of the secondary containment leak spread into a second area and require a blowdown per EOP-8. ERV 111 will not actuate and an alternate blowdown mechanism will be required

Time	Position	Applicant's Actions or Behavior
	SRO	Evaluates that two areas are above the maximum safe temperature / radiation level and a primary system is discharging into secondary containment **(CRITICAL TASK)**
	SRO	Directs entry into EOP-8 - Directs EC's to be initiated - Directs that 3 ERV's be opened Enters EOP-4 Primary Containment Control on high Torus Temperature ▪ Directs Torus Cooling be placed in service per EOP-1 Att. 16
	ATC	Open 3 ERV's and identifies failure of ERV 111 to actuate Opens additional ERV until 3 are open Controls level and maintains level control from feedwater to condensate
	BOP	Initiates EC's by N1-OP-13 - Places 39-05, EMERG CNDSR RET ISOLATION VALVE 11 control switch in OPEN - Places 39-06, EMERG CNDSR RET ISOLATION VALVE 12 control switch in OPEN Starts torus cooling per EOP-1 Attachment 16, following initiation of blowdown **(CRITICAL TASK)** - Attempts to close 80-45 Containment Spray Bypass BV 122 - Recognizes 80-45 Containment Spray Bypass BV 111 is stuck OPEN and will not close - Switches to Loop 122 due to valve 80-45 failure - Closes 80-45 Cont Spray Bypass BV 122 - Closes / verifies closed 80-35 Cont Spray Discharge IV 122 - Verifies OPEN 80-45 Cont Spray Bypass BV - Fully OPENS 80-118 Cont Spray Test to Torus FCV - Starts Containment Spray Raw Water Pump 122 - Starts Containment Spray Pump 122

TERMINATE THE SCENARIO WHEN THE FOLLOWING IS MET:

Blowdown has been performed per EOP-8 and torus cooling has been placed in service..

POST-SCENARIO :
HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

SRO should determine the highest applicable EAL declaration level is an ALERT per 2.2.1.

SCENARIO SUMMARY

The BOP will isolate recirc Pump 14 per N1-OP-1 Section H.2.2 in order to support isolation of the loop Reactor power will need to be reduced with Recirc flow to less than 90.5% to meet procedure N1-OP-1 requirements.

UPS 162A will develop an internal fault and drop out the #11 RPS system and RPS Bus 11. The crew will respond to the trip of UPS per N1-SOP-40.1. The SRO will direct the bus be repowered from I&C Bus 130A and will determine the most limiting Tech Spec condition. The BOP and the RO will reset ½ scram and ½ isolations and perform recovery actions after the bus is repowered. The SRO will determine Tech Spec 3.1.2, 3.6.11 and 3.4.4 are the limiting 7 day LCO's applicable with the RPS 11 Bus tripped.

The crew will respond to a failure of reactor level instrument LT-36-03A. This instrument should result in a half scram condition but RPS fails to trip. The SRO must assess Tech Specs for the failure of the #11 side of RPS to Trip and will determine that the system must be placed in the tripped condition in 1 hour per Tech Spec 3.6.2.a.

The CREW will respond to a leak from the Torus. The SRO will enter EOP-5 for Secondary Containment Control with the Area Water Level Alarm. The crew will determine that make-up to the Torus from raw water is not available due failure of valve 80-118 to open. Additionally the flow paths from condensate transfer will be limited by a breaker issue with the 40-06 valve breaker and a trip of the breaker for the 40-05 valve on Core Spray System 12.

When level in the Torus drops below 10.5 feet a required entry into EOP-4 for Primary Containment Control will be made. The SRO will execute the step to scram the reactor prior to the Torus reaching 8 feet as required by EOP-4 step TL-6. The SCRAM required due to Torus level will not be able to be completed due to the RPS failure previously identified in item 4. The crew will enter EOP-3 for a failure to scram and perform required actions for the ATWS. ARI will not function to alleviate the ATWS.

