NMP SIMULATOR SCENARIO

NMP2 2012 NRC SCENARIO #1   REV. 0

SWAP THE OPERATING HPU SUBLOOPS, RECIRC PUMP SEAL FAILURE, RBM FAILURE, LOSS OF EHC CLOSES TSVS AND BPVS, SRV FAILS OPEN, SUPPRESSION POOL FAILURE, FAILURE OF ADS VALVES DURING BLOWDOWN.

PREPARER	E. Bowles/David Huff	DATE	9/12/2011
VALIDATED	Sawyer, Hilliker, Sobolewski	DATE	06/10/2011
FACILITY REPRESENTATIVE		DATE	9/15/11
OPERATIONS MANAGER	NA Exam Security	DATE	
CONFIGURATION CONTROL	NA Exam Security	DATE	

SCENARIO SUMMARY

Length: 1.5 hours

Initial Power Level: 100%

The scenario begins at 100% power. The BOP will swap HPU subloops. After the HPU swap the "B" Recirculation Pump seal will start to fail and will require tripping and isolating the "B" Recirculation Pump, **(CRITICAL TASK)** and entry into Technical Specifications 3.4.1.

Once the Tech Specs are addressed the "A" RBM will fail inop requiring bypassing the RBM and entering Tech Spec 3.3.2.1. After these T.S. are addressed the operating EHC pump will trip and the standby pump will not start either automatically or manually. This will cause a rapid rise in RPV pressure when the Main Turbine control and bypass valves fail closed. Due to RPS failures, the ARI system will scram the plant on high RPV pressure. In addition, the pressure spike will cause several SRVs to open and one Non-ADS SRV will stick open placing the plant in an uncontrolled cooldown situation. The crew will take the required actions per N2-SOP-34 and close the valve. The pressure transient caused by this delayed scram and stuck open SRV will have impacted the suppression pool causing a suppression pool leak. The crew will take action and attempt to refill the suppression pool but will be unsuccessful. The leak will cause flooding alarms in the RB requiring entry into N2-EOP-SC. The lowering suppression pool level will require the crew to enter N2-EOP-C2 and blowdown the reactor, **(CRITICAL TASK)**. The blowdown will be complicated by a failure of the 7 ADS valves to open and the crew will be required to open 2 additional SRVs.

Termination Criteria: 7 SRVs are open

Major Procedures Exercised: N2-EOP-RPV, N2-EOP-PC, N2-EOP-SC, N2-EOP-C2

Mitigation Strategy: PC2 - Loss of inventory in SP requiring an RPV blowdown

SIMULATOR SET UP

A. IC Number: 153, Batch File: n11scen1.bat

B. Presets/Function Key Assignments:

1. Malfunctions:

a.	**RP02**, RPS AUTO FAIL TO SCRAM, FV=TRUE	**INSERTED**
b.	**AD03B**, PSV128 STUCK, FV=TRUE	**INSERTED**
c.	**TC06**, TURBINE BYPASS VALVES FAIL CLOSED, FV=TRUE	**INSERTED**
d.	**AD08A**, PSV121 ADS N2 SUPPLY SEVERED, FV=TRUE	**INSERTED**
e.	**AD08C**, PSV126 ADS N2 SUPPLY SEVERED, FV=TRUE	**INSERTED**
f.	**RR15B**, RCS*P1B INNER SEAL LEAK, FV=100%	**TRG 1**
g.	**RR16B**, RCS*P1B OUTER SEAL LEAK, FV=3%, DT=3:00	**TRG 1**
h.	**NM19A**, RBM A INOP FAILURE, FV=TRUE	**TRG 2**
i.	**TC15A**, EHC P1A ELECTRICAL FAULT, FV=TRUE	**TRG 3**
j.	**TC15B**, EHC P1B ELECTRICAL FAULT, FV=TRUE	**TRG 3**
k.	**PC12**, SUPPRESSION POOL LEAK TO RB, FV=100%, RT=2:00	**TRG 3**

2. Remotes:

a.	**RH05**, V71 CNS TO RHS A SUPPLY, FV=OPEN	**TRG 4**
b.	**RC02**, RCIC LEVEL 8, FV=DEFEATED	**TRG 5**

3. Overrides:

a.	**01A2S165DI0493** (2CSH*MOV111 CNT SWTCH), FV=0	**INSERTED**
b.	**01A2S165DI0494** (2CSH*MOV111 CNT SWTCH), FV=0	**INSERTED**

4. Annunciators:

a.	None	

5. Event Triggers:

a.	Event # **10**	Event Action:	**zdads09(1)==1** (PSV 128 control switch to off)
		Command:	**dmf AD03B**

C. Equipment Out of Service

1. RHR B and LPCI C system's are tagged out and depressurized for Division II workweek.

D. Support Documentation:

1. N2-OP-29, Section F.2.0

E. Miscellaneous:

1. Protected Equipment:

   i. RHR A Pump Control Switch

   ii. LPCS Pump Control Switch

2. Place red clearance tag on the Division II keep fill pump
3. Place yellow clearance tag on the following components:
   i. RHR B pump switch
   ii. RHR C pump switch
   iii. 2RHS*MOV24B
   iv. 2RHS*MOV24C
4. Ensure >100% Rodline sign posted

II. **SHIFT TURNOVER INFORMATION**

ON COMING SHIFT: ☐ N ■ D DATE: ____________

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 = Rated
- Rodline > 100%
- RHR B and LPCI C are tagged out and depressurized for 2RHS*P2 motor repair
- Currently 4 hours into 72 hour LCO for 3.5.1 Condition C and 4 hours into 7 day LCO for 3.6.1.6, Condition A. Additionally 3.5.1 condition 'A' (twice) for LPCI B and C, 3.6.2.3 condition 'A' (supp pool cooling), 3.6.2.4 condition 'A' (supp pool spray). LPCS and RHR A are protected.

PART III: Remarks/Planned Evolutions:

- Place HPU A subloop 1 in lead and subloop 2 in standby per N2-OP-29, Section F.2.0

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

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRO)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

PERFORMANCE OBJECTIVES

A. Critical Tasks:

CRITICAL TASK DESCRIPTIONS:	**CRITICAL TASK JUSTIFICATION:**
CT-1.0 Given a failure of 2RCS*P1B pump seals, the crew will take action to trip and isolate 2RCS*P1B IAW N2-SOP-29.1	*This task is identified as critical because without operator action to trip and isolate the Recirc pump, Drywell pressure would continue to rise until the reactor automatically scrams.*
CT- 2.0 Given a lowering suppression pool level, the crew will open 7 SRVs per N2-EOP-C2 prior to suppression pool level reaching 192 feet	*This task is identified as critical because without operator action to blowdown the RPV prior level reaching 192 feet, the primary containment pressure limit could be exceeded due to a loss of pressure suppression capability concurrent with pressure control via SRVs.*

EVENT 1 – Swap Recirc Pump HPU A subloops to 1 in lead and 2 in standby

SRO

- Directs BOP to place HPU A subloop 1 in lead and 2 in standby IAW N2-OP-29, Sect. F.2.0

BOP

- Acknowledges direction to place HPU A subloop 1 in lead and 2 in standby
- Verifies SUB LOOP 2 HPU in lead AND controlling Flow Control Valve.
- May momentarily depress SUB LOOP 2 READY pushbutton to obtain:
  - SUB LOOP 1 READY light illuminated.
  - SUB LOOP 1 MAINTENANCE light extinguished.
- Momentarily depresses SUB LOOP 1, PUMP/FAN MTR RUN pushbutton.
- Verifies the following SUB LOOP 1 indications are illuminated:
  - SUB LOOP 1, PUMP/FAN MTR RUN light.
  - SUB LOOP 1, PRESSURIZED light

Role Play

As PO directed to locally determine pressure report that local pressure gauge indicates 1900 psi and that adjustment is NOT required.

- Contacts PO and determines local pressure gauge is reading between 1850 and1950 psi
- Determines 2RCS-RV47A adjustment is NOT required.

BOP, (cont.)

- Performs the following for subloop 2:
  - Directs PO to use 2RCS-PI1001-B-2, and monitor accumulator pressure decay.

Role Play

As PO, acknowledge direction to monitor decay pressure. When asked, state that pressure decay check was satisfactory.

- Depress SUB LOOP 1, LEAD pushbutton.
- Verify the following indications illuminated.
  - SUB LOOP 1, LEAD light.
  - SUB LOOP 1, OPERATIONAL light.
  - SUB LOOP 1, PRESSURIZED light OR local pressure gauge indicates 1850-1950 psi.
  - SUB LOOP 2, PUMP/FAN MTR STOP light.
  - SUB LOOP 2, READY light.

602105 may alarm but will immediately clear

- Determines, 602105 RECIRC FCV A(B) MOTION INHIBIT, alarms AND immediately clears.
- Reports that HPU A subloop 1 is in lead and 2 is in standby.

EVENT 2 - RRP B seal lower and upper seal leak requires tripping Recirc pump.

When directed by Lead Evaluator, **insert** the following **malfunctions**:

TRG1 **RR15B**, RCS*P1B INNER SEAL LEAK, FV=100%
RR16B, RCS*P1B OUTER SEAL LEAK, FV=3%, DT=3:00

Expected Annunciators

- *602216, RECIRC PMP 1B SEAL STAGING FLOW HIGH/LOW*
- *851254, PROCESS AIRBORNE RADN MON ACTIVATED (delayed)*

Crew

- Identifies and reports RCS Pump B inner seal failure.

SRO

- Acknowledges report of failed RCS Pump B inner seal
- Directs entry into N2-SOP-29.1

BOP

- Acknowledges direction to enter N2-SOP-29.1

Role Play

As PO if dispatched to monitor the RCS pump vibration panel, wait two minutes and report that all vibrations are normal.

- May dispatch a PO to monitor vibrations on the vibration panel
- Determines upper seal cavity pressure is >920 psig
- Monitors drywell pressure and drywell floor drain leak rate

After the upper seal fails, the following annunciators are expected:

- *Annunciator 602220, Recirc Pmp 1A/1B mot temp Hi*
- *Annunciator 602110, Recirc Pump 1A Outer SL Leak High*

BOP

- Recognizes the failure of the upper seal

BOP , (cont.)

- Determines drywell pressure and RCS P1B motor temperatures are rising and conditions have been met to trip the pump.
- Trips RCS P1B as follows:
  - **Places P1B breaker 5B switch to trip**
  - Lowers RWCU flow to 450 gpm
  - Closes 2WCS*MOV104
  - Contacts PO and directs him to close 2RCS-V2029B

CT-1.0 Given a failure of 2RCS*P1B pump seals, the crew will take action to trip and isolate 2RCS*P1B IAW N2-SOP-29.1

Role Play

As PO, acknowledge report to close 2RCS-V2029B. After two minutes, report that 2RCS-V2029B is closed.

CT-1.0 Given a failure of 2RCS*P1B pump seals, the crew will take action to trip and isolate 2RCS*P1B IAW N2-SOP-29.1

  - **Isolates RRP Suction MOV10B**
  - **Isolates RRP Discharge MOV18B**
- Informs SRO of the direction to enter N2-SOP-29
- Refers to N2-OP-29, H.1.0

SRO

- Acknowledges report from BOP of direction to enter N2-SOP-29
- Directs RO to enter N2-SOP-29

- *Reactor Power will be ~67%*
- *Core Flow will be ~55 Mlb/hr*

RO

- Enters N2-SOP-29
- Determines a Recirc pump is in service
- Determines core flow and power is NOT within the Scram Region
- Determines Core flow AND power are NOT within the OPRM Dependent Stability Region
- Determines pre-transient rod line was >100%

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	RO, (cont.)
	• Inserts the first four cram rods
55% Power / 55 Mlb/hr core flow	• Reevaluates single loop P/F Map
	• Performs N2-SOP-29, Attachment 1:
	o Determines closure of one or both flow control valves did not cause the sudden reduction in core flow
	o Determines the plant is not operating within the EXIT region
	o Determines the plant is operating in the heightened awareness region and >3 OPRMs are operable
	o May determine plant conditions are stable and reference N2-OP-29 for operating in single loop
	o Determines one recirc pump tripped and the plant is not operating in natural circulation
	o Verifies closed flow control valve for B RCS loop
	o Verifies RCS loop A is operating <41,800 gpm
	o Verifies operating loop jet pump flow is <56.9 Mlb/hr on B22-R611A, RECIRC LOOP 1A SUM JET PMP FLO meter
Role Play As I&C acknowledge the direction to adjust APRMs, Rod Blocks, and Rod Block Monitor setpoints	o Contacts I&C for adjustment to APRMs, Rod Blocks, and Rod Block Monitor
	o Refers to N2-OP-29, Section H.6.0 for single loop operations.
Note DW pressure will continue to rise for a little while after the RRP is isolated because of hot water remaining in the isolation portion of the piping.	

SRO

- Refers to TS 3.4.1 and determines the LCO is not met due to RPS flow instrumentation is not reset for single loop operation. Enters a four hour LCO, Condition C.
- May refer to TS 3.4.5 for RCS leakage requirements.

Role Play

As RE contacted, acknowledge direction and inform the control room you will start working on it.

- Notifies RE to check thermal limits and to make adjustments to the rod pattern based on operation in the Heightened Awareness Region

Event 3: RBM "A" Failure High

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
When directed by Lead Evaluator, **insert** the following **malfunction**: **TRG2** **NM19A**, RBM A INOP FAILURE, FV=TRUE *Expected Annunciators* • *603204 RBM UPSCALE/ INOPERABLE* • *603442 CONTROL ROD OUT BLOCK*	
	Crew • Acknowledge/Report Annunciators • Diagnose failure of RBM A (INOP) **SRO** • Acknowledges report of failed RBM A • Direct response IAW ARPs as necessary **BOP** • Acknowledges SRO and enters ARP 603204 • Determines RBM A is INOP
Role Play As booth when contacted for indications on RBM A Interface Module Top, provide the following information: LED indications on A3 are as follows: • PWR 1-Lit • PWR 2-Not Lit • PWR A-Not Lit • PWR B-Not Lit LED indications on the cards: • A4-Not Lit • A5- Not Lit	• Completes N2-OP-92, Attachment 4 • Informs SRO of the results of Attachment 4 • Informs SRO that the RBM may be bypassed per N2-OP-92

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
• A6- Not Lit • A7-Lit • A8- Not Lit • A9- Not Lit • A10- Not Lit	
Role Play If contacted as the SM, acknowledge report. **Note** If the SRO decides to not bypass RBM A, at the Lead Evaluators discretion, call up the SRO as the SM and direct bypassing RBM A.	**SRO** • Acknowledges report from BOP • May contact the SM for direction • Directs bypassing RBM A per N2-OP-92.
Role Play If contacted as WWM and/or I&C, acknowledge the report	• Contacts WWM and/or I&C
Role Play When contacted as booth to provide indications at P608, inform the operator that BYPASS MANUAL is displayed in inverse video header for RBM A	**BOP** • Acknowledges direction to bypass RBM A • References N2-OP-92, Section H.2.0 • Determines no other RBMs are bypassed • Places the RBM bypass joystick to the 'A' position • Verifies RBM A BYPASS light is lit at P603 • Verifies BYPASS MANUAL is displayed in inverse video header at P608 • Informs SRO that RBM A is bypassed
Note Although RBM A is inoperable, it is only required to	**SRO** • Acknowledges report from BOP

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
be operable when no peripheral, (edge) rod is selected. If an edge rod is not already selected, the SRO may direct the RO to select an edge rod to exit the applicability requirements of TS 3.3.2.1	• References TS 3.3.2.1. Condition A and determines a 24 hour LCO applies • May direct selecting an edge rod to change the applicability

EVENTS 4 and 5 - Loss of EHC pumps results in Turbine Control and Bypass Valves failing closed, SRV stuck open

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
When directed by Lead Evaluator, **insert** the following **malfunctions**:	
TRG3 **TC15A**, EHC P1A ELECTRICAL FAULT, FV=TRUE **TC15B**, EHC P1B ELECTRICAL FAULT, FV=TRUE **PC12**, SUPPRESSION POOL LEAK TO RB, FV=100%, RT=2:00	
• *TCVs close and BPVs remain closed* • *RPV Pressure rises rapidly* • *RPV High Pressure ARI initiates* • *RPV level lowers.* • *RPS trips* • *SRVs are cycling*	
	CREW • Diagnoses and reports EHC failure. • Recognizes and reports Reactor SCRAM.
	RO • Places mode switch to shutdown • Gives scram report to SRO
	SRO • Acknowledges scram report. • Enters EOP-RPV Control on RPV high pressure and low RPV level • Directs RO to enter N2-SOP-101C • Directs an RPV water level band of 160 to 200 inches • Directs pressure band of 800 to 1000 psig via SRVs

SRO, (cont.)

- May direct suppression pool cooling be put in service on RHS A.

BOP

- Uses SRVs to maintain RPV pressure within the directed band
- Identifies PSV128 stuck open and informs the SRO

SRO

- Acknowledges reports from BOP concerning PSV128
- Directs entry into N2-SOP-34

Note

When the BOP places keylock switch for PSV128 in the off position, **verify** malfunction **AD03B** is **deleted**

BOP

- Enters N2-SOP-34
- Places keylock switch for PSV128 in the off position.
- Determines PSV128 is shut
- Informs the SRO and exits N2-SOP-34

RO

- 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
- Attempts to reset the scram as time permits:

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	RO, (cont.)
Role Play As Radwaste, acknowledge the direction to operate all pumps for 2DER-TK2A	o Notifies Radwaste to operate all pumps for 2DER-TK2A. o Places all four SDV high level bypass switches to bypass. o Resets ARI per N2-OP-36B H.3.0 by depressing all four ARI reset pushbuttons o Using scram reset switches, reset the scram and verifies all 8 pilot solenoid lights lit. • May secure one feed pump • 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 time permits inserts SRMs and IRMs
Role Play As PO directed to energize 2WCS-MOV107, acknowledge the report.	• As time permits, contacts PO and direct energizing 2WCS-MOV107 • May shutdown HWC

EVENTS 6 and 7, Suppression Pool rupture results in loss of inventory in the suppression pool, requires blowdown, two ADS valves fail to open on a blowdown

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
The suppression pool malfunction was initiated in the previous event. Approximately 1.5 minutes after TRG 3 went in, the following annunciators will alarm: • *851443 - RB GENERAL AREA 2A FLOODING* • *851444 - RB GENERAL AREA 2E FLOODING* • *851453 - RB FLOOR DR SYSTEM TROUBLE* • *If SPWL goes below 195 ft, 601458, RHS PUMP SUCTION PRESS ABNORMAL*	**CREW** • Recognizes and reports AN851443 and AN85144.
	SRO • Acknowledges report and enters N2-EOP-SC on area water level above 0 inches • Directs BOP to operate all available sump pumps • Directs ROs to dispatch PO to investigate flooding alarms
	BOP • Acknowledges SRO
Role Play If contacted as RW, report all RB Floor Drain Sump Pumps are running.	• Contacts Radwaste and directs them to operate all RB Floor Drain Pumps
Role Play When directed to investigate the RB flooding, wait two minutes and report that you are on RB 175' and there is water leaking from a crack in the suppression pool.	• Dispatches PO to investigate flooding in the RB • Reports PO investigation results to SRO

SRO

- Acknowledges report of a crack in the suppression pool
- Determines all discharges into the affected area have been isolated
- Determines a primary system is not discharging into the reactor building
- Waits for two or more areas water levels to be above their maximum safe values
- Directs BOP to monitor suppression pool level, (SPWL)

Note

It will take approximately 2.5 minutes from when TRG 3 went in to get to 199.5 feet in the suppression pool

BOP

- Acknowledges direction to monitor SPWL
- Informs SRO that SPWL is 199.5 feet

SRO

- Acknowledges report from BOP that SPWL is 199.5 feet and enters N2-EOP-PC
- Determines SPWL cannot be maintained above 199.5 feet
- Directs BOP to fill the suppression pool using HPCS per N2-OP-33, Section H.2.0 or H.3.0

Note

EOP-PC allows the suppression pool to be filled using either gravity drain through HPCS or using the actual HPCS pump. Either method is acceptable.

BOP

- Acknowledges direction to fill the suppression pool using HPCS per N2-OP-33, Section H.2.0 or H.3.0
- Fills the suppression pool using gravity drain (H.2.0) as follows:

BOP, (cont.)

- Verifies SRO has declared HPCS inoperable
- Verifies open CSH*MOV101, PUMP SUCT FROM CNDS TK
- Monitors AND maintains 2CSH*PI117, HPCS SYSTEM PRESS PMP, 65 psig

Note

2CSH*MOV111 will fail to open using control switch.

- Attempts to throttle open CSH*MOV111, TEST RETURN TO SUPPRESSION POOL
- Determines 2CSH*MOV111 will not open

* Fills the suppression pool using the HPCS pump (H.3.0) as follows:
  - Verifies SRO has declared HPCS inoperable
  - Performs prestart checks per section F.1.0
  - Starts HPCS Pump by placing the control switch in start
  - Verifies open 2CSH*MOV105
  - Monitors CST and SPWL

Note

2CSH*MOV111 will fail to open using control switch.

  - Attempts to throttle open 2CSH*MOV111
  - Determines 2CSH*MOV111 will not open

Role Play

As PO dispatched to try to manually open 2CSH*MOV111, acknowledge direction, wait 3 minutes and report to the control room that 2CSH*MOV111 cannot be opened and you are calling additional PO's to help you get it open.

* Informs the SRO and dispatches a PO to manually open 2CSH*MOV111

INSTRUCTOR ACTIONS/
PLANT RESPONSE

Roll Play

As PO dispatched to open 2RHS*V71, wait two minutes and **insert** the following **remote function**:

TRG4 **RH05**, V71 CNS TO RHS A SUPPLY, FV=OPEN

Report to the control room that 2RHS*V71 is open.

Note

It will take approximately 25 minutes from the time TRG 3 is activated before SPWL gets below 195 feet.

OPERATOR ACTIONS

SRO

- Acknowledges report from BOP that 2CSH*MOV111 will not open
- Directs BOP to fill the suppression pool using condensate through RHS A per N2-OP-31, Section H.6.0

BOP

- Acknowledges direction to fill the suppression pool using condensate through RHS A per N2-OP-31, Section H.6.0
- Fills the suppression pool by performing the following:
  - o Notifies the SRO that LPCI A is inoperable
  - o Depresses RHR A manually out of service pushbutton
  - o Places RHR A control switch in PTL
  - o Contacts PO and directs them to open 2RHS*V71
  - o Throttles open 2RHS*FV38A while maintaining >70 psig on the RHR discharge pressure meter
  - o Informs the SRO that filling of the suppression pool has begun.

SRO

- Determines suppression pool water level cannot be maintained >192 feet and (re)enters N2-EOP-RPV and blows down the RPV per N2-EOP-C2
- Determines the reactor will stay shutdown without boron

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	<u>**SRO, (cont.)**</u> • Determines drywell pressure is <1.68psig • Determines SPWL is >192 feet
CT- 2.0 Given a lowering suppression pool level, the crew will open 7 SRVs per N2-EOP-C2 prior to suppression pool level reaching 192 feet	• **Directs BOP to open 7 ADS valves**
	<u>**BOP**</u> • Determines no ECCS pump is running
CT- 2.0 Given a lowering suppression pool level, the crew will open 7 SRVs per N2-EOP-C2 prior to suppression pool level reaching 192 feet	• **Goes to PNL628 and P631 and attempts to open 7 ADS valves using the 14 keylock switches**
<u>**Note**</u> When the BOP attempts to open 7 ADS valves, PSV121 and PSV126 will fail to open due to severed N2 supply lines. This will be indicated on P601 N2 pressures for their associated accumulators reading 0 psig.	• Determines at P601 that only 5 ADS valves opened • Informs the SRO that only 5 ADS valves opened.
	<u>**SRO**</u> • Acknowledges report from the BOP that only 5 ADS valves are open • Directs BOP to open 2 additional SRVs until a total of 7 are open.
	<u>**BOP**</u> • Acknowledges direction to open 2 additional SRVs

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
CT- 2.0 Given a lowering suppression pool level, the crew will open 7 SRVs per N2-EOP-C2 prior to suppression pool level reaching 192 feet **Termination Criteria:** 7 SRVs are open	**BOP, (cont.)** • **Using keylock switches on P601, opens 2 additional SRVs** • Reports to the SRO that 7 SRVs are open.

NMP SIMULATOR SCENARIO

NMP2 2012 NRC SCENARIO #2 REV. 0

RESET A FEED REG VALVE LV-10A LOCKUP, RAISE REACTOR POWER, RWCU ISOLATION WITH A FAILURE TO ISOLATE, CRD PUMP TRIP WITH ACCUMULATOR FAILURES, CLOGGED SERVICE WATER TRASH RACKS, SMALL BREAK IN THE DRYWELL WITH A FAILURE OF HPCS.

PREPARER	E. Bowles/David Huff	DATE	9/12/2011
VALIDATED	Sawyer, Hilliker, Sobolewski	DATE	06/10/2011
FACILITY REPRESENTATIVE	[signature]	DATE	5/15/[illegible]
OPERATIONS MANAGER	NA Exam Security	DATE	
CONFIGURATION CONTROL	NA Exam Security	DATE	

SCENARIO SUMMARY

Length: 1.5 hours

Initial Power Level: 92%

The plant is operating at ~92% power with Feed Reg Valve LV-10A locked up and RCIC OOS for repairs to the turbine coupling. The valve locked up last shift when a momentary loss of signal occurred. Procedure N2-SOP-06, Feedwater Failures, was entered; power lowered to 92% and RPV level was stabilized. The valve is ready to be reset IAW N2-SOP-06, Attachment 1. RCIC is also danger tagged out of service for work on the coupling between the turbine and pump. The plant is on day one of a 14 day LCO IAW Tech Spec 3.5.3. The crew is directed to reset Feed Reg Valve LV-10A and place the valve back in automatic.

Once the Feed Reg Valve is back in automatic, the crew will restore Reactor power to 100% using Recirc Flow. After power has been raised, a heat exchanger tube leak in Reactor Water Cleanup will result in a high differential flow. The expected automatic isolation will fail. The BOP is expected to recognize the failure and manually isolate the system IAW associated ARPs. The SRO is expected to refer to Tech Specs for the instrument/isolation failure.

Next, the CRD P1A suction filter will clog causing a trip of the CRD pump and low pressure alarms on three accumulators. When the standby CRD suction filter is placed in service and a CRD pump is started the low pressure on one accumulator will NOT clear. Report from the field indicates accumulator pressure at 910 psig.. The SRO must enter T.S. 3.1.5 for the inoperable accumulator. After the Technical Specifications are addressed the service water trash racks will become clogged with debris causing service water intake bay level to drop requiring entry into SOP-11, Loss or Degraded Service Water system. When level lowers to 234 feet, 2SWP*MOV77A and B will fail to automatically open. The crew will manually open MOV77A and B, **(CRITICAL TASK)** and clean the trash racks which will cause intake bay level to return to normal.

When conditions have stabilized, or if the crew fails to recover service water, a loss of all condensate and feed will occur when the crew manually scrams the reactor. Additionally, a small coolant leak will

develop eventually requiring entry into EOP-PC. HPCS will not be available due to a bus fault. One RDS pump will trip on electric fault and one Liquid Poison pump will not start due to a failure of its suction valve. RPV level will lower to below TAF requiring an emergency depressurization to permit the use of low pressure ECCS systems **(CRITICAL TASK)**. The crew will restore reactor water level using the low pressure ECCS systems. Suppression Chamber Sprays are also expected to be utilized IAW N2-EOP-PC, Primary Containment Control.

Termination Criteria: Emergency depressurization is in progress and RPV level is being restored to the directed band.

Major Procedures Exercised: N2-SOP-06, N2-SOP-11, N2-EOP-PC, N2-EOP-RPV, N2-EOP-C2, N2-EOP-6

Mitigation Strategy: RL2 – Loss of high pressure injection, RPV level cannot be maintained above TAF with low pressure systems and / or alternate coolant injection systems

SIMULATOR SET UP

A. IC Number: 154

Batch Files: n11scen2.bat, n11scen2a.bat, n11scen2b.bat, n11scen2c.bat

B. Presets/Function Key Assignments:

1. Malfunctions:

a.	**CU08**, WCS FAILS TO ISOLATE, FV=TRUE	**INSERTED**
b.	**SL03B**, SLS P1B SUCTION FAILS TO OPEN	**INSERTED**
c.	**CU06**, NRHX TUBE LEAK. FV=50, RT=2:00	**TRG 1**
d.	**RD18**, CLOGGED RDS SUCTION STRAINER, FV=TRUE	**TRG 2**
e.	**RD06-26-55**, ACCUMULATOR 26-55 ALARM, FV=TRUE, DT=3:00	**TRG 2**
f.	**RD06-30-43**, ACCUMULATOR 30-43 ALARM, FV=TRUE, DT=2:45	**TRG 2**
g.	**RD06-18-31**, ACCUMULATOR 18-31 ALARM, FV=TRUE, DT=2:40	**TRG 2**
h.	**CW09**, SW INTAKE CLOGGING, FV=50, RT=4:00	**TRG 3**
i.	**RR20**, DBA LOCA, FV=0.5, RT=15:00	**TRG 4**
j.	**FW01A**, CONDENSATE PUMP A TRIP, FV=TRUE	**TRG 4**
k.	**FW01B**, CONDENSATE PUMP B TRIP, FV=TRUE, DT=2	**TRG 4**
l.	**FW01C**, CONDENSATE PUMP C TRIP, FV=TRUE, DT=4	**TRG 4**
m.	**RH08,** GROUP 5 ISOLATION FAILURE, FV=TRUE	**TRG 5**

2. Remotes:

a.	**CW26**, 2SWP*MOV77A/B FAIL TO AUTO OPEN, FV=TRUE	**INSERTED**
b.	**RM02-040**, RE23A RAD MONITOR ONLINE, FV=ON	**TRG 6**
c.	**RM03-040**, RE23A SAMPLE PUMP POWER, FV=ON	**TRG 6**
d.	**RM02-041**, RE23B RAD MONITOR ONLINE, FV=ON	**TRG 7**
e.	**RM03-041**, RE23B SAMPLE PUMP POWER, FV=ON	**TRG 7**

3. Overrides:

a.	None	

4. Annunciators:

a.	None	

5. Event Triggers:

a.	Event # **4**	Event Action:	**zdrps1d==1** (Mode Switch to Shutdown)
		Command:	**Blank**
b.	Event # **10**	Event Action:	**hzlcshps2(2)==1** (HPCS red running indicating light is on)
		Command:	**imf ED05B (0 0) true**
c.	Event # **16**	Event Action:	**zar2r623la<0.776** (RPV Wide Range Level <159 inches)
		Command:	**bat n11scen2a.bat**

C. Equipment Out of Service

1. LV10A 86 device is tripped
2. RCIC is tagged out and isolated for repair work to the turbine coupling

D. Support Documentation:

1. N2-SOP-06, Attachment 1
2. Two copies of the attached RMI

E. Miscellaneous:

1. Ensure the following additional batch files are saved in the appropriate location on the simulator computer:
   i. n11scen2a.bat
   ii. n11scen2b.bat
   iii. n11scen2c.bat
2. Protect the following equipment:
   i. Division III EDG Start Switch
   ii. HPCS Pump Start Switch
3. Place red clearance tags on the following components:
   i. 2ICS*MOV121
   ii. 2ICS*MOV128
4. >100% Rodline Posted.

II. **SHIFT TURNOVER INFORMATION**

ON COMING SHIFT: ☐ N ■ D DATE: ______

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, ROs)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor Power = 92% following planned down power for feed pump swap
- Rodline > 100%
- RCIC is tagged out and isolated for work on the turbine coupling
- 2FWS-LV10A 86 device tripped due to momentary loss of power. N2-SOP-06 was entered and is still in progress. Cause has been identified and power has been restored. 2FWS-LV10A is awaiting restoration. The master FWLC controller is in automatic controlling RPV level using 2FWS-LV10B.
- Plant is on day 2 of a 14 day LCO per T.S. 3.5.3. Division III EDG and the HPCS pump are protected

PART III: Remarks/Planned Evolutions:

- Reset 2FWS-LV10A and place FWLC fully back in automatic per N2-SOP-06, Attachment 1 Section 1.1.3.
- After 2FWS-LV10A is reset and FWLC is in automatic raise reactor power to 100% using Recirc flow per the provided RMI. A Reactor Engineer and STA are available if needed.

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

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRO)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Raise Power to Rated Conditions **Step:** 3611

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes__ No_✓__
If YES above, RE presence not required for steps

Initial conditions to be verified prior to initiation of step:

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
CTP	3160-3220 MWth		Load Line	>100%	
Time	Today		MFLCPR	<0.90	

Description of Step:

1. Adjust recirculation flow to achieve 98% CTP (3390-3400 MWth) at a 25%CTP/hr ramp rate
2. Adjust recirculation flow to achieve rated conditions over next hour.

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

Critical Parameter	Limit	Owner	Frequency	Contingency
MFLCPR	0.98	STA	Hourly and every 5% rise in CTP	Notify SM and RE Supervision; Demand and review 3D cases every 15 minutes.
MFLPD or MAPRAT	0.97	STA	Hourly and every 5% rise in CTP	Notify SM and RE Supervision; Demand and review 3D cases every 15 minutes.
Load Line	114.5%	STA	Every ½ hour	Plot location on power flow map every 15 minutes; Implement contingency RMI to lower load line.

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

Other Comments:

- Recirculation flow adjustments may be made per Shift Manager direction at the recommendation of Reactor Engineering.

Step Prepared By:	Joe Engineer RE/STA	Today Date	Step Reviewed By:	John Engineer RE/STA/SRO	Today Date
Approval to Perform Step:	Joe Manager Shift Manager	Today Date	Step Completed By:	______ SRO	 Date

PERFORMANCE OBJECTIVES

A. Critical Tasks:

CRITICAL TASK DESCRIPTIONS:	CRITICAL TASK JUSTIFICATION:
CT-1.0 Given service water intake bay level less than 234 ft and a failure of 2SWP*MOV77A & 77B to automatically open, the crew will take action to manually open 2SWP*MOV77A & 77B per N2-SOP-11	*This task is identified as critical because without operator action the plant will lose its ultimate heat sink.*
CT-2.0 Given RPV level at or below the TAF but above the MSCWL, the crew will open 7 ADS valves IAW N2-EOP-C2	*This task is identified as critical because without operator action, RPV level will continue to lower until the fuel is no longer adequately cooled.*

EVENT 1 – Reset a LV-10A Lockup and place FWLC back in automatic

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO • Directs BOP to reset the LV-10A Lockup and place valve back in automatic IAW N2-SOP-06, Feedwater Failures, Attachment 1, Section 1.1.3
	BOP • Acknowledge the direction to reset a LV-10A Lockup and place valve back in automatic IAW N2-SOP-06, Feedwater Failures, Attachment 1, Step 1.1.3
Role Play As PO directed to verify power is available and breaker is on, report that power is available to LV10A and the circuit breaker is on at 2NHS-MCC003-7C	• Directs PO to verify power is available and breaker is on at 2NHS-MCC003-7C for LV10A
Role Play As PO directed to verify circuit breaker is on at 2FWS-PNL10A. Report that the breaker is on.	• Directs PO to verify circuit breaker is on at 2FWS-PNL10A for LV10A
	• Sets 2FWS-HIC1010A output (horizontal) to match actual valve position • Verifies Annunciator 603143 is clear • Resets the 86 device • May inform the SRO that LV10A lockout is reset • Returns LV10A to automatic control as follows: o Determines two feed pumps are in operation

BOP, (cont.)

- Throttles 2FWS-LV10A Feedwater Pump 1A Level Control Valve, by using the OPEN/CLOSE detent pushbuttons on 2FWS-HIC1010A controller UNTIL the input signal (vertical) AND output signal (horizontal) read the same on 2FWS-HIC1010A controller
- Verifies LV10B responds to control level
- Places 2FWS-LV10A in Auto by momentarily depressing the Auto (A) pushbutton on 2FWS-HIC1010A controller
- Informs the SRO that LV10A has been reset and FWLC is fully in automatic control

EVENT 2 - Raise reactor power to 100%

SRO

- Directs RO to raise power to 100% using Recirc flow per RMI and OP-101D, Att. 1.

RO

- Acknowledges direction to raise reactor power to 100% using Recirc flow.
- Raises power to 100% 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.
- Provides peer checks as needed

EVENT 3 RWCU Heat Exchanger Tube Leak with WCS failing to automatically isolate

When directed by the Lead Evaluator, **insert** the following **malfunction**:

TRG1 **CU06**, NRHX TUBE LEAK. FV=50, RT=2:00

The following annunciator will alarm approximately 80 seconds after TRG 1 is inserted:

602320, RWCU DIFF FLOW TIMER BYPASS.

602313, RWCU DIFFERENTIAL FLOW HIGH. will alarm 45 seconds after 602320 alarms

CREW

- Acknowledges alarm and informs the SRO
- Refers to ARPs

SRO

- Acknowledges report of alarm
- Directs actions IAW ARPs.

BOP

- When AN602313 alarms, determines RWCU did not isolate as expected.
- Informs the SRO that RWCU did not isolate.

SRO

- Acknowledges report that RWCU failed to isolate
- Directs BOP to isolate RWCU

BOP

- Acknowledges the order to isolate RWCU.
- Manually isolates RWCU as follows:
  - Closes RWCU Suction Inboard Isolation valve MOV102

BOP, (cont.)

- Closes RWCU Suction Outboard Isolation Valve, MOV112
- Verifies RWCU pump P1A trips
- Throttles open WCS-MOV110, CLEANUP DEMIN BYPASS VLV

Role Play
As WWM/SM acknowledge the report

SRO

- May contact SM/WWM and inform them that WCS failed to isolate
- Refers to Tech Specs 3.3.6.1 for auto isolation failure
  - Determines that Action A and B are applicable
  - Determines the isolation flow path is already isolated.

EVENT 4 Control Rod Drive Pump suction filter trip and Accumulator alarms

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
When directed by the Lead Evaluator, insert the following malfunctions: **TRG2** **RD18**, CLOGGED RDS SUCTION STRAINER, FV=TRUE **RD06-30-43**, ACCUMULATOR 30-43 ALARM, FV=TRUE, DT=2:45 **RD06-18-31**, ACCUMULATOR 18-31 ALARM, FV=TRUE, DT=2:40 **RD06-26-55**, ACCUMULATOR 26-55 ALARM, FV=TRUE, DT=3:00 The following annunciator alarms: *603318 CRD Pmp Suction Fltr Diff Press High* After the RDS pump trips then: *603308 CRD Pmp 1A/1B Auto Trip* *603309 CRD Pmp 1A Suct Press Low* *603311 CRD Charging Wtr Press Low* *603315 CRD PMP 1B Suct Press Low* *603446 CRD Pmp Disch Hdr Press Low* After a period of time following the pump trip: *603441 ROD DRIVE ACCUMULATOR Trouble* *603316 CONTROL ROD TEMPERATURE HIGH*	
	CREW • Recognizes and reports to the SRO RDS high suction filter DP • References ARP 603318 • Reports trip of RDS*P1A **SRO** • Acknowledges trip of RDS*P1A • Directs RO to enter N2-SOP-30

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Note Approximately 2.5 minutes after the RDS pump trips, three accumulator trouble alarms will come in as indicated by AN603441	**BOP** • Recognizes and reports the accumulator trouble alarms • References AN603441: o Determines which accumulators have trouble alarms by looking at the full core display o References N2-OP-30, Section F.7.0
Role Play As PO directed to report accumulator pressures, wait until an RDS pump is running and report the following values: 30-43: 1000 psig 18-31: 910 psig 26-55: 1000 psig	o Contacts a PO and directs them to report accumulator pressures for the alarming accumulators o Reports to the SRO that Accumulator 18-31 is reading 910 psig, (may also direct SRO to TS 3.1.5)
Role Play As PO directed to re-pressurize Accumulator 18-31, acknowledge the report. Note: This action will not be accomplished during the scenario, so if the control room calls up asking the status, delay.	o Directs the PO to re-pressurize Accumulator 18-31 per N2-OP-30, Section F.7.3
	RO • Acknowledges direction to enter N2-SOP-30 • Performs the actions of N2-SOP-30: o Determines a RDS pump is not operating o Shifts RDS flow controller to manual and closes it o Determines trip of RDS pump was due to low suction pressure

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	RO, (cont.)
Role Play As PO directed to go swap RDS suction filters, wait 2 minutes after the accumulator trouble alarms come in and then **delete** the following **malfunction**: **RD18**, CLOGGED RDS SUCTION STRAINER, FV=TRUE Inform the RO that the RDS suction filters have been swapped.	o Contacts PO and directs them to swap RDS suction filters per N2-SOP-30, Section F.1.0
Note Once an RDS pump is restarted, wait 10 seconds, and **delete** the following **malfunctions**: **RD06-30-43**, ACCUMULATOR 30-43 ALARM **RD06-26-55**, ACCUMULATOR 26-55 ALARM	o Once PO reports back the suction filters have been swapped, restarts RDS*P1A o Once an RDS pump is running, adjusts the RDS flow control valve so system flow is approximately 63 gpm o Places RDS flow controller back in automatic
Role Play When contacted by the RO to verify seal flows and backfill flows, wait two minutes and say they are satisfactory.	o Contacts PO and directs them to verify WCS/RCS seal flows and backfill flows per N2-OP-30, Section F.2.5 through F.2.9
Note Approximately 4 minutes after trip of RDS pump, AN603316, Control Rod Temp. High will alarm.	**BOP** • Recognizes and reports high CRDM temperature alarm
Role Play As PO dispatched to monitor CRDM temperatures, wait two minutes after start of RDS pump, (and AN603316 is clear), and report CRDM temperatures are back to normal.	• Contacts PO and dispatches them to monitor CRDM temperatures at 2RDS-TRS165

SRO

- Acknowledges report of Accumulator 18-31 pressure at 910 psig
- Enters Tech Spec 3.1.5 for one accumulator inoperable
- Determines condition A applies and performs one of the following:
  - Declares rod 18-31 slow

-or-

  - Declares rod 18-31 inoperable

EVENT 5: Lowering service water intake bay level with failure of 2SWP*MOV77A & 77B to automatically open.

Note

This event takes several minutes before an annunciator alerts the crew to a problem with the service water system. At the discretion of the Lead Evaluator, this malfunction may be inserted prior to completing the previous event.

When directed by the Lead Evaluator, **insert** the following **malfunction**:

TRG3 **CW09**, SW INTAKE CLOGGING, FV=50, RT=4:00

Service Water intake bay level will start to lower

Expected Annunciators:

601124 TRAVELING SCREEN WASH SYSTEM TROUBLE (first alarm)

After a period of time:

601115 SWP PUMP 1A/C/E SUCTION PRESSURE LOW
601127 SWP INTAKE BAY WATER LEVEL LOW
601218 SWP PUMP 1B/D/F SUCTION PRESSURE LOW

Note

When Service Water Intake Bay Level reaches 238 feet (~6 min.), **modify** the following **malfunction**:

CW09, SW INTAKE CLOGGING, FV=30

CREW

- May identify that SW intake bay level is lowering prior to any annunciator
- Recognizes and reports AN601124

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO • Acknowledges report • Directs actions per appropriate ARPs
Role Play As PO dispatched to investigate the trash rakes and travelling screens, wait two minutes and report that the travelling screens are clogged with debris but no additional debris is coming in. As necessary, respond to the control room that you are attempting to clean the travelling screens	**BOP** • Contacts PO and dispatches them to inspect and report the status of the trash rakes and traveling screens • Recognizes and reports SW intake bay level lowering
	SRO • Acknowledges report of lowering intake bay level • Directs BOP to enter N2-SOP-11
Role Play As PO dispatched to verify proper operation of the traveling screens and trash rakes per N2-OP-12, acknowledge report.	**BOP** • Acknowledges direction to enter N2-SOP-11 • Contacts PO and dispatches them to verify proper operation of traveling screens and trash racks per N2-OP-12 • Trips the Jet Motive Pump (SWP-P3) • When intake bay level lowers to 238 feet, verifies 2SWP*MOV30A/B are open
CT-1.0 Given service water intake bay level less than 234 ft and a failure of 2SWP*MOV77A & 77B to automatically open, the crew will take action to manually open 2SWP*MOV77A & 77B per N2-SOP-11	• **When intake bay level lowers to 234 feet, determines 2SWP*MOV77A & 77B failed to open automatically and manually opens them.**
Note If the crew places the mode switch in shutdown during this event, the next event will be automatically initiated.	• Determines intake bay level is rising and informs the SRO.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO • Acknowledges report of rising intake bay level.

