Exelon Generation

Training Id: **2017 NMP2 NRC RO Admin COO1** Revision: **0.0**

Title: **Perform an APRM Gain Adjustment**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	3/27/17
Validated By	Ken Cherchio	8/28/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 25 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OSP-NMS-@004

2. NUREG 1123, 2.1.31 (4.6)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to use and comply with the facility's procedures and control room computers. The applicant will perform an APRM gain adjustment IAW N2-OSP-NMS-@004. Indicated power is within ± 2% of Core Thermal Power following the gain adjustment.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. NS-OPS-01007, Perform or Support Performance of System Surveillances.

   b. K/A 2.1.31 (4.6) Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Simulator
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. U2 Simulator

5. JPM Setup (if required)

   a. Reset simulator to IC-021

   b. Set APRM 2 to indicate 97.1% power using remote NM02B at a value of 2.65

   c. Verify APRM 2 indicates ~96.5 – 97.2%

   d. Provide calculators

   e. Copy of N2-OSP-NMS-@004 filled out up to and including section 7.0

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • Reactor power is 100%. • The Shift Manager has given permission to verify and adjust ARPM gains as necessary IAW N2-OSP-NMS-@004, APRM Gain Adjustment. • The Plant Process Computer is available. • The password for the APRM chassis is 1234 **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name)**, perform the APRM gain surveillance IAW N2-OSP-NMS-@004. **Evaluator Note:** Give the candidate a "marked-up" copy of N2-OSP-NMS-@004 completed up to and including section 7.0 during the initiating cue.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** Reviews Section 7.0 and confirms that pre-requisites are complete. Determines that sections 8.1 and 8.2 are not applicable commences procedure at section 8.3.
3.	Verify that Plant Process Computer is available for service.	P (8.3.1)	SAT / UNSAT **STD:** Verifies PPC is available per initial conditions

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Obtain periodic log from Plant Process Computer 3D-Monicore program **Cue:** Provide candidate a copy of Attachment 1 to this JPM, 3D Monicore Official Case.	P (8.3.2)	SAT / UNSAT **STD:** Reviews 3D Monicore Printout
5.	Record the Core Power value (%) from the 3D Monicore Periodic Log here and in Step 8.4.1	P (8.3.3)	SAT / UNSAT **STD:** Records 99.9% in steps 8.3.3 and 8.4.1
6.	Determine APRM SETTING Allowable range from CTP (%) from step 8.4.1 ± 2%	P (8.4.2)	***PASS / FAIL** **STD:** Calculates and records Min setting as 97.9%
			***PASS / FAIL** **STD:** Calculates and records Max setting as 101.9%
7.	Record "As Found" APRM readings for Reactor Power from Panel 608 **NOTE:** Only APRM 2 indication is available on Panel 608 **CUE:** Provide the candidate with the following APRM readings once they demonstrate the ability to determine APRM 2 reading on the 608 Panel: APRM 1 - 99.9% APRM 3 - 100.0% APRM 4 - 99.7%	P (8.4.3)	SAT / UNSAT **STD:** Records "As Found" APRM readings as follows: APRM 1 - 99.9% APRM 2 - 97.4% APRM 3 - 100.0% APRM 4 - 99.7%
8.	IF any "As Found" APRM reading recorded in Step 8.4.3 is NOT within the allowable range specified in Step 8.4.2 OR adjustment is recommended by Reactor Engineer or shift management, identify APRM as requiring adjustment below.	P (8.4.4)	***PASS / FAIL** **STD:** Determines APRM 2 is reading below 97.9% and requires adjustment

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	IF allowed by Tech. Specs., bypass APRM 2 per N2-OP-92: **ROLE PLAY:** If permission is requested from the US/SM, direct bypassing APRM 2.	P (8.5.2.a)	SAT / UNSAT **STD:** Determines APRM 2 needs to be bypassed.
9a	References N2-OP-92	P	SAT / UNSAT **STD:** Reviews N2-OP-92, Section 2.0
9b	Verifies no other APRM is bypassed	P	SAT / UNSAT **STD:** Determines indications on 2CEC*PNL603 show no other APRM is bypassed.
9c	Bypasses APRM 2 **CUE:** If asked for an IV for this step, inform the candidate that you concur with the action conducted and to simulate that the step has been initialed.	P	***PASS / FAIL** **STD:** Moves the APRM bypass joystick to position 2
9d	Verifies APRM 2 is bypassed	P	SAT / UNSAT **STD:** Determines APRM 2 BYPASS light lit on 2CEC* PNL603 and BYP is displayed in inverse video on the APRM 2 chassis at H13-P608
10.	Press ETC softkey on the APRM 2 chassis until ENTER SET MODE appears then press the softkey for ENTER SET MODE	P (8.5.2.b)	SAT / UNSAT **STD:** Presses ETC softkey on the APRM 2 chassis SAT / UNSAT **STD:** Presses the softkey for ENTER SET MODE
11.	Enters password **CUE:** If password is requested tell the candidate the password is 1234	P (8.5.2.c)	SAT / UNSAT **STD:** Enters password 1234

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	Verify APRM GAIN is highlighted then press SET PARAMETERS softkey	P (8.5.2.d)	SAT / UNSAT **STD:** Verifies APRM GAIN is highlighted then presses SET PARAMETERS softkey
13.	Adjust DESIRED APRM GAIN until PROJECTED FLUX reading equals APRM SETTING reading from Step 8.4.1 **NOTE:** APRM 2 will oscillate during adjustment. A reading of approximately 99.9% is sufficient to meet this step.	P	***PASS / FAIL** **STD:** Adjusts APRM 2 GAIN until PROJECTED FLUX reading equals ~99.9%
14.	Press ACCEPT softkey, then press EXIT softkey	P (8.5.2.f)	SAT / UNSAT **STD:** Presses ACCEPT softkey
			SAT / UNSAT **STD:** Presses EXIT softkey
15.	Record "As Left" APRM 2 readings	P (8.5.2.g)	SAT / UNSAT **STD:** Records APRM 2 reading
16.	Press EXIT SET MODE softkey, then press the YES softkey	P (8.5.2.h)	SAT / UNSAT **STD:** Presses EXIT SET MODE softkey
			SAT / UNSAT **STD:** Presses the YES softkey
17.	IF APRM 2 was bypassed in Step 8.5.2.a, THEN unbypass APRM 2 **ROLE PLAY:** If permission is requested from the US/SM, direct un-bypassing APRM 2. **CUE:** If asked for an IV for this step, inform the candidate that you concur with the action conducted and to simulate that the step has been initialed.	P (8.5.2.i)	***PASS / FAIL** **STD:** Un-bypasses APRM 2 with the joystick on 601 panel

TASK STANDARD	APRM gain adjustment performed per N2-OSP-NMS-@004. Indicated power is within ± 2% of Core Thermal Power.

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • Reactor power is 100%. • The Shift Manager has given permission to verify and adjust ARPM gains as necessary IAW N2-OSP-NMS-@004, APRM Gain Adjustment. • The Plant Process Computer is available. • The password for the APRM chassis is 1234

INITIATING CUE	**(Operator Name)**, perform the APRM gain surveillance IAW N2-OSP-NMS-@004.

Exelon Generation

Training Id: **NMP2 2017 NRC RO Admin EC** Revision: **0.0**

Title: **Develop a clearance boundary for a Standby Liquid Control Pump**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	8/10/17
Validated By	Ken Cherchio	8/28/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 30 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-36A, Standby Liquid Control System
2. OP-CE-109-101, Clearance and Tagging
3. NUREG 1123, 2.2.13 (4.1)
4. ESK-6SLS01
5. EE-001AR
6. PID-036A
7. 807E161TY Sh. 1

Exelon Generation

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to use and comply with the facility's Clearance and Tagging procedures. The applicant will identify the isolations required to tagout Standby Liquid Control Pump A for pump maintenance.

2. Task Information:

   a. XX-FIO-SAFTAG-010-E4, Create tagouts to support scheduled work.

   b. K/A 2.2.13 (4.1) Knowledge of tagging and clearance procedures.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. Training Classroom

5. JPM Setup (if required)

   a. Ensure adequate copies OP-CE-109-101 are available, including extra attachment 19 forms.

   b. Ensure adequate copies N2-OP-36A are available

   c. Ensure adequate copies of **PID-036A** are available.

   d. Ensure adequate copies of electrical prints **ESK-6SLS01** are available.

   e. Ensure adequate copies of **EE-001AR** are available.

   f. Ensure adequate copies of **807E161TY Sh. 1** are available.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is in MODE 1. • A clearance is required for SLS*P1A for maintenance on the pump. • eSOMs is unavailable. • The clearance will need to be processed manually in accordance with OP-CE-109-101, Clearance and Tagging. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name)**, identify the components required to tagout Standby Liquid Control Pump 1A (SLS*P1A) for pump maintenance. Record the required components, tag type, and component positions on OP-CE-109-101, Attachment 19, Tagout Form Template.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** OP-CE-109-101 obtained
3.	Obtain copies of the appropriate references to determine isolations.	P	SAT / UNSAT **STD:** obtains and references as required: • PID-036A • ESK-6SLS01 • N2-OP-36A • EE-001AR • 807E161TY SH. 1

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Identifies and records the following component isolations and required positions. **Note:** Due to unavailability of eSOMs and other electronic databases, exact component IDs, names, and tagging positions may vary.		
4a	DIV I/II RRCS TROUBLE 2CEC*PNL603 **Note:** Tagging the annunciator tile is not required; however, identifying expected annunciators is a general practice at NMP.	P	SAT / UNSAT **STD:** Information tag on annunciator tile for 603445 DIV I/II RRCS TROUBLE
4b	SLCS PMP 1A/5A MOT OVERLOAD CONTROL ROOM **Note:** Tagging the annunciator tile is not required; however, identifying expected annunciators is a general practice at NMP.	P	SAT / UNSAT **STD:** Information tag on annunciator tile for 601713 SLCS PMP 1A/5A MOT OVERLOAD CONTROL ROOM
4c	2SLS*P1A Control Switch in Control Room	P	SAT / UNSAT **STD:** Information tag on P1A Keylock Control Switch in Normal - After Stop, on 2CEC*PNL601
4d	Standby Liquid Control Pump A (2SLS*P1A) Breaker (Reactor Bldg 240 N Aux Bay)	P	***PASS / FAIL** **STD:** Danger tag OFF 2EHS*MCC102-16D, breaker for 2SLS*P1A
4e	2SLS*P1A Discharge Valve, 2SLS*V13 (EL 293 by 2SLS*P1A)	P	***PASS / FAIL** **STD:** Danger tag CLOSED the pump discharge valve, 2SLS*V13
4f	2SLS*P1A Suction Valve, 2SLS*V8 (EL 292 NW of SLS Storage Tank)	P	***PASS / FAIL** **STD:** Danger tag CLOSED the pump suction valve, 2SLS*V8
4g	2SLS*P1A Discharge Header Isolation Valve, 2SLS*V50 (Downstream 2SLS*VEX3A)	P	SAT / UNSAT **STD:** Danger tag CLOSED the pump discharge header isolation valve, 2SLS*V50

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4h	2SLS*P1B Discharge Header Crosstie Isolation Valve, 2SLS*V53 (EL 294 North of 2SLS*P1B)	P	SAT / UNSAT **STD:** Danger tag CLOSED the discharge header crosstie valve, 2SLS*V53
4i	2SLS*P1A Discharge Header Drain Valve, 2SLS*V23 (EL 292 by 2SLS*P1A) **Note:** This valve is normally Locked Closed	P	SAT / UNSAT **STD:** Danger tag LOCKED CLOSED the pump discharge header isolation valve, 2SLS*V50
4j	2SLS*P1A Discharge Check Valve Test Connection, 2SLS*V167 (EL 291 by 2SLS*P1A)	P	SAT / UNSAT **STD:** Danger tag OPEN the discharge check valve test connection, 2SLS*V167
4k	2SLS*P1A Discharge Check Valve Test Connection, 2SLS*V166 (EL 291 by 2SLS*P1A)	P	SAT / UNSAT **STD:** Danger tag OPEN and UNPLUGGED the discharge check valve test connection, 2SLS*V166

TASK STANDARD	Isolations for 2SLS*P1A have been identified and recorded on OP-CE-109-101 attachment 19.

STOP TIME	

Exelon Generation

JPM Handout

INITIAL CONDITIONS	Given: • The plant is in MODE 1. • A clearance is required for SLS*P1A for maintenance on the pump. • eSOMs is unavailable. • The clearance will need to be processed manually in accordance with OP-CE-109-101, Clearance and Tagging.

INITIATING CUE	**(Operator Name)**, identify the components required to tagout Standby Liquid Control Pump 1A (SLS*P1A) for pump maintenance. Record the required components, tag type, and component positions on OP-CE-109-101, Attachment 19, Tagout Form Template.

Exelon Generation

Training Id: **2017 NMP2 NRC RO Admin JPM EP** Revision: **0.0**

Title: **Perform RO Actions for an Injured and Contaminated Person**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	3/27/17
Validated By	Ken Cherchio	8/28/17
Facility Reviewer	J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. OP-NM-106-300, Personnel Injury or Illness
2. NUREG 1123, 2.4.12 (4.0)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to to perform Reactor Operator actions in the event of Personnel Injuries.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. NS-EPP11-01002-07, Communicate with Offsite Agencies as Necessary to Coordinate Onsite Activities.

   b. K/A 2.4.12 (4.0), Knowledge of general operating crew responsibilities during emergency operations.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Simulator
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. U2 Simulator

5. JPM Setup (if required)

   a. Provide copy of OP-NM-106-300, Personnel Injury or Illness.

   b. Ensure sufficient copies of the procedure and attachment 1 are available.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is operating at approximately 100% power. • You have just received a report that a Mechanic has passed out in between the "B" & "C" Condensate Pumps. • The Mechanic is bleeding from the left arm and having difficulty breathing. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operators Name)**, perform the required actions as the RO in accordance with OP-NM-106-300, Attachment 1: RO Medical Emergency Checklist.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** OP-NM-106-300 obtained
3.	Records information at the top of Attachment 1	P	SAT / UNSAT **STD:** Records: • Name • Date • Unit 2 • Time of Notification • Location of Medical Emergency

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Contact Oswego County 911 Center at 8-343-1313 and request an ambulance be sent to the Exelon Nine Mile Point Unit 2 Security Building, 350 Lake Road **Note:** Step 2 is NA	P (Step 1)	***PASS / FAIL** **STD:** Contact 911 Center via phone and requests an ambulance
5.	NOTIFY the Fire Brigade Leader, AND PROVIDE location, type of emergency, AND status of the ambulance		
5a	PLACE GAItronics in "Merge" mode.	P (Step 3.A)	***PASS / FAIL** **STD:** On the GAITRONICS, places the MERGE switch in MERGE. Observes the RED MERGE light is lit.
5b	THEN MAKE the following announcement preceding the station alarm AND announcement: "This is a drill, this is a drill."	P (Step 3.B)	SAT / UNSAT **STD:** Announces "This is a drill, this is a drill."
5c	SOUND station alarm for approximately 10 seconds AND ANNOUNCE: *"Attention, attention all personnel, This is (a Drill/an actual event), the Fire Brigade is directed and any available Qualified EMT/CFR is requested to report to _____ in response to a medical emergency. I repeat, this is (a drill/an actual event).*	P (Step 3.C)	***PASS / FAIL** **STD:** Makes the following announcement: *"Attention, attention all personnel, This is a Drill, the Fire Brigade is directed and any available Qualified EMT/CFR is requested to report to the U2 Condensate Pumps (or similar) in response to a medical emergency. I repeat, this is a drill.*
5d	REPEAT the station alarm and the announcement	P (Step 3.C)	SAT / UNSAT **STD:** Alarm and announcement repeated
5e	LEAVE in Merge Mode UNTIL event termination.	P (Step 3.C)	SAT / UNSAT **STD:** Leaves Gaitronics in Merge.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Role Play	As Fire Brigade Leader, report you are acknowledging the announcement and are on your way to the scene. Acknowledge any additional reports from the operator.		
6.	Notify the SM **Role Play:** As the SM, acknowledge the report.	P (Step 4)	SAT / UNSAT **STD:** Notifies the SM of the reported situation
Role Play	As Fire Brigade Leader, report you are at the scene. The individual in unconscious and potentially contaminated. Request and ambulance and RP Tech.		
7.	IF requested by the Fire Brigade Leader, THEN TAKE ANY of the following actions:		
7a	IF Radiation Protection assistance is required, THEN CONTACT RP AND REQUEST they report to scene of the medical emergency **Role Play:** As the RP Tech state that, "Radiation Protection assistance is at the scene and has determined that the Mechanic is contaminated. RP coverage is recommended for transporting in an ambulance"	P (Step 5.A)	***PASS / FAIL** **STD:** Contacts Radiation Protection and requests that they report to the scene of the medical emergency
7b	IF an ambulance OR rescue is required AND has NOT been requested in Step 1 of this attachment, THEN REFER to Attachment 4 AND PERFORM the following:	P (Step 5.B)	SAT / UNSAT **STD:** Determines step is NA since an ambulance has already been requested.
7c	IF transportation by NMP vehicle is requested, THEN REQUEST SM to notify the injured person's supervisor to obtain the necessary vehicle AND driver	P (Step 5.C)	SAT / UNSAT **STD:** Determines step is NA since transportation via a NMP vehicle has not been requested.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7d	IF it is necessary for RP Technician to accompany the ambulance, THEN PERFORM the following:		
	REQUEST permission from SM for the RP Technician to accompany the ambulance **Role Play:** As the SM, grant permission for the RP Tech to go with ambulance.	P (Step 5.D)	SAT / UNSAT **STD:** Requests permission from the SM for the RP Technician to accompany the ambulance
	TRANSMIT permission to RP Technician at the incident scene **Role Play:** As RP Tech, acknowledge SM permission to go to hospital.	P (Step 5.D)	SAT / UNSAT **STD:** Informs the RP Technician that they have SM permission to accompany the ambulance
	CONTACT the RP Supervisor, AND INFORM him of the incident AND direct them to the hospital **Role Play:** As RP supervisor, acknowledge information.	P (Step 5.D)	SAT / UNSAT **STD:** Informs the RP Supervisor of the incident and directs them to the hospital
7e	SM EVALUATE staffing, AND IF necessary, TAKE action to restore staffing levels. **Role Play:** As SM, acknowledge request to evaluate shift staffing.	P (Step 5.E)	SAT / UNSAT **STD:** Informs the SM that an evaluation of required staffing should be performed
7f	IF the incident requires transportation by ambulance OR is determined to be a Medical Emergency (Full Brigade response with Station Announcement), THEN REQUEST SM PERFORM notifications per the Station Specific Notification Requirements **Role Play:** Acknowledge as SM request to perform notifications.	P (Step 5.F)	SAT / UNSAT **STD:** Requests SM perform notifications per the Station Specific Notification Requirements

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7g	IF the incident involves a contaminated injury/illness AND requires transportation, THEN DIRECT Security Shift Supervisor to contact Senior Communications Consultant AND PROVIDE details of the incident. **Role Play:** As the Security Shift Supervisor acknowledge the request.	P (Step 5.G)	SAT / UNSAT **STD:** Directs Security Shift Supervisor to contact Senior Communications Consultant and provide details of the incident
Role Play	As Fire Brigade Leader, report that the contaminated injured person has left the site and is proceeding to Oswego Hospital in the ambulance.		
7h	WHEN the patient has left the site OR when the Fire Brigade Leader indicates the emergency is terminated, THEN INFORM SM that emergency is terminated. **Role Play:** As the SM, acknowledge the report.	P (Step 5.H)	SAT / UNSAT **STD:** Informs the SM that the contaminated injured person has left the site and is proceeding to Oswego Hospital in an ambulance.
7i	REQUEST RP to perform follow up survey on site as needed **Role Play:** As RP, acknowledge the request.	P (Step 5.I)	SAT / UNSAT **STD:** Requests RP to perform follow up surveys
7j	WHEN notified that the emergency is terminated, THEN MAKE the following announcement preceding the station alarm AND announcement: "This is a drill, this is a drill." SOUND station alarm for approximately 10 seconds AND ANNOUNCE: *"The medical emergency has been terminated."*	P (Step 5.J)	SAT / UNSAT **STD:** Makes event termination announcement.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7k	Notify the Fire Brigade Leader to PERFORM EPMP-EPP-02, Emergency Equipment Inventories and Checklists, for applicable attachments AND RECONCILE any missing supplies per procedure **Role Play:** As Fire Brigade Leader, acknowledge the direction.	P (Step 5.K)	SAT / UNSAT **STD:** Directs Fire Brigade Leader to perform EPMP-EPP-02
Role Play	If candidate begins to perform step 5.8 inform the candidate that another operator will complete these required actions.		

TASK STANDARD	Complete Attachment 1 of OP-NM-106-300 when notified of an injured and contaminated person in the plant.

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The plant is operating at approximately 100% power. • You have just received a report that a Mechanic has passed out in between the "B" & "C" Condensate Pumps. • The Mechanic is bleeding from the left arm and having difficulty breathing.

INITIATING CUE	**(Operators Name)**, perform the required actions as the RO in accordance with OP-NM-106-300, Attachment 1: RO Medical Emergency Checklist.

Exelon Generation

Training Id: **NMP2 2017 NRC SRO Admin COO1** Revision: **0.0**

Title: **Single Loop Thermal Limit Review**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	6/14/17
Validated By	Dan Cifonelli	8/29/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 20 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-29, Reactor Recirculation System
2. N2-SOP-29, Sudden Reduction in Core Flow
3. Technical Specifications
4. NUREG 1123, 2.1.7 (4.7)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to evaluate thermal limits during single loop operations.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. NS-REP001-05015, Monitor the accuracy of thermal limit computer programs and other process computer edits used by shift operations personnel.

   b. K/A 2.1.7 (4.7), Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. Training Classroom

5. JPM Setup (if required)

a. Provide copies of the following:

- N2-OP-29
- Unit 2 Technical Specifications
- Unit 2 COLR.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The CRS has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The Reactor was operating at 100% power when the "A" Reactor Recirc Pump tripped. • The plant is being shifted to Single Loop IAW N2-OP-29, Reactor Recirculation, Section H.6.0 • Reactor Engineering has adjusted the required thermal limits to their single loop values. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name)**, Using this 3D Monicore Official Case, determine compliance with the revised thermal limits for Single Loop Operation and any required actions. **Evaluator Note:** Also provide a copy of the provided 3D monicore case.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of Unit 2 Technical specifications to determine which thermal limits were revised	P	SAT / UNSAT **STD:** Refers to Tech Spec Section 3.4.1 and determines that APLHGR and MCPR limits were revised
3.	Determines compliance with revised limits as follows:		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3a	Determines compliance with LCO 3.2.1, APLHGR **Note:** The margin to the APLHGR limit is indicated by MAPRAT. The printout displays the ten core locations with the most limiting values for MAPRAT. A MAPRAT > 1 means that the APLHGR limit is being exceeded. In this case, core location 29-32-7 is >1.0.	P	***PASS / FAIL** **STD:** Using supplied 3D Monicore Case determines that the APLGHR limit is being exceeded.
3b	Determines required action for exceeding LCO 3.2.1	P	***PASS / FAIL** **STD:** Concludes that APLHGR must be restored to within limits within the next two hours per TS 3.2.1 Condition A.1.
3c	Determines compliance with LCO 3.2.2, MCPR **Note:** The margin to the MCPR limit is indicated by MFLCPR. The printout displays the ten core locations with the most limiting values for MFLCPR. A MFLCPR > 1 means that the limit is being exceeded. In this case core locations 17-38 and 15-38 are >1	P	***PASS / FAIL** **STD:** Using supplied 3D Monicore Case determines that the MCPR limit is being exceeded.
3d	Determines required action for exceeding LCO 3.2.2	P	***PASS / FAIL** **STD:** Concludes that MCPR must be restored to within limits within the next two hours per Condition A.1.

TASK STANDARD	The candidate concludes that the operating limits for both APLHGR and MCPR are being exceeded and determines the proper compensatory actions IAW Tech Spec LCO 3.2.1 and LCO 3.2.2.

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The Reactor was operating at 100% power when the "A" Reactor Recirc Pump tripped. • The plant is being shifted to Single Loop IAW N2-OP-29, Reactor Recirculation, Section H.6.0 • Reactor Engineering has adjusted the required thermal limits to their single loop values.

INITIATING CUE	**(Operator Name)**, Using this 3D Monicore Official Case, determine compliance with the revised thermal limits for Single Loop Operation and any required actions.

Exelon Generation

Training Id: **2017 NMP2 NRC RO-SRO COO2** Revision: **0.0**

Title: **Determine Personnel Overtime Availability IAW LS-AA-119**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	3/27/17
Validated By	Dan Cifonelli	8/29/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 20/30 minutes (RO/SRO)

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. LS-AA-119 – Fatigue Management and Work Hour Limits
2. NUREG 1123, 2.1.5 (2.9/3.9)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to evaluate operator work hours for fatigue rule considerations.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. GAP-FFD02-00002, Maintain working hours within overtime guidelines.

   b. GAP-FFD02-00004, Initiate, review and approve an overtime waiver with Empcenter unavailable.

   c. K/A 2.1.5 (2.9/3.9), Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. Training Classroom

5. JPM Setup (if required)

   a. Provide copy of LS-AA-119.

   b. If multiple operators are going to perform the JPM at the same time, ensure each operator has a copy of LS-AA-119.

   c. Provide extra copies of LS-AA-119, attachment 1, Work Hour Limits Waiver, Section 1 for SROs.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is shutdown for a refueling outage. • Current time is 2200 on December 27, 2017. • An Operator scheduled to work the day shift on December 28, 2017 has called in sick for that shift. • In order to support minimum control room staffing requirements, personnel overtime will be required for the day shift on December 28, 2017 from 0630-1830. • All the overtime hours will be spent performing control room activities. • December 14, 2017 through December 28, 2017 is a fixed 15-day period for work hour rule considerations. • EmpCenter is NOT available. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name),** 1. From the provided list of personnel working hours, determine who is eligible to work a complete 12 hour shift beginning at 0630 on December 28 without exceeding the limits of LS-AA-119. 2. If a Work Hour Limits Waiver would be required for any individual(s), state the work hour limit(s) which would be exceeded IAW LS-AA-119.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** LS-AA-119 Obtained

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Reviews work hours for Reactor Operators #1 through #3	P	***PASS / FAIL** **STD:** Determines the following: RO #1 – Not Eligible – Would work more than 26 hours in a 48 hour period OR <10 hours between shifts. (step 5.2.A.2.a) RO #2 – Not Eligible – Would work 9 straight days without a 34 hour break. RO #3 – Eligible
4.	**SRO Only** – Completes LS-AA-119 Attachment 1 Section 1 for RO #2 **Cue:** Give SRO additional cue sheet and blank LS-AA-119 Attachment 1 Section 1. Direct the SRO to complete LS-AA-119, Attachment 1 for RO #2. **Note:** Only the waiver period and limits exceeded of LS-AA-119 Attachment 1 Section 1 are deemed critical for evaluation of this step.	P	***PASS / FAIL** **STD:** Completes LS-AA-119 Attachment 1 Section 1 for RO #2, per attached key

TERMINATING CUE	JPM Attachment B completed. **For SROs**, LS-AA-119 Attachment 1 Section 1 completed for RO #2.

STOP TIME	

RO-SRO JPM Handout

INITIAL CONDITIONS	Given: • The plant is shutdown for a refueling outage. • Current time is 2200 on December 27, 2017. • An Operator scheduled to work the day shift on December 28, 2017 has called in sick for that shift. • In order to support minimum control room staffing requirements, personnel overtime will be required for the day shift on December 28, 2017 from 0630-1830. • All the overtime hours will be spent performing control room activities. • December 14, 2017 through December 28, 2017 is a fixed 15-day period for work hour rule considerations. • EmpCenter is NOT available.

INITIATING CUE	**(Operator Name),** 1. From the provided list of personnel working hours, determine who is eligible to work a complete 12 hour shift beginning at 0630 on December 28 without exceeding the limits of LS-AA-119. 2. If a Work Hour Limits Waiver would be required for any individual(s), state the work hour limit(s) which would be exceeded IAW LS-AA-119.

SRO ONLY Additional JPM Handout

INITIAL CONDITIONS	Given: • All SRO's, RO #1 and RO #3 have not been able to be contacted. • RO #2 is the only operator available and will be required to work.

SRO Only INITIATING CUE	**(Operator Name)**, Complete LS-AA-119, Attachment 1, 10 CFR 26 Work Hour Limits Waiver, Section 1, for RO #2 to cover this shift on December 28.

Exelon Generation

Training Id: **NMP2 2017 NRC SRO Admin EC** Revision: **0.0**

Title: **Review a clearance boundary for a Standby Liquid Control Pump and Determine Technical Specification Impact**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	8/10/17
Validated By	Dan Cifonelli	8/29/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 25 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-36A, Standby Liquid Control System
2. OP-CE-109-101, Clearance and Tagging
3. NUREG 1123, 2.2.13 (4.1)
4. ESK-6SLS01
5. EE-001AR
6. PID-036A
7. 807E161TY Sh. 1

Exelon Generation

Instructor Information

A. JPM Information

1. Description
   a. This JPM tests the operator's ability to use and comply with the facility's Clearance and Tagging procedures. The applicant will review the clearance to ensure proper isolations are identified to tagout Standby Liquid Control Pump A for pump maintenance. Then determine the technical specification impact for tagging the pump.
2. Task Information:
   a. XX-FIO-SAFTAG-010, Develop/Verify a Tagout Boundary
   b. K/A 2.2.13 (4.3) Knowledge of tagging and clearance procedures.
3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location
   a. Training Classroom
5. JPM Setup (if required)
   a. Ensure adequate copies OP-CE-109-101 are available
   b. Ensure adequate copies N2-OP-36A are available
   c. Ensure adequate copies of **PID-036A** are available.
   d. Ensure adequate copies of electrical prints **ESK-6SLS01** are available.
   e. Ensure adequate copies of **EE-001AR** are available.
   f. Ensure adequate copies of **807E161TY Sh. 1** are available.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is in MODE 1. • A clearance has been written for SLS*P1A for maintenance on the pump. • eSOMs is unavailable. • The clearance is being processed manually in accordance with OP-CE-109-101, Clearance and Tagging. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name)**, review for adequacy the components required to tag out Standby Liquid Control Pump 1A (2SLS*P1A) for pump maintenance. Record the results of your review on the turnover sheet. Then, determine the applicable Technical Specification requirements for tagging out 2SLS*P1A

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** May refer to any of the following documents to review OP-CE-109-101 attachment 19. • PID-036A • ESK-6SLS01 • N2-OP-36A • EE-001AR • 807E161TY SH. 1

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Identifies and records the following component isolations and required positions. **Note:** Due to unavailability of eSOMs and other electronic databases, exact component IDs, names, and tagging positions may vary.		
4.	Identifies motor breaker tagging discrepancy	P	***PASS / FAIL** **STD:** Determines that the proposed clearance erroneously opens the breaker to 2SLS*P1**B** instead of 2SLS*P1**A**
5.	Identifies suction isolation valve tagging discrepancy	P	***PASS / FAIL** **STD:** Determines that the proposed clearance erroneously tags 2SLS*V8, 2SLS*P1A SUCTION ISOL, in the OPEN position
6.	Determines applicable Technical Specification	P	***PASS / FAIL** **STD:** Determines TS 3.1.7 condition A applies. 2SLS*P1A must be restored to operable within 7 days OR THEN be in MODE 3 in 12 hours and MODE 4 in 36 hours.

TASK STANDARD	Discrepancies for 2SLS*P1A clearance have been identified and Technical Specification for clearance identified.

STOP TIME	

Exelon Generation

JPM Handout

INITIAL CONDITIONS	Given: • The plant is in MODE 1. • A clearance has been written for SLS*P1A for maintenance on the pump. • eSOMs is unavailable. • The clearance is being processed manually in accordance with OP-CE-109-101, Clearance and Tagging.

INITIATING CUE	**(Operator Name)**, review for adequacy the components required to tag out Standby Liquid Control Pump 1A (2SLS*P1A) for pump maintenance. Record the results of your review on the turnover sheet. Then, determine the applicable Technical Specification requirements for tagging out 2SLS*P1A

Exelon Generation

Training Id: **NMP2 2017 NRC SRO Admin RC** Revision: **0.0**

Title: **Offsite Dose Calculation Manual (ODCM) Assessment for Nonfunctional Equipment**

Approvals:

	Signature / Printed Name	Date
Developed By	Paul Isham	6/15/2016
Validated By	Dan Cifonelli	8/29/17
Facility Reviewer	John Toothaker	9/21/17

Approximate Duration: 20 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-42, Offgas System
2. U2 ODCM D.3.3.2, Radioactive Gaseous Effluent Monitoring Instrumentation
3. NUREG 1123, 2.3.15 (3.1)

Exelon Generation

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the operator's ability to use and comply with the facility's ODCM. The applicant determines that periodic OFG effluent grab samples and analyses are required per the ODCM and the time limits for the first and second grab samples.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. NS-OM202-03002, Review and Approve Operator Logs

   b. K/A 2.3.15 (3.1) Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location

   a. Training Classroom

5. JPM Setup (if required)
   a. Ensure adequate copies of the ODCM and Tech Specs are available.

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The CRS has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • Reactor power is 45% with power ascension in progress. • Both Offgas Inlet Radiation Monitors 2OFG*RE13A and 2OFG*RE13B were previously FUNCTIONAL and in-service. • Both 2OFG*RE13A and 2OFG*RE13B indications have just failed downscale. • Troubleshooting has not yet commenced. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Operator Name)**, complete the attached worksheet regarding the failure of 2OFG*RE13A and 2OFG*RE13B.

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT **STD:** Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT **STD:** ODCM obtained; Section D.3.3.2 and Bases B.3.3.2 are referenced
3.	Determines ODCM requirements		
3a	**Cue:** If asked, during the course of this JPM, inform the candidate that flow indications are unaffected.	P	SAT / UNSAT **STD:** Determines that CONDITIONS B and C are applicable
3b		P	SAT / UNSAT **STD:** Per Condition B, determines that the inoperable OFG Radiation Monitors must be restored to OPERABLE status within 30 days

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3c	**Note:** Candidate is NOT expected to implement REQUIRED ACTION C.1, however if implemented, must determine that OFG will isolate and a shutdown is required. If candidate chooses placing the channels in trip, or just states both possible actions, provide the following role play to facilitate the remainder of the JPM: **Cue:** Inform candidate that the Shift Manager has decided to take grab samples per D.3.3.2 Required Action C.2.1, then provide cue in JPM Part B	P	***PASS / FAIL** **STD:** Per Condition C, determines one of the following: C.1 - Must place the nonfunctional channels in the tripped condition within 12 hours OR C.2 - Grab samples must be taken within 12 hours and once per 12 hours thereafter, and samples must be analyzed for gross activity within 24 hours of sample completion
Evaluator Note	When the candidate determines the ODCM sample requirements, provide the candidate with the attached Additional Turnover Sheet and initiating cue.		
4.	Review ODCM		SAT / UNSAT **STD:** Reviews ODCM Section 3.0, Applicability.
5.	Reviews Tech Specs		SAT / UNSAT **STD:** Reviews Tech Spec Section 1.3, Completion Times.
6.	Determines required sample times		***PASS / FAIL** **STD:** Determines first sample is due by 18:00 today
7.	Determines required sample times		***PASS / FAIL** **STD:** Determines second sample is due by 06:00 tomorrow, with an allowable extension of 3 hours (as late as 09:00)
TERMINATING CUE	Determines that periodic OFG effluent grab samples and analyses are required per the ODCM and the time limits for the first and second grab samples		

STOP TIME	

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-1** Revision: **0.0**

Title: **Swap Mechanical Vacuum Pumps**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ B. Spooner	8/28/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-9, Rev. 02000, Condenser Air Removal
2. NUREG 1123 K/A 256000 A4.13 (3.3/3.4)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to manipulate controls associated with the Mechanical Vacuum Pumps. The operator will swap mechanical vacuum pumps from 2ARC-P1B in service to 2ARC-P1A in service in accordance with N2-OP-9.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-255000-01003, Swap Mechanical Vacuum Pumps

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A		
Evaluation Method:	☑ Perform ☐ Simulate		
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom		
Time Critical Task:	☐ Yes ☑ No		
Alternate Path:	☐ Yes ☑ No		
Safety Function:	2		Reactor Water Inventory Control
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3	

K/A Statement: (Add justification statement below for K/A's < 3.0)	256000 A4.13 Ability to manually operate and/or monitor in the control room: Condenser Vacuum			
K/A Importance Rating:	SRO	3.3	RO	3.4

4. K/A Justification:

   a. N/A

5. Recommended Start Location

   a. NLC Classroom

6. Simulator Setup

   a. IC Number

      1) IC-006

   b. Presets / With Triggers

      1) Malfunctions

         a) None

      2) Remotes

         a) None

      3) Overrides

         a) None

      4) Annunciators

         a) None

      5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

6) Equipment Out of Service

a) None

7) Support Documentation

a) Prepare a copy of N2-OP-9, section F.3.0 with steps F.3.1 & F.3.2 placekept as complete. Next step to be performed is F.3.3.

8) Miscellaneous

a) IC-165 (For ILT 16-1, not paired)

-OR-

b) IC setup:

(1) Reset to IC-006

(2) Secure 2ARC-P1A by:

(a) Placing 2ARC-P1A control switch to normal-after-stop (Green Flagged)

(b) Closing 2SWP-HV98A.

(3) Insert Remote **MC08**, 2ARC-P1A Air Rem Pump Suct Vlv Throttling (0-100%), FV=0%

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

    a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

    a. None

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is shutdown in mode 3. • 2ARC-P1B is running and maintaining main condenser vacuum. • Condenser vacuum is being maintained at approximately 28 in Hg. • The following actions have been completed for 2ARC-P1A: - Proper oil levels have been verified as indicated by sight glasses AND dipstick. - Proper water level has been verified (approximately 25.5 inches) in Separator Tank as indicated by sight glass 2ARC-LG9A. - 2ARC-V3A, AIR REMOVAL PUMP 1A SUCT ISOL has been throttled closed. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *swap mechanical vacuum pumps from 2ARC-P1B in service to 2ARC-P1A in service in accordance with N2-OP-9, section F.3.0.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used.*
Procedure Note:	All actions in this Subsection are performed at 2CEC*PNL851 unless otherwise noted.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Opens 2SWP-HV98A, PMP SEAL COOLER SVCE WTR INLET VLV.	P (F.3.3)	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2SWP-HV98A, PMP SEAL COOLER SVCE WTR INLET VLV on 2CEC*PNL851 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.* ***Failure =*** *2SWP-HV98A RED light ON and GREEN light OFF not achieved.*
3.	Starts 2ARC-P1A, AIR REMOVAL PMP 1A, by placing control switch in Normal-After-START. (Red flagged)	P (F.3.4)	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2ARC-P1A, AIR REMOVAL PMP 1A on 2CEC*PNL851 in the clockwise direction to the START position and verifies the RED light lit and the GREEN light not lit.* ***Failure =*** *2ARC-P1A RED light ON and GREEN light OFF not achieved.*
4.	Verifies the following: • 2ARC-P1A starts	P (F.3.5 first bullet)	SAT / UNSAT ***STD:*** *Observes ARC-P1A Current meter (AM—2ARCA51) on 2CEC*PNL851 indication of starting and then running amps.*
5.	• 2ARC-P2A, SEAL RECIRC WTR PMP 2A, starts	P (F.3.5 second bullet)	SAT / UNSAT ***STD:*** *Observes SEAL RECIRC WTR PMP 2A green light off and red light illuminated indication on 2CEC*PNL851.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	Uses AM-2ARCA51, 2ARC-P1A CURRENT meter, and confirms 2ARC-P1A current is less than 185 amps.	P (F.3.6)	SAT / UNSAT ***STD:*** *Observes ARC-P1A Current meter (AM—2ARCA51) on 2CEC*PNL851 and verifies amps indicate less than 185.*
Evaluator Note:	In the following step, remote function **MC08**, 2ARC-P1A Air Rem Pump Suct Vlv Throttling (0-100%) will be used as directed by the candidate to throttle open 2ARC-V3A (2ARC-V3A will be able to be opened fully without exceeding 185 amps).		
7.	Throttles 2ARC-V3A as required to maintain 2ARC-P1A current less than 185 amps **Cue:** *As field operator, when directed by the candidate to throttle open 2ARC-V3A, coordinate as directed.*	P (F.3.7)	SAT / UNSAT ***STD:*** *Observes ARC-P1A Current meter (AM—2ARCA51) on 2CEC*PNL851 and determines that amps indicate less than 185 and placekeeps step.*
8.	Secures 2ARC-P1B by placing its control switch in Normal-After-STOP. (Green flagged)	P (F.3.8)	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2ARC-P1B, AIR REMOVAL PMP 1B on 2CEC*PNL851 in the counter clockwise direction to the STOP position and verifies the GREEN light lit and the RED light not lit.* ***Failure =*** *2ARC-P1B RED light OFF and GREEN light ON not achieved.*
9.	Verifies the following: • 2ARC-P1B stops	P (F.3.9 first bullet)	SAT / UNSAT ***STD:*** *Observes ARC-P1B Current meter (AM—2ARCB51) on 2CEC*PNL851 indication of zero amps.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	• 2ARC-P2B, SEAL RECIRC WTR PMP 2B, stops	P (F.3.9 second bullet)	SAT / UNSAT ***STD:*** *Observes SEAL RECIRC WTR PMP 2B red light off and green light illuminated indication on 2CEC*PNL851.*
11.	Closes 2SWP-HV98B, PMP SEAL COOLER SVCE WTR INLET VLV.	P (F.3.10)	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2SWP-HV98B, PMP SEAL COOLER SVCE WTR INLET VLV on 2CEC*PNL851 in the counterclockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.* ***Failure =*** *2SWP-HV98B RED light OFF and GREEN light ON not achieved.*
12.	Verifies 2ARC-V3B, AIR REMOVAL PUMP 1B SUCT ISOL, is full open. **Cue:** *As field operator, report that 2ARC-V3B is full open.*	P (F.3.11)	SAT / UNSAT ***STD:*** *Proper communications used.*
Evaluator Note:	After the candidate verifies 2ARC-V3B is full open, provide the following cue: **Cue:** Your task is complete, another operator will complete any remaining actions.		

TASK STANDARD	*2ARC-P1A is running with cooling water and 2ARC-P1B and its associated cooling water is secured.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The plant is shutdown in mode 3. • 2ARC-P1B is running and maintaining main condenser vacuum. • Condenser vacuum is being maintained at approximately 28 in Hg. • The following actions have been completed for 2ARC-P1A: - Proper oil levels have been verified as indicated by sight glasses AND dipstick. - Proper water level has been verified (approximately 25.5 inches) in Separator Tank as indicated by sight glass 2ARC-LG9A. - 2ARC-V3A, AIR REMOVAL PUMP 1A SUCT ISOL has been throttled closed. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *swap mechanical vacuum pumps from 2ARC-P1B in service to 2ARC-P1A in service in accordance with N2-OP-9, section F.3.0.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-2** Revision: **0.0**

Title: **Place SWP*RE23A in service**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	08/04/17
Validated by:		/ J. Wilcox	8/30/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-79, Rev. 01001, Radiation Monitoring
2. NUREG 1123 K/A 272000 A4.02, (3.0/3.0)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to place Service water radiation monitor SWP*RE23A sample pump in service.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-272000-01001, Monitor DRMS Computer System Operation

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A			
Evaluation Method:	☑ Perform ☐ Simulate			
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom			
Time Critical Task:	☐ Yes ☑ No			
Alternate Path:	☐ Yes ☑ No			
Safety Function:	9		Radioactivity Release	
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)			3.5	
K/A Statement: (Add justification statement below for K/A's < 3.0)	272000 A4.02 Ability to manually operate and/or monitor in the control room: meter indications			

K/A Importance Rating:	SRO	3.0	RO	3.0

4. K/A Justification:

   a. N/A

5. Recommended Start Location

   a. NLC Classroom

6. Simulator Setup

   a. IC Number

      a. IC-020 or equivalent

   b. Presets / With Triggers

      a. Malfunctions

         a) None

      b. Remotes

         a) None

      c. Overrides

         a) None

      d. Annunciators

         a) None

      e. Event Triggers

Event #	Event Action	Command
N/A	None	N/A

      f. Equipment Out of Service

         a) None

g. Support Documentation

a) Prepare a copy of N2-OP-79, Section F.4.1 with no steps placekept as completed. Include a copy of the precautions and limitations.

h. Miscellaneous

a) IC-161 (For ILT 16-1, paired with S-4)

-OR-

b) IC setup

(1) Reset to IC-021, "100% Power MOC"

(2) Raise suppression pool temperature to 83°F

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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.

b. 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.