As reactor power is lowered via recirc pump flow, level control, liquid poison injection and control rod insertion, a trip of the turbine will require pressure control to move over to bypass valves, EC's and other alternative pressure control mechanisms per EOP-3. During this time the bypass valves will fail to approximately 25% open and change the reliance on EC's and alternate mechanisms for pressure control. Additionally, the leak from the Torus will get larger and cause level in the Torus to begin dropping faster. As level drops toward 8 feet in the torus the SRO will minimize the crew's use of ERV's and rely on EC's and other alternate mechanisms.

When the Torus reaches 8 feet a blowdown of the reactor will be required. Additional blowdown systems may need to be put in service if ERV's are unavailable with Torus level less than 8 feet and the bypass valves partially failed.

Major Procedures:
N1-OP-1, N1-SOP-40.1, N1-OP-40, N1-EOP-5, N1-EOP-1, N1-EOP-4, N1-SOP-1, N1-EOP-8

INITIAL SIMULATOR SETUP

I. SIMULATOR SET UP

A. IC Number: IC 166

B. Presets/Function Key Assignments

1. Malfunctions:

a. CT01D, CT Pump 122 Trip	PRESET
b. RP22, Loss of UPS 162A	TRG 1
c. RP10B, RPV LT 36-03A Failed Low	TRG 2
d. RP05A, Reactor Protection System Failure to Scram CH11	TRG 2
e. PC04, Torus Water Leak, FV=10	TRG 3
f. RP09, ARI/ATWS Air Header Exhaust Port Blocked	PRESET
g. LP01A, Liquid Poison Pump 11 Trip	PRESET
h. LP01B, Liquid Poison Pump 12 Trip	PRESET
i. TU06, Main Turbine Thrust Bearing Wear, FV=100	TRG 4
j. TC12, All Bypass Valves Fail – Closed, FV=75	TRG 5

2. Remotes:

a. RP03, RPS Bus 11 Power Source, FV=maint	TRG 20
b. CS02A, CS Discharge Isolation Valve 40-12 (11), FV=close	TRG 21
c. CS01B, CS Test Valve 40-05 (12) to Torus, FV=close	TRG 22
d. CS02B, CS Discharge Isolation Valve 40-12 (11), FV=close	TRG 22
e. FW24, Removal of HPCI Fuses FU9/FU9, FV=pulled	TRG 24

3. Overrides:

a. OVR-9S34DI524, POS_2 3K39/80-118B POS C, FV=maint	PRESET

4. Annunciators:

a. None

5. Triggers:

a. TRG 4 – Automatically triggers turbine trip when average APRM reading is less than 40%

i. Event Action: ppapmave<40

ii. Command: None

b. TRG 5 – Automatically triggers turbine bypass valve failure when average APRM reading is less than 20%

i. Event Action: ppapmave<20

ii. Command: None

c. TRG 6 – Automatically triggers more severe Torus water leak when average APRM reading is less than 1%
   i. Event Action: ppapmave<1
   ii. Command: imf pc04 (0 0) 20
d. TRG 23 – Automatically triggers CS test IV 40-05 breaker open when 40-05 red light energizes
   i. Event Action: hzlcsmovr(6)==1
   ii. Command: irf cs01b (0 0) open
e. TRG 29 – Deletes LP pump 12 trip when LP pump 11 is started
   i. Event Action: zdlpsys2==1
   ii. Command: dmf lp01b
f. TRG 30 – Deletes LP pump 11 trip when LP pump 12 is started
   i. Event Action: zdlpsys1==1
   ii. Command: dmf lp01a

C. Equipment Out of Service
1. Containment Spray Pump 122 control switch in PTL with yellow tag applied
2. Containment Spray 122 Suction Valve closed with yellow tag applied

D. Support Documentation
1. N1-OP-1 Section H.2 marked up to step H.2.2
2. N1-OP-43B marked up to section
3. Reactivity Maneuver Instruction for lowering power below 90.5%

E. Miscellaneous
1. Recirc loop 14 idle, with RRMG set 14 control switch green flagged, the discharge valve 2-3 seconds open, the bypass valve fully open, and the suction valve fully open
2. Divisional Status Board updated:
   - EDG 102 green
   - Containment Spray Loop 11 green
   - Containment Spray Loop 12 red
3. Place protected signs on the following equipment:
   - Containment Spray Pumps 111, 112 and 121
   - Containment Spray Raw Water Pumps 111, 112 and 121
   - Power Board 102 and EDG 102:
     - R1012
     - R1022
     - EDG 102 control switch

II. SHIFT TURNOVER INFORMATION

OFF GOING SHIFT: ☐ N ■ D DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, RO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM, CRS, STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM, CRS, STA, RO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (RO)

Evolutions/General Information/Equipment Status:

Plant is at 92.5% power during Recirc Loop isolation.