Events 6, 7, 8: Loss of all condensate pumps, loss of HPCS due to bus fault, loss of RDS pump when started, failure of SLC pump to start, small break LOCA in drywell.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Note If the crew placed the mode switch to shutdown in the previous event, the below malfunctions will have already been inserted. If necessary, when directed by the Lead Evaluator, insert the following malfunctions: **TRG4** **RR20**, DBA LOCA, FV=0.5, RT=15:00 **FW01A**, CONDENSATE PUMP A TRIP, FV=TRUE **FW01B**, CONDENSATE PUMP B TRIP, FV=TRUE, DT=2 **FW01C**, CONDENSATE PUMP C TRIP, FV=TRUE, DT=4 *851254 PROCESS AIRBORNE RADN MON ACTIVATED* *DW pressure starts to rise slowly* *All condensate, booster, and feed pumps trip off* *When HPCS starts, it will immediately trip off on bus fault* *RPV water level starts to lower*	
	CREW • Recognizes and reports loss of all condensate and feed pumps • Places the mode switch to shutdown **RO** • Provides scram report to SRO • Informs SRO that feed and condensate is unavailable

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO • Acknowledges scram report from RO • Enters N2-EOP-RPV **SRO** • Directs RO to perform actions of N2-SOP-101C • Directs RO to maintain RPV water level 160 to 200 inches using HPCS • Directs BOP to maintain RPV pressure 800 to 1000 psig using EHC **RO** • Acknowledges direction to enter N2-SOP-101C and level band of 160-200 inches using HPCS • Recognizes and reports HPCS pump trip on bus fault **BOP** • Acknowledges direction to maintain pressure 800 to 1000 psig using EHC • Reports that drywell pressure is above the EOP entry conditions **SRO** • Acknowledges report of loss of HPCS and high drywell pressure • Reenters N2-EOP-RPV **SRO, (EOP-RPV)** • Directs RO to maximize CRD injection per N2-OP-30, Section H.3.0 • Determines alternate injection systems are needed and performs the following: o Directs RO to inject with SLS per N2-OP-36A, Section H.1.0

SRO, (cont.)

- Determines water level cannot be restored and maintained above -14 inches and enters center leg of N2-EOP-RPV.
- Directs BOP to inhibit ADS
- When MSIVs shut on low RPV water level, directs BOP to maintain RPV pressure 800-1000 psig using SRVs

RO

- Acknowledges direction to maximize CRD injection per N2-OP-30, Section H.3.0 and inject with SLS per N2-OP-36A, Section H.1.0
- Maximizes CRD flow as follows:
  - o Starts the non-running RDS pump
  - o Recognizes and reports trip of RDS pump which was just started
  - o Places RDS flow controller in manual and fully open the flow control valve while observing running pump amps
  - o Opens 2RDS-PV101 while observing running RDS pump amps
  - o Reports to the SRO that CRD flow is maximized
- Injects with SLS as follows:
  - o Places keylock switches for both SLS P1A and P1B in RUN.
  - o Recognizes SLS P1A started as expected and all indications are normal

Note

5 seconds after start of standby RDS pump, the just started pump should trip on motor electric fault. If it did not trip, **insert one** of the following **malfunctions** as appropriate for the recently started RDS pump:

RD12A, RDS P1A PUMP TRIP, FV=TRUE
RD12B, RDS P1B PUMP TRIP, FV=TRUE

Note

SLS P1B will not start due to a failed suction valve

Role Play

As PO dispatched to operate SLS P1B suction valve, wait two minutes and report that the valve is stuck and cannot be opened.

RO, (cont.)

- Recognizes and reports SLS P1B suction valve did not open
- Contacts a PO and dispatches them to manually open the suction valve of SLS P1B
- Reports to the SRO that SLS is injecting with only SLS P1A

BOP

- Acknowledges direction to inhibit ADS
- Inhibits ADS by performing the following:
  - Places BOTH DIV I and Div II ADS AUTOMATIC INITIATION DISABLE keylock switches in ON
- Informs the SRO that ADS is inhibited
- Informs the SRO when RPV water level reaches TAF
- When RPV level reaches L1, determines and reports that Division I and II ECCS systems auto start.

SRO, (EOP-RPV and EOP-C2)

- Determines at least two injection systems are lined up
- Waits until RPV water level is at TAF
- Determines all low pressure ECCS systems are lined up with a pump running
- Enters N2-EOP-C2, RPV Blowdown:
  - Determines Reactor will stay shutdown without boron
  - Determines drywell pressure is above 1.68 psig

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO, (cont.) o Determines there is no need to prevent LPCI or LPCS injection o Determines suppression pool level is >192 feet
CT-2.0 Given RPV level at or below the TAF but above the MSCWL, the crew will open 7 ADS valves IAW N2-EOP-C2	o **Directs BOP to open 7 ADS valves.**
	BOP • Acknowledges direction to open 7 ADS valves and performs the following: o Determines no SRVs are stuck open and an ECCS pump is running
CT-2.0 Given RPV level at or below the TAF but above the MSCWL, the crew will open 7 ADS valves IAW N2-EOP-C2	o **Arms and depresses both ADS pushbuttons for each division** o **Informs the SRO that 7 ADS valves are open** • Verifies Division I and II ECCS systems inject when pressure is lowered sufficiently
Note As RPV pressure lowers, all low pressure systems will inject and RPV level will begin to rapidly rise.	**SRO, (EOP-RPV and EOP-C2)** • Acknowledges report from BOP that 7 ADS valves are open • Directs BOP to inject with all available injection system to restore RPV level >MSCWL • As water level rises above MSCWL and TAF, directs BOP to secure injection sources as necessary to establish and maintain an RPV water level of 160 to 200 inches

SRO, (cont.)

- May direct BOP to remove either RHS A or B and place it into suppression chamber sprays per N2-EOP-6, Attachment 22
- May direct BOP to lineup RHS A or B for injection through shutdown cooling per N2-EOP-6 Attachment 30

Note

The SRO may direct the BOP to align RHR A or B for injection through shutdown cooling prior to blowing down the RPV. This is an acceptable action.

BOP, (EOP-6 Att. 30)

- Acknowledges direction from SRO to align RHS A(B) for injection with shutdown cooling and performs the following:
  - Verifies shut MOV15A(B)
  - Verifies shut MOV8A(B)
  - Verifies shut MOV33A(B)
  - Verifies shut MOV38A(B)
  - Verifies shut MOV24A(B)
  - Verifies shut MOV40A(B)
  - Contacts a PO and directs them to defeat the Group 5 interlock per N2-EOP-6, Attachment 30, Step 3.1.2
  - Verifies RHS A(B) is running
  - Verifies open MOV90A
  - Waits until RPV pressure is <350 psig
  - Throttles open RHS 40A(B) to raise RPV injection rate

Role Play

As PO directed to defeat the Group 5 interlock, wait 2 minutes and **insert** the following **malfunction**:

TRG5 **RH08**, GROUP 5 ISOLATION FAILURE, FV=TRUE

Report back to the control room that the Group 5 isolation interlocks have been defeated.

BOP, (cont.)

- o Throttles open MOV33A as necessary to establish service water flow to RHS heat exchanger
- o May start a 5th service water pump
- o Contacts RP to place RE-23A(B) in service
- Informs SRO that RHS A(B) is injecting through shutdown cooling

Role Play

As RP contacted to place RE-23A(B) in service, wait two minutes and **insert** the following **remote function** as appropriate:

TRG6	**RM02-40**, SWP 23A RAD MONITOR ONLINE, FV=ON **RM03-40**,SWP 23A RAD MONITOR SAMPLE PUMP POWER, FV=ON
TRG7	**RM02-41**, SWP 23B RAD MONITOR ONLINE, FV=ON **RM03-41**,SWP 23B RAD MONITOR SAMPLE PUMP POWER, FV=ON

Report back to control room that RE-23A(B) is in service

Note

Actions in EOP-RPV regarding establishing adequate core cooling will be prioritized, however as systems become available, the SRO may choose to use systems as necessary to mitigate primary containment parameters

SRO, (EOP-PC)

- Determines DW pressure cannot be maintained <1.68 psig
- Directs BOP to place suppression chamber sprays in service on RHS A(B) per N2-EOP-6 Attachment 22
- May direct restoring drywell cooling per N2-EOP-6 Attachment 22

BOP, (EOP-6 Att. 22)

- Acknowledges direction from SRO to spray the suppression chamber using RHS A(B):

BOP, (cont.)

- Verifies open MOV90A(B)
- Verifies shut and overridden MOV24A(B)
- Verifies RHS A(B) is running
- Verifies open 2RHS*MOV33A(B)
- Throttles open 2SWP*MOV33A as necessary to establish service water flow to RHS heat exchanger
- Contacts RP to place RE-23A(B) in service
- May start a 5th service water pump

* Informs the SRO that RHS A(B) is in suppression chamber sprays

Role Play

As RP contacted to place RE-23A(B) in service, wait two minutes and **insert** the following **remote function** as appropriate:

TRG6	**RM02-040**, SWP 23A RAD MONITOR ONLINE, FV=ON
	RM03-040,SWP 23A RAD MONITOR SAMPLE PUMP POWER, FV=ON
TRG7	**RM02-041**, SWP 23B RAD MONITOR ONLINE, FV=ON
	RM03-041,SWP 23B RAD MONITOR SAMPLE PUMP POWER, FV=ON

Report back to control room that RE-23A(B) is in service

Termination Criteria:

The scenario may end when emergency depressurization is in progress and RPV level is being restored to the directed band.

NMP SIMULATOR SCENARIO

NMP 2 NRC 2012 SCENARIO #3 REV. 0

PLACE HEATER DRAIN PUMPS IN RECIRCULATION, CONTINUE SHUTDOWN, CONTROL ROD DRIFT, HPCS INITIATION, RPS MG B TRIPS, LOSS OF INSTRUMENT AIR, ATWS AND RRCS FAILURE

PREPARER	E. Bowles/David Huff	DATE	9/12/2011
VALIDATED	Sawyer, Hilliker, Sobolewski	DATE	06/07/2011
FACILITY REPRESENTATIVE	[signature]	DATE	9/13/11
OPERATIONS MANAGER	NA Exam Security	DATE	
CONFIGURATION CONTROL	NA Exam Security	DATE	

SCENARIO SUMMARY

Length: 1.5 hours

Initial Power Level: 63%

The plant is operating at ~63% power and is the process of shutting down for a scheduled refueling outage. The crew will place the "C" heater drain pump in recirculation mode. The crew will then continue the shutdown by lowering recirculation flow. After a significant power reduction a control rod will drift out of the core. The SRO will direct the control rod be inserted and disarmed then enter Technical Specification 3.1.3.

Once the control rod drift is addressed the crew must respond to an inadvertent HPCS initiation that will require securing HPCS and placing it in pull-to lock. The SRO reviews T.S. 3.5.1 for HPCS being inoperable. After these Technical Specifications are developed RPS motor generator RPM-MG1A trips resulting in a "silent" half scram and the crew will enter N2-SOP-97. N2-SOP-97 will be used to transfer RPS solenoid power to the alternate supply. After the transfer is completed a break in the instrument air system will result in a loss of instrument air that eventually requires a reactor scram as scram air header pressure lowers. Additionally, one of the B/U air compressors will not automatically start requiring manual action to start it. The scram will result in a hydraulic ATWS. The crew must inhibit ADS to prevent an uncontrolled blowdown, **(CRITICAL TASK)**. The crew must terminate and prevent all injection except SLS, CRD and RCIC, **(CRITICAL TASK)**. In addition, both Division I and II RRCS systems fail to automatically initiate. When the crew takes manual actions to start SLC and isolate WCS both SLC pumps will start however one pump will immediately trip on motor overload. The crew will take action to insert control rods per EOP-6, Attachment 14, **(CRITICAL TASK)**.

Termination Criteria:	RPV level is <100 inches and control rods are being manually driven into the core
Major Procedures Exercised:	Major Procedures Exercised: N2-EOP-RPV, N2-EOP-C-5, N2-EOP-6, N2-SOP-8, N2-SOP-97, N2-SOP-19
Mitigation Strategy:	AT1 - High power ATWS, heat addition to suppression pool requires entry into level power control, RPV level controlled below feedwater spargers, RPV Blowdown not required

SIMULATOR SET UP

A. IC Number: 155

Batch Files: n11scen3.bat

B. Presets/Function Key Assignments:

1. Malfunctions:

a.	**IA04A**, LAG COMPRESSOR AUTO START FAILURE, FV=TRUE	**INSERTED**
b.	**IA04B**, B/U COMPRESSOR AUTO START FAILURE, FV=TRUE	**INSERTED**
c.	**RP12A**, RRCS DIV I FAILURE, FV=TRUE	**INSERTED**
d.	**RP12B**, RRCS DIV II FAILURE, FV=TRUE	**INSERTED**
e.	**RD17Z**, RD17 FOR ALL RODS, FV=14	**INSERTED**
f.	**RD05-22-47**, CONTROL ROD DRIFT, FV=TRUE	**TRG 2**
g.	**CS01B**, HPCS INITIATION ON LOW LEVEL, FV=TRUE	**TRG 4**
h.	**RP06B**, LOSS OF MG SET MG01B, FV=TRUE	**TRG 5**
i.	**IA01**, LOSS OF INSTRUMENT AIR, FV=80, RT=10:00	**TRG 7**
j.	**RP14A**, DIVISION I ARI DEFEATED, FV=TRUE, DT=2:00	**TRG 9**
k.	**RP14B**, DIVISION II ARI DEFEATED, FV=TRUE, DT=2:00	**TRG 9**
l.	**RP02**, RPS FAILURE TO SCRAM, FV=TRUE, DT=2:00	**TRG 10**

2. Remotes:

a.	**FW13C**, 2HDL-LIC24C REMOTE SETPOINT, FV=35, RT=2:00	**TRG 1**
b.	**RD08-22-47**, HCU ISOLATION, FV=CLOSE	**TRG 3**
c.	**RP02**, MG 2 EPA, FV=RESET	**TRG 6**
d.	**MS06A**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00	**TRG 8**
e.	**MS06B**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00	**TRG 8**
f.	**MS06C**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00	**TRG 8**
g.	**MS06D**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00	**TRG 8**
h.	**RC10**, RCIC/MT TRIP INTERLOCK, FV=DEFEATED, DT=60	**TRG 11**

3. Overrides:

a.	None	

4. Annunciators:

a.	None	

5. Event Triggers:

a.	Event # **15**	Event Action:	**zdrps1d==1** (Mode switch to shutdown)
		Command:	**dmf IA01**
b.	Event # **16**	Event Action:	**hzlslcspump1a(2)==1** (SLS P1A running light lit)
		Command:	**imf SL03A (0 0) true**

C. Equipment Out of Service

    1. None

D. Support Documentation:

    1. N2-OP-101D, Marked up to step G.1.17.1
    2. N2-OP-8, Section G.1.0. Steps G.1.1 through G.1.4 are marked as complete.

E. Miscellaneous:

    1. >100% Rodline Sign NOT Posted

II. **SHIFT TURNOVER INFORMATION**

OFF GOING SHIFT: ☐ N ■ D DATE: ____________

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

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

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

- LCO Status (SM, CRS, STA)
- Shift Turnover Information Sheet

Evolutions/General Information/Equipment Status:

- Reactor Power = 63%
- Rodline <100%
- Reactor and plant shutdown is in progress per N2-OP-101D. Currently on step G.1.17.1
- Heater Drain Pumps A and B are in Recirculation Mode

PART III: Remarks/Planned Evolutions:

- Place Heater Drain Pump C in recirculation mode per N2-OP-8, Section G.1.0. Steps G.1.1 through G.1.4 are complete. An operator is standing by at 2CES-IPNL204
- Once heater drain pumps are in recirc mode, lower reactor power to 58% using Recirc flow per the provided RMI. RE and STA are available in the control room.

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

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRO)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

ATTACHMENT 2: REACTIVITY MANEUVER INSTRUCTION

Reactivity Maneuver: Raise Power to Rated Conditions **Step:** Shutdown

INITIAL CONDITIONS/STEP DESCRIPTION

RE presence required in the Control Room? Yes ✓ No____
If YES above, RE presence not required for steps

Initial conditions to be verified prior to initiation of step:

Parameter	Expected Range	Actual	Parameter	Expected Range	Actual
CTP	2116 - 2252 MWth		Load Line	<100%	
Time	Today		MFLCPR	<0.90	

Description of Step:

1. Lower recirculation flow to achieve 58% CTP (2005-2015 MWth) at a 25% CTP/hr rate
2. Contact RE when complete

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

Critical Parameter	Limit	Owner	Frequency	Contingency
None				

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

Other Comments:

- Recirculation flow adjustments may be made per Shift Manager direction at the recommendation of Reactor Engineering.

Step Prepared By: Joe Engineer (RE/STA) Today (Date)
Step Reviewed By: John Engineer (RE/STA/SRO) Today (Date)

Approval to Perform Step: Joe Manager (Shift Manager) Today (Date)
Step Completed By: ________ (SRO) ____ (Date)

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CRITICAL TASK DESCRIPTIONS:	CRITICAL TASK JUSTIFICATION:
CT-1.0 Given a failure of the reactor to SCRAM the crew will inhibit ADS per N2-EOP-C5	*This task is identified as critical because without operator action to inhibit ADS prior to manually lowering RPV level, the reactor could experience a rapid and uncontrolled cooldown and subsequent injection of cold water which will dilute boron concentrations and add positive reactivity to the reactor if level were lowered below Level 1.*
CT-2.0 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 per N2-EOP-C5	*This task is identified as critical because without operator action to terminate and prevent injection, the reactor could experience large irregular neutron flux oscillations induced by neutronic/thermal-hydraulic instabilities.*
CT-3.0 Given a failure of the reactor to SCRAM, the crew will insert control rods per N2-EOP-6, Attachment 14	*This 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*

EVENT 1 - Place heater drain pumps in recirculation mode.

Note

The booth operator should have up the following screen displayed on the simulator computer: FW06, Extraction Steam II

Role Play

As PO directed to lower tape setting, immediately **insert** the following **remote function**:

TRG1 **FW13C**, 2HDL-LIC24C REMOTE SETPOINT, FV=35, RT=2:00

Once the remote setpoint reaches 35, contact the control room and inform them that the tape setting is at 35 and 2HDL-LV24C is closed.

Role Play

As PO, observe the position of LV24C on the FW06, Extraction Steam II display and inform the control room when it begins to open and control level.

SRO

- Directs the BOP to place Heater Drain Pump C in recirculation mode.

BOP

- Acknowledges direction to place Heater Drain Pump in recirculation mode.
- At 2CEC*PNL851, slowly raise HDL-LV4C, FD WTR HTR CNM-E4C WTR LEVEL CONTROL setpoint to 47%
- Contacts PO at 2CES-IPNL204 and directs them to slowly lower HDL-LV24C, 4TH PT HTR E4C HIGH DR tape setting in Auto UNTIL 2HDL-LV24C begins to open OR tape setting is at 35%.
- Places 2HDL-LV4C in MAN AND slowly closes the valve WHILE verifying the following:
  - At 2CES-IPNL204, HDL-LV24C, 4TH PT HTR E4C HIGH DR, opens to control heater level.
  - 2HDL-FV35C, HTR DRAIN P1C RECIRC FV POSN opens AND maintains a minimum system flow of approximately 1400 gpm.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	BOP, (cont.)
Role Play As PO directed to lower tape setting, immediately **modify** the following **remote function** as follows: **FW13C**, 2HDL-LIC24C REMOTE SETPOINT, FV=10, RT=1:00	• Contacts the PO and directs them to slowly lower tape setting for HDL-LV24C,4th PT HTR E4C controller set to 10% • Reports to the SRO that Heater Drain Pump C is in recirculation mode.

EVENT 2 – Continue the shutdown by lowering recirculation flow

SRO

- Directs RO to lower power to 58% in accordance with the RMI.

RO

- Lowers power to 58 % by reducing core flow
- Uses manual FCV closure signals at one of the Recirc FCV controllers, RCS*HYV17A&B, one FCV at a time.
- Moves RCS*HYV17A&B individually in the close direction, maintaining loop flow differential at a minimal.
- Monitors NIs and rate of power change.

BOP

- Monitors plant parameters to verify proper operations.
- Determines feedwater control maintains RPV water level.
- Provides peer checks as requested

EVENT 3 – Control Rod 22-47 drifts out of the core.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
When directed by the Lead Evaluator, insert the following malfunction: **TRG2** **RD05-22-47**, CONTROL ROD DRIFT, FV=TRUE • *Rod 22-47 begins to drift out* • *Reactor Power Rises* • *MWe Rises* • *603443, CONTROL ROD DRIFT*	
	<u>CREW</u> • Recognizes and reports rod 22-47 drifting out **<u>SRO</u>** • Acknowledges report of rod 22-47 drifting out • Directs RO to enter N2-SOP-08 **<u>RO</u>** • Acknowledges direction to enter N2-SOP-08 • Determines power change is due to a drifting control rod
<u>Note</u> When the RO attempts to insert the control rod, the rod will insert	• Selects rod 22-47 and depresses the insert pushbutton
<u>Note</u> Once the rod is fully inserted, the SRO/RO may direct the BOP to take over actions for N2-SOP-08	• Determines the control rod did insert and maintains the insert pushbutton depressed • Determines power was rising • Determines reactor power is already lowered below 85%

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	<u>RO, (cont.)</u> • Directs BOP to monitor off gas and main steam line radiation levels • Refers to Flowchart A and determines the initial flowchart actions have been completed • Determines the control rod can be fully inserted • Determines power is already less than 85%
<u>Note</u> When the RO releases the pushbutton, rod 22-47 will begin to drift out again.	• Releases the insert pushbutton • Determines the rod did not remain fully inserted • Re-depresses the insert pushbutton and fully inserts rod 22-47
<u>Role Play</u> As PO directed to isolate HCU 22-47, wait one minute and **insert** the following **remote function**: **TRG3** **RD08-22-47**, HCU ISOLATION, FV=CLOSE -AND- **Delete malfunction RD05-22-47** Report back to the control room that valves V103 and V105 for Accumulator 22-47 have been shut.	• Contacts PO and directs them to isolate the HCU for rod 22-47 • Releases the insert pushbutton and determines rod 22-47 remains fully inserted
<u>Role Play</u> As PO directed to disarm rod 22-47, wait 2 minutes and inform the control room that rod 22-47 has been disarmed.	• May contact a PO and direct disarming rod 22-47 per N2-OP-30

SRO

- Declares rod 22-47 inoperable and refers to T.S. 3.1.3 and determines entry into condition C is applicable.
- Determines rod 22-47 must be fully inserted within 3 hours and disarmed within 4 hours.

EVENT 4: Spurious initiation of HPCS

When directed by the Lead Evaluator, insert the following malfunction:

TRG4 **CS01B**, HPCS INITIATION ON LOW LEVEL, FV=TRUE

HPCS will auto start and begin injecting into the core
RPV water level will rise and FWLC will respond to lower level
MWth lowers
The following annunciators alarm:

- *852311 EDG 2 TROUBLE*
- *852317 EDG2 RUNNING*
- *603139 REACTOR WATER LEVEL HIGH/LOW*

CREW

- Recognizes and reports HPCS initiation and injection into the RPV

RO

- Monitors RPV water level and FWLC response.
- Reports to the SRO that FWLC is responding

SRO

- Acknowledges report of HPCS initiation and injection into the core and FWLC responding
- Directs BOP to determine if the HPCS initiation signal is valid

BOP

- Determines drywell pressure is <1.68 psig
- Determines RPV water level is >108.8 inches

Role Play

If contacted as booth to provide indication of the HPCS trip units all read normal and are not tripped.

- Goes to back panels and calls the booth for indication on the HPCS trip units
- Informs the SRO that HPCS did not initiate on a valid signal

SRO

- Acknowledges report from BOP that HPCS did not initiate on a valid signal
- Directs BOP to shutdown HPCS per N2-OP-33, Section G.3.0 or place HPCS in Pull-To-Lock

BOP

- Acknowledges direction to shutdown HPCS
- May depresses HPCS MANUALLY OUT OF SERVICE pushbutton
- Places HPCS control switch in PTL
- Informs SRO that HPCS is shutdown

Role Play

As PO dispatched to perform running checks on HPCS diesel, acknowledge report

- May contact PO and direct them to perform running checks on HPCS DG

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Role Play As WWM, acknowledge report of HPCS inadvertent initiation and inform the control room that you will put together a troubleshooting plan	**SRO** • Acknowledges report that HPCS is shutdown • Declares HPCS inoperable and enters T.S. 3.5.1 Condition B • May contact WWM and inform them of HPCS initiation

EVENT 5: RPS MG Set B trips

When directed by the Lead Evaluator, insert the following malfunction:

TRG5 **RP06B**, LOSS OF MG SET MG01B, FV=TRUE

The 4 white scram lights on the B RPS side will go out.

Role Play

As PO directed to check the EPAs and MG set, wait one minute and inform the control room that the RPS B RPM-EPAs are tripped, the B RPM-MG

CREW

- Identifies and reports the loss of RPS B scram solenoid power

SRO

- Acknowledges report of loss of RPS B scram solenoid power
- Directs BOP to enter N2-SOP-97

BOP

- Acknowledges direction to enter N2-SOP-97
- Makes an announcement to stop any half scram or isolation testing
- Determines cause of entry into N2-SOP-97 is due to loss of scram solenoid power
- Determines all lights are out on the B trip system
- Determines the power source selector switch is in NORM
- Contacts PO and directs him to check:
  - RPM-EPAs
  - RPM-MG set
  - MG set supply breakers

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
set is not running and the B RPS MG set supply breaker is tripped	**BOP, (cont.)** • Determines the MG set is not running
Role Play As PO directed to adjust the MG set, wait one minute and inform the control room that the B MG set output switch is OFF and the MOTOR OFF pushbutton was depressed until the green light was lit.	• Directs PO to place output switch for B MG set to OFF and hold MOTOR OFF pushbutton until green light is lit • Determines the ALT B FEED AVAILABLE light is illuminated at PNL610 • Places the power source selector switch for MG set B in ALT B
Role Play As PO directed to reset the B RPM-EPAs, wait one minute and **insert** the following **remote function**: **TRG6** **RP02**, MG 2 EPA, FV=RESET Inform the control room that the B RPM-EPAs have been reset.	• Contacts PO and directs them to attempt to reset the RPS B EPAs per N2-SOP-97, Detail B • Determines the 4 white RPS solenoid lights are on at P603. • Reports to the SRO that power has been restored to the RPS B solenoids. **SRO** • Acknowledges report that power has been restored to the RPS B solenoids

EVENT: 6, Loss of All Instrument Air Pressure with a failure of IAS-C3B to auto start

When directed by the Lead Evaluator, insert the following malfunction:

TRG7 **IA01**, LOSS OF INSTRUMENT AIR, FV=80, RT=10:00

Instrument air header begins to lower
Expected Associated Annunciators:
851229, INSTR AIR SYSTEM TROUBLE

Note
Malfunctions IA04A and B will prevent the lag and B/U compressors from starting. Manual action will have to taken to start the compressors

Note
Once all three instrument air compressors are running, air header pressure may begin to rise. As soon as the malfunction fully ramps in, the compressors will not be able to keep up with the leak and pressure will begin to lower again.

CREW
- Identifies and reports that instrument air header pressure is lowering

SRO
- Acknowledges report of lowering instrument air header pressure
- Directs BOP to enter N2-SOP-19

BOP
- Acknowledges direction to enter N2-SOP-19

Role Play
As POs directed to monitor local pressure gages, acknowledge the direction. Provide updates as requested using Simulator Display IA01, Instrument Air

- Contacts POs and directs them to monitor the following local pressure gages:
  - 2IAS-PI194, (RB 261')
  - 2RDS-PI133, (RB 261')

Role Play

As PO directed to investigate for leaks, acknowledge the direction.

Role Play

As soon as the mode switch is placed in shutdown, **verify deleted malfunction IA01**. As soon as the scram report is completed, contact the control room as PO and inform them that you have found the instrument air leak and have been able to isolate it.

BOP, (cont.)

- Determines that the lag and B/U air compressors failed to start and manually starts them
- Contacts PO and directs them to investigate for air leaks
- Attempts to determine the cause of the lowering air header pressure.
- Informs the SRO that air header pressure is lowering and cannot be restored

SRO

- Acknowledges report that instrument air pressure is lowering and cannot be restored
- Directs RO to place the mode switch in shutdown

RO

- Acknowledges direction to place the mode switch in shutdown
- Places mode switch in shutdown
- Provides scram report and informs the SRO that reactor power is NOT downscale and all rods are NOT in.

EVENTS 7 & 8 – Reactor fails to scram and RRCS fails to automatically initiate

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO
	• Acknowledges scram report.
	• Enters N2-EOP-RPV and then exits N2-EOP-RPV and enters N2-EOP-C5
Critical Task-1.0 Given a failure of the reactor to SCRAM the crew will inhibit ADS per N2-EOP-C5	• **Directs BOP to inhibit ADS**
	• Determines HPCS is already in Pull to Lock
	• May direct BOP to perform N2-EOP-6, Attachment 2, Prevent Main Turbine Trip from RCIC
	• Directs RO to initiate RRCS per N2-EOP-6, Attachment 13
	BOP
	• Acknowledges direction to inhibit ADS and prevent main turbine trip from RCIC
	• Inhibits ADS by performing the following:
Critical Task-1.0 Given a failure of the reactor to SCRAM the crew will inhibit ADS per N2-EOP-C5	o **Places BOTH DIV I and Div II ADS AUTOMATIC INITIATION DISABLE keylock switches in ON**
	• Informs the SRO that ADS is inhibited
	• Prevents main turbine trip from RCIC by performing the following:
Role Play As PO directed to prevent main turbine trip from RCIC, insert the following remote function:	o Contacts PO and directs them to prevent main turbine trip from RCIC per N2-EOP-6, Attachment 2, Section 3.1
TRG11 **RC10**, RCIC/MT TRIP INTERLOCK, FV=DEFEATED, DT=60	• Informs the SRO that the main turbine trip from RCIC has been prevented

When the remote function is inserted, contact the control room and inform them that the main turbine trip from RCIC has been prevented

RO

- Acknowledges direction to initiate RRCS per N2-EOP-6, Attachment 13
- Manually initiates RRCS as follows:
  - At PNL603, arms and depresses the Division I and II A and B RRCS MANUAL INITAITION SWITCHES
  - Determines the Division I and II ARI initiation lights are not lit
  - Determines SLC did not initiate after 98 seconds and WCS did not isolate as expected
  - Informs SRO that RRCS failed to initiate manually and that he is taking manual actions
  - Manually places the keylock switches for SLS P1A and P1B in start
  - Verifies SLS P1A and P1B starts and WCS isolates
  - Informs the CRS that both SLC pumps are running and WCS is isolated.

SRO

- Acknowledges the following reports:
  - ADS is inhibited
  - Main turbine trip from RCIC is prevented
  - RRCS failed to initiate and manual actions were required to start SLC P1A and P1B

	SRO, (cont.) o WCS has isolated • Directs BOP to maintain RPV pressure 800-1000 psig using EHC • Determines main condenser is available • Directs BOP to bypass the MSIV low level isolations per N2-EOP-6, Attachment 10.
Critical Task-2.0 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 per N2-EOP-C5	• **Determines reactor power is above 4% and RPV water level is above 100 inches** • **Directs BOP to terminate and prevent PNL601** • **Directs RO to terminate and prevent PNL603** • **Directs RO to let RPV level to lower below 100 inches and then establish a level band of 50 to 80 inches**
	BOP • Acknowledges direction to bypass the MSIV low level isolations
Role Play As PO directed to defeat the MSIV low level isolations, **insert** the following **remote functions**: **TRG8** **MS06A**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00 **MS06B**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00 **MS06C**, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00	• Contacts PO and directs them to bypass the MSIV low level isolations per N2-EOP-6, Attachment 10 • On PNL851, places the LOCA override switches for 2IAS*166 and 184 to OVERRIDE • On PNL851, verifies open 2IAS*166 and 184.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
MS06D, MSIV L1 DEFEAT, FV=DEFEATED, DT=2:00 When the remote functions have inserted, contact the control room and inform them that the MSIV low level isolations have been defeated.	**<u>BOP, (cont.)</u>** • Informs the SRO that the low RPV water level isolations have been defeated
	• Acknowledges direction to terminate and prevent PNL601 • Performs the following to terminate and prevent PNL601:
Critical Task-2.0 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 per N2-EOP-C5	o **Places CSL*P1, PMP 1, control switch in PULL-TO-LOCK** o **Arms and depresses LPCI A/LPCS MANUAL INITIATION pushbutton** o **Closes and overrides RHS*MOV24A, LPCI A INJECTION VLV and CSL*MOV104, PMP 1 INJECTION VLV** o **Places RHS*P1C, PMP 1C, control switch in PULL-TO-LOCK** o **Arms and depresses LPCI B & C MANUAL INITIATION pushbutton** o **Closes and overrides RHS*MOV24B, LPCI B INJECTION VLV and RHS*MOV24C, LPCI C INJECTION VLV**
	• Informs the SRO that PNL601 is terminated and prevented.

INSTRUCTOR ACTIONS/
PLANT RESPONSE

Critical Task-2.0 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 per N2-EOP-C5

OPERATOR ACTIONS

RO

- Acknowledges direction to terminate and prevent PNL603 and let level lower to below 100 inches
- Terminates and prevents PNL603 as follows:
  - **VERIFIES controller 2FWS-HIC1600 is in manual with 0% output**
  - **VERIFIES the following controllers are in manual with 0% output:**
    - **2FWS-HIC1010A**
    - **2FWS-HIC1010B**
    - **2FWS-HIC1010C**
    - **2FWS-LIC1055A**
    - **2FWS-LIC1055B**
    - **2CNM-LIK1137**
- Informs the SRO that PNL603 is terminated and prevented
- As RPV level is lowered, verifies that RCS pump first downshift and then trip as level lowers.
- **Lets RPV level lower to <100 inches** and then reestablishes feed flow and an RPV level band of 50 to 80 inches.

SRO

- Acknowledges reports from BOP and RO that PNL601 and 603 have been terminated and prevented
- Directs RO to insert all control rods per N2-EOP-6, Attachment 14

Critical Task-3.0 Given a failure of the reactor to SCRAM, the crew will insert control rods per N2-EOP-6, Attachment 14

Role Play

As PO directed to defeat the ARI and RPS interlocks, insert the following malfunctions:

TRG9 **RP14A**, DIVISION I ARI DEFEATED, FV=TRUE, DT=2:00
RP14B, DIVISION II ARI DEFEATED, FV=TRUE, DT=2:00

TRG10 **RP02**, RPS FAILURE TO SCRAM, FV=TRUE, DT=2:00

When the malfunctions are fully inserted, report to the control room that ARI and RPS interlocks have been defeated

Critical Task-3.0 Given a failure of the reactor to SCRAM, the crew will insert control rods per N2-EOP-6, Attachment 14

RO, (Repeated Manual Scrams)

- Acknowledges direction to insert control rods
- **Determines the scram solenoid power lights are off and the scram valves are open**
- **Resets ARI and defeats the RPS interlocks as follows:**
  - **Contacts a PO and directs them to defeat the ARI and RPS interlocks per N2-EOP-6, Attachment 14**
- **Resets RPS A and B by placing the reset switches on PNL603 in RESET**
- **Ensures all eight white RPS solenoid lights are lit**
- **Ensures AN603306, CRD SCRAM VALVE PILOT AIR HDR PRESS HIGH/LOW is clear**
- **Ensures SDV vent and drain valves are open**
- **Waits for the scram dump volume to drain.**
- **Initiates a manual scram when the SDV indicates sufficiently drained.**

RO, (Manual Insertion of Rods)

- Acknowledges direction to insert control rods
- **Verifies 2RDS-P1A and P1B are running**
- **Places controller 2RDS-FC107, CRD FLOW CONTROL, in MANUAL at (2CEC*PNL603)**

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	<u>RO, (cont.)</u> • **Depress the OPEN pushbutton on 2RDS-FC107 UNTIL the controller output meter shows 100% OR RDS pump motor current approaches 40 amps** • **Check that RDS System flow rises on C12-R606, CRD SYSTEM FLOW** • **Close 2RDS-PV101, DRIVE WTR PRESS CONTROL MOV, to maximize Drive Water ΔP** • **Ensure RDS Drive Water ΔP rises on C12-R602, DRIVE WTR DIFF PRESSURE** • **Using an SHH 5366 key, bypass the RWM by taking the RWM Operator Console BYPASS/OPERATE/TEST switch to the BYPASS position** • **Inserts control rods in a spiral pattern per N2-EOP-6, Attachment 14, Figures 14-2 and 14-3.**
Termination Cue: • RPV level is <100 inches • Control Rods are being manually driven into the core.	

NRC JPM S-1

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Align SBGTS Train "A" to the Drywell   Revision: NRC 2012

Task Number: 2000070501

Approvals:

______ / 9/15/11		NA EXAM SECURITY /	
Facility Representative	Date	General Supervisor Operations (Designee)	Date
NA EXAM SECURITY /			
Configuration Control	Date		

Performer:______________________(RO/SRO/AO)

Trainer/Evaluator:______________________

Evaluation Method: __X__ Perform ______ Simulate

Evaluation Location: ______ Plant __X__ Simulator

Expected Completion Time: 25 minutes   Time Critical Task: No   Alternate Path Task: No

Start Time: ________   Stop Time:________   Completion Time:________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:______________________   Date:__________

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

Simulator

Simulator Set-up (if required):

IC-157
Override off AN870102, SBGT TRAIN A HTR CHAN 1A DIFF TEMP LO

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

Directions to Operators:
Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-OP-61A, "Primary Containment Ventilation Purge & Nitrogen System", Section H.1.0
2. NUREG K/A: 295024, EA1.20 3.5 / 3.6

Tools and Equipment:

None

Task Standard:

SBGTS Train “A” running, aligned to the Drywell in accordance with applicable procedures.

Initial Conditions:

1. EOPs have been entered due to high suppression pool temperature.
2. Conditions require standby gas be placed on the drywell to reduce pressure.
3. Drywell and Suppression Chamber vent samples have been obtained and are satisfactory.
4. There is no Nitrogen makeup to the Primary Containment in progress.
5. Time does NOT permit performing N2-OP-61A, Attachment 3 for the valves operated (ODCM DSR 3.2.6.1).

Initiating Cues:

"(Operators name), Place Standby Gas Train "A" on the Drywell in accordance with N2-OP-61A, Section H.1.0."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat

RECORD START TIME ________

Performance Steps	Standard	Grade
•2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N2-OP-61A obtained. Precautions & limitations reviewed & section H.1.0 referenced.	Sat/Unsat

Note: *If necessary, instructor cue operator that time does not permit the filling out of attachment 3.*

Performance Steps	Standard	Grade
3. Open 2IAS*SOV168.	At P851, open "PRI CONTMT OUTBRD ISOL VLV TO DW", 2IAS*SOV168 by rotating control switch clockwise to the open position and observing Red Light ON, Green Light OFF.	**Pass/Fail**
4. Open 2IAS*SOV180.	At P851, open "PRI CONTMT INBD ISOL VLV TO DW", 2IAS*SOV180 by rotating control switch clockwise to the open position and observing Red Light ON, Green Light OFF.	**Pass/Fail**

Performance Steps	Standard	Grade
5. At 2CEC*PNL870, start SBGTS "A". *The following alarms actuate:* *870110 SBGTS TRAIN A AIR FLOW LOW* *870102 SBGTS TRAIN A HTR CHAN 1A DIFF TEMP LO*	At P870, start SBGTS "A" by rotating the "Train A Initiation" switch clockwise to the start position and releasing. Observe Red Light ON and Green Light OFF.	**Pass/Fail**
6. At CEC*PNL870, verify the following: • GTS*MOV1A opens • GTS*AOV2A opens • GTS*AOV3A opens • GTS*FN1A starts	At P870, verify GTS*MOV1A, GTS*AOV2A, GTS*AOV3A open GTS*FN1A starts Observe Red Light ON, Green Light OFF.	Sat/Unsat
7. Verify that chemistry is standing by to start the sampling required during the vent. ***Cue:*** *If requested, inform Operator that Chemistry is preparing to sample during the vent.*	Contacts Chemistry to prepare to sample during the vent per ODCM Table D3.2.1-1	Sat/Unsat
8. IF GTS operation is affecting RB Differential pressure, adjust controller 2GTS*PDIK5A, REACTOR BLDG INLET/OUTLET DIFF PRESS, to throttle 2GTS*PV5A, RX BLDG PRESSURE CONTROL, as necessary	Checks that RB diff pressure is stable	Sat/Unsat
9. At CEC*PNL873, verify the following valves closed: • CPS*AOV104 • CPS*AOV105 • CPS*AOV110 • CPS*AOV111 • GTS*SOV102 • GTS*AOV101	At P873, verify valves closed by observing Green Light ON and Red Light OFF.	Sat/Unsat

Performance Steps	Standard	Grade
10. At CEC*PNL875, verify the following valves closed: • CPS*AOV106 • CPS*SOV132/AOV107 • CPS*AOV108 • CPS*SOV133/AOV109	At P875, verify valves closed by observing Green Light ON and Red Light OFF. Note: CPS*AOV-106 may be open and must be closed, however the valve will NOT affect the venting lineup.	Sat/Unsat
11. Notify Chemistry to start ODCM Table D3.2.1-1 required sampling. ***Cue:*** *When contacted respond as Chemistry and acknowledge the direction to start ODCM Table D3.2.1-1 required sampling*	Chemistry contacted and directed to start ODCM Table D3.2.1-1 required sampling	Sat/Unsat
12. At CEC*PNL873, open 2GTS*SOV102.	At P873, open "CONTMT DEPRESSURIZE TO SBGTS ISOL VLV", 2GTS*SOV102 by rotating control switch clockwise to the open position and observing Red Light ON, Green Light OFF.	**Pass/Fail**
13. At CEC*PNL873/875, open the following: • CPS*AOV108 • CPS*AOV110	At P875, open 2CPS*AOV108 and, at P873, open 2CPS*AOV110 by rotating control switch clockwise to the open position and observing Red Light ON, Green Light OFF.	**Pass/Fail**
14. Monitor Drywell Pressure closely via 2CMS*P11A/B on 2CEC*PNL601 OR Computer Point CMSPA04.	Monitors Drywell Pressure Note: This will take a significant amount of time to observe a response in DW pressure, the evaluator may indicate that the task is complete at this time.	Sat/Unsat

Terminating Cue: SBGTS Train "A" running on the Drywell.

RECORD STOP TIME ________

Turnover Sheet

Initial Conditions:

1. EOPs have been entered due to high suppression pool temperature.
2. Conditions require standby gas be placed on the drywell to reduce pressure.
3. Drywell and Suppression Chamber vent samples have been obtained and are satisfactory.
4. There is no Nitrogen makeup to the Primary Containment in progress.
5. Time does NOT permit performing N2-OP-61A, Attachment 3 for the valves operated (ODCM DSR 3.2.6.1).

Initiating Cues:

"(Operators name), place Standby Gas Train "A" on the Drywell in accordance with N2-OP-61A, Section H.1.0."

NINEMILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

N2-OP-61A

REVISION 01500

PRIMARY CONTAINMENT VENTILATION, PURGE, AND NITROGEN SYSTEM

TECHNICAL SPECIFICATION REQUIRED

Approved by: F. R. Payne

Manager Operations

1/12/2012
Date

Effective Date: 1/16/2012

B. SYSTEM DESCRIPTION (Continued)

The LOCA isolation signal can be overridden for 2CPS*AOV108, AOV109, SOV121 and SOV122 by placing the associated purge inboard valves override keylock switch to OVERRIDE at 2CEC*PNL875.

C. OPERATING REQUIREMENTS

1.0 Systems

- N2-OP-19, Instrument And Service Air System
- N2-OP-34, Nuclear Boiler, Automatic Depressurization And Safety Relief Valves
- N2-OP-52, Reactor Building Ventilation
- N2-OP-61B, Standby Gas Treatment System
- N2-OP-71C, 600V A.C. Power Distribution
- N2-OP-72, Standby And Emergency A.C. Distribution System
- N2-OP-82, Containment Atmospheric Monitoring

D. PRECAUTIONS AND LIMITATIONS

1.0 When pressurizing the primary containment, caution should be exercised not to exceed the primary containment high pressure trip (scram) set point of 1.68 psig.

2.0 Prevent contact of liquid nitrogen with skin and clothing. Use extreme caution around the liquid nitrogen tanks to prevent personal injury.