2. For Simulator JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • RHR 'A' is being placed in suppression pool cooling to reduce suppression pool temperature in preparation for a post maintenance run of the RCIC system. • RCIC is currently in standby. • Suppression pool temperature is currently 83°F and stable. • The SM has declared RHR 'A' LPCI mode inoperable. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Place SWP*RE23A sample pump in service per N2-OP-79, section F.4.1.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used*
2.	At 2SWP*RUZ23A, RHS*E1A SVCE WTR EFFLUENT:	P (F.4.0)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Places keylock switch in ENABLE (315 key, tag #175 in key locker)	P (F.4.1.1)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A inserts key into the keyboard enable/disable switch and rotates the keylock switch counter clockwise to the ENABLE position.* ***Failure =*** *Keyboard enable/disable switch positioned to the ENABLE position not achieved.*
4.	Depresses PMP	P (F.4.1.2)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A depresses the PMP pushbutton and releases.* ***Failure =*** *PMP pushbutton depression not achieved.*
5.	Depresses 1	P (F.4.1.3)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A depresses the 1 pushbutton and releases.* ***Failure =*** *1 pushbutton depression not achieved.*
6.	Depresses 0	P (F.4.1.4)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A depresses the 0 pushbutton and releases.* ***Failure =*** *0 pushbutton depression not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	Depresses 1	P (F.4.1.5)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A depresses the 1 pushbutton and releases.* ***Failure*** **=** *1 pushbutton depression not achieved.*
8.	Depresses ENT	P (F.4.1.6)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A depresses the ENT pushbutton and releases.* ***Failure*** **=** *ENT pushbutton depression not achieved.*
9.	Verifies EQUIP FAIL light is extinguished	P (F.4.1.7)	SAT / UNSAT ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A, observes the white EQUIP FAIL indicating light lit.*
10.	Places keylock switch in DISABLE	P (F.4.1.8)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL880 on 2SWP*RUZ23A inserts key into the keyboard enable/disable switch and rotates the keylock switch clockwise to the DISABLE position.* ***Failure*** **=** *Keyboard enable/disable switch positioned to the DISABLE position not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Evaluator Note:	Once the 2SWP*RE23A keylock switch has been placed in the DISABLE position provide the following cue: **Cue:** *Your task is complete. Another operator will complete any remaining actions.*		

TASK STANDARD	*Radiation monitor 2SWP*RE23A sample pump is in service.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • RHR 'A' is being placed in suppression pool cooling to reduce suppression pool temperature in preparation for a post maintenance run of the RCIC system. • RCIC is currently in standby. • Suppression pool temperature is currently 83°F and stable. • The SM has declared RHR 'A' LPCI mode inoperable. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Place SWP*RE23A sample pump in service per N2-OP-79, section F.4.1.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-3** Revision: **0.0**

Title: **Depressurizing the RPV to the Main Condenser (Alternate Path)**

Approvals:

	Signature /	Printed Name	Date
Developed by:		Mike Alexander	8/4/17
Validated by:		B. Spooner	8/30/17
Facility Reviewer:		J. Toothaker	9/21/17

Approximate Duration: _____ minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-EOP-6.18, Rev. 00100, Depressurizing the RPV
2. NUREG 1123 K/A 239001 A4.09, (3.9/3.9)

Instructor Information

A. JPM Information

1. Description

   a. This JPM test the ability of the candidate to Depressurize the RPV to the Main Condenser in accordance with N2-EOP-6.18.

   b. This JPM is considered alternate path because when MSIV opening is attempted, none of the MSIV's will be able to be opened. The candidate will recognize that at least one pair of MSIV's cannot be opened and proceed to step 6.1.8 which directs depressurization of the RPV using the steam line drains.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-EOP06-01001-18, Implement N2-EOP-6.18, Depressurize the RPV

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A		
Evaluation Method:	☑ Perform ☐ Simulate		
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom		
Time Critical Task:	☐ Yes ☑ No		
Alternate Path:	☑ Yes ☐ No		
Safety Function:	3		Reactor Pressure Control

LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3		
K/A Statement: (Add justification statement below for K/A's < 3.0)	239001 A4.09 Ability to manually operate and/or monitor in the control room: Reactor pressure			
K/A Importance Rating:	SRO	3.9	RO	3.9

4. K/A Justification:
   a. N/A
5. Recommended Start Location
   a. NLC Classroom
6. Simulator Setup
   a. IC Number
      a. IC-020 or equivalent
   b. Presets / With Triggers
      a. Malfunctions
         a) **AD08A**, ADS Valve N2 Supply Severed (MSS*PSV121), FINAL=TRUE — **Inserted**
         b) **AD08C**, ADS Valve N2 Supply Severed (MSS*PSV126), FINAL=TRUE — **Inserted**
         c) **MS02**, Steam Line Rupture Outside Primary Containment (DBA), FINAL=0.5 — **TRG2**
         d) **MS04**, Steam Line Rupture Inside Primary Containment, FINAL=1 — **TRG2**

b. Remotes

a)	**MS05B**, 2MSS*MOV112 Appendix R Ckt Breaker, FINAL=CLOSE	**TRG1**

c. Overrides

a)	**OVR-02A2S041DI3240**, Test Inside MSIV-6D, FINAL=ON	**Inserted**
b)	**OVR-02A2S042DI32613**, Test Inside MSIV-6C, FINAL=ON	**Inserted**
c)	**OVR-02A2S043DI32814**, Test Inside MSIV-6B, FINAL=ON	**Inserted**
d)	**OVR-02A2S044DI3324**, Test Inside MSIV-6A, FINAL=ON	**Inserted**
e)	**OVR-02A2S081DI3248**, Test Outside MSIV-7D, FINAL=ON	**Inserted**
f)	**OVR-02A2S082DI3273**, Test Outside MSIV-7C, FINAL=ON	**Inserted**
g)	**OVR-02A2S083DI3294**, Test Outside MSIV-7B, FINAL=ON	**Inserted**
h)	**OVR-02A2S084DI33212**, Test Outside MSIV-7A, FINAL=ON	**Inserted**

d. Annunciators

a) None

e. Event Triggers

Event #	Event Action	Command
4	anntbl(484)>0 (Annunciator 602228 alarms)	dmf ms02

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-EOP-6.18 section 6.1 with steps 6.1, 6.1.1 and 6.1.2 placekept as complete. Next step to be performed is 6.1.3.

h. Miscellaneous

a) IC-164 (For ILT 16-1, not paired)

-OR-

b) IC setup

(1) Reset to IC-021, "100% Power MOC"

(2) Leave simulator in Freeze

(3) Insert Trigger 2

(4) Ensure event trigger is added

(5) Ensure remote MS05B is on TRG1

(6) Take out of Freeze

(7) When the MSIV's are closed, place the mode switch in shutdown (ensure that all eight MSIV control switches are placed in the close position)

(8) Start the 'A' mechanical vacuum pump by:

(a) Closing 2ARC-AOV104

(b) Placing 2ARC-AOV105 in Auto

(c) Opening 2SWP-HV98A

(d) Starting 2ARC-P1A

(9) Lineup steam seals to the main turbine from Aux boiler by:

(a) Manually insert remote MS01, Auxiliary Boiler A Steam Supply, FINAL=OPEN

(b) Verify 2ASS-MOV145 control switch in close and is closed

(c) Opening 2ASS-MOV148

(d) Verify closed 2ESS-STV104 with control switch in close

(e) Verify closed 2ASS-STV112 with control switch in close

(f) Close 2CNA-HV34A(B)

(g) Close 2ASS-MOV3A(B)

(h) Open 2ASS-AOV145 by placing control switch in Open

(i) Slowly throttle open 2ASS-MOV3A(B) until full open

(10) Verify Annunciator 602228 is clear

(11) Arm and depress ADS initiation switches

(12) Place simulator in Freeze

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

   a. None

10. Prerequisites

   a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

   a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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.

   b. 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.

2. For Simulator JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • A LOCA has occurred and an RPV Blowdown was required • Only 5 SRVs could be opened • EOP Jumper #11, #15, #17 & #19 have been installed • All MSIV's have closed with their associated control switches in the "Close" position **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Depressurize RPV to main condenser; in accordance with N2-EOP-6.18, section 6.1.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used*
2.	IF a LOCA signal is present OR expected, using PA235 key, places the following LOCA override switches to OVERRIDE: (2CEC*PNL851)	P (6.1.3)	SAT / UNSAT ***STD:*** *Determines from initial conditions that a LOCA signal is present and determines step as applicable.*
3.	• LOCA OVERRIDE VLV 2IAS*SOV166	P (6.1.3 first bullet)	SAT / UNSAT ***STD:*** *Places a PA235 key in LOCA override key lock switch 2IAS*SOV166 and turns the switch clockwise to the OVERRIDE position.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	• LOCA OVERRIDE VLV 2IAS*SOV184	P (6.1.3 second bullet)	SAT / UNSAT ***STD:*** *Places a PA235 key in LOCA override key lock switch 2IAS*SOV184 and turns the switch clockwise to the OVERRIDE position.*
5.	Verifies open the following valves (2CEC*PNL851)	P (6.1.4)	SAT / UNSAT ***STD:*** *Determines from initial conditions that a LOCA signal is present and determines step as applicable.*
6.	• 2IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV	P (6.1.3 first bullet)	SAT / UNSAT ***STD:*** *Rotates spring return to neutral control switch for 2IAS*SOV166 clockwise to the OPEN position and observes RED light lit and GREEN light not lit.*
7.	• 2IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV	P (6.1.3 second bullet)	SAT / UNSAT ***STD:*** *Rotates spring return to neutral control switch for 2IAS*SOV184 clockwise to the OPEN position and observes RED light lit and GREEN light not lit.*

Evaluator Note:	• The trip units referenced in the following step are not modeled in the simulator and will be provided using the cue listed below. For JPM construction purposes the step has been condensed into one step since the step will be completed using an Evaluator cue. • The Evaluator cue will require that the Evaluator take the value of reactor pressure from C33-R605 on 2CEC*PNL603 and subtract 100 psig. The Evaluator will then provide the resultant value of pressure to the candidate.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	Records differential pressure across the MSIVs using C33-R605 on 2CEC*PNL603 AND one or more of the following Trip Units: • B22-N676A, STM LINE PRESS LO (2CEC*PNL609) • B22-N676C, STM LINE PRESS LO (2CEC*PNL609) • B22-N676B, STM LINE PRESS LO (2CEC*PNL611) • B22-N676D, STM LINE PRESS LO (2CEC*PNL611) **Cue:** *When asked what any of the above trip units are reading, inform the candidate that trip unit B22-N676A(B,C,D) is reading "X" (where X = C33-R605 value minus 100 psig) (if C33-R605 reads less than 100 psig, then report that trip unit B22-N676A(B,C,D) reads 10 psig)*	P (6.1.5)	SAT / UNSAT ***STD:*** *Acknowledges cue from Evaluator and records differential pressure value that is <150 psid and placekeeps step complete.*
9.	IF differential pressure across the MSIVs is > 150 psid, opens at least one pair of MSIVs by performing N2-OP-1, Section H.4.0 AND THEN continue at Step 6.1.8	P (6.1.6)	SAT / UNSAT ***STD:*** *Determines from previous step that differential pressure across the MSIV's is ≤ 150 psid and placekeeps the "N/A, differential pressure across the MSIVs is ≤ 150 psid" portion of the step.*
10.	IF differential pressure across the MSIVs is ≤ 150 psid, opens at least one pair of MSIVs as follows:	P (6.1.7)	SAT / UNSAT ***STD:*** *Determines from initial conditions that a LOCA signal is present and determines step as applicable.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
11.	Verifies MSIV isolation signals reset by performing the following: (2CEC*PNL602)	P (6.1.7.a)	SAT / UNSAT ***STD:*** *Reviews procedure step and placekeeps with circle and slash.*
Evaluator Note:	The initial conditions for the JPM have all MSIV control switches (both inboard and outboard) closed. For JPM construction purposes the step has been condensed into one step since the step will be completed using JPM initial conditions.		
12.	Places control switches for the following to CLOSE: • 2MSS*AOV6A, MSIV • 2MSS*AOV6B, MSIV • 2MSS*AOV6C, MSIV • 2MSS*AOV6D, MSIV • 2MSS*AOV7A, MSIV • 2MSS*AOV7B, MSIV • 2MSS*AOV7C, MSIV • 2MSS*AOV7D, MSIV	P (6.1.7.a.1)	SAT / UNSAT ***STD:*** *Determines from initial conditions that all are closed with their associated control switches in the CLOSE position with RED lights OFF and GREEN lights ON.*
13.	Depresses pushbutton B22H-S33, INBD ISOL LOGIC RESET	P (6.1.7.a.2)	SAT / UNSAT ***STD:*** *Depresses pushbutton B22H-S33, INBD ISOL LOGIC RESET on control room panel 602.*
14.	Depresses pushbutton B22H-S32, OUTBD ISOL LOGIC RESET	P (6.1.7.a.3)	SAT / UNSAT ***STD:*** *Depresses pushbutton B22H-S32, OUTBD ISOL LOGIC RESET on control room panel 602.*
Alternate Path:	In the next step, none of the MSIV's will be able to be opened. The candidate will recognize that at least one pair of MSIV's cannot be opened and proceed to step 6.1.8 which directs depressurization of the RPV using the steam line drains.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	Opens one pair of MSIVs as follows: (2CEC*PNL602)	P (6.1.7.b)	SAT / UNSAT ***STD:*** *Reviews procedure step and placekeeps with circle and slash.*
16.	Places the control switch for ANY outboard MSIV to AUTO	P (6.1.7.b.1)	SAT / UNSAT ***STD:*** *Rotates the control switch for each outboard MSIV clockwise to the AUTO position and determines that the RED light fails to light and the GREEN light remains lit.*
Evaluator Note:	The following JPM step may not be completed by the candidate because it may be determined that since none of the outboard MSIV's opened it will not be possible to get at least one main steam line path established.		
17.	Places the control switch for the corresponding inboard MSIV to AUTO	P (6.1.7.b.2)	SAT / UNSAT / NA ***STD:*** *Rotates the control switch for each inboard MSIV clockwise to the AUTO position.*
Evaluator Note:	The candidate may request direction from the US/SM. If so, then restate the JPM Initiating cue.		
18.	IF a pair of MSIVs can NOT be opened, aligns steam line drains to depressurize the RPV as follows:	P (6.1.8)	SAT / UNSAT ***STD:*** *Determines that since the MSIV's cannot be opened the step is applicable and placekeeps step.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
19.	Verifies open 2MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. (2CEC-PNL824)	P (6.1.8.a)	***PASS / FAIL** ***STD:*** *Rotates spring return to neutral control switch for 2MSS*MOV207 to the OPEN position and observes RED light ON and GREEN light OFF.* ***Failure =*** *2MSS*MOV207 RED light ON GREEN light OFF not achieved.*
20.	Verifies open 2MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV. (2CEC*PNL602)	P (6.1.8.b)	***PASS / FAIL** ***STD:*** *Rotates spring return to auto control switch for 2MSS*MOV111 to the OPEN position and observes RED light ON and GREEN light OFF.* ***Failure =*** *2MSS*MOV111 RED light ON GREEN light OFF not achieved.*
Procedure Note:	A CAT 60 key may be required for entry to 2EHS*MCC102.		
21.	Places 2EHS*MCC102-7A, 2MSS*MOV112 MAIN STEAM LINE DRAIN OUTBD to ON (Aux Bay-North El 240) **Cue:** *Breaker 2EHS*MCC102-7A has been placed in the ON position*	P (6.1.8.c)	SAT / UNSAT ***STD:*** *Directs field operator to locally place in the ON position breaker 2EHS*MCC102-7A. Acknowledges field operator report and placekeeps step.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
22.	Places 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE **Cue:** *ALARM CIRCUIT control switch for 2EHS*MCC102-7A has been placed in the ENABLE position*	P (6.1.8.d)	SAT / UNSAT ***STD:*** *Directs field operator to place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE. Acknowledges field operator report and placekeeps step.*
23.	Verifies open 2MSS*MOV112 (2CEC*PNL602)	P (6.1.8.e)	***PASS / FAIL** ***STD:*** *Rotates spring return to auto control switch for 2MSS*MOV112 to the OPEN position and observes RED light ON and GREEN light OFF.* ***Failure*** *= 2MSS*MOV112 RED light ON GREEN light OFF not achieved.*
24.	Verifies open 2MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING (2CEC*PNL602)	P (6.1.8.f)	***PASS / FAIL** ***STD:*** *Rotates spring return to normal control switch for 2MSS-MOV187 to the OPEN position and observes RED light ON and GREEN light OFF.* ***Failure*** *= 2MSS*MOV187 RED light ON GREEN light OFF not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
25.	IF Turbine Bypass Valves are NOT already open, THEN using BYPASS VALVE OPENING JACK SELECTOR, depresses AND holds INCREASE pushbutton UNTIL bypass valves are full open (2CEC*PNL851)	P (6.1.9)	***PASS / FAIL** ***STD:*** *Determines that the turbine bypass valves are not open and depresses and holds the BYPASS VALVE OPENING JACK SELECTOR INCREASE pushbutton UNTIL bypass valves are full open as indicated by all 5 TBV valve position indication reading 100%.* ***Failure*** **=** *Bypass Valve Open Jack not raised to 100%.*
Evaluator Note:	Once the BYPASS VALVE OPENING JACK SELECTOR INCREASE pushbutton has been pushed and the bypass valves are full open provide the following cue: **Cue:** *Your task is complete. Another operator will complete any remaining actions.*		

TASK STANDARD	*RPV is depressurizing to Main Condenser via Bypass valves or Drain valves.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • A LOCA has occurred and an RPV Blowdown was required • Only 5 SRVs could be opened • EOP Jumper #11, #15, #17 & #19 have been installed • All MSIV's have closed with their associated control switches in the "Close" position **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Depressurize RPV to main condenser; in accordance with N2-EOP-6.18, section 6.1.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-4** Revision: **0.0**

Title: **HPCS Pump Run Following Maintenance (Alternate Path)**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ B. Spooner	8/30/17
Facility Reviewer:		J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-33, Rev. 01500, High Pressure Core Spray System
2. N2-ARP-601700, 2CEC*PNL601 Series 700 Alarm Response Procedures
3. NUREG 1123 K/A 209002 A4.01 (3.7/3.7)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to manipulate controls associated with the High Pressure Core Spray System. The operator will perform a HPCS pump run following maintenance in accordance with N2-OP-33.

   b. This JPM is considered alternate path because when the test return to condensate storage tank valves are closed per procedure and the HPCS min flow valve opens, 2CSH*P1 (HPCS Pump) will experience a pump motor overcurrent condition, but fail to trip as designed. The candidate will evaluate panel indications and reference the applicable annunciator response procedure and place 2CSH*P1 control switch in P-T-L.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-209002-01003, Shutdown the High Pressure Core Spray System to Inoperable

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A
Evaluation Method:	☑ Perform ☐ Simulate
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom

Time Critical Task:	☐ Yes ☑ No				
Alternate Path:	☑ Yes ☐ No				
Safety Function:	4		Heat Removal From Reactor Core		
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)	209002 A4.01 Ability to manually operate and/or monitor in the control room: HPCS Pump				
K/A Importance Rating:	SRO	3.7	RO	3.7	

4. K/A Justification:
   a. N/A
5. Recommended Start Location
   a. NLC Classroom
6. Simulator Setup
   a. IC Number
      a. IC-021
   b. Presets / With Triggers
      a. Malfunctions
         a) None
      b. Remotes
         a) **CS02**, 2CSH*MOV110 Appendix R Ckt Breaker, FV=Close **Inserted**

c. Overrides

a) **OVR-01A1M130AO01530**, 0-600 AMP Ammeter, FV=600 **TRG1**

d. Annunciators

a) **an601730**, hpcs pump 1 motor overcurrent, FV=Crywolf **TRG1**

e. Event Triggers

Event #	Event Action	Command
1	hzacshr604>0.6 .AND. hzacshr606>0.6	Left Blank

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-OP-33 with steps H.17.1 and H.17.2 placekept as complete. Next step to be performed is H.17.3.

h. Miscellaneous

a) IC-161 (For ILT 16-1, paired with S-2)

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

    a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

    a. None

B. Read Before Every JPM Performance

1. For the performance of this JPM, I will act as all those you need to talk to. 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. (Note, read the next only if conducting a plant JPM). 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.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant operating at rated power. • The plant process computer is out of service for corrective maintenance. • Minor maintenance was conducted on the HPCS system. • HPCS has been declared inoperable. • The maintenance activity has been completed. • N2-OP-33, section E.1 Fill and Vent has been completed satisfactorily. • Breaker 2EHS*MCC201-6B, 2CSH*MOV110-COND STG TK TEST BP VALVE is closed. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Perform a HPCS Pump Run Following Maintenance in accordance with N2-OP-33, section H.17.0.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used.*
Procedure Note:	Starting 2CSH*P1 with the suction from the CST can result in Gross Failure alarms on trip units E22-N652, HPCS PMP SUCT LO, and E22-N653, HPCS PMP SUCT HI.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	STARTS 2CSH*P1, HPCS PUMP 1.	P (H.17.3)	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2CSH*P1, HPCS PUMP 1 on 2CEC*PNL601 clockwise to the Normal-After-Start position and observes the RED light lit and GREEN light not lit.* ***Failure*** *= 2CSH*P1 RED light ON and GREEN light OFF not achieved.*
3.	VERIFIES 2CSH*MOV107, PMP 1 INJECTION VLV, is closed.	P (H.17.4)	SAT / UNSAT ***STD:*** *Observes 2CSH*MOV107, PMP 1 INJECTION VLV GREEN light lit and RED light not lit on 2CEC*PNL601.*
4.	OBSERVES 2CSH*MOV105, MINIMUM FLOW BYPASS VLV, opens.	P (H.17.5)	SAT / UNSAT ***STD:*** *Observes 2CSH*MOV105, MINIMUM FLOW BYPASS VLV RED light lit and GREEN light not lit on 2CEC*PNL601.*

Procedure Caution:	• Throttling HPCS return flow to CST with only one throttle valve can cause extensive valve damage. • With HPCS operating in full flow test with suction and return to the CSTs, "A" CST will fill up and overflow if level is not monitored.
Alternate Path:	During performance of the following step, 2CSH*P1 will experience a motor overcurrent condition with a failure of 2CSH*P1 to trip. The candidate will recognize that annunciator 601730, "HPCS Pump 1 Motor Overcurrent" is in alarm and that that 2CSH*P1 current ammeter indicates upscale with 2CSH*P1 still running. The candidate will reference the ARP and place the pump control switch in P-T-L.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	THROTTLES OPEN 2CSH*MOV110 AND 2CSH*MOV112, TEST RETURN TO CONDENSATE TK, in equal increments to establish 6350 gpm (6350 gpm to 6450 gpm) on E22-R603 (P601).	P (H.17.6)	***PASS / FAIL** ***STD:*** *Alternately rotates the control switch for 2CSH*MOV110 AND 2CSH*MOV112, TEST RETURN TO CONDENSATE TK, in equal increments on 2CEC*PNL601 in the clockwise direction to the OPEN position and then releases until 6350 gpm to 6450 gpm is indicated on HPCS System Flow meter E22-R603.* ***Failure =*** *Flow value of 6350 gpm to 6450 gpm as read on HPCS System Flow meter E22-R603 not achieved.*
6.	Recognizes that annunciator 601730, "HPCS Pump 1 Motor Overcurrent" is in alarm and that 2CSH*P1 current ammeter indicates upscale with 2CSH*P1 still running. References ARP 601730 and determines that the automatic response did not occur. Determines per operator action 3 that 2CSH*P1 control switch is required to be placed in P-T-L and places 2CSH*P1 control switch in P-T-L.	P	***PASS / FAIL** ***STD:*** *Rotates the control switch for 2CSH*P1, HPCS PUMP 1 on 2CEC*PNL601 counter clockwise to the Pull-To-Lock position and observes that both the green and red indicating lights are OFF and that pumps amps indicate zero.* ***Failure =*** *2CSH*P1 RED light OFF and GREEN light OFF not achieved.*
7.	Reports to the US that 2CSH*P1 experienced a motor overcurrent condition with a failure of 2CSH*P1 to automatically trip and that HPCS has been secured by placing the control switch in P-T-L.	P	SAT / UNSAT ***STD:*** *Proper communications used.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Evaluator Note:	Once 2CSH*P1, HPCS PUMP 1 control switch has been placed in Pull-To-Lock. Provide the following cue: **Cue:** Your task is complete, another operator will complete any remaining actions.		

TASK STANDARD	*HPCS pump has been secured by placing the pump control switch in P-T-L.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The plant operating at rated power. • The plant process computer is out of service for corrective maintenance. • Minor maintenance was conducted on the HPCS system. • HPCS has been declared inoperable. • The maintenance activity has been completed. • N2-OP-33, section E.1 Fill and Vent has been completed satisfactorily. • Breaker 2EHS*MCC201-6B, 2CSH*MOV110-COND STG TK TEST BP VALVE is closed. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Perform a HPCS Pump Run Following Maintenance in accordance with N2-OP-33, section H.17.0.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-5** Revision: **0.0**

Title: **Determine containment water level**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ B. Spooner	8/30/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-EOP-6.23, Rev. 00001, Containment Level Determination
2. NUREG 1123 K/A 295029 EA2.03, (3.4/3.5)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to determine containment water level in accordance with N2-EOP-6.23, Containment Level Determination.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-EOP06-01001-23, Implement N2-EOP-6.23, Containment Level Determination

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A			
Evaluation Method:	☑ Perform ☐ Simulate			
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom			
Time Critical Task:	☐ Yes ☑ No			
Alternate Path:	☐ Yes ☑ No			
Safety Function:	5		Containment Integrity	
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		4		

K/A Statement: (Add justification statement below for K/A's < 3.0)	295029 EA2.03 Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Drywell/containment water level			
K/A Importance Rating:	SRO	3.4	RO	3.5

4. K/A Justification:
   a. N/A
5. Recommended Start Location
   a. NLC Classroom
6. Simulator Setup
   a. IC Number
      a. IC-021 or equivalent
   b. Presets / With Triggers
      a. Malfunctions
         a) **PC18A**, Group 3, 8 and 9 Isolation Occurs (Div I), FV=True — **Inserted**
         b) **PC18B**, Group 3, 8 and 9 Isolation Occurs (Div II), FV=True — **Inserted**
      b. Remotes
         a) None
      c. Overrides
         a) None
      d. Annunciators
         a) None

e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-EOP-6.23 with no steps placekept as completed. All procedure steps in section 6.0 to be completed by the candidate.

h. Miscellaneous

a) IC-163 (For ILT 16-1, not paired)

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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.

   b. 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.

2. For Simulator JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given • Suppression Pool level indication is upscale. • Containment flooding with service water is in progress. • Service water intake temperature is 72°F. • Feedwater is injecting to vessel. • A LOCA signal is sealed in. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Determine containment water level in accordance with N2-EOP-6.23.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back on initiating cue. **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT ***STD:*** *Proper communications used*
2.	Places control switch for 2CPS-FV125, CONTMT N2 MAKEUP FLOW CONTROL to CLOSE (2CEC*PNL873)	P (6.1)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 rotates control switch for 2CPS-FV125 counter clockwise to the CLOSE position observes GREEN light lit, RED light not lit.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Verifies closed, the following valves: • 2CPS*SOV119, SUPPR CHAM N2 MAKEUP OUTBOARD ISOL VLV (2CEC*PNL873)	P (6.2 first bullet)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 visually observe 2CPS*SOV119 closed. GREEN light lit, RED light not lit. (Rotate control switch counter clockwise to the CLOSE position as necessary).*
4.	• 2CPS*SOV121, SUPPR CHAM N2 MAKEUP INBOARD ISOL VLV (2CEC*PNL875)	P (6.2 second bullet)	SAT / UNSAT ***STD:*** *At 2CEC*PNL875 visually observe 2CPS*SOV121 closed. GREEN light lit, RED light not lit. (Rotate control switch counter clockwise to the CLOSE position as necessary).*
5.	IF a LOCA signal is present or expected, verifies the following keylock switches in OVERRIDE: • PURGE OUTBD VALVES OVERRIDE (2CEC*PNL873)	P (6.3 first bullet)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL873 insert PA235 key and rotate PURGE OUTBD VALVES OVERRIDE switch clockwise to the OVERRIDE position. Observe annunciator 873416 lit.* ***Failure =*** *PURGE OUTBD VALVES OVERRIDE switch to OVERRIDE position not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	• PURGE INBOARD VLVS OVERRIDE (2CEC*PNL875)	P (6.3 second bullet)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL875 insert PA235 key and rotate PURGE INBOARD VALVES OVERRIDE switch clockwise to the OVERRIDE position. Observe annunciator 875216 lit.* ***Failure =*** *PURGE INBOARD VALVES OVERRIDE switch to OVERRIDE position not achieved.*
7.	Disables GTS high exhaust radiation isolation as follows: • Pull Fuse F3-2GTSN01 in 2CEC-PNL856, Bay F (Figure 23-3). (Relay Room) • Label Fuse with component identification AND this procedure number AND deliver fuse to the SM **Cue:** *Inform the operator that F3-2GTSN01 is pulled and labeled. Steps 6.4.a and 6.4.b are complete.*	P (6.4.a & b)	SAT / UNSAT ***STD:*** *Fuse pulled IAW N2-EOP-6, NMP2 EOP Support Procedure.*
8.	Rotates Division I CONTAINMENT PURGE isolation switch to PUSH TO RESET AND depresses (2CEC*PNL602)	P (6.4.c)	SAT / UNSAT ***STD:*** *At 2CEC*PNL602 rotates/verifies the Division I CONTAINMENT PURGE isolation switch counter clockwise to the PUSH TO RESET position and depresses.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	Rotates Division II CONTAINMENT PURGE isolation switch to PUSH TO RESET AND depress (2CEC*PNL602)	P (6.4.d)	SAT / UNSAT ***STD:*** *At 2CEC*PNL602 rotates/verifies the Division II CONTAINMENT PURGE isolation switch counter clockwise to the PUSH TO RESET position and depresses.*
10.	IF possible, closes 2GSN-V88, N2 SPLY HEADER ISOL. (Rx Bldg, EL 261, 2AAS-TK2, Rx Bldg Breathing Air Accumulator) **Cue:** *Inform the operator that 2GSN-V88 is closed*	P (6.5)	SAT / UNSAT ***STD:*** *Acknowledges cue using proper communications that 2GSN-V88 is closed.*
11.	Opens the following valves: • 2CPS*SOV120, DRYWELL N2 MAKEUP OUTBOARD ISOL VLV, (2CEC*PNL873)	P (6.6 first bullet)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL873 rotates control switch for 2CPS*SOV120 clockwise to the OPEN position and observes RED light lit, GREEN light not lit.* ***Failure =*** *2CPS*SOV120 RED light ON and GREEN light OFF not achieved.*
12.	• 2CPS*SOV122, DRYWELL N2 MAKEUP INBOARD ISOL VLV, (2CEC*PNL875)	P (6.6 second bullet)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL875 rotates control switch for 2CPS*SOV122 clockwise to the OPEN position and observes RED light lit, GREEN light not lit.* ***Failure =*** *2CPS*SOV122 RED light ON and GREEN light OFF not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Procedure Note:	1. "S" pressure is indicated on 2CMS*PI7A, SUPPR CHAMBER PRESS, (2CEC*PNL601). 2. "D" pressure is indicated on 2CPS-PI127, PRIMARY CONTMT INLET N2 PRESS, (2CEC*PNL873). 3. When injection temperatures are less than or equal to 70°F, water levels are referenced to the 70°F curve of Figure 1a. 4. When injection temperatures are greater than 70°F, water levels are referenced to the 210°F curve of Figure 1b. 5. The different pressure lines of Figure 1a AND Figure 1b are used as follows: • P(0) = 14.2 psia Line - used when "D" pressure is less than 30.0 psia. • P(0) = 30.0 psia Line - used when "D" pressure is greater than or equal to 30.0 psia but less than 59.7 psia. • P(0) = 59.7 psia Line - used when "D" pressure is greater than or equal to 59.7 psia.		
13.	Using Figure 1a OR Figure 1b, tracks primary containment water level as a function of ΔP (S-D) **Cue:** *Instruct operator 2CMS*PI7A is reading 20 PSIG and 2CPS-PI127 is reading 5 PSIG -or- if the IC is built so that the meter will read respective pressures, allow the candidate to read the pressures off the panel.*	P (6.7)	SAT / UNSAT ***STD:** At P601 observe 2CMS*PI7A. At P873 observe 2CPS-PI127 IAW N2-EOP-6, NMP2 EOP Support Procedure*
14.	Calculates containment level L = (S-D) L = 20 - 5 L = 15 PSID 15 PSID for water temperature greater than 70°F (on Figure 1b) equals 270' elevation. Accept 270 feet plus or minus 2 feet	P	***PASS / FAIL** ***STD:** Containment Water level determined to be 270±2'.* ***Failure** = Containment water level cannot be determined or is outside keyed level band of 270 +/- 2 feet.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	Reports to US/SM that containment water level is 270'. **Cue:** *Acknowledge report*	P	SAT / UNSAT ***STD:*** *Proper communications used*
Evaluator Note:	Once containment water level has been determined and reported, then provide the following cue: **Cue:** *Your task is complete. Another operator will complete any remaining actions.*		

TASK STANDARD	*Containment water level has been determined in accordance with N2-EOP-6.23.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given • Suppression Pool level indication is upscale. • Containment flooding with service water is in progress. • Service water intake temperature is 72°F. • Feedwater is injecting to vessel. • A LOCA signal is sealed in. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Determine containment water level in accordance with N2-EOP-6.23.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-6** Revision: **0.0**

Title: **Transfer House Loads from Normal Station Service to the Reserve Station Transformers**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ J. Wilcox	8/31/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 10 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-71A, Rev. 00800, 13.8KV AC Power Distribution
2. NUREG 1123 K/A 262001 A4.01, (3.4/3.7)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to Transfer House Loads from Normal Station Service to the Reserve Station Transformers in accordance with N2-OP-71A, Section F.3.3.

   b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-262001-01008, Transfer Station Service From Normal to Reserve

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A			
Evaluation Method:	☑ Perform ☐ Simulate			
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom			
Time Critical Task:	☐ Yes ☑ No			
Alternate Path:	☐ Yes ☑ No			
Safety Function:	6		Electrical	
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3		

K/A Statement: (Add justification statement below for K/A's < 3.0)	262001 A4.01 Ability to manually operate and/or monitor in the control room: All breakers and disconnects (including available switch yard)			
K/A Importance Rating:	RO	3.4	SRO	3.7

4. K/A Justification:

   a. N/A

5. Recommended Start Location

   a. NLC Classroom

6. Simulator Setup

   a. IC Number

      a. IC-021 or equivalent

   b. Presets / With Triggers

      a. Malfunctions

         a) None

      b. Remotes

         a) None

      c. Overrides

         a) None

      d. Annunciators

         a) None

      e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-OP-71A with steps F.3.1, F.3.2 and F.3.3.1 placekept as complete. Next step to be performed is F.3.3.2.

h. Miscellaneous

a) IC-162 (For ILT 16-1, paired with S-7)

-OR-

b) House Loads being supplied by the Normal Station Transformer.

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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.

b. 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.

2. For Simulator JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The Main Generator is on line and the load is stable. • All notifications required by OP-NM-108-107-1002 have been made. • All lock out relays and relay flags are reset in the relay room CB 288'. • 2RTX-SW001 Neutral Switch is open. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Transfer house loads to the Reserve Station Transformers in accordance with N2-OP-71A Sections F.3.3 and F.3.5.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue. **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT ***STD:*** *Proper communications used*
2.	Places SYNCHRONIZE RESERVE A Sync Switch across Breaker 1-1 to NPS 13.8KV Bus 001 in ON.	P (F.3.3.2)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, places the sync key switch in the SYNCHRONIZE RESERVE A slot and rotates SYNCHRONIZE RESERVE A synch switch clockwise to the ON position.* ***Failure =*** *SYNCHRONIZE RESERVE A synch switch in the ON position not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Verifies frequency is in sync as indicated by a stable SYNCHROSCOPE indicator.	P (F.3.3.3)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852 visually observes SYNCHROSCOPE indicating needle is stable.*
4.	Observes voltage indication on 13.8KV STX-XNS1/RTX-XSR1A/RTX-XSR1B RUNNING VOLTS meter is the same as 13.8KV BUS NPS 001/003 INCOMING VOLTS meter.	P (F.3.3.4)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, visually observes transformer and bus voltages are matched as read on 13.8 KV BUS NPS 001/003 INCOMING VOLTS meter and 13.8 KV STX-XNS1/RTX-XSR1A/RTX-XSR1B RUNNING VOLTS meter.*
Evaluator Note:	The following 2 steps may be required to be performed in order to match voltages.		
5.	IF 2RTX-XSR1A Transformer Voltage needs to be adjusted, performs the following: • Places RES STA SVCE XFMR 1A LTC AUTO-MANUAL SELECT Switch in MAN.	P (F.3.3.5.a)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL852, rotates RES STA SVCE XFMR 1A LTC AUTO-MANUAL SELECT switch counter clockwise to the MAN position.* ***Failure =*** *RES STA SVCE XFMR 1A LTC AUTO-MANUAL SELECT switch in the MAN position not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	• Raises OR lowers Transformer Voltage by changing Transformer Tap Changer setting with RES STA SVCE XFMR 1A LOAD TAP CHANGER Control Switch.	P (F.3.3.5.b)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL852, adjusts RES STA SVCE XFMR 1A LOAD TAP CHANGER control switch to modify transformer voltage to match transformer and bus voltages.* ***Failure =*** *Transformer and bus voltage matching not achieved.*
7.	Observes amps indication on RES STA SVCE XFMR 1A PHASE 1, 2, 3 PRIM CURRENT ammeters.	P (F.3.3.6)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes transformer amps at zero as read on RES STA SVCE XFMR 1A PRIM CURRENT phase 1, 2 and 3 meters.*
Procedure Note:	Indication of load transferred to 2RTX-XSR1A by observation of a rise in RES STA SVCE XFMR 1A PHASE 1, 2, 3 PRIM CURRENT ammeters may not be evident depending on incoming and running voltages and on bus loading.		
8.	Closes Breaker 1-1.	P (F.3.3.7)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, rotates control switch for BREAKER 1-1 clockwise to the NORMAL-AFTER-START position and observes RED light lit and green light not lit.* ***Failure =*** *BREAKER 1-1 RED light ON and GREEN light OFF not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	Places SYNCHRONIZE RESERVE A Synch Switch across BREAKER 1-1 to NPS 13.8KV Bus 001 in OFF.	P (F.3.3.8)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, rotates SYNCHRONIZE RESERVE A synch switch counter clockwise to the OFF position.*
10.	Opens BREAKER 1-3, 2STX-XNS1 Normal Station Service Transformer Supply to NPS 13.8KV Bus 001.	P (F.3.3.9)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, rotates control switch for BREAKER 1-3 counter clockwise to the NORMAL-AFTER-STOP position and observes GREEN light lit and RED light not lit.* ***Failure =*** *BREAKER 1-3 GREEN light ON and RED light OFF not achieved.*
11.	Observes load transferred to 2RTX-XSR1A transformer as indicated by a rise in RES STA SVCE XFMR 1A PHASE 1, 2, 3 PRIM CURRENT Ammeters.	P (F.3.3.10)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes transformer amps at zero as read on RES STA SVCE XFMR 1A PRIM CURRENT phase 1, 2, and 3 meters.*
12.	Verifies RES STA SVCE XFMR 1A LTC AUTO-MANUAL SELECT Switch in AUTO.	P (F.3.3.11)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes/places RES STA SVCE XFMR 1A LTC AUTO-MANUAL SELECT switch in the AUTO position.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
13.	Observes voltage indication at 13.8KV NORM BUS NPS 001 KILOVOLTS Voltmeter.	P (F.3.3.12)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, visually observes voltage to be approximately 13.8 KV as read on 13.8 KV NORM BUS NPS 001 KILOVOLTS meter.*
14.	Section F.3.5 of OP-71A referenced. Transfer 2NPS-SWG003 to 2RTX-XSR1B.	P (F.3.5)	SAT / UNSAT ***STD:*** *Step referenced IAW Procedure Use and Adherence Requirements.*
15.	Places SYNCHRONIZE RES STA SVCE XFMR 1B Synch Switch across Breaker 3-1 to NPS 13.8KV Bus 003 in ON.	P (F.3.5.1)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, places the sync key switch in the SYNCHRONIZE RES STA SVCE XFMR 1B slot and rotates SYNCHRONIZE RES STA SVCE XFMR 1B synch switch clockwise to the ON position.* ***Failure =*** *SYNCHRONIZE RES STA SVCE XFMR 1B synch switch in the ON position not achieved.*
16.	Verify frequency is in sync as indicated by a stable SYNCHROSCOPE indicator.	P (F.3.5.2)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852 visually observes SYNCHROSCOPE indicating needle is stable.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
17.	Observe voltage indication of 13.8KV STX-XNS1/RTX-XSR1A/RTX-XSR1B RUNNING VOLTS meter is the same as 13.8KV BUS NPS 001/003 INCOMING VOLTS meter.	P (F.3.5.3)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, visually observes transformer and bus voltages are matched as read on 13.8 KV BUS NPS 001/003 INCOMING VOLTS meter and 13.8 KV STX-XNS1/RTX-XSR1A/RTX-XSR1B RUNNING VOLTS meter.*
Evaluator Note:	The following 2 steps may be required to be performed in order to match voltages.		
18.	IF 2RTX-XSR1B Transformer Voltage needs to be adjusted, performs the following: • Places RES STA SVCE XFMR 1B LTC AUTO-MANUAL SELECT Switch in MAN.	P (F.3.5.4.a)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL852, rotates RES STA SVCE XFMR 1B LTC AUTO-MANUAL SELECT switch counter clockwise to the MAN position.* ***Failure =*** *RES STA SVCE XFMR 1B LTC AUTO-MANUAL SELECT switch in the MAN position not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
19.	• Raises OR lowers Transformer Voltage by changing Transformer Tap Changer setting with RES STA SVCE XFMR 1B LOAD TAP CHANGER Control Switch.	P (F.3.5.4.b)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL852, adjusts RES STA SVCE XFMR 1B LOAD TAP CHANGER control switch to modify transformer voltage to match transformer and bus voltages.* ***Failure =*** *Transformer and bus voltage matching not achieved.*
20.	Observes amps indication on RES STA SVCE XFMR 1B PHASE 1, 2, 3 PRIM CURRENT Ammeters.	P (F.3.5.5)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes transformer amps at zero as read on RES STA SVCE XFMR 1B PRIM CURRENT phase 1, 2 and 3 meters.*
Procedure Note:	Indication of load transferred to 2RTX-XSR1B by observation of a rise in RES STA SVCE XFMR 1B PHASE 1, 2, 3 PRIM CURRENT ammeters may not be evident depending on incoming and running voltages and on bus loading.		
21.	Closes Breaker 3-1.	P (F.3.5.6)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, rotates control switch for BREAKER 3-1 clockwise to the NORMAL-AFTER-START position and observes RED light lit and green light not lit.* ***Failure =*** *BREAKER 3-1 RED light ON and GREEN light OFF not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
22.	Places SYNCHRONIZE RES STA SVCE XFMR 1B Synch Switch across BREAKER 3-1 to NPS 13.8KV BUS 003 in OFF.	P (F.3.5.7)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, rotates SYNCHRONIZE RES STA SVCE XFMR 1B synch switch counter clockwise to the OFF position.*
23.	Opens Breaker 3-14, 2STX-XNS1 Normal Station Service Transformer Supply to NPS 13.8KV BUS 003.	P (F.3.5.8)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL852, rotates control switch for BREAKER 3-14 counter clockwise to the NORMAL-AFTER-STOP position and observes GREEN light lit and RED light not lit.* ***Failure =*** *BREAKER 3-14 GREEN light ON and RED light OFF not achieved.*
24.	Observes load transferred to 2RTX-XSR1B transformer as indicated by a rise in RES STA SVCE XFMR 1B PHASE 1, 2, 3 PRIM CURRENT Ammeters.	P (F.3.5.9)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes transformer amps at zero as read on RES STA SVCE XFMR 1B PHASE 1, 2, 3 PRIM CURRENT phase 1, 2, and 3 meters.*
25.	Verifies RES STA SVCE XFMR 1B LTC AUTO-MANUAL SELECT Switch in AUTO.	P (F.3.5.10)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, observes/places RES STA SVCE XFMR 1B LTC AUTO-MANUAL SELECT switch in the AUTO position.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
26.	Observes voltage indication at 13.8KV NORM BUS NPS 003 KILOVOLTS Voltmeter.	P (F.3.5.11)	SAT / UNSAT ***STD:*** *At 2CEC*PNL852, visually observes voltage to be approximately 13.8 KV as read on 13.8 KV NORM BUS NPS 003 KILOVOLTS meter.*

Evaluator Note:	Once voltage indication at 13.8KV NORM BUS NPS 003 KILOVOLTS Voltmeter has been observed, then provide the following cue: **Cue:** *Your task is complete. Another operator will complete any remaining actions.*

TASK STANDARD	*House loads have been transferred to the Reserve Station Transformers in accordance with N2-OP-71A Sections F.3.3 and F.3.5.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The Main Generator is on line and the load is stable. • All notifications required by OP-NM-108-107-1002 have been made. • All lock out relays and relay flags are reset in the relay room CB 288'. • 2RTX-SW001 Neutral Switch is open. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Transfer house loads to the Reserve Station Transformers in accordance with N2-OP-71A Sections F.3.3 and F.3.5.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-7** Revision: **0.0**

Title: **Manual Actions for Group 8 Isolation Failure on Valid RPS Signal (Alternate Path)**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ J. Wilcox	8/31/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-SOP-83, Rev. 00400, Primary Containment Isolation Failure/Reset
2. NUREG 1123 K/A 212000 A2.09, (4.1/4.3)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to manipulate plant controls associated with PCIS. The operator will manually perform a group 8 isolation due to a failure of RPS.

   b. This JPM is considered alternate path. The normal method to perform a Group 8 isolation does not work. The candidate will be required to use N2-SOP-83 to perform the required isolations.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-SOP-83-01001, Respond to SOP-83 Primary Containment Isolation Failure / Reset

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A		
Evaluation Method:	☑ Perform ☐ Simulate		
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom		
Time Critical Task:	☐ Yes ☑ No		
Alternate Path:	☑ Yes ☐ No		
Safety Function:	7		Instrumentation

LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)	212000 A2.09 Ability to (a) predict the impacts of the following on the Reactor Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High containment/drywell pressure				
K/A Importance Rating:		RO	4.1	SRO	4.3

4. K/A Justification:
   a. N/A
5. Recommended Start Location
   a. NLC Classroom
6. Simulator Setup
   a. IC Number
      a. IC-021 or equivalent
   b. Presets / With Triggers
      a. Malfunctions
         a) None
      b. Remotes
         a) None
      c. Overrides
         a) **OVR-20A1S059DI2125**, Close DW Coolers Isol Valve MOV265, FV = OFF — **Inserted**
         b) **OVR-20A1S059DI2126**, Open DW Coolers Isol Valve MOV265, FV = ON — **Inserted**

c) **OVR-20A1S064DI2127**, Close DW Coolers Isol Valve MOV273, FV = OFF **Inserted**

d) **OVR-20A1S064DI2128**, Open DW Coolers Isol Valve MOV273, FV = ON **Inserted**

e) **OVR-20A1S065DI2129**, Close DW Coolers Isol Valve MOV122, FV = OFF **Inserted**

f) **OVR-20A1S065DI21210**, Open DW Coolers Isol Valve MOV122, FV = ON **Inserted**

g) **OVR-20A1S066DI21211**, Close DW Coolers Isol Valve MOV124, FV = OFF **Inserted**

h) **OVR-20A1S066DI21212**, Open DW Coolers Isol Valve MOV124, FV = ON **Inserted**

d. Annunciators

a) None

e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-SOP-83 with no steps placekept as completed.

h. Miscellaneous

a) IC-162 (For ILT 16-1, paired with S-6)

7. Strategy Code

   a. None

8. Tools and Equipment

   a. None

9. Commitments

   a. None

10. Prerequisites

    a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

    a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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.

   b. 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.