Containment Spray Loop 122 is out of service for maintenance (Day 1 of planned 2 day LCO).

PART III: Remarks/Planned Evolutions:

Lower power per N1-OP-43B to less than 90.5%

Isolate Recirc loop 14 per N1-OP-1 section H.2.2

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Downpower to isolate Recirc Loop 14 **Step:** 2

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes_____ No__√___ (check)
If YES above, RE presence not required for steps _____

Initial conditions to be verified prior to initiation of step: 2

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
CTP	1740-1770 MWth		Load Line	100-108%	

Description of Step:
Lower recirculation flow to lower power to 89-90% (1645-1665 MWth).

Critical parameters to be monitored DURING Step: 0
Critical parameters not used must be deleted OR marked N/A

RMI evaluated against approved power profile: □. N/A ■

Other Comments:

Step Prepared by: *Alex Reed* / *Today* Step Reviewed by: *Jake Darrow* / *Today*
RE/STA Date RE/STA/SRO Date

Approval to perform Step *Joe Allen* / *Today* Step Completed by: _____ / _____
Shift Manager Date SRO Date

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Isolate Recirc Loop #4.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.
	■ When 30 minute hold has started, communicate to the CRS that time compression is in effect and the 30 minute hold time is completed

EVENT 2: Respond to trip of Reactor Protection System (RPS) UPS 162A. Multiple TS entry conditions and swap to UPS 162B.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate TRG 1 when Step 2.2.6 of N1-OP-1 is complete
	■ Report that UPS 162A inverter appears tripped, lights are out and all indications are off.
	■ When requested to transfer to I&C Bus 130, wait one minute and insert TRG 20. Report task completion.

EVENT 3: Respond to failure of reactor level instrument LT-36-03A with a failure to ½ scram

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate TRG 2 after the half scram has been reset and directed by examiner.
	■ Respond to request for assistance as appropriate.
	■ When dispatched to field, wait 2 minutes and report level transmitter 36-03A is failed downscale and gross failure light is on at ATS cabinet.

EVENT 4: Respond to unisolable leak from torus.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate TRG 3 after Tech Spec call has been made.
	■ Respond to request for assistance as appropriate.
	■ If dispatched to look for Torus leak, wait 3 minutes and then report no water visible in the corner rooms, but you can hear some flow from behind the watertight door to the Torus room.
	■ If dispatched to manually open or investigate 80-118, wait two minutes and report the valve is stuck.
	■ If dispatched to close breakers for 40-12 and 40-06, wait one minute, insert TRG 21, then report that breaker for 40-06 will not close.
	■ If dispatched to close breakers for 40-11 and 40-05, wait one minute, insert

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	TRG 22, then report task completion.
	■ If requested to investigate the failure of the 40-05 to fully open, respond that there is no obvious issue with the valve and you will investigate. Also notify the control room that you can hear flow through the valve so it is at least partially open.

EVENT 5: Torus level drops below 10.5 feet and scram is directed per EOP-4. Respond to failure of RPS and ATWS at 90% power.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ If dispatched to pull HPCI fuses, wait one minute, insert TRG 24 and report task completion.
	■ If dispatched to pull RPS fuses, wait one minute, then report fuses are pulled. (Do not actually pull fuses on simulator.)
	■ If dispatched to locally vent the scram air header, wait 4 minutes, then report the valve is stuck closed.
	■ Respond to request for assistance as appropriate.

EVENT 6: Respond to trip of Main Turbine on high vibrations.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

EVENT 7: Bypass valves fail to a partially open position requiring additional pressure control mechanisms to be initiated per EOP-3.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

EVENT 8: Blowdown on Torus level prior to dropping to 8 feet using bypass valves or other alternate blowdown systems.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

CRITICAL TASKS

1. **All Recirc Pumps are tripped with power >6% power per EOP-3 Steps Q-3 through Q-6.**

   Standard - Recirc pumps must tripped when power is greater than 6% and EOP-3 has been entered. This may be done following pressure stabilization but should be completed prior to level changes made to effect thermal-hydraulic instabilities.