3.0 Any venting or purging of the Drywell or Suppression Chamber shall be through the Standby Gas Treatment System.

- The 12" and 14" containment purge valves are opened in MODES 1, 2, and 3 for venting or purging through 2GTS*AOV101 AND one Standby Gas Treatment subsystem becomes inoperable THEN action per TS 3.6.1.3 is required. Refer to Surveillance Requirement SR 3.6.1.3.1.
- Vent and purge lineups shall be verified within 4 hrs prior to and every 12 hrs during VENTING or PURGING (ODCM DSR 3.2.6.1).

D. PRECAUTIONS AND LIMITATIONS (Continued)

4.0 Use caution when unisolating pressure control valves. Slowly crack open manual isolations to equalize pressure before fully opening valve.

5.0 When O_2 levels are checked using the CMS system, the sample stream must be selected to the appropriate source. For normal (non-emergency) readings the sample stream should be lined up for a minimum of 30 minutes prior to the taking of a reading.

(C3) 6.0 Closure of 2IAS*SOV166 and/or 2IAS*SOV184 in Modes 1, 2 or 3 will cause the Main Steam Isolation Valves to become inoperable due to the loss of Instrument Nitrogen supply. Closure of one or both of the Containment Isolation Valves supplying the Inboard MSIVs will require entry into Tech Spec 3.6.1.3, Condition A, and the resultant 8 hour LCO.

7.0 To prevent crossflow from the primary containment to the reactor building when using the 20" line to GTS, (2GTS*AOV101), the following plant parameters shall be maintained:

1. Primary containment pressure <0.41 psig.

2. Reactor building pressure shall not be more negative than −1.0" water.

3. Purge flow (air/nitrogen) shall be maintained less than GTS out flow.

8.0 During normal plant operations, do not vent, depressurize, or purge the Primary Containment if average containment temperature is above 150°F, subsequent inadvertent initiation of Drywell sprays could result in exceeding the design maximum negative containment differential pressure, (−4.7 psid).

9.0 Primary Containment Pressure Limits

9.1 There are two sets of limits on Drywell/Suppression Chamber pressure: −0.5 to +0.75 psig for USAR accident analysis, and 14.2 to 15.45 psia for Technical Specification 3.6.1.4.

9.2 The PSIG instruments are referenced to the Reactor Building and will vary with a change in Reactor Building or barometric pressure, while actual Primary Containment pressure may remain constant.

9.3 Adjusting Primary Containment pressure to maintain within the USAR limits due to barometric pressure changes without also referencing the PSIA instruments, could result in violation of the Technical Specification limits.

10.0 Performance of Subsections/Steps in this procedure may be required by the EOPs. Changes to these Subsections/Steps (including renumbering) are required to be reviewed by the EOP Coordinator.

(C5) 11.0 If a purge is in progress and a Rx Bldg Ventilation High Radiation alarm is received, termination of purge is required to ensure GTS is only lined up to the Reactor Building.

(C7) 12.0 Due to concerns involving bypassing the Suppression Pool, venting, purging or pressurizing of the Drywell and Suppression Chamber simultaneously is prohibited in Modes 1, 2 or 3. Suppression Pool bypass is prevented by maintaining at least one valve closed in the following bypass pathways:

- Bypass Path 1 - 2CPS*SOV119, 120, 121, 122
- Bypass Path 2 - 2CPS*AOV104, 106, 105, 107
- Bypass Path 3 - 2CPS*AOV108, 109, 110, 111

13.0 IF the Primary Containment is closed, the following requirements shall be adhered to regarding Chemistry sampling for containment Venting or Purging:

- The Suppression Chamber (SC) Purge may be performed with a pre-purge evaluation sample being performed ONLY on the SC. The Drywell (DW) Purge requires a pre-purge evaluation sample on BOTH the SC and DW. This is due to the ability for the SC to communicate with the DW if the DW vacuum breakers open. Commencing a DW purge does not require an additional SC sample if the SC has been sampled within 24 hours.
- Venting/Purging must commence within 12 hours of the pre-purge evaluation sample being drawn or within 24 hours of a pre-purge evaluation sample with no significant changes in the CMS radiation monitors after factoring out power effects. This allowable 12-hour extension is determined by the SM and the on-shift Chemistry Technician.
- IF for any reason Drywell vacuum breaker(s) open after the drywell sample is performed but before commencing the drywell purge, the drywell must be resampled prior to commencing the drywell purge as radiological conditions may have changed.
- Venting/Purging may be stopped and restarted (ie. for shifting chambers, equipment malfunction) without another pre-purge sample required provided the following are met:
    1) Still within 12 hours (24 hours with SM and on-shift Chemistry Technician approval) of the original pre-purge sample.
    2) There has been no significant change in the CMS radiation monitor levels after factoring out power effects from the time of the original sample.
- If a vent/purge is stopped and restarted, the samples for Tritium and Noble Gas from the Stack must be performed EACH TIME a vent/purge is restarted. (ODCM Table D3.2.1-1)
- The sample requirements for venting and purging are identical. A current sample for one satisfies the other.

14.0 If the recirculation line for either GTS train is isolated, the associated GTS train shall not be used for normal Primary Containment ventilation and purging.

D. PRECAUTIONS AND LIMITATIONS (Continued)

(C8) 15.0 Do not secure the containment air purge when personnel are working in the primary containment until a temporary air handling unit is placed in service, or as directed by the SM.

16.0 SR 3.6.1.3.6 requires that primary containment purge valves with resilient seals (12" and 14" supply and exhaust valves) be leak rate tested every 184 days AND once within 92 days after opening the valve.

(C9) 17.0 Drywell purge total duration prior to initial Drywell entry must be a minimum of 12 hours duration or Drywell Unit Coolers are periodically cycled prior to initial Drywell entry. This may be either "Drywell only" purge, combined containment purge (allowable in Mode 4 or 5 only), or a combination of both. This is necessary as local oxygen concentrations in the Drywell have been found below 19.5% even after Drywell atmosphere monitoring indicates 20% O_2.

(C10) 18.0 The CPS purge supply valves (2CPS*AOV104, 2CPS*AOV105, 2CPS*AOV106, and 2CPS*AOV107) must be leak rate tested using N2-ISP-CPS-Q001 following closure whenever primary containment integrity is required. These valves may still be considered as operable containment isolation valves prior to LLRT testing, but testing should be completed as soon as practical following valve closure. If plant is in Mode 4 or 5 (or in the process of shutting down), then this testing will be conducted after startup, when containment inerting has been completed.

(C11) 19.0 Personal Protective Equipment (PPE) shall be worn by all personnel (including driver) as follows:

When working with liquefied gases:

- Cold insulating gloves
- Safety glasses with full face shield or goggles with full face shield
- Long sleeve shirts and trousers
- Hard hats and safety shoes

When working with compressed gases:

- Work gloves
- Safety glasses (full face shield not required for handling compressed gases)
- Hard hats AND safety shoes

20.0 Placing 2GTS*PV5A (B) in manual will require the associated Standby Gas Treatment subsystem to be declared inoperable due to its inability to satisfy all secondary containment drawdown criteria. Refer to TS 3.6.4.3 AND TS 3.6.1.3.

(C13) 21.0 If the plant is in Modes 1, 2, or 3, the SGTS shall not be operated in the full flow (High Volume Purge) unless one of the following valves is closed: 2GTS*AOV28A or 2GTS*AOV28B.

22.0 If 2CPS-FN1 is supplying air to the Drywell OR Suppression Chamber and heating is not available to 2HVR-CH1 in the Reactor Building Ventilation Unit then monitoring of the associated primary containment penetrations temperature is required. Per SSM S106-0034, (Primary Containment Boundary Concerns) the following limits are applicable:

- Operational Conditions 1, 2, or 3

  If any penetration drops below 70°F, and does not drop below 60°F, then within 8 hours have Site Engineering perform Dynamic Event Evaluation and restore temperature equal to or greater than 70°F. Otherwise, place the Unit in Hot Shutdown within the next 12 hours and be in Cold Shutdown within the following 24 hours.

  If any penetration drops below 60°F at any time, then place the Unit in Hot Shutdown within the next 12 hours and be in Cold Shutdown within the following 24 hours. An engineering evaluation of the Primary Containment pressure boundary components must be performed prior to placing the Unit in Operational Conditions 1, 2, or 3.

- Operational Conditions 4 or 5

  If any penetration drops below 70°F, then restore temperature equal to or greater than 70°F as soon as possible. A Dynamic Event Evaluation must be performed satisfactorily by Site Engineering prior to placing the Unit in Operational Conditions 1, 2, or 3.

  If any penetration drops below 60°F, then restore temperature equal to or greater than 70°F as soon as possible. An engineering evaluation of the Primary Containment pressure boundary components must be performed prior to placing the Unit in Operational Conditions 1, 2, or 3.

H. OFF-NORMAL PROCEDURES

(EOP) (SOP) 1.0 Initiating Containment Venting

NOTES:

1. Performance of this subsection may be required by the EOPs. Changes (including renumbering) are required to be reviewed by the EOP Coordinator. (N2-EOP-PC)

2. Sample results prior to venting are not required if venting is directed by EOP's.

3. Chemistry sampling takes a minimum of 3 hours to complete.

4. Only one Standby Gas Treatment subsystem is required to be OPERABLE to allow opening the 12" and 14" containment purge valves in MODES 1, 2, and 3 provided 2GTS*AOV101 is closed (SR 3.6.1.3.1).

1.1 IF required, as determined by Chemistry Supervision, notify Chemistry to sample the containment for the pre-vent acceptance criteria of ODCM Table D3.2.1-1 per Precaution and Limitation D.13.0 guidance:

- IF NO vent/purge is in progress, sample BOTH the Drywell AND the Suppression Chamber.

- Suppression Chamber Venting may be performed with a pre-vent evaluation sample being performed only on the Suppression Chamber. Drywell Venting requires a pre-vent evaluation sample on BOTH the Suppression Chamber AND Drywell.

- Commencing DW venting does NOT require an additional SC sample IF the SC has been sampled within 24 hours.

1.1.1 Verify Chemistry has a current sample PRIOR to venting AND it is permissible to vent based on the results (ODCM Table D3.2.1-1).

1.1.2 IF the Nitrogen low flow makeup to Primary Containment is in service, secure makeup per Subsection F.8.0, Securing Nitrogen Addition to Drywell OR F.10.0, Securing Nitrogen Addition to Suppression Chamber.

****

CAUTION

During normal plant operations, do not vent, depressurize, or purge the Primary Containment if average containment temperature is above 150°F. Subsequent inadvertent initiation of Drywell sprays could result in exceeding the design maximum negative containment differential pressure, (−4.7 psid).

****

1.2 IF time permits, concurrently with the following steps, fill out Attachment 3 for the valves operated (ODCM DSR 3.2.6.1). The listed position shall be the position of the valve following completion of the step.

NOTE: If time does not permit simultaneous completion of Attachment 3 (Plant Transient), then completion of Steps H.1.3 through H.1.10 satisfies ODCM DSR 3.2.6.1 for verifying the pre-venting lineup.

1.3 IF desired to reduce Drywell OR Suppression Chamber pressure, open the following:

- IAS*SOV168 at 2CEC*PNL851.
- IAS*SOV180 at 2CEC*PNL851.

1.4 Start at least one of the GTS trains by placing TRAIN A(B) INITIATION Control Switch to START position at 2CEC*PNL870 (871) AND verify the following:

- GTS*MOV1A (B), INLET FROM RX BLDG VENTILATION - opens.
- GTS*AOV2A (B), TRAIN A (B) INLET VLV - opens.
- GTS*AOV3A (B), FAN 1A (B) DISCH ISOL VLV - opens.
- GTS*FN1A (B), SBGTS FAN - STARTS.

1.5 Verify that Chemistry is standing by to start the sampling required during the vent (ODCM Table D3.2.1-1).

NOTE: Placing 2GTS*PV5A (B) in manual will require the associated SGTS subsystem to be declared inoperable. Refer to TS 3.6.4.3 AND TS 3.6.1.3.

1.6 IF GTS operation is affecting Reactor Building differential pressure, adjust controller 2GTS*PDIK5A (B), REACTOR BLDG INLET/OUTLET DIFF PRESS, to throttle 2GTS*PV5A (B), RX BLDG PRESSURE CONTROL as necessary.

NOTE: If Reactor Building pressure is desired to be changed, then N2-OP-52, Section F.1.0, may be used.

(C7) 1.7 At 2CEC*PNL873, verify the following valves closed:

- CPS*AOV104, DRYWELL PURGE INLET OUTBOARD ISOL VLV.
- CPS*AOV105, SUPP CHMBR PURGE INLET OUTBOARD ISOL VLV.
- CPS*AOV110, DRYWELL PURGE OUTLET OUTBOARD ISOL VLV.
- CPS*AOV111, SUPP CHAM PURGE OUTLET OUTBOARD ISOL VLV.
- GTS*SOV102, CONTMT DEPRESSURIZE TO SBGTS ISOL VLV.
- GTS*AOV101, CONTAINMENT PURGE TO SBGTS ISOL VLV.

(C7) 1.8 At 2CEC*PNL875, verify the following valves closed:

- CPS*AOV106, DRYWELL PURGE INLET INBOARD ISOL VLV.
- CPS*SOV132/AOV107, SUPPR POOL PURGE N2 SUPPLY INBD INLET IV.
- CPS*AOV108, DRYWELL PURGE OUTLET INBOARD ISOL VLV.
- CPS*SOV133/AOV109, SUPPR POOL PURGE N2 SUPPLY INBD OUTLET IV.

1.9 Notify Chemistry to start ODCM Table D3.2.1-1 required sampling.

1.10 At 2CEC*PNL873, open GTS*SOV102, CONTMT DEPRESSURIZE TO SBGTS ISOL VLV.

(C7) **NOTE:** 1. Vent will only be established from one source at a time (either drywell or suppression chamber) to prevent bypass flows through purge lines.

2. If a vent/purge is stopped and restarted (i.e., for shifting sources, equipment malfunction), the samples for Tritium and Noble Gas from the Stack must be performed each time a vent/purge is restarted. See P&L D.13.0 (ODCM Table D3.2.1-1)

1.11 IF desired to reduce Drywell pressure, open the following:

- CPS*AOV108, DRYWELL PURGE OUTLET INBOARD ISOL VLV at 2CEC*PNL875.
- CPS*AOV110, DRYWELL PURGE OUTLET OUTBOARD ISOL VLV at 2CEC*PNL873.

1.12 IF desired to reduce Suppression Chamber pressure, perform the following:

- Open CPS*SOV133/AOV109, SUPPR POOL PURGE N2 SUPPLY INBD OUTLET IV at 2CEC*PNL875
- Open CPS*AOV111, SUPP CHAM PURGE OUTLET OUTBOARD ISOL VLV at 2CEC*PNL873

1.13 Monitor Drywell pressure closely via 2CMS*PI1A/B on 2CEC*PNL601 OR computer point CMSPA01/02.

1.14 Monitor Suppression Chamber pressure closely via 2CMS-PI168 on 2CEC*PNL601 OR computer point CMSPA04.

1.15 Complete Attachment 3 within 4 hrs to document the venting lineup AND continue to complete every 12 hours as long as venting is in progress (ODCM DSR 3.2.6.1).

1.16 WHEN Containment venting is NO longer required, perform Subsection F.19.0, Securing Containment Venting.

NRC JPM S-2

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Start RCIC in Reject to CST Mode (Tank to Tank) with EOP-HC Revision: NRC 2012

Task Number: 21700001008

Approvals:

_____________ / 9/15/11
Facility Representative Date

NA EXAM SECURITY /
General Supervisor Operations (Designee) Date

NA EXAM SECURITY /
Configuration Control Date

Performer:________________________(RO/SRO/AO)

Trainer/Evaluator:________________________

Evaluation Method: X Perform ______ Simulate

Evaluation Location: ______ Plant X Simulator

Expected Completion Time: 12 min. Time Critical Task: No Alternate Path Task: Yes

Start Time: ________ Stop Time: ________ Completion Time: ________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator's Signature:________________________ Date:__________

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

Simulator

Simulator Set-up (if required):

1. IC-158
2. Reactor is shutdown following a scram
3. RPV water level is <130 inches

4. Malfunctions:

a.	**RC01**, RCIC AUTO START FAILURE	**INSERTED**

5. Remote Functions:

a.	**RC02**, RCIC LEVEL 8, FV=DEFEATED	**INSERTED**

6. Overrides:

a.	**OVR-01A1S06SDI096**, RCIC MANUAL INITIATION PB, FV=OFF	**INSERTED**
b.	**OVR-01A1S06SDI097**, RCIC MANUAL INITIATION COLLAR, FV=OFF	**INSERTED**
c.	**OVR-01A1S071DI0126,** RCIC TURBINE TRIP PUSHBUTTON, FV=OFF	**INSERTED**
d.	**OVR-01A1S068DI098,** RCIC MANUAL ISOLATION PUSHBUTTON, FV=OFF	**INSERTED**

7. Annunciators:

a.	**AN601301**, RCIC TURBINE EXHAUST PRESSURE HIGH, FV=CRYWOLF, DT=5 SECONDS	**TRG 1**

8. Event Triggers:

a.	Event # **1**	Event Action:	**zdrcvs07(2)==1** (2ICS*FV108 switch in open)
		Command:	**Blank**

9. Miscellaneous:

   a. As necessary, remotely control SRVs from the Booth to maintain RPV pressure 800 to 1000 psig

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-EOP-HC, Attachment 5, 2CEC*PNL601
2. NUREG K/A K/A 217000, A4.03, 3.4 / 3.3

Tools and Equipment:

None

Task Standard: RCIC turbine tripped and isolated after aligning RCIC for injection with reject to CST's, (tank to tank mode)

Initial Conditions:

1. The reactor has scrammed and the MSIVs are closed due to a steam leak in the Turbine Building.
2. Feedwater is being used to control RPV water level
3. RCIC failed to initiate automatically using the MANUAL INITIATION pushbutton
4. RPV Pressure is being controlled using SRVs by another operator.
5. RCIC level 8 interlocks have been defeated
6. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name), Manually initiate RCIC per N2-EOP-HC and using RCIC in automatic, place it in the reject to the CST mode for RPV pressure control. Maintain RPV pressure 800-1000 psig using RCIC"

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ________		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N2-EOP-HC Attachment 5, 2CEC*PNL601 obtained. Page 4, Manual RCIC Injection referenced.	Sat/Unsat
3. Place 2ICS*FC101, Flow Controller in M for Manual, and set to 20% output.	Places 2ICS*FC101, Flow Controller in M for Manual, and depresses the closed pushbutton until the vertical needle reads 20%	**Pass/Fail**
4. Start GLAND SEAL SYSTEM AIR COMPRESSOR.	Verifies Gland Seal System Air Compressor is running, (Red light ON, Green light OFF).	Sat/Unsat
5. Open ICS*MOV116, LUBE OIL COOLING WATER SUPPLY.	Verifies 2ICS*MOV116, Lube Oil Cooling Wtr Supply is open, (Red light ON, Green light OFF).	Sat/Unsat

Performance Steps	Standard	Grade
6. Open ICS*MOV120, TURB STM SUPPLY VLV, AND observe RCIC Turbine speed rising	• Opens ICS*MOV120, TURBINE STEAM SUPPLY VLV. (Red light ON, Green light OFF)	**Pass/Fail**
	• Observes E51-C002-M1 and verifies speed is rising	Sat/Unsat
	• Verifies open ICS*MOV143, Pmp Minimum flow to Suppression Pool, (Red light ON, Green light OFF).	Sat/Unsat
7. WHEN ICS*MOV120 is full open, open ICS*MOV126, PMP 1 DISCH TO REACTOR	When ICS*MOV120 is full Open, opens ICS*MOV126, Pmp 1 Disch to Reactor (Green light OFF, Red light ON)	**Pass/Fail**
8. Slowly raise RCIC Turbine speed using RCIC FLOW CONTROLLER in Manual AND verify the following:	Slowly raise RCIC turbine speed using the RCIC flow controller OPEN pushbutton	**Pass/Fail**
• RCIC Turbine speed rises on E51-C002-M1	Observes E51-C002-M1 and verifies speed is rising	Sat/Unsat
• RCIC pump discharge pressure rises on E51-R601	Observes E51-R601 and verifies pressure is rising	Sat/Unsat
9. WHEN RCIC pump discharge pressure exceeds reactor pressure, verify the following:	Identifies RPV pressure and compares it against E51-R601 to determine when RCIC pressure exceeds RPV pressure	Sat/Unsat
• ICS*V156, REACTOR INJECTION OUTBD CHECK VLV, opens	Observes ICS*V156, REACTOR INJECTION OUTBD CHECK VLV opens, (Green light OFF, Red light ON)	Sat/Unsat
• ICS*V157, REACTOR INJECTION INBD CHECK VLV, opens	Observes ICS*V157, REACTOR INJECTION INBD CHECK VLV, opens, (Green light OFF, Red light ON)	Sat/Unsat
• RCIC injection flow rises on E51-R606	Observes RCIC injection flow rise. (E51-R606)	Sat/Unsat

Performance Steps	Standard	Grade
10. WHEN system flow exceeds 220 gpm, verify ICS*MOV143, PMP MINIMUM FLOW TO SUPPRESSION POOL, closes	When system flow exceeds 220 gpm, on (E51-R606), verifies ICS*MOV143, PMP MINIMUM FLOW TO SUPPRESSION POOL, closes (Green light ON, Red light OFF)	Sat/Unsat
11. WHEN RCIC injection flow reaches 600 gpm, place flow controller in Automatic	When E51-R606 reads 600 gpm, places 2ICS*FC101, Flow Controller in A for Automatic	**Pass/Fail**
12. Maintains Turbine Speed >1500 rpm and injection flow 400 to 600 gpm	• Observes E51-C002-M1 and maintains speed >1500 rpm	**Pass/Fail**
	• Observes E51-R606 and maintains flow between 400 and 600 gpm	**Pass/Fail**
13. Lineup for reject to the CST	Opens ICS*MOV124, Test Bypass to Condensate Storage Tank, (Green light OFF, Red light ON)	**Pass/Fail**
14. Controls flow to the Reactor to control RPV water level while operating RCIC to control RPV pressure	Control injection flow to reactor by throttling ICS*FV108, Test Bypass To Condensate Storage Tank, as follows: • Opens ICS*FV108 to lower RPV injection • Closes ICS*FV108 to raise RPV injection	**Pass/Fail**
Note: *5 seconds after ICS*FV108 is open, Annunciator 601301, RCIC TURBINE EXHAUST PRESSURE HIGH will alarm.*		
15. Acknowledges Annunciator 601301, RCIC Turbine Exhaust Pressure High	Recognizes and acknowledges 601301, RCIC Turbine Exhaust Pressure High	Sat/Unsat
Cue: *If candidate states they would confirm the annunciator by checking point ICSPC01, tell them that the point is in ALARM.*		

Performance Steps	Standard	Grade
16. References ARP 601301	Obtains ARP 601301 and reviews the Automatic Actions and Operator Response sections	Sat/Unsat
17. Determines RCIC should have tripped and isolated	Observes RCIC turbine is still in operation and associated isolation valves still open	Sat/Unsat
Note: *The operator may attempt to use the RCIC manual turbine trip pushbutton to shutdown RCIC. The turbine trip pushbutton will not work due to overrides.*		
18. Closes ICS*MOV150, TURBINE TRIP THOTTLE VLV	Closes ICS*MOV150, TURBINE TRIP THOTTLE VLV, (Green light ON and Red light OFF)	**Pass/Fail**
19. Closes ICS*MOV126, PMP 1 DISCH TO REACTOR	Verifies closed ICS*MOV126, PMP 1 DISCH TO REACTOR, (Green light ON and Red light OFF)	Sat/Unsat
20. Closes ICS*MOV143, PMP MINIMUM FLOW TO SUPPRESSION POOL	Verifies closed ICS*MOV143 PMP MINIMUM FLOW TO SUPPRESSION POOL, (Green light ON and Red light Off)	Sat/Unsat

Terminating Cue: **RCIC manually aligned for reject to the CST then manually tripped and isolated when a high exhaust pressure occurs.**

RECORD STOP TIME __________

Turnover Sheet

Initial Conditions:

1. The reactor has scrammed and the MSIVs are closed due to a steam leak in the Turbine Building.
2. Feedwater is being used to control RPV water level
3. RCIC failed to initiate automatically using the MANUAL INITIATION pushbutton
4. RPV Pressure is being controlled using SRVs by another operator.
5. RCIC level 8 interlocks have been defeated

Initiating Cues:

"(Operator's name), Manually initiate RCIC per N2-EOP-HC and using RCIC in automatic, place it in the reject to the CST mode for RPV pressure control. Maintain RPV pressure 800-1000 psig using RCIC"

NINE MILE POINT NUCLEAR STATION UNIT 2

EMERGENCY OPERATING PROCEDURE

N2-EOP-HC

Revision 00200

EOP HARD CARDS PROCEDURE

TECHNICAL SPECIFICATION REQUIRED

Approved by: J. Krakuszeski
J. A. Krakuszeski Manager Operations

11-1-10
Date

Effective Date: 11/04/2010

ATTACHMENT 5 (Cont)

2CEC*PNL601

6.0	Manual RCIC Injection	
6.1	Place 2ICS*FC101 in Manual AND set output to 20%	(__)
6.2	Start GLAND SEAL SYSTEM AIR COMPRESSOR	(__)
6.3	Open ICS*MOV116, LUBE OIL COOLING WATER SUPPLY	(__)
6.4	Open ICS*MOV120, TURB STM SUPPLY VLV, AND observe RCIC Turbine speed rising	(__)
6.5	Verify open ICS*MOV143, PMP MINIMUM FLOW TO SUPPRESSION POOL	(__)
6.6	WHEN ICS*MOV120 is full open, open ICS*MOV126, PMP 1 DISCH TO REACTOR	(__)
6.7	Slowly raise RCIC Turbine speed using RCIC FLOW CONTROLLER in Manual AND verify the following:	
	• RCIC Turbine speed rises on E51-C002-M1	(__)
	• RCIC pump discharge pressure rises on E51-R601	(__)
6.8	WHEN RCIC pump discharge pressure exceeds reactor pressure, verify the following:	
	• ICS*V156, REACTOR INJECTION OUTBD CHECK VLV, opens	(__)
	• ICS*V157, REACTOR INJECTION INBD CHECK VLV, opens	(__)
	• RCIC injection flow rises on E51-R606	(__)
6.9	WHEN system flow exceeds 220 gpm, verify ICS*MOV143, PMP MINIMUM FLOW TO SUPPRESSION POOL, closes	(__)
6.10	WHEN RCIC injection flow reaches 600 gpm, place flow controller in Automatic	(__)
6.11	Control RCIC Injection to maintain desired reactor level as required:	
6.11.1	Automatic control using thumbwheel WHILE maintaining:	
	• Turbine speed >1500 rpm	(__)
	AND	
	• Injection flow ≥400 gpm AND ≤600 gpm	(__)
6.11.2	Manual control using pushbuttons WHILE maintaining:	
	• Turbine speed >1500 rpm	(__)
	AND	
	• Injection flow ≤600 gpm	(__)
6.11.3	IF injection with reject to CST is required:	
	a. Open ICS*MOV124, TEST BYPASS TO CONDENSATE STORAGE TK	(__)
	b. Control injection flow to reactor by throttling ICS*FV108, TEST BYPASS TO CONDENSATE STOR TK, as follows:	
	• Open ICS*FV108 to lower RPV injection	(__)
	• Close ICS*FV108 to raise RPV injection	(__)

ATTACHMENT 5 (Cont)

2CEC*PNL601

6.0 Manual RCIC Injection (Cont)

NOTES:

1. The CST should be refilled as water is depleted to maintain the suction source available due to being higher quality water, higher elevation, and not affected by containment heatup or steam discharges from the RPV. Opening 2CNS-AOV123 attempts to maintain CST level greater than 33 feet.
2. 2CNS-AOV123 will auto close when CST level rises to 46 feet.

6.12 IF injecting with suction from CST, open 2CNS-AOV123, CONDENSATE STORAGE TKS MAKE UP VLV .... (__)

NRC JPM S-3

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Shift Running Instrument Air Compressors Revision: NRC 2012

Task Number: 2780040101

Approvals:

[signature] / 9/15/11
Facility Representative Date

NA EXAM SECURITY /
General Supervisor Operations (Designee) Date

NA EXAM SECURITY /
Configuration Control Date

Performer:____________________(RO/SRO)

Trainer/Evaluator:____________________

Evaluation Method: X Perform ________ Simulate

Evaluation Location: _____ Plant X Simulator

Expected Completion Time: 15 minutes Time Critical Task: NO Alternate Path Task: Yes

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:____________________ Date:__________

Recommended Start Location:

Simulator

Simulator Set-up:

1. IC 168
2. Verify the following IAS compressor lineup:

   a. C1A in lead
   b. C1B in lag
   c. C1C in backup

3. Malfunctions:

a.	**IA02B**, 2IAS-C3B THERMAL OVERLOAD, DT=5, FV=TRUE	**TRG 1**
b.	**IA04A,** IAS COMPRESSOR LAG AUTO START FAILURE, FV=TRUE, DT=5	**TRG 1**
c.	**IA04B,** IAS COMPRESSOR BACKUP AUTO START FAILURE, FV=TRUE, DT=5	**TRG 1**

4. Event Triggers:

a.	Event # **1**	Event Action:	**hzlia1asa01(1)==1** (IAS Compressor A green light lit
		Command:	**Blank**

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-19, Section F.2.0
2. N2-SOP-19
3. NUREG K/A 295019 AA2.01 3.5/3.6

Tools and Equipment:

1. None

Task Standard:

IAS-C3C is running and IAS header pressure is above alarm setpoint.

Initial Conditions:

1. 2IAS- C3A is due for periodic maintenance
2. A field operator is standing by to perform in-plant actions
3. Instructor to ask the operator for any questions.

Initiating cue:

(Operators Name), shift IAS compressors to place 2IAS-C3B as Lead, 2IAS-C3C as Lag, and 2IAS-C3A in backup in accordance with N2-OP-19, Section F.2.0.

Performance Steps	Standard	Grade
1) Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2) Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-19 obtained. Precautions & Limitations reviewed and section F.2.0 referenced.	Sat/Unsat
3) For the oncoming 2IAS –C3B: • Verify OFF/OPERATE switch in OPERATE • Verify UNLOAD/NORMAL switch in NORMAL • Confirm fault indicator lamps extinguished ***Cue:** Report that the OFF/OPERATE switch is in OPERATE, the UNLOAD/NORMAL switch is in NORMAL, and all fault indicator lights are OFF*	Requests an in-plant operator to verify that IAS-C3B is ready to start.	Sat/Unsat
4) Slowly open 2CCP-V523 ***Cue:** Report that 2CCP-V523 is open*	Request that the in-plant operator slowly open 2CCP-V523	Sat/Unsat
5) Select on-coming 2IAS-C3B as LEAD on Instrument Air Compressor Selector, at 2CEC*PNL851	Rotates Instrument Air Compressor Selector Switch to BCA position	**Pass/Fail**

Performance Steps	Standard	Grade
6) Place 2IAS-C3B control switch in Normal-After Start at P851	Rotates IAS-C3B control switch to NORMAL AFTER START	**Pass/Fail**
7) Determines IAS-C3B Started	Observes IAS-C3B red light – ON	Sat/Unsat
	Observes IAS-C3B green light – OFF	Sat/Unsat
	Observes AM-2IASB03 amps	Sat/Unsat
8) Confirm the following at on-coming compressor control panel: • 2IAS-PI25B, Oil Pressure >20 psig • 2IAS-PI41B, Intercooler Press. ~40 psig • 2IAS-PI24B, Comp. Disch. Press. 125 psig ***Cue:*** *When asked, Oil pressure is >20 psig, intercooler pressure is 40 psig, and discharge pressure is <125 psig*	Contacts operator and asks them to report local readings of oil pressure, intercooler pressure and compressor discharge pressure	Sat/Unsat
9) Slowly close on-coming 2CCP-V523, 2CCP-SOV87B bypass line isolation ***Cue:*** *Report 2CCP-V523 is closed*	Contacts operator and directs them to slowly close 2CCP-V523	Sat/Unsat
10) Verify off-going compressor UNLOAD/NORMAL switch in UNLOAD ***Cue:*** *Report A compressor UNLOAD/NORMAL switch is in UNLOAD*	Contacts operator and directs them to place A compressor UNLOAD/NORMAL switch to UNLOAD	Sat/Unsat
11) Slowly open off-going 2CCP-V520, 2CCP-SOV87A bypass line isolation ***Cue:*** *Report that 2CCP-V520 is open*	Contacts operator and directs them to open 2CCP-V520.	Sat/Unsat

12) Place off-going 2IAS-C3A control switch in Normal After STOP, at 2CEC*PNL851 ***Note:** 5 seconds after the 2IAS-C3A control switch is taken to stop, 2IAS-C3B will trip on motor overload. 8512278 will alert the operator to the trip.*	Places 2IAS-C3A control switch in NORMAL AFTER STOP	**Pass/Fail**
13) Identifies and reports 2IAS-C3B trips on thermal overload ***Note**: Annunciators 851259, INST AIR COMPRESSOR CLG WTR FLOW LOW, and 851260, INST AIR COMPRESSOR COOLING SYS TROUBLE may alarm. These annunciators are of no consequence to the JPM, and the candidates may not respond to them.* ***Cue:** Acknowledge the report of IAS-C3B trip*	Observes Annunciator 851228, INSTR AIR CPSR 3A/3B/3C AUTO START/ FAIL TO TRIP – LIT Observes IAS-C3B green light – ON Observes IAS-C3B red light – OFF Observes AM-2IBSA03 amps – 0 Reports to SRO trip of IAS B compressor	Sat/Unsat
14) Obtains and references ARP 851228 ***Cue:** If asked by the operator on entering N2-SOP-19, inform them to take action per appropriate procedures.*	Enters N2-SOP-19	Sat/Unsat
15) Enters the compressor leg of N2-SOP-19	Determines an air compressor WAS tripped or degraded	Sat/Unsat
	Determines the loss air B air compressor was NOT due to slow transfer or loss of control power	Sat/Unsat

16) Manually selects either 2IAS-C3A or 2IAS-C3C as lead **per the following:**

Note: *The operator may choose to wait to see if the lag compressor auto starts at 100 psig. This is an acceptable action. It will take ~80 seconds for IAS pressure to lower to 100 psig. Malfunctions will prevent the lag and b/u compressors from auto starting.*

Note: *The operator may start either C3A or C3C to pass the JPM*

• For 2IAS-C3A, Places COMPRESSOR SELECTOR SWITCH in position A-B-C	Rotates COMPRESSOR SELECTOR SWITCH to position A-B-C	**Pass/Fail** -OR-
• For 2IAS-C3C, Places COMPRESSOR SELECTOR SWITCH in position C-A-B	Rotates COMPRESSOR SELECTOR SWITCH to position C-A-B	**Pass/Fail**

17) Manually starts either 2IAS-C3A or 2IAS-C3C **per the following:**

• For 2IAS-C3A, Places control switch in NORMAL AFTER START	Rotates 2IAS-C3A control switch to NORMAL-AFTER-STOP and releases it	**Pass/Fail** -OR-
• For 2IAS-C3C, Places control switch in NORMAL AFTER START	Rotates 2IAS-C3C control switch to NORMAL-AFTER-STOP and releases it	**Pass/Fail**

Cue*: Inform the operator that another operator will complete the rest of the actions.*

TERMINATING CUE: IAS-C3A or C are running and IAS header pressure is rising

RECORD STOP TIME____________

Initial Conditions:

1. 2IAS- C3A is due for periodic maintenance
2. A field operator is standing by to perform in-plant actions

Initiating cue:

(Operators Name), Shift IAS compressors to place 2IAS-C3B as Lead, 2IAS-C3C as Lag, and 2IAS-C3A in backup in accordance with N2-OP-19, Section F.2.0.

NRC JPM S-4

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Post Scram Feed Pump Restart per N2-SOP-101C   Revision: NRC 2012

Task Number: N2-256000-01043, START CONDENSATE BOOSTER PUMPS AND FEEDWATER PUMPS DURING PLANT TRANSIENT

Approvals:

[signature]	9/15/11	NA EXAMINATION SECURITY	
Facility Representative	Date	General Supervisor Operations (Designee)	Date
NA EXAMINATION SECURITY			
Configuration Control	Date		

Performer:________________________________(RO/SRO)

Trainer/Evaluator:___________________________

Evaluation Method: _X_ Perform ______Simulate

Evaluation Location: _Plant _X_ Simulator

Expected Completion Time: 15 min.   Time Critical Task: No   Alternate Path Task: N/A

Start Time: ________   Stop Time:_________   Completion Time:_________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:______________________________   Date:_____________

Recommended Start Location: Simulator

Simulator Set-up:

1. IC 159
2. Insert a manual scram
3. Raise RPV water level until all Reactor Feed Pumps trip on high vessel level (level 8)
4. Allow level to lower below 159 inches
5. Booth operations may be needed to insert the following Remote Function: FW03A, FW AUX LUBE OIL PUMP A, FV=ON

Directions to the Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as Pass/Fail.
2. All steps are sequenced critical unless denoted by a "•".
3. During Evaluated JPM:
    - Self-verification shall be demonstrated.
4. During Training JPM:
    - Self-verification shall be demonstrated.
    - No other verification shall be demonstrated.

References:

1. N2-SOP-101C, Reactor Scram
2. NUREG K/A 259001 Reactor Feedwater System, A4.05, 4.0/3.9

Tools and Equipment:

1. None

Task Standard:

"A" Reactor Feed Pump in service and RPV level has been restored to between 160 and 200 inches.

Initial Conditions:

1. Reactor scram occurred due to momentary RPV Level 8 signals.
2. RPV Water Level is now below 159 inches.
3. N2-EOP-RPV is being executed.
4. N2-SOP-101C is being executed.
5. Feedwater pumps have tripped as a result of the level 8 signals.
6. No other abnormal conditions exist for the Feedwater system.
7. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name), Restart Feed Pump "A" and restore and maintain RPV water level between 160 and 200 inches on the Wide Range Instrumentation IAW N2-SOP-101C, Reactor Scram.

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N2-SOP-101C - LEVEL CONTROL LEG A, Detail A, is referenced and reviewed.	Sat/Unsat
***Note:** The following steps are in N2-SOP-101C, Detail 1:*		
3. Is at least one condensate pump running?	Observes at least one condensate pump running and answers YES.	Sat/Unsat
4. Verify the following:		
• Out of service condensate, booster and feed pumps in PTL.	Observes 3 condensate and boosters running.	Sat/Unsat
	Places feed pump A, B and C in PTL at P851.	Sat/Unsat
• At least 2 condensate pumps running.	Observes 3 condensate pumps running at P851.	Sat/Unsat

Performance Steps	Standard	Grade
• At least 2 booster pumps running.	Observes 3 boosters running at P851	Sat/Unsat
• 2FWR-FV2s closed	Observes REACTOR FD P1A, P1B and P1C RECIRC VLV POSN indicators at 0% VALVE POSITION on P851	Sat/Unsat
• Output of the following controllers in manual with 0% output:	At P603:	
o FWS-HIC55s	Verifies HIC55A in Manual at 0% output	Sat/Unsat
	Verifies HIC55B in Manual at 0% output	Sat/Unsat
o FWS-HIC1010's	Places HIC1010A in manual by depressing M button and lowers output to 0%	**Pass/Fail**
	Places HIC1010 B in manual by depressing M button and lowers output to 0%	**Pass/Fail**
o FWS-HIC1600	Places HIC1600 (Master) in manual by depressing M button and lowers output to 0%	Sat/Unsat
5. IF required, reset Level 8 pushbuttons	Observes three amber HI LEVEL TRIP lights lit on P603	Sat/Unsat
Note: *Level 8 trips will be sealed in via initial setup and reset will be required.*	Depresses amber HI LEVEL TRIP RESET pushbuttons on P603 and observes all three amber lights extinguish.	**Pass/Fail**

Performance Steps	Standard	Grade
Start feedwater pump as follows:		
6. Confirm suction pressure > 500 psi.	Observes 2CNM-PI70A, RX FD WTR P1A SUCT PRESS indicator reading at least 500 psig on P851	Sat/Unsat
7. Verify aux oil pump running. ***Role Play:*** *As PO if contacted to verify the Aux Lube Oil Pump is running, verify the following remote function is inserted: FW03A, FV=ON*	Observes AUX LUBE OIL PMP 2A FWL-2A red light is on and green light is off at P851. May contact PO to verify the AUX LUBE OIL PMP 2A FWL-2A control switch is in START.	Sat/Unsat
8. Place pump to red flag. ***Note****: After the control switch is taken to start FW Pump min flow valve, 2FWS-FV2A, will begin to open. When 2FWS-FV2A is about 19 % open the pump will start.*	Places REACTOR FW PMP 1A FWS P1A control switch to start position (red flag)	**Pass/Fail**
9. WHEN 2FWS-FV2A is about 19% open, confirm pump start.	Observes REACTOR FD P1A RECIRC VLV POSN indicator opens to 19% VALVE POSITION on P851.	Sat/Unsat
	Observes REACTOR FW PMP 1A FWS P1A starts	Sat/Unsat
10. Confirm flow for 2FWS-P1A of about 6500 gpm	Verifies flow of 2FWS-P1A is about 6500 gpm	Sat/Unsat
11. Inject with 2FWS-LV55A/B OR verify open FWS-MOV47A/B/C and inject with 2FWS-LV10A/B/C, as required ***Note:*** *Selected level control valve opens and FW HEADER A and B FLOW indicators at P603 rise as flow is established.*	Using controllers HIC55A or HIC1010A, opens LV55A or LV10A to establish injection to RPV.	**Pass/Fail**
12. Monitor and controls injection to restore RPV water level to 160 to 200 inches.	Restores RPV water level to 160 to 200 inches.	**Pass/Fail**
13. Reports RPV level restored	Reports RPV level restored using Feedwater Pump A.	Sat/Unsat

Terminating Cue: Reactor Feed Pump A running and RPV water level above 159 inches.

Performance Steps	Standard	Grade

RECORD STOP TIME________

Turnover Sheet

Initial Conditions:

1. Reactor scram occurred due to momentary RPV Level 8 signals.
2. RPV Water Level is now below 159 inches.
3. N2-EOP-RPV is being executed.
4. N2-SOP-101C is being executed.
5. Feedwater pumps have tripped as a result of the level 8 signals.
6. No other abnormal conditions exist for the Feedwater system.

Initiating Cues:

"(Operator's name), Restart Feed Pump "A" and restore and maintain RPV water level between 160 and 200 inches on the Wide Range Instrumentation IAW N2-SOP-101C, Reactor Scram Detail 1."

NRC JPM S-5

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Energizing 2ENS*SWG103 from the Div II EDG & 2NNS-SWG015 from 2ENS*SWG103

Revision: NRC 2012

Task Number: N2-SOP-03-01001

Approvals:

[signature] / 5/15/4	NA Exam Security /
Facility Representative Date	General Supervisor Operations (Designee) Date
NA Exam Security /	
Configuration Control Date	

Performer:_________________________________(RO/SRO)

Trainer/Evaluator:___________________________

Evaluation Method: _X_ Perform ______Simulate

Evaluation Location: _Plant _X_ Simulator

Expected Completion Time: 15 min. Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:_________ Completion Time:_________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:______________________________ Date:_____________

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

Simulator

Simulator Set-up (if required):

1. IC 160
2. Station Blackout
3. Div II EDG running. SWG 103 and SWG 015 de-energized
4. Fault identification section 1.6 complete (Provide with handout to candidate)

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-SOP-3, Sections 8.4 9.3
2. NUREG K/A 262001 A4.01 3.4/3.7

Tools and Equipment:

1. PA 3225 Key

Task Standard: Energize 2NNS-SWG015 & 2ENS*SWG103.