2. For Simulator JPM's:

   a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • A LOCA has resulted in a high Drywell pressure RPS actuation and a valid group 8 isolation signal. • A Drywell unit cooler cooling water isolation has failed and is required. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name),** *Perform Drywell Unit Cooler Cooling Water isolation in accordance with N2-SOP-83.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used*
2.	Confirms a valid isolation signal exists	P	SAT / UNSAT ***STD:*** *Recognizes from the initial conditions that a valid isolation signal exists.*
3.	Using the associated control switches, verifies isolations per Attachment 1 by attempting to close the following CCP Drywell Unit Cooler Cooling Water valves using their respective control switches on panel 2CEC*PNL873: • 2CCP*MOV265	P (SOP-83, Att. 1)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 rotates the control switch for 2CCP*MOV265 counter clockwise to the CLOSE position and observes that 2CCP*MOV265 failed to close.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	• 2CCP*MOV124	P (SOP-83, Att. 1)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 rotates the control switch for 2CCP*MOV124 counter clockwise to the CLOSE position and observes that 2CCP*MOV124 failed to close.*
5.	• 2CCP*MOV122	P (SOP-83, Att. 1)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 rotates the control switch for 2CCP*MOV122 counter clockwise to the CLOSE position and observes that 2CCP*MOV122 failed to close.*
6.	• 2CCP*MOV273	P (SOP-83, Att. 1)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 rotates the control switch for 2CCP*MOV273 counter clockwise to the CLOSE position and observes that 2CCP*MOV273 failed to close.*
7.	Informs the US that the CCP Cooling water isolation valves failed to close using their respective control switches **Cue:** *Acknowledge operator report that the CCP Cooling water isolation valves failed to close using their respective control switches*	P	SAT / UNSAT ***STD:*** *Proper 3 way communications are conducted.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Alternate Path:	In the previous steps, the operator recognized that 2CCP*MOV265, 124, 122 and 2CCP*MOV273 failed to close using their respective control switches and that manual isolation of a selected system is required using the "Selected System" Flowchart "D"		
8.	Continues on with N2-SOP-83 Flowchart actions: • Evaluates second IF/THEN block statement that manual isolation of a selected system is required and continues with "Selected System " flowchart 'D'	P	SAT / UNSAT ***STD:*** *N2-SOP-83 evaluated/reviewed.*
9.	References flowchart "D" and obtains SM/US permission to manually isolate or reset a selected system **Cue:** *As US/SM inform operator that they have permission to manually isolate the affected system*	P	SAT / UNSAT ***STD:*** *N2-SOP-83 evaluated/reviewed and flowchart "D" referenced. Proper 3 way communications are conducted.*
10.	Refers to Attachment 2 for a list of PCIS control switches and associated valves	P (SOP-83, Att. 2)	SAT / UNSAT ***STD:*** *N2-SOP-83 evaluated/reviewed and Attachment 2 referenced.*
11.	Evaluates step that asks if the system will be isolated or reset and determines that the system will be isolated.	P (SOP-83, "D" Flowchart)	SAT / UNSAT ***STD:*** *N2-SOP-83 evaluated/reviewed and flowchart "D" referenced and isolation leg exercised.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	Uses Attachment 2 as a guide and determines that the CCP system, specifically 2CCP*MOV265, 2CCP*MOV124, 2CCP*MOV265 and 2CCP*MOV122 are required to be isolated and that both the Division I and Division II individual system isolation switches "Drywell Unit Cooler Cooling Wtr" are applicable	P (SOP-83, Att. 2)	SAT / UNSAT ***STD:*** *N2-SOP-83 evaluated/reviewed and Attachment 2 referenced.*
13.	Rotates the collar on the Division I DRYWELL UNIT COOLER COOLING WTR individual system isolation switch pushbutton to the PUSH TO ISOLATE position	P (SOP-83, "D" Flowchart)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL602 rotates the collar on the control switch for Division I DRYWELL UNIT COOLER COOLING WTR clockwise to the PUSH TO ISOLATE position.* ***Failure =*** *Division I DRYWELL UNIT COOLER COOLING WTR control switch collar in the PUSH TO ISOLATE position not achieved.*
14.	Depresses the Division I DRYWELL UNIT COOLER COOLING WTR individual system isolation switch pushbutton AND verifies the amber light is lit	P (SOP-83, "D" Flowchart)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL602 depresses the pushbutton on the control switch for Division I DRYWELL UNIT COOLER COOLING WTR and observes that Division I DRYWELL UNIT COOLER COOLING WTR AMBER light is lit.* ***Failure =*** *Division I DRYWELL UNIT COOLER COOLING WTR AMBER light ON not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	Verifies that 2CCP*MOV265 and 2CCP*MOV124 valves are closed	P (SOP-83, "D" Flowchart)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 observes 2CCP*MOV265 & 2CCP*MOV124 RED lights not lit and GREEN lights lit.*
16.	Rotates the collar on the Division II DRYWELL UNIT COOLER COOLING WTR individual system isolation switch pushbutton to the PUSH TO ISOLATE position	P (SOP-83, "D" Flowchart)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL602 rotates the collar on the control switch for Division II DRYWELL UNIT COOLER COOLING WTR clockwise to the PUSH TO ISOLATE position.* ***Failure** = Division II DRYWELL UNIT COOLER COOLING WTR control switch collar in the PUSH TO ISOLATE position not achieved.*
17.	Depress the Division II DRYWELL UNIT COOLER COOLING WTR individual system isolation switch pushbutton AND verifies the amber light is lit	P (SOP-83, "D" Flowchart)	***PASS / FAIL** ***STD:*** *At 2CEC*PNL602 depresses the pushbutton on the control switch for Division II DRYWELL UNIT COOLER COOLING WTR and observes that Division II DRYWELL UNIT COOLER COOLING WTR AMBER light is lit.* ***Failure** = Division II DRYWELL UNIT COOLER COOLING WTR AMBER light ON not achieved.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
18.	Verifies that 2CCP*MOV273 and 2CCP*MOV122 valves are closed	P (SOP-83, "D" Flowchart)	SAT / UNSAT ***STD:*** *At 2CEC*PNL873 observes 2CCP*MOV273 & 2CCP*MOV122 RED lights not lit and GREEN lights lit.*
Evaluator Note:	After 2CCP*MOV265, 124, 122 and 273 have been closed, provide the following cue: **Cue:** Inform the candidate that another operator will refer to the isolated systems operating procedures to verify any additional system shutdown actions. Your task is complete.		

TASK STANDARD	*Drywell unit cooler cooling water isolation has been performed in accordance with N2-SOP-83.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • A valid group 8 isolation signal exists • A Drywell unit cooler cooling water isolation has failed and is required **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Perform Drywell Unit Cooler Cooling Water isolation in accordance with N2-SOP-83.*

Exelon Generation

Training ID: **2017 NMP2 NRC Simulator JPM S-8** Revision: **0.0**

Title: **Restore 2SWP*MOV50B from Inadvertent Closure**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ B. Spooner	8/30/17
Facility Reviewer:		/ J. Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

Evaluators Signature: _____ Date: _____

References

1. N2-SOP-11, Rev 00700, Loss or Degraded Service Water System
2. NUREG 1123 K/A 400000 A4.01 (3.1/3.0)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to respond to an inadvertent closure of 2SWP*MOV50B per N2-SOP-11.

   b. This JPM is NOT considered alternate path.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-SOP-11-01001, Loss of or Degraded Service Water System

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A			
Evaluation Method:	☑ Perform ☐ Simulate			
Evaluation Location:	☐ Plant ☑ Simulator ☐ Classroom			
Time Critical Task:	☐ Yes ☑ No			
Alternate Path:	☐ Yes ☑ No			
Safety Function:	8		Plant Service Systems	
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3		

K/A Statement: (Add justification statement below for K/A's < 3.0)	400000 A4.01 Ability to manually operate and/or monitor in the control room: CCW indications and control			
K/A Importance Rating:	SRO	3.1	RO	3.0

4. K/A Justification:
    a. N/A
5. Recommended Start Location
    a. NLC Classroom
6. Simulator Setup
    a. IC Number
        a. IC-021 or equivalent
    b. Presets / With Triggers
        a. Malfunctions
            a) None
        b. Remotes
            a) None
        c. Overrides
            a) None
        d. Annunciators
            a) None
        e. Event Triggers

Event #	Event Action	Command
N/A	None	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-SOP-11. Include a copy of the Discussion section as well as Attachment 1.

h. Miscellaneous

a) IC-166 (For ILT 16-1, not paired)

-OR-

b) IC setup

(1) Reset to IC-021, "100% Power MOC"

(2) Place the control switches for 2SWP*MOV50B in the CLOSE position and allow it to fully shut.

(3) Align service water in a 3 – 2 (SWP*P1A, C, E & SWP*P1B & D) lineup with Division I SWP pump discharge MOV's throttled to maintain SWP flow less than 10,000 gpm.

(4) Open 2SWP*MOV90B and throttle 2SWP*MOV33B open ensure that Division II SWP flow is greater than 2,500 gpm.

(5) Start SWP*RE23B.

(6) Allow plant conditions to stabilize for a few minutes.

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

    a. None

10. Prerequisites

    a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

    a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

    a. For the performance of this JPM, I will act as all those you need to talk to. 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.

    b. 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.

2. For Simulator JPM's:

    a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • The plant is at 100% power • An inadvertent closure of 2SWP*MOV50B, PMP 1B DISCH HEADER CROSS-TIE ISOL VLV has occurred. • Initial actions to stabilize the Service Water System have been taken per the N2-SOP-11 flowchart. • SWP*P1A, C and E are running with their respective discharge MOV's throttled to maintain pump flows at 10,000 gpm. • SWP*P1B and D are running in Division II. • Service Water flow has been established to RHS "B" Heat Exchanger in order to maintain service water flow in Division II above 2,500 gpm **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Complete the actions to restore 2SWP*MOV50B per N2-SOP-11, Attachment 1.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used*
Procedure Note:	• Initial actions to stabilize the Service Water System are taken per the flowchart and should result in three Division I Service Water Pumps running (if available) with their associated Discharge MOVs throttled as required to maintain pump flows at 10,000 gpm and Service Water flow established to RHS "B" Heat Exchanger to maintain flow for the running Division II Pumps above 2,500 gpm. • This Attachment is written for actions to re-open the closed Service Water Cross-Tie MOVs to meet the one hour action in Tech Spec 3.7.1, Action A.1.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Dispatches Operators to the Valves AND Breakers to determine whether SWP Cross-Tie MOV(s) may be re-opened **Cue:** *As the EO dispatched to perform an inspection of the valve and breaker, inform the operator that the inspection was completed and there are no issues with the valve or breaker.*	P (N2-SOP-11, Attachment 1, step 1.0)	SAT / UNSAT ***STD:*** *Contacts an EO and dispatches them to 2SWP*MOV50B and its associated breaker and directs them to inspect them for abnormalities.*
Evaluator Note:	For grading of the below step, the operator may choose either 2SWP*P1B or D to secure. Either one is acceptable. For the pump that is not secured, grading of the applicable step is not required and the step may be marked as N/A.		
3.	WHEN it has been determined that Service Water System conditions allow re-opening the SWP Cross-Tie MOV(s), reduces the number of operating Division II Service Water Pumps to one by placing control switches in Normal-After-STOP AND verifying that the associated Discharge MOVs close: **Cue:** *If asked as the US, inform the operator you have no preference for which pump to secure.* • 2SWP*P1B AND 2SWP*MOV74B	P (N2-SOP-11, Attachment 1, step 2.0)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL601, rotates the control switch for 2SWP*P1B counter clockwise to the NORMAL-AFTER-STOP position and observes the RED light not lit and the GREEN light lit. Observes that SWP*MOV74B fully closes as indicated by the RED light not lit and the GREEN light lit.* ***Failure =*** *Both running Div 2 SWP Pumps secured <u>OR</u> neither running Div 2 SWP pump secured before 2SWP*MOV50B is opened.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	• 2SWP*P1D AND 2SWP*MOV74D	P (N2-SOP-11, Attachment 1, step 2.0)	***PASS / FAIL / NA** ***STD:*** *At 2CEC*PNL601, rotates the control switch for 2SWP*P1D counter clockwise to the NORMAL-AFTER-STOP position and observes the RED light not lit and the GREEN light lit. Observes that SWP*MOV74D fully closes as indicated by the RED light not lit and the GREEN light lit.* ***Failure =*** *Both running Div 2 SWP Pumps secured <u>OR</u> neither running Div 2 SWP pump secured before 2SWP*MOV50B is opened.*
5.	• 2SWP*P1F AND 2SWP*MOV74F	P (N2-SOP-11, Attachment 1, step 2.0)	SAT / UNSAT ***STD:*** *At 2CEC*PNL601, determines 2SWP*P1E is already secured. Marks this step as NA.*
6.	IF 2SWP*MOV50A was closed, opens 2SWP*MOV50A by taking BOTH control switches to OPEN	P (N2-SOP-11, Attachment 1, step 3.0)	SAT / UNSAT ***STD:*** *At 2CEC*PNL601, determines that 2SWP*MOV50A is NOT closed by observing the RED light lit and the GREEN light not lit. Marks this step as NA.*
Evaluator Note:	JPM steps 7a and 7b may be performed in any order. JPM step 8 was split into two separate steps because it requires manipulation of two separate control room switches both of which are required to be manipulated to get 2SWP*MOV50B open.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	IF 2SWP*MOV50B was closed, opens 2SWP*MOV50B by:	P (N2-SOP-11, Attachment 1, step 4.0)	SAT / UNSAT ***STD:*** *Reads/reviews step.*
7a.	Takes lower 2SWP*MOV50B control switch to OPEN position at 2CEC*PNL601	P (N2-SOP-11, Attachment 1, step 4.0)	***PASS / FAIL** ***STD:*** *Rotates the lower control switch for 2SWP*MOV50B clockwise to the OPEN position. If this is the second 2SWP*MOV50B switch operated, observes the RED light lit and the GREEN light not lit. If this is the first 2SWP*MOV50B switch operated, observes the RED light not lit and the GREEN light lit.* ***Failure =*** *2SWP*MOV50B RED light ON and GREEN light OFF not achieved.*
7b.	Takes upper 2SWP*MOV50B control switch to OPEN position at 2CEC*PNL601	P (N2-SOP-11, Attachment 1, step 4.0)	***PASS / FAIL** ***STD:*** *Rotates the upper control switch for 2SWP*MOV50B clockwise to the OPEN position. If this is the second 2SWP*MOV50B switch operated, observes the RED light lit and the GREEN light not lit. If this is the first 2SWP*MOV50B switch operated, observes the RED light not lit and the GREEN light lit.* ***Failure =*** *2SWP*MOV50B RED light ON and GREEN light OFF not achieved.*
Evaluator Note:	Steps 8 and 9 may be performed in any order.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Procedure Note:	The following two steps may be performed concurrently.		
8.	WHILE maintaining a minimum of 2,500 gpm on the running Division II Service Water Pumps, slowly closes 2SWP*MOV33B	P (N2-SOP-11, Attachment 1, step 5.0)	SAT / UNSAT ***STD:*** *On 2CEC*PNL601, rotates the control switch for 2SWP*MOV33B counter clockwise to the CLOSE position. Observes the RED light not lit and the GREEN light lit.*
9.	WHILE maintaining Pump flows less than 10,000 gpm, slowly opens Discharge MOVs for the running Division I Service Water Pumps	P (N2-SOP-11, Attachment 1, step 6.0)	SAT / UNSAT ***STD:*** *On 2CEC*PNL601, throttles the 2SWP*MOV74A, C, and/or E control switches as necessary to achieve all SWP*MOV74's open as indicated by their RED lights lit and their GREEN lights not lit.*
10.	Closes 2SWP*MOV90B	P (N2-SOP-11, Attachment 1, step 7.0)	SAT / UNSAT ***STD:*** *On 2CEC*PNL601, rotates the control switch for 2SWP*MOV90B counter clockwise to the CLOSE position. Observes the RED light not lit and the GREEN light lit.*
Evaluator Note:	Once the operator has placed the control switch for 2SWP*MOV90B in the CLOSE position, then provide the following cue: **Cue:** *Your task is complete. Another operator will complete any remaining actions.*		

TASK STANDARD	*2SWP*MOV50B is open, flow is secured through RHS B Heat Exchanger, all MOV74's are fully open with all pump flows ≤10,000 gpm.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • The plant is at 100% power • An inadvertent closure of 2SWP*MOV50B, PMP 1B DISCH HEADER CROSS-TIE ISOL VLV has occurred. • Initial actions to stabilize the Service Water System have been taken per the N2-SOP-11 flowchart. • SWP*P1A, C and E are running with their respective discharge MOV's throttled to maintain pump flows at 10,000 gpm. • SWP*P1B and D are running in Division II. • Service Water flow has been established to RHS "B" Heat Exchanger in order to maintain service water flow in Division II above 2,500 gpm **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Complete the actions to restore 2SWP*MOV50B per N2-SOP-11, Attachment 1.*

Exelon Generation

Training ID: **2017 NMP2 NRC Plant JPM P-1** Revision: **0.0**

Title: **Place Battery Charger 2BYS-CHGR1A1 in service (Alternate Path)**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ K. Cherchio	9/14/17
Facility Reviewer:		/ John Toothaker	9/21/17

Approximate Duration: 20 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-73A, Rev. 01300, Normal DC Distribution
2. NUREG 1123 K/A 263000 A1.01, (2.5/2.8)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to manipulate plant controls associated with Battery Charger 2BYS-CHGR1C1. The operator will perform actions to place battery charger 2BYS-CHGR1C1 into service in accordance with N2-OP-73A, section E.6.0.

   b. This JPM is considered alternate path. When the battery charger is placed in service it will go into the current limiting mode and will be capped at 600 amps. This requires the candidate to perform section H.14.0 of N2-OP-73A.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-263000-04008, Adjust 125V Battery Charger Output Manually

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A		
Evaluation Method:	☐ Perform ☑ Simulate		
Evaluation Location:	☑ Plant ☐ Simulator ☐ Classroom		
Time Critical Task:	☐ Yes ☑ No		
Alternate Path:	☑ Yes ☐ No		
Safety Function:	6		Electrical

LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3		
K/A Statement: (Add justification statement below for K/A's < 3.0)	263000 A1.01 Ability to predict and/or monitor changes in parameters associated with operating the D.C. Electrical Distribution controls including: Battery charging/discharging rate			
K/A Importance Rating:	RO	2.5	SRO	2.8

4. K/A Justification:
    a. N/A
5. Recommended Start Location
    a. Unit #2 R.P. Access Building
6. Simulator Setup
    a. IC Number
        a. N/A
    b. Presets / With Triggers
        a. Malfunctions
            a) None
        b. Remotes
            a) None
        c. Overrides
            a) None
        d. Annunciators
            a) None

e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-OP-73A with no steps placekept as completed.

h. Miscellaneous

a) None

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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.

b. 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.

2. For Simulator JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1. • Battery Charger 2BYS-CHGR1C1 is ready to be placed into service. • Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours • An Equipment Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *place battery charger 2BYS-CHGR1C1 into service in accordance with N2-OP-73A, section E.6.0.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provides repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used.*
Procedure Note:	The following steps are performed at 2BYS-CHGR1C1, unless otherwise specified.		
Evaluator Note:	• Where possible when providing cue's for component configuration the use of the words "As indicated" is desired if the actual plant configuration matches the JPM condition. In cases where the configuration of actual plant components does not match the intended JPM condition, provide the scripted JPM cue. • In JPM steps 2 through 5, the cue provides the component position because the cues are describing the initial condition of each component prior to manipulation by the candidate.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Verifies open the following breakers:	S (6.1)	SAT / UNSAT ***STD:*** *Reads, reviews and placekeeps step.*
3.	• AC INPUT Breaker **Cue:** *2BYS-CHGR1C1 AC INPUT breaker is in the OFF position.*	S (6.1 first bullet)	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.*
4.	• DC OUTPUT Breaker **Cue:** *2BYS-CHGR1C1 DC OUTPUT breaker is in the OFF position.*	S (6.1 second bullet)	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.*
5.	Verifies FLOAT/EQUALIZE TIMER is set to 10. **Cue:** *2BYS-CHGR1C1 FLOAT/EQUALIZE TIMER is set to 10.*	S (6.2)	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.*
6.	Depresses AND releases FLOAT push button **Cue:** *The component you have identified is in the position you described.*	S (6.3)	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1 depresses AND releases the FLOAT push button, repeats back cue and placekeeps step.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	At 2BYS-SWG001C, closes 2BYS-SWG001C-2B, 125V DC BAT CHARGER 2BYS-CHGR1C1 **Cue:** *If asked, initial breaker position is open.* **Cue:** *The component you have identified is in the position you described.* **Cue:** *An equipment operator is standing by to close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.*	S (6.4)	***PASS / FAIL** ***STD:*** *At 2BYS-SWG001C on control building elevation 214, locates and places breaker 2BYS-SWG001C-2B, 125V DC Bat Charger 2BYS-CHGR1C1 in CLOSE position.* ***Failure*** **=** *Breaker 2BYS-SWG001C-2B not positioned to the CLOSE position as determined by candidate verbalization.*

Evaluator Note:	In the following step the operator may have the equipment operator that is stationed in the normal switchgear close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.
Evaluator Note:	• In the following step if the candidate contacts the equipment operator, provide role plays as necessary. • If the candidate chooses to close breaker 2NJS-US6-3D, then use Cue(a) below. If the candidate chooses to dispatch and equipment operator to close breaker 2NJS-US6-3D, then use Cue(b) below.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	At 2NJS-US6, closes 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1 **Cue:** *If asked, initial breaker position is open.* **Cue(a):** *The component you have identified is in the position you described.* **Cue(b):** *As the equipment operator dispatched to close 2NJS-US6-3D, report to the candidate that 2NJS-US6-3D has been closed.*	S (6.5)	***PASS / FAIL** ***STD(a):*** *At 2NJS-US6 on normal switchgear building elevation 261 east side, locates and places breaker 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1 in CLOSE position.* ***Failure(a) =*** *Breaker 2NJS-US6-3D not positioned to the CLOSE position as determined by candidate verbalization.* ***STD(b):*** *Repeats back Cue(b) using proper communications and placekeeps step.* ***Failure(b) =*** *Breaker 2NJS-US6-3D closed communication not performed as determined by candidate verbalization.*
9.	Places in ON, AC INPUT Breaker **Cue:** *The component you have identified is in the position you described.*	S (6.6)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places AC INPUT breaker in the ON position.* ***Failure =*** *AC INPUT breaker not positioned to the ON position as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	Observes battery voltage is 105 - 140 volts on 2BYS-CHGR1C1 **Cue:** *The indications you have identified are as you have described.*	S (6.7)	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1 Battery voltage is observed to be between 105 and 140VDC.*
Procedure Note:	The battery charger may go to the current limit of 625 amps if the battery is not fully charged.		
11.	Places in ON, DC OUTPUT Breaker **Cue:** *The component you have identified is in the position you described.*	S (6.8)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places DC OUTPUT breaker in the ON position.* ***Failure*** **=** *DC OUTPUT breaker not positioned to the ON position as determined by candidate verbalization.*
Alternate Path:	In the following step when the battery charger is placed in service it will go into the current limiting mode and will be capped at 625 amps. This requires the operator to perform section H.14.0 of N2-OP-73A.		
12.	Verifies amperage **Cue:** *Charging current indicates 680 amps.*	S	SAT / UNSAT ***STD:*** *At 2BYS-CHGR1C1, repeats back cue using proper communications.*
13.	IF 2BYS-CHGR1C1 DC OUTPUT current is greater than 625 amps OR AC POWER breaker trips, THEN performs the following:	S (6.9)	SAT / UNSAT ***STD:*** *Reads, reviews and placekeeps step.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	Notifies Electrical Maintenance **Cue:** *If contacted as electrical maintenance, direct the operator to correct the condition.*	S (6.9.1)	SAT / UNSAT ***STD:*** *Reads/reviews step. Acknowledges Evaluator cue and placekeeps step.*
15.	Exits this Section AND performs Section H.14.0 of this procedure	S (6.9.2)	SAT / UNSAT ***STD:*** *Reads, reviews and placekeeps step.*
16.	Verifies battery charger AC INPUT breaker in OFF **Cue:** *If asked, initial breaker position is ON.* **Cue:** *The component you have identified is in the position you described.*	S (H.14.1)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places AC INPUT breaker in the OFF position.* ***Failure =*** *AC INPUT breaker not positioned to the OFF position as determined by candidate verbalization.*
17.	Verify battery charger DC OUTPUT breaker in OFF **Cue:** *If asked, initial breaker position is ON.* **Cue:** *The component you have identified is in the position you described.*	S (H.14.2)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places DC OUTPUT breaker in the OFF position.* ***Failure =*** *DC OUTPUT breaker not positioned to the OFF position as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
18.	Loosens FLOAT ADJUSTMENT potentiometer lock nut **Cue:** *The component you have identified is in the position you described.*	S (H.14.3)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 locates FLOAT ADJUSTMENT potentiometer lock nut and loosens lock nut by turning counterclockwise.* ***Failure*** **=** *FLOAT ADJUSTMENT potentiometer lock nut not loosened as determined by candidate verbalization.*
18.	Rotates fully counter clockwise the FLOAT ADJUSTMENT potentiometer **Cue:** *The component you have identified is in the position you described.*	S (H.14.4)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 locates FLOAT ADJUSTMENT potentiometer and rotates potentiometer fully counterclockwise.* ***Failure*** **=** *FLOAT ADJUSTMENT potentiometer not rotated fully counterclockwise as determined by candidate verbalization.*
19.	Places in ON the AC INPUT breaker **Cue:** *The component you have identified is in the position you described.* **Cue:** *If asked, voltage is 110 VDC and current is 200A.*	S (H.14.5)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places AC INPUT breaker in the ON position.* ***Failure*** **=** *AC INPUT breaker not positioned to the ON position as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
20.	Place in ON the DC OUTPUT breaker **Cue:** *The component you have identified is in the position you described.* **Cue:** *If asked, voltage is 110 VDC and current is 200A.*	S (H.14.6)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 places DC OUTPUT breaker in the ON position.* ***Failure*** **=** *DC OUTPUT breaker not positioned to the ON position as determined by candidate verbalization.*
21.	WHILE performing the following steps, maintain battery charger DC OUTPUT current less than 500 amps	S (H.14.7)	SAT / UNSAT ***STD:*** *Reads, reviews and placekeeps step.*

Procedure Note:	• As the battery is charged, DC output current will drop. • The charger responds slowly to voltage adjustments.
Evaluator Note:	In the following step a cue is given to the operator that electrical maintenance will perform float and equalize voltage adjustments inside the battery charger.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
22.	While maintaining charger DC OUTPUT current less than 500 amps, incrementally raises charger DC OUTPUT voltage by rotating clockwise the FLOAT ADJUSTMENT potentiometer UNTIL battery charger DC OUTPUT voltage is 135 volts as indicated on DC OUTPUT volt meter AND charger DC OUTPUT current is less than 500 amps. **Cue:** *Initial adjustment leaves Output voltage at 135 VDC and DC OUTPUT current at 480 amps.*	S (H.14.8)	***PASS / FAIL** ***STD:*** *At 2BYS-CHGR1C1 incrementally raises charger DC OUTPUT voltage by rotating clockwise the FLOAT ADJUSTMENT potentiometer while maintaining charger DC OUTPUT current less than 500 amps. Acknowledges cue using proper communications.* ***Failure =*** *FLOAT ADJUSTMENT potentiometer not rotated in the clockwise direction while taking into account cue information as determined by candidate verbalization.*
Evaluator Note:	When the FLOAT ADJUSTMENT potentiometer has been adjusted at least once and the Evaluator cue has been given and 3 way communicated by the candidate, provide the following cue: **Cue:** Your task is complete. Electrical maintenance will complete section H.14.9 and adjust battery float and equalize voltages.		

TASK STANDARD	*2BYS-CHGR-1C1 has been placed in service in accordance with N2-OP-73A.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1. • Battery Charger 2BYS-CHGR1C1 is ready to be placed into service. • Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours • An Equipment Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *place battery charger 2BYS-CHGR1C1 into service IAW N2-OP-73A, Section E.6.0.*

Exelon Generation

Training ID: **2017 NMP2 NRC Plant JPM P-2** Revision: **0.0**

Title: **Diesel Fire Pump Local Start (Alternate Path)**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ K. Cherchio	9/14/17
Facility Reviewer:		/ John Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-OP-43, Rev. 02000, Fire Protection Water
2. NUREG 1123 K/A 286000 A4.06, (3.4/3.4)

Instructor Information

A. JPM Information

1. Description

   a. This JPM evaluates the ability of the candidate to start the Diesel Fire Pump.

   b. This JPM is considered alternate path because once the candidate has started the diesel fire pump, a fuel leak will occur with sufficient enough fuel spray to render the diesel fire pump room inaccessible. The candidate will be forced to perform an emergency shutdown of the diesel fire pump using N2-OP-43, section H.5.0.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-286000-04003, Start 2FPW-P1, Diesel Fire Pump Locally

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A		
Evaluation Method:	☐ Perform ☑ Simulate		
Evaluation Location:	☑ Plant ☐ Simulator ☐ Classroom		
Time Critical Task:	☐ Yes ☑ No		
Alternate Path:	☑ Yes ☐ No		
Safety Function:	8		Plant Support Systems

LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)	286000 A4.06 Ability to manually operate and/or monitor in the control room: Fire diesel				
K/A Importance Rating:		RO	3.4	SRO	3.4

4. K/A Justification:
    a. N/A
5. Recommended Start Location
    a. Unit #2 R.P. Access Building
6. Simulator Setup
    a. IC Number
        a. N/A
    b. Presets / With Triggers
        a. Malfunctions
            a) None
        b. Remotes
            a) None
        c. Overrides
            a) None
        d. Annunciators
            a) None

e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-OP-43 section E.3.0 with no steps placekept as completed.

h. Miscellaneous

a) None

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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.

b. 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.

2. For Simulator JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • Preventive maintenance has just been completed on the Diesel Fire Pump • Post maintenance Testing requires the Diesel Fire Pump to be run for 30 minutes to verify proper operation **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Perform a local start of 2FPW-P1, Diesel Fire Pump in accordance with N2-OP-43, section E.3.0.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary.*	P	SAT / UNSAT ***STD:*** *Proper communications used.*
Procedure Note:	• 2FPW-P1 can be started either locally at 2FPW-PNL234 or remotely from 2CEC-PNL849. • The preferred method is local starting of 2FPW-P1. • Annunciator 849205, DIESEL FIRE PUMP RUNNING, will alarm when the pump is started.		
Procedure Caution:	• When 2FPW-P1 is operated in Auto, the only protective trip in effect is the engine overspeed trip. When 2FPW-P1 is operated in MAN A or MAN B, there is no protective trip in effect. Frequent checks of the engine are required while it is running to prevent unnecessary damage. • 2FPW-P1 should be run at least 20 minutes before being secured to reach stable operating engine temperatures as recommended by the manufacturer.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	PRIOR to starting 2FPW-P1, notifies the Fire Brigade Leader ***Cue:*** *As the fire brigade leader, acknowledge candidate notification.*	S (E.3.1)	SAT / UNSAT ***STD:*** *Proper communications used.*
Procedure Note:	The following step is performed inside 2FPW-PNL234 in the Diesel Fire Pump Room.		
3.	Locally starts 2FPW-P1, Diesel Engine Driven Fire Pump, as follows:	S (E.3.2)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step.*
Procedure Note:	Annunciator 849221, DIESEL FIRE PUMP NOT IN AUTO START, will alarm in the next step.		
4.	Places SELECTOR switch in MAN A OR MAN B **Cue:** *The component you have identified is in the position you described.*	S (E.3.2.1)	***PASS / FAIL** ***STD:*** *At 2FPW-PNL234 rotates SELECTOR switch clockwise/counter clockwise to the MAN A/MAN B position.* ***Failure*** **=** *SELECTOR Switch in MAN A or MAN B not achieved as determined by candidate verbalization.*
5.	Starts 2FPW-P1 by depressing START pushbutton. **Cue:** *The component you have identified is in the position you described.* **Cue:** *The Diesel Fire pump starts and comes up to rated speed.* **Cue:** *If the candidate contacts the control room to verify receipt of annunciator 849205, DIESEL FIRE PUMP RUNNING, inform the candidate that the annunciator is in alarm.*	S (E.3.2.2)	***PASS / FAIL** ***STD:*** *At 2FPW-PNL234 depresses START pushbutton.* ***Failure*** **=** *START pushbutton depression not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	IF 2FPW-P1 fails to crank, THEN performs the following: • Briskly turns SELECTOR switch to opposite Manual position • Depresses 2FPW-P1 START pushbutton	S (E.3.2.3.a & b)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step as N/A.*
Procedure Note:	The following step is performed at 2CEC-PNL849 in the Control Room.		
7.	Remotely starts 2FPW-P1, Diesel Engine Driven Fire Pump, by depressing DIESEL ENG DRIVEN FIRE PUMP START pushbutton	S (E.3.3)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step as N/A.*
Procedure Note:	The following parameters should be monitored at 5 minute intervals during the first 15 minutes of pump operation and then once per hour.		
8.	Confirm proper pump operation as indicated by the following: • NO unusual noise OR vibrations **Cue:** *If asked, report that there are no unusual noises or vibrations.*	S (E.3.4 first bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Proper communications used.*
9.	• NO red lights lit on 2FPW-PNL234 **Cue:** *If asked, report that there are no red lights lit on 2FPW-PNL234.*	S (E.3.4 second bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates red light indications on 2FPW-PNL234. Proper communications used.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	System pressure is approximately 150 psig as indicated on one of the following: • 2FPW-PI108, 2FPW-P1 discharge pressure gauge, located at the pump • 2FPW-PI214, FPW System pressure gauge, located on the wall by 2FPW-PNL234 • 2FPW-PI215, FIRE HEADER WTR PRESS meter, located on 2CEC-PNL849 **Cue:** *If asked, report that all pressure gauges read approximately 150 psig.* **Cue:** *If the candidate contacts the control room to verify 2FPW-PI215, FIRE HEADER WTR PRESS meter on 2CEC*PNL849, inform the candidate that the pressure meter reads 150 psig.*	S (E.3.4 third bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates/evaluates 2FPW-PI108 (at pump) and 2FPW-PI214 (2FPW-PNL234) pressure indications. Proper communications used.*
11.	Engine speed is approximately 1950 RPM as indicated on the diesel **Cue:** *If asked, Engine speed indicates approximately 1950 rpm.*	S (E.3.4 fourth bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates/evaluates diesel rpm indications. Proper communications used.*
12.	Lube oil pressure is 59 to 80 psi as indicated on the diesel **Cue:** *If asked, engine lube oil pressure indicates approximately 70 psig.*	S (E.3.4 fifth bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates/evaluates diesel lube oil pressure indications. Proper communications used.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
13.	Jacket water temperature is 165 to 195°F as indicated on 2FPW-TI1012, DSL ENG COOLANT TEMP gauge, on the diesel **Cue:** *If asked, jacket water temperature is 175°F as indicated on 2FPW-TI1012, DSL ENG COOLANT TEMP gauge, on the diesel.*	S (E.3.4 sixth bullet)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates/evaluates 2FPW-TI1012, DSL ENG COOLANT TEMP gauge. Proper communications used.*
Alternate Path:	During performance of the next step, when the candidate checks the discharge strainer D/P, a fuel leak will develop at the fuel filter causing diesel fuel to start spraying into the area. This will require an emergency shutdown of the diesel fire pump. The instructor should provide the associated cue and inform the candidate that the area around the diesel fire pump engine is now inaccessible. If asked for further guidance, the candidate should be given the cue to make a recommendation and carry out the recommended action. Ensure that the cue given does not infer that the entire room is inaccessible. The intent is that only the area around the "NOD STOPP" handle and the area immediately near the diesel fire pump become inaccessible. The evaluator can provide leak cues as necessary, if questioned by the candidate to ensure the JPM objective can be achieved with regards to room accessibility.		
14.	Observes 2FPW-PDI211, DIESEL FIRE PUMP DISCHARGE STRAINER DP. **Cue:** *If asked, 2FPW-PDI211 indicates 4 psid.* **Cue:** *When the candidate is finished checking operating parameters, inform the candidate that a severe diesel fuel leak has started and that diesel fuel is spraying out the side of the engine near the fuel filter making the engine area inaccessible.*	S (E.3.5)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Locates/evaluates 2FPW-PDI211, DIESEL FIRE PUMP DISCHARGE STRAINER DP gauge. Proper communications used.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	Reports to the control room that the diesel fire pump has developed a fuel leak **Cue:** *As the control room, acknowledge the report. If additional direction is requested, inform the candidate to make a recommendation and carry out the recommended action.*	S	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step. Proper communications used.*
16.	Candidate references and performs N2-OP-43, section H.5.0, Emergency Shutdown of Diesel Driven Fire Pump 2FPW-P1	S (H.5.0)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step.*
Procedure Note:	The "NOD STOPP" handle is located behind the lube oil dipstick on the south side of the Diesel Driven Fire Pump engine.		
17.	Stops fuel oil flow to Diesel Driven Fire Pump engine by performing one OR both of the following:	S (H.5.1)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step.*
18.	IF Diesel Driven Fire Pump engine is accessible THEN shut off fuel oil by pulling down AND holding "NOD STOPP" handle UNTIL engine stops.	S (H.5.1.1)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step as N/A.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
19.	IF Diesel Driven Fire Pump engine is NOT accessible THEN shuts off fuel oil by unlocking AND closing 2FOF-V10, FUEL OIL TANK OUTLET LINE ISOL **Cue:** *The component you have identified is in the position you described. The diesel has stopped running.*	S (H.5.1.2)	***PASS / FAIL** ***STD:*** *Locates 2FOF-V10, FUEL OIL TANK OUTLET LINE ISOL, unlocks valve handwheel and rotates the valve handwheel clockwise to the full closed position. Verifies valve stem lowering.* ***Failure =*** *Closure of 2FOF-V10, FUEL OIL TANK OUTLET LINE ISOL not achieved as determined by candidate verbalization.*
20.	Reports to the control room that an emergency stop of the diesel fire pump has been performed and that the diesel fire pump has been successfully shutdown.	S	SAT / UNSAT ***STD:*** *Proper communications used.*

Instructor Note:	After the candidate has closed 2FOF-V10, FUEL OIL TANK OUTLET LINE ISOL and informed the control room of actions taken, provide the following cue: **Cue:** Your task is complete, another operator will complete any remaining actions.

TASK STANDARD	*Diesel Fire pump secured using the emergency shutdown section (H.5.0) of N2-OP-43.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • Preventive maintenance has just been completed on the Diesel Fire Pump • Post maintenance Testing requires the Diesel Fire Pump to be run for 30 minutes to verify proper operation **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Perform a local start of 2FPW-P1, Diesel Fire Pump in accordance with N2-OP-43, section E.3.0.*

Exelon Generation

Training ID: **2017 NMP2 NRC Plant JPM P-3** Revision: **0.0**

Title: **Inject boron with hydro pump**

Approvals:

	Signature	/ Printed Name	Date
Developed by:		/ Mike Alexander	8/4/17
Validated by:		/ K. Cherchio	9/14/17
Facility Reviewer:		/ John Toothaker	9/21/17

Approximate Duration: 15 minutes

Documentation of Performance:

Performer: _____

Evaluator: _____

Start Time: _____ Stop Time: _____ Completion Time: _____

Grade: **Pass / Fail**

Comments: _____

_____

_____

_____

_____

Evaluators Signature: _____ Date: _____

References

1. N2-EOP-6.15, Rev. 00002, SLS HYDRO PUMP INJECTION
2. NUREG 1123 K/A 295037 EA1.10, (3.7/3.9)

Instructor Information

A. JPM Information

1. Description

   a. This JPM tests the candidate's ability to manipulate plant controls associated with SLS. The operator will lineup for Boron injection with the Hydro Pump.

   b. This JPM is NOT considered alternate path.

   c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

2. Task Information:

   a. N2-EOP06-01001-15, Implement N2-EOP-6.15 SLS Hydro Pump Injection

3. Evaluation / Task Criteria

License Level: (Target Audience)	☑ SRO ☑ RO ☐ EO ☐ N/A			
Evaluation Method:	☐ Perform ☑ Simulate			
Evaluation Location:	☑ Plant ☐ Simulator ☐ Classroom			
Time Critical Task:	☐ Yes ☑ No			
Alternate Path:	☐ Yes ☑ No			
Safety Function:	1		Reactivity Control	
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3		

K/A Statement: (Add justification statement below for K/A's < 3.0)	295037 EA1.10 Ability to operate and/or monitor the following as they apply to scram condition present and reactor power above APRM downscale or unknown: Alternate boron injection methods			
K/A Importance Rating:	RO	3.7	SRO	3.9

4. K/A Justification:
   a. N/A
5. Recommended Start Location
   a. Unit #2 R.P. Access Building
6. Simulator Setup
   a. IC Number
      a. N/A
   b. Presets / With Triggers
      a. Malfunctions
         a) None
      b. Remotes
         a) None
      c. Overrides
         a) None
      d. Annunciators
         a) None
      e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-EOP-6.15 section E.3.0 with no steps placekept as completed

h. Miscellaneous

a) Breakaway tie-wrap for EOP box.

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

B. Read Before Every JPM Performance

1. For Plant JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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.

b. 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.

2. For Simulator JPM's:

a. For the performance of this JPM, I will act as all those you need to talk to. 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 provide cues as necessary.