   Basis - If the reactor remains critical following initial attempts to insert control rods, power is reduced by decreasing recirculation flow. While power can be reduced most rapidly by tripping the recirculation pumps, tripping the pumps from a high power level may cause a turbine trip due to changes in steam flow, RPV pressure, and RPV water level. The trip of the recirc pumps is required in order to provide the following protective actions during an ATWS:

   - Allowing reactor power to remain high would increase the heat load on the containment.
   - Concurrent RPV water level control actions will prevent or mitigate extremely large thermal-hydraulic instabilities which may damage the fuel.

   (NER-1M-095, Rev. 2 Section 4.8)

2. **Reactor Pressure emergency blowdown is performed when eight (8) feet can not be maintained in the Torus.**

   Standard - A reactor blowdown is performed when it is determined that Torus water level cannot be restored and maintained above eight (8) feet.

   Basis - Torus water level must be maintained above 8 ft. to ensure that all openings in the ERV discharge devices remain submerged. If torus water level is below the elevation of the discharge holes, opening ERVs would discharge steam directly into the torus airspace. The resulting pressure increase could exceed the maximum pressure capability of the primary containment.
   (NER-1M-095, Rev. 2 Section 4.5)

3. **Terminate and Prevent with Reactor Power >6% and Reactor Level > -41 inches.**

   Standard - Terminate and Prevent all RPV injection except boron and CRD.

   Basis- RPV water level is lowered to prevent thermal-hydraulic instabilities. Core instabilities may occur in a BWR when the reactor is operated at relatively. High power-to-flow ratios and recirculation flow is reduced. The potential for instabilities is largely dependent upon core inlet subcooling. The greater the subcooling, the more likely that power oscillations will occur and increase in magnitude. Prompt level reduction is the most effective method of preventing or suppressing power oscillations. If power remains above 6% (the APRM downscale setpoint) following a reactor scram, RPV water level is lowered to an elevation 2 ft. below the feedwater sparger. The feedwater sparger is at –17 in. and uncovering the sparger heats the incoming feedwater, thereby reducing subcooling at the core inlet. A level 2 ft. below the feedwater sparger is low enough to reduce subcooling by 65%-75%.

Op-Test No.: 1 Scenario No.: 6 Event No.: 1

Event Description: Isolate Recirc Loop #4.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Isolation of Recirc Pump #14 per N1-OP-1 Directs power reduction using recirc flow to approximately 90% power
	ATC	Reduces power to less than 90.5% using recirc flow master controller
	BOP	Closes REACTOR R PUMP 14 SUCTION VALVE (Annunciator F2-1-4 expected) Holds REACTOR R PUMP 14 SUCTION VALVE OPEN for 2-3 seconds
	ROLE PLAY	When the RRP 14 suction valve is opened for the warming period, inform the CRS that time compression is in effect, and the 30 minute warmup time for both the RRP 14 suction and discharge valves is complete.
	BOP	Closes REACTOR R PUMP 14 SUCTION VALVE (Annunciator F2-1-4 expected)
	BOP	Closes REACTOR R PUMP 14 DISCHARGE VALVE Closes REACTOR R PUMP 14 BYPASS VALVE
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 6 Event No.: 2

Event Description: Respond to trip of Reactor Protection System (RPS) UPS 162A. Multiple TS entry conditions and swap to Maintenance power supply.