Initial Conditions:

1. The Reactor has just been manually scrammed.
2. A Station Blackout (SBO) is in progress.
3. A loss of coolant condition does NOT exist.
4. 2ENS*SWG 103 & 2NNS-SWG015 are required for SBO recovery.
5. Division II Emergency Diesel Generator is running
6. Fault identification per N2-SOP-03, Attachment 1, Section 1.6 is complete
7. Instructor to ask operator for any questions

Initiating Cues:

"(Operator's name), Energize 2ENS*SWG103 from the DIV II EDG and 2NNS-SWG015 from 2ENS* SWG103, in accordance with N2-SOP-03, Attachment 1, Section 1.7."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N2-SOP-3 obtained. Section 1.7 is referenced.	Sat/Unsat
3. Determines Step 1.7.5 is the appropriate step	Section 1.7.5 is referenced which directs the candidate to Attachment 8, Section 8.4.	Sat/Unsat
3. At 2ENS*SWG103 (CB 261') verify reset the following lockouts:	Contacts field operator to verify the following lockouts are reset at 2ENS*SWG103 (CB 261')	Sat/Unsat
• 86 2EGPY01 for Breaker 103-13.	• 86 2EGPY01 for Breaker 103-13.	
• 86-2-2EGPY02 for Breaker 103-14.	• 86-2-2EGPY02 for Breaker 103-14.	
• 86-1-2EGPY02 for Breaker 103-14.	• 86-1-2EGPY02 for Breaker 103-14	
Cue: *Respond as Plant Operator sent to reset the lockouts that the lockouts are reset.*		

Performance Steps	Standard	Grade
4. Place the SYNC switch to ON (SYNCHRONIZE TO BUS 103).	Places the SYNC switch to ON (SYNCHRONIZE TO BUS 103).	**Pass/Fail**
5. Close 103-14.	Closes 103-14.	**Pass/Fail**
6. Place the SYNC switch to OFF.	Places the SYNC switch to OFF.	Sat/Unsat
7. At Panel 601, verify started, one Division II service water pump.	At Panel 601, verifies started, one Division II service water pump.	Sat/Unsat
8. Start additional loads as directed by SM/CRS in accordance with Attachment 12. Section 12.1. ***Cue:*** *No additional loads are required at this time.*	Asks CRS if any additional loads must be started.	Sat/Unsat
9. Return to Attachment 1 Section 1.7.10. ***Cue:*** *If asked, Prerequisite 9.1.4, lockout 86-2NNSY15 (4.16KVBUS NNS-015 PROTECTION LOCKOUT RELAY) at Panel 804 is reset.*	References Attachment 1 Section 1.7.10 and then goes to procedure Section 9.3 to power 2NNS-SWG015 from SWG103	Sat/Unsat
10. Place 15-3 in Pull-to-Lock. ***Note:*** *Breaker 15-3 is already in Pull-to-Lock.*	Places (verifies) 15-3 in Pull-to-Lock.	Sat/Unsat
11. IF 2NNS-SWG015 is needed for SBO recovery, THEN at Panel 852, place the Div II LOCA SIGNAL BYPASS switch to ON.	Obtains Key and at Panel 852, places the Div II LOCA SIGNAL BYPASS switch to ON.	**Pass/Fail**

Performance Steps	Standard	Grade
12. Do NOT exceed the emergency diesel generator rating, 4400 KW (4840 KW 2 hour limit) WHEN re-energizing STUB Bus 2NNS-SWG015.	Reads step and checks diesel load when performing the next step	Sat/Unsat
13. At 2ENS*SWG103 (CB 261'), verify reset 86-2ENSY12. (Breaker 103-8)	Contacts field operator to verify reset 86-2ENSY12. (Breaker 103-8) at 2ENS*SWG103 (CB 261').	Sat/Unsat
Cue: *Breaker is reset*		
14. Close 103-8.	Closes 103-8.	**Pass/Fail**
15. Close 15-8.	Closes 15-8.	**Pass/Fail**
16. Return to Attachment 1 Section 1.6.	Returns to Attachment 1 Section 1.6.	
Cue: *When candidate returns to Att.1 Section 1.6, the JPM is completed*		

TERMINATING CUE: **2NNS-SWG015 is re-energized from 2ENS*SWG103.**

RECORD STOP TIME __________

Turnover Sheet

Initial Conditions:

1. The Reactor has just been manually scrammed.
2. A Station Blackout (SBO) is in progress.
3. A loss of coolant condition does NOT exist.
4. 2ENS*SWG 103 & 2NNS-SWG015 are required for SBO recovery.
5. Division II Emergency Diesel Generator is running
6. Fault identification per N2-SOP-03, Attachment 1, Section 1.6 is complete

Initiating Cues:

"(Operator's name), Energize 2ENS*SWG103 from the DIV II EDG and 2NNS-SWG015 from 2ENS* SWG103, in accordance with N2-SOP-03, Attachment 1, Section 1.7."

NINE MILE POINT NUCLEAR STATION UNIT 2

SPECIAL OPERATING PROCEDURE

N2-SOP-03

REVISION 01200

LOSS OF AC POWER

TECHNICAL SPECIFICATION REQUIRED

Approved by:
M. A. Philippon

Manager Operations

8/12/11
Date

Effective Date: 8/12/2011

TABLE OF CONTENTS

SECTION		PAGE
1.0	EVENT DESCRIPTION	1
2.0	AUTOMATIC RESPONSES	2
3.0	IMMEDIATE ACTIONS	2
4.0	SUBSEQUENT ACTIONS	2
5.0	DISCUSSION	6
6.0	REFERENCES AND COMMITMENTS	9
ATTACHMENT 1:	ADDITIONAL ACTIONS	11
ATTACHMENT 2:	ENERGIZING RESERVE STATION SERVICE TRANSFORMER 1A	52
ATTACHMENT 3:	ENERGIZING 2NPS-SWG001	54
ATTACHMENT 4:	ENERGIZING/RESTORING 2ENS*SWG101 (DIVISION I EMERGENCY SWITCHGEAR)	56
ATTACHMENT 5:	ENERGIZING 2NNS-SWG014 (STUB BUS)	59
ATTACHMENT 6:	ENERGIZING RESERVE STATION SERVICE TRANSFORMER 1B	61
ATTACHMENT 7:	ENERGIZING 2NPS-SWG003	63
ATTACHMENT 8:	ENERGIZING/RESTORING 2ENS*SWG103 (DIVISION II EMERGENCY SWITCHGEAR)	65
ATTACHMENT 9:	ENERGIZING 2NNS-SWG015 (STUB BUS)	68
ATTACHMENT 10:	ENERGIZING AUX BOILER TRANSFORMER	70
ATTACHMENT 11:	ENERGIZING/RESTORING 2ENS*SWG102 (DIVISION III EMERGENCY SWITCHGEAR)	72
ATTACHMENT 12:	EDG LOADING	75
ATTACHMENT 13:	SINGLE LINE FAULT EVALUATION LINE 5(6)	78
ATTACHMENT 14:	REDUCE BATTERY LOADING	81

5.0 DISCUSSION

5.1 Precautions and Limitations

5.1.1 Fault indications should be known and explained, prior to closing any breaker or switcher.

5.1.2 Fluid systems may have drained due to the loss of power and may cause water hammer upon start.

5.1.3 Prior to energizing any switchgear, load center, motor control center or circuit, an investigation should be made to ensure no condition exists that could cause damage to equipment or injury to personnel.

5.1.4 Before beginning power restoration procedures the following should be verified:

- All personnel are clear of electrical equipment to be operated.
- All required electrical equipment is operable.

5.1.5 Operation of the Division III EDG WITHOUT cooling water can cause damage to the Division III EDG.

5.1.6 Closure of 2IAS*SOV166 AND/OR 2IAS*SOV184 in Modes 1, 2, or 3 will cause the Inboard Main Steam Isolation Valves to become INOPERABLE due to loss of Instrument Nitrogen supply. Closure of one or both of the Containment Isolation Valves supplying the Inboard MSIV's will require entry into LCO 3.6.1.3 and the resultant 8 hour REQUIRED ACTION COMPLETION TIME.

5.1.7 The Service Water Pump Logic is designed such that a loss of power event with a subsequent restart of 2SWP*P1C or P1E (2SWP*P1D or P1F) followed by a manual restart of 2SWP*P1A(B) will cause the running service water pump (C(D) or E(F)) to trip and prevent the restart of both 2SWP*P1C and P1E (2SWP*P1D and P1F) for 18 seconds.

5.1.8 (C5) Verification of off-site power source availability and reliability is required prior to restoration of off-site power subsequent to its loss. Restoration of off-site power with an unstable or degraded grid could result in additional losses.

5.1.9 (C5) Restoration of safety systems to standby subsequent to their initiation due to a loss of or degraded voltage should be prioritized such that trains are restored one at a time. Restoration of multiple trains simultaneously can increase station vulnerability should another loss of power occur.

5.1.10 Restoration of Spent Fuel Cooling (SFC) should be prioritized such that the design temperature of 150°F is not reached. Depending on Spent Fuel Pool (SFP) temperature at the time power is lost, the time to reach 150°F could be as low as 5 hours (SBO occurs after an 8 day refueling outage with initial Spent Fuel Pool temperature of 115.8°F). Refer to Attachment 9 in N2-SOP-38 for restoration times prior to SFP temperature reaching 150°F.

5.1.11 The Div 3 diesel running fully loaded without adequate cooling will cause generator damage after approximately 1 minute of operation. Therefore, direction is given to immediately shut down the diesel generator.

5.1.12 When supplying Fire Water to the HPCS diesel (Detail BB) the SWP supply MOVs are manually closed prior to opening their respective MCC breakers due to the time requirements and the need to establish immediate cooling to the Div 3 diesel generator (only power source available). In addition, it is assumed that either one or both diesels have been attempted to be started (Detail AA) and have failed to start or cannot be closed in on its respective bus.

5.2 Service Water Pump Restart

5.2.1 It is preferable to have two operators in the service water pump bay when the Division I(II) switchgear is re-energized. One at the MCC to de-energize the associated service water pump discharge MOV after it initially closes, and the other standing by the discharge MOV itself to commence manually opening as soon as the service water pump is started. This is in an effort to establish cooling water flow to the DIV III EDG as soon as possible yet minimize the possibility of water hammer in the service water system.

5.2.2 When a service water pump is initially started, the expected service water flow will likely be less than 2000 gpm. This is due to the non-essential headers being isolated, the service water header cross-tie 2SWP*MOV50A(B) being closed, makeup to the cooling tower isolated, and service water being supplied to only the DIV III EDG. This flow will vary depending on the number of control/switchgear building unit coolers demanding cooling. Service water flow can be raised by initiating flow through the associated RHR heat exchanger. Per the service water pump vendor, pump damage is expected to occur if the pump is at a no-flow condition for greater than five minutes. Operating a pump at no-flow condition for less than two minutes is expected to have no adverse impact on pump performance (ref. SE 00-048).

5.2.3 When DIV III EDG is used to re-energize the DIV I or DIV II emergency switchgear, the applicable division of service water non-essential header isolation and pump discharge valves will auto close, however the applicable 2SWP*MOV50A/B and applicable divisional service water pumps will not auto sequence on (ref. ESK-7SWP17).

Service Water Pump Restart (Cont)

5.2.4 When power is restored to DIV I(II) emergency switchgear via the DIV III emergency diesel, it is important to close 2SWP*MOV50A(B) to prevent running out the one service water pump which is started. It makes no difference which service water pump within the division is started. Also, if 'A'('B') service water pump is started to provide additional cooling water, then it will not cause a trip of the initially started service water pump as the logic has not been actuated (ref. ESK-7SWP17). Caution should be used when/if the DIV I(II) emergency diesel is eventually placed on its respective emergency switchgear as system auto actuation logic may then be actuated.

5.3 Service Water Isolation Valve Response to Power Loss

The diagrams below delineates the response of the Service Water Non-essential header isolation valves AND essential header cross-ties (MOV 50's) to loss of power events.

The following diagram is diplaying the logic response for the Division 1 SWP valves:

The following diagram is diplaying the logic response for the Division 2 SWP valves:

1.6 Fault Identification and Isolation

NOTE: Do **NOT** reset any Relay Targets UNTIL they have been logged.

1.6.1 Dispatch operators to the following areas, as applicable, to investigate for the cause of the loss of power **AND** report all protective devices actuated:

NOTE: This step is **NOT** sequence dependent AND is to be performed on a NOT to interfere with power restoration basis.

- For each relay target that is tripped, perform the following:
  - Record relay name .... (✓)
  - Reset relay target .... (✓)
- NMP Unit 2 switchyard .... (✓)
- Scriba switchyard .... (✓)
- 13.8 KV Non-Safety Related switchgear .... (✓)
- 4.16 KV Non-Safety Related switchgear .... (✓)
- 4.16 KV Emergency switchgear .... (✓)
- Relay Room .... (✓)

1.6.2 (C2) To aid in determining the cause for the loss of power, perform the following:

- Contact Electrical Maint. For assistance .... (✓)
- Scan all Control Room panels for abnormal indications which may aid in identifying the cause for loss of power .... (✓)
- Request assistance from I&C AND Meter & Test as necessary .... (✓)
- Refer to electrical diagrams AND load lists as necessary to identify affected loads .... (✓)

1.6.3 Notify System Power Control of loss of power AND any known causes .... (✓)

NOTE: A loss of Aux Boiler Transformer will be indicated by annunciator 852433 AUX BOILER TRANSFORMER LOSS OF VOLTAGE.

1.6.4 IF ....Aux Boiler Transformer is de-energized,

THEN... Verify the following:

N/A, Aux Boiler Transformer is energized .... (__)

At Panel 852:

- MDS5 to PULL-TO-LOCK .... (✓)
- 18-2 to PULL-TO-LOCK .... (✓)
- 2-5 to PULL-TO-LOCK .... (✓)

NOTE: A loss of Line 5 AND Reserve Station Service Transformer 1A will be indicated by zero voltage on 115KV FEED FROM SCRIBA STATION LINE KILOVOLTS AND annunciator 852434 RES STA SER XFMER 1A LOSS OF VOLTAGE.

1.6.5 IF ....Line 5 AND Reserve Station Service Transformer 1A are de-energized,

THEN... Verify the following:

N/A, Line 5 AND Reserve Transformer 1A are energized .... (__)

At Panel 852:

- MDS3 to PULL-TO-LOCK .... (✓)
- MDS10 to Open .... (✓)
- MDS1 to Open .... (✓)
- 16-2 to PULL-TO-LOCK .... (✓)
- 1-1 to PULL-TO-LOCK .... (✓)
- 2-1 to PULL-TO-LOCK .... (✓)
- 3-16 to PULL-TO-LOCK .... (✓)

NOTE: A loss of 2NPS-SWG001 will be indicated by annunciator 852509 13.8 KV BUS NPS 001 UNDERVOLTAGE.

1.6.6 IF ....2NPS-SWG001 is de-energized,

THEN... Verify the following:

N/A, 2NPS-SWG001 is energized .... (__)

At Panel 852:

- 11-3 to PULL-TO-LOCK .... (✓)
- 14-2 to PULL-TO-LOCK .... (✓)

1.6.6 (Cont)

At Panel 851:

- 2CNM-P2A to PULL-TO-LOCK .... (✓)
- 2CNM-P2C (from SWG001) to PULL-TO-LOCK .... (✓)
- 2FWS-P1A to PULL-TO-LOCK .... (✓)
- 2FWS-P1C (from SWG001) to PULL-TO-LOCK .... (✓)
- 2CWS-P1A to PULL-TO-LOCK .... (✓)
- 2CWS-P1C to PULL-TO-LOCK .... (✓)
- 2CWS-P1E to PULL-TO-LOCK .... (✓)
- 2IAS-C3A to PULL-TO-LOCK .... (✓)
- 2CNM-P1A to PULL-TO-LOCK .... (✓)
- 2CNM-P1C to PULL-TO-LOCK .... (✓)

At Panel 603:

- 2RDS-P1A to PULL-TO-LOCK .... (✓)

At Panel 602:

- 2WCS-P1A to PULL-TO-LOCK .... (✓)

At Panel 601:

- 2CCP-P1C to PULL-TO-LOCK .... (✓)
- 2CCP-P3C to PULL-TO-LOCK .... (✓)
- 2CCP-P1A to PULL-TO-LOCK .... (✓)
- 2CCS-P1A to PULL-TO-LOCK .... (✓)
- 2CCS-P1C to PULL-TO-LOCK .... (✓)

NOTE: A loss of 2ENS*SWG101 will be indicated by zero volts on 4KV EMER BUS 101 VOLTS.

1.6.7 IF ....2ENS*SWG101 is de-energized,

THEN... Verify the following:

N/A, 2ENS*SWG101 is energized .... (__)

At Panel 852:

- 101-1 to PULL-TO-LOCK .... (✓)
- 101-13 to PULL-TO-LOCK .... (✓)
- 101-10 to PULL-TO-LOCK .... (✓)
- 101-11 to PULL-TO-LOCK .... (✓)

1.6.7 (Cont)

At Panel 601:

- 2RHS*P1A to PULL-TO-LOCK .... (✓)
- 2CSL*P1 to PULL-TO-LOCK .... (✓)

At Panel 873:

- 2SFC*P1A to PULL-TO-LOCK .... (✓)

NOTE: A loss of Line 6 AND Reserve Station Service Transformer 1B will be indicated by zero voltage on 115KV FEED FROM JAF ENERGY CENTER LINE KILOVOLTS AND annunciator 852435 RES STA SER XFMER 1B LOSS OF VOLTAGE.

1.6.8 IF ....Line 6 AND Reserve Station Service Transformer 1B are de-energized,

THEN... Verify the following:

N/A, Line 6 AND Reserve Transformer 1B are energized .... (__)

At Panel 852:

- MDS4 to PULL-TO-LOCK .... (✓)
- MDS20 to OPEN .... (✓)
- MDS2 to OPEN .... (✓)
- 17-2 to PULL-TO-LOCK .... (✓)
- 3-1 to PULL-TO-LOCK .... (✓)
- 1-16 to PULL-TO-LOCK .... (✓)

NOTE: A loss of 2NPS-SWG003 will be indicated by annunciator 852529 13.8 KV BUS NPS 003 UNDERVOLTAGE.

1.6.9 IF ....2NPS-SWG003 is de-energized,

THEN... Verify the following:

N/A, 2NPS-SWG003 is energized .... (__)

At Panel 852:

- 13-6 to PULL-TO-LOCK .... (✓)
- 15-3 to PULL-TO-LOCK .... (✓)

1.6.9 (Cont)

At Panel 851:

- 2CNM-P2B to PULL-TO-LOCK .... (✓)
- 2CNM-P2C (from SWG003) to PULL-TO-LOCK .... (✓)
- 2FWS-P1B to PULL-TO-LOCK .... (✓)
- 2FWS-P1C (from SWG003) to PULL-TO-LOCK .... (✓)
- 2CWS-P1B to PULL-TO-LOCK .... (✓)
- 2CWS-P1D to PULL-TO-LOCK .... (✓)
- 2CWS-P1F to PULL-TO-LOCK .... (✓)
- AUTO TURNING GEAR MOTORS to PULL-TO-LOCK .... (✓)
- 2IAS-C3B to PULL-TO-LOCK .... (✓)
- 2CNM-P1B to PULL-TO-LOCK .... (✓)
- 2CNM-P1C to PULL-TO-LOCK .... (✓)

At Panel 603:

- 2RDS-P1B to PULL-TO-LOCK .... (✓)

At Panel 602:

- 2WCS-P1B to PULL-TO-LOCK .... (✓)

At Panel 601:

- 2CCP-P1B to PULL-TO-LOCK .... (✓)
- 2CCP-P3B to PULL-TO-LOCK .... (✓)
- 2CCP-P3A to PULL-TO-LOCK .... (✓)
- 2CCS-P1B to PULL-TO-LOCK .... (✓)

NOTE: A loss of 2ENS*SWG103 will be indicated by zero volts on 4KV EMER BUS 103 VOLTS.

1.6.10 IF ....2ENS*SWG103 is de-energized,

THEN... Verify the following:

N/A, 2ENS*SWG103 is energized .... (__)

At Panel 852:

- 103-14 to PULL-TO-LOCK .... (✓)
- 103-4 to PULL-TO-LOCK .... (✓)
- 103-2 to PULL-TO-LOCK .... (✓)
- 103-8 to PULL-TO-LOCK .... (✓)

At Panel 601:

- 2RHS*P1B to PULL-TO-LOCK .... (✓)
- 2RHS*P1C to PULL-TO-LOCK .... (✓)

1.6.10 (Cont)

At Panel 875:

- 2SFC*P1B to PULL-TO-LOCK .... (✓)

NOTE: A loss of 2ENS*SWG102 will be indicated by zero volts on 4KV EMER BUS 102 VOLTS.

1.6.11 IF ....2ENS*SWG102 is de-energized,

THEN... Verify the following:

N/A, 2ENS*SWG102 is energized .... (✓)

At Panel 852:

- 102-1 to PULL-TO-LOCK .... (✓)
- 102-4 to PULL-TO-LOCK .... (✓)
- 102-5 to PULL-TO-LOCK .... (✓)

At Panel 601:

- 2CSH*P1 to PULL-TO-LOCK .... (✓)

Initials/Date

1.6.12 Identify any faulted components/busses, notify SM/CRS. K / Today
SM/CRS

1.6.13 Isolate any faulted components/busses .... (✓)

ATTACHMENT 1: (Cont)

1.6.14 Reset lockouts caused by power loss...(✓)

1.6.15 IF ....**ONLY** Line 5 **OR** Line 6 is lost (NOT BOTH),

N/A, NEITHER OR BOTH Lines were lost...(✓)

AND.....NO physical damage is noted in the Scriba OR NMP U2 switchyards,

AND.....**NONE** of the following 86 devices were tripped:

At Panel 805 (CB 288')

- ☐ 86-2SPRX01 (RES STA SER XFMR 1A PRIM PROT LO RELAY)
- ☐ 86-1-2SPRX01 (RES STA SER XFMR 1A PRIM TRANSFER TRIP LO RELAY)

At Panel 806 (CB 288')

- ☐ 86-2SPRZ01 (RES STA SER XFMR 1A BU PROT LOCKOUT RELAY)
- ☐ 86-1-2SPRZ01 (RES STA SER XFMER B/U TRANSFER TRIP LO RELAY)

At Panel 808 (CB 288')

- ☐ 86-2SPRY01 (RES STA SER XFMR 1B PRIM PROT LO RELAY)

At Panel 809 (CB 288')

- ☐ 86-2SPRZ08 (RES STA SER XFMR 1B BU PROT LOCKOUT RELAY)

At Panel 811 (CB 288')

- ☐ 86-2SPRY11 (AUX BOILER XFMR ABS-X1 PRIM PROT LOCKOUT RELAY)

At Panel 802 (CB 288')

- ☐ 86-2SPRX11 (AUX BOILER SER XFMR BU PROT LOCKOUT RELAY)

1.6.15 (Cont)

****

CAUTION

Attempting to energize the lost 115KV buses from the remaining offsite line, BEFORE the 115KV Line fault is isolated, may result in a complete loss of offsite power.

****

THEN...a. **DO NOT** attempt to re-energize the lost 115KV busses UNTIL the 115KV Line fault location is known AND isolated.

AND.....b. Perform Attachment 13 (Single Line Fault Evaluation Line 5(6)) of this procedure to locate the fault ....(__)

1.6.16 WHEN .The fault is identified AND isolated,

THEN...Determine the appropriate lineup to restore power to the plant utilizing Section 1.7 ....(✓)

ATTACHMENT 1: (Cont)

1.7 Power Restoration

NOTE: Steps 1.7.1 through 1.7.11 may be performed in any order.

1.7.1 IF ....Reserve Station Service Transformer 1A is de-energized,

N/A, Reserve Transformer 1A is energized .... (__)

THEN...Perform Attachment 2 of this procedure .... (__)

1.7.2 IF ....Reserve Station Service Transformer 1B is de-energized,

N/A, Reserve Transformer 1B is energized .... (__)

THEN...Perform Attachment 6 of this procedure .... (__)

1.7.3 IF ....Aux Boiler Transformer is de-energized,

N/A, Aux Boiler Transformer is energized.. (__)

THEN...Perform Attachment 10 of this procedure .... (__)

1.7.4 IF ....2ENS*SWG101 is de-energized,

OR.......Offsite power is to be restored to 2ENS*SWG101 WHILE Div I Diesel is supplying the bus,

N/A, 2ENS*SWG101 is energized AND restoration NOT required .... (__)

THEN...Perform Attachment 4 of this procedure .... (__)

1.7.5 IF ....2ENS*SWG103 is de-energized,

OR.......Offsite power is to be restored to 2ENS*SWG103 WHILE Div II Diesel is supplying the bus,

N/A, 2ENS*SWG103 is energized AND restoration NOT required .... (__)

THEN...Perform Attachment 8 of this procedure .... (__)

1.7.6 IF ....2ENS*SWG102 is de-energized,

OR.......Offsite power is to be restored to 2ENS*SWG102 WHILE Div III Diesel is supplying the bus,

N/A, 2ENS*SWG102 is energized AND restoration NOT required ....(__)

THEN...Perform Attachment 11 of this procedure ....(__)

1.7.7 IF ....2NPS-SWG001 is de-energized,

N/A, 2NPS-SWG101 is energized ....(__)

THEN...Perform Attachment 3 of this procedure ....(__)

1.7.8 IF ....2NPS-SWG003 is de-energized,

N/A, 2NPS-SWG003 is energized ....(__)

THEN...Perform Attachment 7 of this procedure ....(__)

1.7.9 IF ....2NNS-SWG014 is de-energized,

N/A, 2NNS-SWG014 is energized ....(__)

THEN...Perform Attachment 5 of this procedure ....(__)

1.7.10 IF ....2NNS-SWG015 is de-energized,

N/A, 2NNS-SWG015 is energized ....(__)

THEN...Perform Attachment 9 of this procedure ....(__)

1.7.11 IF ....ALL LOCA signals are cleared,

N/A, LOCA signals NOT cleared ....(__)

THEN...Verify in OFF the following:

- Div I EDG LOCA SIGNAL BYPASS ....(__)
- Div II EDG LOCA SIGNAL BYPASS ....(__)

ATTACHMENT 8: ENERGIZING/RESTORING 2ENS*SWG103 (DIVISION II EMERGENCY SWITCHGEAR)

NOTE: The following steps are performed at Panel 852 unless otherwise noted.

8.1 Prerequisites

8.1.1 PRIOR to executing the following steps, power must be available from one of the following sources:

- Reserve Station Service Transformer 1B (Attachment 6)
- Aux Boiler transformer (Attachment 10)
- Division II EDG (2EGS*EG3) (N2-OP-100A)
- Division III EDG (2EGS*EG2) (N2-OP-100B)

8.1.2 Attachment 1, Section 1.6, Fault Identification and Isolation, is complete.

8.1.3 Upon completion of Attachment 8, return to Attachment 1, Section 1.7, as appropriate to restore power to the plant.

8.1.4 At switchgear 2ENS*SWG103 (CB 261'), verify reset the following lockouts:

- ☐ 86A-2ENSY02 for Breaker 103-2
- ☐ 86B-2ENSY02 for Breaker 103-2
- ☐ 86A-2ENSY01 for Breaker 103-4
- ☐ 86B-2ENSY01 for Breaker 103-4
- ☐ 86C-2ENSY01 for Breaker 103-N2
- ☐ 86C-2ENSY02 for Breaker 103-N2
- ☐ 86-2EJSY03 for Breaker 103-1
- ☐ 86-2EJSY04 for Breaker 103-13

8.2 Energizing/Restoring 2ENS*SWG103 (Division II Emergency Switchgear) from Reserve Station Service Transformer 1B

N/A, 2ENS*SWG103 will NOT be restored to Reserve Transformer 1B ....(__)

8.2.1 Verify reset 86-1-2NNSY28 (LOCKOUT RELAY 86 TRIP & LOCKOUT BREAKER 17-2).

8.2.2 Close 17-2.

8.2.3 Verify reset 86-2-2NNSY28 (LOCKOUT RELAY 86-2 TRIP & LOCKOUT BREAKER 103-4).

8.2.4 IF Div II Diesel is powering 2ENS*SWG103, THEN refer to N2-OP-100A, Section H.14.0, AND exit this Section.

8.2.5 Place the SYNC switch to ON (SYNCHRONIZE PRIM FEED FROM NORM BUS NNS017 TO EMER BUS 103).

8.2.6 Close 103-4.

8.2.7 Place the SYNC switch to OFF.

8.2.8 Return to Attachment 1, Section 1.7.

8.3 Energizing/Restoring 2ENS*SWG103 (Division II Emergency Switchgear) from Aux Boiler Transformer

N/A, 2ENS*SWG103 will NOT be restored to the Aux Boiler Transformer .... (__)

8.3.1 Verify reset 86-1-2NNSZ28 (LOCKOUT RELAY 86 TRIP & LOCKOUT BREAKER 18-2).

8.3.2 Close 18-2.

8.3.3 At switchgear 2ENS*SWG103, perform the following:

a. Remove breaker from cubicle 103-4.

b. Verify the following:

- At Panel 852, 103-2 is in PULL-TO-LOCK.
- Control circuit fuses are removed.
- Circuit breaker is OPEN.

c. Install circuit breaker in cubicle 103-2.

d. Install control circuit fuses.

8.3.4 Verify reset 86-3-2NNSZ28 (LOCKOUT RELAY 86-3 TRIP & LOCKOUT BREAKER 103-2).

8.3.5 IF Div II Diesel is powering 2ENS*SWG103, THEN refer to N2-OP-100A, Section H.14.0, AND exit this Section.

8.3.6 Place the SYNC switch to ON (SYNCHRONIZE ALTN FEED FROM NORM BUS NNS018 TO EMER BUS 103).

8.3.7 Close 103-2.

8.3.8 Place the SYNC switch to OFF.

8.3.9 Return to Attachment 1, Section 1.7.

8.4 Energizing 2ENS*SWG103 (Division II Emergency Switchgear) from Division II EDG

N/A, 2ENS*SWG103 will NOT be energized from Division II EDG .... (__)

8.4.1 At 2ENS*SWG103 (CB 261') verify reset the following lockouts:

- ☐ 86 2EGPY01 for Breaker 103-13
- ☐ 86-2-2EGPY02 for Breaker 103-14
- ☐ 86-1-2EGPY02 for Breaker 103-14

8.4.2 Place the SYNC switch to ON (SYNCHRONIZE TO BUS 103).

8.4.3 Close 103-14.

8.4.4 Place the SYNC switch to OFF.

8.4.5 At Panel 601, verify started, one Division II service water pump.

****

CAUTION

Fluid systems may have drained due to the loss of power.

****

8.4.6 Start additional loads as directed by SM/CRS in accordance with Attachment 12 Section 12.1.

8.4.7 Return to Attachment 1, Section 1.7.

8.5 Energizing 2ENS*SWG103, Division II Emergency Switchgear, from Division III EDG

N/A, 2ENS*SWG103 will NOT be energized from Division III EDG .... (__)

Perform Attachment 1, Section 1.4.

ATTACHMENT 9: ENERGIZING 2NNS-SWG015 (STUB BUS)

NOTE: The following steps are performed at Panel 852 unless otherwise noted.

9.1 Prerequisites

9.1.1 PRIOR to executing the following steps, power must be available from one of the following sources:

- 2NPS-SWG003 (Attachment 7)
- 2ENS*SWG103 (Division II Emergency Switchgear) (Attachment 8)

9.1.2 Attachment 1 Section 1.6 Fault Identification and Isolation is complete.

9.1.3 Upon completion of Attachment 9, return to Attachment 1, Section 1.7, as appropriate to restore power to the plant.

9.1.4 At Panel 804 (CB 288'), verify reset 86-2NNSY15 (4.16KV BUS NNS-015 PROTECTION LOCKOUT RELAY)

9.2 Energizing 2NNS-SWG015 (Stub Bus) from 2NPS-SWG003

N/A, 2NNS-SWG015 will NOT be energized from 2NPS-SWG003 ....(__)

9.2.1 Verify closed 3-6.

9.2.2 Close 15-3.

9.2.3 Return to Attachment 1, Section 1.6.

9.3 Energizing 2NNS-SWG015 (Stub Bus) from 2ENS*SWG103

N/A, 2NNS-SWG015 will NOT be energized from 2ENS-SWG003 ....(__)

****

CAUTION

Energizing 2NNS-SWG015 from 2ENS*SWG103 when the Div II Diesel is supplying the bus is not permitted during a LOCA.

****

9.3.1 Place 15-3 in PULL-TO-LOCK.

NOTE: The following step requires a PA 2235 Key located in the CRO's desk.

9.3.2 IF 2NNS-SWG015 is needed for SBO recovery, THEN at Panel 852, place the Div II LOCA SIGNAL BYPASS switch to ON.

9.3.3 Do NOT exceed the emergency diesel generator rating, 4400 KW (4840 KW 2 hour limit) WHEN re-energizing STUB Bus 2NNS-SWG015.

9.3.4 At 2ENS*SWG103 (CB 261'), verify reset 86-2ENSY12. (Breaker 103-8)

9.3.5 Close 103-8.

9.3.6 Close 15-8.

9.3.7 Return to Attachment 1, Section 1.6.

NRC JPM S-6

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Restart Loop of SFC after pump trip. Revision: NRC 2012

Task Number: 2000070501

Approvals:

/ 3/14/12
Facility Representative / Date

NA EXAM SECURITY /
General Supervisor Operations (Designee) / Date

NA EXAM SECURITY /
Configuration Control / Date

Performer:________________________(RO/SRO/AO)

Trainer/Evaluator:________________________

Evaluation Method: X Perform ________ Simulate

Evaluation Location: ________ Plant X Simulator

Expected Completion Time: 15 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:________________________ Date:____________

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

Simulator

Simulator Set-up (if required):

1. IC-159
2. 2SFC*P1A tripped with no electrical faults, but switch in NORMAL AFTER START
3. Verify the operating SFC Pump is shutdown and the standby loop is ready to be placed in service.
4. Remote Functions:

a.	**PC58**, 2SFC*V21A SFC A PUMP DISCHARGE VALVE, FV=2	**TRG 2**

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-SOP-38, "Loss of Spent Fuel Pool Cooling", Attachment 1.
2. NUREG K/A: 233000 A2.04 2.6 / 2.7

Tools and Equipment:

None

Task Standard:

The SFC Loop A is running in cooling only mode.

Initial Conditions:

1. N2-SOP-38 has been entered following a trip of 2SFC*P1A
2. Investigation determined 2SFC*P1A tripped due to an Electrician accidently tripping the breaker locally.
3. The 2SFC*P1A breaker has been reset and SFC Loop A is ready to be restored.
4. The initial conditions of N2-SOP-38, Attachment 1 are completed.
5. ADH and RHS SFC Assist mode are not in service
6. It has been at least 15 minutes since N2-SOP-38 was entered.
7. An operator is standing by in the 2SFC*P1A Room for local actions
8. An operator is standing by on the Refuel Floor to monitor Spent Fuel Pool level until level and flow have stabilized.
9. Instructor to ask operator for any questions

Initiating Cues:

"(Operators name), Restart SFC Loop A in Cooling Only per N2-SOP-38, Attachment 1, Section 2.0

Performance Steps		Standard	Grade
1.	Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat

RECORD START TIME __________

2.	Obtain a copy of the reference procedure and review/utilize the correct attachment of the procedure.	N2-SOP-38, Attachment 1 obtained and section 2.0 reviewed.	Sat/Unsat
3.	Verify an operator is standing by on the Refuel Floor to monitor Spent Fuel Pool level.	Establishes communication with the operator on the Refuel Floor.	Sat/Unsat

Note: *The booth operator will function as the operator on the Refuel Floor*

4.	At 2CEC*PNL873 Verify closed (off going) 2SFC*HV18A, SFC F/D INLET FROM P1A	At P873, Verifies closed 2SFC*HV18A, SFC F/D INLET FROM P1A by placing control switch to shut and observing Red Light OFF, Green Light ON.	**Pass/Fail**
5.	At 2CEC*PNL873, Verify closed 2SFC*AOV19A, SFC F/D OUTLET VLV TO SFC HX1A	At P873, Verifies closed 2SFC*AOV19A, SFC F/D OUTLET VLV TO SFC HX1A by placing control switch to shut and observing Red Light OFF and Green Light ON.	**Pass/Fail**

Performance Steps	Standard	Grade
6. At CEC*PNL873, Verify closed 2SFC*AOV153, SFC F/D INLET ISOL VLV	At P875, Verifies closed 2SFC*AOV153, SFC F/D INLET ISOL VLV by placing control switch to shut. Observe Red Light OFF, Green Light ON	**Pass/Fail**
7. At CEC*PNL875, Verify closed 2SFC*AOV154, SFC F/D INLET ISOL VLV	At P875, Verifies closed 2SFC*AOV154, SFC F/D INLET ISOL VLV by placing control switch to shut. Observe Red Light OFF, Green Light ON	**Pass/Fail**
8. At CEC*PNL873, Verify open 2SFC*HV17A, PMP 1A F/D BYPASS	At P873, Verifies open 2SFC*HV17A, PMP 1A F/D BYPASS by placing control switch to open. Observe Red Light ON, Green Light OFF	**Pass/Fail**
9. Dispatch an operator to 2SFC*P1A Room AND establish communications with the Control Room	Determines an operator has been dispatched to 2SFC*P1A Room AND communications with the Control Room are established per initial conditions.	Sat/Unsat
***Note**: The booth operator will function as the operator sent to 2SFC*P1B Room*		
10. Direct the operator In 2SFC*P1A Room, to verify approximately ½ to 1 turn open (from full closed) 2SFC*V21A, SFC PUMP 1A DISCHARGE ISOLATION	Directs the operator In 2SFC*P1A Room, to verify 2SFC*V21A, SFC PUMP 1A DISCHARGE ISOLATION is approximately ½ to 1 turn open (from full closed)	**Pass/Fail**
***Booth cue:** When directed to shut V21A, **insert TRG 2, PC58**. When the valve is at 2%, inform the control room the valve is 1 turn open*		
11. At CEC*PNL873 and 875, Using 2SFC*LI32A AND 2SFC*LI32B, SFC SURGE TK WTR LEVEL meters, confirm SFC Surge Tank levels are >8'	At P873 and 875, confirm SFC Surge Tank levels are > 8' using 2SFC*LI32A AND 2SFC*LI32B, SFC SURGE TK WTR LEVEL meters	Sat/Unsat

Performance Steps	Standard	Grade
12. Reviews the following for pump flow requirements: • 900 gpm within 10 seconds • 1100 gpm within 5 minutes • That starting an SFC Pump may draw down SFC Surge Tank level until weir wall overflow is established.	Reviews the following for pump flow requirements: • 900 gpm within 10 seconds • 1100 gpm within 5 minutes • That starting an SFC Pump may draw down SFC Surge Tank level until weir wall overflow is established.	Sat/Unsat
13. At CEC*PNL873 starts 2SFC*P1A, CIRCULATION PMP	At CEC*PNL873 starts 2SFC*P1A, CIRCULATION PMP, verifies pump starts by observing Red light ON and Green light OFF and Pump flow rises.	**Pass/Fail**
14. Directs operator to open 2SFC*V21A as soon as the pump starts.	Contacts operator in 2SFC*P1A Room and directs them to open 2SFC*V21A as soon as the pump starts	**Pass/Fail**
Booth cue: *When directed to open V21A,* ***modify remote function PC58*** *to ramp to 100% open. When the valve is fully open, inform the control room*		
15. At CEC*PNL873, using 2SFC*FI36A, SFC SYS FLOW meter, confirm loop flow is >2400 gpm	At CEC*PNL873, using 2SFC*FI36A, SFC SYS FLOW meter, confirms loop flow is >2400 gpm	Sat/Unsat

Terminating Cue: The SFC Loop A is running in cooling only mode.

RECORD STOP TIME ________

Turnover Sheet

Initial Conditions:

1. N2-SOP-38 has been entered following a trip of 2SFC*P1A
2. Investigation determined 2SFC*P1A tripped due to an Electrician accidently tripping the breaker locally.
3. The 2SFC*P1A breaker has been reset and SFC Loop A is ready to be restored.
4. The initial conditions of N2-SOP-38, Attachment 1 are completed.
5. ADH and RHS SFC Assist mode are not in service
6. It has been at least 15 minutes since N2-SOP-38 was entered.
7. An operator is standing by in the 2SFC*P1A Room for local actions
8. An operator is standing by on the Refuel Floor to monitor Spent Fuel Pool level until level and flow have stabilized.
9. Instructor to ask operator for any questions

Initiating Cues:

"(Operators name), Restart SFC Loop A in Cooling Only per N2-SOP-38, Attachment 1, Section 2.0

NINE MILE POINT NUCLEAR STATION UNIT 2

SPECIAL OPERATING PROCEDURE

N2-SOP-38

REVISION 00800

LOSS OF SPENT FUEL POOL COOLING

TECHNICAL SPECIFICATION REQUIRED

Approved by: M. A. Philippon — M. A. [signature], Manager Operations — Date: 6/30/11

Effective Date: July 6, 2011

TABLE OF CONTENTS

SECTION		PAGE
1.0	EVENT DESCRIPTION	1
2.0	AUTOMATIC RESPONSES	1
3.0	IMMEDIATE ACTIONS	1
4.0	SUBSEQUENT ACTIONS	1
5.0	DISCUSSION	3
6.0	REFERENCES AND COMMITMENTS	3
ATTACHMENT 1:	RESTORING SPENT FUEL POOL COOLING FROM THE CONTROL ROOM	6
ATTACHMENT 2:	SPENT FUEL POOL FEED AND BLEED	14
ATTACHMENT 3:	ADDITIONAL CIRCULATION OF SPENT FUEL POOL	25
ATTACHMENT 4:	RESTORATION OF SFC SYSTEM DURING CONTROL ROOM EVACUATION	28
ATTACHMENT 5:	SWAPPING SFC HEAT EXCHANGER COOLING DURING CONTROL ROOM EVACUATION	38
ATTACHMENT 6:	SPENT FUEL POOL FEED AND BLEED DURING CONTROL ROOM EVACUATION	44
ATTACHMENT 7:	OPERATION OF BETTIS ACTUATORS	57
ATTACHMENT 8:	TIME TO BOIL CURVES	60
ATTACHMENT 9:	TIME TO REACH 150°F SFP DESIGN LIMIT FOLLOWING LOSS OF SFP COOLING	66
ATTACHMENT 10:	TEMPORARY SPENT FUEL POOL TEMPERATURE MONITORING	67

5.0 DISCUSSION

5.1 Actions should be initiated as soon as possible upon loss of cooling to the Spent Fuel Pool (SFP). Analysis demonstrates that pool temperature may rise at a rate of about 5.3°F per hour without cooling. This heatup rate is discussed in Safety Evaluation 97-080.

5.2 In an event where power is not initially available to systems capable of providing cooling to the SFP, it is difficult to prescribe all of the actions available or required to mitigate the event. Direction is provided to begin aligning systems addressed in this procedure in preparation for SFP cooling. This should minimize the time required to restore some method of cooling the SFP even when power is only partially restored.

5.3 Attachment 8, Time to Boil Curves, Represent the Response of Spent Fuel Pool water temperature due to a loss of all cooling with the Spent Fuel Pool gates installed and removed (SFP communicates with Rx. Cavity). The curves represent specific initial pool temperatures and cooling water temperature but can also be used to estimate temperature response for other initial conditions.

5.4 If the Secondary Containment has no breaches, then no action is required for the step to "Initiate actions for Secondary Containment closure." The intent of this step is to prevent the free exchange of air through breaches in the Secondary Containment prior to Spent Fuel Pool boiling. These actions would normally be tracked by appropriate administrative: Breach Permit, Contingency Plan, ESL, etc.

6.0 REFERENCES AND COMMITMENTS

6.1 Technical Specifications

- 3.4.9, Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown
- 3.4.10, Residual Heat Removal (RHR) Shutdown Cooling System - Cold Shutdown
- 3.7.6, Spent Fuel Storage Pool Water Level
- 3.9.8, Residual Heat Removal (RHR) - High Water Level
- 3.9.9, Residual Heat Removal (RHR) - Low Water Level

6.2 Licensee Documentation

Updated Safety Analysis Report, (USAR)

Volume 17, Section 9.1.3, Spent Fuel Cooling and Cleanup System

Off-Site Dose Calculation Manual, (ODCM)

Section D.3.1.1, Liquid Effluents Concentration

ATTACHMENT 1: RESTORING SPENT FUEL POOL COOLING FROM THE CONTROL ROOM

NOTES:

1. This subsection provides contingency actions in the event of a loss of Spent Fuel Pool Cooling due to pump trip or loss of CCP. This procedure assumes that the Control Room has not been evacuated and that power is available to SFC, RHS or ADH Systems.

2. With no cooling or circulation, the Fuel Pool temperature may rise at a rate of about 5.3°F/hour. This rate will vary depending upon the decay heat associated with the fuel present. Action should be taken immediately to restore cooling.

3. Steps in this subsection are in order of preference, but may be implemented out of sequence or concurrently at the discretion of the CRS/SM, to mitigate heatup of the Spent Fuel Pool.