C. Read Before Each Evaluated JPM

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

INITIAL CONDITIONS	Given: • Boron injection is required. • The Standby Liquid Control pumps will not start. • An additional operator is standing by to perform any needed field actions. • You have been given F2-57 and CAT 60 Keys. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Commence boron injection with the hydro pump lined up to 2SLS*P1A piping in accordance with N2-EOP-6.15.*

START TIME	

	PERFORMANCE	**ACT. CODE** P / S / NA	**EVALUATOR**
1.	Provide repeat back of initiating cue **Cue:** *Acknowledge repeat back providing correction if necessary*	P	SAT / UNSAT ***STD:*** *Proper communications used*
Procedure Note:	Figure 1 shows the general arrangement and equipment connections listed in this procedure.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
Instructor Note:	• Where possible when providing cue's for component configuration the use of the words "As indicated" is desired if the actual plant configuration matches the JPM condition. In cases where the configuration of actual plant components does not match the intended JPM condition, provide the scripted JPM cue. • When candidates are repositioning components, the JPM cue will provide the position that the candidate stated during performance of the procedure step. (For example, if the candidate states that a breaker is being/was taken to the "open" position then the cue shall state that the breaker is in the "open" position even if the correct position required by the procedure was "closed".) The cue's provided in the JPM assume that the step was performed correctly per the procedure. If the step is performed correctly the provide the scripted JPM cue.		
Instructor Note:	For simulation purposes, actual layout of hoses and connection to pump or plant equipment is not required. Identification of hose and use along with connection points is all that is required.		
2.	Locates equipment. EOP Box Adjacent to SLS Tank, Rx Bldg. El. 289	P	SAT / UNSAT ***STD:*** *At EOP box, open box, removes equipment, and checks to ensure specified equipment contained.*
3.	Removes plug from 2SLS*V42, 2SLS*P1A SUCTION PRESS TEST CONN. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.1)	***PASS / FAIL** ***STD:*** *At 2SLS*V42, removes test conn. plug by rotating plug counter clockwise.* ***Failure =*** *Removal of 2SLS*V42 test conn. plug not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Using 25 ft hard suction hose (black) with brass couplings AND the appropriate connections, connects hose to 2SLS*V42. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.2)	***PASS / FAIL** ***STD:*** *At 2SLS*V42, connects 25' black suction hose by rotating brass coupling clockwise into the test connection.* ***Failure*** **=** *25' black suction hose connection not achieved as determined by candidate verbalization.*
5.	Using 25 ft hard suction hose (black) with brass couplings AND the appropriate connections, connects hose to suction side of Hydro Pump. (Rx Bldg, EL 289, SLS Area). **Cue:** *The component you have identified is in the position you described.*	S (6.1.3)	***PASS / FAIL** ***STD:*** *At hydro pump, connects 25' black suction hose by rotating brass coupling clockwise onto the suction connection. (Located on the bottom of the pump.)* ***Failure*** **=** *25' black suction hose connection not achieved as determined by candidate verbalization.*
6.	Removes cap downstream of 2SLS*V35, INJECTION HEADER DRAIN VLV. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.4)	***PASS / FAIL** ***STD:*** *At 2SLS*V35, removes pipe cap by rotating cap counter clockwise.* ***Failure*** **=** *Removal of 2SLS*V35 pipe cap not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	Using 25 ft Hydro Hose with Hi Press SS Couplings AND the appropriate connections, connects hose to 2SLS*V35. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.5)	***PASS / FAIL** ***STD:*** *At 2SLS*V35, connects 25' hydro hose by rotating hose coupling clockwise onto the drain connection.* ***Failure*** **=** *25' hydro hose connection not achieved as determined by candidate verbalization.*
8.	Using 25 ft Hydro Hose with Hi Press SS Couplings AND the appropriate connections, connects hose to discharge side of Hydro Pump. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.6)	***PASS / FAIL** ***STD:*** *At hydro pump, connects 25' hydro hose by inserting hose coupling into pump discharge disconnect. (Located middle of hydro unit. Downstream of Relief Valve.).* ***Failure*** **=** *25' hydro hose connection not achieved as determined by candidate verbalization.*
9.	Closes 2MWS-V24, MWS TO SLC SYSTEM ISOL. (Rx Bldg, EL 289, on top of SLS tank) **Cue:** *Another operator has closed 2MWS-V24, MWS TO SLC SYSTEM ISOL.*	S (6.1.7)	SAT / UNSAT ***STD:*** *Proper communications used.*
Instructor Note:	For JPM step 10, the evaluator should cue the candidate that the power supply breaker is opened. At the evaluators discretion, the evaluator can ask the candidate to locate 2EHS*MCC102 breaker-17D (North Aux Bay El 240) at the completion of the JPM while transitioning to perform remaining JPMs.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	Opens 2SLS*MOV1A, STORAGE TANK OUTLET VLV, manually as follows:	S (6.1.8)	SAT / UNSAT ***STD:*** *Reads/reviews and placekeeps step.*
Procedure Note:	A CAT 60 key may be required for entry at 2EHS*MCC102.		
Instructor Note:	For JPM step 11, wait until it is clear that the candidate is evaluating completion of step 6.1.8.a and then inform the candidate that the additional operator is standing by on station to place 2EHS*MCC102-17D to OFF.		
11.	Places 2EHS*MCC102-17D, 2SLS*MOV1A, SLCS STORAGE TANK OUTLET MOV to OFF. (Aux Bay North, EL 240) **Cue:** *If/when directed to place 2EHS*MCC102-17D to OFF, inform the candidate that 2EHS*MCC102-17D has been placed in OFF.*	S (6.1.8.a)	SAT / UNSAT ***STD:*** *Directs additional operator to place breaker 2EHS*MCC102-17D to OFF. Proper communications used.*
12.	Opens 2SLS*MOV1A, manually (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.8.b)	***PASS / FAIL** ***STD:*** *Manually opens 2SLS*MOV1A by rotating valve handwheel in the counterclockwise direction on Rx Bldg, EL 289, SLS Area until the valve is open by local valve indication and or by stem position.* ***Failure =*** *Opening of 2SLS*MOV1A not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
13.	Opens 2SLS*V42, 2SLS*P1A SUCTION PRESS TEST CONN. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.1.9)	***PASS / FAIL** ***STD:*** *Opens 2SLS*V42, 2SLS*P1A SUCTION PRESS TEST CONN by rotating valve handwheel in the counterclockwise direction on Rx Bldg, EL 289, SLS Area until the valve is open by local valve indication and or by stem position.* ***Failure =*** *Opening of 2SLS*V42 not achieved as determined by candidate verbalization.*
Instructor Note:	Procedure transition to Section 6.3 to establish boron injection.		
14.	Proceed to Section 6.3 to continue procedure	P (6.1.10)	SAT / UNSAT ***STD:*** *reads/reviews step and placekeeps with a circle slash.*
15.	Opens 2SLS*V35, INJECTION HEADER DRAIN VLV. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.1)	***PASS / FAIL** ***STD:*** *Opens 2SLS*V35, INJECTION HEADER DRAIN VLV by rotating valve handwheel in the counterclockwise direction on Rx Bldg, EL 289, SLS Area until the valve is open by local valve indication and or by stem position.* ***Failure =*** *Opening of 2SLS*V35 not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
16.	Opens 2SLS*V34, INJECTION HEADER DRAIN VLV. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.2)	***PASS / FAIL** ***STD:*** *Opens 2SLS*V34, INJECTION HEADER DRAIN VLV by rotating valve handwheel in the counterclockwise direction on Rx Bldg, EL 289, SLS Area until the valve is open by local valve indication and or by stem position.* ***Failure =*** *Opening of 2SLS*V34 not achieved as determined by candidate verbalization.*
17.	Verifies open, EITHER 2SLS*MOV5A OR 2SLS*MOV5B: (2CEC*PNL601)	P (6.3.3)	SAT / UNSAT ***STD:*** *reads/reviews step and placekeeps with a circle slash.*
18.	• SLS*MOV5A, OUTBOARD ISOL STOP CHECK VLV **Cue:** *SLS*MOV5A is open.*	P (6.3.3 first bullet)	SAT / UNSAT ***STD:*** *Contacts control room and request valve position for 2SLS*MOV5A. Acknowledges report. Proper communications used.*
19.	• SLS*MOV5B, OUTBOARD ISOL STOP CHECK VLV **Cue:** *SLS*MOV5B is open.*	P (6.3.3 second bullet)	SAT / UNSAT ***STD:*** *Contacts control room and request valve position for 2SLS*MOV5B. Acknowledges report. Proper communications used.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
20.	Using 50 ft Air Hose, connect air hose to Hydro Pump VLV. (Rx Bldg, EL 289, SLS Area **Cue:** *The component you have identified is in the position you described.*	S (6.3.4)	***PASS / FAIL** ***STD:*** *At hydro pump, connects 50 foot air hose fitting onto hydro pump air line quick disconnect fitting.* ***Failure =*** *50' air hose connection not achieved as determined by candidate verbalization.*
21.	Verifies closed, Hydro Pump Manual Air Inlet Isolation. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.5)	SAT / UNSAT ***STD:*** *At hydro pump verifies the Air inlet isolation closed.*
22.	Verifies Hydro Pump Air Regulator spring tension is backed off. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.6)	SAT / UNSAT ***STD:*** *At hydro pump verifies the Hydro Pump Air Regulator spring tension is backed off.*
23.	Using 50 ft Air Hose, connects air hose from Hydro Pump to 2SAS-V529, SERVICE AIR CONNECTION located behind SLS pump. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.7)	***PASS / FAIL** ***STD:*** *At 2SAS-V529, connects air hose fitting into service air quick disconnect fitting.* ***Failure =*** *50' air hose connection not achieved as determined by candidate verbalization.*

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
24.	Opens 2SAS-V529. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.8)	***PASS / FAIL** ***STD:*** *Opens 2SAS-V529 by rotating valve handwheel in the counterclockwise direction on Rx Bldg, EL 289, SLS Area until the valve is open by local valve indication and or by stem position.* ***Failure*** **=** *Opening of 2SAS*V529 not achieved as determined by candidate verbalization.*
25.	Opens Hydro Pump Manual Air Inlet Isolation. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described.*	S (6.3.9)	***PASS / FAIL** ***STD:*** *Opens air inlet isolation valve by rotating T-handle counter clockwise to the in-line position.* ***Failure*** **=** *Opening of the air inlet isolation valve not achieved as determined by candidate verbalization.*
26.	Starts Hydro Pump by tightening spring tension on Hydro Pump Air Regulator. (Rx Bldg, EL 289, SLS Area) **Cue:** *The component you have identified is in the position you described and the indications you have identified are as you have described.*	S (6.3.10)	***PASS / FAIL** ***STD:*** *Adjusts spring tension on air regulator.* ***Failure*** **=** *The adjustment of spring tension on the air regulator not achieved as determined by candidate verbalization.*
Instructor Note:	Once the candidate has started the hydro pump by tightening spring tension on Hydro Pump Air Regulator, provide the following cue: **Cue:** Simulate Hydro Pump is running. Your task is complete, another operator will complete any remaining actions.		

TASK STANDARD	*Hydro pump running with flowpath established from SLS tank to Reactor Vessel.*

STOP TIME	

JPM Handout

INITIAL CONDITIONS	Given: • Boron injection is required. • The Standby Liquid Control pumps will not start. • An additional operator is standing by to perform any needed field actions. • You have been given F2-57 and CAT 60 Keys. **Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

INITIATING CUE	**(Candidate Name)**, *Commence boron injection with the hydro pump lined up to 2SLS*P1A piping in accordance with N2-EOP-6.15.*

Exelon Generation.

Copy_____ of _____

Training Id: **NMP2 NRC 2017 Scenario 1** Revision: **0.0**

Title: **SC1-Primary system leak in secondary containment, exceed max safe level and/or temperature in 2 or more areas, Blowdown required.**

	Signature / Printed Name	Date
Developed By	Mike Alexander	9/13/17
Validated By	Dan Cifonelli	8/29/17
	Bob Spooner	8/29/17
	K. Cherchio	8/29/17
Facility Reviewer	John Toothaker	9/21/17

References

1. N2-OP-101A, Reactor Startup
2. N2-OP-30, Control Rod Drive System
3. N2-ARP-603200, 2CEC*PNL603 Series 200 Alarm Response Procedures
4. N2-ARP-603400, 2CEC*PNL603 Series 400 Alarm Response Procedures
5. N2-OP-92, Neutron Monitoring
6. N2-ARP-601300, 2CEC*PNL601 Series 300 Alarm Response Procedures
7. N2-OP-35, Reactor Core Isolation Cooling
8. N2-ARP-851200, 2CEC*PNL851 Series 200 Alarm Response Procedures
9. N2-SOP-19, Loss of Instrument Air
10. N2-ARP-601400, 2CEC*PNL601 Series 400 Alarm Response Procedures
11. N2-OP-31, Residual Heat Removal System
12. N2-SOP-90, Natural Events
13. N2-SOP-101C, Reactor Scram
14. N2-EOP-RPV, RPV Control - Flowchart
15. N2-EOP-SC, Secondary Containment Control
16. N2-EOP-C2, RPV Blowdown
17. N2-EOP-6 (Series), NMP2 EOP Support Procedures (N2-EOP-6.1 thru 6.31)
18. N2-EOP-HC, NMP2 EOP Hard Cards Procedure
19. N2-EOP-PC, Primary Containment Control
20. EP-CE-111, Emergency Classification and Protective Action Recommendations
21. EP-CE-113, Personnel Protective Actions
22. EP-CE-114-100, Emergency Notifications

23. EPIP-EPP-02-EAL, EMERGENCY ACTION LEVEL MATRIX UNIT 2
24. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
25. OP-AA-112-101, Shift Turnover and Relief

Instructor Information

A. Scenario Description

1. Sequence of Events / Expected Crew Response

   a. The scenario begins at 4.5% with a reactor startup in progress. Narrow range 'C' level transmitter has failed high and 2RDS-P1B is out of service due to high pump vibrations.

   b. Event 1 is the reactivity maneuver (RO withdrawing control rods to continue the reactor startup).

   c. Event 2 occurs while the RO is raising power using rods. A control rod will stick. The crew will take action to raise drive water pressure per N2-OP-30. Raising drive water pressure will free the stuck rod and allow the startup to continue.

   d. Event 3 occurs when IRM "D" fails Upscale. After evaluating Technical Specifications 3.3.1.1 and verifying that all other IRM's are operable, the crew will bypass IRM "D" using the joystick at 2CEC*PNL603 in accordance with N2-OP-92 and reset the half scram on RPS "B" per N2-OP-97.

   e. Event 4 occurs when RCIC spuriously initiates and injects into the RPV. The crew will evaluate 2 independent methods to determine that RPV water level is in the appropriate level

band, trip RCIC and close 2ICS*MOV126. The crew will then evaluate Technical Specifications.

f. Event 5 occurs when the operating Instrument Air Compressor (2IAS-C3A) trips on motor electrical fault. The crew will recognize that no Instrument Air Compressors are running and enter N2-SOP-19. A failure of the lag and backup compressors to auto start will become evident as the actions of N2-SOP-19 are being conducted. The crew will recognize the failure of the lag compressor to auto start and take manual action to reposition the instrument air compressor selector switch to the "BCA" position and start the lag air compressor (2IAS-C3B)(Critical Task 1).

g. Event 6 occurs when an inadvertent Division I ECCS signal is received. This causes the CSL and RHR 'A' pumps to automatically start and run on minimum flow. During the transient 2RHS*MOV4A (2RHS*P1A minimum flow valve) fails closed. The crew will evaluate using redundant and independent indications that the ECCS signal is not valid and determine that 2RHS*P1A is running at shutoff head. The crew will then place 2RHS*P1A in P-T-L and secure the Division I diesel generator. The crew will evaluate Technical Specifications

for the inoperability of one ECCS injection system.

h. Event 7, 8 & 9 start when a seismic event occurs. The event will cause an unisolable RCIC steam leak and a FWLC failure. The crew will take action per N2-EOP-SC and enter N2-EOP-RPV to manually scram the reactor (Critical Task 2). RPV level control will be complicated by the FWLC failure requiring the crew to place LV55A(B) in MANUAL control and adjust the valve to maintain RPV Level in the normal band. Due to the RCIC steam leak, Secondary Containment conditions will continue to degrade requiring the crew to either anticipate RPV blowdown per N2-EOP-RPV, or perform a blowdown per N2-EOP-C2 (Critical Task 3). The scenario may be terminated when the RPV is being depressurized.

2. Termination Criteria

   a. RPV depressurization in progress

   b. Secondary containment temperatures lowering

3. Critical Tasks

CT-1.0 Justification:	
Safety Significance:	*Critical Task 1.0 is identified as critical because lowering CRD system air pressure can result in various rods drifting to unpredictable locations in the core. This can lead to an unanalyzed rod pattern and localized power peaking resulting in fuel damage.*
Cueing:	*Annunciators on the 851 and 603 panels will provide indication for lowering plant air pressures. Procedures direct starting standby air compressors and inserting a manual reactor scram if CRD system air pressure lowers to <60 psig.*

Measurable Performance Indicators:	*Manually starting air compressors or inserting a manual reactor scram will provide observable actions for the evaluation team.*
Performance Feedback:	*Instrument air pressure and/or control rod position will provide performance feedback regarding success of crew actions.*

a. CT-1.0, Given a trip of the running instrument air compressor and a failure of the lag and backup air compressors to automatically start, prior to CRD System air pressure lowering below 60 psig, manually start the lag or backup air compressor or SCRAM the reactor in accordance with N2-SOP-19.

CT-2.0 Justification:	
Safety Significance:	*Critical Task 2.0 is identified as critical because with an un-isolable primary system discharging outside of Primary Containment resulting in general area temperature approaching the maximum safe limit, the Reactor must be scrammed. This reduces the rate of energy production and thus the heat input, radioactivity release, and break flow into the Secondary Containment. This also ensures the Reactor is shutdown prior to the need for a blowdown.*
Cueing:	*Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. Valve position indicators will provide indication that the system is un-isolable. Temperature monitoring activities provide indication that a general area is approaching the maximum safe temperature limit. N2-EOP-SC provides direction to scram the Reactor.*
Measurable Performance Indicators:	*Rotation of the Mode Switch to SHUTDOWN or depressing the manual scram pushbuttons will provide observable actions for the evaluation team.*
Performance Feedback:	*Control rod position and Reactor power indications will provide performance feedback regarding the success of the scram.*

b. CT-2.0, Given an un-isolable steam leak outside primary containment and one general area temperature approaching the maximum safe limit, the crew will insert a manual reactor scram, in accordance with N2-EOP-SC.

CT-3.0A Justification:	
Safety Significance:	*Critical Task 3.0A is identified as critical because an un-isolable primary system discharging outside of Primary Containment resulting in two general area temperatures above the maximum safe limit indicates a wide-spread problem posing a direct and immediate threat to Secondary Containment. A vessel depressurization*

	minimizes flow through the break, rejects heat to the main condenser in preference to outside the containment, and places the primary system in the lowest possible energy state.
Cueing:	*Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. Valve position indicators will provide indication that the system is un-isolable. Temperature monitoring activities provide indication that two general areas is above the maximum safe temperature limit. N2-EOP-SC provides direction to depressurize the Reactor.*
Measurable Performance Indicators:	*The crew will manually open TBVs.*
Performance Feedback:	*EHC instrumentation will provide indication that these valves are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the depressurization.*

c. CT-3.0A, Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves in accordance with N2-EOP-RPV.

CT-3.0B Justification:	
Safety Significance:	*Critical Task 3.0B is identified as critical because an un-isolable primary system discharging outside of Primary Containment resulting in two general area temperatures above the maximum safe limit indicates a wide-spread problem posing a direct and immediate threat to Secondary Containment. A 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.*
Cueing:	*Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. Valve position indicators will provide indication that the system is un-isolable. Temperature monitoring activities provide indication that two general areas is above the maximum safe temperature limit. N2-EOP-SC provides direction to blowdown the Reactor.*
Measurable Performance Indicators:	*The crew will manually open SRVs.*
Performance Feedback:	*SRV instrumentation will provide indication that these valves are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the blowdown.*

d. CT-3.0B, Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves in accordance with N2-EOP-C2.

4. Length

   a. 60 minutes

5. Mitigation Strategy Code

   a. SC-1, Primary system leak in secondary containment, exceed max safe level and/or temperature in 2 or more areas, Blowdown required.

6. Technical Specifications (Applicable actions for initial conditions only)

   a. None

7. EAL Classification

   a. Loss or potential loss of **ANY** two fission product barriers (Table F-1)

   (RCS Loss C.3 & C.4, RCS Potential Loss C.1, Containment Loss C.5)

8. Special Orders

   a. None

B. Initial Conditions

1. IC Number

   a. IC-012 or equivalent (IC-150 for ILT 16-1)

2. Presets / With Triggers

   a. Malfunctions

      1) **FW28C**, Reactor NR Level Transmitter Failure-Upscale (C33-N004C), FINAL=True — **Inserted**

      2) **RC11**, RCIC Isolation Failure, FINAL=True — **Inserted**

3) **RD07-26-11**, Control Rod Failure - Stuck, FINAL=True	**TRG1**
4) **NM06D**, IRM Channel Failure - Upscale (D), FINAL=True	**TRG2**
5) **RC10**, RCIC System Spurious Initiation, FINAL=True	**TRG3**
6) **IA02A**, 2IAS-C3A Thermal Overload Trip, FINAL=True	**TRG4**
7) **IA04A**, IAS Compressor Lag Auto-start Failure, FINAL=True	**TRG4**
8) **IA04B**, IAS Compressor Backup Auto-start Failure, FINAL=True	**TRG4**
9) **RH13A**, ECCS Inadvertently Initiates (Div I), FINAL=True	**TRG5**
10) **RH15**, RHS*MOV4A Valve Fails Shut, FINAL=True	**TRG5**
11) **MT01**, Seismic Acceleration, FINAL=2.0	**TRG6**
12) **FW08A**, FW High Pressure Low Flow Valve Failure – Closed (LV55A), FINAL=True	**TRG6**
13) **RC12**, RCIC Steam Leak In Reactor Building Elevation 215, FINAL=40, RT=15:00	**TRG6**
b. Remotes	
1) **MS03**, Cond Low Vac Bypass Switch (A-D), FV=OFF	**Inserted**

c. Overrides

1) **OVR-01A2S041DI0365**, Close MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=Off — **Inserted**

2) **OVR-01A2S041DI0366**, Open MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=On — **Inserted**

3) **OVR-01A2S042DI0564**, Close MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=Off — **Inserted**

4) **OVR-01A2S042DI0418**, Open MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=On — **Inserted**

d. Annunciators

1) None

e. Event Triggers

Event #	Event Action	Command
15	hzardr602>0.827 (Drive Water DP greater than 290 psid)	dmf RD07-26-11

f. Equipment Out of Service

1) Narrow range 'C' level transmitter has failed high

2) 2RDS-P1B is out of service due to high pump vibrations

g. Support Documentation

1) None

h. Miscellaneous

1) Place CRD Pump 1B control switch in P-T-L with clearance reference tag applied.

2) Place off-normal pink tag near narrow range 'C' level indicator on 2CEC*PNL603.

3) Clear APRM #2 trip memory

4) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:

a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).

b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.

c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

C. Shift Turnover Information

1. Reactor Power: 4.5%
2. Rodline: Below 100%
3. Technical Specification LCOs in effect:

a. None

4. Significant Problems / Abnormalities / Equipment Out of Service:

   a. Narrow range 'C' level transmitter has failed high

   b. 2RDS-P1B is out of service due to high pump vibrations

5. Evolutions / Maintenance Scheduled for this Shift:

   a. Raise reactor power using rods per the startup rod sequence and provided ReMA to 8% in preparation for transferring the mode switch to run.

SHIFT TURNOVER INFORMATION

ON COMING SHIFT: ☐ N ■ D DATE: Today

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

- Control Panel Walkdown (all panels) (SRO, ROs)

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

- LCO Status (SRO)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor power is approximately 4.5% with a reactor startup in progress.
- Narrow range 'C' level transmitter has failed high and is meeting 3.3.2.2 Required Action A.1
- 2RDS-P1B is out of service due to high pump vibrations.
- RPV Pressure is 925 psig with 1 bypass valve partially open
- Feed Pump A is running with level control on LV55A
- A reactor startup in progress per N2-OP-101A. Currently on step E.3.4. The Clean Steam Reboiler is still on the Aux Boilers per SM direction. The SM wants to complete an inspection on an aux steam component prior to transferring the Reboiler to aux steam. Once the inspection is complete, the SM will inform the control room.
- Currently on NM2C15A2SU startup sequence page 31, rod 26-51 withdrawing control rods from position 4 to position 8
- All LCOs are met

PART III: Remarks/Planned Evolutions:

- Raise reactor power using rods per the startup rod sequence and provided ReMA to 8% in preparation for transferring the mode switch to run.

Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown. Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	**Crew** Walkdown control room panels Conduct shift turnover brief Assume the shift

Events #1 and #2: Withdraw rods to raise power and one rod sticks

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Power ~ 4.5% • Critical activities or tasks - Withdraw control rods to raise power - Raise drive water pressure to free the stuck control rod • Final (expected) operating result - Operating at ~4.5% with control rod un-stuck • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
	SRO • Directs RO to raise reactor power to 8% using NM2C15A2SU startup rod sequence and provided ReMA
	RO • Acknowledges direction to raise power using control rods • Monitors RPV, CRD and Nuclear Instruments • Withdraws control rods IAW rod sequence using single notch withdrawal.
Note: When rod 26-11 is moved from position 4 to position 6, verify the following **malfunction** is **inserted**:	• Determines and reports rod 26-11 is stuck at position 6

Instructor Actions / Plant Response	Operator Actions
TRG1 **RD07-26-11**, Control Rod Failure - Stuck, FINAL=True	
	SRO • Acknowledges report that rod 26-11 is stuck at position 6
Role Play: If contacted as the SM/RE for direction, inform them to follow the appropriate procedures for a rod which fails to withdraw.	• May contact SM/RE for direction • Directs RO to respond to the stuck rod per N2-OP-30.
Role Play: As field operator report: • The HCU valve lineup looks good and the HCU sounds normal • SOV120 or SOV122 Directional Control Valves are functioning correctly • 134 or 136 HCU manifold filters are not plugged • Stabilization valves appear to be functioning correctly There appears to be no problems at the HCU for control rod 26-11.	**RO** • Acknowledges direction to respond to the stuck control rod per N2-OP-30 • References section H.1.2, Failure to Withdraw Using Single Notch Withdrawal. • Attempts to withdraw rod 26-11 again while monitoring drive water flow
Note: Do to variations in drive water flow indications, the crew may determine that the insert portion of the DCV sequence is operating correctly and continue on H.1.2. If the crew determines the insert portion of the DCV sequence is operating correctly, then they will refer to section H.1.1 to continue trying to free the stuck rod. The actions are relatively the same, so either action is acceptable.	• Determines one of the following: - Drive water flow was not approximately 4 GPM during the insert portion of the rod withdrawal. • -OR- - Drive water flow was approximately 4 GPM during the insert portion of the rod withdrawal. • May refer to section H.1.1, Failure to Insert

Instructor Actions / Plant Response	Operator Actions
Note: When drive water pressure is raised above 300 psid, **verify TRG 15** inserts to automatically **delete** the following **malfunction**: • **RD07-26-11**, Control Rod Failure - Stuck, FV=True	• Raises drive water pressure 50 psid by throttling shut on 2RDS-PV101 • Attempts to WITHDRAW rod 26-11 one notch • Determines rod 26-11 inserted/withdrew one notch • Lowers drive water pressure back to 260 psid • Withdraws rod 26-11 to position 8 if necessary.
Note: Once rod 26-11 has been withdrawn to position 8, the Lead Evaluator may choose to either continue the startup to 8%, or may move on to the next event (recommended).	

Event Termination Criteria	• Control Rod 26-11 has been freed • Reactor power has been raised sufficiently as determined by the Lead Evaluator • Or as determined by the lead evaluator/instructor

Event #3: IRM "D" Fails Upscale

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor startup in progress • Critical activities or tasks - Bypass IRM "D" • Final (expected) operating result - Operating with IRM "D" Bypassed • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
Booth Operator When directed by the lead evaluator, **insert** the following **malfunction**: **TRG2** **NM06D,** IRM Channel Failure - Upscale (D), FINAL=True	
The plant responds as follows: *IRM D Upscale or INOP red light illuminated at 2CEC*PNL603* *IRM D Upscale Alarm yellow light illuminated at 2CEC*PNL603* *IRM D recorder indicates upscale at 2CEC*PNL603* *The following annunciators alarm:* *603207, IRM UPSCALE* *603301, IRM TRIP SYSTEM B UPSCALE/INOPERABLE* *603402, RPS B NMS TRIP*	**RO** • Recognizes / reports the following Annunciators in alarm: ◦ 603207 ◦ 603301 ◦ 603402 ◦ 603442 • Recognizes / reports IRM "D" Upscale indications and that a half scram has occurred on RPS B

Instructor Actions / Plant Response	Operator Actions
603442, CONTROL ROD OUT BLOCK	
	SRO • Acknowledges RO report that IRM "D" has failed upscale and that a half scram has occurred on RPS B
	RO • Executes ARP's: ◦ 603207 ◦ 603301 ◦ 603402 ◦ 603442 • Determines all other IRMs are reading normally • Determines that IRM "D" has failed upscale • Recommends bypassing IRM "D" per N2-OP-92 • Recommends resetting the half scram per N2-OP-97
Role Play: As SM, if contacted to discuss bypassing IRM D, acknowledge the report and direct the SRO to bypass IRM D	**SRO** • Acknowledges RO recommendation to bypass IRM "D" and reset the half scram based on all other IRM indications reading normally. • Directs the RO to bypass IRM D and reset half scram on B RPS • May declare IRM D inoperable and reference TS 3.3.1.1 and/or TRM 3.3.2 • Determines the plant is in Mode 2 and that at least 3 channels on RPS B are operable • Determines no additional TS actions are required
The following annunciators clear when IRM "D" is bypassed:	**RO** (N2-OP-92) • Acknowledges direction to bypass IRM D

Instructor Actions / Plant Response	Operator Actions
603207, IRM UPSCALE *603301, IRM TRIP SYSTEM B UPSCALE/INOPERABLE* *603402, RPS B NMS TRIP* *603442, CONTROL ROD OUT BLOCK*	• Bypasses IRM D per N2-OP-92, H.2.0 as follows: ◦ Determines no other IRMs are bypassed ◦ Performs a Channel Check (IRMs within 2 decades) to verify NO other IRM is INOPERABLE for the division being bypassed. ◦ Places the joystick to BYPASS ◦ Verifies the BYPASS light is lit on panel 603 • Resets the half scram on B side per N2-OP-97, H.2.0 as follows: ◦ Places Reactor Scram Reset Logic B and Reactor Scram Reset Logic D switches to RESET ◦ Verifies PILOT SCRAM VALVE SOLENOID white lights are lit for B, D, F and H. • Informs the SRO that IRM D has been bypassed and the RPS B reset
	SRO • Acknowledges report of IRM D bypassed and RPS B reset

Event Termination Criteria	• IRM "D" has been bypassed • Half scram on "B" side is reset • Or as determined by the lead evaluator/instructor

Event #4: Inadvertent RCIC Initiation

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor startup in progress • Critical activities or tasks - Trip RCIC • Final (expected) operating result - RCIC Turbine Tripped • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
BOOTH OPERATOR When directed by the lead evaluator, **insert** the following **malfunction**: **TRG3** **RC10**, RCIC System Spurious Initiation, FINAL=True	
The following plant response occurs: *2ICS*MOV120 throttles open* *2ICS*HYV151 throttles open* *2ICS*MOV143, pump min flow valve to suppression pool, throttles open* *2ICS*MOV126 throttle open* *The following annunciator alarms when 2ICS*MOV126 opens:* *601347, RCIC Injection Vlv Not Fully Closed* *RCIC turbine speed and discharge pressure rise,*	**RO** • Silences, acknowledges and reports annunciator 601347 • Provides crew update of RCIC start and injection to the RPV • Perform ARP 601347 actions: ◦ Determines that the main turbine is not on-line and therefore the main turbine will not trip after a four minute time delay ◦ Verifies reactor water level > 178.3"

Instructor Actions / Plant Response	Operator Actions
*2ICS*V156 & 2ICS*V157 open and RCIC total flow rises to ~600 gpm* *MWth output lowers*	◦ Attempts to reset the RCIC initiation logic to prevent an unnecessary main turbine trip ◦ Recognizes/reports that the RCIC initiation logic will not reset ◦ Confirms that 2ICS*MOV126 is open • May request permission from SRO to close 2ICS*MOV126
	SRO • Directs Operator to take ARP 601347 actions • May direct RO to attempt closure of 2ICS*MOV126
*ICS*MOV126 strokes closed then back open due to initiation signal locked in*	**RO** • May attempt manual closure of ICS*MOV126 and recognizes/reports that it failed to remain closed
	SRO • Acknowledges report that ICS*MOV126 failed to remain closed • Directs RCIC Tripped
*RCIC turbine trips and ICS*MOV126 goes closed* *The following annunciators alarm when RCIC is tripped:* *601303, RCIC TURBINE BRG OIL PRESS LOW* *601305, RCIC SYSTEM INOPERABLE* **Role Play:** If requested to provide RCIC trip unit indications, report that there are no trip units in alarm and no gross failures present	**RO** • Continues with ARP 601347 actions and trips the RCIC turbine by depressing the RCIC turbine trip pushbutton • Investigates trip unit indications to determine source of RCIC initiation • Determines that no trip units are in alarm or experiencing a gross failure condition • Inform the SRO of trip unit indications
	SRO • Acknowledges report from RO concerning trip unit indications

<table>
<tr><th>Instructor Actions / Plant Response</th><th>Operator Actions</th></tr>
<tr><td></td><td><u>SRO</u>
• Maintains crew oversight and looks ahead for potential issues/thresholds</td></tr>
<tr><td></td><td><u>SRO</u>
• Maintains crew oversight and provides coaching when necessary
• Declares RCIC inoperable but available
• May direct performance of S-OSP-LOG-@001 to monitor supp. pool temperature</td></tr>
<tr><td>Note:
With HPCS available, the following Technical Specification is applicable:
<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.5.3</td><td>A</td><td>A.1 and A.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>A.1</td><td colspan="2">Verify by administrative means High Pressure Core Spray System is OPERABLE. (Immediately)</td></tr>
<tr><td>A.2</td><td colspan="2">Restore RCIC System to OPERABLE status. (14 Days)</td></tr>
</table></td><td><u>SRO</u>
• Evaluates plant conditions against Tech Specs and determines the following apply:
◦ 3.5.3 A.1/A.2</td></tr>
<tr><td></td><td><u>SRO</u>
• Evaluates plant conditions against EALs and determines the following apply:
◦ None</td></tr>
<tr><td></td><td><u>SRO</u>
• Conducts transient brief (when time permits)</td></tr>
</table>

Event Termination Criteria	• RCIC injection has been terminated • Or as determined by the lead evaluator/instructor

Event #5: IAS Compressor Trip w/ Failure of Lag to Start

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor startup in progress • Critical activities or tasks - Manually start 2IAS-C3B (C3C) • Final (expected) operating result - 2IAS-C3B (C3C) running • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given a trip of the running instrument air compressor and a failure of the lag and backup air compressors to automatically start, prior to CRD System air pressure lowering below 60 psig, manually start the lag or backup air compressor or SCRAM the reactor in accordance with N2-SOP-19.

Instructor Actions / Plant Response	Operator Actions
Booth Operator When directed by the lead evaluator, **insert** the following **malfunctions**: **TRG4** **IA02A**, 2IAS-C3A Thermal Overload Trip, FINAL=True **IA04A**, IAS Compressor Lag Auto-start Failure, FINAL=True **IA04B**, IAS Compressor Backup Auto-start Failure, FINAL=True	
The plant responds as follows: *IAS-C3A, the running instrument air compressor trips on motor electrical fault* *Instrument Air Header Pressure starts to lower*	
The following annunciators alarm: *851228, Instr Air Cpsr 3A/3B/3C Auto Trip Fail To Start*	**RO** • Silences, acknowledges and reports

Instructor Actions / Plant Response	Operator Actions
851259, Instr Air Compressor Clg Wtr Flow Low *851260, Instr Air Compressor Cooling Sys Trouble* *The following computer points are generated:* *CCPBC09, RBCLCW P2A/B Auto Start (Start)* *IASUC04, IAS CPRSR C3A/B/C AT/FTS (Tripped)* *Approximately 1 minute after event initiation (based on the timeliness of crew actions) the following annunciator alarms:* *851229, Instr Air System Trouble* *The following computer point is generated:* *IASPC02, Instr Air Hdr Press (Low)*	annunciator 851228 and reports that he running IAS compressor has tripped • Provides crew update for the trip of 2IAS-C3A.
	SRO • Acknowledges RO report of 2IAS-C3A trip • Provides crew update for the entry into N2-SOP-19 • Directs RO to enter N2-SOP-19
	RO (N2-SOP-19) • Determines that an air compressor trip has occurred • Determines that compressor cooling is available • Determines that header pressure is lowering • Performs "Compressor" leg actions of N2-SOP-19: • Determines that an air compressor has tripped and/or is degraded • Determines that there has not been a loss of all air compressors due to slow transfer or loss of control power • Determines that the lag compressor failed to auto start • Provides crew update of the failure of the lag compressor to auto start • Manually starts the lag compressor per N2-SOP-19:

Instructor Actions / Plant Response	Operator Actions
The following annunciator clears when IAS-C3B (C3C) is manually started: *851259, Instr Air Compressor Clg Wtr Flow Low*	- ***Selects 2IAS-C3B (C3C) as LEAD on the instrument air compressor selector switch*** - ***Places 2IAS-C3B (C3C) control switch to normal-after-start*** • Monitors air header pressure to determine if pressure is restoring - Determines instrument air header pressure is restoring • Performs "Header Pressure" leg actions of N2-SOP-19: • Determines the cause of lowering air pressure to be loss of IAS compressors • Determines that the loss of air is not due to a line break • Determines that the cause of the lowering air pressure has been corrected • Performs attachment 1 of N2-SOP-19 • Determines from SRO that breathing air will not be shutdown • Determines that loss of air is not due to improper valve lineup • Determines that IAS-SOV171 service air isolation valve did not close
Role Play: As Equipment Operator if dispatched locally to evaluate local air pressure indicators, wait 3 minutes and then report the following: 2IAS-PI194 (RB el. 261'), Inst air rcvr 2IAS-TK3 pressure reads normal (> 74 psig) 2RDS-PI133 (RB el. 261'), scram air header pressure reads normal (> 60 psig)	**SRO** • Oversees crew actions. • Provides crew transient brief / reverse brief • Directs RO not to isolate breathing air • May direct 2IAS-C3B protected
Role Play: As Equipment Operator dispatched locally to 2IAS-C3A, wait 3 minutes and then report that 2IAS-C3A trip on thermal overload, but further investigation is needed to verify that.	**RO** • Performs ARP851228, 851259 & 851260 ◦ Dispatches Equipment Operator to investigate 2IAS-C3A locally to determine trip cause

Instructor Actions / Plant Response	Operator Actions
If dispatched power supply, wait 2 minutes and report that nothing apparent is visible. If asked about any reverse air flow through 2IAS-C3A, report that there is no reverse air flow through 2IAS-C3A. *When 2IAS-C3A is placed in P-T-L the following annunciator clears:* *851228, Instr Air Cpsr 3A/3B/3C Auto Trip Fail To Start* *When IAS header pressure rises to ~100 psig, the following annunciator clears:* *851229, Instr Air System Trouble*	◦ Dispatches Equipment Operator to inspect power supply indications • Continues with ARP actions: ◦ Places 2IAS-C3A in P-T-L ◦ Verifies 2IAS-C3A is selected as the backup IAS compressor ◦ Directs Equipment Operator to protect 2IAS-C3B (C3C)
	RO • Performs the actions of ARP 851260 for having both 2CCP-P2 pumps running: ◦ Places the control switch in Normal-After-STOP for the CCP pump that auto started.
	SRO • Evaluates plant parameters paying particular attention to IAS fed components
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.	**SRO** • Maintains crew oversight and provides coaching when necessary.

Event Termination Criteria	• Instrument Air Compressor 2IAS-C3B (C3C) running • Or as determined by the lead evaluator/instructor

Event #6: Inadvertent Initiation of ECCS w/ Min Flow Failure

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor startup in progress • Critical activities or tasks - Place 2RHS*P1A in P-T-L • Final (expected) operating result - 2RHS*P1A in P-T-L • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
Booth Operator When directed by the lead evaluator, **insert** the following **malfunctions**: **TRG5** **RH13A**, ECCS Inadvertently Initiates (Div I), FINAL=True **RH15**, RHS*MOV4A Valve Fails Shut, FINAL=True	
The following plant response occurs after Div I ECCS event initiation: *Division I low pressure ECCS pumps receive initiation signals and auto start* *Division I Diesel Generator starts* *RHS*MOV4A closes* *LPCI A / LPCS initiation white light illuminates*	
The following annunciators alarm after Div I ECCS event	**RO**

Instructor Actions / Plant Response	Operator Actions
initiation: *601413, LPCS PUMP 1 AUTO START* *601426, LPCS SYSTEM ACTUATED* *601442, RHR PUMP 1A AUTO START* *601451, RHR A SYSTEM ACTUATED* *601539, ADS A LPCS / RHR A PERMISSIVE* *852109, DIVISION I EDG 1 START SYSTEM TROUBLE* *852117, EDG 1 RUNNING*	• Silences, acknowledges and reports annunciators 601413 and 601442 • Provides crew update for the Division I Low Pressure ECCS initiation • Recognizes that 2RHS*MOV4A, RHR 'A' minimum flow valve, is closed • Reviews ARP 601413 and 601442: • Verifies the validity of the LOCA initiation using at least two redundant indications
	SRO • Oversees / directs crew actions • Directs indications of LOCA be evaluated using two independent redundant indications • Directs 2RHS*P1A placed in P-T-L. • May direct 2CSL*P1 placed in P-T-L. • May direct Division I Diesel Generator shutdown per N2-OP-100A
Role Play: If requested to provide RHR and CSL trip unit indications (2CEC*PNL629), report that no trip units are in alarm and that no gross failures are present.	**RO** • Ensures by two separate and redundant means that the initiation is not valid • Checks trip unit indications for status
*The following annunciator alarms when 2RHS*P1A is placed in P-T-L:* *601431, RHR A SYSTEM INOPERABLE* *The following annunciator clears when 2RHS*P1A is placed in P-T-L:* *601442, RHR PUMP 1A AUTO START* *The following computer point is generated when 2RHS*P1A is placed in P-T-L:* *RHSBC12, RHR A Sys (Inop)* *The following annunciator alarms if 2CSL*P1 is placed in P-T-L:*	**RO** • Places 2RHS*P1A in P-T-L • Provides crew update that RHR 'A' has been placed in P-T-L • Dispatches field operator to perform running checks on the Div I DG • Checks trip unit indications for status • If directed, places 2CSL*P1 in P-T-L

Instructor Actions / Plant Response	Operator Actions
601401, DIVISION I LPCS SYSTEM INOPERABLE *The following annunciator clears if 2CSL*P1 is placed in P-T-L:* *601413, LPCS PUMP 1 AUTO START* *601539, ADS A LPCS / RHR A PERMISSIVE* *The following computer point is generated if 2CSL*P1 is placed in P-T-L:* *CSLBC02, Div I LPCS Sys (Inop)*	• Provides crew update that CSL has been placed in P-T-L
Role Play: If dispatched as an EO to monitor diesel running parameters, wait 5 minutes and then report that all diesel running indications are normal for the Division I EDG.	**RO** • If directed, shuts down the Division I diesel generator per N2-OP-100A, Section H.16.0 • Places EMERGENCY DSL GEN 1 LOCA SIGNAL BYPASS switch to ON • Places DIVISION I 2EGS*EG1 START switch in PULL-TO-LOCK
Role Play: If contacted to perform vibration readings on 2CSL*P1, acknowledge the report. • This is done to address N2-OP-32 P&L 3.0 which states, "If LPCS Pump is to run on minimum flow for an extended period of time, as soon as personnel are available, take vibration readings every 2 hours or as determined by pump component specialist and verify readings remain stable. Do not permit the LPCS pump to exceed a runout flow of 7800 GPM."	**SRO** • Evaluates plant parameters paying particular attention to containment indications
	SRO • Maintains crew oversight and provides coaching when necessary
Note:	**SRO**

Instructor Actions / Plant Response	Operator Actions
<table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.5.1</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>A.1</td><td colspan="2">Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (7 days)</td></tr></table> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.5.1</td><td>C</td><td>C.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>C.1</td><td colspan="2">Restore one ECCS injection/spray subsystem to OPERABLE status. (72 hours)</td></tr></table> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.6.1.6</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>A.1</td><td colspan="2">Restore RHR drywell spray subsystem to OPERABLE status. (7 days)</td></tr></table> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.6.2.3</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>A.1</td><td colspan="2">Restore RHR suppression pool cooling subsystem to OPERABLE status. (7 days)</td></tr></table> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.6.2.4</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>A.1</td><td colspan="2">Restore RHR suppression pool spray subsystem to OPERABLE status. (7 days)</td></tr></table>	• Evaluates plant conditions against Tech Specs and determines the following apply: • LCO 3.5.1 Condition A or C (if CSL is placed in PTL) • Evaluates entry into the following TS: • LCO 3.6.1.6 Condition A • LCO 3.6.2.3 Condition A • LCO 3.6.2.4 Condition A • May also evaluate LCO 3.3.5.1 Condition A, B & E (this may be contingent on troubleshooting results)

Event Termination Criteria	• 2RHS*P1A has been placed in P-T-L • Or as determined by the lead evaluator/instructor

Event #7, #8, and #9: Seismic Event, FWLC Failure, RCIC Steam Leak

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor startup in progress - Verify the following **malfunctions** and **overrides** are **inserted** before a manual scram is initiated: • **RC11**, RCIC Isolation Failure, FINAL=True • **OVR-01A2S041DI0365**, Close MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=Off • **OVR-01A2S041DI0366**, Open MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=On • **OVR-01A2S042DI0564**, Close MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=Off • **OVR-01A2S042DI0418**, Open MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=On • Critical activities or tasks - Manual reactor scram, open 5 bypass valves and may open 7 ADS valves • Final (expected) operating result - Shutdown and depressurized / depressurizing • Mitigation Strategy code (if applicable) - DMS-SC1
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given an un-isolable steam leak outside primary containment and one general area temperature approaching the maximum safe limit, the crew will insert a manual reactor scram, in accordance with N2-EOP-SC. 2. Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves in accordance with N2-EOP-RPV. 3. Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves in accordance with N2-EOP-C2.