Time	Position	Applicant's Actions or Behavior
	SRO	- Directs Entry into N1-SOP-40.1 - Directs swap to I&C Bus 130A - Evaluates Tech Specs and determines Tech Spec 3.1.2, 3.6.11 and 3.4.4 are the limiting 7 day LCO's applicable with the RPS 11 Bus tripped (N1-OP-40 attachment 6 gives a list of affected systems and LCOs with an RPS bus de-energized).
	BOP	Executes N1-SOP-40.1 - Dispatches operator to re-power RPS Bus 11 from I&C Bus 130A - Reset channel 11 high drywell pressure trips - Reset half scram
	BOP	Note: The actions will be prioritized and may not happen before next event. Lead examiner may move on to next event once half scram is reset. Following power swap to IC130A performs the following: - Presses Feedwater CH 11 Power supply reset per N1-OP-16 - Places control switch of BV-77-03 OFF_GAS TO STACK ISOLATION VALVE to OPEN to reset trip logic - Closes N2 Supply Pressure Control valve - Takes 39-05 AND 39-06 control switches to close to reset logic - Reset ATWS channel 11 LOV alarm - Reset emergency condenser logic and radiation monitors - Reset logic by placing BV 76-12 control switch to OPEN - Press reset pushbutton on 11 AND 12 APRM Flow Converters - Reset alarms on APRM drawers - Reset #11 DW High Range Radiation Monitor - Reset alarms at ATS cabinets A and C. - Resets Reactor Building Vent Rad Monitor per N1-OP-10

PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 6 Event No.: 3

Event Description: Respond to failure of reactor level instrument LT-36-03A with a failure to ½ scram

Time	Position	Applicant's Actions or Behavior
	ATC	Responds to ARP F1-1-3 Recognizes ½ SCRAM did not occur as expected Verifies computer point W006 shows LOW Attempts manual ½ SCRAM with Channel 11 pushbutton Recognizes failure to ½ SCRAM with pushbutton
	SRO	Evaluates Tech Spec 3.6.2 Determines that a Channel 11 RPS Trip must be inserted in 1 hour Directs Channel 11 ½ Scram be inserted with pushbutton Recognizes manual ½ SCRAM can not be inserted with pushbutton.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 6 Event No.: 4

Event Description: Respond to unisolable leak from torus.

Time	Position	Applicant's Actions or Behavior
	BOP	- Responds to ARP H2 2-1 R BLDG FLDR SUMPS 11-16/AREA WTR LVL HIGH (Sumps 15 and 16 in alarm) - Responds to K2-4-4, Torus Pressure High-Low - Responds to K3-3-1, Torus Level High-Low - Dispatches an operator to determine the cause of the alarm
	SRO	- Enters EOP-5 due to high sump level alarm - Determines not a primary system discharge - Holds EOP execution at Step SC-6 of EOP-5.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 6 Event No.: 5

Event Description: Torus level drops below 10.5 feet and scram is directed per EOP-4

Time	Position	Applicant's Actions or Behavior
	SRO	- Recognizes refilling Torus using Keep-Fill System per N1-OP-2 Section H.1 does not meet prerequisite conditions at 10.65 feet - Enters EOP-4 when Torus Level drops below 10.5 feet ▪ Directs all Containment Spray Pumps locked out ▪ Directs Torus Level raised using EOP-1 Att 18 or 6 ▪ Directs the Reactor Scrammed before Torus level drops to 8 feet
		Note: EOP-1 Attachment 6 is available, but is much lower capacity than Attachment 18. Attachment 18 will be prioritized, and attachment 6 may be not attempted due to severity of leak.
	BOP	- Locks out Containment Spray Pumps - Executes EOP-1 Attachment 18 ▪ Closes 80-35 ▪ Closes 80-40 ▪ Places CONT SPRAY RAW WTR 112 INTERTIE control switch to CNT SPR 122 position ▪ Starts CONTAINMENT SPRAY RAW WATER PUMP 112 ▪ Attempts to open 80-118 and recognizes failure of valve to open ▪ Reports to CRS that Attachment 18 is not available with 80-118 failure - Executes EOP-1 Attachment 6 ▪ Directs breakers for 40-12 and 40-06 be closed from field
	BOP	▪ Recognizes that with breaker issue Core Spray System 11 can not be used for make-up ▪ Directs breakers for 40-02 and 40-05 be closed from field ▪ CLOSES 40-02, CORE SPRAY DISCHARGE IV 12 ▪ Opens 40-05 CORE SPRAY TEST VALVE 12 ▪ Recognizes that breaker for valve 40-05 has tripped. ▪ Directs field operator to investigate 40-05 valve issue and open manually
		Note: The next series of actions are related to the identification and mitigation of the ATWS condition.