4. All actions are performed at 2CEC*PNL873 (875) unless otherwise stated.

1.0 General Actions

1.1 IF ADH is in service OR RHS is operating in SFC mode AND SFC cooling is NOT immediately required, THEN continue to determine the cause for the loss of SFC AND exit this procedure........................(__)

N/A, SFC cooling is required........................(✓)

1.2 IF the tripped SFC pump can be restarted, THEN restore it to service per Section 2.0........................(__)

N/A, SFC pump can NOT be restarted........................(__)

1.3 IF the tripped SFC pump can NOT be restored to service, THEN place the standby pump in service per Section 3.0........................(__)

N/A, SFC pump was restored to service........................(__)

1.4 IF CCP cooling has been lost to the SFC Heat Exchangers OR does NOT provide sufficient cooling to maintain Spent Fuel Pool temperature, THEN align Service Water to the inservice SFC Heat Exchanger per Section 5.0........................(__)

N/A, CCP cooling has NOT been lost........................(__)

ATTACHMENT 1 (Cont)

1.5 IF SFC cooling can NOT be restored before the Spent Fuel Pool temperature is predicted to exceed 140°F based on time to boil curves listed in Attachment 8, THEN commence monitoring SF Pool temperature using the thermocouple staged in the Unit 2 Control Room M&TE drawer by placing the thermocouple 1-2 feet below the pool surface .... (__)

AND perform one OR more of the following:

N/A, SFC will be restored prior to exceeding 140°F .... (__)

1.5.1 Spent Fuel Pool feed AND bleed per Attachment 2........ (__)

1.5.2 IF NOT required for Shutdown Cooling, place a loop of RHR in Fuel Pool Cooling mode per N2-OP-31, Section H.1.0........ (__)

1.5.3 Place ADH in service per Section 4.0........ (__)

1.5.4 IF additional circulation is desired AND the Reactor Cavity is flooded with the gates removed,
THEN perform Attachment 3 .... (__)

2.0 Restarting a SFC Pump in Cooling Only

N/A, trip was due to electrical fault or failed piping .... (__)

NOTE: The following steps will attempt to restart the tripped SFC loop in the Cooling Only mode.

2.1 Dispatch an operator to Refuel Floor to monitor Spent Fuel Pool level UNTIL level AND flow have stabilized .... (__)

2.2 Perform the following:

2.2.1 Verify closed 2SFC*HV18A(B), SFC F/D INLET FROM P1A(B) .... (__)

2.2.2 Verify closed 2SFC*AOV19A(B), SFC F/D OUTLET VLV TO SFC HX1A(B) .... (__)

2.2.3 Verify closed 2SFC*AOV153, SFC F/D INLET ISOL VLV .... (__)

2.2.4 Verify closed 2SFC*AOV154, SFC F/D INLET ISOL VLV .... (__)

2.2.5 Verify open 2SFC*HV17A(B), PMP 1A(B) F/D BYPASS .... (__)

2.3 Dispatch an operator to 2SFC*P1A(B) Room AND establish communications with the Control Room .... (__)

2.4 In 2SFC*P1A(B) Room, verify approximately ½ to 1 turn open (from full closed) 2SFC*V21A(B), SFC PUMP 1A(B) DISCHARGE ISOLATION........................ (__)

2.5 Using 2SFC*LI32A AND 2SFC*LI32B, SFC SURGE TK WTR LEVEL meters, confirm SFC Surge Tank levels are > 8' .... (__)

NOTES:

1. The following pump flows must be established within the time intervals listed to avoid a pump trip on low flow:
   - > 900 gpm within 10 seconds
   - > 1100 gpm within 5 minutes
2. Starting an SFC Pump may draw down SFC Surge Tank level until weir wall overflow is established.
3. SFC Pump start limitations are as follows:
   - Cold starts (pump idle for ≥ 45 minutes): 2 consecutive starts and again after each 45 minute wait.
   - Hot starts (pump running for ≥ 15 minutes): 1 restart after each 15 minute wait.

2.6 Start 2SFC*P1A(B), CIRCULATION PMP .... (__)

2.7 In 2SFC*P1A(B) Room, open 2SFC*V21A(B) .... (__)

2.8 Using 2SFC*FI36A(B), SFC SYS FLOW meter, confirm loop flow is > 2400 gpm........ (__)

2.9 IF 2SFC*P1A(B) fails to start, perform Section 3.0 to attempt to place the opposite SFC loop in service .... (__)

N/A, 2SFC*P1A(B) started........ (__)

2.10 IF the SFC System is in service cooling the Fuel Pool, exit this procedure .... (__)

N/A, The SFC System is NOT in service .... (__)

3.0 Placing the Standby Loop of SFC in Service

N/A, previously running pump has restarted........ (__)

NOTE: The following steps will attempt to start a loop of SFC in the Cooling Only mode.

3.1 Dispatch an operator to Refuel Floor to monitor Spent Fuel Pool level UNTIL level AND flow have stabilized .... (__)

3.2 Perform the following:

3.2.1 Verify closed (off going) 2SFC*HV18A(B), SFC F/D INLET FROM P1A(B) .... (__)

3.2.2 Verify closed (off going) 2SFC*AOV19A(B), SFC F/D OUTLET VLV TO SFC HX1A(B) .... (__)

3.2.3 Verify closed 2SFC*AOV153, SFC F/D INLET ISOL VLV .... (__)

3.2.4 Verify closed 2SFC*AOV154, SFC F/D INLET ISOL VLV .... (__)

3.2.5 Verify open (on coming) 2SFC*HV17A(B), PMP 1A(B) F/D BYPASS .... (__)

3.2.6 Verify closed (off going) 2CCP*MOV18A(B), SFC HEAT EXCHANGER RBCLC OUTLET on previously in service heat exchanger. .... (__)

3.3 Dispatch an operator to 2SFC*P1A(B) Room AND establish communications with the Control Room .... (__)

3.4 In 2SFC*P1A(B) Room, verify approximately ½ to 1 turn open (from full closed) 2SFC*V21A(B), SFC PUMP 1A(B) DISCHARGE ISOLATION........ (__)

3.5 Using 2SFC*LI32A AND 2SFC*LI32B, SFC SURGE TK WTR LEVEL meters, confirm SFC Surge Tank levels are > 8' .... (__)

NRC JPM S-7

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Transfer RCS Pumps from Low to High Speed   Revision: NRC 2012

Task Number: N2-202001-01003 TRANSFER REACTOR RECIRCULATION PUMP FROM LOW TO HIGH SPEED

Approvals:

________________ / ________
Facility Representative   Date

NA EXAM SECURITY   /
General Supervisor Operations (Designee)   Date

NA EXAM SECURITY   /
Configuration Control   Date

Performer:________________________(RO/SRO/AO)

Trainer/Evaluator:________________________

Evaluation Method: X Perform   ______ Simulate

Evaluation Location: ______ Plant   X Simulator

Expected Completion Time: 15 minutes   Time Critical Task: No   Alternate Path Task: Yes

Start Time: ________   Stop Time: ________   Completion Time: ________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:________________________   Date:____________

Recommended Start Location: Simulator

Simulator Set-up (if required):

1. IC-157

2. Event Trigger:

a.	Event # **1**	Event Action:	**zdrr603asi==1 .and. hzlrrs101a(2)==1** (2RCS-HC1603A open signal and RCS P1A fast speed running light lit)
		Command:	**Blank**

3. Remote Functions:

a.	**RR11A,** RECIRC FCV A MANUAL FAILURE, FV=TRUE	**TRG 1**
b.	**RP10A,** RECIRC FCV A DRIFT, FV=TRUE, DT=1	**TRG 1**
c.	**RR12A,** RECIRC FCV A DRIFT POSITION, FV=100, DT=1, RT=120	**TRG 1**

4. Miscellaneous :

   a. Ensure the booth operator is monitoring Recirc FCV A valve position to provide appropriate cues to the operator when asked

Directions to the Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as Pass/Fail.
2. All steps are sequenced critical unless denoted by a "•".
3. During Evaluated JPM:
    - Self-verification shall be demonstrated.
4. During Training JPM:
    - Self-verification shall be demonstrated.
    - No other verification shall be demonstrated.

References:

1. N2-OP-29, Reactor Recirculation System, section E.4.0.
2. N2-SOP-08, Unexplained Power Changes
3. NUREG K/A: 202001, A4.01, 3.7 /3.7
4. NUREG K/A: 202001, A2.05, 3.8/4.0

Tools and Equipment:

1. None

Task Standard:

"A" Recirc pump running in fast speed with its FCV locked up and isolated IAW N2-SOP-08 and N2-OP-29.

Initial Conditions:

1. A Reactor Plant Startup is in progress IAW N2-OP-101A,
2. Reactor power is approximately 32%
3. Both Recirc pumps are currently operating in slow speed.
4. Preparations are in progress for transferring the Recirc Pumps from low to high speed IAW N2-OP-29, Reactor Recirculation System, section E.4.0
5. N2-OP-29, section E.4.0 has been completed up to step E.4.2 for Recirc Pump A, FCV A is ~30% open.
6. An operator is standing by to measure voltages when directed per Attachment 4. Attachment 4 has been completed up to step 2.1
7. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name), transfer recirc pump A to high speed IAW N2-OP-29, section E.4.0"

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. Evaluator *Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back CNG-HU-1.01-1001	Sat/Unsat
RECORD START TIME ________		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	IAW N2-OP-29, section E.4.0 is referenced and reviewed.	Sat/Unsat

Performance Steps	Standard	Grade
3. Close 2RCS*HYV17A, Loop A flow control valve, to approximately 17-19% open by manually lowering the output of 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL station.	Places the slider for 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL to the left, until Flow control valve position indicates 17 to 19% on "% Valve Position" indicator, that a Volt/Ohm Meter reads 66 VDC and confirms the flow interlock is met per Attachment 4	**Pass/Fail**

Note: *Refers to Attachment 4 for confirmation that minimum position interlock is met.*

Booth Cue: *As requested from the operator, provide indications per Attachment 4. Note, the FCV position must be ≤19% in order to meet the start interlock. When ≤19% but ≥17%, inform the control room that "Attachment 4 is complete, FCV A minimum position interlock is met and Volt/Ohm Meter reads 66 VDC.*

4. Dispatch an Operator to panel 2RCS-PNL100 to monitor RCS Pump AND Motor vibration, AND reset alarm(s) as required.	Dispatches operator	Sat/Unsat

Cue: *(as required) Report that an operator has been dispatched and all alarms reset.*

5. Place the high speed control switch BRKR 5A, RECIRC PMP 1A MOTOR A control switch for 2RCS*P1A to START.	Places control switch BRKR 5A, RECIRC PMP 1A MOTOR A for 2RCS*P1A to START	**Pass/Fail**

Note: *numerous annunciators will come in after start of the pump. Inform the operator that another operator will take care of the annunciators.*

Booth: *Silence and acknowledge annunciators as required.*

6. Observe the following:

• BRKR 2A, LOW FREQ MG SET GEN, trips.	Observes BRKR 2A trip (GREEN light on, RED light off)	Sat/Unsat

Performance Steps	Standard	Grade
• BRKR 1A, LOW FREQ MG SET DRIVE MOT, trips.	Observes BRKR 1A trip (GREEN light on, RED light off); monitors MG current (AM-2RCSA60)	Sat/Unsat
• Pump speed lowers to 350 rpm (20% of rated speed) on B35-R651A, RECIRC PMP 1A SPEED.	Monitors pump speed (B35-R651A).	Sat/Unsat
• THEN BRKR 5A closes (3 second time delay).	Verifies BRKR 5A closes (RED light on, GREEN light off)	Sat/Unsat
• Pump accelerates to 1782 rpm (100% rated speed).	Monitors pump speed (B35-R651A), current (B35-R634A), and flows	Sat/Unsat
7. IF 2RCS*P1A fails to upshift as expected, THEN place the high speed control switch BRKR 5A, RECIRC PMP 1A MOTOR A, control switch for 2RCS*P1A to PTL.	Determines that pump upshifted properly and moves on to next step.	Sat/Unsat
Note: *Evaluator may prompt operator that pump flows have stabilized*		
8. AFTER pump flows stabilize, verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position.	Momentarily places the slider for 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL to the right and observes valve response.	**Pass/Fail**
	Determines and reports that FVC 2RCS*HYV17A is continuing to open.	Sat/Unsat
Note: *Preset remotes will cause the valve to continue to drift open when the momentary open signal is inputted via this step.*	Determines and reports that loop flow and reactor power are increasing.	Sat/Unsat
Note: *The operator is expected to recognize that this condition requires entry into off N2-SOP-08, Unexplained Power Changes*		
Cue: *(if required) "Take actions per appropriate procedures."*		

Performance Steps	Standard	Grade
9. Obtains copy of N2-SOP-08, Unexplained Power Changes	Refers to N2-SOP-08 Flowchart	Sat/Unsat
10. Determine power change due to drifting control rod	Determines power change NOT due to drifting control rod.	Sat/Unsat
11. Determine if power change due to Recirc FCV motion	Determines power change IS due to Recirc FCV motion	Sat/Unsat
12. Depress HYDRAULIC PRESSURE UNIT SHUTDOWN pushbutton at 2CEC*PNL602.	Depresses the "A" HYDRAULIC PRESSURE UNIT SHUTDOWN pushbutton	**Pass/Fail**
13. Close LOOP A HYDR FLUID OUTSIDE ISOL.	Places the LOOP A HYDR FLUID OUTSIDE ISOL switch to CLOSE	**Pass/Fail**
	Verifies that the FCV has stopped drifting open.	Sat/Unsat
	Reports that 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL is locked up and isolated.	Sat/Unsat

***Cue**: This completes your assignment. Another operator will perform any follow-up actions.*

Terminating Cue: RCS Pump A Shifted from Low to High Speed with its Flow Control Valve locked up and isolated IAW N2-SOP-08.

RECORD STOP TIME __________

Turnover Sheet

Initial Conditions:

1. A Reactor Plant Startup is in progress IAW N2-OP-101A,
2. Reactor power is approximately 32%
3. Both Recirc pumps are currently operating in slow speed.
4. Preparations are in progress for transferring the Recirc Pumps from low to high speed IAW N2-OP-29, Reactor Recirculation System, section E.4.0
5. N2-OP-29, section E.4.0 has been completed up to step E.4.2 for Recirc Pump A, FCV A is ~30% open.
6. An operator is standing by to measure voltages when directed per Attachment 4. Attachment 4 has been completed up to step 2.1

Initiating Cues:

"(Operator's name), transfer recirc pump A to high speed IAW N2-OP-29, section E.4.0"

NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

N2-OP-29

REVISION 01600

REACTOR RECIRCULATION SYSTEM

TECHNICAL SPECIFICATION REQUIRED

Approved by: M. A. Philippon — Manager Operations — Date: 8/4/11

Effective Date: August 9, 2011

TABLE OF CONTENTS

SECTION | PAGE

A. REFERENCES AND COMMITMENTS ... 1

B. SYSTEM DESCRIPTION ... 5

C. OPERATING REQUIREMENTS ... 7

D. PRECAUTIONS AND LIMITATIONS ... 8

E. STARTUP ... 14
- 1.0 Hydraulic Power Unit Startup ... 14
- 2.0 RCS Loop Fill and Vent, Placing the Seal Purge System in Service and Pump Seal Vent ... 20
- 3.0 Startup From No Flow (Low Speed Operation) ... 25
- 4.0 Transfer of Reactor Recirculation Pump From Low (15 Hz) to High Speed (60 Hz) ... 28
- 5.0 Adjusting RCS HPU Needle Bypass Valve ... 38

F. NORMAL OPERATION ... 40
- 1.0 Filling the HPU Reservoir ... 40
- 2.0 Hydraulic Power Supply – Subloop Transfer ... 41
- 3.0 Restart of a Tripped Recirculation Pump ... 43
- 4.0 Normal Flow Control Valve Operation ... 47
- 5.0 Operational Checks ... 48
- 6.0 Swapping Seal Water Filters ... 51
- 7.0 Placing Seal Water Filter in Standby ... 53

G. SHUTDOWN ... 55
- 1.0 Transfer of Recirculation Pump From High (60HZ) to Low (15HZ) Speed ... 55
- 2.0 Reactor Recirculation Pump Shutdown ... 57
- 3.0 Hydraulic Power Supply Shutdown ... 59

H. OFF NORMAL PROCEDURES ... 60
- 1.0 Recirculation Loop Isolation ... 60
- 2.0 Loss of Seal Injection Water ... 62
- 3.0 Loss of Cooling Water to the Recirculation Pump(s) ... 63
- 4.0 Loss of Both Seal Injection and Cooling Water ... 64
- 5.0 Seal Failure ... 65
- 6.0 Single Recirculation Loop Operation ... 66
- 7.0 Starting or Upshifting Recirculation Pumps with a Bad Suction Thermal Interlock Thermocouple ... 69
- 8.0. Bypassing Recirc Pump 1A(1B) Interlocks To Allow Fast Speed Operation During Hydrostatic Testing ... 71
- 9.0 Options to Improve the Degraded Fyrquel EHC Fluid in HPU ... 73
- 10.0 Start of RCS HPU Subloop for Post Maintenance Testing Without Subloop Transfer ... 82
- 11.0 Swapping FLow Control Valve Position Control and Indication from NORMAL to ALTERNATE ... 83

TABLE OF CONTENTS

SECTION PAGE

12.0 Swapping Flow Control Valve Position Control and Indication from ALTERNATE to NORMAL 86

ATTACHMENT 1: RCS PUMP/MOTOR VIBRATION MONITORING COMPUTER 89

ATTACHMENT 2: FUSE LINEUP 93

ATTACHMENT 3: WALKDOWN ELECTRIC LINEUP 94

ATTACHMENT 4: CONFIRMING THE FLOW CONTROL VALVE (FCV) MINIMUM POSITION INTERLOCK IS MADE UP PRIOR TO PUMP START OR UPSHIFT 105

ATTACHMENT 5: LIMITING TEMPERATURES FOR PUMP OPERATION 106

ATTACHMENT 6: ALTERNATE METHODS FOR MEASURING RCS SUCTION TEMPERATURE 107

ATTACHMENT 7: SEAL PURGE FILTER SKID 110

D. PRECAUTIONS AND LIMITATIONS

1.0 Motor Start Limitations are two starts in succession from ambient temperature or one start from rated temperature. For subsequent starts allow 15 minutes running time or 45 minutes idle time.

2.0 See Section F.5.0 of this procedure for reactor recirculation pump/motor normal and operating limits.

3.0 For two-pump operation, the recirculation loop flow (as read on meters at 2CEC*PNL602 in lbs/hr x 10^6) mismatch must be maintained within:

a. 5.4 x 10^6 lbs/hr (5% of rated core flow) with effective core flow greater than or equal to 75.95 x 10^6 lbs/hr (70%).

b. 10.8 x 10^6 lbs/hr (10% of rated core flow) with effective core flow less than 75.95 x 10^6 lbs/hr (70%).

Effective core flow shall be the core flow that would result if both recirculation loop flows were assumed to be at the smaller value of the two loop flows.

4.0 Avoid operation of the recirculation pumps with air in the seal cavities by thoroughly venting the seal cavities whenever seal maintenance has been performed or whenever an isolated loop is returned to service. It is particularly important to avoid operation with air in the cavities at low reactor pressure.

5.0 An auto sequence incomplete or loss of control power during speed transfer will result in a trip from both 60 Hz and 15 Hz to off. This trip seals in and prevents further pump starts. The seal in can be reset by taking the respective high speed control switch (BRKR 5A or BRKR 5B) to PULL-TO-LOCK.

6.0 The following conditions will result in the trip of a reactor recirculation pump from 60 Hz to off:

- Suction valves 2RCS*MOV10A (B) <90% open.
- Discharge valve 2RCS*MOV18A (B) <90% open.
- Pump motor lock out relay trip.
- Reactor vessel Level 2 (108.8") Redundant Reactivity Control (RRCS) trip.
- High speed control switch, BRKR 5A (B) in PULL-TO-LOCK.
- High speed control switch(s): BRKR 3A (B) or BRKR 4A (B) in PULL-TO-LOCK.
- Pump motor phase overcurrent protection tripped.
- Incomplete sequence relay activated.
- Loss of control power during start sequence.
- Loss of Divisional DC power, Div. 1 or Div. 2, will trip both pumps.
- Loss of Normal DC power from Battery 1A will result in Recirculation Pump A trip to off. Loss of Normal DC power from Battery 1B will not result in Recirculation Pump B trip, since its control breaker will not have control power.

7.0 Annunciator 602111 (602112) "RECIRC FCV A (B) HYDRAULICS MAINT REQ'D" may alarm during RCS sub-loop startup/swap. If this alarm has not cleared after approximately 15 minutes, then a Work Document (WD) should be generated for filter maintenance.

D. PRECAUTIONS AND LIMITATIONS (Cont)

8.0 The following conditions will result in the trip of a reactor recirculation pump from 15 Hz to off:

- Suction valves 2RCS*MOV10A (B) <90% open.
- Discharge valves 2RCS*MOV18A (B) <90% open.
- Pump motor lockout relay trip.
- Low Frequency Motor Generator (LFMG) generator lockout relay trip.
- Loss of 240 VAC to LFMG voltage regulator.
- Low speed control switches BRKR 1A (B) or BRKR 2A (B) trip or in PULL-TO-LOCK.
- RRCS high RPV pressure (1065 psig) trip, and if the APRMs are not downscale after a time delay of 25 seconds.
- RRCS level 2 (108.8") trip.

9.0 The following conditions will result in the transfer of a reactor recirculation pump from 60 Hz to 15 Hz:

- High to low speed transfer (BRKR 5A and 5B positioned to LFMG).
- During a low speed start when pump speed reaches 95%.
- Main turbine stop valves closure (less than 95% open) or control valve closure (less than 530 psi EHC pressure) when the reactor power is greater than 30%.
- A differential temperature between the reactor recirculation pump suction and the steam dome less than 10.7°F for 45 seconds.
- Redundant Reactivity Control System (RRCS) high reactor pressure 1065 psig.
- Low water level 159.3" (level 3).
- Total feed flow less than 3.35 million lb/hr (Approx. 22.3% power) for 15 seconds.

10.0 To prevent exceeding reactor vessel and recirculation system thermal shock interlocks when starting the recirculation pump (thermal shock interlocks for both pumps must be met to satisfy start logic), verify the following temperatures and flow rates within 15 minutes prior to starting the idle recirculation pump and enter the applicable temperature differences and time they were checked in the Control Room log.

10.1 The following Technical Specifications (TS) requirements apply per TS SR 3.4.11.3 and 3.4.11.4 for D.10.1.1. and D.10.1.2, and USAR Section 7.7.1.2 for D.10.1.3.

10.1.1 Bottom head coolant temperature AND the Reactor Pressure Vessel (RPV) coolant temperature ΔT is $\leq$ 145°F.

a. Bottom head coolant temperature can be determined by computer point RCSTA101 ($\geq$ 212°F) OR WCS bottom head drain temperature at 2CEC*PNL602.

b. RPV coolant temperature can be determined either by reactor pressure ($\geq$ 212°F) using steam tables, computer point RCSTA102, OR reactor shell temperatures (< 212°F) at 2CEC-PNL614, OR RHR Heat Exchanger Inlet Temperature (if RHR is in SDC).

D. PRECAUTIONS AND LIMITATIONS (Cont)

10.1.2. Reactor coolant temperature in the recirculation loop to be started AND RPV coolant temperature ΔT is $\leq 50°F$.

a. Reactor coolant temperature in the loop to be started can be determined from recirculation pump suction temperature at 2CEC*PNL602 or RCSTA103, RCSTA104, RCSTA105, RCSTA106.

b. RPV coolant temperature can be determined by reactor pressure ($\geq 212°F$) using steam tables, computer point RCSTA102, reactor shell temperatures ($< 212°F$) at 2CEC- PNL614, OR RHR Heat Exchanger Inlet Temperature (if RHR is in SDC).

c. When one loop is idle AND one loop is operating, it is acceptable to compare the temperatures of the operating recirculation loop AND the idle loop.

10.1.3. Operating loop flow rate is less than or equal to 50% of rated jet pump loop flow (27.125 Mlb/hr sum jet pump flow indicator on 2CEC*PNL602). To ensure this requirement is met, it will be necessary to have the operating pump running in slow speed prior to starting the idle pump.

11.0 Operation of the Reactor Recirculation System shall be within the limitations of the "Power-to-Flow Operating Map," Single Loop found on Drawing EM-950B, Two Loop found on Drawing EM-950A.

12.0 If both CRD seal purge injection and cooling flow (CCP) are lost when the pump suction temperature is greater than 200°F, the pump must be tripped immediately and N2-SOP-29 entered.

13.0 Fyrquel EHC may cause mild skin and eye irritation. Inhalation of vapors, mists or aerosols may cause respiratory tract irritation. May cause nerve damage if inhaled, swallowed or absorbed through the skin. In case of insufficient ventilation, respiratory protection is required. Additionally, neoprene gloves, chemical safety goggles and body covering (that is, chemical apron) are to be worn. If splashed in the eyes, flush with copious amounts of water for at least 20 minutes and seek medical attention. If contact with skin is made, wash thoroughly with a mild soap and plenty of water for at least 15 minutes. Clothing is to be washed prior to next use.

14.0 Prevent spillage of Fyrquel EHC. If a spill or leak develops, immediately wipe it up with a dry rag and take action to correct the problem.

15.0 Plant operation at low recirculation flow and near the 100% rod line can result in raised APRM and LPRM noise levels. (Refer to N2-SOP-29 limitations)

16.0 Cycling of recirc flow control valve to stop (0%) in fast speed may cause fluctuation in hydraulic line isolation valve due to hydraulic pressure transients at extent of ram travel.

17.0 When isolating Reactor water sample flow using 2RCS*SOV104 or 2RCS*SOV105, the Chemistry Department should be notified to ensure that the Reactor water GEZIP is secured and that alternate reactor water conductivity samples are obtained.

18.0 Applicable radiological precautions shall be observed. Radiation Protection shall be contacted for guidance, as required.

19.0 ALARA practices shall be observed to minimize personnel exposure and spread of contamination.

D. PRECAUTIONS AND LIMITATIONS (Cont)

20.0 Notify Radiation Protection prior to venting or draining operations.

21.0 Total drive flow (RHR Shutdown Cooling and Recirculation Drive Flow) through the jet pumps shall not exceed 5700 gpm when incore instrumentation is not surrounded by fuel or blade guides (all four corners).

22.0 Loop drive flow is administratively limited at 45,000 gpm for two pump high speed operation due to RPV internal vibration concerns.

23.0 IF pump is being started in accordance with refuel Technical Specification requirements and installed vibration instrumentation is unavailable, then notify I&C or IST to perform baseline vibration data collection.

24.0 In order to maintain seismic qualifications for Emergency Busses breaker configuration and restrictions given in N2-ELU-01, Precaution and Limitation 4.4 are to be used to determine acceptable breaker configurations.

25.0 With a recirculation flow control valve isolated and/or locked up, it will slowly drift closed due to flow forces on the valve disc. Technical Specification flow requirements and power level should be closely monitored.

26.0 If WCS is to be operated in a one pump - 3 filter/demineralizer configuration, both Reactor Recirculation loops must remain in service to insure adequate WCS pump NPSH and prevent possible seal failure and pump damage.

27.0 A Recirc Loop should be isolated at power only if necessary, as it cannot be unisolated at power (SIL 517).

!) 28.0 When starting a recirculation pump under any conditions, motor upper guide bearing temperature shall be monitored for the first 30 minutes after pump start. Computer Points RCSTA05 and RCSTA06 may be used for monitoring temperatures. If the rate of rise of upper guide bearing temperature exceeds 15°F per minute after upper guide bearing reaches 140°F, motor shutdown is required. This is an indication of possible bearing lubrication starving which can lead to wiping of the bearing.

(C6) 29.0 If a standby HPU Subloop remains pressurized (greater than 500 psig) when not in service, then restarting that subloop in operation could cause RECIRC FCV motion. This should be avoided.

(C9) 30.0 In Modes 4 or 5 if a Reactor Recirculation pump is not operating or trips and can't be restarted, maintain RPV level between 227-243 inches (or higher if Main Steam Line Flooding is not a concern) unless directed otherwise by the EOP's. This will provide for natural circulation and enhanced temperature monitoring if Shutdown Cooling is lost. This does not apply if Recirculation pumps are secured for short periods of time.

31.0 When operating the Recirc Loop A(B) Flow Controller in manual at P602, care should be taken when using fast detent mode such that controller demand does not exceed valve motion (i.e – demand signal is great enough that valve motion continues after controls are released).

32.0 Following maintenance on the RCS Flow Control Valves, the required valve position to match loop flows may change. Technical Support should be consulted.

33.0 Exercise caution when removing a recirculation loop from service (i.e. isolating for maintenance). Isolating seal water from RDS has the potential for exposing the seal line relief valve (2RCS-RV46A, 2RCS-RVN2-04-133) to overpressure from the RDS pump discharge. This could cause the relief valve to lift which would require the relief valve to be replaced. To prevent this from occurring, 2RCS-V2029A(B) should be the first valve shut when isolating the RCS seal line(s).

34.0 Main Steam Line Dose Rates may increase if a Chemistry excursion occurs while H2 Injection System is in service potentially causing a MSLRM alarm.

35.0 IF a Recirc pump trips while operating in parallel operation with SDC, Secure SDC prior to Recirc Pump restart to prevent excessive flow perturbation then SDC may be restored per N2-OP-31.

36.0 The velocity controller dx/dt circuit will generate a Motion Inhibit signal almost instantaneously on a large deviation between the FCV demand signal and the Position Indication signal. If a small deviation between these signals existed, a Motion Inhibit signal would not be generated as quickly.

37.0 Annunciator 603317 will alarm at 20 psid across Recirc Seal Purge Filters. Loss of filtration will occur at or above 30 psid.

38.0 During slow speed operation, water pumped through the Recirc Pump seal water heat exchanger is reduced due to reduced pump speed. Therefore, on a loss of seal purge flow the "Without Injection" lower and upper seal temperatures listed in Section F.5.0 (150°F and 153°F) may be exceeded but should remain less than 185°F Alert Levels.

(C15) 39.0 RCS Seal Filter Subsystem valves must be operated very slowly to prevent the high differential pressure from damaging the filter media.

17) 40.0 Gradual Flow Control Valve (FCV) drifting may be observed over time. This is due to design characteristics of the FCV manual/auto (M/A) station. The Foxboro (M/A) station output drift will be less than 0.1% per hour. Specifically following a change from 10% to 90% demand in manual, the output drift will be less than 0.2% in the first 10 minutes, after which the drift rate will stabilize to less than 0.1% per hour.

41.0 The Recirc Flow Control System is sensitive to sustained temperature changes in the Control Room. The Reactor Recirculation Flow Control valve, 2RCS*HYV17A, will move gradually over a 3 -4 hour period with the change in temperature (the valve opens a fraction of 1% when temperature decreases ≥ 4°F and closes a fraction of 1% when temperature increases ≥ 4°F). This is due to temperature sensitivity of control circuit components. As such, when performing changes in alignment of the Control Room Chillers, Operations should take positive control of reactivity by closely monitoring Reactor Thermal Power and the "A" Flow Control Valve position as Control Room temperature is likely to change during chiller swaps. Reference CR 2006-5063 for details.

42.0 During single loop operation the operating jet pump flow will be maintained less than 56.9 Mlbm/hr on B22-R611A(B), RECIRC LOOP 1A(B) SUM JET PMP FLO meter. This is to minimize the risk of jet pump flow induced vibration (Reference CR-2010-010367) and due to an indication found on Jet Pump 14 Jet Pump Riser to Riser Brace weld (RS9) (Reference Condition Report 2008-2961).

D. PRECAUTIONS AND LIMITATIONS (Cont)

43.0 Due to cracking in Jet Pump No. 6 sensing line (Reference CR 2008-2793), the potential for failure of the sensing line exist. If the Jet Pump No. 6 sensing line fails such that it reads downcomer pressure, its DP reading will show a step jump of ~ 8% to 9% above its baseline and the indicated loop flow and core flow will increase. Core DP, Jet Pump No. 5 DP and generator output will not change.

44.0 If it is discovered that Jet Pump No. 6 sensing line has failed, core flow is required to be maintained 5% lower than core flow prior to determination of the Jet Pump No. 6 sensing line failure. This limitation can be removed once Engineering confirms that the effect on core flow measurement due to a sensing line failure is within the 2.5% uncertainty assumed in the GE Thermal Analysis Basis (GETAB), and Jet Pump No. 5 input substitution from the Jet Pump No. 6 signal using gains derived from past historical Jet Pump No. 6 performance is implemented.

45.0 Operation of Reactor Recirculation Pumps at Low Operating Pressures should be minimized. The pressure available at Low Pressure Conditions can be insufficient to separate the Reactor Recirculation Pump seal faces and establish a water flow through the seal gap. As a result pump operation at the Low Operating Pressures during a plant startup or shutdown can be detrimental to the shaft seals (Ref OE-2009-001877).

46.0 NMP2 has experienced a failure of a Recirculation pump upshift to occur as expected and observed pump upshift after an approximate 4 minute time delay. Should an upshift fail to occur as expected, the operator will be directed to place the BRKR 5A(B) in pull-to-lock to prevent an unexpected reactivity event. See CR-2010-004948.

47.0 When starting a Recirc HPU following maintenance that drained the downstream hydraulic piping (for example: FCV actuator replacement), it is not uncommon for an HPU to trip / transfer to MAINTENANCE on low discharge pressure until the lines have been completely filled and vented. Performing the fill and vent evolution slowly can reduce the probability of HPU trip / transfers to MAINTENANCE. Note that the low discharge pressure trip / transfer does not have an associated alarm to indicate the cause of the annunciator.

4.0 Transfer of Reactor Recirculation Pump From Low (15 Hz) to High Speed (60 Hz)

NOTES:

1. Low to high speed transfer is to be performed above the Low Feedwater Flow Interlocks, but below the 62% Rod Line as directed by N2-OP-101A.

2. Actions performed in this subsection are performed at 2CEC*PNL602 unless otherwise stated.

3. Requirements for Recirculation loop flow shall be maintained in accordance with Technical Specification 3.4.1, which allows up to two hours to restore loop flow mismatch to within 10% when effective core flow is less than 70%.

****

CAUTIONS

1. In order to maximize the margin to APRM scram setpoint, Recirculation pump up-shift should be performed with thermal power and APRM Gain Adjustment factors as low as possible.

2. Opening the Flow Control Valve during or immediately after pump up-shifting prior to stabilizing pump speed and flow will amplify the positive reactivity transient.

3. NMP2 has experienced a failure of a Recirculation pump upshift to occur as expected and observed pump upshift after an approximate 4 minute time delay. Should an upshift fail to occur as expected, the operator will be directed to place the BRKR 5A(B) in pull-to-lock to prevent an unexpected reactivity event. See CR-2010-004948.

****

4.1 Verify the following prerequisites:

- BRKR 3A(B), RECIRC PMP 1A(1B) MOTOR A(B) AND BRKR 4A(B), RECIRC PMP 1A(1B) MOTOR A(B) are closed. ____
- BOTH RECIRC LOOP A AND RECIRC LOOP B FLOW CONTROL stations are in MAN (Manual) position. ____
- FW FL < 30% FVC <19% RESET interlock white light is out. ____
- DOME/SUCT LO DIFF TEMP RESET interlock white light is out. ____
- LEVEL 3 RESET (S111A(B)) is reset (white light out) ____
- Reactor Power is above the Low Feedwater Flow Interlocks AND is below the 62% Rod Line. Consult with Reactor Engineer as required. ____
- APRMs indicate less than 50%. ____
- Annunciator 602225(602226), RECIRC PMP 1A(B) AUTO TRIP LOW SPEED TRANSFER is clear. ____

4.2 IF up-shifting 2RCS*P1A, perform the following:

NOTES:

1. Main Steam Line Dose Rates may increase if a Chemistry excursion occurs while H2 Injection System is in service potentially causing a MSLRM alarm.

2. The flow control valve needs to be approximately 17-19% to meet the maximum valve position interlock, however if the valve is driven to minimum position (≤12.5%) it can become hydraulically locked after the pump upshift. This may be avoided by not overdriving the valve closed and establishing valve control soon after the pump upshift and pump flow stabilizes.

4.2.1 Close 2RCS*HYV17A, Loop A flow control valve, to approximately 17-19% open by manually lowering the output of 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL station. (Refer to Attachment 4 for confirmation that minimum position interlock is met.) ______

(C10) 4.2.2 Dispatch an Operator to panel 2RCS-PNL100 to monitor RCS Pump AND Motor vibration, AND reset alarm(s) as required. ______

4.2.3 Place the high speed control switch BRKR 5A, RECIRC PMP 1A MOTOR A control switch for 2RCS*P1A to START. ______

4.2.4 Observe the following:

- BRKR 2A, LOW FREQ MG SET GEN, trips. ______
- BRKR 1A, LOW FREQ MG SET DRIVE MOT, trips. ______
- Pump speed lowers to 350 rpm (20% of rated speed) on B35-R651A, RECIRC PMP 1A SPEED,
  THEN BRKR 5A closes (3 second time delay). ______
- Pump accelerates to 1782 rpm (100% rated speed). ______

4.2.5 IF 2RCS*P1A fails to upshift as expected,
THEN place the high speed control switch BRKR 5A, RECIRC PMP 1A MOTOR A, control switch for 2RCS*P1A to PTL. ______

4.2.6 AFTER pump flows stabilize, verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.2.7 IF 2RCS*HYV17A fails to open, locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting valve 2RCS-RV47A(RV48A), RELIEF VALVE, for the in-service HPU. ______

E. STARTUP (Cont) INITIALS

4.2.8 Verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.2.9 IF 2RCS-RV47A(RV48A), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.2.10 IF 2RCS*HYV17A fails to open, swap HPU subloops per N2-OP-29, F.2.0, AND verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.2.11 IF 2RCS*HYV17A fails to open, locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV48A(RV47A), RELIEF VALVE, for the in-service HPU. ______

4.2.12 Verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.2.13 IF 2RCS-RV48A(RV47A), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.2.14 IF 2RCS*HYV17A opens, continue at Step E.4.6 AND IF up-shifting 2RCS*P1B, perform Step E.4.3. ______

4.2.15 IF 2RCS*HYV17A fails to open, downshift 2RCS*P1A to low speed (LFMG) in accordance with G.1.0,
THEN continue at Step E.4.4. ______

4.3 IF up-shifting 2RCS*P1B, perform the following:

NOTES: 1. Main Steam Line Dose Rates may increase if a Chemistry excursion occurs while H2 Injection System is in service potentially causing a MSLRM alarm.

2. The flow control valve needs to be approximately 17-19% to meet the maximum valve position interlock, however if the valve is driven to minimum position (≤12.5%) it can become hydraulically locked after the pump upshift. This may be avoided by not overdriving the valve closed and establishing valve control soon after the pump upshift and pump flow stabilizes.

4.3.1 Close 2RCS*HYV17B, Loop B flow control valve, to approximately 17 - 19% open by manually lowering the output of 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL station. (Refer to Attachment 4 for confirmation that minimum position interlock is met.) _____

(C10) a. Dispatch an Operator to panel 2RCS-PNL100 to monitor RCS Pump AND Motor vibration, AND reset alarm(s) as required. _____

4.3.2 Place the high speed control switch BRKR 5B, RECIRC PMP 1B MOTOR B control switch for 2RCS*P1B to START. _____

4.3.3 Observe the following:

- BRKR 2B, LOW FREQ MG SET GEN trips. _____
- BRKR 1B, LOW FREQ MG SET DRIVE MOT trips. _____
- Pump speed lowers to 350 rpm (20% of rated speed) on B35-R651B, RECIRC PMP 1B SPEED,
  THEN BRKR 5B closes (3 second time delay). _____
- Pump accelerates to 1782 rpm (100% rated speed). _____

4.3.4 IF 2RCS*P1B fails to upshift as expected,
THEN place the high speed control switch BRKR 5B, RECIRC PMP 1B MOTOR B, control switch for 2RCS*P1B to PTL. _____

4.3.5 AFTER pump flows stabilize, verify control of 2RCS*HYV17B by input of a momentary open signal to 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. _____

4.3.6 IF 2RCS*HYV17B fails to open, locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV47B(RV48B), RELIEF VALVE for the in-service HPU. _____

4.3.7 Verify control of 2RCS*HYV17B by input of a momentary open signal to 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. _____

4.3.8 IF 2RCS-RV47B(RV48B), RELIEF VALVE pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.3.9 IF 2RCS*HYV17B fails to open, swap HPU subloops per N2-OP-29, F.2.0 AND verify control of 2RCS*HYV17B by input of a momentary open signal to 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.3.10 IF 2RCS*HYV17B fails to open, locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV48B(RV47B), RELIEF VALVE for the in-service HPU. ______

4.3.11 Verify control of 2RCS*HYV17B by input of a momentary open signal to 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.3.12 IF 2RCS-RV48B(RV47B), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.3.13 IF 2RCS*HYV17B opens, continue at Step E.4.6 AND IF up-shifting 2RCS*P1A, perform Step E.4.2. ______

4.3.14 IF 2RCS*HYV17B fails to open, downshift 2RCS*P1B to low speed (LFMG) in accordance with G.1.0,
THEN continue at Step E.4.5. ______

4.4 IF 2RCS*HYV17A failed to open from an indicated position of approximately 17 - 19% on 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL using EITHER HPU sub-loop at a hydraulic pressure of 2100 psi, following pump up-shift, THEN perform the following:

4.4.1 Verify the following:

- Reactor thermal power less than 35%. ______
- APRM indicated power less than 40%. ______
- BRKR 3A, RECIRC PMP 1A MOTOR A, AND BRKR 4A, RECIRC PMP 1A MOTOR A, are closed. ______
- BOTH RECIRC LOOP A AND RECIRC LOOP B FLOW CONTROL stations are in MAN (Manual) position. ______
- FW FL <30% FVC <19% RESET interlock white light is out. ______
- DOME/SUCT LO DIFF TEMP RESET interlock white light is out. ______
- LEVEL 3 RESET (S111A(B)) interlock white light out. ______
- Reactor power is above the Low Feedwater Flow Interlocks AND is below the 62% Rod Line. ______

E. STARTUP (Cont) INITIALS

4.4.2 Perform the following to override the valve position interlock for 2RCS*HYV17A:

a. Obtain SM permission to install jumper to override 2RCS*HYV17A valve position interlock. ______ SM

b. Obtain CRO permission to install jumper to override 2RCS*HYV17A valve position interlock. ______ CRO

c. At Switchgear Bldg. El. 293', in 2RCS-PNL1A, bay A, right side, (B35-P001A) install a jumper from terminal CC11 to terminal CC12. ______

______ IV

4.4.3 Adjust 2RCS*HYV17A, Loop A flow control valve, to an indicated position as identified below by manually adjusting the output of 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL station.