Instructor Actions / Plant Response	Operator Actions
Note:	

Instructor Actions / Plant Response	Operator Actions
Ensure several instructors are staged to shake the back of panels in conjunction with inserting the next malfunction to simulate an earthquake When directed by the Lead Evaluator, **insert** the following **malfunctions** and shake the back of several panels: **TRG6** **MT01**, Seismic Acceleration, FINAL=2.0 **FW08A**, FW High Pressure Low Flow Valve Failure – Closed (LV55A), FINAL=True **RC12**, RCIC Steam Leak In Reactor Building Elevation 215, FINAL=40, RT=15:00 *RPV Level begins to lower* *RB Temperatures begin to rise* *The following annunciator alarms:* • *603139, REACTOR WATER LEVEL HIGH/LOW* *After a few minutes, the following additional annunciators alarm:* • *601157, REACTOR BLDG GENERAL AREAS TEMP HIGH* • *602218, DIVISION 1 NSSSS ISOL SIGNAL* • *602224, DIVISION 2 NSSSS ISOL SIGNAL*	
	CREW • Recognizes and reports seismic event

Instructor Actions / Plant Response	Operator Actions
	RO • Recognizes that FW LV55A has drifted full shut and that RPV level is slowly lowering • Places LV55A(B) in MANUAL control and adjusts the valve to maintain RPV Level in the normal band -OR- may utilize LV10A • Informs the SRO that LV55A failed and it is manual control
	SRO • Acknowledges report of a seismic event and FWLC failure • Directs BOP to enter N2-SOP-90
Note: Although the SRO may direct entry into N2-SOP-06, the actions directed by N2-SOP-06 for this FWLC failure are time consuming and will not be able to be completed prior to the RCIC steam leak requiring a reactor scram.	• May direct RO to enter N2-SOP-06
	BOP (N2-SOP-90) • Acknowledges direction to enter N2-SOP-90 • Review plant process computer and determines ERSNC02 computer point is in and determines the plant has exceeded the OBE
Role Play: As EO contacted to provide indications on the Seismic Monitor Panel, wait 2 minutes and inform them that an amber light is lit on the Response Spectrum Annunciator section.	• May contact EO and direct them to provide indications at the Seismic Monitor Panel • Informs the SRO that N2-SOP-90 requires a plant shutdown per N2-OP-101C

Instructor Actions / Plant Response	Operator Actions
Role Play: As POs contacted to perform walkdowns, acknowledge report. Wait 5 minutes and inform them that there appears to be a steam leak in on RB215 in the RCIC Pipe Chase	**BOP (cont.)** • Contacts POs and directs them to perform plant walkdowns of the following areas: ◦ ECCS Pump Rooms ◦ ECCS Piping ◦ Refuel Floor/ Spent Fuel Pool ◦ Emergency Switchgear/Diesels ◦ Pipe Tunnel
Role Play: As Unit 1 and JAF Control Rooms, respond that you did also feel the earthquake.	• Contacts Unit 1 and JAF Control Rooms to communicate receipt of Seismic Event Indications
Role Play: As EO dispatched to place service water strainers in continuous backwash, wait 5 minutes and inform the control room that all operating pump strainers are in continuous backwash.	• Directs EO to place all service water pump discharge strainers in continuous backwash in accordance with N2-OP-11, H.3.0
Role Play: As I&C, acknowledge the direction to perform N2-IMP-ERS-001	• Notifies I&C TO PERFORM N2-IMP-ERS-001, Post Event Data Retrieval • May refer to N2-OP-86, Section H.1.0 to verify operability of Loose Parts Monitor • Informs SRO to refer to TRM 3.3.7.2 and 3.7.6
Role Play: As Maintenance, acknowledge direction to perform N2-MSP-GEN-V001	• Contacts Maintenance and directs them to perform N2-MSP-GEN-V001

Instructor Actions / Plant Response	Operator Actions
	RO (N2-SOP-06) • Acknowledges direction to enter N2-SOP-06 • Reviews N2-SOP-06 and determines the following additional actions can be taken: ◦ Swap Feed Pumps ◦ Place LV10B in service • Informs the SRO of the options for dealing with the FWLC failure.
	Crew • Recognizes and reports high RB temperatures
	SRO • Acknowledges report of high RB temperature • Enters N2-EOP-SC on RB area temperature above an isolation setpoint • Directs RO to evacuate the RB • Directs BOP to monitor RB temperatures
	RO • Acknowledges direction to evacuate the Reactor Building • Makes GAITRONICS announcement to evacuate the Reactor Building
	BOP • Acknowledges direction to monitor RB Temperatures

Instructor Actions / Plant Response	Operator Actions
Note: As RCIC pipe chase temperature rises above 135°F, WCS will isolate but RCIC will not isolate as expected. The following **malfunction** becomes **apparent**: • **RC11**, RCIC Isolation Failure, FINAL=True **EAL Criteria Met** *Indications available for SAE, EAL FS1.1:*  Loss or potential loss of **ANY** two fission product barriers (Table F-1)	• Monitors RB temperatures and determines WCS system isolated and RCIC system should have isolated • Informs the SRO that RCIC should have isolated • Attempts to manually isolate RCIC by taking the following keylock switch to shut on P601: ◦ 2ICS*MOV128 ◦ 2ICS*MOV121 • Reports to SRO that RCIC failed to isolate manually
When the crew attempts to manually isolate RCIC, the following **overrides** become **apparent**: • **OVR-01A2S041DI0365**, Close MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=Off • **OVR-01A2S041DI0366**, Open MOV 121 Valve Steam Supply Line Isln (Outboard), FINAL=On • **OVR-01A2S042DI0564**, Close MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=Off • **OVR-01A2S042DI0418**, Open MOV 128 Valve Steam Supply Line Isln (Inboard), FINAL=On	**SRO** • Acknowledges report of RCIC failing to isolate automatically and manually • Determines a primary system is discharging into the RB • Determines one RB area is approaching a maximum safe value
	• ***Enters N2-EOP-RPV and directs RO to place the mode switch in shutdown***
	RO • Acknowledges direction to place the mode switch in shutdown

Instructor Actions / Plant Response	Operator Actions
	• ***Places mode switch in shutdown*** • Provides scram report to the SRO
	SRO • Acknowledges scram report • Directs RO to enter N2-SOP-101C • Directs RO to maintain RPV water level 160 to 200 inches using feed and condensate • Directs RO to maintain RPV pressure 800 to 1000 psig using EHC
	RO • Acknowledges direction to: ◦ Enter N2-SOP-101C ◦ Maintain RPV water level 160 to 200 inches using feed and condensate ◦ Maintain RPV pressure 800 to 1000 psig using EHC • Performs initial actions of N2-SOP-101C: ◦ Verifies SDV vent and drain valves have closed • May determine the scram can be reset and attempt to reset the scram as follows:
Role Play: As Radwaste, acknowledge the direction to operate all pumps for 2DER-TK2A	◦ Notifies Radwaste to operate all pumps for 2DER-TK2A. ◦ Places all four SDV high level bypass switches to bypass. ◦ Using scram reset switches, reset the scram and verifies all 8 pilot solenoid lights lit • Maintains RPV water level 160 to 200 inches using feed and condensate • As necessary inserts SRMs and IRMs

Instructor Actions / Plant Response	Operator Actions
Role Play: As EO directed to energize 2WCS-MOV107, acknowledge the report.	• May direct energizing 2WCS-MOV107 • May shutdown HWC • Maintains RPV pressure 800-1000 psig using EHC
	BOP • Continues to monitor RB temperatures. • Determines and reports a second RB area temperature is rising and approaching a maximum safe value
Note: At this point the SRO may make the decision to "Anticipate Blowdown"	**SRO (Anticipate Blowdown)** • Acknowledges report of second RB area temperature approaching a maximum safe value
	• ***Directs the RO to open 5 main turbine bypass valves***
Note: If the evaluation team would like to see the crew enter N2-EOP-C2, then before reactor pressure lowers below ~600 psig with all of the TBV's open and at the discretion of the Lead Evaluator, **modify** the following **malfunction** as necessary to cause a second area temperature to go above the maximum safe value: • **RC12**, RCIC Steam Leak In Reactor Building Elevation 215, FINAL=45	**RO** • Acknowledges direction to open 5 main turbine bypass valves
	• ***Using the Bypass Opening Jack Increase Pushbutton, opens 5 bypass valves*** • Informs the SRO that 5 bypass valves are open

Instructor Actions / Plant Response	Operator Actions
Note: The BOP should continue to monitor temperatures until he verifies all RB temperatures are lowering. If a second area temperature goes above a maximum safe value, then a blowdown MUST be performed per N2-EOP-C2 and Critical Task 3.0B must be evaluated	**BOP** • Continues to monitor RB temperatures • If temperatures continue to rise, informs the SRO that a second area temperature is above the maximum safe value
Note: Crew may Terminate CSL injection since it will be running with an initiation signal due to the previous inadevertent Division I ECCS event. RHR 'A' should be in PTL due to the failure of the minimum flow valve in the previous event.	**SRO** • Acknowledges report of a second area temperature above a maximum safe value • Enters N2-EOP-C2 • Determines the reactor will stay shutdown without boron • Determines drywell pressure is <1.68 psig • Determines suppression pool level is above 192 feet
	• ***Directs BOP to open 7 ADS valves***
	BOP • Acknowledges direction to open 7 ADS valves. • Determines no ECCS pump is running
	• ***Takes control switches to OPEN at BOTH 2CEC*PNL628 and 2CEC*PNL631 UNTIL a total of 7 SRVs are open:*** ◦ ***MSS*PSV137*** ◦ ***MSS*PSV127*** ◦ ***MSS*PSV126*** ◦ ***MSS*PSV121*** ◦ ***MSS*PSV134*** ◦ ***MSS*PSV130*** ◦ ***MSS*PSV129*** • Reports to the SRO that 7 ADS valves are open.

Event Termination Criteria	• RPV depressurization in progress • Secondary containment temperatures lowering

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Training Id: **NMP2 NRC 2017 Scenario 2** Revision: **0.0**

Title: **PC3 - High containment pressure, drywell sprays required, maintain safe region PSP, no Blowdown required**

	Signature / Printed Name	Date
Developed By	Mike Alexander	7/26/17
Validated By	Dan Cifonelli	8/29/17
	Bob Spooner	8/29/17
	Ken Cherchio	8/29/17
Facility Reviewer	John Toothaker	9/21/17

References

1. N2-OP-71B, 4.16KV AC Power Distribution
2. N2-OP-101D, Power Changes
3. N2-SOP-08, Unplanned Power Changes
4. N2-SOP-101D, Rapid Power Reduction
5. N2-OP-25, Auxiliary Steam, Auxiliary Condensate, and Gland Seal
6. N2-ARP-851200, 2CEC*PNL851 Series 200 Alarm Response Procedures
7. N2-SOP-97, Reactor Protection System Failures
8. N2-SOP-30, Control Rod Drive Failures
9. N2-SOP-60, Loss of Drywell Cooling
10. N2-SOP-19, Loss of Instrument Air
11. N2-SOP-68, Generator Auxiliaries Failures
12. N2-ARP-852200, 2CEC*PNL852 Series 200 Alarm Response Procedures
13. N2-SOP-23, EHC Pressure Regulator Failure
14. N2-OP-3, Condensate and Feedwater System
15. N2-SOP-101C, Reactor Scram
16. N2-EOP-RPV, RPV Control - Flowchart
17. N2-EOP-6 (Series), NMP2 EOP Support Procedures (N2-EOP-6.1 thru 6.31)
18. N2-EOP-PC, Primary Containment Control
19. EP-CE-111, Emergency Classification and Protective Action Recommendations
20. EP-CE-113, Personnel Protective Actions
21. EP-CE-114-100, Emergency Notifications
22. EPIP-EPP-02-EAL, EMERGENCY ACTION LEVEL MATRIX UNIT 2

23. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
24. OP-AA-112-101, Shift Turnover and Relief

Instructor Information

A. Scenario Description

1. Sequence of Events / Expected Crew Response

   a. The scenario begins at approximately 92% power with instrument air compressor 3C out of service.

   b. Event 1 is the BOP evolution to perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012.

   c. Event 2 will be the reactivity maneuver (RO raising reactor power to ~ 98% using reactor recirculation flow).

   d. Event 3 occurs when reactor recirculation flow control valve 'A' begins to drift open. The crew will examine reactor power and MWe output and determine an unplanned power change is occurring. The crew will enter and take the actions on N2-SOP-8. N2-SOP-8 will require the crew to depress the HPU shutdown pushbutton to lock up the flow control valve and close the associated hydraulic fluid outside isolation valve. The crew will reduce reactor power to restore and maintain reactor power $\leq$ 3988 MWth using either cram rods or recirculation flow. The crew will investigate the cause of the transient and evaluate required tech. specs.

e. Event 4 occurs when the in service steam packing exhauster (TME-FN1A) trips on motor electrical fault. The crew will be forced to monitor turbine steam seal indications to ensure a loss of the main turbine does not occur. The crew will follow the appropriate ARP actions and start a standby steam packing exhauster in accordance with N2-OP-25. The crew will also dispatch field operators to perform visual inspections in order to determine the cause of the event.

f. Event 5 occurs when a loss of 2NNS-SWG014 occurs. The crew will enter the following SOPs:

1) N2-SOP-30 to restore RDS to service using 2RDS-P1B.
Accumulator 30-51 will experience a trouble alarm due to low accumulator pressure. This will require the crew to evaluate tech specs and recharge the accumulator.

2) N2-SOP-97 and restore power to the 'A' side scram solenoids using the alternate source

3) N2-SOP-60 to restore Drywell Cooling and start 2DRS-UC3B, and monitor conditions since without power Division I fans cannot be restored

4) N2-SOP-19 to restore IA or verify the lag compressor starts at 100 psig

5) N2-SOP-68 to verify that 2GMO-P2 is maintaining hydrogen seal oil pressure.

g. Event 6 occurs when a malfunction in the EHC pressure regulator system causes a slow reduction in reactor pressure. The crew will manually scram the reactor (CRITICAL TASK) to prevent exceeding a core safety limit. As reactor pressure lowers the MSIVs will fail to automatically isolate. The operators must diagnose the failure of the MSIVs to isolate and manually close the MSIVs to stabilize reactor pressure (CRITICAL TASK) and execute N2-EOP-RPV.

h. Event 7 & 8 occurs when following the scram, a loss of all off-site power will occur. Diesel will fail to automatically start. The crew must manually start the diesel. Then a steam leak will occur in the drywell raising drywell pressure and requiring suppression pool sprays. As drywell and suppression pool pressure continue to rise the crew must initiate drywell sprays to mitigate the rising drywell pressure (CRITICAL TASK).

2. Termination Criteria

a. Containment Parameters Improving

3. Critical Tasks

CT-1.0 Justification:	
Safety Significance:	*Critical Task 1.0 is identified as critical because reactor pressure lowering below 785 psig with the reactor in operation greater than 23% power would violate a Safety Limit. Inserting a manual reactor scram is required to lower reactor power below the 23% threshold.*
Cueing:	*Multiple annunciators will provide indication of reactor pressure lowering. Failure of MSIVs to automatically isolate is indicated by lights on control room panels.*
Measurable Performance Indicators:	*Operators rotating the Mode Switch to shutdown will provide observable actions for the evaluation team.*
Performance Feedback:	*Control Rod position and reactor power indications will provide performance feedback regarding the success of crew actions.*

a. CT-1.0, Given a lowering RPV pressure, the crew will scram the reactor before exceeding a reactor core safety limit in accordance with N2-EOP-RPV.

CT-2.0 Justification:	
Safety Significance:	*Critical Task 2.0 is identified as critical because as pressure lowers, operator action is necessary to shut the MSIVs to prevent exceeding 100°F/hr cooldown rate.*
Cueing:	*Multiple annunciators will provide indication of reactor pressure lowering.*
Measurable Performance Indicators:	*Operation of the MSIV control switches will provide observable actions for the evaluation team.*
Performance Feedback:	*MSIV position will provide performance feedback regarding the success of crew actions.*

b. CT-2.0, Given a failure of the EHC system causing lowering RPV pressure, the crew will manually isolate MSIVs, as necessary, avoid exceeding the allowable cooldown rate in accordance with N2-EOP-RPV.

CT-3.0 Justification:	
Safety Significance:	*Critical Task 3.0 is identified as critical because initiating Containment Sprays reduces Primary Containment pressure. This reduces stresses on the Drywell and Suppression Pool, assists in avoiding "chugging" that may cause fatigue failure of the LOCA downcomers, and avoids the need for a blowdown. These benefits reduce challenges to the fuel cladding, the RPV, and the Primary Containment.*
Cueing:	*Multiple Primary Containment pressure and temperature indications and annunciators will indicate*

	degrading conditions. N2-EOP-PC provides direction to initiate Containment Sprays.
Measurable Performance Indicators:	*Manipulation of Drywell Spray controls will provide observable actions for the evaluation team.*
Performance Feedback:	*Spray flow and lowering Primary Containment pressure and temperature indications will provide performance feedback regarding success of crew actions to initiate Containment Sprays.*

c. CT-3.0, Given a steam leak in the drywell, the crew will spray the drywell prior to exceeding the PSP limit in accordance with N2-EOP-PC.

4. Length

   a. 60 minutes

5. Mitigation Strategy Code

   a. PC3 - High containment pressure, drywell sprays required, maintain safe region PSP, no Blowdown required.

6. Technical Specifications (Applicable actions for initial conditions only)

   a. None

7. EAL Classification

   a. **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1)

   (RCS B.2 LOSS: Primary Containment pressure > 1.68 psig due to RCS leakage)

B. Initial Conditions

1. IC Number

   a. IC-021 or equivalent (IC-151 for ILT 16-1)

2. Presets / With Triggers

a. Malfunctions

1) **MS13**, MSIV Isolation Failure, FINAL=True	**Inserted**
2) **DG04B**, EDG 3 fail to UV/LOCA Auto-Start, FINAL=True	**Inserted**
3) **RR52A,** RCS FCV A Drift, FINAL=100	**TRG1**
4) **MS20A**, Gland Seal Exhaust Fan Trip (TME-FN1A), FINAL=True	**TRG2**
5) **ED04D**, 4.16KV Normal Bus Fault (SWG14), FINAL=True	**TRG3**
6) **RD06-30-51**, Control Rod Failure-Accumulator Trouble, FV=True, DT=10 sec	**TRG3**
7) **ED02A**, Loss Of Off-Site 115KV Line 5, FINAL=True, DT=60	**TRG6**
8) **ED02B**, Loss Of Off-Site 115KV Line 6, DT=62	**TRG6**
9) **RR20**, RR Loop Rupture – DBA LOCA, IV=1, FINAL=2, RT=10:00, DT=180	**TRG6**

b. Remotes

1) **RP01**, RPS MG1 EPA, FINAL=Reset	**TRG4**
2) **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On	**TRG7**
3) **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FINAL=On	**TRG7**

4) **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On — **TRG8**

5) **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On — **TRG8**

c. Overrides

1) **OVR-02A2A1DI3304**, On MIA Flow Controller A, FINAL=Off — **TRG1**

2) **OVR-02A2A1DI3305**, On MIA Flow Controller A, FINAL=Off — **TRG1**

3) **OVR-04A1A6S26DI6411**, ON Pressure Setpoint Selector Decrease (White), FINAL=On — **TRG5**

4) **OVR-04A1A6S27DI6412,** ON Pressure Setpoint Selector Increase (White), FINAL=Off — **TRG5**

d. Annunciators

1) None

e. Event Triggers

Event #	Event Action	Command
6	hzlms028d(1)==1 .or. thpdome<415 (outboard MSIV shut indicating light on -or- RPV pressure <415 psig)	Blank

f. Equipment Out of Service

1) 2IAS-C3C

g. Support Documentation

1) None

h. Miscellaneous

1) Place 2IAS-C3C control switch in P-T-L with clearance reference tag applied.

2) Clear APRM #2 trip memory

3) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:

a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).

b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.

c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

C. Shift Turnover Information

1. Reactor Power: 92%
2. Rodline: Above 100%
3. Technical Specification LCOs in effect:

a. None

4. Significant Problems / Abnormalities / Equipment Out of Service:

   a. 2IAS-C3C for unloader valve replacement

5. Evolutions / Maintenance Scheduled for this Shift:

   a. Raise reactor power using reactor recirculation flow per the provided ReMA to 98%.

SHIFT TURNOVER INFORMATION

ON COMING SHIFT: ☐ N ■ D DATE: Today

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

- Control Panel Walkdown (all panels) (SRO, ROs)

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

- LCO Status (SRO)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor power is approximately 92%.
- 2IAS-C3C is out of service for unloader valve replacement.
- All LCOs are met

PART III: Remarks/Planned Evolutions:

- Raise reactor power using reactor recirculation flow per the provided ReMA to 98%.
- Perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 per N2-OP-71B, H.6.0.

Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown. Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	**Crew** Walkdown control room panels Conduct shift turnover brief Assume the shift

Event 1: Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Power ~ 92% • Critical activities or tasks - Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 • Final (expected) operating result - Operating at ~92% with 2NNS-SWG013 being powered from 2NNS-SWG012 • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
	SRO • Directs the BOP to Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 per OP-71B, Sect H.6.0

Instructor Actions / Plant Response	Operator Actions
	BOP • Verifies that 2NPS-SWG001 AND 2NPS-SWG003 are being supplied from the same transformer (2STX-XNS1 OR 2RTX-XSR1A OR 1B). • Checks closed BREAKER 13-6, (Auxiliary Transformer to 2NNS-SWG013 Feeder) AND verifies 2NNS-SWG013 is energized. • Checks closed the following breakers AND verifies 2NNS-SWG011 AND 2NNS-SWG012 is energized: ◦ BREAKER 11-3, (Auxiliary Transformer to 2NNS-SWG011 Feeder) ◦ BREAKER 11-1, (2NNS-SWG011 to 2NNS-SWG012 Feeder) • Verifies voltages on 2NNS-SWG011 AND 2NNS-SWG013 are approximately equal.
Note: A time delay interlock exists which will allow the Normal Supply and Tie Breaker to be closed for up to 15 seconds when all supplies are from a common source. Paralleling of supplies in the following two steps should be performed in less than 15 seconds or the Tie Breaker (13-10) will trip open.	• Closes BREAKER 13-10, (2NNS-SWG013 to 2NNS-SWG012 Feeder). • Opens BREAKER 13-6. • Verifies voltage on the following buses at approximately 4160 volts: ◦ 2NNS-SWG011 ◦ 2NNS-SWG012
Role Play: If contacted as a EO to ensure proper breaker operation in the field, wait two minutes and inform them that proper breaker operation was observed.	**BOP, (cont.)** ◦ 2NNS-SWG013 • Informs SRO that the live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 has been completed

Event Termination Criteria	Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 has been completed

Event 2: Raise reactor power to 98%

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Power ~ 92% • Critical activities or tasks - Raise reactor recirculation flow to achieve ~98% reactor power • Final (expected) operating result - Operating at ~98% • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
	SRO • Directs RO to raise power to 98% using Recirc flow per ReMA and N2-OP-101D, Att. 1.
	RO • Acknowledges direction to raise reactor power to 98% using Recirc flow. • Raises power to 98% by raising core flow ◦ Moves RCS*HYV17A&B individually in the open direction, maintaining loop flow differential at a minimal value by alternating between the two valves. • Monitors NIs and rate of power change.
	BOP • Monitors plant parameters to verify proper operations.

Instructor Actions / Plant Response	Operator Actions
	• Provides peer checks as needed

Event Termination Criteria	Reactor power is ~98%

Event 3: RCS FCV 'A' - Drifts Open

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Power ~ 98% • Critical activities or tasks - Shutdown 'A' RCS HPU - Power reduction to maintain below license limit (if necessary) • Final (expected) operating result - Operating with 'A' RCS HPU shutdown, power reduced (if necessary) • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
Booth Operator When directed by the lead evaluator, **insert** the following **malfunctions** and **overrides**: Malfunction: **TRG1** **RR52A**, RCS FCV A Drift, FV=100 Overrides: **OVR-02A2A1DI3304**, On MIA Flow Controller A, FINAL=Off **OVR-02A2A1DI3305**, On MIA Flow Controller A, FINAL=Off	
The following plant response occurs: • *2RCS-HC1603A, % valve position indication begins to rise* • *Indicated MWth output on panel 603 begins to rise* • *Indicated MWe output on panel 603 begins to rise*	**RO** • Recognizes rising MWth indication • Recognizes rising generator MWe output indication • Recognizes RCS-FCV 'A' drifting open

Instructor Actions / Plant Response	Operator Actions
• *APRM indicated power rises on panel 603*	• Provides crew update of RCS-FCV 'A' drifting open
After approximately 3 minutes the following annunciators may alarm if the crew fails to quickly recognize the FCV drift: • *851150, Turbine Bypass Valve Open* • *851160, Turbine Bypass Valve 89A Thru 89E Out Temp High* Note: Based on final value of reactor power from the previous reactivity manipulation and the timeliness of the crew identifying the drifting RCS flow control valve the following critical task may become applicable: • Given a failure of a recirc. flow control valve causing the valve to drift open, the crew will reduce reactor power to restore and maintain reactor power below 3988 MWth in accordance with N2-SOP-08 and N2-SOP-101D.	**SRO** • Provides crew update on N2-SOP-08 and N2-SOP-101D entry • Directs RO to enter and execute N2-SOP-08 and N2-SOP-101D • Provides reactivity oversight during power reduction to maintain less than rated power • Establishes reactor power band following initial reactor power reduction • Oversees crew actions • Provides crew transient brief / reverse brief
Role Play: If requested, as I&C, report that the LVDT is already in service. *When the HPU shutdown pushbutton is depressed, the following annunciators alarm:* • *602101, Recirc FCV A Hydraulics Inoperable* • *602103, Recirc FCV A Backup Hydr Inoperable* • *602105, Recirc FCV A Motion Inhibit* *The following plant response occurs:* • *RCS-FCV 'A' Stops drifting* *The following computer points are generated:*	**RO** (N2-SOP-08) • Performs N2-SOP-08, and N2-SOP-101D actions • Performs the actions of N2-SOP-08: ◦ Evaluates IF/THEN statement that says "If Unintended RCS FCV movement is occurring Then Depress the HPU shutdown pushbutton at 2CEC*PNL602 - Depresses the HPU 'A' shutdown pushbutton at 2CEC*PNL602 ◦ Determines power change is NOT due to a drifting control rod ◦ Determines power change is due to Recirc FCV motion ◦ Closes the loop 'A' hydraulic fluid outside isolation valve

Instructor Actions / Plant Response	Operator Actions
• *RCSBC09, RCS FCV A BU Hydr Inop (Inop)* • *RCSBC07, RCS FCV A Hydr Inop (Inop)* • *RCSBC05, RCS FCV A Mtn Inhib (Alarm)* Note: Crew may not exceed TS 3.4.1 limits based on the timeliness of crew actions.	◦ If necessary, provides crew update for the override of N2-SOP-08 to maintain reactor power ≤ 3988 Mwth ◦ Reduces reactor power to remain below 3988 MWth using CRAM rods or recirc. flow ◦ Monitors Offgas and Main Steam Line Rad Monitors for evidence of fuel failure • Makes plant announcement for SOP entry • Performs N2-SOP-08, attachment 2: ◦ Determines that the affected loop will remain in service ◦ Informs SRO to refer to technical specification 3.4.1 for loop flow mismatch ◦ Contacts I & C to evaluate RVDT position feedback signal ◦ Determines that only one RCS FCV has been hydraulically isolated ◦ Determines that the recirc HPU was shutdown and exits N2-SOP-08
Role Play: When Reactor Engineering notified, report that fuel thermal limits are being evaluated. If requested, recommend no rod withdraw operations until evaluation is complete. **Role Play:** As reactor engineering, 5 minutes after initial request to evaluate thermal limits, report back that thermal limits have been evaluated as satisfactory	**SRO** • Provides additional plant parameter monitoring due to plant transient affecting reactor core parameters • Provides independent position verification on the power to flow map • Notifies reactor engineer and requests thermal limit evaluation • Maintains crew oversight and looks ahead for potential issues / thresholds
Note: • Condition B: Recirculation loop flow mismatch not within limits.	**SRO** • Maintains crew oversight and provides coaching when necessary. • Reviews Technical Specification 3.4.1 for loop flow mismatch, Cond. B, Action B.1.

Instructor Actions / Plant Response	Operator Actions

Spec	Condition	Applicable Actions
3.4.1	B	B.1
Action	**Description**	
B.1	Declare the recirculation loop with lower flow to be "not in operation" (2 hours)	

Event Termination Criteria	• HPU for RCS FCV 'A' shutdown • Reactor power is reduced ≤ 3988 MWth

Event 4: Gland Seal Exhaust Fan 2TME-FN1A Trip

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power with 2TME-FN1A in service • Critical activities or tasks - Start a standby TME fan • Final (expected) operating result - Operating with a standby TME fan running • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **malfunction:** **TRG2** **MS20A**, Gland Seal Exhaust Fan Trip (TME-FN1A), FINAL=True *Steam Packing Exhaust Blower Fan 1A trips on motor electrical fault* *The following annunciator alarms:* • *851211, "Gland Seal Exhaust Fan 1A/1B/2A/2B Mot Temp High"*	
The following annunciator alarms: • *851201, "Gland Seal Exhaust Fan 1A/1B/2A/2B Mot Overload"* • *851231, "Gland Seal Exhaust Fan 1A/1B/2A/2B Auto TRIP/FTS"* *Steam seal exhaust vacuum begins to degrade as read on*	**RO** • Silences acknowledges and reports annunciator 851201 • Provides crew update for the trip of 2TME-FN1A and degrading gland seal vacuum • Silences acknowledges and reports annunciator 851203

Instructor Actions / Plant Response	Operator Actions
2TME-PI108 *The following annunciator alarms approximately 2 minutes after event initiation:* • *851203, "Gland Seal Exhaust Fan 1A/1B/2A/2B Vacuum Low"* *The following computer points are generated:* • *TMETC05, "Gld Sl Exh FN1A Mot (Overload)"* • *TMEUC01, "Exh FN 1A-1B-2A-2B Vac (Low)"* • *TMEPC01, "Gld Sl FN 1A-1B-2A-2B Vac (Low)"* *Steam seal exhaust vacuum begins to improve as read on 2TME-PI108* *When steam seal exhaust vacuum reaches 6 inches water vacuum as read on 2TME-PI108 the following annunciator clears:* • *851203, "Gland Seal Exhaust Fan 1A/1B/2A/2B Vacuum Low"* **Role Play:** If dispatched as field operator to investigate the trip of 2TME-FN1A, wait 3 minutes and then report that the power supply breaker is tripped with no visible indications why and that 2TME-FN1A looks O.K. not visible signs of damage	• Reviews ARP 851201 & 851203: ◦ Determines that no steam packing exhausters are running ◦ Closes 2TME-MOV22A, steam packing exhaust fan 1A inlet valve ◦ Determines that ARP 851201 requires the standby TME fan be started using N2-OP-25 • Performs N2-OP-25, steps E.2.5 thru E.2.7 ◦ Throttles open 2TME-MOV22B(23A,23B), steam packing exhaust fan 1B(2A,2B) inlet valve ◦ Makes plant announcement for the start of 2TME-FN1B(2A,2B) ◦ Starts 2TME-FN1B(2A,2B) ◦ Throttles 2TME-MOV22B(23A,23B) to achieve 10 - 14 inches vacuum as indicated on one of the following: - 2TME-PI108, STEAM SEAL EXH VACUUM gage - Computer Point TMEPA05, STM SEAL EXH VACUUM • Continues with ARP 851201 & 851203 actions: ◦ Monitors gland seal operations per N2-OP-25, subsection F.1.0 • Dispatches a field operator to investigate the trip of 2TME-FN1A
	SRO • Oversees crew actions • Provides crew transient brief / reverse brief

Instructor Actions / Plant Response	Operator Actions
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.	**SRO** • Maintains crew oversight and provides coaching when necessary. • Evaluates E-plan to assess potential classification.

Event Termination Criteria	• Standby TME fan in service

Event 5: Loss of 2NNS-SWG014

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor operating at power • Critical activities or tasks - Start the standby RDS pump (2RDS-P1B) - Start the lag Instrument Air compressor - Restore Drywell cooling - Verify 2GMO-P2 running - Restore RPS - Recharge HCU accumulator • Final (expected) operating result - Operating with CRD, RPS, DRS, IAS and GMO systems restored and stabilized and HCU accumulator recharged • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
Booth Operator When directed by the lead evaluator, **insert** the following **malfunction**: **TRG3** **ED04D**, 4.16KV Normal Bus Fault (SWG14), FINAL=True **RD06-30-51**, Control Rod Failure-Accumulator Trouble, FV=True, DT=10 sec	
The following annunciators alarm (N2-SOP-03): • *852458, LOAD CENTER NJS US5*	**RO** • Reports the following:

Instructor Actions / Plant Response	Operator Actions
UNDERVOLTAGE • *852518, 4KV STUB BUS NNS 014 ELECTRICAL FAULT* • *852535, NNS 014 SUPPLY ACB AUTO TRIP/FTC* • *852537, 4KV BUS NNS 014 UNDERVOLTAGE*	◦ Loss of 2NNS-SWG014 due to electrical fault ◦ Loss of 'A' side RPS solenoids (2RPS-MG1A) power (silent half scram)
The following annunciators alarm (N2-SOP-30): • *603308, CRD PUMP 1A/1B AUTO TRIP* • *603311, CRD CHARGING WTR PRESSURE LOW* • *603316, CONTROL ROD TEMPERATURE HIGH* • *603446, CRD PUMP DISCH HEADER PRESSURE LOW*	**RO** • Reports loss of RDS pump (2RDS-P1A)
The following annunciators alarm (N2-SOP-60): • *873201, DRYWELL UNIT COOLING GROUP 1 SYS TROUBLE* • *871304, DIVISION I DRYWELL TEMPERATURE HIGH* • *875104, DIVISION II DRYWELL TEMPERATURE HIGH*	**RO** • Reports loss of Div I Drywell unit coolers
The following annunciators alarm (N2-SOP-19): • *851228, INSTR AIR CPSR 3A/3B/3C AUTO TRIP / FAIL TO START* • *851229, INSTR AIR SYSTEM TROUBLE* • *851238, INSTR AIR COMPRESSOR 3A/3B/3C AUTO START* • *851260, INST AIR COMPRESSOR COOLING SYS TROUBLE*	**RO** • Reports the following: ◦ Loss of IAS compressor (2IAS-C3A) ◦ Loss of IAS mini loop cooling pump (2CCP-P3A)
The following annunciators alarm (N2-SOP-68): • *851111, GENERATOR EMER SEAL OIL PUMP 2 RUNNING* • *851112, GENERATOR AUXILIARIES TROUBLE*	**RO** • Reports the following: ◦ Loss of 2GMO-P1 (MSOP) ◦ 2GMO-P2 (ESOP) is running
The following WCS annunciators alarm after event initiation: • *602314, RWCU PUMP 1A/1B AUTO TRIP* • *602317, RWCU FILTER DEMIN 1 TROUBLE* • *602318, RWCU FILTER DEMIN 2 TROUBLE*	**RO** • Reports loss of WCS pump (2WCS-P1A)

Instructor Actions / Plant Response	Operator Actions
	SRO • SRO acknowledges crew report • Directs RO to enter and execute: ◦ N2-SOP-03 ◦ N2-SOP-97 ◦ N2-SOP-30 ◦ N2-SOP-60 ◦ N2-SOP-19 ◦ N2-SOP-68
Role Play: When dispatched as an Equipment Operator to 2NNS-SWG014, wait 3 minutes and report that Breaker 14-2 tripped on overcurrent.	
Role Play: When dispatched as Equipment Operator to report local indications, wait 1 minute to get to the local area then call back to the control room and report the following: • RPM EPA's are tripped • 2RPM-MG1A is off • RPM MG set supply breaker 2NHS-MCC008-7EL is closed. **Role Play:** When directed to place RPM-MG1 output switch to "OFF," wait 30 seconds then report that RPM-MG1A output switch has been placed in "OFF" and the motor off pushbutton has been held in off and the green light is lit. **Role Play:** When Equipment Operator dispatched to reset 'A' Side RPM EPAs, wait 3 minutes and **insert** the following **remote**: **TRG4** **RP01**, RPS MG1 EPA, FINAL=Reset	**RO** (N2-SOP-97 Flowchart) • Makes plant announcement to stop any half scram or isolation testing • Determines the following: ◦ Cause was loss of scram solenoid power ◦ All lights out for RPS A solenoids ◦ Power Source selector switch in NORM ◦ 2RPM-MG1A is not running • Dispatches Equipment Operator to place 2RPM-MG1A output switch in OFF and hold Motor Off pushbutton until Green light on • Swaps Power Source selector switch to Alt supply as follows: ◦ ALTN A FEED AVAILABLE light lit ◦ Places Power Source selection switch in ALT A • Dispatches Equipment Operator to reset RPM EPAs

Instructor Actions / Plant Response	Operator Actions
Then report the 'A' Side RPM EPAs have been reset.	
10 seconds after event initiation the following occurs: • *Annunciator 603441,Rod Drive Accumulator Trouble alarms* • *Amber light for control rod 30-51 illuminated on full core display* **Role Play:** When dispatched as Equipment Operator to verify WCS/RDS flows, wait 5 minutes and report WCS/RDS flows have been verified per N2-OP-30 Step F.2.5 through F.2.9 *The following annunciators clear when 2RDS-P1B is started:* • *603311, CRD Charging Wtr Pressure Low* • *603446, CRD Pump Disch Header Pressure Low* *The following annunciator clears approximately 1 minute after RDS pump is started:* • *603316, Control Rod Temperature High*	**RO** (N2-SOP-30 Flowchart) • Recognizes/reports accumulator trouble for control rod 30-51 • Informs crew that a manual scram will be initiated (RPV pressure ≥ 900 psig) if: ◦ ≥ 2 accumulators for withdrawn control rods are inoperable; **AND** ◦ Charging water header pressure < 940 psig for ≥ 20 minutes • Informs crew that RDS backfill will be isolated if: ◦ RDS pump cannot be restored within 15 minutes; **OR** ◦ System breech exists • Determines that an RDS pump is not operating • Shifts 2RDS-FIC107 to MANUAL • Closes FCV to minimum position • Determines that the trip was not caused by low suction pressure • Starts 2RDS-P1B • Adjusts RDS flow using 2RDS-FIC107 to ~ 63 gpm • Places 2RDS-FIC107 in AUTO • Restores WCS per SRO/SRO direction • Dispatches EO to verify WCS/RDS flows per N2-OP-30 Step F.2.5 through F.2.9
	SRO • Acknowledges report of accumulator trouble for control rod 30-51 • Acknowledges report of trip of 2RDS-P1A on motor electrical fault. • When time permits, conducts a crew transient brief / reverse brief

Instructor Actions / Plant Response	Operator Actions
Annunciator 603441,Rod Drive Accumulator Trouble alarm clears **Role Play:** As field operator dispatched to check the local accumulator pressure, wait 5 minutes then report that local accumulator pressure for control rod 30-51 reads 930 psig.	**RO** • Performs the actions of N2-ARP-01 for the accumulator trouble: ◦ Verifies a CRD pump running ◦ Determines which accumulator is causing the alarm by checking the Rod Display at panel 603. ◦ Refers to N2-OP-30, Subsection F.7.0 for actions to take for accumulator trouble. ◦ Acknowledge accumulator trouble to allow reflash by depressing "Accumulator Trouble Acknowledge" pushbutton at panel 603. • Performs the actions of N2-OP-30 F.7.0. ◦ Directs a plant operator to check the local accumulator pressure indicator at the HCU. ◦ IF the pressure is less than 940 psig, refer to Technical Specification 3.1.5 ◦ Reports local accumulator pressure for control rod 30-51 reads 930 psig.
	SRO • Oversees crew actions. • Acknowledges report of local accumulator pressure for control rod 30-51 reads 930 psig. • Provides crew transient brief / reverse brief. • Directs Control rod Accumulator for control rod 30-51 recharged in accordance with N2-OP-30 F.7.0.
Role Play: When directed to charge accumulator for control rod 30-51 wait approximately 5 minutes then **delete** the following	**RO** • Directs Plant/Field operator to charge Control rod Accumulator for control rod 30-51 in accordance with N2-OP-30 F.7.0.

Instructor Actions / Plant Response	Operator Actions
malfunction: • **RD06-30-51**, Control Rod Failure-Accumulator Trouble *Amber light for control rod 30-51 extinguishes on full core display* Then wait 1 minute and **manually re-insert** the following **malfunction**: • **RD06-30-51**, Control Rod Failure-Accumulator Trouble, FV=True *Annunciator 603441,Rod Drive Accumulator Trouble re-alarms* *Amber light for control rod 30-51 re-illuminates on full core display* Then wait an additional 1 minute and **delete** the following **malfunction**: • **RD06-30-51**, Control Rod Failure-Accumulator Trouble, FV=True Then as field operator report that it appears that the P-6 connection appeared to have a piece of debris on the threads and that you cleaned it and put some never seize on the threads and recapped it. Control rod accumulator for control rod 30-31 has been charged to approximately 1100 psig.	◦ Acknowledges accumulator trouble to allow reflash by depressing "Accumulator Trouble Acknowledge" pushbutton at panel 603.
Role Play: If asked, the M&TE number of the wrench used to recharge accumulator 30-51 is #2148 and its calibration due date is January 18th, 2018.	
Role Play:	**SRO** • Maintains crew oversight and provides coaching when necessary. • Evaluates E-plan to assess potential

<table>
<tr><th>Instructor Actions / Plant Response</th><th>Operator Actions</th></tr>
<tr><td>If requested for control rod 30-51 scram time during the last scram time Surveillance, report that scram time was within the limits of Table 3.1.4-1.

Note:

<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.1.5</td><td>A</td><td>A.1 or A.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>A.1</td><td colspan="2">Declare the associated control rod scram time "slow." (8 hours)</td></tr>
<tr><td>A.2</td><td colspan="2">Declare the associated control rod inoperable. (8 hours)</td></tr>
</table>
</td><td>classification.
• Reviews Technical Specification 3.1.5, condition A, Required Action A.1 or A.2 (When time permits)</td></tr>
<tr><td></td><td><u>RO</u> (N2-SOP-60 Flowchart)
• Determines drywell cooling isolation valves are open
• Verifies 2DRS-UC3B is operating
• Monitors drywell temperature & pressure</td></tr>
<tr><td><u>Note</u>:
Based on the timeliness of crew actions, the crew may manually start the lag compressor if it has not already started.</td><td><u>RO</u> (N2-SOP-19 Flowchart)
• Determines the following:
◦ 2IAS-C3A tripped / degraded
◦ 2IAS-C3A loss not due to slow transfer / control power loss
• Verifies the lag compressor automatically starts when lower to 100 psig
• Determines IAS pressure restored
• Performs Attachment 1</td></tr>
<tr><td></td><td><u>RO</u> (N2-SOP-68 Flowchart)
• Determines 2GMO-P1 not operating
• Verifies 2GMO-P2 is running
• Verifies seal oil pressure 3-5 psig above generator gas pressure
• Places the following control switches in STOP:
◦ 2GMO-P1
◦ 2GMO-P4
◦ 2GMO-P3</td></tr>
</table>

Instructor Actions / Plant Response	Operator Actions
	• Determines seal oil pressure regulator functioning properly
	SRO/IA • Maintains crew oversight and looks ahead for potential issues / thresholds • Updates EOOS
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable. **Role Play:** When contacted, respond as appropriate.	**SRO** • Maintains crew oversight and provides coaching when necessary • Contacts the following (when time permits): ◦ Work Week Manager for investigation / support ◦ Plant Management

Event Termination Criteria	• RPS has been reset • 2RDS-P1B is running with normal RDS parameters • HCU accumulator pressure restored • Drywell Cooling has been restored • Instrument Air has been restored

Event 6: EHC regulator slow failure causes reactor pressure to lower

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor operating at power • Critical activities or tasks - Reactor is scrammed - MSIVs are shut • Final (expected) operating result - Shutdown with the MSIV's closed • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given a lowering RPV pressure, the crew will scram the reactor before exceeding a reactor core safety limit IAW N2-EOP-RPV. 2. Given a lowering RPV pressure, the crew will close the appropriate number of MSIVs before exceeding the allowable cooldown rate IAW N2-EOP-RPV.