Op-Test No.: 1 Scenario No.: 6 Event No.: 5

Event Description: Torus level drops below 10.5 feet and scram is directed per EOP-4

Time	Position	Applicant's Actions or Behavior
	SRO	- Enters N1-EOP-2 due to reactor power above 6% when scram required - Exits N1-EOP-2, enters N1-EOP-3 - Enters N1-SOP-1 Reactor Scram ▪ Verifies RPS pushbuttons have been depressed and ARI initiated - Directs the following EOP-3 actions: ▪ Directs ADS bypassed ▪ Directs prevent Core Spray injection per N1-EOP-1 Att 4 ▪ Directs initiation of ARI ▪ Directs Recirc Flow be run back to minimum ▪ Directs Recirc Pumps tripped ▪ Directs execution of N1-EOP-3.1 • Directs plant operators to perform EOP-3.1 Attachment 1 and Attachment 2 • Directs ATC to perform EOP-3.1 Attachment 3 ▪ Before torus temperature reaches 110°F: ▪ Records Liquid Poison tank level ▪ Directs Liquid Poison injection ▪ Directs RPV pressure controlled below 1080 psig using Emergency Condensers and ERVs ▪ Directs terminate and prevent of all injection except boron and CRD, N1-EOP-1 Att 24 ▪ Directs RPV level lowered to at least -41 inches **(CRITICAL TASK)** ▪ Directs performance of EOP-3.2 for Liquid poison unavailable.
	ATC	- Perform the following N1-SOP-1, Reactor Scram actions: ▪ Initiates ARI ▪ Depresses Reactor Trip 11 and 12 pushbuttons - Performs the following EOP-3 actions: ▪ Runs back Recirc Flow to minimum ▪ Bypasses Core Spray IV interlocks per N1-EOP-1 Att 4 by installing six jumpers inside Panel N (17, 18, 19, 24, 25 and 26) ▪ Defeats low-low MSIV isolation per EOP-1 Att. 2 by installing four jumpers inside Panel N (1, 2, 8 and 9) - Performs the N1-EOP-3.1, Section 3 (driving rods) Actions ▪ Performs the following N1-EOP-3.1 Section 3 Actions: - Verify a CRD Pump running - Place Reactor Mode Switch in REFUEL - Place ARI OVERRIDE switch in OVERRIDE - Install RPS jumpers (5, 6, 12, 13) - Reset the scram - Insert rods to 00 using EMER ROD IN If more drive pressure is required, perform one or more of the following: o Fully open CRD Flow Control Valve (F panel) o Close 44-04, Control Rod Drive Water Cont V (F Panel) o Close 44-167, Charging Water Header Blocking Valve (RB 237')

Op-Test No.: 1 Scenario No.: 6 Event No.: 5

Event Description: Torus level drops below 10.5 feet and scram is directed per EOP-4

Time	Position	Applicant's Actions or Behavior
	BOP	Performs the following EOP-3 actions: • Bypasses ADS • **Trips all Recirc Pumps (CRITICAL TASK)** • **Terminates and prevents all injection per N1-EOP-1 Att 24: (CRITICAL TASK)** o Closes both FEEDWATER ISOLATION Valves 11 and 12 OR places FEEDWATER Pumps 11 and 12 in PTL o Selects Manual on 11, 12 and 13 FWP Valve Control selector switches o Closes 11, 12 and 13 Feedwater FCV (Knurled Knob) full counterclockwise o Directs NAO to remove fuses FU-8 and FU-9 from Panel IS34 in the Aux Control Room o Verifies closed, FEEDWATER PUMP 13 BLOCKING VALVE o Verifies in MAN, FWP 11 BYPASS VALVE, AND set to zero output o Verifies in MAN, FWP 12 BYPASS VALVE, AND set to zero output • Informs SRO when RPV water level reaches -41 inches • Controls RPV pressure below 1080 psig with bypass valves • Initiates Liquid Poison as directed o Reports initial tank level o Starts Liquid Poison pump 11 or 12 o Verifies RWCU isolated o Recognizes the trip of Liquid Poison pumps 11 or 12 o Starts alternate Liquid Poison Pump
		PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 6 Event No.: 6

Event Description: Respond to trip of Main Turbine on high vibrations.