- IF 2RCS*P1A is the first to be up-shifted (restarted), THEN adjust 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, to an indicated position of 21% (+0/- 2%). ______
- IF 2RCS*P1A is the second to be up-shifted (restarted), THEN adjust on 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, to an indicated position of 19% (+0/-2%). ______

(C10) 4.4.4. Dispatch an Operator to panel 2RCS-PNL100 to monitor RCS Pump AND Motor vibration, AND reset alarm(s) as required. ______

4.4.5 Place the high speed control switch BRKR 5A, RECIRC PMP 1A MOTOR A control switch for 2RCS*P1A to START. ______

4.4.6 Observe the following:

- BRKR 2A, LOW FREQ MG SET GEN, trips. ______
- BRKR 1A, LOW FREQ MG SET DRIVE MOT, trips. ______
- Pump speed lowers to 350 rpm (20% of rated speed) on B35-R651A, RECIRC PMP 1A SPEED, THEN BRKR 5A closes (3 second time delay). ______
- Pump accelerates to 1782 rpm (100% rated speed). ______

4.4.7 AFTER pump flows stabilize, verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.4.8 IF 2RCS*HYV17A fails to open, THEN locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV47A(RV48A), RELIEF VALVE for the in-service HPU. ______

4.4.9 Verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.4.10 IF 2RCS-RV47A(RV48A), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.4.11 IF 2RCS*HYV17A fails to open,
THEN swap HPU sub-loops per N2-OP-29, F.2.0, AND verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.4.12 IF 2RCS*HYV17A fails to open,
THEN locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV48A(RV47A), RELIEF VALVE, for the in-service HPU. ______

4.4.13 Verify control of 2RCS*HYV17A by input of a momentary open signal to 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.4.14 IF 2RCS-RV48A(RV47A), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psig. ______

4.4.15 IF valve opens,
THEN continue at Step E.4.6 AND IF up-shifting 2RCS*P1B,
THEN perform Step E.4.3. ______

4.4.16 IF 2RCS*HYV17A fails to open:
N/A, 2RCS*HYV17A opened .... (__)

- Downshift 2RCS*P1A to low speed (LFMG) in accordance with G.1.0 .... (__)
- Notify Plant Manager .... (__)
- Notify Operations Manager .... (__)
- Notify Reactor Engineer .... (__)
- Notify Technical Support System Engineer .... (__)

E. STARTUP (Cont) INITIALS

4.4.17 Perform the following to restore the operability of the valve position interlock for 2RCS*HYV17A:

a. Obtain SM permission to remove the jumper AND restore operability of 2RCS*HYV17A valve position interlock. ______ SM

b. Obtain CRO permission to remove the jumper AND restore operability of 2RCS*HYV17A valve position interlock. ______ CRO

c. At Switchgear Bldg. El. 293', in 2RCS-PNL1A, bay A, right side, (B35-P001A) remove the jumper from terminals CC11 AND CC12. ______

______ IV

4.5 IF 2RCS*HYV17B failed to open from an indicated position of approximately 17 - 19% on 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL using EITHER HPU sub-loop at a hydraulic pressure of 2100 psi, following pump up-shift, THEN perform the following:

4.5.1 Verify the following:

- Reactor thermal power less than 35% ______
- APRM indicated power less than 40% ______
- BRKR 3B, RECIRC PMP 1B MOTOR B AND BRKR 4B, RECIRC PMP 1B MOTOR B, are closed. ______
- BOTH RECIRC LOOP A AND RECIRC LOOP B FLOW CONTROL stations, 2RCS-HC1603A(B), are in the MAN (Manual) position. ______
- FW FL <30% FVC <19% RESET interlock white light is out. ______
- DOME/SUCT LO DIFF TEMP RESET interlock white light is out. ______
- LEVEL 3 RESET (S111A(B)) interlock white light is out. ______
- Reactor power is above the Low Feedwater Flow Interlocks AND is below the 62% Rod Line. ______

4.5.2 Perform the following to over-ride the valve position interlock for 2RCS*HYV17B:

a. Obtain SM permission to install jumper to over-ride 2RCS*HYV17B valve position interlock. ______ SM

b. Obtain CRO permission to install jumper to over-ride 2RCS*HYV17B valve position interlock. ______ CRO

c. At Switchgear Bldg. El. 293', in 2RCS-PNL1B, bay A, right side, (B35-P001B) install a jumper from terminal CC11 to terminal CC12. ______

______ IV

4.5.3 Adjust 2RCS*HYV17B, Loop B flow control valve, to an indicated position as identified below by manually adjusting the output to 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL station.

- IF 2RCS*P1B is the FIRST to be up-shifted (restarted), THEN adjust 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, to an indicated position of 21% (+0/-2%). ______
- IF 2RCS*P1B is the SECOND to be up-shifted (restarted), THEN adjust 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL to an indicated position of 19% (+0/-2%). ______

(C10) 4.5.4. Dispatch an Operator to panel 2RCS-PNL100 to monitor RCS Pump AND Motor vibration, AND reset alarm(s) as required. ______

4.5.5 Place the high speed control switch BRKR 5B, RECIRC PMP 1B MOTOR B, control switch for 2RCS*P1B to START. ______

4.5.6 Observe the following:

- BRKR 2B, LOW FREQ MG SET GEN, trips. ______
- BRKR 1B, LOW FREQ MG SET DRIVE MOT, trips. ______
- Pump speed lowers to 350 rpm (20% of rated speed) on B35-R651B, RECIRC PMP 1B SPEED, THEN BRKR 5B closes (3 second time delay). ______
- Pump accelerates to 1782 rpm (100% rated speed). ______

4.5.7 AFTER pump flows stabilize, verify control of 2RCS*HYV17B by input of a momentary open signal to 2RCS-HC1603B, RICIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.5.8 IF 2RCS*HYV17B fails to open, THEN locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV47B(RV48B), RELIEF VALVE, for the in-service HPU. ______

4.5.9 Verify control of 2RCS*HYV17B by input of a momentary open signal 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.5.10 IF 2RCS-RV47B(RV48B), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.5.11 IF 2RCS*HYV17B fails to open,
THEN swap HPU sub-loops per N2-OP-29, F.2.0, AND verify control of 2RCS*HYV17B by input of a momentary open signal 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.5.12 IF 2RCS*HYV17B fails to open,
THEN locally raise Hydraulic Power Unit (HPU) pressure to 2100 psi maximum by adjusting 2RCS-RV48B(RV47B), RELIEF VALVE, for the in-service HPU. ______

4.5.13 Verify control of 2RCS*HYV17B by input of a momentary open signal 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, AND observe valve motion as indicated by valve % SERVO ERROR meter deflection AND return to 0 (center) position. ______

4.5.14 IF 2RCS-RV48B(RV47B), RELIEF VALVE, pressure was raised, THEN locally adjust valve to return HPU pressure to 1850-1950 psi. ______

4.5.15 IF valve opens, continue at Step E.4.6 AND IF up- shifting 2RCS*P1A, perform Step E.4.2. ______

4.5.16 IF 2RCS*HYV17B fails to open:
N/A, 2RCS*HYV17B opened .... (__)

- Downshift 2RCS*P1B to low speed (LFMG) in accordance with G.1.0.. (__)
- Notify Plant Manager.. (__)
- Notify Operations Manager.. (__)
- Notify Reactor Engineer .... (__)
- Notify Technical Support System Engineer .... (__)

4.5.17 Perform the following to restore the operability of 2RCS*HYV17B valve position interlock:

a. Obtain SM permission to remove the jumper AND restore operability of 2RCS*HYV17B valve position interlock.
______
SM

b. Obtain CRO permission to remove the jumper AND restore operability of 2RCS*HYV17B valve position interlock.
______
CRO

4.5.17 (Cont)

c. At Switchgear Bldg. El. 293', in 2RCS-PNL1B, Bay A, right side, (B35-P001B) remove the jumper from terminals CC11 AND CC12: ______

______ IV

4.6 Monitor operation of the Reactor Recirculation System at minimum flow with the recirculation pumps on the fast speed power supply. Refer to precautions for motor parameters AND allowed flow mismatch between loops. ______

4.7 Monitor Recirc Pump vibrations. ______

4.8 Control Reactor recirculation flow using 2RCS-HC1603A(B), RECIRC LOOP A(B) FLOW CONTROL stations. ______

(C14) 4.9 Perform the following:

4.9.1 At 2NPS-SWG004 (SWG005), confirm breaker 1, REACTOR RECIRCULATION PUMP MOTOR BRKR-2A(B) 2RCS-M1A(B), is charged as indicated by yellow indicator on lower left of breaker. ______

4.9.2 IF the breaker is NOT charged, contact Electrical Maintenance to charge the breaker. ______

4.10 IF required, return H_2 injection to proper flow rate. ______

5.0 <u>Adjusting RCS HPU Needle Bypass Valve</u>

5.1 For the RCS HPU Needle valve being adjusted, perform the following:

5.1.1 Verify Subloop in MAINTENANCE Mode. ______

5.1.2 Verify Subloop accumulator charged. ______

5.1.3 Verify fluid temperature stabilized between 120°F to 140°F (normal operating temperature). ______

****

CAUTION

Do not fully remove locking set screw.

****

5.2 Start Subloop pump. ______

5.3 AFTER pump has been operating for at least 5 minutes, loosen locking set screw on 2RCS-V2003A(B,C,D). ______

5.4 Close 2RCS-V2003A(B,C,D). ______

ATTACHMENT 4: <u>CONFIRMING THE FLOW CONTROL VALVE (FCV) MINIMUM POSITION INTERLOCK IS MADE UP PRIOR TO PUMP START OR UPSHIFT</u>

<u>NOTES</u>:

1. If starting the Recirc Pumps for low speed operation it may be easier to set the FCV to 17-19% indicated position. The FCV is expected to respond at low speed operation.

2. Based on investigative results, it has been shown that the FCV is less likely to stick if it is open to the maximum position possible while still satisfying the minimum position interlock. This was verified by using a Fluke (Volt/Ohm Meter) and stroking the valve open and just before the volts dropped to zero stopping the valve stroke and ensuring approximately 66 VDC still reading on Fluke (VOM). 66 VDC ensures the minimum position interlock is satisfied.

3. The following steps may be exercised at the SM discretion.

		INITIALS
1.0	Establish communications between 2CEC-PNL612 <u>AND</u> 2CEC*PNL602.	J
2.0	At panel 2CEC-PNL612, perform the following to verify FCV minimum position interlock made up:	J
2.1	For FCV A place the "red" lead of the VOM to terminal DD-94 AND the "black" lead to a part of the panel door that is NOT painted for a proper ground.	______
2. 2	For FCV B place the "red" lead of the VOM to terminal DD-97 AND the "black" lead to a part of the panel door that is NOT painted for a proper ground.	______
3.0	Starting at approximately 17-19% FCV position, slowly open the valve - stopping when the volts start to drop. Go in the closed direction UNTIL the VDC returns to 66 VDC, AND hold for 1 additional second. If the volts drop off too much it may be necessary to return to 17-19% position AND repeat this procedure.	______

NRC JPM S-8

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Depressurize the RPV to the Main Condenser   Revision: NRC 2012

Task Number: N2-EOP-06-01001-18

Approvals:

[signature]	3/14/12	NA EXAM SECURITY	/
Facility Representative	Date	General Supervisor Operations (Designee)	Date

NA EXAM SECURITY	/
Configuration Control	Date

Performer:____________________(RO/SRO/AO)

Trainer/Evaluator:_______________

Evaluation Method: __X____Perform   _______Simulate

Evaluation Location:_____Plant   ____X_Simulator

Expected Completion Time: 20 minutes   Time Critical Task: NO   Alternate Path Task: YES

Start Time: ________   Stop Time:_________   Completion Time:_________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:________________________________   Date:_____________

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 161 (185)

2. Malfunctions:

a.	**MS02**, Steam Line Rupture Outside Primary Containment (DBA), FV = 0.5	**TRG 2**
b.	**MS04**, Steam Line Rupture Inside Primary Containment, FV = 1	**TRG 2**

3. Remote Functions:

a.	**MS05B**, 2MSS*MOV112 Appendix R Ckt Breaker, FV = Close	**TRG 1**

4. Overrides:

a.	**OVR-02A2S041DI3240**, Test Inside MSIV-6D, FV = On	**TRG 3**
b.	**OVR-02A2S042DI32613**, Test Inside MSIV-6C, FV = On	**TRG 3**
c.	**OVR-02A2S043DI32814**, Test Inside MSIV-6B, FV = On	**TRG 3**
d.	**OVR-02A2S044DI3324**, Test Inside MSIV-6A, FV = On	**TRG 3**
e.	**OVR-02A2S081DI3248**, Test Outside MSIV-7D, FV = On	**TRG 3**
f.	**OVR-02A2S082DI3273**, Test Outside MSIV-7C, FV = On	**TRG 3**
g.	**OVR-02A2S083DI3294**, Test Outside MSIV-7B, FV = On	**TRG 3**
h.	**OVR-02A2S084DI33212**, Test Outside MSIV-7A, FV = On	**TRG 3**

5. Event Triggers:

a.	Event # **3**	Event Action:	**zdrps1d==1** (Mode Switch in SHUTDOWN)
		Command:	**Blank**
b.	Event # **4**	Event Action:	**anntbl(484)>0** (Annunciator 602228 alarms)
		Command:	**dmf MS02**

Actions to setup simulator for the JPM:

1. Reset Simulator
2. Insert Trigger #2
3. When the MSIVs are closed, place the Mode Switch in SHUTDOWN
4. Start one Mechanical Vacuum Pump
5. Verify Steam Seal system is lined up to the turbine from the Auxiliary Boiler.
6. Verify Annunciator 602228 is clear
7. Verify the eight MSIV overrides are inserted and active
8. Open 5 ADS SRVs to establish JPM initial conditions

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. EOP-6 Attachment 18
2. NUREG K/A 239001 A4.09

Tools and Equipment:

1. None

Task Standard:

Depressurize RPV to main condenser where unable to open a pair of MSIVs.

Initial Conditions:

1. A LOCA has occurred and an RPV Blowdown was required
2. Only 5 SRVs could be opened
3. EOP Jumper #11, #15, #17 & #19 have been installed
4. Ask trainee if he/she has any questions after presenting initial conditions

Initiating cue:

"(Operator's name), Depressurize RPV to main condenser; in accordance with N2-EOP-6, Attachment 18.

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat

RECORD START TIME ____

2. Obtain a copy of the reference procedure and review/utilize the correct section.	EOP-6, Attachment 18 obtained.	Sat/Unsat
3. IF any MSIV isolation signals exist OR are expected, defeat MSIV isolation interlocks as follows:	Determines criteria met	Sat/Unsat

Note: *Jumpers installed per initial conditions.*

4. IF a LOCA signal is present expected, using PA235 key, place the following LOCA override switches to OVERRIDE: (2CEC*PNL851)	Determines LOCA is present by observing control room indications (may use SPDS terminal).	Sat/Unsat
• LOCA OVERRIDE VLV IAS*SOV166	Using key, places switch in OVERRIDE	**Pass/Fail**
• LOCA OVERRIDE VLV IAS*SOV184	Using key, places switch in OVERRIDE	**Pass/Fail**

Annunciators 601517 and 601519 alarms when switches are placed in OVERRIDE.

Performance Steps	Standard	Grade
5. Verify open the following valves at 2CEC*PNL851		
• IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV	Open IAS*SOV166 and observe red light ON and green light OFF.	**Pass/Fail**
• IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV	Open IAS*SOV184 and observe red light ON and green light OFF.	**Pass/Fail**
6. Record 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) Note: PNL609 and 611 trip units are not modeled in the simulator. ***CUE:*** *Differential Pressure is <150 psid*	Determines differential pressure is within 150 psid.	Sat/Unsat
7. IF differential pressure across the MSIVs is > 150 psid, open at least one pair of MSIVs by performing N2-OP-1, Section H.4.0 AND THEN continue at Step 3.1.7 N/A, differential pressure across the MSIVs is < 150 psid	Determines step is N/A, based on differential pressure.	Sat/Unsat

Performance Steps	Standard	Grade
8. IF differential pressure across the MSIVs is < 150 psid, open at least one pair of MSIVs as follows: Verify MSIV isolation signals reset by performing the following at 2CEC*PNL602. • Place control switches for the following to CLOSE: o MSS*AOV6A, MSIV o MSS*AOV6B, MSIV o MSS*AOV6C, MSIV o MSS*AOV6D, MSIV o MSS*AOV7A, MSIV o MSS*AOV7B, MSIV o MSS*AOV7C, MSIV o MSS*AOV7D, MSIV	Places all eight MSIV control switches in CLOSE	Sat\Unsat
9. Depress pushbutton B22H-S33, INBD ISOL LOGIC RESET	Depresses pushbutton	Sat\Unsat
10. Depress pushbutton B22H-S32, OUTBD ISOL LOGIC RESET	Depresses pushbutton	Sat\Unsat
11. Open pairs of MSIVs as follows at 2CEC*PNL602 • Place the control switch for individual outboard MSIVs to AUTO • Place the control switch for the corresponding inboard MSIV to AUTO.	Places control switches for one pair of MSIVs to AUTO. MSIVs will NOT open Determines no valve opens when switch placed in AUTO (GREEN light on, RED light off)	Sat/Unsat

Note: Due to inserted overrides (control switches in CLOSE), MSIVs fail to open.

Performance Steps	Standard	Grade
Cue: The candidate may request direction from the CRS/SM. If so, then direct the candidate to continue with efforts to depressurize the RPV to the main condenser.		
12. IF a pair of MSIVs can NOT be opened, align steam line drains to depressurize the RPV as follows:		
• Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. At 2CEC-PNL824	Opens MSS*MOV207 and observe red light ON and green light OFF.	**Pass/Fail**
Note: *This is a throttle valve and the switch must be held in the open positions to fully open the valve.*		
• Verify open MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV. (2CEC*PNL602)	Opens MSS*MOV111 and observe red light ON and green light OFF.	**Pass/Fail**
13. Direct an operator to: • Place 2EHS*MCC102-7A, 2MSS*MOV112 MAIN STEAM LINE DRAIN OUTBD to ON in the Aux Bay-North El 240	Directs operator to locally close 2EHS*MCC102-7A AND place alarm circuit to enable.	Sat/Unsat
Note: *A CAT 60 key may be required for entry to 2EHS*MCC102.*		
• Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE		Sat/Unsat
BOOTH OPERATOR: *Enter Remote MS05B, 2MSS*MOV112 APP R CKT BKR, CLOSE*		
Cue: *Report the breaker is closed and alarm circuit is enabled.*		
14. Verify open 2MSS*MOV112 at 2CEC*PNL602	Open 2MSS*MOV112 and observe red light ON and green light OFF.	**Pass/Fail**

Performance Steps	Standard	Grade
15. Verify open MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING at 2CEC*PNL602	Open 2MSS-MOV187 and observe red light ON and green light OFF.	**Pass/Fail**

Note: *This is a throttle valve and the switch must be held in the open positions to fully open the valve.*

16. Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the INCREASE pushbutton UNTIL bypass valves are full open at 2CEC*PNL851	Depresses and holds to Open all TBVs (each valve indicates 100%)	**Pass/Fail**
17. Report depressurizing RPV to main condenser	Reports status	Sat/Unsat

Cue: *Acknowledge report.*

TERMINATING CUE: RPV is depressurizing to Main Condenser via Bypass valves or Drain valves

RECORD STOP TIME___________

Turnover Sheet

Initial Conditions:

1. A LOCA has occurred and an RPV Blowdown was required
2. Only 5 SRVs could be opened
3. EOP Jumper #11, #15, #17 & #19 have been installed

Initiating cue:

"(Operator's name), Depressurize RPV to main condenser; in accordance with N2-EOP-6, Attachment 18.

NINE MILE POINT NUCLEAR STATION UNIT 2

EMERGENCY OPERATING PROCEDURE

N2-EOP-6

REVISION 01200

NMP2 EOP SUPPORT PROCEDURE

TECHNICAL SPECIFICATION REQUIRED

Approved by: PAT FOTI for J. KraKUSZESKI
J. A. Krakuszeski Manager Operations

5/2/10
Date

THIS IS A LIMITED REVISION

Effective Date: MAY 2,2010

B. REFERENCES AND COMMITMENTS (Cont)

4.0 Supplemental References

NRC Correspondence - Emergency Operating Procedures Inspection and Initial Examination - Report No.50-410/91-80

5.0 Commitments

Commitment Number	Protected Step number	Description
NCTS 502822-03	Entire Procedure	Following N2-EOP-5 revision, N2-EOP-6 will be rewritten, verified and validated
DER 2-94-2326	Attachment 9, Step 4.3.5	Discrepancy between the Containment Isolation Design Criteria and Normal Operating valve position for 2SLS*MOV5A/B
DER 2-95-1294	Attachment 9 Steps 3.1.5 & 3.2.5	EOP Procedure Problem
NCTS 503911-00	Attachment 1, Steps 3.5.1, 3.5.2, 3.7.1 & 3.7.2	Ensure one HVC Special Filter Train is operating within 20 minutes of LOCA. Ensure less contaminated Control Room Outside Air Intake path is selected during LOCA within 8 hours (Increased MSIV Leakage Amendment)
ESB2-M960608	C.15.0 Attachment 24 Step 1.1 & Section 3.0	Restrict re-opening 2CCP*MOV122, 124, 265 and 273 after drywell is at or above 250°F.

C. PRECAUTIONS AND LIMITATIONS

1.0 Each attachment is used as a "stand-alone" document with all the directions necessary to accomplish the task stated in the Purpose of the Attachment. In some cases, special situations may require referencing or branching to another EOP support procedure. If branching is required it will be stated in the Purpose of the Attachment.

2.0 All Notes, Cautions, Warnings and Drawings required to effectively perform the attachment are included in that attachment.

3.0 It is the intent that individual attachments may be pulled from the procedure for use, however they must be replaced upon completion.

4.0 When using the Attachments, the operator shall use the provided place-keeping "check boxes" opposite each step as it is completed.

C. <u>PRECAUTIONS AND LIMITATIONS</u> (Cont)

5.0 Changes to these attachments should not be made (including step numbering) except in an emergency, without review by the EOP Coordinator and Manager Operations or General Supervisor-Unit 2 Operations, as required per S-ODP-PRO-0301.

6.0 If a procedure step can not be performed as written, the EOP Director shall be notified immediately.

7.0 The Restoration section of an Attachment shall be performed only when specifically directed by the SM/EOP Director. This permission shall not be granted until the system/equipment is in a condition to support restoration.

8.0 All tools, materials, keys, etc. that are required to perform in an attachment will listed in Section 2 of the attachment.

9.0 A (T) notation in the left margin adjacent to a step number or note indicates that a tool or material is required for performance.

10.0 Common tools (screwdrivers, tape etc.) will not be specified in the procedure step. Only special tools or situations where confusion may result will have a particular tool specified in a step or note.

11.0 Independent verification is required in the Restoration section when restoring temporary alterations or returning permanent plant equipment to normal status. This verification may be delayed if emergency conditions still exist, and it is imperative that restoration be completed immediately. The EOP Director/SM permission is required to delay independent verification.

12.0 During plant conditions which require implementation of these procedures, environmental conditions may be potentially extreme (temperature, radiation, water levels).

In many cases this will require coordination and support from the OSC. Where access may be needed in areas of elevated temperatures, prudency dictates protective equipment be used and precautions taken. Stay times and activity levels should be minimized.

Consultation with the Safety Department is recommended when possible. Above 135° F personnel access may be significantly hampered.

When it is anticipated or known that radiation levels are elevated, radiation protection assistance should be sought. Some evolutions may require utilization of emergency exposure guidelines or emergency dosimetry.

13.0 The attachments give locations of panels when installing jumpers and lifting leads. However, inside many panels there are Operator Aids that will give amplifying instructions as to the exact locations of affected equipment.

C. PRECAUTIONS AND LIMITATIONS (Cont)

14.0 Drywell cooling is not restored with Drywell temperature ≥250°F due to steam voiding concerns in the drywell CCP piping. If voiding were to occur, significant piping or equipment damage could occur.

15.0 The following lines of RHS re-entering the primary containment downstream of the RHS heat exchanger have a lower permissible lowest service metal temperature (PLSMT), of 55°F, for GDC-51.

- Suppression Pool Cooling Return
- Supply to the Suppression Pool Spray ring
- Supply to the Drywell Spray ring

D. DEFINITIONS

1.0 CHECK

To observe an expected condition or characteristic; to determine; to ascertain.

2.0 ENSURE

To confirm a condition. (NO subsequent action is implied to establish that condition if not already there.)

3.0 GO TO

3.1 To proceed to; to transport oneself to a given location.

3.2 To discontinue use of present procedure or section and execute another procedure or section.

4.0 VERIFY

To confirm a condition AND take action to establish that condition if required.

1.0 PURPOSE

1.1 This procedure is used to support depressurizing the Reactor Pressure Vessel (RPV) as rapidly as possible should conditions develop that prevent or prohibit opening a sufficient number of Safety Relief Valves (SRV) to blowdown the RPV and keep it depressurized.
This depressurization is conducted irrespective of the resulting cooldown rate.

1.2 Applicability

1.2.1 Used to support N2-EOP-C2, RPV Blowdown, N2-EOP-C4, RPV Flooding, and N2-SAP-2, RPV, Containment And Radioactivity Release Control.

1.2.2 Depressurization may be accomplished using one or more of the following methods described in this attachment:

- Subsection 3.1 - Depressurizing to the Main Condenser (Utilizes N2-OP-1, Main Steam to open MSIVs if differential pressure across the MSIVs is > 150 psid).
- Subsection 3.2 - Depressurizing via use of RCIC (Utilizes N2-OP-35, Reactor Core Isolation Cooling to startup/shutdown RCIC and Attachment 20 of this procedure to defeat Level 2 low water level interlocks).
- Subsection 3.3 - Depressurizing via use of RPV Head Vents

1.2.3 Defeating any isolation interlocks is authorized to accomplish this function, irrespective of the offsite release rate.

2.0 TOOLS AND MATERIALS

TOOL/MATERIAL	QTY	LOCATION
Flashlight	1	Control Room EOP Toolbox
EOP Jumper #19	1	2CEC*PNL609 Bay B
EOP Jumper #17	1	2CEC*PNL609 Bay C
EOP Jumper #15	1	2CEC*PNL611 Bay A
EOP Jumper #11	1	2CEC*PNL611 Bay C
EOP Jumper #7	1	2CEC*PNL618 Bay C
EOP Jumper #4	1	2CEC*PNL621
L660 Key	1	Control Room EOP Toolbox
PA235	6	Control Room CRO Desk
CAT 60 key	1	Control Room EOP Toolbox

NOTES: 1. Sections 3.1, 3.2, and 3.3 may be performed separately, concurrently, or in any order.

2. Keys PA235, PA1235, and PA2235 are interchangeable.

3.0 PROCEDURE

3.1 Depressurizing To The Main Condenser

N/A, the condenser will NOT be used for depressurizing .... (___)

NOTE: The intent of this section is to depressurize the RPV to the condenser with a vacuum established. However, if a vacuum does not exist this section will still be worked until completion.

3.1.1. IF any MSIV isolation signals exist OR are expected, defeat MSIV isolation interlocks as follows:

N/A, NO isolation signals are present NOR expected................................. (___)

(T) **NOTE:** A L660 Key may be needed for entry into CEC*PNL609 and 2CEC*PNL611.

(T) • Using EOP Jumper #19, connect jumper from terminal B1 on relay B22H-K7J to terminal T4 on relay B22H-K7A in 2CEC*PNL609 Bay B (Figure 18-1) ....(__)

(T) • Using EOP Jumper #17, connect jumper from terminal T4 to terminal B1 on relay B22H-K7C in 2CEC*PNL609 Bay C. (Figure 18-2) ....(__)

(T) • Using EOP Jumper #15, connect jumper from terminal 2 on fuse holder B22H-F6B to terminal 1 on relay B22H-K7F in 2CEC*PNL611 Bay A (Figure 18-3) ....(__)

(T) • Using EOP Jumper #11, connect jumper from terminal T4 to terminal B1 on relay B22H-K7D in 2CEC*PNL611 BAY C (Figure 18-4)...(__)

Ⓣ 3.1.2 IF a LOCA signal is present OR expected, using PA235 key, place the following LOCA override switches to OVERRIDE: *(2CEC*PNL851)*

N/A, a LOCA signal is NOT present NOR expected .... (___)

- LOCA OVERRIDE VLV IAS*SOV166 .... (__)
- LOCA OVERRIDE VLV IAS*SOV184 .... (__)

3.1.3 Verify open the following valves *(2CEC*PNL851)*

- IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV .... (__)
- IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV .... (__)

3.1.4 Record 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)

__________ psid .... (__)

3.1.5 IF differential pressure across the MSIVs is > 150 psid, open at least one pair of MSIVs by performing N2-OP-1, Section H.4.0 AND THEN continue at Step 3.1.7 .... (__)

N/A, differential pressure across the MSIVs is ≤ 150 psid .... (___)

3.1.6 IF differential pressure across the MSIVs is $\leq$ 150 psid, open at least one pair of MSIVs as follows:

N/A, a pair of MSIVs will be opened per N2-OP-1, Section H.4.0................ (___)

a. Verify MSIV isolation signals reset by performing the following: *(2CEC*PNL602)*

1. Place control switches for the following to CLOSE:

- MSS*AOV6A, MSIV..(__)
- MSS*AOV6B, MSIV..(__)
- MSS*AOV6C, MSIV..(__)
- MSS*AOV6D, MSIV..(__)
- MSS*AOV7A, MSIV..(__)
- MSS*AOV7B, MSIV..(__)
- MSS*AOV7C, MSIV..(__)
- MSS*AOV7D, MSIV..(__)

2. Depress pushbutton B22H-S33, INBD ISOL LOGIC RESET ....(__)

3. Depress pushbutton B22H-S32, OUTBD ISOL LOGIC RESET ....(__)

b. Open one pair of MSIVs as follows: *(2CEC*PNL602)*

1. Place the control switch for ANY outboard MSIV to AUTO.......(__)

2. Place the control switch for the corresponding inboard MSIV to AUTO...(__)

3.1.7 IF a pair of MSIVs can NOT be opened, align steam line drains to depressurize the RPV as follows:

N/A, a pair of MSIVs are open .... (___)

a. Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. *(2CEC-PNL824)*..(__)

(T) b. Verify open MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV. *(2CEC*PNL602)* ....(__)

NOTE: A CAT 60 key may be required for entry to 2EHS*MCC102.

c. Place 2EHS*MCC102-7A, 2MSS*MOV112 MAIN STEAM LINE DRAIN OUTBD to ON *(Aux Bay-North El 240)*....................................(__)

d. Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE ....(__)

(T) e. Verify open 2MSS*MOV112 *(2CEC*PNL602)*....................................(__)

f. Verify open MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING *(2CEC*PNL602)* ....(__)

3.1.8 Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the INCREASE pushbutton UNTIL bypass valves are full open *(2CEC*PNL851)* ....(__)

N/A, Turbine Bypass Valves will NOT open.. (___)

3.1.9 IF Bypass Valves are unavailable, verify open as many of the following steam line drains as possible to depressurize the RPV to the condenser:

N/A, Turbine Bypass Valves are available.. (___)

a. Open Turbine Stop Valve Drains *(2CEC-PNL824)*:

- MSS-MOV21A, TURBINE STOP VLV MSV3 DRAIN VLV ....(__)
- MSS-MOV21B, TURBINE STOP VLV MSV4 DRAIN VLV ....(__)
- MSS-MOV21C, TURBINE STOP VLV MSV1 DRAIN VLV ....(__)
- MSS-MOV21D, TURBINE STOP VLV MSV2 DRAIN VLV ....(__)

3.1.9 (Cont)

b. Open MSS-MOV147, TURBINE CONTROL VLVS DRAIN VLV *(2CEC-PNL824)* ....(__)

c. Open Main Steam Line Drains *(2CEC-PNL824)*:

- MSS-AOV191, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV194, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV203, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV205, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV209, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV87A MSL A LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87B MSL B LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87C MSL C LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87D MSL D LOW POINT DRAIN VALVE ....(__)
- MSS-AOV88A MSL DRAIN HEADER ISOL VALVE ....(__)
- MSS-A0V88B MSL DRAIN HEADER ISOL VALVE ....(__)

d. Open MSL Drain Orifice Bypass *(2CEC-PNL824)*:

- MSS-AOV85A, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85B, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85C, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85D, MAIN STM LINE DRAIN VLV ....(__)

3.2 Depressurizing Via Use Of RCIC

N/A, RCIC will NOT be used for depressurizing .... (___)

NOTES:
1. Step 3.2.1 may be delayed until after RCIC is operating if no isolation signals are present for 2ICS*MOV121 and 2ICS*MOV128.
2. A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

3.2.1 IF RCIC isolation interlocks are present or expected for 2ICS*MOV121 AND 2ICS*MOV128 perform the following:

N/A, RCIC Isolation Interlocks are NOT present NOR expected .... (___)

a. Remove relay E51A-K33 in 2CEC*PNL618 Bay C (Figure 18-5) ....(__)

Ⓣ b. Install EOP Jumper #7 between terminal points AA-54 AND AA-107 in 2CEC*PNL618 Bay C (Figure 18-5)....................................(__)

c. Remove relay E51A-K15 in 2CEC*PNL621 (Figure 18-6)....................(__)

Ⓣ d. Install EOP Jumper #4 between terminal points DD-1 AND DD-17 in 2CEC*PNL621 (Figure 18-6) ....(__)

e. Label relays with component identification, orientation AND attachment number...(__)

f. Deliver relays to the SM ....(__)

3.2.2 Verify open the following valves *(2CEC*PNL601)*:

Ⓣ a. ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV................(__)

Ⓣ b. ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV.............(__)

ATTACHMENT 18
DEPRESSURIZING THE RPV

3.2.3 Operate RCIC to depressurize the RPV as follows:

a. Manually operate RCIC using N2-OP-35, Reactor Core Isolation Cooling, Subsection F.2.0 OR F.3.0 ....(__)

b. If RPV water level is less than 108.8 inches (Level 2), defeat RCIC low level interlocks per Attachment 20 of this procedure ....(__)

N/A, RPV water level is above 108.8" ....(___)

c. Throttle OR stop RPV injection flow by establishing recirculation flow to the Condensate Storage Tank (CST) as required:

NOTES:
1. 2ICS*MOV124 and 2ICS*FV108 will not open unless Rx water level is above 108.8" (L2) or interlocks are defeated per Attachment 20 of this procedure.
2. As RPV pressure drops, RCIC injection flow may re-initiate or rise.

1. Open ICS*MOV124, TEST RETURN TO CONDENSATE STOR TK . *(2CEC*PNL601)*..(__)

2. Throttle RPV injection flow using ICS*FV108, TEST BYPASS TO CONDENSATE STOR TK THROTTLE. *(2CEC*PNL601)* ....(__)

3. Stop RPV injection flow by throttling open 2ICS*FV108 UNTIL ICS*V156, REACTOR INJECTION OUTBD CHECK VLV AND ICS*V157, REACTOR INJECTION INBD CHECK VLV remain closed. *(2CEC*PNL601)* ....(__)

(T) **NOTE:** A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

3.2.4 Defeat RCIC steam supply low pressure isolations by performing the following:

a. Remove the following relays:

- E51A-K79 (Figure 18-5), *(2CEC*PNL618 Bay C)*.....................(__)
- E51A-K86 (Figure 18-5), *(2CEC*PNL618 Bay C)*.....................(__)
- E51A-K66 (Figure 18-6) *(2CEC*PNL621)*................................(__)
- E51A-K78 (Figure 18-6) *(2CEC*PNL621)*................................(__)

b. Label relays with component identification, orientation AND attachment number..(__)

c. Deliver relays to the SM ....(__)

3.3 Depressurizing Via Use of RPV Head Vent

N/A, RPV Head Vent will NOT be used for depressurizing.......................... (___)

3.3.1 Verify open the following valves: *(2CEC*PNL602)*

- MSS*MOV118, REACTOR VESSEL VENT ....(__)
- MSS*MOV119, REACTOR VESSEL VENT ....(__)

3.3.2 Verify closed MSS*MOV108, REACTOR VESSEL VENT ....(__)

Initials/Date

4.0 RESTORATION

NOTES: 1. This section is not performed until specifically directed by the SM/EOP Director. This permission shall not be granted until the system/equipment is in a condition to support restoration.

2. Independent verification may be delayed until emergency conditions no longer exist per SM/EOP Director.

4.1 IF Turbine Bypass Valves were unavailable (Step 3.1.4.e performed), perform the following:

N/A, Turbine Bypass Valves were available .... (___)

4.1.1 Verify open turbine stop valve drains *(2CEC-PNL824)*:

- MSS-MOV21A, TURBINE STOP VLV MSV 3 DRAIN VLV ....(__)
- MSS-MOV21B, TURBINE STOP VLV MSV 4 DRAIN VLV ....(__)
- MSS-MOV21C, TURBINE STOP VLV MSV 1 DRAIN VLV ....(__)
- MSS-MOV21D, TURBINE STOP VLV MSV 2 DRAIN VLV ....(__) _____/_______

_____/_______
Ind. Verif

4.1.2 Verify open MSS-AOV201, REHEATING STM PIPING DRAIN VLV. *(2CEC-PNL824)* _____/_______

_____/_______
Ind. Verif

4.1.3 Verify open MSS-MOV147, TURBINE CONTROL VLVS DRAIN VLV. *(2CEC-PNL824)* _____/_______

_____/_______
Ind. Verif

Initials/Date

4.1.4 Verify open the following main steam line drain valves *(2CEC-PNL824)*:

- MSS-AOV191, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV194, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV203, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV205, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV209, MAIN STM LINE HEADER DRAIN VLV ....(__)
- MSS-AOV87A, MSL A LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87B, MSL B LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87C, MSL C LOW POINT DRAIN VALVE ....(__)
- MSS-AOV87D, MSL D LOW POINT DRAIN VALVE ....(__)
- MSS-AOV88A, MSL DRAIN HEADER ISOL VALVE ....(__)
- MSS-A0V88B, MSL DRAIN HEADER ISOL VALVE ....(__) _____/_______

_____/_______
Ind. Verif

4.1.5 Verify open the following main steam line drain orifice bypass valves: *(2CEC-PNL824)*

- MSS-AOV85A, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85B, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85C, MAIN STM LINE DRAIN VLV ....(__)
- MSS-AOV85D, MAIN STM LINE DRAIN VLV ....(__) _____/_______

_____/_______
Ind. Verif

Initials/Date

4.2 Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the DECREASE pushbutton UNTIL all bypass valves are closed. *(2CEC*PNL851)*

N/A, bypass valves were NOT used .... (___) ____/______

____/______
Ind. Verif

4.3 IF steam line drains were used to depressurize the RPV in Step 3.1.4.c, perform the following:

N/A, steam line drains were NOT used... (___)

(T) 4.3.1 Verify closed MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV: *(2CEC*PNL602)* ____/______

____/______
Ind. Verif

4.3.2 Verify closed MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING: *(2CEC*PNL602)* ____/______

____/______
Ind. Verif

(T) **NOTE:** A CAT 60 key may be required for entry at 2EHS*MCC102.

4.3.3 Restore 2MSS*MOV112 power to normal as follows: *(Aux Bay-North El 240)*

a. Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to DISABLE ....(__)

b. Place 2EHS*MCC102-7A, 2MSS*MOV112, MAIN STEAM LINE DRAIN OUTBD to OFF...(__) ____/______

____/______
Ind. Verif

4.3.4 Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. *(2CEC-PNL824)* ____/______

____/______
Ind. Verif

Initials/Date

Ⓣ 4.3.5 Verify closed 2MSS*MOV111. *(2CEC*PNL602)* ____/______

____/______
Ind. Verif

4.4 IF IAS AND MSIV Isolations Interlocks were defeated by Step 3.1.1, perform the following:

N/A, IAS AND MSIV isolation interlocks were NOT defeated .... (___)

4.4.1 Verify open, the following valves *(2CEC*PNL851)*:

- IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV ....(__)
- IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV ....(__) ____/______

____/______
Ind. Verif

4.4.2 Verify the following LOCA override switches in RESET *(2CEC*PNL851)*:

- Ⓣ LOCA OVERRIDE VLV IAS*SOV166..(__)
- Ⓣ LOCA OVERRIDE VLV IAS*SOV184..(__) ____/______

____/______
Ind. Verif

4.4.3 Remove the following EOP Jumpers:

- Ⓣ Remove EOP Jumper #19, from terminal B1 on relay B22H-K7J to terminal T4 on relay B22H-K7A in 2CEC*PNL609 Bay B. (Figure 18-1)..(__)
- Ⓣ Remove EOP Jumper #17, from terminal T4 to terminal B1 on relay B22H-K7C in 2CEC*PNL609 Bay C (Figure 18-2).........................(__)
- Ⓣ Remove EOP Jumper #15, from terminal 2 on fuse holder B22H-F6B to terminal 1 on relay B22H-K7F in 2CEC*PNL611 Bay A. (Figure 18-3) ....(__)

Initials/Date

4.4.3 (Cont)

(T) • Remove EOP Jumper #11, from terminal T4 to terminal B1 on relay B22H-K7D in 2CEC*PNL611 BAY C (Figure 18-4) ....(__) _____/_______

_____/_______
Ind. Verif

4.4.4 Align MSIVs per EOP Director/SM direction:

• MSIVs open per EOP Director/SM ....(__)

• MSIVs closed per EOP Director/SM ....(__) _____/_______

_____/_______
Ind. Verif

4.5 IF N2-OP-1, Subsection H.4.0 was used to open the MSIV's for Subsection 3.1 of this procedure, perform steps H.4.24 AND H.4.25 of N2-OP-1 to restore the valves and temporary alterations used. _____/_______

_____/_______
Ind. Verif

4.6 IF RCIC was used for depressurizing the RPV, perform the following:

N/A, RCIC was NOT used for depressurizing ....(___)

4.6.1 Shutdown RCIC in accordance with N2-OP-35, Reactor Core Isolation Cooling Subsection G.1.0 OR G.2.0. _____/_______

_____/_______
Ind. Verif

4.6.2 If RCIC steam supply valves are to be closed, perform the following: *(2CEC*PNL601)*

N/A, steam supply valves will NOT be closed.. (___)

(T) a. Verify closed ICS*MOV121,TURB STM SUPPLY OUTBOARD ISOL VLV ....(__)

(T) b. Verify closed ICS*MOV128,TURBINE STM SUPPLY INBOARD ISOL VLV ....(__) _____/_______

_____/_______
Ind. Verif

Initials/Date

4.6.3 If required, restore RCIC low level interlocks per Attachment 20 of this procedure.

N/A, RCIC low level interlocks were NOT defeated .... (___) _____/_______

_____/_______
Ind. Verif

4.7 IF RCIC isolation interlocks for 2ICS*MOV121 and 2ICS*MOV128 were defeated in Step 3.2.1, perform the following:

N/A, Isolation interlocks were NOT defeated .... (___)

(T) **NOTE**: A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

4.7.1 Obtain relays from SM ....(__)

(T) 4.7.2 Remove EOP Jumper #7 from terminal points AA-54 AND AA-107 in 2CEC*PNL618 Bay C (Figure 18-5) ....(__)

4.7.3 Install relay E51A-K33 in 2CEC*PNL618 Bay C (Figure 18-5) ....(__)

(T) 4.7.4 Remove EOP Jumper #4 from terminal points DD-1 AND DD-17 in 2CEC*PNL621 (Figure 18-6) ....(__)

4.7.5 Install relay E51A-K15 in 2CEC*PNL621 (Figure 18-6) ....(__) _____/_______

_____/_______
Ind. Verif

(T) **NOTE**: A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

4.8 IF RCIC steam supply low pressure isolation interlocks were defeated in step 3.2.4, perform the following:

4.8.1 Obtain relays from SM ....(__) _____/_______

Initials/Date

4.8.2 Install the following relays:

- E51A-K79 (Figure 18-5), *(2CEC*PNL618 Bay C)*................................(__)
- E51A-K86 (Figure 18-5), *(2CEC*PNL618 Bay C)*................................(__)
- E51A-K66 (Figure 18-6), *(2CEC*PNL621)* ....(__)
- E51A-K78 (Figure 18-6), *(2CEC*PNL621)* ....(__) _____/_______

_____/_______
Ind. Verif

4.9 IF RPV Head Vents were used in Subsection 3.3, perform the following:

N/A, RPV Head Vent to Suppression Pool was NOT used......................... (___)

4.9.1 IF RPV pressure is greater than or equal to 5 psig AND use of the RPV head vents is no longer required, re-align the head vents as follows: *(2CEC*PNL602)*

N/A, RPV pressure is less than 5 psig OR use of the head vents is still required .... (___)

a. Verify closed the following valves: *(2CEC*PNL602)*

- MSS*MOV118, REACTOR VESSEL VENT ....(__)
- MSS*MOV119, REACTOR VESSEL VENT ....(__) _____/_______

_____/_______
Ind. Verif

b. Verify open MSS*MOV108, REACTOR VESSEL VENT *(2CEC*PNL602)* _____/_______

_____/_______
Ind. Verif

Initials/Date

4.10 SM Review

SM verify that restoration is complete. Record comments in Remarks below.