Instructor Actions / Plant Response	Operator Actions
When directed by the Lead Evaluator, **insert** the following **overrides**: **TRG5** **OVR-04A1A6S26DI6411,** EHC Pressure Decrease PB, FINAL=On **OVR-04A1A6S27DI6412,** EHC Pressure Increase PB, FINAL=Off *RPV pressure begins to lower*	
	CREW • Identifies and reports Reactor pressure lowering

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges report of lowering RPV pressure • Directs BOP to enter N2-SOP-23
Note: Safety Limit of Reactor is RPV pressure <785 psig with power >25%. If Reactor Pressure reaches 766 psig with the mode switch still in RUN, the MSIV's will receive a signal to close, but remain open due to Isolation Failure malfunction.	**BOP** • Acknowledges direction to enter N2-SOP-23 • Determines reactor pressure is lowering rapidly and informs the SRO that a scram is required per N2-SOP-101C
	SRO • Acknowledges report that a scram is required.
	• ***Directs the RO to place the mode switch in shutdown***
	RO • Acknowledges direction to place the mode switch in shutdown
	• ***Places the mode switch in shutdown*** • Provides scram report

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges scram report • Enters N2-EOP-RPV • Directs RO to take actions per N2-SOP-101C • Directs RO to maintain RPV level between 160 and 200 inches using feed and condensate
	• Directs BOP to attempt to maintain RPV pressure above 500 psig
Note: RPV pressure will continue to lower. N2-SOP-23 will direct shutting the outboard MSIVs before pressure reaches 500 psig. If RPV pressure reaches 420 psig and the MSIVs are not shut, then the crew has violated the 100F cooldown rate	**SRO Cont...** • ***Directs BOP to shut the MSIVs prior to RPV pressure reaching 500 psig***

Instructor Actions / Plant Response	Operator Actions
	RO • Acknowledges direction to take actions per N2-SOP-101C • Acknowledges direction to maintain RPV water level 160 to 200 inches using feed and condensate • Performs initial actions of N2-SOP-101C: ◦ Verifies turbine has tripped and TSV/TCVs are shut ◦ Verifies generator has tripped and house loads have transferred ◦ Verifies SDV vent and drain valves have closed ◦ Verifies RCS pumps have downshifted ◦ Verifies FWLC controlling level >154.3 inches • May determine the scram can be reset and attempt to reset the scram:
Role Play: As Radwaste, acknowledge the direction to operate all pumps for 2DER-TK2A	**RO Cont...** ◦ Notifies Radwaste to operate all pumps for 2DER-TK2A. ◦ Places all four SDV high level bypass switches to bypass. ◦ Resets ARI per N2-OP-36B H.3.0 by depressing all four ARI reset pushbuttons ◦ Using scram reset switches, reset the scram and verifies all 8 pilot solenoid lights lit. • As necessary, resets setpoint setdown per general actions flowchart or per N2-OP-3, section H.1.0 • Maintains RPV water level 160 to 200 inches using feed and condensate • As necessary inserts SRMs and IRMs

Instructor Actions / Plant Response	Operator Actions
Role Play: As EO directed to energize 2WCS-MOV107, acknowledge the report.	• May direct energizing 2WCS-MOV107 • May shutdown HWC
	BOP • Acknowledges direction to attempt to maintain RPV pressure >500 psig • Acknowledges direction to shut the outboard MSIVs before pressure reaches 500 psig • Determines he cannot maintain pressure >500 psig
	• ***Shuts the outboard MSIVs*** • Reports to the SRO that the outboard MSIVs are closed
	SRO • Acknowledges report of the outboard MSIVs closed. • Directs BOP to maintain RPV pressure using SRVs

Event Termination Criteria	• Reactor is scrammed • MSIVs are shut

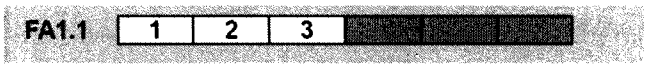
Event #7 and #8: LOOP, Div II EDG Fails to auto start. Steam Line break in Drywell

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Shutdown with the MSIV's closed - Verify the following **malfunctions** and **overrides** are **inserted** before a manual scram is initiated: • **MS13**, MSIV Isolation Failure, FINAL=True • **DG04B**, EDG 3 Fail To UV/LOCA Auto-Start, FINAL=True • Critical activities or tasks - Spray the Drywell prior to exceeding PSP • Final (expected) operating result - Shutdown and depressurized / depressurizing • Mitigation Strategy code (if applicable) - DMS-PC3
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given a steam leak in the drywell, the crew will spray the drywell prior to exceeding the PSP limit IAW N2-EOP-PC.

Instructor Actions / Plant Response	Operator Actions
Note: When outboard MSIVs are shut -OR- RPV pressure lowers to <415 psig, verify the following **malfunctions** are **inserted**: **TRG6** **ED02A,** Loss Of Off-Site 115KV Line 5, FINAL=True, DT=60 **ED02B,** Loss Of Off-Site 115KV Line 6, DT=62 **RR20,** RR Loop Rupture – DBA LOCA, IV=1, FINAL=2, RT=10:00 DT=180	**CREW** • Recognizes and reports loss of line 5 and 6 and failure of Div II EDG to automatically start

Instructor Actions / Plant Response	Operator Actions
• *Power is lost to Div I (temporary) and II SWG* • *Div II EDG fails to auto start* • *Power is lost to feed and condensate systems* • *Division III EDG starts up and power its bus*	
	SRO • Acknowledges report of loss of line 5 and 6 • Directs BOP to enter N2-SOP-03 • Directs RO to maintain RPV water level with RCIC and/or HPCS
	BOP • Acknowledges direction to enter N2-SOP-03 • Determines HPCS EDG has started and Division II EDG is not powering their bus
	BOP, (cont.) • Determines Div II lost power • Determines Division II EDG did not start and power its bus • Attempts to manually start and load the Division II EDG as follows: ◦ Verifies the following annunciators are not lit: ▪ 852211 ▪ 852225 ▪ 852227 ▪ 852231 ▪ 852235 ▪ 852239 ▪ 852247 ▪ 852248

Instructor Actions / Plant Response	Operator Actions
	◦ Places Division II 2EGS*EG3 control switch to START. ◦ Verifies Emergency DSL GEN 3 frequency 60 Hz. ◦ Verifies Emergency DSL GEN 3 voltage is 4160 V. ◦ Determines that Division II EDG started and re-energized the Division II SWG • Reports to the SRO that EDG has started and is powering the Division II SWG • Continues actions in Attachment 1 of N2-SOP-03
	RO • Acknowledges direction to maintain RPV water level using RCIC and/or HPCS • Initiates RCIC as follows: ◦ If RCIC is not already running, arms AND depresses RCIC MANUAL INITIATION pushbutton ◦ Verifies the following: ▪ GLAND SEAL SYSTEM AIR COMPRESSOR starts ▪ ICS*MOV116 opens ▪ ICS*MOV120 opens ▪ ICS*MOV126 opens ▪ WHEN RCIC flow >220 gpm, ICS*MOV143 closes ▪ WHEN RCIC discharge pressure > Reactor pressure, ICS*V156 AND ICS*V157 open ▪ RCIC injection to Reactor controlled at 600 gpm ▪ ICS*AOV109 closes ▪ ICS*AOV110 closes ▪ ICS*AOV130 closes ▪ ICS*AOV131 closes

Instructor Actions / Plant Response	Operator Actions
	◦ Informs the SRO that RCIC is running
Note: With a high drywell pressure signal and lowering RPV pressure, the crew may prevent LPCS and LPCI injection not needed for core cooling.	**CREW** • Recognizes and reports rising drywell pressure
EAL Criteria Met *Indications available for Alert, EAL FA1.1:*  **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1) *(RCS B.2 LOSS: Primary Containment pressure > 1.68 psig due to RCS leakage)*	**SRO** • Acknowledges report of rising drywell pressure • When drywell pressure is >1.68 psig, reenters N2-EOP-RPV and enters N2-EOP-PC • Determines drywell pressure cannot be maintained <1.68 psig • Directs BOP to place RHR in suppression chamber sprays per N2-EOP-6.22
Role Play: As RP contacted to place RE-23B in service, wait two minutes and **insert** the following **remote functions**: **TRG7** **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On **RM03-041,** SWP23B Current Radiation Level Sample Pmp Power, FINAL=On Contact the control room and inform them that RE23B is in service	**BOP** • Acknowledges direction from SRO to spray the suppression chamber using RHR: • Places RHR in suppression chamber sprays as follows: ◦ Verifies open MOV90A/B ◦ Verifies shut and overridden MOV24A/B ◦ Verifies RHR A/B is running ◦ Verifies open 2RHS*MOV33A/B ◦ Throttles open 2SWP*MOV33A/B as necessary to establish service water flow to RHS heat exchanger ◦ Contacts RP to place RE-23A/B in service • Informs the SRO that RHS A/B is in suppression chamber sprays

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges report that suppression chamber sprays are in service on RHR A/B
Note: At the Lead Evaluators discretion, the following malfunction may be modified at 0.1% increments to raise or lower the speed at which drywell pressure is coming up: • **RR20**, RR Loop Rupture – DBA LOCA	**SRO Cont...** • Determines suppression chamber pressure is 10 psig • Determines he is in the good region of the DWSIL curve • Verifies tripped both Recirc Pumps • Directs BOP to verify tripped all drywell unit coolers
	• ***Directs BOP to spray the drywell using N2-EOP-6.22***
Note: The operator may not place drywell unit cooler control switches to normal after stop due to the power board being de-energized. **Role Play:** As RP contacted to place RE-23A in service, wait two minutes and **insert** the following **remote functions**: **TRG8** **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On Contact the control room and inform them that RE23A is in service	**BOP** • Acknowledges direction to verify tripped all drywell unit coolers • Verifies tripped all drywell unit coolers as follows: ◦ Goes to PNL873 and places all drywell unit cooler control switches to NORMAL AFTER STOP ◦ Informs the SRO that all drywell unit coolers are tripped • Sprays the drywell with RHR A/B as follows: ◦ Determines drywell spray interlocks are met ◦ Verifies open SWP*MOV90A/B, HEAT EXCHANGER 1A/B SVCE WTR INLET VLV ◦ Verifies closed AND IF overridden, RHS*MOV24A/B, LPCI A/B INJECTION VLV ◦ Verifies running RHS*P1A/B, PMP 1A/B ◦ Verifies open RHS*MOV33A/B, OUTLET TO SUPPR POOL SPRAY

Instructor Actions / Plant Response	Operator Actions
	◦ Verifies ≥450 gpm on SUPPR SPRAY HEADER FLOW 2RHS*FI64A/B ◦ Verifies closed, RHS*FV38A/B, RETURN TO SUPPR POOL COOLING ◦ Verifies open, RHS*MOV4A/B, PMP 1A/B MINIMUM FLOW VLV
If directed to lift and tape leads and install jumper #9 to defeat the group 5 isolation interlocks, **manually insert** the following **malfunction**: • **RH08**, Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=TRUE Wait 2 minutes, then report that the lead has been lifted and taped and jumper #9 has been installed	**BOP Cont.** ◦ ***Initiates drywell sprays by opening the following valves:*** ▪ ***RHS*MOV15A/B, OUTLET TO DRYWELL SPRAY*** ▪ ***RHS*MOV25A/B, OUTLET TO DRYWELL SPRAY*** ◦ Verifies closed, RHS*MOV4A/B, PMP 1A/B MINIMUM FLOW VLV ◦ Verifies approximately 7450 gpm on DRYWELL SPRAY HEADER FLOW (2RHS*FI63A/B) • Informs the SRO that RHR A/B is spraying the drywell
Role Play: If directed to defeat the RCIC level 8 logic, wait 1 minute then **manually insert** the following **remote**: • **RC02A**, RCIC Level 8 Trip Defeat:Withdraw Trip Units N693A,E, FV=Defeated	
Role Play: If requested to defeat the HPCS level 8 logic, wait 1 minute and then **manually insert** the following **remote**: • **CS14**, OPS-CSH01 PNL625 Tst. Sw CSH*MOV107, FINAL=TEST	

Instructor Actions / Plant Response	Operator Actions
Note: If the crew is not expeditious in spraying the drywell, then when the SRO evaluates PSP, he may have exceeded the limit. If this is the case, the crew will perform an RPV blowdown per N2-EOP-C2. At the discretion of the Lead Evaluator, if the crew does blowdown, then the scenario may be terminated after the blowdown.	**SRO** • Acknowledges report that RHR is spraying the drywell
	SRO • May direct RO to inject with LPCI 'C' per N2-EOP-6.3
Role Play When directed, as field operator to place the LPCI 'C' injection valve (RHS*MOV24C) breaker to off and Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303, wait 3 minutes and then **manually insert** the following **remotes**: • **RH35**, RHS*MOV24C 600V Bkr Status, FV=Open • **RH12**, OP32.H.9 2RHS*MOV24C Injection Throttle, FV=Throttle Then report that breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped. When directed to place 2EHS*MCC303-19A,	**RO** • If directed, acknowledges report to inject with LPCI 'C' per N2-EOP-6.3 • Reviews N2-EOP-6.3, step 6.5 for LPCI 'C' Injection Throttling • Performs N2-EOP-6.3, step 6.5 actions: ◦ Dispatches a field operator to: - Place 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV to OFF. - Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04, 2EHS*MCC303 Rear of Cubicle 19A ◦ Acknowledges report that 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped. ◦ Directs field operator to place breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV back to On ◦ Notifies SRO that RHS*MOV24C seal-in

Instructor Actions / Plant Response	Operator Actions
2RHS*MOV24C, RHR INJECTION MOV back to On, wait 1 minute and then **manually change** the following **remote**: • **RH35**, RHS*MOV24C 600V Bkr Status, FV=Close	has been defeated ◦ Informs SRO that LPCI 'C' injection is lined up and ready ◦ Prompts for direction from SRO for level band

Event Termination Criteria	• Containment Parameters Improving

Exelon Generation

Copy_____ of _____

Training Id: **NMP2 NRC 2017 Scenario 3** Revision: **0.0**

Title: **AT1, High power ATWS, heat addition to suppression pool or Torus requires entry into level power control, RPV level controlled below feedwater spargers, RPV Blowdown not required**

	Signature / Printed Name	Date
Developed By	Mike Alexander	7/26/17
Validated By	Dan Cifonelli	8/30/17
	Bob Spooner	8/30/17
	Ken Cherchio	8/30/17
Facility Reviewer	John Toothaker	9/21/17

References

1. N2-OSP-EGS-M@001, Diesel Generator and Diesel Air Start Valve Operability Test – Div I and II
2. N2-ARP-852100, 2CEC*PNL852 Series 100 Alarm Response Procedures
3. N2-ARP-603200, 2CEC*PNL603 Series 200 Alarm Response Procedures
4. N2-OP-92, Neutron Monitoring
5. N2-ARP-603400, 2CEC*PNL603 Series 400 Alarm Response Procedures
6. N2-SOP-08, Unplanned Power Changes
7. N2-ARP-601200, 2CEC*PNL601 Series 200 Alarm Response Procedures
8. N2-SOP-13, Loss or Degraded CCP System
9. N2-SOP-101D, Rapid Power Reduction
10. N2-ARP-851500, 2CEC*PNL851 Series 500 Alarm Response Procedures
11. N2-SOP-06, Feedwater Failures
12. N2-SOP-29, Sudden Reduction In Core Flow
13. N2-EOP-RPV, RPV Control - Flowchart
14. N2-EOP-6 (Series), NMP2 EOP Support Procedures (N2-EOP-6.1 thru 6.31)
15. N2-EOP-PC, Primary Containment Control
16. N2-EOP-C5, Failure To Scram
17. N2-EOP-HC, NMP2 EOP Hard Cards Procedure
18. EP-CE-111, Emergency Classification and Protective Action Recommendations
19. EP-CE-113, Personnel Protective Actions
20. EP-CE-114-100, Emergency Notifications
21. EPIP-EPP-02-EAL, EMERGENCY ACTION LEVEL MATRIX UNIT 2

22. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
23. OP-AA-112-101, Shift Turnover and Relief

Instructor Information

A. Scenario Description

1. Sequence of Events / Expected Crew Response

   a. The scenario begins at rated power with 2TMB-P1B, EHC Fluid Pump 1B is out of service for maintenance. N2-OSP-EGS-M@001 is in progress for Division I Diesel PMT. The Diesel has been operating for 7 minutes.

   b. Event 1 is the normal evolution performed by the BOP to continue with N2-OSP-EGS-M@001 for the Division I EDG.

   c. Event 2 occurs after the operator has tied the EDG to the bus. When the operator attempts to raise diesel load an electrical fault will occur causing the diesel to trip. The operator will diagnose the failure, take the appropriate actions then back out of the procedure. The SRO will declare the diesel inoperable and enter T.S. 3.8.1.

   d. Event 3 occurs when the recirculation flow input to APRM #2 fails downscale. The crew will verify all other APRMs are reading normal and determine that a scram should not have occurred. The crew will follow up with ARP actions and local panel indications and determine that APRM #2 is required to be

bypassed per N2-OP-92. The crew will also evaluate T.S. 3.3.1.1.

e. Event 4 occurs when Control Rod 10-23 spuriously scrams. The crew will enter and perform the actions of N2-SOP-8. N2-SOP-8 actions will require recirculation flow lowered to reduce reactor power by 40 MWe (CRITICAL TASK).

f. Event 5 occurs when the RBCLC TCV fails causing a reduction in cooling. The crew will take action per N2-SOP-13 to place the TCV in manual and restore temperatures to normal.

g. Event 6 occurs when feedwater pump P1B experiences an over current condition. The crew will enter and execute N2-SOP-6 for feedwater failures. The crew will be forced to lower reactor power using N2-SOP-101D to 68% and remove 2FWS-P1B from service. During the transient 2FWS-P1B will trip and with reactor power >72% and only one feedpump running a RCS flow control valve runback will occur. The crew will be required to enter N2-SOP-29 for the sudden reduction in core flow. N2-SOP-29 will require CRAM rods inserted (CRITICAL TASK). The crew will take the actions of N2-SOP-29 to reset the RCS flow control valve runback and raise core flow to exit the 'exit region' of the power to flow map.

h. Event 7 & 8 occurs after the runback has been reset, when two additional control rods scram. The crew will re-enter N2-SOP-08 and recognize the requirement to scram the reactor. When the mode switch is placed in SHUTDOWN, all remaining control rods will fail at position 40. The crew will enter N2-EOP-RPV and then enter N2-EOP-C5. The RRCS 98 second timers will fail causing the operators to manually initiate Standby Liquid Control and secure Reactor Water Cleanup. The crew will take the actions of N2-EOP-C5 for the failure to scram. The crew will inhibit ADS. Reactor power level will remain above 4% and reactor water level will be greater than 100 inches, requiring the crew to terminate and prevent and intentionally lower RPV level to uncover the feedwater spargers (CRITICAL TASK). This action serves to preheat the incoming feedwater to reduce the amount of subcooling. This in turn, will prevent any core hydraulic instability thus protecting the fuel from damage. The crew will continue with the actions of N2-EOP-C5 and manually insert control rods using N2-EOP-6.14 (CRITICAL TASK). When reactor power drops to 18% the 'A' EHC pump will trip and the back-up pump is out of service for maintenance. This will cause the turbine stop, control, and bypass valves to

close and pressure to be maintained using SRV's. Suppression pool temperature will rise and the crew will place RHR in suppression pool cooling to cool the suppression pool.

2. Termination Criteria

   a. Control Rods are being inserted

   b. RHS is operating in Suppression Pool Cooling

3. Critical Tasks

CT-1.0 Justification:	
Safety Significance:	*Critical Task is identified as critical because with the occurrence of a control rod scram, the maximum fraction of limiting power density (MFLPD) could become greater than the fraction of rated thermal power (FRTP) indicating that power peaking is occurring which would challenge fuel pin integrity and is a precursor to fuel damage.*
Cueing:	*Annunciator 603443 will alarm, the full core display for control rod 10-23 blue scram light illuminates, Reactor Power on APRM's will lower to ~95%, MWe indication on panel 603 will lower and MWth indication on panel 603 will lower.*
Measurable Performance Indicators:	*Operators reducing MWe using the RCS FCV switches at control room panel 602 will provide observable actions for the evaluation team.*
Performance Feedback:	*MWe indication on control room panel 603 will provide performance feedback regarding the success of crew actions.*

   a. CT-1.0, Given the plant at rated power with a scrammed control rod, the crew will reduce reactor power by at least 40 MWe in accordance with N2-SOP-8.

CT-2.0 Justification:	
Safety Significance:	*Critical Task is identified as critical because without operator action the reactor would be operating in a high power (rodline) low core flow condition which is a condition that could cause core power oscillations which is a precursor to fuel damage.*
Cueing:	*Annunciators will provide indications of the RCS-FCV runback. N2-SOP-29 provides direction to insert the first four CRAM rods.*
Measurable Performance Indicators:	*Manual insertion of control rods will provide observable actions for the evaluation team.*
Performance Feedback:	*Control rod position and Reactor power will provide performance feedback regarding success of crew actions to insert control rods.*

b. CT-2.0, Given a transient resulting in the plant operating in the "Exit Region" of the power to flow map due to a RCS-FCV runback, the crew will insert the first four CRAM rods in accordance with N2-SOP-29.

CT-3.0 Justification:	
Safety Significance:	*Critical Task is identified as critical because without operator action, the manual RPV blowdown combined with a high power ATWS in progress would cause the uncontrolled injection of relatively cold water which would result in fuel damage.*
Cueing:	*Multiple annunciators and panel meter readings will provide indication of a failure of all control rods to insert, with reactor power greater than 4% and RPV level greater than 100 inches.*
Measurable Performance Indicators:	*Operation of the CSL pump control switch, CSL injection valve control switch, RHS 'A' injection valve control switch, RHS 'B' injection valve control switch, RHS 'C' injection valve control switch, RHS 'C' pump control switch and Feedwater valve controller switches will provide observable actions for the evaluation team.*
Performance Feedback:	*CSL and RHS 'C' pump indication lights, RHS 'A' and 'B' injection valve light indications, feedwater valve indication and feedwater flow indication on control room pane 603 will provide performance feedback regarding the success of crew actions.*

c. CT-3.0, Given a failure of the reactor to SCRAM, power above 4%, and RPV water level above 100 inches, the crew will terminate and prevent all injection except SLS, CRD and RCIC in accordance with N2-EOP-C5.

CT-4.0 Justification:	
Safety Significance:	*Critical Task is identified as critical because without operator action to insert control rods, the reactor will remain susceptible to inadvertent power generation due to potential boron dilution or displacement.*
Cueing:	*Multiple annunciators and panel meter readings will provide indication of a failure of all control rods to insert.*
Measurable Performance Indicators:	*Control rod position indications on the RWM showing control rod insertion, RPS white lights illuminating, reactor power lowering will provide observable actions for the evaluation team.*
Performance Feedback:	*Control rod position indications on the RWM showing control rod insertion, RPS white lights illuminating, reactor power lowering.*

d. CT-4.0, Given a failure of the reactor to SCRAM, the crew will insert control rods in accordance with N2-EOP-6.14.

4. Length

   a. 60 minutes

5. Mitigation Strategy Code

   a. AT1, High power ATWS, heat addition to suppression pool or Torus requires entry into level power control, RPV level controlled below feedwater spargers, RPV Blowdown not required.

6. Technical Specifications (Applicable actions for initial conditions only)

   a. None

7. EAL Classification

   a.

1	2

An automatic scram failed to shut down the reactor as indicated by reactor power > 4%

AND

Manual actions taken at the reactor control console (mode switch in shutdown, manual scram push buttons and ARI) failed to shut down the reactor as indicated by reactor power > 4%

B. Initial Conditions

1. IC Number

   a. IC-021 or equivalent (IC-152 for ILT 16-1)

2. Presets / With Triggers

   a. Malfunctions

1) **RP08A**, RRCS 98 Second Timer Failure (DIV I), FV=True	**Inserted**
2) **RP08B**, RRCS 98 Second Timer Failure (DIV II), FV=True	**Inserted**
3) **DG02A**, Diesel Generator Number 1 Trip, FINAL=True, DT=5	**TRG1**
4) **RR08B**, RR Flow Unit Failure - Downscale (B), FINAL=True	**TRG2**
5) **RD09-10-23**, Control Rod Failure - Scrammed, FINAL=True	**TRG3**
6) **FW36B**, Feed Pump Motor Overheating (P1B), FINAL=True	**TRG5**
7) **FW03B,** Feedwater Pump Trip (P1B), DELAY=1:00, FINAL=True	**TRG5**
8) **RD17Z**, RD17 For All Banks, FINAL=40, DT=3	**TRG7**
9) **RD09-14-35**, Control Rod Failure - Scrammed, FINAL=True	**TRG7**
10) **RD09-18-15**, Control Rod Failure - Scrammed, FINAL=True	**TRG7**
11) **RP14A**, RRCS ARI Failure/Defeated (Div I), FINAL=True, DT=1:00	**TRG10**

12) **RP14B**, RRCS ARI Failure/Defeated (Div II), FINAL=True, DT=1:00	**TRG10**
13) **RP02**, Reactor Protection System Failure To Scram - Automatic, FINAL=True, DT=1:00	**TRG11**
14) **TC15A**, EHC PMP A Trip, FV = True	**TRG12**
b. Remotes	
1) **CW44**, 2CCP-TIK108 Temperature Setpoint (35-130 DEGF), FINAL=100	**TRG4**
2) **FW03B,** FW Aux Lube Oil Pump B, FINAL=Start	**TRG6**
3) **RC10**, Defeat RCIC/MT Trip Intlk (EOP-6 ATT 2), FV=Defeated	**TRG8**
4) **MS06A**, Defeat Level One Isolation of MSIVs (Jumper K148A), FV=Defeated	**TRG9**
5) **MS06B**, Defeat Level One Isolation of MSIVs (Jumper K148B), FV=Defeated	**TRG9**
6) **MS06C**, Defeat Level One Isolation of MSIVs (Jumper K148C), FV=Defeated	**TRG9**
7) **MS06D**, Defeat Level One Isolation of MSIVs (Jumper K148D), FV=Defeated	**TRG9**
8) **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On	**TRG13**
9) **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On	**TRG13**

10) **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On — **TRG14**

11) **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FINAL=On — **TRG14**

c. Overrides

1) None

d. Annunciators

1) None

e. Event Triggers

Event #	Event Action	Command
1	hzadgwat(1)>0.083 (DG Load > 500KW)	Left Blank
12	spdsa101<18	Left Blank

f. Equipment Out of Service

1) TMB-P1B, EHC Fluid Pump 1B is out of service for maintenance.

g. Support Documentation

1) Markup N2-OSP-EGS-M@001 up to and including step 8.2.21 for the Division I EDG.

h. Miscellaneous

1) Place TMB-P1B in P-T-L and apply a clearance reference tag

2) Clear APRM #2 trip memory

3) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:

a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).

b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.

c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

C. Shift Turnover Information

1. Reactor Power: Rated
2. Rodline: Above 100%
3. Technical Specification LCOs in effect:
   a. None
4. Significant Problems / Abnormalities / Equipment Out of Service:
   a. TMB-P1B, EHC Fluid Pump 1B is out of service for maintenance.
5. Evolutions / Maintenance Scheduled for this Shift:
   a. Complete N2-OSP-EGS-M@001 for Division I EDG. Next step to be performed is 8.2.22.

SHIFT TURNOVER INFORMATION

ON COMING SHIFT: ☐ N ■ D DATE: Today

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

- Control Panel Walkdown (all panels) (SRO, ROs)

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

- LCO Status (SRO)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor power is at rated
- TMB-P1B, EHC Fluid Pump 1B is out of service for maintenance.
- All LCOs are met

PART III: Remarks/Planned Evolutions:

- Complete N2-OSP-EGS-M@001 for Division I EDG. Next step to be performed is 8.2.22.

Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown. Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	**Crew** Walkdown control room panels Conduct shift turnover brief Assume the shift

Events #1 and #2: Load the Div I EDG for surveillance testing with a governor failure

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Rated Reactor Power • Critical activities or tasks - Evaluate required T.S. • Final (expected) operating result - Operating at rated power with the Division I EDG secured • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
	SRO • Directs BOP to perform N2-OSP-EGS-M@001

Instructor Actions / Plant Response	Operator Actions
	BOP • Acknowledges direction to perform N2-OSP-EGS-M@001 • At 2CEC*PNL852, place SYNCHRONIZE TO BUS 101 switch to ON. • Using EMERGENCY DSL GEN 1 (3) VOLTAGE REGULATOR switch, verifies voltage control by varying INCOMING VOLTS from 3950V- 4350V. • Using EMERGENCY DSL GEN 1 GOVERNOR switch, verifies Governor control by varying SYNCHROSCOPE indication. • Using VOLTAGE REGULATOR switch, matches voltages on 4.16KV BUS 2ENS*SWG101 INCOMING VOLTS meter AND 4KV RTX-XSR1A/2ABS-X1/2EGS*EG1 RUNNING VOLTS meter. • Adjusts GOVERNOR switch to establish slow clockwise rotation on SYNCHROSCOPE • WHEN SYNCHROSCOPE reaches 5 minutes before 12 o clock close BREAKER 101-1 and verifies the EDG picks up load • Places SYNCHRONIZE TO BUS 101 switch to OFF.
Note: When EDG loading gets above 500 KW (hzadgwat(1)>0.083), **verify** the following **malfunction** is **inserted**: **TRG1** **DG02A**, Diesel Generator Number 1 Trip, FINAL=True, DT=5 *EDG1 trips on Lockout* *The following annunciators alarm:* • *852127, EDG 1 PROT LOCKOUT RELAY TRIP* • *852112, BRKR 101-1 AUTO TRIP/FAIL TO CLOSE*	**BOP (cont.)** • Using GOVERNOR switch, raise Generator Load at a rate of about 500 KW per minute • Identifies and reports EDG 1 has tripped on lockout • May Enter ARPs 852127 and 852112

Instructor Actions / Plant Response	Operator Actions
Role Play: As EO acknowledge direction to inspect the EDG and check protective relaying for the cause of the trip. Wait one minute then report the Differential Overcurrent relay is tripped.	• Contacts EO and directs him to visually inspect the EDG and check protective relaying for the cause of the trip • May place EDG 1 control switch in PTL if directed by SRO
Role Play: If contacted as Work Week Manager or Maintenance acknowledge the request and inform them you will start investigating.	**SRO** • Acknowledges report of EDG 1 lockout trip • Declares EDG 1 inoperable • Enters T.S. 3.8.1.B ◦ Declares a 72 hour LCO with the Diesel INOP. ◦ Initiates SR 3.8.1.1.1 – 1 hour breaker alignment • May notify maintenance or the work week manager

Event Termination Criteria	• SRO addresses tech specs for inoperable EDG

Event 3: Loss of recirc flow input to APRM #2

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Reactor Power at rated with no APRM's bypassed • Critical activities or tasks - Bypass APRM #2 • Final (expected) operating result - Operating at rated power with APRM #2 bypassed • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **malfunction**: **TRG2** **RR08B**, RR Flow Unit Failure - Downscale (B), FINAL=True *Recirc. flow input to APRM #2 occurs*	
The following annunciators alarm: • *603202, "APRM Trip System Upscale / Inoperable"* • *603208, "APRM Trip System Upscale"* • *603217, "Flow Reference Off Normal"* • *603218, "OPRM Trip Enabled"* • *603442, "Control Rod Out Block"* • *603212, "OPRM ALARM"* *The following computer points are generated:* *NMPUC08, "APRM 2 STP UPSC Trip (Tripped)"*	**RO** • Silences, acknowledges and reports annunciator 603202, 603208, 603212 & 603217 • Provides crew update for APRM #2 upscale trip

Instructor Actions / Plant Response	Operator Actions
APRM/RBM/OPRM/Flow B alarm status lights on panel 603 indicate "UPSC Tr or Inop" and 'UPSC Alarm" for APRM 2	• Reviews ARP 603202, 603208, 603212 & 603217: ◦ Determines by Red UPSC / INOP light on panel 603 that APRM #2 has alarmed ◦ Determines that a scram did not occur ◦ Checks all other APRM channels to verify a scram should not have occurred ◦ Validates that an instrument malfunction was the cause ◦ Determines that a scram should not have occurred ◦ Determines that a power reduction is not required ◦ Inform Shift Manager to review technical specifications ◦ Checks APRM 2 panel 608 indications
The following are the APRM chassis indications on panel 608: • *Flow bar graph indicates 0%* • *STP bar graph alarm triangle indicates ~52%* • *STP bar graph Trip double triangle indicates ~60%* • *Trip status screen shows STP Upscale trip, STP Upscale alarm and OPRM trip enabled*	
2/4 voter modules all indicate High/Inop Trip and memory red lights for APRM #2 **Role Play:** If requested to provide all other 2/4 voter module indications, report that all 2/4 voter modules show High/Inop Trip and memory red lights for APRM #2 only. **Role Play:** If requested, report that all other APRM's are reading within 2% of each other as indicated at Panel 608.	• Discusses with SRO that ARP 603202, 603208 & 603217 require APRM#2

Instructor Actions / Plant Response	Operator Actions
The following annunciators clear when APRM 2 is bypassed: • *603202, "APRM Trip System Upscale / Inoperable"* • *603208, "APRM Trip System Upscale"* • *603217, "Flow Reference Off Normal"* • *603218, "OPRM Trip Enabled"* • *603442, "Control Rod Out Block"* • *603212, "OPRM ALARM"* **Role Play:** If requested to provide all other 2/4 voter module indications when APRM 2 is bypassed, report that all 2/4 voter modules show a blue bypassed light for APRM #2 **Role Play:** If requested to provide all other 2/4 voter module indications when 2/4 voter module memories are reset, report that all trip and memory red lights are clear	bypassed and seeks concurrence • Acknowledges direction from SRO to bypass APRM #2 • Continues with ARP 603202, 603208 & 603217 actions: ◦ Determines that APRM #2 should be bypassed per N2-OP-92 ◦ Performs N2-OP-92,section H.2.0 actions to bypass APRM #2 - Verifes NO other APRM in bypass - Determines that an APRM is to be bypassed, and performs a Channel Check (APRMs within 2%) to verify NO other APRM is INOPERABLE for the division being bypassed - Places the APRM BYPASS joystick to the bypass position for APRM #2 - Verifies the following: o APRM 2 BYPASS light is lit on 2CEC*PNL603 o BYP is displayed in inverse video in the header for APRM 2 Chassis at H13-P608 o The blue BYPASSED LED is lit for APRM 2 on each 2/4 MDL at H13-P608 ◦ Resets the memory on all 2/4 voter modules per N2-OP-92 section F.4.0: - On 2/4 MDL 1 (2-4) depresses the TRIP MEMORY RESET pushbutton - On 2/4 MDL 1 (2-4) verifies all red and yellow LEDs are extinguished
	SRO • Oversees crew actions.

Instructor Actions / Plant Response	Operator Actions
	• Provides direction/concurrence to bypass APRM 2 • Provides crew transient brief / reverse brief
	SRO • Maintains crew oversight and looks ahead for potential issues/thresholds. • Evaluates PRA (CDF & LERF) • Evaluates risk
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.	**SRO** • Maintains crew oversight and provides coaching when necessary. • Evaluates risk • Reviews: ◦ Tech. Spec. 3.3.1.1 and determines that no action is required since 3 out of 4 APRMs are still operable ◦ TRM 3.3.2 Table T3.3.2-1 still met • Contacts Work Week Manager for investigation / support. (When time permits) • Contacts Plant Management. (When time permits)

Event Termination Criteria	• APRM #2 has been bypassed

Event 4: Control Rod 10-23 Scram

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Rated Reactor Power • Critical activities or tasks - Power reduction by 40 MWe • Final (expected) operating result - Operating with power reduced by 40 MWe • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given the plant at rated power with a scrammed control rod, the crew will reduce reactor power by at least 40 MWe in accordance with N2-SOP-8.

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **malfunction**: **TRG3** **RD09-10-23**, Control Rod Failure - Scrammed, FINAL=True	
The following plant response occurs after event initiation: • *Control rod 10-23 fully inserts into the core* • *Full core display for control rod 10-23 blue scram light illuminated* • *Reactor Power on APRM's indicates ~95%* • *MWe indication on panel 603 lowers* • *MWth indication on panel 603 lowers* *The following annunciators alarm immediately after event initiation:* • *603443, Control Rod Drift* *The following computer points are generated after event*	**SRO** • Silences, acknowledges and reports annunciator 603443 • Reviews ARP 603443 • Provides control room update of control rod 10-23 scrammed.

Instructor Actions / Plant Response	Operator Actions
initiation: • *RDSBC134, Rod Drift Alarm* • *RDSBC09, Control Rod Drift*	
	SRO • Provides crew update for entry into N2-SOP-08 • Directs RO to enter and execute N2-SOP-08
Role Play: If dispatched to investigate HCU accumulator pressure, wait 2 minutes then report accumulator pressure is reading 1040 psig. **Role Play:** If asked for more local indications at the HCU, report that the scram inlet/outlet valves appear to be open.	**RO** (N2-SOP-08) • Acknowledges direction from SRO to enter and execute N2-SOP-08 • Performs N2-SOP-08 actions: ◦ Determines that the power change is not due to a drifting control rod ◦ Determines power change not due to RCS-FCV motion ◦ Monitors offgas and MSL Rad monitors for evidence of fuel failure • Continues with N2-SOP-08 actions using Attachment 4: ◦ ***Determines reactor power was >50% and power was not previously lowered and reduces recirc. flow to reduce power by 40 MWe in accordance with N2-SOP-101D*** ◦ Verifies which control rod scrammed ◦ Informs SRO that maintenance needs to be contacted to troubleshoot
	SRO • Performs reactivity oversight during reactor power reduction • Maintains crew oversight of actions conducted • When time permits, conducts a crew transient brief / reverse brief

Instructor Actions / Plant Response	Operator Actions
	• Establishes reactor power band
Role Play: If contacted to verify thermal limits, wait 2 minutes then report that all thermal limits are satisfactory. And if asked, report that control rod 10-23 is still considered a drifting rod pending further evaluation.	**SRO** • Calls reactor engineering for thermal limit evaluation • Plots position on power to flow map
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable. Note: Crew may evaluate isolating/disarming control rod HCU 10-23 per N2-OP-30. If this is requested, inform the crew that you will make preparations to isolate/disarm control rod 10-23.	**SRO** • Maintains crew oversight and provides coaching when necessary. • Evaluates E-plan to assess potential classification. • Evaluate T.S. 3.1.3, condition 'C', however the control rod is performing its intended function • Contacts Work Week Manager for investigation / support. (When time permits) • Contacts Plant Management. (When time permits) • Contacts Power Control. (When time permits)

Event Termination Criteria	• Power reduced by 40 MWe • Actions of N2-SOP-8 Attachment 4 complete

Event 5: CCP Temperature Control Valve Fails causing a reduction in cooling

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power • Critical activities or tasks - Place CCP temperature control valve in manual • Final (expected) operating result - Operating with CCP temperature control valve in manual • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
When directed by lead evaluator, **insert** the following **remote function**: **TRG4** **CW44**, 2CCP-TIK108 Temperature Setpoint (35-130 DEGF), FINAL=100 *CCP TCV positions so that full CCP flow is bypassing the CCP HXs.* *Temperatures on components cooled by CCP begin to rise* *The following annunciator alarms:* • *601246, REACTOR BLDG CLOSED LOOP COOLING SYS TROUBLE*	
	CREW • Recognizes and reports Annunciator

Instructor Actions / Plant Response	Operator Actions
	601246
	SRO • Acknowledges report of Annunciator 601346 • Directs RO to enter N2-SOP-13
Note: Crew may refer to N2-SOP-29.1 due to reduction in cooling to the reactor recirculation pump motors.	**BOP (N2-SOP-13)** • Acknowledges direction to enter N2-SOP-13 • Determines the CCP TCV has failed to minimum cooling
Temperatures on components cooled by CCP begin to lower *Annunciator 601246 clears* **Role Play:** As an EO dispatched to monitor and report CCP HX outlet temperature, wait one minute and provide the indication found on Booth Screen CW01 (Local Temperature indication from 2CCP-TI117).	**BOP (cont.)** • Places CCP TCV in MANUAL and adjusts the TCV to maintain 80 to 85°F • May dispatch a EO to provide local temperature indication at the HX's. • May use PI to monitor CCP HX Outlet Temperature • Informs the SRO that the CCP TCV is in MANUAL and that CCP temperature is being restored to the normal band
Role Play: As the SRO, acknowledge the report of the failed CCP TCV and inform the SRO that you will contact maintenance and the work week manager.	**SRO** • Acknowledges report of CCP TCV in MANUAL • Contacts SRO and informs him of the failed CCP TCV

Event Termination Criteria	• CCP TCV in MANUAL and CCP supply temperature controlled between 80 and 85°F

Event 6: 2FWS-P1B Pump Overheat

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant on-line with 2FWS-P1A & B in service • Critical activities or tasks - Power Reduction - Respond to FWP trip/Recirc FCV Runback - Exit the 'Exit Region' of the power to flow map • Final (expected) operating result - First four cram rods inserted - Operating with one FWS pump in service • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given the plant operating in the "Exit Region" of the power to flow map due to a RCS-FCV runback, the crew will insert the first four CRAM rods in accordance with N2-SOP-29.

Instructor Actions / Plant Response	Operator Actions
Booth Operator: When directed by the lead evaluator, **insert** the following **malfunctions**: **TRG5** **FW36B**, Feed Pump Motor Overheating (P1B), FINAL=True **FW03B,** Feedwater Pump Trip (P1B), DELAY=1:00, FINAL=True *Feedpump 'B' amps read upscale on AM-2FWSB51 on panel 851*	
	RO • Silences, acknowledges and reports annunciator 851529.