Time	Position	Applicant's Actions or Behavior

	BOP	- Responds to ARP A2 3-4 Turbine Thrust Bearing Trip
		- Notifies CREW of Turbine Trip
		- Stabilizes pressure with ERVs
		- Places EC's in service to stabilize pressure (one or both of the following may be performed)
		  - Places 39-05, EMERG CNDSR RET ISOLATION VALVE 11 control switch in OPEN
		  - Places 39-06, EMERG CNDSR RET ISOLATION VALVE 12 control switch in OPEN

	SRO	- Directs EC's to be placed in service to stabilize pressure - Directs ERV's to be used to stabilize pressure until EC's are placed in service - Commences monitoring of Torus temperature - Injects Liquid Poison prior to 110 degrees Torus temperature, if not previously injected - Re-enters EOP-4 on high Torus temperature
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 6 Event No.: 7

Event Description: Bypass valves fail to a partially closed position requiring additional pressure control mechanisms to be initiated per EOP-3.

	ATC/BOP	Recognizes partial failure of the bypass valves
	SRO	Directs the following alternate pressure control mechanisms placed in service to maintain pressure (one or more may be utilized) - Directs use of additional ECs (if not already in service from Event 7) - Directs use of ERVs
	BOP	Places alternate pressure control mechanisms in place to stabilize pressure - Stabilizes pressure with ERVs - Places ECs in service to stabilize pressure (one or both of the following may be performed) - Places 39-05, EMERG CNDSR RET ISOLATION VALVE 11 control switch in OPEN - Places 39-06, EMERG CNDSR RET ISOLATION VALVE 12 control switch in OPEN
PROCEED TO THE NEXT EVENT.		

Op-Test No.: 1 Scenario No.: 6 Event No.: 8

Event Description: Blowdown on Torus level prior to dropping to 8 feet using bypass valves or other alternate blowdown systems.

Time	Position	Applicant's Actions or Behavior
	SRO	- **Evaluates that Torus level can not be restored and maintained above 8 feet and entry into EOP-8 is required (CRITICAL TASK)** - Directs terminate and prevent of all RPV injection except boron and CRD per EOP-1 Att. 24 - Directs Emergency Condensers initiated - Directs additional blowdown systems placed in service o If Torus level is above 8 feet, directs open 3 ERVs o If Torus level is below 8 feet, directs use of TBVs (Bypass Opening Jack will allow TBVs to open first 25% of travel) - Returns to N1-EOP-3 at circle 10 - If 3 ERVs are open, waits until RPV pressure lowers to 288 psig - Directs RPV injection between -109 inches and previous final actual level with Condensate / FW
	ATC	- Terminates and prevents all injection per N1-EOP-1 Att 24: o Closes both FEEDWATER ISOLATION Valves 11 and 12 OR places FEEDWATER Pumps 11 and 12 in PTL o Selects Manual on 11, 12 and 13 FWP Valve Control selector switches o Closes 11, 12 and 13 Feedwater FCV (Knurled Knob) full counterclockwise o Directs NAO to remove fuses FU-8 and FU-9 from Panel IS34 in the Aux Control Room o Verifies closed, FEEDWATER PUMP 13 BLOCKING VALVE o Verifies in MAN, FWP 11 BYPASS VALVE, AND set to zero output o Verifies in MAN, FWP 12 BYPASS VALVE, AND set to zero output - Controls level and maintains level control from feedwater to condensate between -109 and the level previously lowered to in EOP-3
	BOP	- Places EC's in service to stabilize pressure (one or both of the following may be performed) o Places 39-05, EMERG CNDSR RET ISOLATION VALVE 11 control switch in OPEN o Places 39-06, EMERG CNDSR RET ISOLATION VALVE 12 control switch in OPEN - Opens ERVs or TBVs based on SRO direction

TERMINATE THE SCENARIO WHEN THE FOLLOWING IS MET:

Blowdown has been performed per EOP-8 and power is suppressed.

POST-SCENARIO:
HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

SRO should determine the highest applicable EAL declaration level is a Site Area Emergency per 2.2.2.