Remarks:____

____

____

____

____

____________________ / ________ / ________

SM Signature Date Time

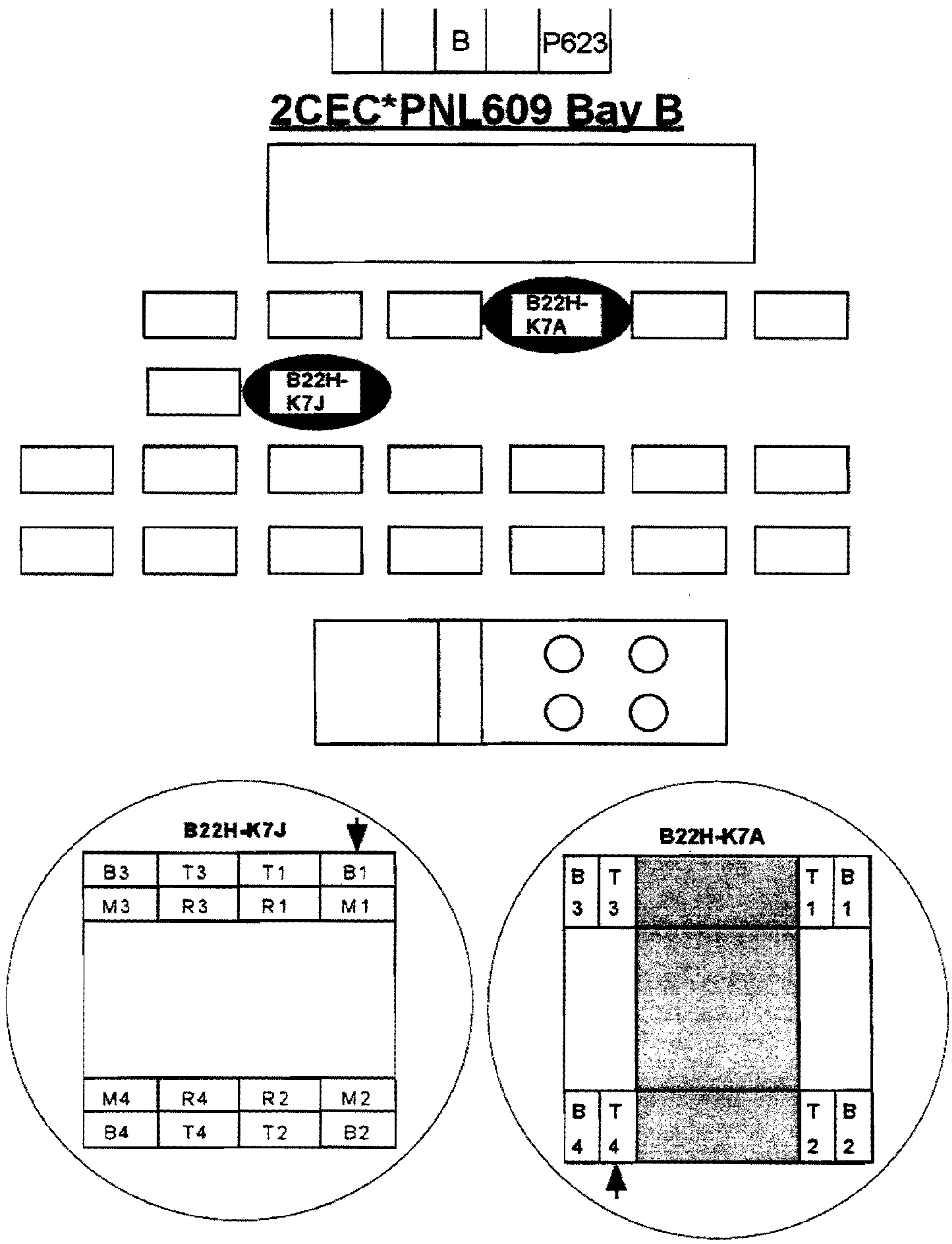
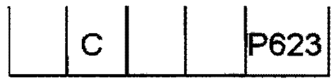

B
P623
2CEC*PNL609 Bay B
B22H-K7A
B22H-K7J
B22H-K7J
B3 T3 T1 B1
M3 R3 R1 M1
M4 R4 R2 M2
B4 T4 T2 B2
B22H-K7A
B3 T3 T1 B1
B4 T4 T2 B2

FIGURE 18-1



2CEC*PNL609 Bay C

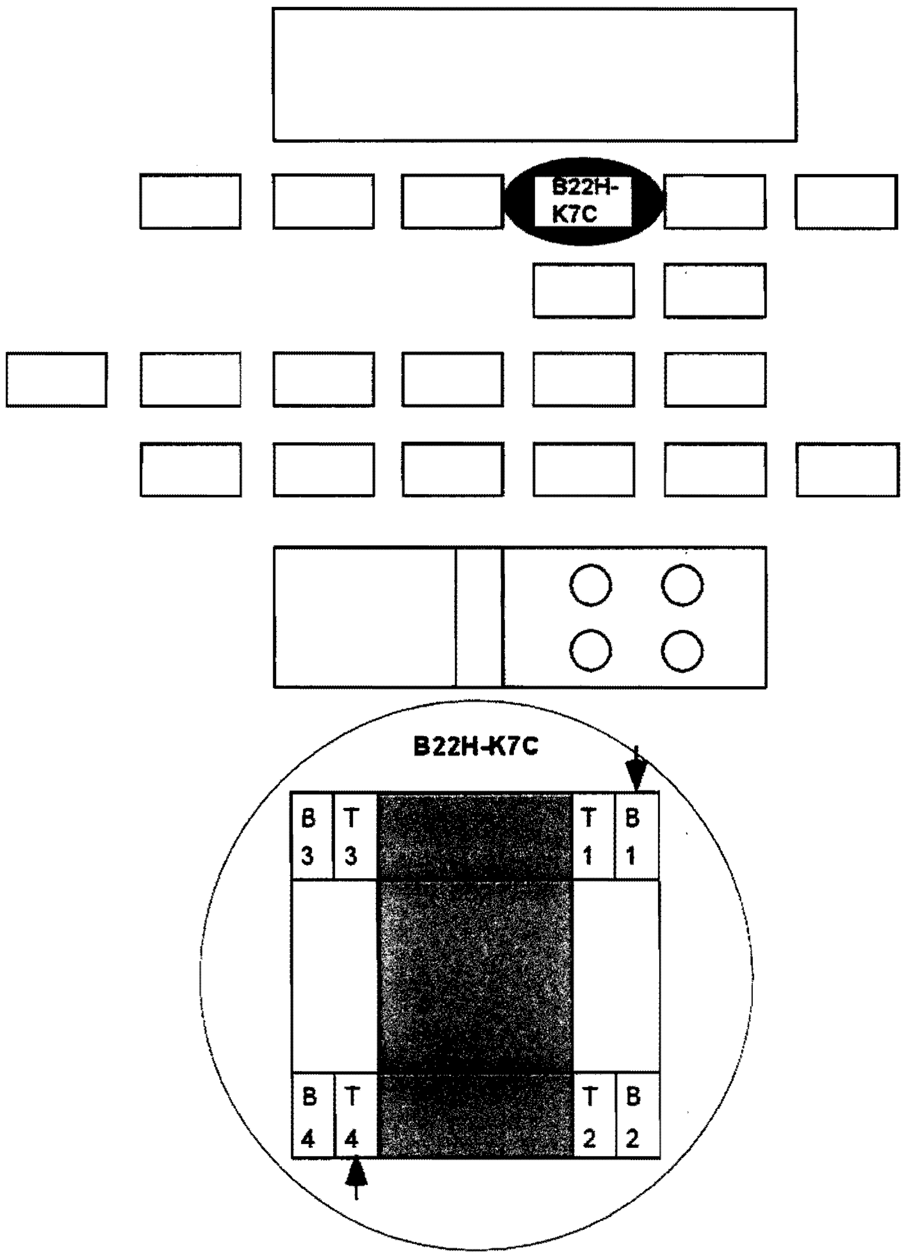


FIGURE 18-2

P622	D	C	B	A

2CEC*PNL611 BAY A

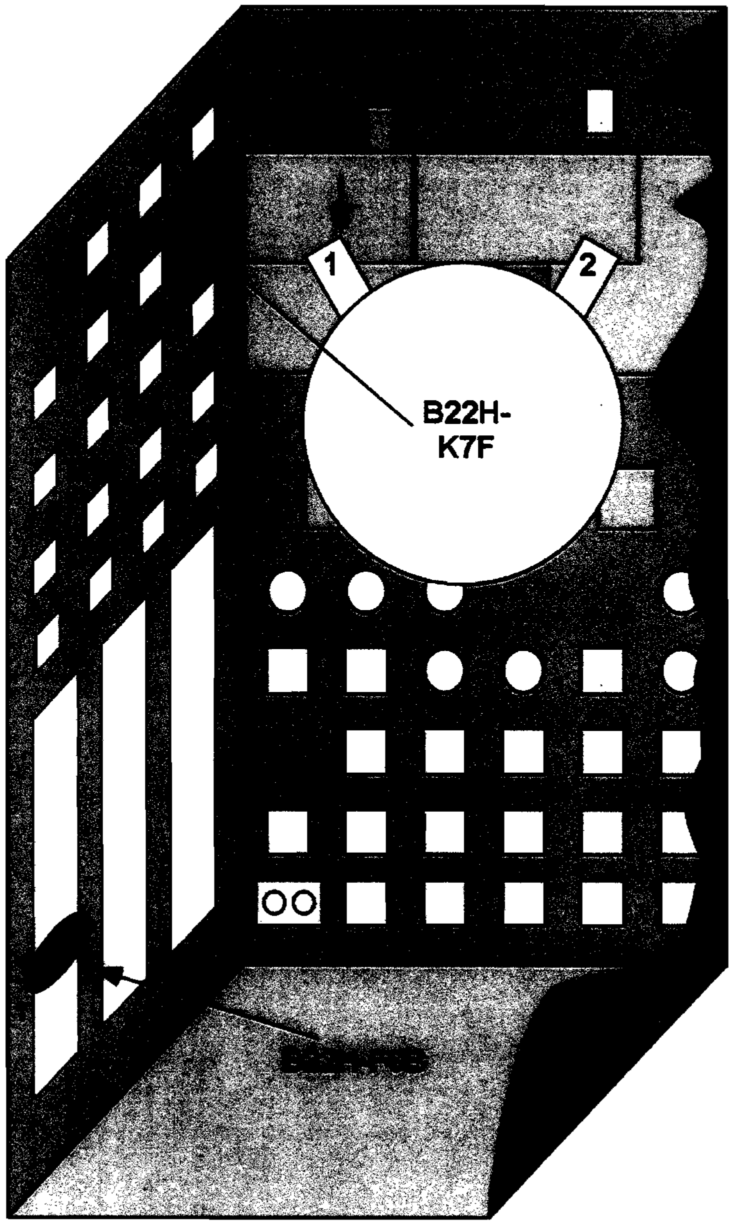


FIGURE 18-3

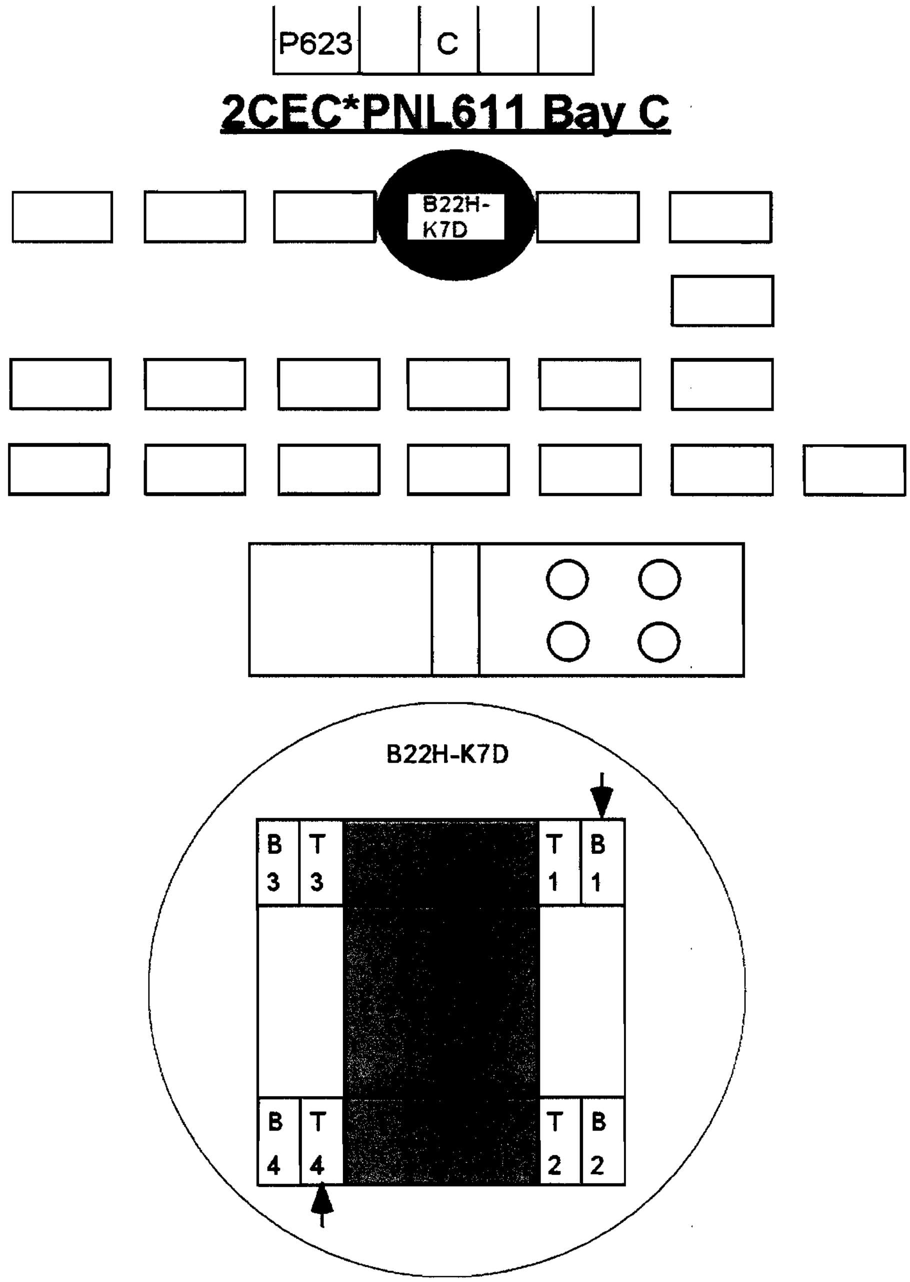


FIGURE 18-4

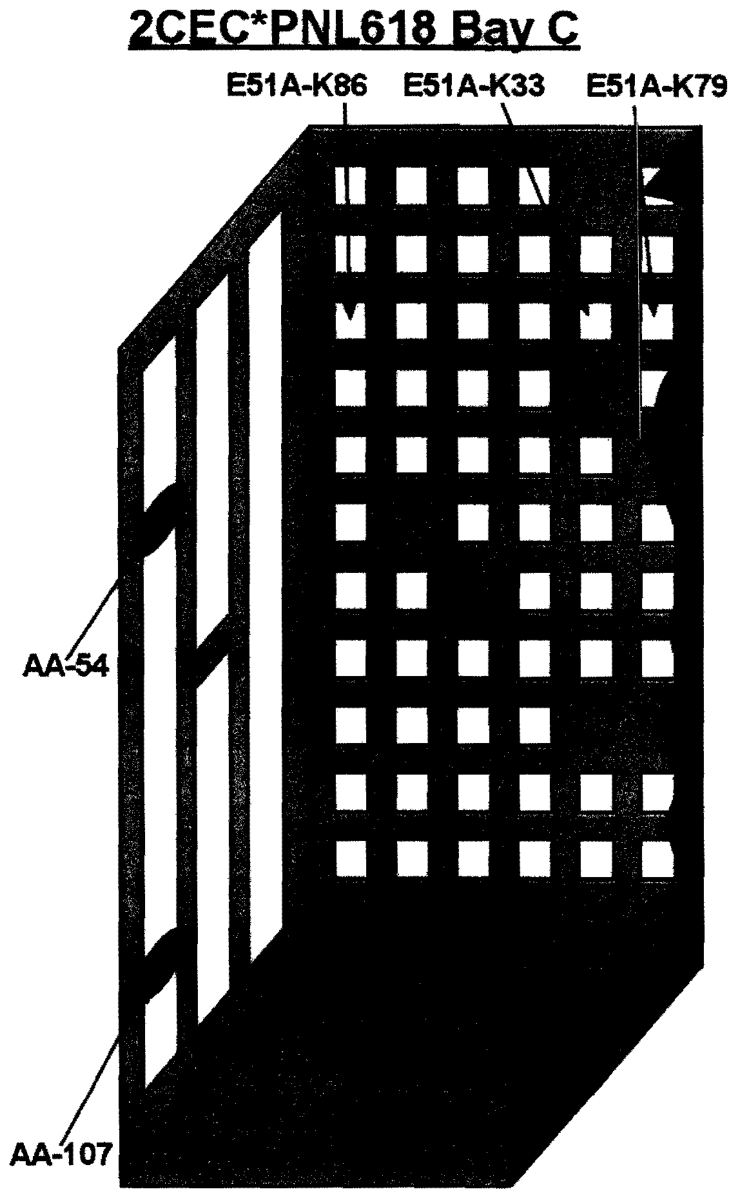


FIGURE 18-5

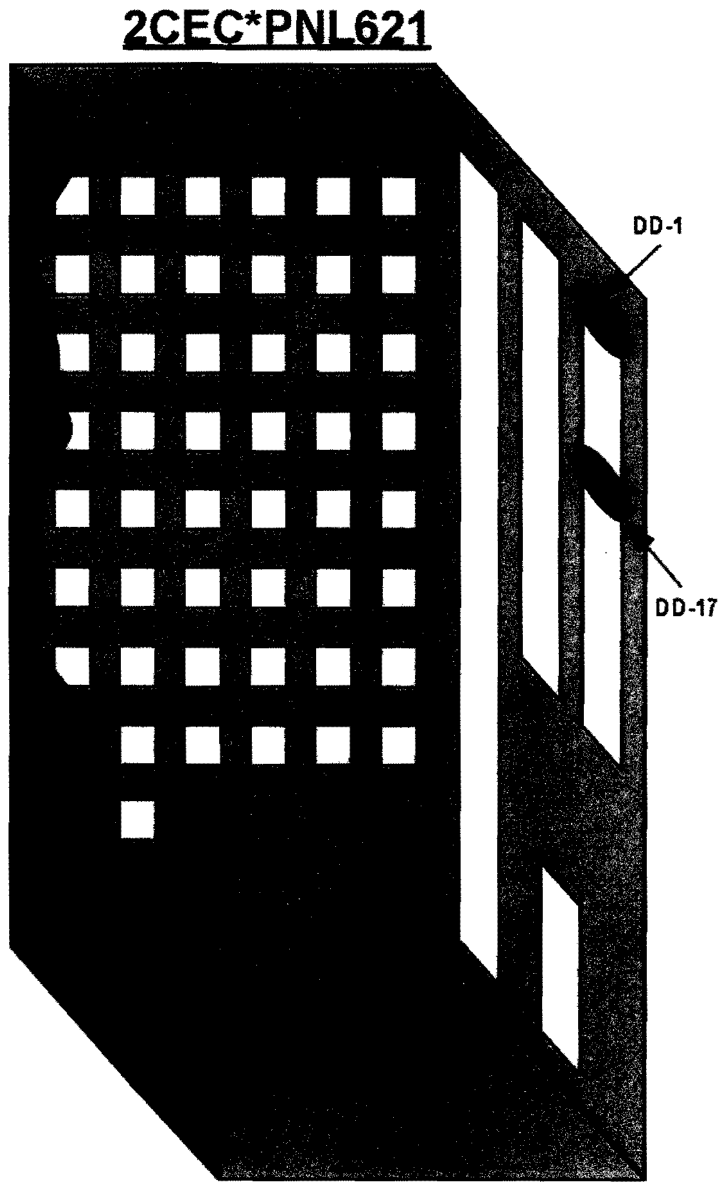


FIGURE 18-6

NRC JPM P-1

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Align Service Water to SFC Heat Exchanger 1A   Revision: NRC 2012

Task Number: NA

Approvals:

______________ / ______
Facility Representative   Date

NA Exam Security / ______
General Supervisor Operations (Designee)   Date

NA EXAM SECURITY / ______
Configuration Control   Date

Performer:________________________________(RO/SRO)

Trainer/Evaluator:____________________________

Evaluation Method: ________Perform   ____X____Simulate

Evaluation Location: __X__Plant   __________Simulator

Expected Completion Time: 25 min. Time Critical Task: No Alternate Path Task: No

Start Time: ________   Stop Time:________   Completion Time:________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator's Signature:____________________________   Date:____________

Recommended Start Location:

Plant

Simulator Set-up:

NA

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-SOP-38, Loss of Spent Fuel Pool Cooling
2. NUREG K/A 233000 K1.02

Tools and Equipment:

1. None

Task Standard:

Service Water is aligned to SFC Heat Exchanger 1A

Initial Conditions:

1. The Control Room has been evacuated
2. A loss of Spent Fuel Pool Cooling has occurred

Initiating cue:

"(Operator's name), Align Service Water to SFC Heat Exchanger 1A in accordance with N2-SOP-38, Attachment 5

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-SOP-38, Attachment 5, obtained.	Sat/Unsat
3. Obtain SM permission to supply Service Water Cooling to SFC Heat Exchanger 1A	Requests SM permission	Sat/Unsat
UNLESS directed otherwise by the SM, verify Chemistry has sampled the CCP system AND sample results meet SPDES AND ODCM requirements for discharge		
N/A, the SM directs sampling to be performed later		
Cue: *SM has granted permission and directs that chemistry sampling will be performed later.*		
4. In the Division I Switchgear Room, place the following breakers in OFF:		
• 2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A	Locates breaker and places in OFF	**Pass/Fail**
• 2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A	Locates breaker and places in OFF	**Pass/Fail**

Performance Steps	Standard	Grade
5. In North Aux Bay Elev 240, place the following breakers in OFF:		
• 2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A	Locates breaker and places in OFF	**Pass/Fail**
• 2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A	Locates breaker and places in OFF	**Pass/Fail**
6. **NOTE:** 2CCP*MOV14A and MOV18A are located on RB Elev 215 outside the 2SFC*E1A Room.		
Manually close the following valves:		
• 2CCP*MOV14A, SFC HEAT EXCHANGER RBCLC INLET	Locates and closes valve	**Pass/Fail**
• 2CCP*MOV18A, SFC HEAT EXCHANGER RBCLC OUTLET	Locates and closes valve	**Pass/Fail**
7. **NOTE:** 2SWP*MOV17A and MOV18A are located on RB Elev 196 by the North stairwell.		
Manually open the following valves:		
• 2SWP*MOV17A, SFC HEAT EXCHANGER SERVICE WTR INLET	Locates and opens valve	**Pass/Fail**
• 2SWP*MOV18A, SFC HEAT EXCHANGER SERVICE WTR OUTLET	Locates and opens valve	**Pass/Fail**
8. Throttle 2CCP*V12, SFC HX 1A OUTLET ISOL, to maintain Spent Fuel Pool temperature 80 – 100°F	Throttles valve until desired temperature is reached	**Pass/Fail**
Cue: *Desired temperature has been reached.*		
9. IF not previously done, contact Chemistry to sample the CCP System AND determine if sample meets requirements for discharge	Requests Chemistry provide sample	Sat/Unsat

Performance Steps	Standard	Grade

Examiner Note: JPM may be terminated at this point

Terminating Cue: Service Water is providing cooling to SFC Heat Exchanger 1A

RECORD STOP TIME___________

Turnover Sheet

Initial Conditions:

1. The Control Room has been evacuated
2. A loss of Spent Fuel Pool Cooling has occurred

Initiating cue:

"(Operator's name), Align Service Water to SFC Heat Exchanger 1A in accordance with N2-SOP-38, Attachment 5

NINE MILE POINT NUCLEAR STATION UNIT 2

SPECIAL OPERATING PROCEDURE

N2-SOP-38

REVISION 00800

LOSS OF SPENT FUEL POOL COOLING

TECHNICAL SPECIFICATION REQUIRED

Approved by: M. A. Philippon — Manager Operations — Date 6/30/11

Effective Date: July 6, 2011

TABLE OF CONTENTS

SECTION		PAGE
1.0	EVENT DESCRIPTION	1
2.0	AUTOMATIC RESPONSES	1
3.0	IMMEDIATE ACTIONS	1
4.0	SUBSEQUENT ACTIONS	1
5.0	DISCUSSION	3
6.0	REFERENCES AND COMMITMENTS	3
ATTACHMENT 1:	RESTORING SPENT FUEL POOL COOLING FROM THE CONTROL ROOM	6
ATTACHMENT 2:	SPENT FUEL POOL FEED AND BLEED	14
ATTACHMENT 3:	ADDITIONAL CIRCULATION OF SPENT FUEL POOL	25
ATTACHMENT 4:	RESTORATION OF SFC SYSTEM DURING CONTROL ROOM EVACUATION	28
ATTACHMENT 5:	SWAPPING SFC HEAT EXCHANGER COOLING DURING CONTROL ROOM EVACUATION	38
ATTACHMENT 6:	SPENT FUEL POOL FEED AND BLEED DURING CONTROL ROOM EVACUATION	44
ATTACHMENT 7:	OPERATION OF BETTIS ACTUATORS	57
ATTACHMENT 8:	TIME TO BOIL CURVES	60
ATTACHMENT 9:	TIME TO REACH 150°F SFP DESIGN LIMIT FOLLOWING LOSS OF SFP COOLING	66
ATTACHMENT 10:	TEMPORARY SPENT FUEL POOL TEMPERATURE MONITORING	67

ATTACHMENT 5: SWAPPING SFC HEAT EXCHANGER COOLING DURING CONTROL ROOM EVACUATION

NOTES:

1. This subsection provides contingency actions in the event of a loss of Spent Fuel Pool Cooling due to loss of CCP or high CCP temperature. This procedure assumes that the Control Room has been evacuated and the SFC System is in service.

2. With no cooling or circulation, the Fuel Pool temperature may rise at a rate of about 5.3°F/hour. This rate will vary depending upon the decay heat associated with the fuel present. Action should be taken immediately to restore cooling.

1.0 Aligning Service Water to SFC Heat Exchanger 1A

N/A, 2SFC*P1A is NOT in service ....(__)

****

CAUTIONS

1. Service Water Cooling to the SFC Heat Exchanger is intended for emergency use only and requires SM authorization.

2. Opening of 2SWP*MOV17A or 2SWP*MOV18A with CCP cut into the SFC Heat Exchanger will result in a rapid loss of the CCP System.

3. 2CCP*MOV14A/18A and 2SWP*MOV17A/18A are not provided with 8-hour battery pack lighting. Sealed beam portable lighting may be required at the valve locations if a loss of power occurs during Control Room evacuation.

4. During Modes 4, 5 or during movement of recently irradiated fuel assemblies in the secondary containment or during Operations with a Potential for Draining the Reactor Vessel (OPDRVs), if Service Water divisional cross-tie header pressure is <63.5 psig (as indicated by SWPPA07 (08) or 2SWP*PI2A(B)) with <4 OPERABLE Service Water pumps in operation for greater than one hour, the associated safety related equipment will be declared inoperable and actions required by the Technical Specifications are applicable.

****

1.1 Perform the following:

1.1.1 Obtain SM permission to supply Service Water Cooling to SFC Heat Exchanger 1A ....(__)

1.1.2 (C1) UNLESS directed otherwise by the SM, verify Chemistry has sampled the CCP system AND sample results meet SPDES AND ODCM requirements for discharge ....(__)

N/A, the SM directs sampling to be performed later ....(__)

1.2 In the Division I Switchgear Room, place the following breakers in OFF:

- 2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A .... (__)
- 2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A .... (__)

1.3 In North Aux Bay Elev 240, place the following breakers in OFF:

- 2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A .... (__)
- 2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A .... (__)

NOTE: The following are located on RB Elev 215 outside the 2SFC*E1A Room:

- 2CCP*MOV14A
- 2CCP*MOV18A

1.4 Manually close the following valves:

- 2CCP*MOV14A, SFC HEAT EXCHANGER RBCLC INLET .... (__)
- 2CCP*MOV18A, SFC HEAT EXCHANGER RBCLC OUTLET .... (__)

NOTE: 2SWP*MOV17A and MOV18A are located on RB Elev 196 by the North stairwell.

1.5 Manually open the following valves:

- 2SWP*MOV17A, SFC HEAT EXCHANGER SERVICE WTR INLET .... (__)
- 2SWP*MOV18A, SFC HEAT EXCHANGER SERVICE WTR OUTLET .... (__)

1.6 Throttle 2CCP*V12, SFC HX 1A OUTLET ISOL, to maintain Spent Fuel Pool temperature 80 – 100°F .... (__)

1.7 IF not previously done, contact Chemistry to sample the CCP System AND determine if sample meets requirements for discharge .... (__)

1.8 IF the CCP water is contaminated with measurable levels of radioactivity, notify Chemistry Supervision to evaluate the batch discharge of CCP water in accordance with effluent monitoring requirements .... (__)

N/A, The CCP water meets discharge requirements OR evaluation previously completed .... (__)

1.9 WHEN SWP cooling to 2SFC*E1A from outside the Control Room is NO longer required, perform the following:

1.9.1 Verify plant control has been transferred back to the Control Room ....(__)

1.9.2 In the Division I Switchgear Room, place the following breakers in ON:

- 2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A ....(__)
- 2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A ....(__)

1.9.3 In North Aux Bay Elev 240, place the following breakers in ON:

- 2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A ....(__)
- 2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A ....(__)

1.9.4 WHEN the CCP System has been restored to normal, shift 2SFC*E1A cooling supply to CCP in accordance with N2-OP-13, Subsection H.6.0............(__)

NRC JPM P-2

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Vent Control Rod Overpiston Volume — Revision: NRC 2012

Task Number: 2009620501, 2009620504

Approvals:

[signature]	1/9/15/1	NA EXAM SECURITY	/
Facility Representative	Date	General Supervisor Operations (Designee)	Date
NA EXAM SECURITY	/		
Configuration Control	Date		

Performer:____________________(RO/SRO)

Trainer/Evaluator:______________

Evaluation Method: ________Perform ___X____Simulate

Evaluation Location:___X_____Plant ________Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: ________ Stop Time:_________ Completion Time:_________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:______________________________ Date:____________

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

RP Access Area

Simulator Set-up (if required):

None

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-EOP-6, Att. 14, Rev. 5, "Alternate Rod Insertions," Sections 3.6
2. NUREG 1123, K/A 295015, AA.1.01 (3.8/3.9)

Tools and Equipment:

EOP box has a breakaway tie-wrap.

Task Standard:

Control Rod 26-59 at notch 00 and 2RDS*V1 shut.

Initial Conditions:

1. A scram has occurred.
2. Several rods have not fully inserted.
3. Communications are established with Control Room.
4. An OD-7, Print out of Rod Positions is **NOT** available.
5. You have been given a F2-57 key
6. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name) using N2-EOP-6, Attachment 14, insert control rod 26-59 to notch 00 by locally venting its overpiston area."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure	Open EOP box by removing breakaway tie-wrap and review procedure and enclosures. Reference EOP-6, Att. 14, Section 3.6	Sat/Unsat
***Cue**: When candidate identifies the equipment required to vent the overpiston area, proceed to the HCU. It is NOT required to open the EOP box.*	Describe and identify the tools necessary to perform the task, but do **NOT** remove the tools from the EOP Box	
3. Locate the correct HCU (26-59).	Physically locate the correct HCU (26-59). Use Figure 14-1, RDS HCU LOCATIONS, as a guide, if required.	**Pass/Fail**
4. Remove the drain plug from 2RDS*V1, Withdraw Line Vent Valve.	AT HCU, use wrench to remove the Withdraw Line Vent Valve drain plug.	**Pass/Fail**
Cue: *Simulate cap removal.*		
5. Install quick disconnect adapter. ***Cue:*** *Simulate drain adapter* connected.	At HCU, connect adapter to the correct RDS*V1 by threading in the quick disconnect adapter.	**Pass/Fail**

Performance Steps	Standard	Grade
6. Connect hose. ***Cue:*** *Simulate hose connected and routed. If the candidate starts to go down the ladder to secure the hose at the drain, tell them another operator has secured the bottom of the hose.*	At HCU, connect hose to the quick disconnect adapter and route to a drain. Secure the hose at the drain against whip.	**Pass/Fail**
7. Uncap 2RDS*V1 Valve Operator. ***Cue:*** *Simulate cap removed.*	At HCU, remove cap from RDS*V1 Valve Operator.	**Pass/Fail**
8. Notify the Control Room to monitor the motion of the selected control rod by selecting that control rod on the RMCS Rod Select Matrix. *(2CEC*PNL603)* ***Cue:*** *As the Control Room acknowledge the request and confirm that you will monitor control rod 26-59.*	Notifies the Control Room to monitor the motion of control rod 26-59 by selecting the control rod on the RMCS Rod Select Matrix.	Sat/Unsat
9. Insert rod using T-handled HCU Vent Tool, slowly open 2RDS*V1 ***Cue:*** *Simulate RDS*V1 opened and sound of flow noise.*	At HCU, slowly open RDS*V1 by inserting the T-handled HCU Vent Tool and rotating counter clockwise, venting the above piston area.	**Pass/Fail**
10. Report to Control Room. ***Cue:*** *Acknowledge report and inform the operator that control rod 26-59 has fully inserted*	Report that RDS*V1 is opened. Request rod position.	Sat/Unsat
11. Shut RDS*V1. ***Cue:*** *Simulate RDS*V1 shut.*	At HCU, using the T-handled HCU Vent Tool shut RDS*V1 by rotating the operator clockwise.	**Pass/Fail**

Performance Steps	Standard	Grade
12. Replace the cap on 2RDS*V1 Valve Operator.	At HCU, replace the cap on RDS*V1 Valve Operator.	Sat/Unsat

Cue: *Simulate cap replaced.*

13. Remove high pressure hose from RDS*V1.	At HCU, disconnect and remove hose.	Sat/Unsat

NOTE: *At this time the JPM may be stopped.*

End of JPM

TERMINATING CUE: Control Rod 26-59 at notch 00 and 2RDS*V1 shut.

RECORD STOP TIME______

Turnover Sheet

Initial Conditions:

1. A scram has occurred.
2. Several rods have not fully inserted.
3. Communications are established with Control Room.
4. An OD-7, Print out of Rod Positions is **NOT** available.
5. You have been given a F2-57 key

Initiating Cues:

"(Operator's name) using N2-EOP-6, Attachment 14, insert control rod 26-59 to notch 00 by locally venting its overpiston area."

NINE MILE POINT NUCLEAR STATION UNIT 2

EMERGENCY OPERATING PROCEDURE

N2-EOP-6

REVISION 01200

NMP2 EOP SUPPORT PROCEDURE

TECHNICAL SPECIFICATION REQUIRED

Approved by: PAT FOTI for J. KRAKUSZESKI 5/2/10
J. A. Krakuszeski Manager Operations Date

THIS IS A LIMITED REVISION

Effective Date: MAY 2,2010

B. REFERENCES AND COMMITMENTS (Cont)

4.0 Supplemental References

NRC Correspondence - Emergency Operating Procedures Inspection and Initial Examination - Report No.50-410/91-80

5.0 Commitments

Commitment Number	Protected Step number	Description
NCTS 502822-03	Entire Procedure	Following N2-EOP-5 revision, N2-EOP-6 will be rewritten, verified and validated
DER 2-94-2326	Attachment 9, Step 4.3.5	Discrepancy between the Containment Isolation Design Criteria and Normal Operating valve position for 2SLS*MOV5A/B
DER 2-95-1294	Attachment 9 Steps 3.1.5 & 3.2.5	EOP Procedure Problem
NCTS 503911-00	Attachment 1, Steps 3.5.1, 3.5.2, 3.7.1 & 3.7.2	Ensure one HVC Special Filter Train is operating within 20 minutes of LOCA. Ensure less contaminated Control Room Outside Air Intake path is selected during LOCA within 8 hours (Increased MSIV Leakage Amendment)
ESB2-M960608	C.15.0 Attachment 24 Step 1.1 & Section 3.0	Restrict re-opening 2CCP*MOV122, 124, 265 and 273 after drywell is at or above 250°F.

C. PRECAUTIONS AND LIMITATIONS

1.0 Each attachment is used as a "stand-alone" document with all the directions necessary to accomplish the task stated in the Purpose of the Attachment. In some cases, special situations may require referencing or branching to another EOP support procedure. If branching is required it will be stated in the Purpose of the Attachment.

2.0 All Notes, Cautions, Warnings and Drawings required to effectively perform the attachment are included in that attachment.

3.0 It is the intent that individual attachments may be pulled from the procedure for use, however they must be replaced upon completion.

4.0 When using the Attachments, the operator shall use the provided place-keeping "check boxes" opposite each step as it is completed.

C. PRECAUTIONS AND LIMITATIONS (Cont)

5.0 Changes to these attachments should not be made (including step numbering) except in an emergency, without review by the EOP Coordinator and Manager Operations or General Supervisor-Unit 2 Operations, as required per S-ODP-PRO-0301.

6.0 If a procedure step can not be performed as written, the EOP Director shall be notified immediately.

7.0 The Restoration section of an Attachment shall be performed only when specifically directed by the SM/EOP Director. This permission shall not be granted until the system/equipment is in a condition to support restoration.

8.0 All tools, materials, keys, etc. that are required to perform in an attachment will listed in Section 2 of the attachment.

9.0 A Ⓣ notation in the left margin adjacent to a step number or note indicates that a tool or material is required for performance.

10.0 Common tools (screwdrivers, tape etc.) will not be specified in the procedure step. Only special tools or situations where confusion may result will have a particular tool specified in a step or note.

11.0 Independent verification is required in the Restoration section when restoring temporary alterations or returning permanent plant equipment to normal status. This verification may be delayed if emergency conditions still exist, and it is imperative that restoration be completed immediately. The EOP Director/SM permission is required to delay independent verification.

12.0 During plant conditions which require implementation of these procedures, environmental conditions may be potentially extreme (temperature, radiation, water levels).

In many cases this will require coordination and support from the OSC. Where access may be needed in areas of elevated temperatures, prudency dictates protective equipment be used and precautions taken. Stay times and activity levels should be minimized.

Consultation with the Safety Department is recommended when possible. Above 135° F personnel access may be significantly hampered.

When it is anticipated or known that radiation levels are elevated, radiation protection assistance should be sought. Some evolutions may require utilization of emergency exposure guidelines or emergency dosimetry.

13.0 The attachments give locations of panels when installing jumpers and lifting leads. However, inside many panels there are Operator Aids that will give amplifying instructions as to the exact locations of affected equipment.

C. PRECAUTIONS AND LIMITATIONS (Cont)

14.0 Drywell cooling is not restored with Drywell temperature $\geq$250°F due to steam voiding concerns in the drywell CCP piping. If voiding were to occur, significant piping or equipment damage could occur.

15.0 The following lines of RHS re-entering the primary containment downstream of the RHS heat exchanger have a lower permissible lowest service metal temperature (PLSMT), of 55°F, for GDC-51.

- Suppression Pool Cooling Return
- Supply to the Suppression Pool Spray ring
- Supply to the Drywell Spray ring

D. DEFINITIONS

1.0 CHECK

To observe an expected condition or characteristic; to determine; to ascertain.

2.0 ENSURE

To confirm a condition. (NO subsequent action is implied to establish that condition if not already there.)

3.0 GO TO

3.1 To proceed to; to transport oneself to a given location.

3.2 To discontinue use of present procedure or section and execute another procedure or section.

4.0 VERIFY

To confirm a condition AND take action to establish that condition if required.

1.0 PURPOSE

1.1 To provide instructions for alternate methods of inserting control rods during Anticipated Transient Without a Scram (ATWS) conditions.

1.2 Applicability

1.2.1 When used to support N2-EOP-C5, Failure To Scram, or N2-SAP-2, RPV, Containment and Radioactivity Release Control, this attachment is performed, using one or more of the following methods, to insert control rods to shutdown the Reactor following an ATWS:

- Scram Solenoid De-energization, Section 3.1
- Scram Air Header Venting, Section 3.2
- Additional Manual Scram Initiations, Section 3.3
- Individual Control Rod Scrams, Section 3.4
- Manual Control Rod Insertion, Section 3.5
- Control Rod Over-piston Volume Venting, Section 3.6

2.0 TOOLS AND MATERIALS

TOOL/MATERIAL	QTY	LOCATION
For Sections 3.2 & 4.2		
L660 Key	1	Control Room EOP Toolbox
PA235 Keys	2	Control Room CRO Desk
For Sections 3.1, 3.3, 3.4, 4.1, 4.3, & 4.4		
L660 Key	1	Control Room EOP Toolbox
Fuse Pullers	1	Control Room EOP Toolbox
Flashlight	1	Control Room EOP Toolbox
EOP Jumper #10	1	2CEC*PNL611, Bay D
EOP Jumper #14	1	2CEC*PNL611, Bay A
EOP Jumper #16	1	2CEC*PNL609, Bay D
EOP Jumper #21	1	2CEC*PNL609, Bay A
Continued on next page.		

2.0 (Cont)

TOOL/MATERIAL	QTY	LOCATION
For Section 3.5 & 4.5		
SHH 5366 Key (For RWM)	1	SM Key Locker, Hook #151
L660 Key	1	Control Room EOP Toolbox
EOP Jumper #5	1	2CEC*PNL613
EOP Jumper #6	1	2CEC*PNL613
For Section 3.6 & 4.6		
F2-57 Key	1	Control Room EOP Toolbox
Leather Gloves	2	Control Room EOP Toolbox
Communications devices capable of communicating between the Control Room and the HCU areas	2	None, not reserved for EOP use only
Operator Aid for HCU Layout	1	RQ EOP Toolbox (*Rx Bldg, EL261, near south HCUs*)
Operator Aid for Core Map	1	RQ EOP Toolbox
Tubes Pipe Sealant - Loctite Nuclear Grade PST	1	RQ EOP Toolbox
Wrench	1	RQ EOP Toolbox
T-handled HCU Vent Tool	1	RQ EOP Toolbox
High pressure Hose with Quick Disconnect Fitting	1	RQ EOP Toolbox
Quick Disconnect Adapter for HCU Vent Lines	1*	RQ EOP Toolbox
* 10 Quick Disconnects are provided in the toolbox to speed the setup process if there are sufficient operators available.		

3.0 PROCEDURE

NOTES:

1. Figure 14-4, ALTERNATE CONTROL ROD INSERTION FLOWCHART, is included, at the back of the attachment, to serve as a guide to determine the correct course of action for given symptoms.

2. Keys PA235, PA1235, and PA2235 are interchangeable.

3. Subsections in this attachment may be performed concurrently, independently or out of order as appropriate for inserting control rods.

3.5.15 IF more than one rod is NOT inserted to at least position 00, check here AND re-perform this section OR perform Subsections 3.1, 3.2, 3.3, 3.4 OR 3.6 as appropriate .... (__)

3.6 Control Rod Over-piston Volume Venting

****

CAUTION

This activity will result in draining of Rx coolant and poses the risk of creating a high level of radioactivity airborne as well as creating high radiation conditions and contamination in local and general areas of Rx Bldg El. 261.

ALL appropriate protective measures must be taken for this activity as deemed necessary by Radiation Protection.

****

3.6.1 IF possible, obtain an OD-7 printout of rod positions from the Process Computer .... (__)

(T) 3.6.2 Establish communications between the Control Room AND the HCU Areas. *(Rx Bldg, EL 261)* .... (__)

NOTES:

1. The following steps will require the use of tools staged in the RQ EOP Toolbox located in the Rx Bldg, EL261, west of the south HCU area.

2. (T) F2-57 key required to unlock the RQ EOP Toolbox. The Toolbox is equipped with a breakaway lock for entry if an F2-57 key is not readily available.

3. Figure 14-1, RDS HCU LOCATIONS, is provided, in the back of this attachment, as an aid for locating HCUs for individual control rods.

4. Figures 14-2, ROD INSERTION (First Sequence), and 14-3, ROD INSERTION (Second Sequence), are to be used as the guides for inserting control rods unless directed otherwise by the EOP Director with input from a Reactor Engineer.

5. If a control rod in the sequence of Figures 14-2 or 14-3, or other sequence as determined per NOTE 4 above, is already inserted to position 00, that rod may be skipped and the sequence continued with the next rod in that sequence.

3.6.3 Using Figures 14-2 AND 14-3, track the status of the control rods, as the rods are inserted ....(__)

3.6.4 Using Figure 14-2, ROD INSERTION (First Sequence), select a control rod at OR near the center of the core ....(__)

3.6.5 Using Figure 14-1, RDS HCU LOCATIONS, locate the HCU for the selected control rod ....(__)

NOTES:
1. The Withdraw and Insert lines and are located on the mezzanine above the HCUs.
2. The Withdraw line connects to the Over-piston Volume, and is the smaller of the two lines.
3. Figure 14-13 shows the general arrangement and equipment connections listed in this sub-section.

(T) 3.6.6 Remove the drain plug from 2RDS*V1, WITHDRAW LINE VENT VALVE. *(Mezzanine above selected HCU)* ....(__)

(T) 3.6.7 Install the quick disconnect adapter into 2RDS*V1 ....(__)

(T) 3.6.8 Connect the high pressure hose to 2RDS*V1 ....(__)

3.6.9 Route the hose to the nearest Rx Bldg Drain. *(Rx Bldg. El 261, HCU Area)* ....(__)

* *

CAUTION

The high pressure hose end should be secured at the drain to prevent flow-induced hose whip.