Instructor Actions / Plant Response	Operator Actions
	• Provides crew update for feedpump 'B' motor amps upscale
	SRO • Acknowledges report from RO • Provides crew update for the entry into N2-SOP-6 • Directs RO to enter and execute N2-SOP-6
The following annunciators alarm: • *851529, Reactor Feed Pump 1A/1B/1C Mot Overload* *The following computer point is generated:* • *FWSTC02, Rx Feed Pump P1B Motor (Overload)* *~ One minute and 30 seconds after event initiation the following annunciator alarms:* • *851559, Reac Feed Pmp 1A/1B/1C BRG / WDG Temp High* *During the power reduction, the following annunciator and computer points alarm:* *Annunciator:* • *603218, OPRM Trip Enabled* *Computer Points:* • *NMPBC37, APRM 1 OPRM Trip Enabled (Alarm)* • *NMPBC36, APRM 4 OPRM Trip Enabled (Alarm)* • *NMPBC22, APRM 2 OPRM Trip Enabled (Alarm)* • *NMPBC19, APRM 3 OPRM Trip Enabled (Alarm)*	**RO** (N2-SOP-6) • Performs the actions of N2-SOP-6: ◦ Determines that an emergency feedpump shutdown is required ◦ Determines that reactor power is required to be reduced to 68% using N2-SOP-101D • Provides crew update that N2-SOP-6 requires power to be lowered to 68% per N2-SOP-101D • Using Recirculation flow and CRAM rods, reduces reactor power to 68% • Continues with N2-SOP-6 actions • Verifies 2FWS-P1B auto trip response / shuts down 2FWS-P1B • Recognizes/reports RCS-FCV runback
	SRO • Acknowledges RO report that 2FWS-P1B has tripped on low suction pressure • Acknowledges RO report of RCS-FCV runback • Provides crew update for the entry into N2-SOP-29 • Directs RO to enter and execute the actions of N2-SOP-29

Instructor Actions / Plant Response	Operator Actions
When the FWS-P1B trips, the following annunciators and computer points alarm: *Annunciators:* • *851509, Reactor Feed Pump 1A/1B/1C Auto Trip* • *851519, React Feed Pump 1A/1B/1C Motor Elec Fault* • *603139, Reactor Water Level High/Low* • *603218, OPRM Trip Enabled* • *603442, Control Rod Out Block* • *602210, FCV A Part Closure RFP Trip* • *602222, FCV B Part Closure RFP Trip* *Computer Points:* • *FWSUC06, Rx Feed Pmp P1B Mot Elec (Fault)* • *CNMFA06, Rx FW Pmp 2FWS-P1B Flow (Low)* • *CNMPA08, CNST BSTR Pmp Dis Hdr Pr (High)*	**RO** • Plots position on the 2 loop power to flow map and identifies reactor operation in the "Exit Region"
Role Play: If requested, as field operator, to place the control switch for Aux Lube Oil Pump 'B' to start, wait 2 minutes then **insert** the following **remote function**: **TRG6** **FW03B,** FW Aux Lube Oil Pump B, FINAL=Start Then inform control room that FWL-P2B control switch has been placed in start. After the FWS pump trip and subsequent RCS FCV runback, reactor operation may be in the "Exit Region"	**RO** • Directs field operator to place 2FWL-P2B in start
	SRO • Provides independent review of position on the power to flow map and concurs with RO that the reactor is operating in the 'Exit Region' of the 2 loop power to flow map

Instructor Actions / Plant Response	Operator Actions
When FWS-P1B trips, reactor power will be above 72%, which causes a RCS-FCV runback	**SRO** • Oversees crew actions. • Provides reactivity oversight during power reduction
Note: It is permissible per N2-SOP-29 to use recirc. Flow or control rod insertion to exit the 'exit region'	**RO** (N2-SOP-29) • Recognizes / provides crew update and reports the recirculation flow control valve runback • Acknowledges SRO direction to enter and execute N2-SOP-29 • Performs N2-SOP-29 actions for the RCS-FCV runback ◦ Determines at least 1 recirc pump in service ◦ Determines that core flow is not to the left of the natural circ line or the flow biased thermal power scram line ◦ Determines that core flow and power are not within the OPRM dependent stability region • Makes crew update for the need to insert the first four CRAM rods ◦ ***Inserts the first four CRAM rods per N2-SOP-101D*** if not already performed • Informs SRO that reactor operation remains in the "Exit Region"
Role Play: If contacted as reactor engineering to verify thermal limits, wait 5 minutes then report that thermal limits are satisfactory.	**SRO** • Provides crew oversight and reactivity oversight during CRAM rod insertion • Acknowledges RO report that reactor operation remains in the "Exit Region" • Provides direction on recirc. flow value target or control rod insertion to exit the 'exit region'
	RO

Instructor Actions / Plant Response	Operator Actions
Reactor operation exits the "Exit Region" and enters the "Heightened Awareness region" of the Power to Flow Map	• Inserts CRAM rods as directed by the SRO or adjusts recirc flow as directed to exit the "Exit Region" of the power to flow map. • Informs the SRO that reactor operation is now in the "Heightened Awareness Region" of the power to flow map
	SRO • Acknowledges RO report that reactor operation is now in the "Heightened Awareness Region" of the power to flow map
	RO • Recovers from reduction in core flow using N2-SOP-29, Attachment 1 section 1, 2, 3 and 4: ◦ Zeroes the limiter error using the Recirc loop A(B) flow control increase/decrease positioner ◦ Confirms % servo error is nulled and recirc loop A(B) flow control output is at approximately 35% ◦ Verifies % M/A error meter is nulled, using the recirc flux control M/A station ◦ Resets the runback by pushing the FW/CBP PMP TRIP INTK A(B) RESET button at 2CEC*PNL602. ◦ Raises recirc. flow or inserts control rods, as directed, to exit the 'exit region'
	SRO • Posts/verifies posted the "Heightened Awareness Region" sign

Instructor Actions / Plant Response	Operator Actions
	• Provides power to flow map plotting to verify operating region. • Maintains crew oversight and looks ahead for potential issues/thresholds. • Contacts Work Week Manager for investigation / support. (When time permits) • Contacts Plant Management. (When time permits) • Contacts Power Control. (When time permits)

Event Termination Criteria	• First four Cram Rods inserted

Event #7, #8, & #9: Two Additional Control Rods Scram, ATWS, Loss of EHC Pumps, RRCS Timer Failure

	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power - Verify the following **malfunctions** and **overrides** are **inserted** before a manual scram is initiated: • **RP08A**, RRCS 98 second timer failure (Div 1), FV=True • **RP08B**, RRCS 98 second timer failure (Div 2), FV=True • Critical activities or tasks - Inhibit ADS - Terminate and prevent injection to maintain level below feedwater spargers - Insert Control Rods • Final (expected) operating result - Shutdown • Mitigation Strategy code (if applicable) - DMS-AT1
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given a failure of the reactor to SCRAM, power above 4%, and RPV water level above 100 inches, the crew will terminate and prevent all injection except SLS, CRD and RCIC in accordance with N2-EOP-C5. 2. Given a failure of the reactor to SCRAM, the crew will insert control rods in accordance with N2-EOP-6.14.

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator **insert** the following **malfunctions**: **TRG7** **RD09-14-35**, Control Rod Failure - Scrammed, FINAL=True **RD09-18-15**, Control Rod Failure - Scrammed, FINAL=True **RD17Z**, RD17 For All Banks,	**RO** • Recognizes/reports that 2 additional control rods have scrammed • Re-enters N2-SOP-08 ◦ Recognizes IF/THEN statement requires a reactor scram when more than one control rod has scrammed OR drifted ◦ Determines that a reactor scram is

Instructor Actions / Plant Response	Operator Actions
FINAL=40, DT=3	required per N2-SOP-101C
	SRO • Acknowledges RO report that a reactor scram is required per N2-SOP-101C • Directs RO to place the mode switch in shutdown
Control rods fail to insert	**RO** • Acknowledges SRO direction to place the mode switch in shutdown • Places the Mode Switch to SHUTDOWN • Provides scram report, by reporting: ◦ Reactor mode switch in shutdown ◦ APRMs not downscale ◦ Reactor power ~50% ◦ Reactor pressure and trend ◦ Reactor level and trend ◦ MSIVs open ◦ All control rods are not fully inserted • Reports EOP entry condition on low RPV water level • Performs N2-SOP-101C Immediate Actions
	SRO • Acknowledges and repeats back scram report • Acknowledges report of EOP entry condition on low RPV water level • Provides crew update and enters EOP-RPV on low RPV water level and on reactor power above 4% with a scram required • Provides crew update for exit from N2-EOP-RPV and entry into N2-EOP-C5 • Performs EOP-C5 actions: ◦ Directs ADS Inhibited ◦ Directs HPCS injection terminated ◦ Directs the main turbine trip from RCIC

Instructor Actions / Plant Response	Operator Actions
	defeated in accordance with N2-EOP-6.2 ◦ Performs power leg actions - Verifies the mode switch in shutdown - Directs RRCS initiated per N2-EOP-6.13 - Verifies that the recirc. pumps have tripped on RPV level 2 - Determines that reactor power is above 4% - Determines that the recirc. Pumps have tripped - Directs control rods inserted per N2-EOP-6.14 ◦ Performs pressure control leg actions: - Determines that no SRVs are cycling - Directs pressure band of 800-1000 psig using EHC in automatic - Directs pneumatics restored to the drywell ◦ Performs level control leg actions: - Verifies needed auto isolations, ECCS starts and diesel generator response occurred per EOP-6.1 - Directs the MSIV low RPV water level isolation bypassed per N2-EOP-6.10
	RO • Places HPCS in P-T-L • Inhibits ADS in accordance with N2-EOP-HC attachment 5 section 3.0: ◦ Places the Div I ADS Automatic Initiation Disable switch to On and verifies the associated white light is lit ◦ Places the Div II ADS Automatic Initiation Disable switch to On and verifies the associated white light is lit ◦ Verifies 601521 Division I ADS

Instructor Actions / Plant Response	Operator Actions
	Automatic Initiation Disabled is lit ◦ Verifies 601522 Division II ADS Automatic Initiation Disabled is lit • Reports to the SRO that ADS is inhibited and that HPCS is in P-T-L
	SRO • Acknowledges report that ADS is inhibited and that HPCS is in P-T-L
When RRCS is initiated, the following **malfunctions** become **apparent**: • **RP08A**, RRCS 98 Second Timer Failure (Div I), FV=True • **RP08B**, RRCS 98 Second Timer Failure (Div II), FV=True *SLS fails to inject after 98 seconds* **EAL Criteria Met** *Indications available for SAE, EAL SS3.1:*	**RO** (N2-EOP-6.13) • Acknowledges the order to initiate RRCS per N2-EOP-6.13 • Performs N2-EOP-6.13 actions: ◦ Arms AND depresses the following pushbuttons (2CEC*PNL603): - Division I Channel A Manual Initiation - Division I Channel B Manual Initiation - Division II Channel A Manual Initiation - Division II Channel B Manual Initiation ◦ Ensures the following (2CEC*PNL603): - Division I ARI INIT amber light on - Division II ARI INIT amber light on - Annunciator 603422, DIV I/II RRCS POTENTIAL ATWS, alarms - Annunciator 603306, CRD SCRAM VALVE PILOT AIR HEADER PRESS HIGH/LOW, alarms ◦ AFTER a 98 second time delay, IF APRMs are NOT downscale OR are inoperable, verify the following: - Reactor Water Cleanup System (WCS) has isolated (2CEC*PNL602) - Standby Liquid Control System (SLS) has initiated (2CEC*PNL601)

Instructor Actions / Plant Response	Operator Actions
1 2 An automatic scram failed to shut down the reactor as indicated by reactor power > 4% **AND** Manual actions taken at the reactor control console (mode switch in shutdown, manual scram push buttons and ARI) failed to shut down the reactor as indicated by reactor power > 4%	• After 98 seconds, recognizes and reports that SLS should have initiated and did not • Reports to the SRO that RRCS has been initiated and that no control rod motion has occurred
	SRO • Directs RO to manually initiate standby liquid control
*2SLS*P1A & B start* *WCS isolates*	**RO** • Acknowledges SRO direction to manually initiate standby liquid control • Manually starts both SLS pumps using keylock control switches • Observes that 2SLS*P1A & B have started and are injecting • Verifies that WCS isolates • Reports to the SRO that 2SLS*P1A & B are injecting and that WCS has isolated
	SRO • Acknowledges report that 2SLS*P1A & B are injecting and that WCS has isolated
Role Play: If requested to defeat the Main turbine trip from RCIC, wait 2 minutes then **insert** the following **remote:** **TRG8** **RC10**, Defeat RCIC/MT Trip Intlk (EOP-6 ATT 2), FV=Defeated Then report to the control room that the Main turbine trip from RCIC has been defeated per N2-EOP-6.2.	**RO** (N2-EOP-6.2) • Performs N2-EOP-6.2 actions: ◦ Determines that section 6.1 applies - Removes relay E51A-K102 in 2CEC*PNL613 - Delivers relay to the SRO • Reports to the SRO that the main turbine trip from RCIC has been defeated

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges RO report that the main turbine trip from RCIC has been defeated
Note: SA-NM-129, Electrical Safety Attachment 4, "Nine Mile Point Task Matrices/PPE Requirements" states: Remove/Install 120VAC & 125VDC EOP Jumpers in U-2 Control Room Panels, including Simulator at NLC requires: • No Minimum Arc Rating Required for FR Clothing • 100% Cotton Long Sleeve Shirt and Pants, OR 100% cotton short sleeve shirt and pants under FR Lab Coat • Safety Glasses • V-Rated Gloves (If voltage-rated gloves are required, the leather protectors worn external to the rubber gloves satisfy the leather glove requirement). When requested to defeat the level 1 isolation of the MSIVs **insert** the following **remotes**: **TRG9** **MS06A**, Defeat Level One Isolation of MSIVs (Jumper K148A), FV=Defeated **MS06B**, Defeat Level One Isolation of MSIVs (Jumper K148B), FV=Defeated **MS06C**, Defeat Level One Isolation of MSIVs (Jumper K148C), FV=Defeated **MS06D**, Defeat Level One Isolation of MSIVs (Jumper K148D), FV=Defeated	**RO** • Acknowledges the order to bypass the level 1 Isolation of the MSIVs in accordance with N2-EOP-6.10 • Dons appropriate electrical PPE • Performs N2-EOP-6.10 section 6.1 actions: - Installs EOP Jumper #20 from relay B22H-K148A terminal T1 to jumper block EOP B terminal 1 in 2CEC*PNL609, Bay B - Installs EOP Jumper #18 from relay B22H-K148C terminal T1 to jumper block EOP C terminal 1 in 2CEC*PNL609, Bay C - Installs EOP Jumper #13 from relay B22H-K148B terminal T1 to jumper block EOP B terminal 1 in 2CEC*PNL611, Bay B - Installs EOP Jumper #12 from relay B22H-K148D terminal T1 to jumper block EOP C terminal 1 in 2CEC*PNL611, Bay C - Verifies IAS*SOV166, LOCA OVERRIDE VLV switch in OVERRIDE - Verify IAS*SOV184, LOCA OVERRIDE VLV switch in OVERRIDE - Verifies 2IAS*SOV166 and 184 open • Reports to the SRO that the level 1 isolation of the MSIVs has been defeated

Instructor Actions / Plant Response	Operator Actions
RPS auto trips defeated **Role Play:** If requested to defeat the Offgas high Radiation trips, **manually insert** the following **remote function**: • **OG03**, Off Gas High Radiation Isolation Defeated, FV=Defeated	• IF directed, defeats OFG system high radiation isolation AND restore OFG system per N2-OP-42, Attachment 6: ◦ Lifts AND tapes lead marked 3001 from terminal point #16 on terminal strip TB-6K at 2OFG-IPNL122.
	SRO • Acknowledges report that the level 1 isolation of the MSIVs has been defeated
	RO • Acknowledges pressure control band of 800-1000 psig using EHC in automatic • Restores pneumatics to the drywell using N2-EOP-HC attachment 5 panel 601 section 1.0: ◦ Verifies IAS*SOV166 and 184 opened (Performed during N2-EOP-6.10 actions earlier) ◦ Places LOCA Override valve IAS*SOV164 to override ◦ Opens IAS*SOV164 ◦ Places LOCA Override valve IAS*SOV165 to override ◦ Opens IAS*SOV165
Note: If the RO calls an extra RO or EO to perform the RPS/ARI actions then wait 5 minutes before performing the ARI/RPS actions. Note:	**RO** • Acknowledges direction to insert control rods per EOP-6.14 • Performs N2-EOP-6.14: ◦ Starts with alternate control rod insertion flowchart ◦ Determines scram solenoid power lights are off

Instructor Actions / Plant Response	Operator Actions
SA-NM-129, Electrical Safety Attachment 4, "Nine Mile Point Task Matrices/PPE Requirements" states: Remove/Install 120VAC & 125VDC Fuses AND EOP fuses in U-2 Control Room and Relay Room Panels, including Simulator at NLC (voltage rated gloves required due to congestion of panels) requires: • No Minimum Arc Rating Required for FR Clothing • 100% Cotton Long Sleeve Shirt and Pants, OR 100% cotton short sleeve shirt and pants under FR Lab Coat • Safety Glasses • V-Rated Gloves (If voltage-rated gloves are required, the leather protectors worn external to the rubber gloves satisfy the leather glove requirement) • V-Rated / Insulated Tools. When requested to defeat ARI **insert** the following **malfunction**: **TRG10** **RP14A**, RRCS ARI Failure/Defeated, FV=True **RP14B**, RRCS ARI Failure/Defeated, FV=True *ARI function is defeated* When requested to defeat RPS **insert** the following **malfunction**: **TRG11** **RP02**, Reactor Protection System Failure To Scram-Automatic, FV=True	◦ Determines that the scram valves are open ◦ Dons appropriate electrical PPE ◦ Resets ARI per section 6.3.1 - DE-energizes ARI solenoids by: - Pulls the 20 amp fuses to fail Division I ARI valves closed - Pulls the 20 amp fuses to fail Division II ARI valves closed - Marks the pulled fuses with their Equipment Piece Numbers AND this Attachment number AND gives the fuses to the SRO ◦ Defeats RPS interlocks as follows per section 6.3.3: - Places switch C72A-S10A, RPS A1 SCRAM LOGIC BYPASS, in BYPASS AND confirm amber RPS A1 SCRAM LOGIC BYPASS C72A-DS24A light lit (2CEC*PNL609) OR Installs EOP Jumper #21 from fuse C72A-F14A to terminal B on relay C72A-K12E in 2CEC*PNL609, Bay A - Places switch C72A-S10C, RPS A2 SCRAM LOGIC BYPASS, in BYPASS AND confirm amber RPS A2 SCRAM LOGIC BYPASS C72A-DS24C light lit (2CEC*PNL609) OR Installs EOP Jumper #16 from fuse C72A-F14C to terminal B on relay C72A-K12G in 2CEC*PNL609, Bay D - Place switch C72A-S10B, RPS B1 SCRAM LOGIC BYPASS, in BYPASS AND confirm amber RPS B1 SCRAM LOGIC BYPASS C72A-DS24B light lit (2CEC*PNL611) OR

Instructor Actions / Plant Response	Operator Actions
RPS auto trips defeated	Install EOP Jumper #14 from fuse C72A-F14B to terminal B on relay C72A-K12F in 2CEC*PNL611, Bay A - Place switch C72A-S10D, RPS B2 SCRAM LOGIC BYPASS, in BYPASS AND confirm amber RPS B2 SCRAM LOGIC BYPASS C72A-DS24D light lit (2CEC*PNL611) OR Install EOP Jumper #10 from fuse C72A-F14D to terminal B on relay C72A-K12H in 2CEC*PNL611, Bay D ◦ Resets RPS by momentarily placing REACTOR SCRAM RESET LOGIC A, B, C, D switches to reset on panel 603 ◦ Ensures the eight white PILOT SCRAM VALVE SOLENOIDS lights are lit on panel 603 ◦ Ensures SCRAM DISH VOLUME VENT VLVS RDS*AOV124/132 indicate open on panel 603 ◦ Ensures SCRAM DISH VOLUME DRAIN VLVS RDS*AOV123/130 indicate open on panel 603 ◦ Waits for scram discharge volume (SDV) to drain ◦ Manually drives control rods per section 6.5 while the SDV drains: - ***Verifies CRD-P1A & B are running*** - ***Places controller 2RDS-FC107, CRD FLOW CONTROL, in MANUAL*** - ***Depresses the OPEN pushbutton on 2RDS-FC107 UNTIL the controller output meter shows 100% OR RDS pump motor current approaches 40 amps*** - ***Checks that RDS System flow rises on C12-R606, CRD SYSTEM***

Instructor Actions / Plant Response	Operator Actions
	FLOW - ***Closes 2RDS-PV101, DRIVE WTR PRESS CONTROL MOV, to maximize Drive Water ΔP*** - ***Ensures RDS Drive Water ΔP rises on C12-R602, DRIVE WTR DIFF PRESSURE*** - ***Bypasses the RWM by taking the RWM Operator Console BYPASS/OPERATE/TEST switch to the BYPASS position on panel 603*** - ***Starts with a control rod at OR near the center, and selects a control rod to be driven in on the Rod Select Matrix*** - ***Using Figure 2, ROD INSERTION (First Sequence), as a guide, works outward in a spiral pattern and rapidly inserts control rods by depressing AND holding the Reactor Manual Control System (RMCS) CONTINUOUS INSERT pushbutton UNTIL control rod motion stops*** • Informs SRO when control rod motion is achieved
	SRO • Continues with N2-EOP-C5 level leg actions ◦ Determines that Reactor power is greater than 4% and water level is above 100" ◦ Continues with reactor power oscillation concern actions of N2-EOP-C5 ◦ Determines that level was not previously lowered

Instructor Actions / Plant Response	Operator Actions
	• Recognizes reactor power above 4% and reactor water level above 100 inches • Directs Panel 603 Terminated and Prevented with exception of CRD • Directs RPV level band between 50-80 inches • Directs panel 601 Terminated and Prevented with exception of boron injection and RCIC
	RO (N2-EOP-HC, Attachment 6) • Acknowledges direction to terminate and prevent injection at panel 603 • Verifies feedwater injection terminated and prevented at panel 603 using T & P hard card (N2-EOP-HC, Attachment 6): ◦ ***Verifies FWS-LV10A, B, C level controllers in manual and closed*** ◦ Verifies no feedwater flow indicated on panel 603 • Reports to the SRO that feedwater injection has been verified terminated and prevented at panel 603
	SRO • Acknowledges report that feedwater injection has been verified terminated and prevented at panel 603
	RO (N2-EOP-HC, Attachment 5) • Acknowledges direction to terminate and prevent low pressure ECCS injection on panel 601 • Terminates and prevents low pressure ECCS injection using the Terminate & Prevent hard card (N2-EOP-HC, Attachment 5): ◦ ***Verifies an initiation signal is present on both divisions***

Instructor Actions / Plant Response	Operator Actions
	◦ ***Places CSL*P1 in P-T-L*** ◦ ***Overrides closed CSL*MOV104 injection valve*** ◦ ***Overrides closed RHS*MOV24A injection valve*** ◦ ***Places RHS*P1C in P-T-L*** ◦ ***Overrides closed RHS*MOV24C injection valve*** ◦ ***Overrides closed RHS*MOV24B injection valve*** • Reports to the SRO that panel 601 has been terminated and prevented
	SRO • Acknowledges report from RO that panel 601 has been terminated and prevented
RPV level lowers to 108.8 inches and a RCIC auto initiation signal is generated	**RO** • Recognizes that RCIC auto start on RPV level 2 • Informs SRO that RCIC auto started on RPV level 2
	SRO • Acknowledges RO report that RCIC auto started on RPV level 2
	RO • Once RPV water level drops below 100 inches, re-injects with feedwater to maintain RPV level band of 50 - 80 inches • Reports to the SRO that RPV level is in ordered band of 50 -80 inches
	SRO • Acknowledges report that RPV level is in ordered band of 50-80 inches
	SRO

Instructor Actions / Plant Response	Operator Actions
	• Verifies Terminate and Prevent performed correctly at P-603 and P-601.
When reactor power lowers below 18% as read on SPDS (spdsa101<18) the following **malfunction** becomes **active**: **TRG12 TC15A**, EHC PMP A Trip, FV=True • *When reactor water level is lowered to 50-80 inches reactor power will lower to <18%* • *The running EHS pump will trip and the standby pump will fail to start* • *Turbine Stop, Control, and Bypass valves will close* • *SRVs will cycle based upon the pressure transient*	**Crew** • Recognizes and reports loss of EHC and closure of turbine stop, control, and bypass valves. • Recognizes and reports SRVs cycling • Recognizes and reports Suppression Pool temperature rising
	SRO • Acknowledges report of loss of EHC and SRVs cycling • Directs RPV pressure control Transitioned to the SRVs with a band of 800-1000 psig • If not already done, directs SLS injection before suppression pool temperature exceeds 110°F
	RO • Acknowledges direction to transfer pressure control to the SRVs • Controls RPV pressure using the SRVs in ordered band of 800-1000 psig
Note: Based on the timeliness of crew actions (Getting SLS Injecting) suppression pool temperature may not exceed 90°F. The sim guide is written as if SPT exceeds 90°F *Suppression pool temperature begins to rise and exceeds 90°F*	**SRO** (N2-EOP-PC) • Recognizes that suppression pool temperature at or above 90°F is entry condition for N2-EOP-PC • Provides crew update for entry into N2-EOP-PC on high suppression pool temperature

Instructor Actions / Plant Response	Operator Actions
	• Performs N2-EOP-PC actions: ◦ Evaluates all legs of N2-EOP-PC and determines that the only applicable leg is the suppression pool temperature leg ◦ Determines the need to maintain suppression pool temperature below 90°F using suppression pool cooling ◦ Determines cannot maintain suppression pool temperature below 90°F ◦ Directs the start of all available suppression pool cooling by directing RHR 'A' & 'B' be placed in suppression pool cooling ◦ Directs a 5th SWP pump started
	SRO • May direct Group 5 isolations defeated per N2-EOP-6.30
If directed to lift and tape leads and install jumper #9 to defeat the group 5 isolation interlocks, **manually insert** the following **malfunction**: • **RH08**, Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=TRUE Wait 2 minutes, then report that the lead has been lifted and taped and jumper #9 has been Installed	**RO** • If directed, defeats the Group 5 isolation interlocks in accordance with N2-EOP-6.30
Role Play: If requested to place SWP radiation monitor RE23A in service, wait 2 minutes and **insert** the following **remote**: **TRG13** **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FV=On	**RO** • Acknowledges direction to place RHR 'A' and RHR 'B' in suppression pool cooling • Attains a copy of N2-OP-31, section F.4.0 • Performs N2-OP-31, section F.4.0 actions: ◦ Notifies Shift Manager to declare RHS A & B LPCI mode inoperable ◦ Directs radiation protection department

Instructor Actions / Plant Response	Operator Actions
RM03-040, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FV=On Then report 2SWP*RE23A is in service. **Role Play:** If requested to place SWP radiation monitor RE23B in service, wait 2 minutes **insert** the following **remote**: **TRG14** **RM02-041**, SWP23B Current Radiation Level Online, FV=On **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FV=On Then report 2SWP*RE23B is in service	to start SWP radiation monitors 2SWP*RE23A & B ◦ Opens 2SWP*MOV90A & B ◦ Makes plant announcement for the start of 2SWP*P1E(F) ◦ Starts 2SWP*P1E(F) ◦ Throttles open 2SWP*MOV33A & B to establish 7450 gpm service water flow to RHR 'A' & 'B' ◦ Verifies 2RHS*MOV24A & B closed ◦ Makes plant announcement for the start of 2RHS*P1A & P1B ◦ Starts 2RHS*P1A & P1B ◦ Verifies 2RHS*MOV4A & B open ◦ Throttles open 2RHS*FV38A & B to establish 7450 gpm RHR 'A' & 'B' total flow ◦ Verifies 2RHS*MOV4A & B close • Informs SRO that both RHR 'A' & 'B' are in suppression pool cooling • Monitors Suppression Pool temperature trend and updates SRO

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges report that both RHR 'A' & 'B' are in suppression pool cooling • Verifies margin to HCTL • Notifies station management. • Declares RHS A(B) LPCI mode inoperable

Event Termination Criteria	• Control Rods are being inserted • RHS is operating in Suppression Pool Cooling

Exelon Generation

Copy_____ of _____

Training Id: **NMP2 NRC 2017 Scenario 4** Revision: **0.0**

Title: **RL2, Small break LOCA or loss of high pressure injection, RPV level can not be maintained above the top of active fuel, RPV blowdown, recover level above TAF with low pressure systems and/or alternate coolant injection systems.**

	Signature / Printed Name	Date
Developed By	Mike Alexander	7/26/17
Validated By	Dan Cifonelli	8/30/17
	Bob Spooner	8/30/17
	Ken Cherchio	8/30/17
Facility Reviewer	John Toothaker	9/21/17

References

1. N2-OSP-ISC-M@002, Drywell Vacuum Breaker Operability Test
2. N2-ARP-601500, 2CEC*PNL601 Series 500 Alarm Response Procedures
3. N2-ARP-603100, 2CEC*PNL603 Series 100 Alarm Response Procedures
4. N2-SOP-08, Unplanned Power Changes
5. N2-SOP-101D, Rapid Power Reduction
6. N2-SOP-06, Feedwater Failures
7. N2-OP-3, Condensate and Feedwater System
8. N2-ARP-601300, 2CEC*PNL601 Series 300 Alarm Response Procedures
9. N2-OP-35, Reactor Core Isolation Cooling
10. N2-ARP-603300, 2CEC*PNL603 Series 300 Alarm Response Procedures
11. N2-SOP-30, Control Rod Drive Failures
12. N2-OP-30, Control Rod Drive
13. N2-SOP-34, Stuck Open Safety Relief Valve
14. N2-EOP-PC, Primary Containment Control
15. N2-OP-31, Residual Heat Removal System
16. N2-ARP-851200, 2CEC*PNL851 Series 200 Alarm Response Procedures
17. N2-EOP-RPV, RPV Control - Flowchart
18. N2-OP-36A, Standby Liquid Control System
19. N2-EOP-HC, NMP2 EOP Hard Cards Procedure
20. N2-EOP-C2, RPV Blowdown
21. EP-CE-111, Emergency Classification and Protective Action Recommendations
22. EP-CE-113, Personnel Protective Actions

23. EP-CE-114-100, Emergency Notifications
24. EPIP-EPP-02-EAL, EMERGENCY ACTION LEVEL MATRIX UNIT 2
25. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
26. OP-AA-112-101, Shift Turnover and Relief

Instructor Information

A. Scenario Description

1. Sequence of Events / Expected Crew Response

   a. The scenario begins at rated reactor power above the 100% rodline with the HPCS Pump out of service for pump seal replacement.

   b. Event 1 is the normal evolution performed by the BOP to perform N2-OSP-ISC-M@002 section 8.2 for 2ISC*RV33A only.

   c. Event 2 occurs when 'C' Main Steam Line flow fails downscale. The crew will shift FWLC to single element control and return FWLC to automatic.

   d. Event 3 occurs when an individual on an R.P. decontamination crew, performing decon in the RCIC room, inadvertently trips the RCIC trip throttle valve. The crew will perform appropriate ARP actions. The crew will determine that the cause for the RCIC trip was inadvertent and that no physical damage has occurred to the RCIC system. The crew will reset the RCIC turbine trip throttle valve in accordance with N2-OP-35. Once RCIC has been reset the crew will perform standby checks in order to declare RCIC operable.

   e. Event 4 occurs when CRD-P1A trips on motor electrical fault. The crew will enter and

perform the actions of N2-SOP-30. The crew will shift 2RDS-FC107 to manual, close 2RDS-FC107 to minimum position and then start the standby CRD pump (CRD-P1B). Once CRD-P1B is running the crew will adjust 2RDS-FC107 to 63 gpm and place it back in auto.

f. Event 5 occurs when 2MSS*PSV127, an ADS valve, inadvertently opens due to a failure of the 'A' solenoid. The crew will enter N2-SOP-34 and attempt to close the SRV by placing its control switch in CLOSED. The SRV will remain open forcing the crew to reduce reactor power to approximately 85% (CRITICAL TASK). The crew will then continue the actions of N2-SOP-34 to close the open SRV. When the crew pulls the 'C' solenoid fuses the ADS SRV will remain open. The crew will be forced to pull the 'A' solenoid fuses to get the ADS SRV closed (CRITICAL TASK). During the transient heat will be added to the suppression pool requiring entry into N2-EOP-PC. Both loops of RHR will be placed in suppression pool cooling due to temperature exceeding 90°F. The event concludes when the crew closes the open SRV and has placed both RHR loops in suppression pool cooling.

g. Events 6, 7 & 8 start when a small LOCA occurs coincident with a loss of the condensate and feedwater system. HPCS is out of service

for maintenance at the start of the scenario, leaving only RCIC and CRD as high pressure injection systems. The crew will enter and execute the actions of N2-EOP-RPV and N2-EOP-PC. Drywell pressure will rise and exceed 1.68 psig resulting in a low pressure ECCS initiation. Div I ECCS systems will fail to initiate and must be started manually (CRITICAL TASK). Div II ECCS systems will start as designed. The crew will be forced to monitor reactor pressure and ensure an uncontrolled low pressure ECCS injection does not occur. RPV level will be the critical parameter for the scenario. During the transient RCIC will start and come up to 3,000 rpm, then trip. CRD will not keep up with the inventory loss. Reactor water level will continue to lower requiring the crew to enter the water level contingency leg (center leg) of N2-EOP-RPV control. Once level reaches the top of active fuel the crew will perform an RPV blowdown to restore RPV level with low pressure ECCS systems (CRITCAL TASK). During the blowdown, one SRV accumulator pressure will fail causing the crew to recognize the failure and open one additional non ADS SRV. Containment pressures will continue to rise and require containment sprays per N2-EOP-PC. The scenario concludes when the

crew has stabilized reactor water level with remaining high pressure and low pressure injection sources (CRD and LPCI/LPCS) and when containment pressure is reduced and stabilized below PSP.

2. Termination Criteria

   a. Drywell sprays in service with containment parameters stable

   b. RPV level controlled and maintained in ordered band

3. Critical Tasks

CT-1.0 Justification:	
Safety Significance:	*Critical Task 1.0 is identified as critical because an open SRV will cause a significant loss in feedwater heating which in turn would cause reactor power to rise above rated, challenging thermal limits.*
Cueing:	*The following indications are available:* *- Annunciator 602553, ADS ACC TANK 32/33/34 PRESSURE LOW (comes in then clears)* *- Annunciator 601537, ADS VALVES / SAFETY VALVES LEAKING in alarm* *- Annunciator 601548, SAFETY / RELIEF VALVE OPEN in alarm* *- ADS - Safety/Relief Vlv 2MSS*PSV127 indication on P601 is red (Open)* *- Computer point SVVBC08, SAF/RLF VLV PSV127 STAT (Open)* *- Computer point ADSBC20, ADS VLVS/SAF VLVS LEAK (Alarm)*
Measurable Performance Indicators:	*Operators reducing reactor power using CRAM rods/Reduction in recirc flow will provide observable actions for the evaluation team.*
Performance Feedback:	*The insertion of CRAM rods/Reduction in recirc flow and the lowering of reactor power as indicated on 2CEC*PNL603 will provide performance feedback regarding the success of crew actions.*

   a. CT-1.0, Given the plant with a failed open SRV, the crew will reduce reactor power to approximately 85% in accordance with N2-SOP-34 and N2-SOP-101D.

CT-2.0 Justification:	
Safety Significance:	*Critical Task 2.0 is identified as critical because failure to take action to close the SRV would result in elevated suppression pool temperature that would exceed 110°F. 110°F is the Tech. Spec. limit for suppression pool temperature. This ensures that the*

	suppression pool will quench all the steam released through the downcomer lines during a loss of coolant accident (LOCA).
Cueing:	*The following indications are available:* *- Annunciator 602553, ADS ACC TANK 32/33/34 PRESSURE LOW (comes in then clears)* *- Annunciator 601537, ADS VALVES / SAFETY VALVES LEAKING in alarm* *- Annunciator 601548, SAFETY / RELIEF VALVE OPEN in alarm* *- ADS - Safety/Relief Vlv 2MSS*PSV127 indication on P601 is red (Open)* *- Computer point SVVBC08, SAF/RLF VLV PSV127 STAT (Open)* *- Computer point ADSBC20, ADS VLVS/SAF VLVS LEAK (Alarm)*
Measurable Performance Indicators:	*Operators taking the 'C' solenoid keylock switch for 2MSS-PSV127 to the "Off" position and pulling fuses in control room panel 2CEC*PNL628 will provide observable actions for the evaluation team.*
Performance Feedback:	*The following will provide performance feedback regarding the success of crew actions:* *- The following annunciator alarms when the 'C' solenoid fuses are pulled:* *> 601538, Safety/Relief Valves Power Failure* *- The following annunciator alarms when the 'A' solenoid fuses are pulled:* *> 601503, Division I ADS System Inoperable* *- The following annunciator clears when the 'A' solenoid fuses are pulled:* *> 601548, Safety / Relief Valve Open* *- 'B' main steam line flow returns to normal* *- Steam flow feed flow return to normal* *- SPDS ERF menu #4 shows PSV-127 green (indicating closed)*

b. CT-2.0, Given the plant at power with a failed open SRV, the crew will remove SRV solenoid fuses to close the failed open SRV and/or prior to suppression pool temperature exceeding 110°F insert a manual scram in accordance with N2-SOP-34.

CT-3.0 Justification:	
Safety Significance:	*Critical Task 3.0 is identified as critical because an RPV Blowdown permits injection from low head systems, maximizes the total injection flow, and minimizes the flow through any primary system break. The physical action of opening 7 SRVs does not have to be performed before -39 inches; however the crew must enter N2-EOP-C2, "RPV Blowdown", prior to -39 inches and be executing the required actions to open 7 SRVs.*
Cueing:	*Multiple annunciators and panel meter readings will provide indication of lowering RPV water level with degradation of high pressure injection systems.*
Measurable Performance Indicators:	*Operation of ADS LOGIC Manual Initiation arm and depress control switches with applicable white initiation light response, operation of an additional 'C' solenoid keylock switch and lowering reactor pressure indication will provide observable actions for the evaluation team.*
Performance Feedback:	*Lowering reactor pressure indication on multiple pressure indicators will provide performance feedback regarding the success of crew actions.*

c. CT-3.0, Given the plant with a loss of high pressure injection sources, the crew will commence a RPV blowdown before RPV water level reaches -39 inches in accordance with N2-EOP-RPV and N2-EOP-C2.

CT-4.0 Justification:	
Safety Significance:	*Critical Task 4.0 is identified as critical because without operator action no RPV injection would occur post RPV blowdown. This is because the division 2 low pressure emergency core cooling systems have failures that will prevent them from injecting. Without operator action RPV level would drop below adequate core cooling thresholds and potentially cause core damage.*
Cueing:	*The failure of the LPCI A/LPCS initiation white light to illuminate when drywell pressure reaches 1.68 psig and the failure of 2RHS*P1A and 2CSL*P1 to auto start will provide indication of a failure of the auto initiation logic.*
Measurable Performance Indicators:	*The operator arming and depressing the LPCI A/LPCS manual initiation control switch on 2CEC*PNL601 will provide observable actions for the evaluation team.*
Performance Feedback:	*2RHS*P1A and 2CSL*P1 starting with red run lights lit and pumps amps indicated along with the LPCI A/LPCS initiation white light lit on 2CEC*PNL601.*

d. CT-4.0, Given a failure of Division I LP ECCS to automatically initiate, the crew will manually initiate Division I LP ECCS in accordance with N2-EOP-RPV.

4. Length

   a. 60 minutes

5. Mitigation Strategy Code

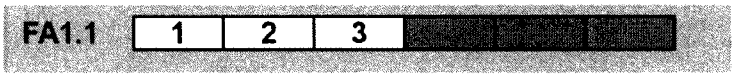
   a. RL2, Small break LOCA or loss of high pressure injection, RPV level can not be maintained above the top of active fuel, RPV blowdown, recover level above TAF with low pressure systems and/or alternate coolant injection systems.

6. Technical Specifications (Applicable actions for initial conditions only)

   a. T.S. 3.5.1, Condition B, Required Action B.2

7. EAL Classification

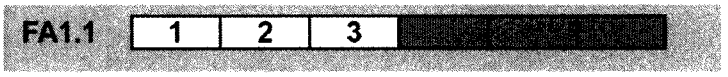
   a. Alert, EAL FA1.1 (RCS Loss D.5)



   1) **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1)

      a) Reactor Coolant System Barrier - Loss (D.5 - Drywell area radiation $\geq$ 41 R/hr (4.1 E4 mRem/hr))

   b. Alert, EAL FA1.1 (RCS Loss B.2)



   1) **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1)

      a) Reactor Coolant System Barrier - Loss (B.2 - Primary Containment pressure > 1.68 psig due to RCS leakage)

B. Initial Conditions

1. IC Number

   a. IC-021 or equivalent (IC-153 for ILT 16-1)

2. Presets / With Triggers

   a. Malfunctions

      1) **AD08F**, ADS Valve N2 Supply Severed (2MSS*PSV130), FINAL=True — **Inserted**

      2) **RH14A**, ECCS Fails To Initiate (Div I), FINAL=True — **Inserted**

      3) **RR43B**, RX FT11C (C33-N003C) Fails - Downscale, FINAL=True — **TRG1**

      4) **RD12A**, CRD Feed Pump Trip (P1A), FINAL=True — **TRG3**

      5) **RR20,** RR Loop Rupture - DBA LOCA, RT = 25 minutes, FINAL=0.1 — **TRG7**

      6) **FW01A**, Condensate Pump Trip (P1A), FINAL=True — **TRG8**

      7) **FW01B**, Condensate Pump Trip (P1B), FINAL=True — **TRG8**

      8) **FW01C**, Condensate Pump Trip (P1C), FINAL=True — **TRG8**

      9) **RC06**, RCIC Turbine Trip, FINAL=True — **TRG9**

      10) **RH08**, Group 5 Isolation Failure (2RHS*MOV122/113), FINAL=True — **TRG10**

   b. Remotes

      1) **CS02**, 2CSH*MOV110 Appendix R Ckt Breaker, FINAL=Open — **Inserted**

2) **CS12**, 2CSH*MOV107 600 Volt Bkr Status, FINAL=Open	**Inserted**
3) **CS15**, 2CSH*MOV101 600V Bkr Status, FINAL=Open	**Inserted**
4) **CS16**, 2CSH*MOV118 600V Bkr Status, FINAL=Open	**Inserted**
5) **RC01**, RCIC Mech O.S., FINAL=Trip	**TRG2**
6) **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On	**TRG5**
7) **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On	**TRG5**
8) **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On	**TRG6**
9) **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FINAL=On	**TRG6**
c. Overrides	
1) **OVR-01A1M133AO01560**, 0-150 psia pressure indicator HPCS, FINAL=0	**Inserted**
2) **OVR-01A1S332DI02311**, On HPCS Test Rtn To Supp Pool MOV 111 Amber, FINAL=On	**Inserted**
3) **OVR-01A1S340DI0238**, Inop HPCS To Cnd Stor Tk Test Rtn MOV112 Inop Amber, FINAL=On	**Inserted**

4) **OVR-01A1S344DI0239**, Inop HPCS Min Flow MOV105 Amber, FINAL=On — **Inserted**

5) **OVR-01A2DS326LO0724**, Off Water Leg Pump P2 Green, FINAL=Off — **Inserted**

6) **OVR-01A2DS335LO0757**, Off HPCS Pump 1 Green, FINAL=Off — **Inserted**

7) **OVR-01A2DS340LO0729**, Off Test Return To Supr Pool MOV111 Green, FINAL=Off — **Inserted**

8) **OVR-01A2DS342LO0759**, Off Min Flow To Suppr Pool MOV105 Green, FINAL=Off — **Inserted**

9) **OVR-01A1M131AO01540**, 0-1500 PSI HPCS Pump Disch Pressure, FINAL=0 — **Inserted**

10) **OVR-13S02DI2014**, Open ADS Valve PSV 127, FINAL=On — **TRG4**

d. Annunciators

1) **AN601740**, HPCS High Pt Vent Level Low, FINAL=Crywolf — **Inserted**

e. Event Triggers

Event #	Event Action	Command
8	zdrps1d==1	imf rr20 1
9	hzarctum1>0.3	Left Blank

f. Equipment Out of Service

1) HPCS Pump for pump seal replacement (Day 1 of 14 day LCO)

g. Support Documentation

1) N2-OSP-ISC-M@002, marked up to and including step 8.1.3. Next step to be performed is 8.2.

h. Miscellaneous

1) Verify CSH Manually Out Of Service light is lit

2) Place clearance danger tags on the following:

a) 2CSH*P2 control switch in STOP

b) 2CSH*P1 control switch (PTL)

c) 2CSH*MOV101 control switch in AUTO

d) 2CSH*MOV107 control switch in AUTO

e) 2CSH*MOV118 control switch in AUTO

f) 2CSH*MOV105 control switch in AUTO

g) 2CSH*MOV110 control switch in AUTO

h) 2CSH*MOV111 control switch in AUTO

3) Hang protected pathway signs on the following components:

a) 2CSL*P1 control switch

b) RCIC manual initiation pushbutton

4) EOOS updated with CSH out of service

5) Clear APRM #2 trip memory

6) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:

a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).

b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.

c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

C. Shift Turnover Information

1. Reactor Power: Rated
2. Rodline: Above 100%
3. Technical Specification LCOs in effect:
   a. ITS 3.5.1 Condition B, required action B.1 & B.2 for HPCS out of service
4. Significant Problems / Abnormalities / Equipment Out of Service:
   a. HPCS out of service for pump seal replacement
5. Evolutions / Maintenance Scheduled for this Shift:
   a. Support Mechanical Maintenance with HPCS maintenance activities
   b. Perform 2ISC*RV33A Exercise and Position Indication Test section 8.2 for 2ISC*RV33A only.

SHIFT TURNOVER INFORMATION

ON COMING SHIFT: ☐ N ■ D DATE: Today

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

- Control Panel Walkdown (all panels) (SRO, ROs)

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

- LCO Status (SRO)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor power is at rated
- HPCS out of service for pump seal replacement.
- TS 3.5.1 Condition B, required action B.1 & B.2 for HPCS out of service
- N2-OSP-ISC-M@002, Drywell Vacuum Breaker Operability Test completed up to and including step 8.1.3. Next step to be completed is 8.2. Field Operators have been briefed and are on station awaiting direction.

PART III: Remarks/Planned Evolutions:

- Perform 2ISC*RV33A Exercise and Position Indication Test per N2-OSP-ISC-M@002, section 8.2 only.

Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown. Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	**Crew** Walkdown control room panels Conduct shift turnover brief Assume the shift

Event #1: 2ISC*RV33A Exercise and Position Indication Test

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Rated Reactor Power • Critical activities or tasks - Open then close 2ISC*RV33A • Final (expected) operating result - Operating with 2ISC*RV33A closed • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
	SRO • Directs BOP to perform N2-OSP-ISC-M@002, section 8.2 only for 2ISC*RV33A

Instructor Actions / Plant Response	Operator Actions
Note: The intent below is to have the field operators continue to complete steps 8.11 through 8.14. The scenario is to move on while the field actions are conducted. They are not intended to be completed in this scenario. **Role Play:** As the field operator acknowledge the direction to perform steps 8.11 through 8.14.	**BOP** • Acknowledges direction to perform N2-OSP-ISC-M@002, section 8.2 only for 2ISC*RV33A • Opens 2ISC*RV33A, VACUUM BREAKER INBOARD, by depressing AND holding VACUUM BREAKER 2ISC*RV33A INBOARD TEST pushbutton. • Verifies the following: ◦ Position indication lights for 2ISC*RV33A indicate open. [(Green Extinguished, Red Illuminated)]. ◦ Annunciator 601556, DRYWELL VACUUM BRKR INBOARD DISC OPEN, alarms on 2CEC*PNL601. ◦ Computer point ISCBC37, RV33A/34A DW VAC BRKR IN, is generated in the OPEN condition. ◦ Position indication lights for 2ISC*RV33B indicate closed. (Green illuminated, Red extinguished) • Closes 2ISC*RV33A by releasing VACUUM BREAKER 2ISC*RV33A INBOARD TEST pushbutton • Verifies the following: ◦ Position indication lights for 2ISC*RV33A indicate closed. [(Green Illuminated, Red Extinguished)] ◦ Annunciator 601556, DRYWELL VACUUM BRKR INBOARD DISC OPEN, clear on 2CEC*PNL601. ◦ Computer point ISCBC37, RV33A/34A DW VAC BRKR IN, is generated in the CLOSED condition. ◦ Closes 2IAS*SOV167, PRIMARY CNTMT OUTBD ISOL VLV TO DRYWELL, at 2CEC*PNL851. ◦ Directs field operator to perform steps 8.11 through 8.14.

Event Termination Criteria	• N2-OSP-ISC-M@002, section 8.2 for 2ISC*RV33A has been performed with field actions directed.

Event 2: FWLC Steam Flow Instrument Fails Downscale

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant in Mode 1 with FWLC in 3-element control • Critical activities or tasks - Place FWLC in single element control • Final (expected) operating result - Plant in Mode 1 with FWLC in single element control • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
Booth Operator: When directed by the lead evaluator, **insert** the following **malfunction**: **TRG1** **RR43B**, RX FT11C (C33-N003C) Fails - Downscale, FINAL=True	
The following annunciator alarms ~30 seconds after MSL flow event initiation: • *603139, REACTOR WATER LEVEL HIGH/LOW* *The following computer points are generated after APRM event initiation:* • *FWSLC01, REACTOR WTR LEVEL HI/LO*	**Crew** • Recognizes / reports the following: ◦ Annunciator 603139 in alarm ◦ 'C' MSL Flow downscale (C33-R603C) ◦ RPV water level lowers and stabilizes at a new lower value due to steam flow / feed flow mismatch
Note: Crew may enter N2-SOP-08 and N2-SOP-101D for unplanned power changes based on the	**RO** • OATC monitors the following: ◦ Reactor power

Instructor Actions / Plant Response	Operator Actions
timeliness of initial event diagnosis.	◦ Reactor water level ◦ Reactor pressure • Executes ARP 603139 ◦ Determines RPV pressure ≥ 900 psig ◦ Recognizes N2-SOP-06 entry is warranted
	SRO • Provides crew update for entry into N2-SOP-06 • Directs RO to enter and execute N2-SOP-06
Role Play: If asked to provide trip unit indication, report that there are no trip units in alarm and there are no gross failures present and all trip units indicate normal D/P.	**RO** (N2-SOP-06 Flowchart) • Acknowledges SRO direction to enter and execute N2-SOP-06 • Performs N2-SOP-06 actions and determines the following: ◦ FWLC is responding correctly ◦ Feedwater failure does not require a power reduction - Enters & executes N2-SOP-101D ◦ A steam flow instrument is malfunctioning • Recommends changing to single element control per N2-OP-3 Section F.8.0
Note: Crew may place FWLC in master manual as an initial response to the malfunction. If this is performed, N2-OP-3, section F.8.0, step 8.1.3 will be step deleted.	**RO** (N2-OP-3 F.8.0) • Changes to single element control as follows: ◦ Verifies plant conditions are stable ◦ Continuously monitors reactor level ◦ Verifies 2FWS-HIC1600 is in AUTO ◦ Places FWLC System in Master Manual by depressing the MANUAL (M) pushbutton on 2FWS-HIC1600 ◦ Places switch C33A-S2 in the 1 ELEMENT position ◦ IF required, nulls out 2FWS-HIC1600

Instructor Actions / Plant Response	Operator Actions
	by adjusting the level band thumbwheel UNTIL the indicator is in the green band ◦ Places FWLC System in Master Auto by depressing the AUTO (A) pushbutton on 2FWS-HIC1600 ◦ Verifies reactor level remains stable ◦ IF required, slowly adjusts the level band thumb wheel on 2FWS-HIC1600 UNTIL the desired reactor level is reached • Informs crew that FWLC is in single element control in automatic
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable. **Role Play:** When contacted, respond as appropriate.	**SRO** • Maintains crew oversight and provides coaching when necessary • Contacts the following (when time permits): ◦ Work Week Manager for investigation / support ◦ Plant Management
Role Play: If contacted as reactor engineer to determine plan to return to rated power tell the crew that you will begin working on a plan to restore power.	**SRO** • Evaluates plant conditions against Technical Specifications and determines the following apply: ◦ None

Event Termination Criteria	• FWLC is in single element control in automatic

Event 3: RCIC Turbine Trip Throttle Valve Trip & Reset (CSH Inop)

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power with HPCS out of service and unavailable • Critical activities or tasks - Re-latch RCIC trip throttle valve • Final (expected) operating result - Operating with RCIC operable • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **remote**: **TRG2** **RC01**, RCIC Mech O.S., FINAL=Trip	
The following plant response occurs after event initiation: • *RCIC Turbine Tripped system status light illuminates* • *2ICS*MOV150 trip throttle valve indication on the vertical section of P601 indicates green (tripped)* *The following annunciators alarm after event initiation:* • *601305, RCIC SYSTEM INOPERABLE* *The following computer points are generated after event initiation:* • *ICSBC04, RCIC SYS*	**RO** • Silences, acknowledges and reports annunciator 601305 • Provides crew update of RCIC turbine trip throttle valve indications and status of RCIC Dispatches field operator locally to investigate

Instructor Actions / Plant Response	Operator Actions
Role Play: As field operator dispatched to investigate local RCIC indications, wait 3 minutes then report that an R.P. Decontamination crew was in the RCIC room and one of the individuals inadvertently tripped the trip throttle valve. The crew said they saw the protected pathway signs, but thought they had special permission to perform decon activities in the RCIC room since they were working in there all day yesterday. Also, report that you did an inspection of the area and no physical damage is apparent and that you recommend re-latching and resetting the RCIC trip throttle valve.	**RO** • Acknowledges report from field operator • Informs SRO of field indications and of field operator recommendation
Role Play: If asked about trip unit status, report that no trip units are in alarm and that no gross failures are present.	**SRO** • Directs RO to reset RCIC per N2-OP-35 • Oversees crew actions.
	SRO • Monitors plant indications
Role Play:	**RO** • Acknowledges direction form SRO to reset RCIC turbine in accordance with N2-OP-35 • Performs N2-OP-35, Section H.1.0: ◦ Determines that the cause of the turbine trip is understood and has been corrected ◦ Determines that a RCIC initiation signal is not sealed in and verifies closed 2ICS*MOV120 ◦ Places 2ICS*MOV150 control switch to close, until both valve position indications indicate the valve is closed ◦ Verifies turbine speed is less than 3500 rpm

Instructor Actions / Plant Response	Operator Actions
When directed as field operator to locally reset the RCIC trip mechanism, wait 1 minute then **manually change** the following **remote:** • **RC01**, RCIC Mech O.S., FINAL=Reset Then report that the RCIC turbine trip throttle valve has been successfully reset. *When ICS*MOV150 is opened the following annunciator clears:* • *601305, RCIC SYSTEM INOPERABLE* *When the turbine tripped pushbutton is depressed the following annunciator alarms:* • *601305, RCIC SYSTEM INOPERABLE* *When ICS*MOV150 is opened the following annunciator clears:* • *601305, RCIC SYSTEM INOPERABLE* **Role Play:** If directed as field operator to conduct RCIC standby checks in accordance with N2-OP-35, wait 5 minutes, then report that RCIC standby checks have been completed in accordance with N2-OP-35, section F.1.0.	◦ Determines that the RCIC was tripped locally and directs a field operator to locally reset the trip mechanism ◦ Acknowledges report from the field ◦ Opens 2ICS*MOV150, Turbine Trip throttle valve just until the red light illuminates ◦ Depresses Turbine Tripped pushbutton and verifies 2ICS*MOV150 closes ◦ Re-latches and opens 2ICS*MOV150 as follows: - Holds 2ICS*MOV150 control switch in close until both green closed lights are lit - Opens 2ICS*MOV150 ◦ Performs standby checks per N2-OP-35, section F.1.0.
	SRO • Maintains crew oversight and looks ahead for potential issues / thresholds.
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.	**SRO** • Maintains crew oversight and provides coaching when necessary • Contacts the following (when time permits): ◦ Work Week Manager for investigation / support ◦ Plant Management

<table>
<tr><th>Instructor Actions / Plant Response</th><th>Operator Actions</th></tr>
<tr><td>Note:
<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.5.3</td><td>A</td><td>A.1 & A.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>A.1</td><td colspan="2">Verify by administrative means High Pressure Core Spray System is OPERABLE (Immediately)</td></tr>
<tr><td>A.2</td><td colspan="2">Restore RCIC System to OPERABLE status (14 Days)</td></tr>
</table>
<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.5.3</td><td>B</td><td>B.1 & B.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>B.1</td><td colspan="2">Be in Mode 3 (12 hours)</td></tr>
<tr><td>B.2</td><td colspan="2">Reduce reactor steam dome pressure ≤ 150 psig (36 hours)</td></tr>
</table>
<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.5.1</td><td>D</td><td>D.1 & D.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>D.1</td><td colspan="2">Be in Mode 3 (12 hours)</td></tr>
<tr><td>D.2</td><td colspan="2">Be in MODE 4 (36 hours)</td></tr>
</table></td><td><u>SRO</u>
• Evaluates plant conditions against Tech Specs and determines the following apply:
◦ 3.5.3 Condition A
◦ 3.5.3 Condition B
◦ 3.5.1 Condition D</td></tr>
<tr><td></td><td><u>SRO</u>
• Once RCIC has been declared operable, exits Tech Spec 3.5.3 Condition B and 3.5.1 Condition D</td></tr>
</table>

Event Termination Criteria	• RCIC trip throttle valve has been reset • RCIC declared operable

Event 4: CRD Pump trip on Motor Electrical Fault

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power with 2RDS-P1A running • Critical activities or tasks - Start the standby CRD pump (2RDS-P1B) • Final (expected) operating result - Operating with 2RDS-P1B in service and 2RDS-P1A secured • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. None.

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **malfunction**: **TRG3** **RD12A**, CRD Feed Pump Trip (P1A), FINAL=True *The following annunciators alarm after event initiation:* *603308, CRD Pump 1A / 1B Auto Trip* *603311, CRD Charging Wtr Pressure Low* *603446, CRD Pump Disch Header Pressure Low* *603313, CRD Pump 1A/1B Motor Electrical Fault* *The running CRD pump trips (2RDS-P1A)* *The following computer points are generated:* *RDSUC01, CRD Pmp 1A Auto Trip* *Approximately 2 minutes later the following annunciator alarms:*	**RO** • Silences, acknowledges and reports annunciator 603308 and reports that 2RDS-P1A pump has tripped on motor electrical fault. • Provides control room update of 2RDS-P1A trip on motor electrical fault

Instructor Actions / Plant Response	Operator Actions
• *603316, Control rod Temperature High*	
	SRO • Acknowledges RO report of 2RDS-P1A trip on motor electrical fault • Provides crew update of 2RDS-P1A trip on motor electrical fault and entry into N2-SOP-30 • Directs RO to enter and execute N2-SOP-30
Role Play: If dispatched, as field operator, to isolate RDS backfill by closing either 2RDS-V20 or RDS-V2058, wait 3 minutes then report back that 2RDS-V20 (RDS-V2058) has been closed. *The following annunciators clear when RDS pump is started:* *603311, CRD Charging Wtr Pressure Low* *603446, CRD Pump Disch Header Pressure Low* *The following annunciator clears approximately 1 minute after an RDS pump is started:* *603316, Control rod Temperature High* **Role Play:** When dispatched as field operator to report	**RO** (N2-SOP-30) • Performs N2-SOP-30 actions for CRD pump trip: ◦ Determines that an RDS pump is not running ◦ May direct field operator to isolate RDS backfill by closing either: - 2RDS-V20 OR - 2RDS-V2058 ◦ Shifts 2RDS-FC107 to manual ◦ Closes 2RDS-FC107 to minimum position ◦ Determines that the trip was not caused by low suction pressure • Dispatches field operator to report control rod temperature values and trends • Continues on with N2-SOP-30 actions: ◦ Starts 2RDS-P1A(B) ◦ Adjusts RDS flow using RDS-FC107 to approximately 63 gpm ◦ Places 2RDS-FC107 in auto ◦ Directs field operator to verify WCS/RCS seal flows and backfill flows per N2-OP-30, sections F.2.5 through F.2.9.

Instructor Actions / Plant Response	Operator Actions
control rod temperatures report the following: • If request and report is made prior to the CRD pump re-start then report the following control rods and temperatures: ◦ Control rod is 26-47 at 265°F and rising slowly ◦ Control rod is 34-15 at 255°F and rising slowly ◦ Control rod is 42-23 at 253°F and rising slowly • If request and report is made post CRD pump re-start and control rod temp. high annunciator is clear then report the following: ◦ Control rod is 26-47 at 247°F and lowering slowly ◦ Control rod is 34-15 at 243°F and lowering slowly ◦ Control rod is 42-23 at 240°F and lowering slowly	
Role Play: When dispatched as field operator to restore WCS/RCS seal flow or RPV backfill wait 3 minutes and report that it is complete.	**SRO** • Acknowledges report of trip of 2RDS-P1A on motor electrical fault • When time permits, conducts a crew transient brief / reverse brief

Event Termination Criteria	• CRD-P1B running

Event 5: SRV Opens (ADS), Able to Close

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power • Critical activities or tasks - Remove both the 'C' and 'A' solenoid fuses for 2MSS*PSV127 - Verify reactor power is approximately 85% • Final (expected) operating result - Reactor power at ~85% with 2MSS*PSV127 closed • Mitigation Strategy code (if applicable) - N/A
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given the plant with a failed open SRV, the crew will reduce reactor power to 85% in accordance with N2-SOP-34 and N2-SOP-101D. 2. Given the plant at power with a failed open SRV, the crew will remove SRV solenoid fuses to close the failed open SRV and/or prior to suppression pool temperature exceeding 110°F insert a manual scram in accordance with N2-SOP-34.

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, **insert** the following **override**: **TRG4** **OVR-13S02DI2014**, Open ADS Valve PSV 127, FINAL=On	
The following plant response occurs: • *The steam flow transient reduces steam pressure to the feedwater heaters causing a reduction in feedwater temperature and a subsequent rise in reactor power* • *'B' Main steam line flow indication on panel 603 lowers slightly* • *MWe output lowers initially then rises* • *MWth lowers initially then rises due to the reduction*	**RO** • Silences, acknowledges and reports annunciator 601537 & 601548 • Provides crew update that 2MSS*PSV127 has inadvertently opened

Instructor Actions / Plant Response	Operator Actions
in feedwater heating • *APRM power rises slowly* • *SPDS ERF menu #4 shows 2MSS*PSV127 red (indicating open)* • *ADS SRV (PSV127) opens fully* • *ADS - Safety/Relief Vlv 2MSS*PSV127 indication on P601 is red (Open)* *The following annunciators alarm:* • *602553, ADS ACC TANK 32/33/34 PRESSURE LOW (comes in then clears)* • *601537, ADS VALVES / SAFETY VALVES LEAKING* • *601548, SAFETY / RELIEF VALVE OPEN* • *601543, SAFETY RELIEF VALVE SWITCH IN OFF POSITION (When switch taken to OFF)* *The following computer points are generated:* • *SVVBC08, SAF/RLF VLV PSV127 STAT (Open)* • *ADSBC20, ADS VLVS/SAF VLVS LEAK (Alarm)*	
Note: N2-SOP-34 allows solenoid fuse removal in any order. The crew may only choose to pull the 'A' solenoid fuses based on panel indications. The scenario guide is written as if the crew were to pull the 'C' fuses followed by the 'A' fuses.	**SRO** • Oversees crew actions • Updates the crew on entry into N2-SOP-34 and N2-SOP-101D • Directs RO to enter and execute N2-SOP-34 and N2-SOP-101D • Provides reactivity oversight during power reduction
Suppression pool temperature rises due to SRV discharge Note: SA-NM-129, Electrical Safety Attachment 4, "Nine Mile Point Task Matrices/PPE Requirements" states: Remove/Install 120VAC & 125VDC Fuses AND EOP fuses in U-2 Control Room and Relay Room Panels, including Simulator at NLC (voltage rated gloves required due to	**RO** • Performs the actions of N2-SOP-34: ◦ Identifies 2MSS*PSV127 as the open SRV ◦ Places the keylock switch for 2MSS*PSV127 in Off ◦ Determines 2MSS*PSV127 failed to close by the use of one or more of the following indications: - SPDS Computer - ERF computer points MSSZC111 and

Instructor Actions / Plant Response	Operator Actions
congestion of panels) requires: • No Minimum Arc Rating Required for FR Clothing • 100% Cotton Long Sleeve Shirt and Pants, OR 100% cotton short sleeve shirt and pants under FR Lab Coat • Safety Glasses • V-Rated Gloves (If voltage-rated gloves are required, the leather protectors worn external to the rubber gloves satisfy the leather glove requirement) • V-Rated / Insulated Tools *The following annunciator alarms when fuses F49 & F50 are pulled:* • *601538, Safety/Relief Valves Power Failure* *2MSS*PSV127 remains open with 'C' solenoid fuses removed* *2MSS*PSV127 closes when 'A' solenoid fuses are removed* *The following annunciator alarms when fuses F5A & F6A are pulled:* • *601503, Division I ADS System Inoperable* *The following annunciator clears when fuses F5A & F6A are pulled:* • *601548, Safety / Relief Valve Open* *The following plant response occurs:* • *'B' main steam line flow returns to normal* • *Steam flow feed flow return to normal* • *SPDS ERF menu #4 shows 2MSS*PSV127 green (indicating closed)*	MSSZC128 - Reactor power change - Generator output change - Steam flow/Feed flow mismatch - Acoustic monitor • ***Reduces reactor power to approximately 85%*** • Continues with N2-SOP-34 and N2-SOP-101D actions: ◦ Locates, inspects and dons appropriate electrical PPE to prepare for SRV fuse removal ◦ Using detail 2 of N2-SOP-34 removes fuses in any of the following order until the SRV closes: - 'C' solenoid fuses - 'A' solenoid fuses - 'B' solenoid fuses ◦ Determines, using detail 2 of N2-SOP-34 that the location of the 'C' solenoid fuses is panel 628 strip 'A' fuse numbers F49 & F50 ◦ Removes fuses F49 & F50 ◦ Verifies, using the same indications mentioned above (N2-SOP-34 detail 1), the position of 2MSS*PSV127 ◦ Determines that 2MSS*PSV127 did not close by pulling the 'C' solenoid fuses • Proceeds with N2-SOP-34 actions to pull the 'A' solenoid fuses ◦ Determines, using detail 2 of N2-SOP-34 that the location of the 'A' solenoid fuses is panel 628 strip 'K' fuse numbers F5A & F6A ◦ ***Removes fuses F5A & F6A*** ◦ Verifies, using the same indications mentioned above (N2-SOP-34 detail 1), the position of 2MSS*PSV127 ◦ Determines that 2MSS*PSV127 did

Instructor Actions / Plant Response	Operator Actions
	close by pulling the 'A' solenoid fuses • Provides control room update that the 'C' & 'A' fuses have been pulled for 2MSS*PSV127 • Continues with N2-SOP-34 actions: ◦ Determines that the SRV did close using the same indications mentioned above (N2-SOP-34 detail 1) ◦ Identifies the need for performing N2-OSP-ISC-M@002 (SR 3.6.1.7.2)
The following annunciator alarms ~ 3 minutes after event initiation: • *601560, Suppression Pool Water Temp High* *Suppression Pool temperature exceeds 90°F*	**Crew** • Silences, acknowledges and reports annunciator 601560 • Monitors suppression pool temperature • Provides crew update that suppression pool temperature has exceeded 90°F
Role Play: If dispatched as field operator to perform pre-start checks on SWP-P1A(B-E), wait 3 minutes then report that SWP-P1A(B-E) is ready for start and that all pre-start checks are completed. Note: Based on the timeliness of crew actions, the crew may not reach 90°F in the suppression pool and therefore will not enter N2-EOP-PC. The scenario is written as if the crew were to enter N2-EOP-PC on high Suppression pool water temperature.	**SRO** • Acknowledges report of annunciator 601560 • Recognizes that suppression pool temperature at or above 90°F is entry condition for N2-EOP-PC • Provides crew update for entry into N2-EOP-PC on high suppression pool temperature • Writes down time of EOP entry • Performs N2-EOP-PC actions: ◦ Evaluates all legs of N2-EOP-PC and determines that the only applicable leg is the suppression pool temperature leg ◦ Determines the need to maintain suppression pool temperature below 90°F using suppression pool cooling ◦ Determines cannot maintain suppression pool temperature below 90°F ◦ Directs the start of all available

Instructor Actions / Plant Response	Operator Actions
	suppression pool cooling by directing RHR 'A' & 'B' be placed in suppression pool cooling ◦ Directs a 5th SWP pump started
Role Play: If requested to place SWP radiation monitor RE23A in service, wait 2 minutes and **insert** the following **remote**: **TRG5** **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On Then report 2SWP*RE23A is in service. **Role Play:** If requested to place SWP radiation monitor RE23B in service, wait 2 minutes **insert** the following **remote**: **TRG6** **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FINAL=On Then report 2SWP*RE23B is in service	**RO** • Acknowledges direction to place RHR 'A' and RHR 'B' in suppression pool cooling • Attains a copy of N2-OP-31, section F.4.0 • Performs N2-OP-31, section F.4.0 actions: ◦ Notifies Shift Manager to declare RHS A & B LPCI mode inoperable ◦ Directs radiation protection department to start SWP radiation monitors 2SWP*RE23A & B ◦ Opens 2SWP*MOV90A & B ◦ Makes plant announcement for the start of 2SWP*P1E(F) ◦ Starts 2SWP*P1E(F) ◦ Throttles open 2SWP*MOV33A & B to establish 7450 gpm service water flow to RHR 'A' & 'B' ◦ Verifies 2RHS*MOV24A & B ◦ Makes plant announcement for the start of 2RHS*P1A & P1B ◦ Starts 2RHS*P1A & P1B ◦ Verifies 2RHS*MOV4A & B open ◦ Throttles open 2RHS*FV38A & B to establish 7450 gpm RHR 'A' & 'B' total flow ◦ Verifies 2RHS*MOV4A & B close • Informs SRO that both RHR 'A' & 'B' are in suppression pool cooling • Monitors Suppression Pool temperature trend and updates SRO
	SRO • Acknowledges report that both RHR 'A' & 'B' are in suppression pool cooling

<table>
<tr><th>Instructor Actions / Plant Response</th><th>Operator Actions</th></tr>
<tr><td></td><td>• Establishes reactor power band</td></tr>
<tr><td><u>Role Play</u>:
When Reactor Engineering notified, report that fuel thermal limits are being evaluated.

<u>Role Play</u>:
As Reactor Engineering, 5 minutes after initial request to evaluate thermal limits, report back that thermal limits have been evaluated as satisfactory</td><td><u>SRO</u>
• Maintains crew oversight and looks ahead for potential issues / thresholds
• May notify Reactor Engineer to request a thermal limit evaluation</td></tr>
<tr><td><u>Note</u>:
Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.</td><td><u>SRO</u>
• Maintains crew oversight and provides coaching when necessary
• Declares RHS A & B LPCI mode inoperable
• Contacts the following (when time permits):
◦ Work Week Manager for investigation / support
◦ Plant Management
◦ Power Control and Constellation Load Dispatch
• Evaluates Risk</td></tr>
<tr><td><u>Note</u>:
The following tech. specs assume that suppression pool temperature exceeds 90°F. If suppression pool temperature does not exceed 90°F then 3.5.1 condition C would be applicable vice 3.5.1 condition H.
<u>ITS 3.5.1</u>, (C.1) Restore one ECCS injection / spray subsystem to operable status within 72 hours is applicable if suppression pool temperature reaches 90°F.

<table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.5.1</td><td>H</td><td>H.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>H.1</td><td colspan="2">Enter LCO 3.0.3. (Immediately)</td></tr></table></td><td><u>SRO</u>
• Evaluates plant conditions against Tech Specs and determines the following apply:
◦ ITS 3.5.1 Condition C
◦ ITS 3.4.4 (no action required, safety mode of 16 SRVs operable)
◦ ITS 3.6.2.1 Condition A (no action required until supp. pool temperature > 90°F)
◦ Reviews surveillance requirement for DW vacuum breaker (3.6.1.7.2)</td></tr>
</table>

<table>
<tr><th>Instructor Actions / Plant Response</th><th>Operator Actions</th></tr>
<tr><td>
<table>
<tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr>
<tr><td>3.6.2.1</td><td>A</td><td>A.1 & A.2</td></tr>
<tr><th>Action</th><th colspan="2">Description</th></tr>
<tr><td>A.1</td><td colspan="2">Verify suppression pool average temperature ≤110°F (Once per hour)</td></tr>
<tr><td>A.2</td><td colspan="2">Restore suppression pool average temperature to ≤90°F (24 hours)</td></tr>
</table>
</td><td></td></tr>
<tr><td></td><td><u>SRO</u>
• Evaluates plant conditions against EALs and determines the following apply:
◦ None</td></tr>
<tr><td></td><td><u>SRO</u>
• Conducts transient brief (when time permits)</td></tr>
</table>

Event Termination Criteria	• 2MSS*PSV127 has been closed

Event #6, #7 and #8: Small LOCA and Loss of High Pressure Injection

Event Information	Enter important information about the event here such as: • Presumed or required initial plant operating conditions - Plant at power with HPCS out of service and unavailable - Verify the following **malfunctions** are **inserted** before a manual scram is initiated: • **AD08F**, ADS Valve N2 Supply Severed (2MSS*PSV130), FINAL= True • **RH14A**, ECCS Fails To Initiate (Div I), FINAL=True • Critical activities or tasks - RPV Blowdown • Final (expected) operating result - Shutdown and depressurized with RPV level being maintained by low pressure ECCS systems • Mitigation Strategy code (if applicable) - DMS-RL2
Critical Tasks ***(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)***	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: 1. Given the plant with a loss of high pressure injection sources, the crew will commence a RPV blowdown before RPV water level reaches -39 inches in accordance with N2-EOP-RPV and N2-EOP-C2.

Instructor Actions / Plant Response	Operator Actions
When directed by the Lead Evaluator, **insert** the following **malfunction**: **TRG7** **RR20,** RR Loop Rupture - DBA LOCA, RT = 25 minutes, FINAL=0.1	
The following plant response occurs after event initiation: • *Drywell pressure will begin to rise* • *Drywell leak rates rise* *The following annunciator alarms ~5 minutes after event initiation:*	**RO** • Silences, acknowledges and reports annunciator 851254 • Performs ARP851254 actions: ◦ Ensures Shift Manager notified

Instructor Actions / Plant Response	Operator Actions
• *603140, DRYWELL PRESSURE HIGH / LOW* • *851254, PROCESS AIRBORNE RADN MON ACTIVATED* *The following computer points are generated ~5 minutes after event initiation:* • *RMSRC76, PROCESS AIR RADN MONT ACT* • *RPSPC01, RPS DW PRESS* **Role Play:** If contacted as Radiation Protection, confirm CMS-10 alarms are valid	◦ Notifies radiation protection department ◦ Attempts to identify the cause and notifies chemistry to sample the containment ◦ Analyses drywell leak rates • Recognizes and Reports Drywell pressure rising and reports annunciator 603140 • Performs ARP603140 actions: ◦ Checks drywell pressure readings on redundant independent indicators to validate value and trend ◦ Monitors: - Drywell pressure in psia - Drywell temperatures - Drywell leak rates - Radiation levels ◦ Determines drywell pressure change is not due to barometric pressure change and determines that N2-OP-61A actions will not be appropriate for this situation due to the relative rapid rise in drywell pressure
	SRO • Acknowledges report of high drywell pressure • May direct RO to lower power using Recirc flow/CRAM rods IAW with N2-SOP-101D. • Establishes threshold for placing the mode switch to shutdown • Provides crew update to inform crew of threshold
Note: Based on timeliness of crew actions and where the threshold to take the mode switch to shutdown is established, the crew may not complete the power reduction. Instead the	**RO** • If directed, reduces reactor power by reducing recirc. flow or inserting CRAM rods IAW with N2-SOP-101D. • Provides crew update for entry into N2-

Instructor Actions / Plant Response	Operator Actions
power reduction may be stopped and the mode switch directed in shutdown.	SOP-101D for power reduction • Enters N2-SOP-101D and performs actions to reduce reactor power
Role Play: If Reactor Engineering is notified, report that fuel thermal limits are being evaluated. **Role Play:** As reactor engineering, 5 minutes after initial request to evaluate thermal limits, report back that thermal limits have been evaluated as satisfactory.	**SRO** • Maintains crew oversight and looks ahead for potential issues / thresholds. • May assist RO with DRMS computer to determine which radiation monitors are in alarm and what current trend is • Contacts Reactor Engineering to verify thermal limits, after the power reduction
• *Approximately 5 minutes after event initiation drywell rad levels will exceed 41R/Hr* • *Drywell pressure continues to rise and reaches pre-established drywell pressure threshold* **EAL Criteria Met** *Indications available for Alert, EAL FA1.1:* FA1.1 | 1 | 2 | 3 **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1) *Reactor Coolant System Barrier - Loss (D.5 - Drywell area radiation ≥ 41 R/hr (4.1 E4 mRem/hr)* **Time:** _____	**Crew** • Reports drywell radiation levels are >41 R/Hr • Reports drywell pressure at pre-established threshold for placing Mode Switch in SHUTDOWN • Reports trip of all running condensate pumps and lowering RPV water level
RPV level lowers	**SRO** • Acknowledges report of drywell pressure at pre-established threshold • Directs RO to place Mode Switch in SHUTDOWN

Instructor Actions / Plant Response	Operator Actions
When the reactor Mode Switch is placed in SHUTDOWN (zdrps1d == 1), the following **malfunction modifies:** • **RR20**, RR Loop Rupture - DBA LOCA, FINAL=1 When the reactor Mode Switch is placed in SHUTDOWN, **insert** the following **malfunctions**: **TRG8** **FW01A**, Condensate Pump Trip (P1A), FINAL=True **FW01B**, Condensate Pump Trip (P1B), FINAL=True **FW01C**, Condensate Pump Trip (P1C), FINAL=True *The following plant response occurs:* • *All condensate pumps trip, resulting in a loss of condensate and feedwater injection* • *Drywell pressure will exceed 1.68 psig* • *RPV level shrinks due to manual scram*	**RO** • Places Mode Switch in SHUTDOWN • Provides scram report, by reporting: ◦ Mode Switch in SHUTDOWN ◦ APRMs downscale ◦ Reactor pressure and trend ◦ Reactor level and trend ◦ MSIVs open ◦ feedwater pumps have tripped ◦ All control rods fully inserted • Reports trip of all running condensate pumps and lowering RPV water level • Reports EOP entry condition on high drywell pressure and low RPV water level
EAL Criteria Met *Indications available for Alert, EAL FA1.1:* FA1.1 | 1 | 2 | 3 | **ANY** loss or **ANY** potential loss of **EITHER** Fuel Clad barrier **OR** RCS barrier (Table F-1) *Reactor Coolant System Barrier - Loss (B.2 - Primary Containment pressure > 1.68 psig due to RCS leakage)* **Time:** _____ *RPV pressure continues to lower due to the LOCA*	**SRO** • Acknowledges and repeats back scram report • Provides crew update and enters N2-EOP-RPV on low RPV water level and high drywell pressure • Provides crew update and enters N2-EOP-PC on high drywell pressure • Assigns an RPV level band 160-200 inches using RCIC • Assigns an RPV pressure band of 800-1000 psig using turbine bypass valves • Directs the RO to close the MSIVs when reactor pressure reaches a predetermined

Instructor Actions / Plant Response	Operator Actions
Note: Based on the timeliness of crew actions, the MSIVs may auto close on RPV Level 1.	value
When drywell pressure exceeds 1.68 psig the following **malfunction** becomes **apparent**: • **RH14A**, ECCS Fails To Initiate (Div I), FINAL=True	**RO** • Recognizes / reports the failure of Div I low pressure ECCS systems to initiate • ***Arms and depresses the LPCI A/LPCS Manual Initiation pushbutton on panel 601***
	SRO • Acknowledges report that Division I low pressure ECCS failed to initiate. • ***Directs/concurs with action to attempt a manual initiation***
Note: The best way to accomplish insertion of the following malfunction is to assign the following event trigger (TRUE when RCIC turbine speed > 3000 rpm) to the malfunction trigger: • Event Action: hzarctum1 > 0.3 • Command: Left Blank When RCIC turbine speed rises to ~3000 rpm, **insert** the following **malfunction**: **TRG9** **RC06**, RCIC Turbine Trip, FINAL=True	**RO** • Closes the MSIVs and transitions pressure control to the SRVs when reactor pressure reaches the predetermined pressure value • Verifies proper RCIC initiation • Recognizes and reports RCIC trip and that injection from RCIC will not be possible
	SRO • Recognizes and reports EOP entry conditions • Monitors EOP implementation and provides input as necessary • Monitors critical plant parameters and update SRO as necessary

Instructor Actions / Plant Response	Operator Actions
	SRO • Acknowledges report of RCIC trip • Directs CRD injection maximized in accordance with N2-OP-30, section H.3.0
	RO • Performs N2-OP-30 section H.3.0 actions to maximize CRD injection: ◦ Verifies RPS is tripped per N2-SOP-101C ◦ Verifies 2RDS-P1A & 2RDS-P1B are running (recognizes that 2RDS-P1A is not available) ◦ Places 2RDS-FC107, CRD FLOW CONTROL, in MANUAL ◦ Opens 2RDS-FC107 UNTIL RDS pump motor current(s) approach 40 amps OR controller output meter is 100% ◦ Opens 2RDS-PV101,DRIVE WTR PRESS CONTROL MOV, UNTIL RDS pump motor current(s) approach 40 amps OR fully open ◦ Monitors RDS pump motor current during RPV depressurization
	SRO • Determines that RPV level cannot be restored and maintained above -14" (TAF) with current available injection sources • Transitions to the center (contingency) water level leg of N2-EOP-RPV • May direct SLS injection from the boron tank per N2-OP-36A, section H.1.0 • Directs ADS inhibited • Determines that all remaining preferred and alternate injection systems are low pressure • Determines that 2 or more subsystems are lined up (LPCI-A, LPCI-B, LPCI-C,

Instructor Actions / Plant Response	Operator Actions
	LPCS) • Waits until level reaches -14" (TAF) • Determines that 2 or more subsystems are lined up with a pump running (LPCI-A, LPCI-B, LPCI-C, LPCS)
	RO • Inhibits ADS using N2-EOP-HC attachment 5: ◦ Places the DIV I ADS Automatic Initiation Disable switch to ON and verifies the associated white light is lit ◦ Places the DIV II ADS Automatic Initiation Disable switch to ON and verifies the associated white light is lit ◦ Verifies annunciators 601521 and 601522, Division I(II) ADS Automatic Initiation Disabled are lit
	RO • If directed injects with SLS in accordance with N2-OP-36A, Section H.1.0 • Performs N2-OP-36A, Section H.1.0 actions: ◦ Places 2SLS*P1A, PMP 1A, keylock control switch momentarily to PUMP A RUN ◦ Places 2SLS*P1B, PMP 1B, keylock control switch momentarily to PUMP B RUN ◦ Verifies the following: – 2SLS*MOV1A, SLC STORAGE TK OUTLET VLV, open – 2SLS*MOV1B, SLC STORAGE TK OUTLET VLV, open – 2SLS*P1A running – 2SLS*P1B running – 2SLS*VEX3A, SQUIB VLV READY white light out

Instructor Actions / Plant Response	Operator Actions
RPV water level reaches -55 inches Fuel Zone indicated or -14 inches (TAF) actual	– 2SLS*VEX3B, SQUIB VLV READY white light out – 2SLS*P1A Discharge Pressure greater than Reactor Pressure – 2SLS*P1B Discharge Pressure greater than Reactor Pressure – SLS Storage Tank Level lowering – SLS Total Flow approximately 86 gpm (two pumps running) ◦ Verifies 2WCS*MOV112, CLEANUP SUCT OUTBD ISOL VLV, closed ◦ Verifies 2WCS*MOV102, CLEANUP SUCT INBD ISOL VLV, closed ◦ Throttles open 2WCS-MOV110, CLEANUP DEMIN BYPASS VLV, to avoid over pressurizing WCS Pump suction piping • Reports to the SRO that SLS injection has been performed
Note: The crew may chose not to terminate and prevent injection prior to the blowdown based on the judgment that LPCS and LPCI injection is needed for core cooling. This is allowed per N2-EOP-C2, Step 11.	**SRO** • Recognizes that RPV blowdown is required • Provides crew update for entry into N2-EOP-C2 (RPV Blowdown) • Performs actions of N2-EOP-C2 (RPV Blowdown): ◦ Determines that the reactor will remain shutdown without boron ◦ Determines drywell pressure >1.68 psig • ***Directs 7 ADS valves opened***
	RO • Acknowledges direction to open all 7 ADS valves. • Opens all 7 ADS valves using N2-EOP-HC attachment 5: ◦ Determines that no SRVs are stuck open and that an ECCS pump is

Instructor Actions / Plant Response	Operator Actions
When the ADS logic is actuated the following **malfunction** becomes **apparent**: • **AD08F**, ADS Valve N2 Supply Severed (2MSS*PSV130), FINAL=True	operating ◦ ***Arms and depresses both ADS logic pushbuttons for Division I:*** - ***ADS LOGIC "A" manual pushbutton*** - ***ADS LOGIC "E" manual pushbutton*** ◦ ***Arms and depresses both ADS logic pushbuttons for Division II:*** - ***ADS LOGIC "B" manual pushbutton*** - ***ADS LOGIC "F" manual pushbutton*** ◦ Recognizes/reports that on accumulator has failed for 2MSS*PSV130
	SRO • Acknowledges RO report of the failure of 2MSS*PSV130 • Directs an additional non ADS SRV opened to achieve a total of 7 SRV's open
	RO • Acknowledges SRO direction to an additional non ADS SRV opened to achieve a total of 7 SRV's open • Opens an additional SRV using a 'C' solenoid keylock switch • Reports to the SRO that 7 SRVs are open
	SRO • Acknowledges report that 7 SRVs are open • Directs level band of 160-200" using LPCI injection • Recognizes rising suppression chamber pressure • Directs RO to place suppression chamber sprays in service per N2-EOP-6.22 before exceeding 10 psig in the suppression

Instructor Actions / Plant Response	Operator Actions
	chamber • May direct Low Pressure ECCS overridden • Directs RO to secure suppression chamber sprays before suppression chamber pressure lowers to 0 psig
Drywell pressure continues to rise **Role Play:** If requested to defeat the Group 5 Isolations interlocks, wait 1 minutes and **insert** the following **malfunction**: **TRG10** **RH08**, Group 5 Isolation Failure (2RHS*MOV122/113), FINAL=True Then report Group 5 Isolations interlocks defeated	**RO** • Acknowledges direction for RPV water level control 160-200" using LPCI injection • Controls LPCI injection to raise RPV level above -39" (MSCRWL) and into ordered band • Places RHR A(B) in suppression chamber sprays: ◦ Opens 2SWP*MOV90A(B) (may be delayed until after sprays are in service) ◦ Verifies 2RHS*P1A(B) running ◦ Verifies 2RHS*MOV24A(B) overridden closed ◦ Opens 2RHS*MOV33A(B) to establish suppression chamber spray flow ◦ Opens 2RHS*FV38A(B) and establish approximately 7450 gpm – If suppression pool cooling is directed ◦ Throttles open 2SWP*MOV33A(B) to establish flow not to exceed 7400 gpm - Makes plant announcement for the start of the 5th SWP pump - Starts 5th SWP pump using N2-EOP-HC attachment 5 (post LOCA) ◦ Closes 2RHS*MOV8A(B) - after 10 minute time delay.

Instructor Actions / Plant Response	Operator Actions
Role Play: If requested to place SWP radiation monitor RE23A in service, wait 2 minutes and **insert** the following **remote**: **TRG5** **RM02-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=On **RM03-040**, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL=On Then report 2SWP*RE23A is in service **Role Play:** If requested to place SWP radiation monitor RE23B in service, wait 2 minutes and **insert** the following **remote**: **TRG6** **RM02-041**, SWP23B Current Radiation Level Online, FINAL=On **RM03-041**, SWP23B Current Radiation Level Sample Pmp Power, FINAL=On *Then report 2SWP*RE23B is in service*	◦ Directs RP to place 2SWP*RE23A(B) in service • Secures suppression chamber sprays before suppression chamber pressure lowers to 0 psig • If directed, overrides low pressure ECCS injection valves closed
Suppression Chamber pressure exceeds 10 psig	**SRO** • Recognizes suppression chamber pressure above 10 psig • Verifies Drywell spray conditions are met ◦ Orders recirc pumps and drywell unit coolers tripped • Directs A(B) loop of RHR placed in Drywell sprays, in accordance with N2-EOP-6.22 • Directs Drywell sprays be terminated before Drywell pressure drops to 0 psig
	SRO

Instructor Actions / Plant Response	Operator Actions
	• Verifies Drywell sprays conditions are met
	RO • Places RHR A(B) in drywell sprays: ◦ Trips / verifies tripped reactor recirculation pumps ◦ Trips / verifies tripped drywell unit coolers • Initiates drywell sprays: ◦ Verifies an initiation signal present ◦ Opens 2SWP*MOV90A(B) (may be delayed until after sprays are in service) ◦ Verifies 2RHS*MOV24A(B) overridden closed ◦ Verifies RHR A(B) pump running ◦ Opens 2RHS*MOV33A(B) and verifies flow (If suppression chamber spray is required concurrently with drywell sprays) ◦ Verifies closed 2RHS*FV38A(B) ◦ Verifies open 2RHS*MOV4A(B) ◦ Opens 2RHS*MOV25A(B) ◦ Opens 2RHS*MOV15A(B) • Reports to the SRO that drywell spray valves are full open and that full drywell spray flow has been achieved
	SRO • Acknowledges report that drywell sprays are in service • Evaluates PSP and determines blowdown not required
	SRO • Verifies PSP curve not violated and blowdown not required • Maintains crew oversight and looks ahead for potential issues / thresholds

Instructor Actions / Plant Response	Operator Actions
Note: Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable. **Role Play:** When contacted, respond as appropriate.	**SRO** • Maintains crew oversight and provides coaching when necessary • Contacts the following (when time permits): ◦ Work Week Manager for investigation / support ◦ Plant Management ◦ Power Control and Constellation Load dispatch
	SRO • May direct RO to inject with LPCI 'C' per N2-EOP-6.3
Role Play When directed, as field operator to place the LPCI 'C' injection valve (RHS*MOV24C) breaker to off and Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303, wait 3 minutes and then **manually insert** the following **remotes**: • **RH35**, RHS*MOV24C 600V Bkr Status, FV=Open • **RH12**, OP32.H.9 2RHS*MOV24C Injection Throttle, FV=Throttle Then report that breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped.	**RO** • If directed, acknowledges report to inject with LPCI 'C' per N2-EOP-6.3 • Reviews N2-EOP-6.3, step 6.5 for LPCI 'C' Injection Throttling • Performs N2-EOP-6.3, step 6.5 actions: ◦ Dispatches a field operator to: - Place 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV to OFF. - Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04, 2EHS*MCC303 Rear of Cubicle 19A ◦ Acknowledges report that 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped. ◦ Directs field operator to place breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV back to On

Instructor Actions / Plant Response	Operator Actions
When directed to place 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV back to On, wait 1 minute and then **manually change** the following **remote**: • **RH35**, RHS*MOV24C 600V Bkr Status, FV=Close	◦ Notifies SRO that RHS*MOV24C seal-in has been defeated ◦ Informs SRO that LPCI 'C' injection is lined up and ready ◦ Prompts for direction from SRO for level band

Event Termination Criteria	• Drywell sprays in service with containment parameters stable • RPV level controlled and maintained in ordered band