* *

(T) 3.6.10 Secure the hose at the drain to prevent flow-induced hose whip ....(__)

(T) 3.6.11 Remove the cap from 2RDS*V1 operator ....(__)

3.6.12 Monitor the motion of the selected control rod by selecting that control rod on the RMCS Rod Select Matrix. *(2CEC*PNL603)* ....(__)

****

CAUTION

Venting the over-piston area will result in Rx coolant being drained through the high pressure hose connected to 2RDS*V1. This may create a high level of radioactive airborne as well as create high radiation conditions and contamination in local and general areas of Rx Bldg El. 261.

****

(T) 3.6.13 Using T-handled HCU Vent Tool, slowly open 2RDS*V1 ....(__)

(T) 3.6.14 WHEN control rod motion stops OR no control rod movement is observed, using T-handled HCU Vent Tool, close 2RDS*V1 ....(__)

(T) 3.6.15 Replace the cap on the operator for 2RDS*V1 ....(__)

****

CAUTION

Extreme caution should be exercised when removing the high pressure hose and connections. The draining of Rx coolant will result in the hose and connections being contaminated and may have caused them to be at a high temperature.

****

(T) 3.6.16 Disconnect the high pressure hose from 2RDS*V1 ....(__)

(T) 3.6.17 Remove the quick disconnect adapter from 2RDS*V1 ....(__)

3.6.18 Remove the quick disconnect adapter from 2RDS*V1 AND move rig to the HCU for the next control rod to be inserted ....(__)

(T) 3.6.19 Using Figures 14-2, ROD INSERTION (First Sequence),AND Figure 14-3, ROD INSERTION (Second Sequence) sequentially, select the next control rod to insert by working in an outward spiral pattern..(__)

3.6.20 Repeat steps 3.6.5 through 3.6.19 for each control rod to be inserted ....(__)

3.6.21 WHEN Figure 14-3, ROD INSERTION (Second Sequence), has been completed, check position of <u>ALL</u> control rods. *(2CEC*PNL603)* ....(__)

Initials/Date

3.6.22 IF ALL rods except one are full in, check here AND exit this section..................(__)

3.6.23 IF more than one rod is still NOT inserted to at least position 00, check here AND perform Subsections 3.1, 3.2, 3.3, 3.4 OR 3.5 as appropriate ....(__)

4.0 RESTORATION

NOTES:
1. This section is not performed until specifically directed by the SM/EOP Director. This permission shall not be granted until the system/equipment is in a condition to support restoration.
2. Independent verification may be delayed until emergency conditions no longer exist per SM/EOP Director.

4.1 Scram Solenoid Power Restoration

N/A, Section 3.1 was NOT performed... (___)

4.1.1 IF the Reactor Protection System (RPS) Electrical Protection Assemblies (EPAs) are tripped, reset the RPS EPAs in the following order:

N/A, EPA's are NOT tripped .... (___)

a. 2RPM*ACB1A (*Cont Bldg, EL237, West Cable Tray Aisle*)..................(__)

b. 2RPM*ACB2A (*Cont Bldg, EL237, West Cable Tray Aisle*)..................(__)

c. 2RPM*ACB1B (*Cont Bldg, EL237, East Cable Tray Aisle*)....................(__)

d. 2RPM*ACB2B (*Cont Bldg, EL237, East Cable Tray Aisle*)....................(__) _____/_______

_____/_______
Ind. Verif

RDS HCU LOCATIONS

NORTH

2HVR*UC414A

				30 43	30 39	30 35	30 31	34 27	34 23				
		30 51	30 47	34 43	34 39	34 35	34 31	38 27	38 23	34 19			
		34 51	34 47	38 43	38 39	38 35	38 31	42 27	42 23	38 19	34 15	34 11	34 03
30 59	30 55	38 51	38 47	42 43	42 39	42 35	42 31	46 27	46 23	42 19	38 15	38 11	38 03
34 59	34 55	42 51	42 47	46 43	46 39	46 35	46 31	50 27	50 23	46 19	42 15	42 11	42 03
38 59	38 55	46 51	46 47	50 43	50 39	50 35	50 31	54 27	54 23	50 19	46 15	46 11	34 07
42 59	42 55	50 51	50 47	54 43	54 39	54 35	54 31	58 27	58 23	54 19	50 15	50 11	38 07
	46 55		54 47	58 43	58 39	58 35	58 31			58 19	54 15	46 07	42 07

SOUTH

HPU-A

HPU-B

2CES*RAK107

18 55	14 55						02 27	02 23	02 19	06 15		14 07	
22 55	10 51		02 43	02 39	02 35	02 31	06 27	06 23	06 19	10 15	10 11	18 07	18 03
26 55	14 51	06 47	06 43	06 39	06 35	06 31	10 27	10 23	10 19	14 15	14 11	22 07	22 03
18 59	18 51	10 47	10 43	10 39	10 35	10 31	14 27	14 23	14 19	18 15	18 11	26 07	26 03
22 59	22 51	14 47	14 43	14 39	14 35	14 31	18 27	18 23	18 19	22 15	22 11	30 07	30 03
26 59	26 51	18 47	18 43	18 39	18 35	18 31	22 27	22 23	22 19	26 15	26 11		
		22 47	22 43	22 39	22 35	22 31	26 27	26 23	26 19	30 15	30 11		
		26 47	26 43	26 39	26 35	26 31	30 27	30 23	30 19				

FIGURE 14-1

ATTACHMENT 14
ALTERNATE CONTROL ROD INSERTIONS

Rod Insertion (First Sequence)

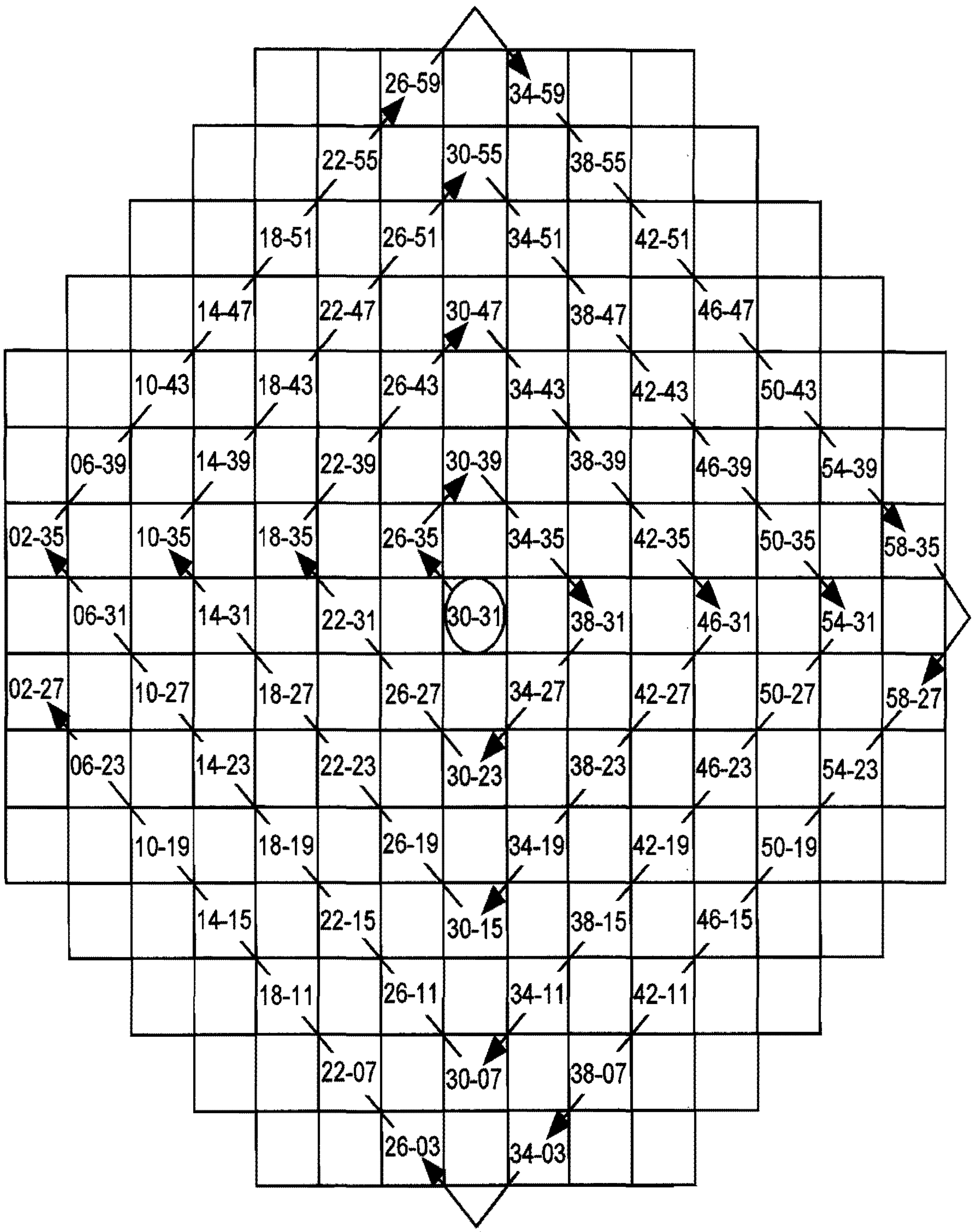


FIGURE 14-2

NOTE: **The Withdraw Line is smaller than the Insert Line.**

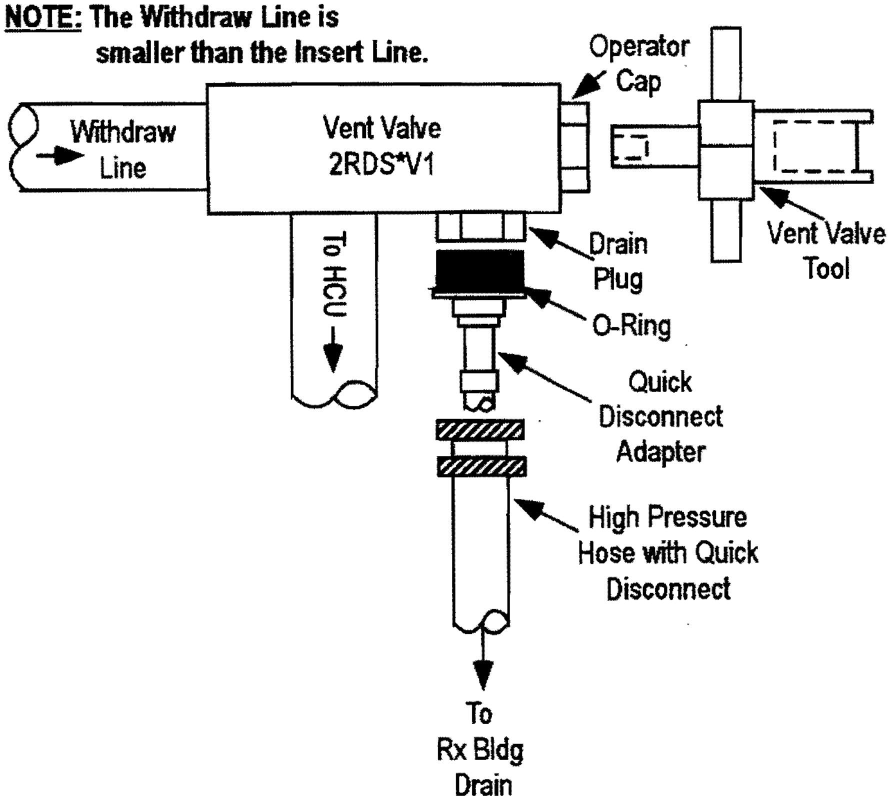


FIGURE 14-13

NRC JPM P-3 (Alternate JPM)

Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Placing a Battery Charger in Service (Alternate) Revision: NRC 2012

Task Number: 2630070104

Approvals:

_______________ / 2/20/2012
Facility Representative Date

NA EXAM SECURITY /
General Supervisor Operations (Designee) Date

NA EXAM SECURITY /
Configuration Control Date

Performer:________________________________(RO/SRO)

Trainer/Evaluator:___________________________

Evaluation Method: ________Perform ______X_____Simulate

Evaluation Location: X Plant ____________Simulator

Expected Completion Time: 30 Time Critical Task: NO Alternate Path Task: YES

Start Time: ________ Stop Time:_________ Completion Time:_________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator's Signature:_____________________________ Date:_____________

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

Plant

Simulator Set-up (if required):

None

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-OP-73A
2. NUREG 1123 263000 A1.01 2.5/2.8

Tools and Equipment:

1. N2-OP-73A
2. Appropriate PPE IAW Personnel Safety Manual

Task Standard:

Battery Charger 2BYS-CHGR1C1 is placed in service.

Initial Conditions:

1. Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1.
2. Battery Charger 2BYS-CHGR1C1 is ready to be placed into service.
3. Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours
4. A Plant Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers.
5. Instructor to ask operator for any questions.

Initiating Cues:

"(Operator's name) place battery charger 2BYS-CHGR1C1 into service IAW N2-OP-73A, Section E.6.0."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary.*	Proper communications used for repeat back (CNG-HU-1.01-1001).	Sat/Unsat

RECORD START TIME __________

Performance Steps	Standard	Grade
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure.	N2-OP-73A obtained. Precautions & limitations and section reviewed E.6.0.	Sat/Unsat
3. Verify breakers positions. **Cue:** *Breaker is OPEN (OFF)*	AC Power and DC power breakers are verified to be OPEN (Off).	Sat /Unsat
4. Verify in OFF the Equalize Timer.	Equalize float timer is verified to be OFF.	Sat /Unsat
5. Verify float/equalize Switch in float.	Float/Equalize Switch verified to FLOAT.	Sat /Unsat
6. At 2BYS-SWG001C, close 2BYS-SWG001C-2B, 125V DC BAT CHARGER 2BYS-CHGR1C1	Closes breaker 2BYS-SWG001C-2B, 125V DC Bat Charger 2BYS-CHGR1C1	**Pass/Fail**

Cue: *If asked, initial breaker position is open. Final breaker position is closed. A Plant operator is standing by to close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1*

Note: In the following step the operator may have the plant operator station in the normal switchgear close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.

6. Close breaker close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.	Breaker 2NJS-US6-3D, 125V DC Norm Bat CHGR 2BYS-CHGR1C1, is closed	**Pass/Fail**
Cue: *If asked, initial breaker position is open. Final position is closed. Note: If the candidate contacts the Plant Operator role plays as necessary.*		
7. Close DC Breaker.	DC Power breaker on charger is closed.	**Pass/Fail**
Cue: *DC breaker is closed*		
8. Verify voltage.	Battery voltage is observed to be between 105 and 140VDC on 2BYS-CHGR1C1.	Sat /Unsat
Cue: *If asked, voltage is 110 VDC*		
9. Close AC breaker.	AC Power breaker on charger is closed.	**Pass/Fail**
Cue: *AC breaker is closed*		

Note: 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 600 amps. This requires the operator to perform section H.14.0 of N2-OP-73A.

10. Verify amperage.	Battery charging current verified to be a positive value but less than the 600 amp limit specified.	**Pass/Fail**
Cue: *Charging current is 680 amps*	***Note:*** *Operator should recognize current value above amount specified.*	
11. Contact Electrical Maintenance.	Electrical Maintenance Contacted. Operator will probably also contact the Control Room.	Sat /Unsat
Cue: *Elect. Maint. contacted.*		
Cue: *If asked, direct the operator to correct condition.*		
12. References Section H.14.0 Manual Current Limiting.	References Section H.14.0	Sat /Unsat
13. Opens AC Breaker on charger.	AC Power Breaker on charger is open.	**Pass/Fail**
Cue: *AC Breaker is OPEN*		

14. Loosen float potentiometer lock nut. ***Cue:*** *Lock Nut is loosened*	Float potentiometer lock nut is loosened by turning counterclockwise.	**Pass/Fail**
15. Adjust potentiometer counter clockwise. ***Cue:*** *Potentiometer is rotated fully counterclockwise*	Float potentiometer is rotated fully counterclockwise.	**Pass/Fail**
16. Close AC Breaker. ***Cue:*** *AC Breaker is closed* ***Cue:*** *If asked, voltage is 110 VDC and current is 200A*	AC Power breaker on charger is closed.	**Pass/Fail**

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.

17. Adjust potentiometer. ***Cue:*** *Initial adjustment leaves Output voltage at 135VDC and current at 480 amps. Inform the candidate that electrical maintenance has completed section H.14.7 and adjusted battery float and equalize voltages.*	While maintaining amperage less than 500 amps, potentiometer is adjusted clockwise until output voltage is 135VDC.	**Pass/Fail**
18. Report completion. ***Cue:*** *At the evaluator's discretion, inform the candidate that their task is complete.*	Report completion.	Sat/Unsat

Terminating Cue: 2BYS-CHGR-1C1 is in service.

RECORD STOP TIME __________

Turnover Sheet

Initial Conditions:

1. Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1.
2. Battery Charger 2BYS-CHGR1C1 is ready to be placed into service.
3. Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours
4. A Plant Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers.

Initiating Cues:

"(Operator's name) place battery charger 2BYS-CHGR1C1 into service IAW N2-OP-73A, Section E.6.0."

NINE MILE POINT NUCLEAR STATION UNIT 2
OPERATING PROCEDURE

N2-OP-73A
REVISION 00802

NORMAL DC DISTRIBUTION

TECHNICAL SPECIFICATION REQUIRED

Approved By: M. A. Philippon — Manager Operations — Date: 5/9/11

Effective Date: 5/10/2011

C. PLANT OPERATING REQUIREMENTS

1.0 Prerequisites

The following systems must be in operation in accordance with their respective Operating Procedure to support operation of the Normal DC Distribution System:

• Control Building AC and Ventilation	N2-OP-53A
• Normal Switchgear Building Ventilation	N2-OP-54A
• Station Electrical Feed, 115KV Switchyard	N2-OP-70
• 13.8KV AC Distribution	N2-OP-71A
• 4.16KV AC Distribution	N2-OP-71B
• 600V AC Distribution	N2-OP-71C

D. PRECAUTIONS AND LIMITATIONS

1.0 Battery ventilation shall be kept in operation at all times to prevent the buildup of hydrogen gas.

2.0 Tools capable of causing a short between battery cell terminals shall be taped with insulating tape.

3.0 The use of spark producing devices, open flames or smoking shall not be permitted in the battery rooms.

4.0 The following safety equipment shall be worn when working with electrolyte:

- Rubber gloves
- Rubber apron
- Face shield

5.0 Electrolyte spills shall be cleaned up immediately using baking soda/water solution to limit ground current from battery terminals to the battery rack.

6.0 Severe battery charger damage may result if the AC Supply breaker is closed before the DC Power breaker.

7.0 ARP 852501 directs removing the battery from service if voltage is less that 105VDC. Discharge of 125 VDC batteries below 105 VDC or individual cell voltages below 1 VDC could result in battery cell reversal. Cell reversal can permanently damage the battery so that recharging can not restore that cell and jumpering out the cell may be required. (Reference CR-2010-010968)

5.10.2 Establish 140VDC battery charger Equalize voltage as follows:

a. Place in EQUALIZE the Float/Equalize selector switch.

b. Loosen EQUALIZE potentiometer lock nut.

c. Adjust EQUALIZE potentiometer UNTIL output voltage as indicated on Digital Multimeter is between 139.5 AND 140.0 VDC.

d. WHILE maintaining EQUALIZE potentiometer setting, tighten EQUALIZE potentiometer lock nut.

e. Place in FLOAT the Float/Equalize selector switch.

f. Remove Digital Multimeter from VOLTS meter terminals.

6.0 Placing In Service 2BYS-CHGR1C1, Battery Charger **[SOP]**

NOTE

The following steps are performed at 2BYS-CHGR1C1, unless otherwise specified.

6.1 Verify open the following breakers:

- AC POWER
- DC POWER

6.2 Verify in OFF the Equalizer Float Timer.

6.3 Verify in FLOAT the Float/Equalize selector switch.

6.4 At 2BYS-SWG001C, close 2BYS-SWG001C-2B, 125V DC BAT CHARGER 2BYS-CHGR1C1.

6.5 At 2NJS-US6, close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.

6.6 Close DC POWER breaker.

6.7 Observe battery voltage is 105 - 140 volts on 2BYS-CHGR1C1.

6.8 Close AC POWER breaker.

NOTE

Should the battery not be at full charge, the battery charger will go to the current limit of 600 amps.

6.9 IF 2BYS-CHGR1C1 current is greater than 600 amps OR AC POWER breaker trips, perform the following:

6.9.1 Notify Electrical Maintenance.

6.9.2 Perform Section H.14.0 of this procedure.

E. STARTUP (Continued)

6.10 WHEN 2BYS-CHGR1C1 is less than 350 AMPS, perform the following:

6.10.1 Establish 135VDC battery charger Float voltage as follows:

a. Obtain Digital Multimeter.

b. Connect leads of Digital Multimeter to terminal posts of VOLTS meter of 2BYS-CHGR1C1.

c. Loosen FLOAT potentiometer lock nut.

d. Adjust FLOAT potentiometer UNTIL output voltage as indicated on Digital Multimeter is between 134.0 AND 135.0 volts.

e. WHILE maintaining FLOAT potentiometer setting, tighten FLOAT potentiometer lock nut.

6.10.2 Establish 140VDC battery charger Equalize voltage as follows:

a. Place in EQUALIZE the Float/Equalize selector switch.

b. Loosen EQUALIZE potentiometer lock nut.

c. Adjust EQUALIZE potentiometer UNTIL output voltage as indicated on Digital Multimeter is between 139.5 AND 140.0 volts.

d. WHILE maintaining EQUALIZE potentiometer setting, tighten EQUALIZE potentiometer lock nut.

e. Place in FLOAT the Float/Equalize selector switch.

f. Remove Digital Multimeter from VOLTS meter terminals.

H. OFF-NORMAL PROCEDURES (Continued)

12.0 Removing From Service 2BYS-BAT1C

> **NOTE**
>
> For maintenance activities of short duration, it is permissible to take the battery out of service with the battery charger supplying the bus, HOWEVER, should a unit trip occur during this lineup, a Fast (or Slow) transfer may be inhibited.

12.1 Verify in service 2BYS-CHGR1C1 by verifying 2BYS-SWG001C voltage greater than 130 VDC at 2BYS-SWG001C.

12.2 Verify current load on 2BYS-SWG001C is less than or equal to 500 amps.

12.3 IF 2BYS-CHGR1C1 is to be removed from service, exit this section AND perform Section H.7.0, Removing From Service 2BYS-SWG001C.

12.4 At 2BYS-SWG001C, open 2BYS-SWG001C-1B, 125V DC BATTERY 2BYS-BAT1C.

13.0 Returning To Service 2BYS-BAT1C

13.1 At 2BYS-SWG001C, close 2BYS-SWG001C-1B, 125V DC BATTERY 2BYS-BAT1C.

13.2 Determine the need to perform an Equalize battery charge in accordance with Section F.1.0.

14.0 Manual Current Limiting **[C1]**

14.1 Verify open battery charger AC POWER breaker.

14.2 Loosen FLOAT potentiometer lock nut.

14.3 Rotate fully counter clockwise the FLOAT potentiometer.

14.4 Close AC POWER breaker.

14.5 WHILE performing the following steps, maintain battery charger current less than 500 amps.

> **NOTE**
>
> As the battery is charged, current will drop.

14.6 Rotate clockwise the FLOAT potentiometer UNTIL battery charger output voltage is 135 volts as indicated on VOLTS meter AND charger current is less than 500 amps.

14.7 WHEN battery charger output voltage is 135 volts, perform the following:

14.7.1 Establish 135VDC battery charger Float voltage as follows:

a. Obtain Digital Multimeter.

b. Connect leads of Digital Multimeter to terminal posts of VOLTS meter of battery charger.

c. Adjust FLOAT potentiometer UNTIL output voltage as indicated on Digital Multimeter is between 134.0 AND 135.0 volts.

d. WHILE maintaining FLOAT potentiometer setting, tighten FLOAT potentiometer lock nut.

14.7.2 Establish 140VDC battery charger Equalize voltage as follows:

a. Place in EQUALIZE the Float/Equalize selector switch.

b. Loosen EQUALIZE potentiometer lock nut.

c. Adjust EQUALIZE potentiometer UNTIL output voltage as indicated on Digital Multimeter is between 139.5 AND 140.0 volts.

d. WHILE maintaining EQUALIZE potentiometer setting, tighten EQUALIZE potentiometer lock nut.

e. Place in FLOAT the Float/Equalize selector switch.

f. Remove Digital Multimeter from VOLTS meter terminals.

NRC ADMIN RO JPM CO-1
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Perform Jet Pump Flow Mismatch Checks IAW N2-OSP-LOG-D001, Attachment 10 — Revision: NRC 2012

Approvals:

Facility Representative	13/14/17 Date	NA Exam Security General Supervisor Operations (Designee)	/ Date
NA Exam Security Configuration Control	/ Date		

Performer:____________________(RO)

Trainer/Evaluator:____________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 40 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator's Signature:______________________________ Date:____________

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

Classroom

Simulator Set-up: (if required):

N/A

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-OSP-LOG-D001
2. NUREG 1123 K/A 2.1.18 Ability to make accurate, clear and concise logs, records, status boards and reports (3.6).

Tools and Equipment:

1. Calculator.

Task Standard:

Completes N2-OSP-LOG-D001 Attachment 10 and identifies Jet pump 13 differential pressure ratio is outside of limits.

Initial Conditions:

1. The plant is operating at 100% power.
2. N2-OSP-LOG-D001 is in progress.
3. Ask the operator for any questions.

Initiating cue:

"(Operator's name), given the data provided on JPM Attachment 1, complete Attachment 10 of N2-OSP-LOG-D001. Summarize your results and document any recommended actions on JPM Attachment 2."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue. *Evaluator acknowledge repeat back providing correction if necessary* **EVALUATOR to provide JPM Attachment 1 Data Sheet and copy of N2-OSP-LOG-D001 Attachment 10 to candidate.**	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. • Obtain a copy of the reference procedure and review/utilize the correct section.	Obtains N2-OSP-LOG-D001 Attachment 10, Two Loop Jet Pump Operability Verification	Sat/Unsat
Note: The attached key shows N2-OSP-LOG-D001 completed as described in JPM steps 3-20		
3. • Record Recirc Pump Speed by checking appropriate choice	Using information from JPM initial conditions, determines that Recirc Pump speed is 60 Hz and records in Step 1.0	Sat/Unsat
4. • Record Recirc FCV Positions in Table 10-1	Records Recirc FCV Positions in Table 10-1: Loop A – 68 Loop B – 76	Sat/Unsat
5. • Record Summed Jet Pump Loop Flows from indicators B22-R611A and B22-R611B in Table 10-1 and Table 10-2	Records Summed Jet Pump Loop Flows in Table 10-1 and Table 10-2: Loop A – 52 Loop B – 52	Sat/Unsat
6. • Using the Recirc FCV Position for	Records flow limits for Loop A in Table 10-	Sat/Unsat

Performance Steps	Standard	Grade
Loop A recorded in Table 10-1, obtain the Jet Pump Loop Flow High AND Low Limits for Loop A from Figure 10-1 AND record them in Table 10-1	1: High – 55 (±0.5) Low – 45 (±0.5)	
7. • Using the Recirc FCV Position for Loop B recorded in Table 10-1, obtain the Jet Pump Loop Flow High AND Low Limits for Loop B from Figure 10-2 AND record them in Table 10-1	Records flow limits for Loop B in Table 10-1: High – 55 (±0.5) Low – 45 (±0.5)	Sat/Unsat
8. • Compare the actual Loop A AND Loop B Jet Pump Flows to the respective Loop High AND Low Limits, as recorded in Table 10-1, AND indicate below whether the actual values fall within the Limits	Reviews the data in table 10-1 and indicates the values are within the limits for both loops	**Pass/Fail**
9. • Record Recirc Loop Drive Flows from recorder B35-R614, RECIRC FLOW LOOP B/FLOW LOOP A, on 2CEC*PNL602, in Table 10-2	Records Recirc Loop Drive Flows in Table 10-2: Loop A – 42 Loop B – 41	Sat/Unsat
10. • Using the Recirc Loop A Drive Flow recorded in Table 10-2, obtain the Jet Pump Loop Flow High AND Low Limits for Loop A from Figure 10-3 AND record them in Table 10-2	Records Jet Pump Loop Flow High and Low Limits for Loop A in Table 10-2: High – 53.5 (±0.5) Low – 44 (±0.5)	Sat/Unsat
11. • Using the Recirc Loop B Drive Flow recorded in Table 10-2, obtain the Jet Pump Loop Flow High AND Low Limits for Loop B from Figure 10-4 AND record them in Table 10-2	Records Jet Pump Loop Flow High and Low Limits for Loop B in Table 10-2: High – 53 (±0.5) Low – 43 (±0.5)	Sat/Unsat
12. • Compare the actual Loop A AND Loop B Jet Pump Flows to the respective Loop High AND Low Limits, as recorded in Table 10-2, AND indicate below whether the actual values fall within the Limits	Reviews the data in Table 10-2 and indicates the values are within the limits for both loops	**Pass/Fail**
13. • Record value for each Jet Pump ΔP in Loop A, as read on 2CEC-PNL619 (H13-P619), in Table 10-3	Records each Jet Pump ΔP in Loop A on Table 10-3	Sat/Unsat
14. • Calculate Loop A Average Jet Pump ΔP and record in Table 10-3	Calculates Loop A Average Jet Pump ΔP to be 41.5	Sat/Unsat

Performance Steps	Standard	Grade
15. • Divide each Loop A Jet Pump ΔP by Loop A Average Jet Pump ΔP AND record the resulting Individual to Average ΔP Ratios in Table 10-3	Divides each jet pump ΔP by the average and records in Table 10-3 ❑ Jet pump 1 = 1.03 ❑ Jet pump 2 = 0.86 ❑ Jet pump 3 = 0.96 ❑ Jet pump 4 = 0.96 ❑ Jet pump 5 = 1.10 ❑ Jet pump 6 = 1.15 ❑ Jet pump 7 = 0.96 ❑ Jet pump 8 = 0.96 ❑ Jet pump 9 = 0.96 ❑ Jet pump 10 = 1.01	Sat/Unsat
16. • For ALL Jet Pumps in Loop A, compare each Jet Pump's Individual to Average ΔP Ratio to the Limits given in Table 10-3 AND indicate below whether the actual values are within the Limits	Reviews the data in Table 10-3 and indicates that Jet Pumps 1-10 are all within limits	**Pass/Fail**
17. • Record value for each Jet Pump ΔP in Loop B, as read on 2CEC-PNL619 (H13-P619), on Table 10-3	Records each Jet Pump ΔP in Loop B on Table 10-3	Sat/Unsat
18. • Calculate Loop B Average Jet Pump ΔP for AND record on Table 10-3	Calculates Loop B Average Jet Pump ΔP to be 39.6	Sat/Unsat
19. • Divide each Loop B Jet Pump ΔP by Loop B Average Jet Pump ΔP AND record the resulting Individual to Average ΔP Ratios in Table 10-3	Divides each jet pump ΔP by the average and record in table 10-3 ❑ Jet pump 11 = 1.03 ❑ Jet pump 12 = 0.98 ❑ Jet pump 13 = 0.75 ❑ Jet pump 14 = 0.95 ❑ Jet pump 15 = 1.11 ❑ Jet pump 16 = 1.16 ❑ Jet pump 17 = 1.03 ❑ Jet pump 18 = 0.98 ❑ Jet pump 19 = 1.01 ❑ Jet pump 20 = 0.95	Sat/Unsat

Performance Steps	Standard	Grade
20. • For ALL Jet Pumps in Loop B, compare each Jet Pump's Individual to Average ΔP Ratio to the Limits given in Table 10-3 AND indicate below whether the actual values are within the Limits	Reviews the data in Table 10-3 and indicates that Jet Pumps 11, 12, 14-20 are all within limits; indicates that Jet Pump 13 is NOT within limits	**Pass/Fail**
21. Informs CRS / SM that Jet Pump 13 is not within the limits of Table 10-3	CRS /SM informed to take actions for Jet pump 13	Sat/Unsat
Cue: As CRS / SM, inform candidate that appropriate actions will be taken for Jet pump 13		

TERMINATING CUE: Identify Jet pump number 13 differential pressure is outside of limits and informs CRS / SM.

RECORD STOP TIME___________

Attachment 3: Evaluation and Recommendation(s)

DO NOT PROVIDE TO CANDIDATE

RECORD YOUR RESULTS BELOW
Name:
Summary of Evaluation of Data: Actual Loop A and Loop B jet pump flows are within limits of Table 10-2 Loop A Jet Pumps are within limits of Table 10-3 Loop B Jet Pump 13 is NOT within specified limits of Table 10-3. All other jet pumps are within Table 10-3 limits.
Summary of Recommended Actions: Reported to CRS/SM

Turnover Sheet

Initial Conditions:

1. The plant is operating at 100% power.
2. N2-OSP-LOG-D001 is in progress.

Initiating cue:

"(Operator's name), given the data provided on JPM Attachment 1, complete Attachment 10 of N2-OSP-LOG-D001. Summarize your results and document any recommended actions on JPM Attachment 2."

JPM Attachment 1: N2-OSP-LOG-D001 Data Sheet

OK TO PROVIDE TO CANDIDATE

Item #	Description		Value	
1	**2RCS-HC1603A**, RECIRC LOOP A FLOW CONTROL		68%	
2	**2RCS-HC1603B**, RECIRC LOOP B FLOW CONTROL		76%	
3	**B22-R611A**, RECIRC LOOP 1A SUM JET PMP FLO		52 Mlbm/Hr (Flow Oscillations Minimal)	
4	**B22-R611B**, RECIRC LOOP 1B SUM JET PMP FLO		52 Mlbm/Hr (Flow Oscillations Minimal)	
5	**B35-R614** RECIRC FLOW LOOP A		42,000 gpm (Flow Oscillations Minimal)	
6	**B35-R614** RECIRC FLOW LOOP B		41,000 gpm (Flow Oscillations Minimal)	
7	**2CEC-PNL619 Indications for Jet Pump Delta P**			
	Loop A		**Loop B**	
	Jet pump 1	43%	Jet pump 11	41%
	Jet pump 2	36%	Jet pump12	39%
	Jet pump 3	40%	Jet pump 13	30%
	Jet pump 4	40%	Jet pump 14	38%
	Jet pump 5	46%	Jet pump 15	44%
	Jet pump 6	48%	Jet pump 16	46%
	Jet pump 7	40%	Jet pump 17	41%
	Jet pump 8	40%	Jet pump 18	39%
	Jet pump 9	40%	Jet pump 19	40%
	Jet pump 10	42%	Jet pump 20	38%

JPM Attachment 2: Evaluation and Recommendation(s)

OK TO PROVIDE TO CANDIDATE

RECORD YOUR RESULTS BELOW
Name:
Summary of Evaluation of Data:
Summary of Recommended Actions:

Key KEY

NINE MILE POINT NUCLEAR STATION UNIT 1

SURVEILLANCE TEST PROCEDURE

N2-OSP-LOG-D001

REVISION 01501

DAILY CHECKS LOG

TECHNICAL SPECIFICATION REQUIRED

Approved by:
M. A. Philippon

Manager Operations

7·6·11
Date

Effective Date: 7/12/2011

TABLE OF CONTENTS

SECTION		PAGE
1.0	PURPOSE	1
2.0	TECHNICAL SPECIFICATIONS	1
3.0	REFERENCES AND COMMITMENTS	1
4.0	GENERAL TEST METHODS	3
5.0	TEST EQUIPMENT	5
6.0	PRECAUTIONS AND LIMITATIONS	5
7.0	PREREQUISITES	6
8.0	PROCEDURE	6
9.0	RETURN TO NORMAL	7
10.0	ACCEPTANCE CRITERIA	9
ATTACHMENT 1:	TEST PERSONNEL SIGNATURE AND INITIAL LOG	12
ATTACHMENT 2:	DAILY CHECKS LOG	13
ATTACHMENT 3:	PRIMARY CONTAINMENT AC CIRCUIT CHECK	33
ATTACHMENT 4:	SINGLE CONTROL ROD REMOVAL CHECKS	34
ATTACHMENT 5:	MULTIPLE CONTROL ROD REMOVAL CHECKS	35
ATTACHMENT 6:	SUPPRESSION POOL AVERAGE WATER TEMPERATURE	36
ATTACHMENT 7:	DRYWELL AVERAGE TEMPERATURE	37
ATTACHMENT 8:	JET PUMP LOOP FLOW MISMATCH	38
ATTACHMENT 9:	REACTOR MODE SWITCH INTERLOCK TESTING	40
ATTACHMENT 10:	TWO LOOP JET PUMP OPERABILITY VERIFICATION	41
ATTACHMENT 11:	SINGLE LOOP JET PUMP OPERABILITY VERIFICATION	56
ATTACHMENT 12:	SINGLE CONTROL ROD WITHDRAWAL - HOT SHUTDOWN	70
ATTACHMENT 13:	SINGLE CONTROL ROD WITHDRAWAL - COLD SHUTDOWN	71
ATTACHMENT 14:	SWP SUPPLY HEADER DISCHARGE WATER TEMPERATURE	72
ATTACHMENT 15:	SPENT FUEL POOL TIME TO 200°F	74

3.4 Commitments

Sequence Number	Commitment Number	Description
1	NRC SER 68571	NRC Staff Safety Evaluation pertaining to NMP2 response to Station Blackout Rule
2	PRNM MOD	Verify APRMs receiving correct Mode Switch input
3	PRNM MOD	Verify APRM/LPRM Chassis Self-test
4	DER 2-97-3357	Deviation from Design Specification Recommendations for RHR Heat Exchangers
5	CR 2007-7742	Surveillance Procedure Overdue for Diesel Fire Pump

4.0 GENERAL TEST METHODS

4.1 Test Description

4.1.1 This procedure contains surveillance requirements such as instrument checks, pressure/level/temperature readings, and other checks that are to be performed on a daily basis.

4.1.2 Special requirements associated with Items, including details of Operational Condition requirements, are listed in footnotes on the page with the affected Item.

4.1.3 Items that fall outside normal operating limits and require increased surveillance frequency are tested using S-OSP-LOG-@001.

4.1.4 If the same operator records all data on a page, a single set of initials may be entered in the INITIALS column.

4.1.5 If more than one operator records data on a page, each operator shall initial for the data he/she recorded. Include dividing lines to indicate responsibility for readings.

4.1.6 Attachments 8, 10, and 11 will not all be performed or completed each time this procedure is performed. Only the attachments required, based on Recirc system operation in two loop or one loop configuration, need to be completed. The attachments required for the two configurations are as follows:

a. Two Loop:

- Attachment 8
- Attachment 10

b. One Loop:

- Attachment 11

4.2 Definitions

4.2.1 Channel Check

A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

4.2.2 Operational Conditions

- 1: Power Operation
- 2: Startup
- 3: Hot Shutdown
- 4: Cold Shutdown
- 5: Refueling

4.3 Use of Not Applicable (N/A) or Not Required (N/R) for Procedure Steps

Use of N/A may only be used as directed in this procedure, except as allowed by CNG-PR-1.01-1009, Procedure Use and Adherence Requirements.

4.4 General Notes

4.4.1 Obtain readings using Computer Points from the Process Computer.

4.4.2 Obtain readings using ERF Computer Points from the ERF/SPDS Computer.

4.4.3 Record Max Difference means to calculate and record the difference between the highest and lowest readings of the Items referenced.

4.4.4 Obtain Radiation Monitor readings from the DRMS computer. If the DRMS computer is unavailable, readings may be obtained from the LICs (Local) or, for Safety Related Rad Monitors, the RICs on 2CEC*PNL880.

4.4.5 Indications in yellow print on DRMS indicate that the ALERT value has been exceeded. Indications in red print indicate that the ALARM value has been exceeded.

5.0 TEST EQUIPMENT

Fluke Digital Multimeter (DMM) Series 8060, (Only if required, M&TE Issue)

6.0 PRECAUTIONS AND LIMITATIONS

6.1 The Shift Manager (SM) shall be notified immediately when a step cannot be completed as stated or if acceptance criteria are not met.

6.2 Applicable radiological precautions shall be observed. Radiation Protection shall be contacted for guidance.

6.3 ALARA practices shall be observed to minimize personnel exposure and spread of contamination.

6.4 Prior to initialing any step in this procedure, all individuals shall place their initials, signatures, and printed names on Attachment 1, Test Personnel Signature And Initial Log.

6.5 Due to cracking in the Jet Pump #6 sensing line (reference CR-2008-002793), the potential for failure of the sensing line exists. If the Jet Pump #6 sensing line fails such that it reads downcomer pressure, its D/P reading will show a step jump of ~8% to 9% above its baseline and the indicated loop flow and core flow will increase. Jet Pump #5 D/P and generator output will not change. Should the step jump in Jet Pump #6 be observed, in addition to following the guidance in N2-OP-29, a CR shall be initiated.

N/A, Plant is in single loop operation .... (__)

N/A, Plant NOT in Mode 1 OR 2. .... (__)

Initials

1.0 Record Recirc Pump Speed by checking appropriate choice below:

- 15 Hz (__)
- 60 Hz (✓)

2.0 Comparison of Indicated Jet Pump Loop Flows to Predicted Jet Pump Loop Flows by Recirc Flow Control Valve Positions (SR 3.4.3.1.a)

2.1 Record Recirc Flow Control Valve (FCV) Positions, as follows:

2.1.1 IF Recirc FCV Positions, as read on 2RCS-HC1603A, RECIRC LOOP A FLOW CONTROL, AND 2RCS-HC1603B, RECIRC LOOP B FLOW CONTROL, are ≤85% for FCV A AND ≤95% for FCV B, record Recirc FCV Positions in Table 10-1.

N/A, One OR BOTH Recirc FCV Positions, as read on 2RCS-HC1603A OR 2RCS-HC1603B, are >85% for FCV A AND >95% for FCV B.......................... (__) γ

2.1.2 IF one OR BOTH Recirc FCV Positions as read on 2RCS-HC1603A AND 2RCS-HC1603B, are >85% for FCV A and >95% for FCV B, obtain Recirc FCV Positions from TARS as follows:

N/A, BOTH Recirc FCV Positions, as read on 2RCS-HC1603A OR 2RCS-HC1603B, are ≤85% for FCV A and ≤95% for FCV B........................... (✓)

a. Using TARS Point ID 2002, obtain Recirc Loop A FCV Position AND record in Table 10-1. ______

b. Using TARS Point ID 2003, obtain Recirc Loop B FCV Position AND record in Table 10-1. ______

c. Attach TARS plot to this procedure. ______

Initials

2.2 Record Jet Pump Loop Flows as follows:

2.2.1 IF flow oscillations on indicators do NOT make an accurate reading difficult, record Summed Jet Pump Loop Flows from Indicators B22-R611A, RECIRC LOOP 1A SUM JET PMP FLO, AND B22-R611B, RECIRC LOOP 1B SUM JET PMP FLO, on 2CEC*PNL602, in the following places:

N/A, TARS used due to flow oscillations .... (__)

- Table 10-1 ___Y___
- Table 10-2 ___Y___

2.2.2 IF flow oscillations on indicators make an accurate reading difficult, perform the following:

N/A, 2CEC*PNL602 meters were used .... (✓)

a. Obtain a 1 min mean of PID 2042, Loop A Jet Pump Flow using TARS Point ID 2674. ______

b. Record the value of Jet Pump Loop A Flow obtained in the Step above in the following places:

- Table 10-1 ______
- Table 10-2 ______

c. Obtain a 1 min mean of PID 2043, Loop B Jet Pump Flow using TARS Point ID 2673.

d. Record the value of Jet Pump Loop B Flow obtained in the Step above in the following places:

- Table 10-1 ______
- Table 10-2 ______

e. Attach TARS plot to this procedure. ______

Initials

2.3 Determine the High AND Low Limits for Jet Pump Loop Flows as follows:

2.3.1 IF Recirc Pumps are in slow speed operation, enter the following in Table 10-1 for the High AND Low Limits:

N/A, Recirc Pumps are in high speed operation .... (✓)

- High Limit: 21.43 Mlb_m/Hr
- Low Limit: 17.54 Mlb_m/Hr ______

2.3.2 IF the Recirc Pumps are in high speed operation, perform the following:

N/A, Recirc Pumps are in low speed operation .... (__)

a. Using the Recirc FCV Position for Loop A recorded in Table 10-1, obtain the Jet Pump Loop Flow High AND Low Limits for Loop A from Figure 10-1 AND record them in Table 10-1. γ

b. Using the Recirc FCV Position for Loop B recorded in Table 10-1, obtain the Jet Pump Loop Flow High AND Low Limits for Loop B from Figure 10-2 AND record them in Table 10-1. γ

2.4 Compare the actual Loop A AND Loop B Jet Pump Flows to the respective Loop High AND Low Limits, as recorded in Table 10-1, AND indicate below whether the actual values fall within the Limits:

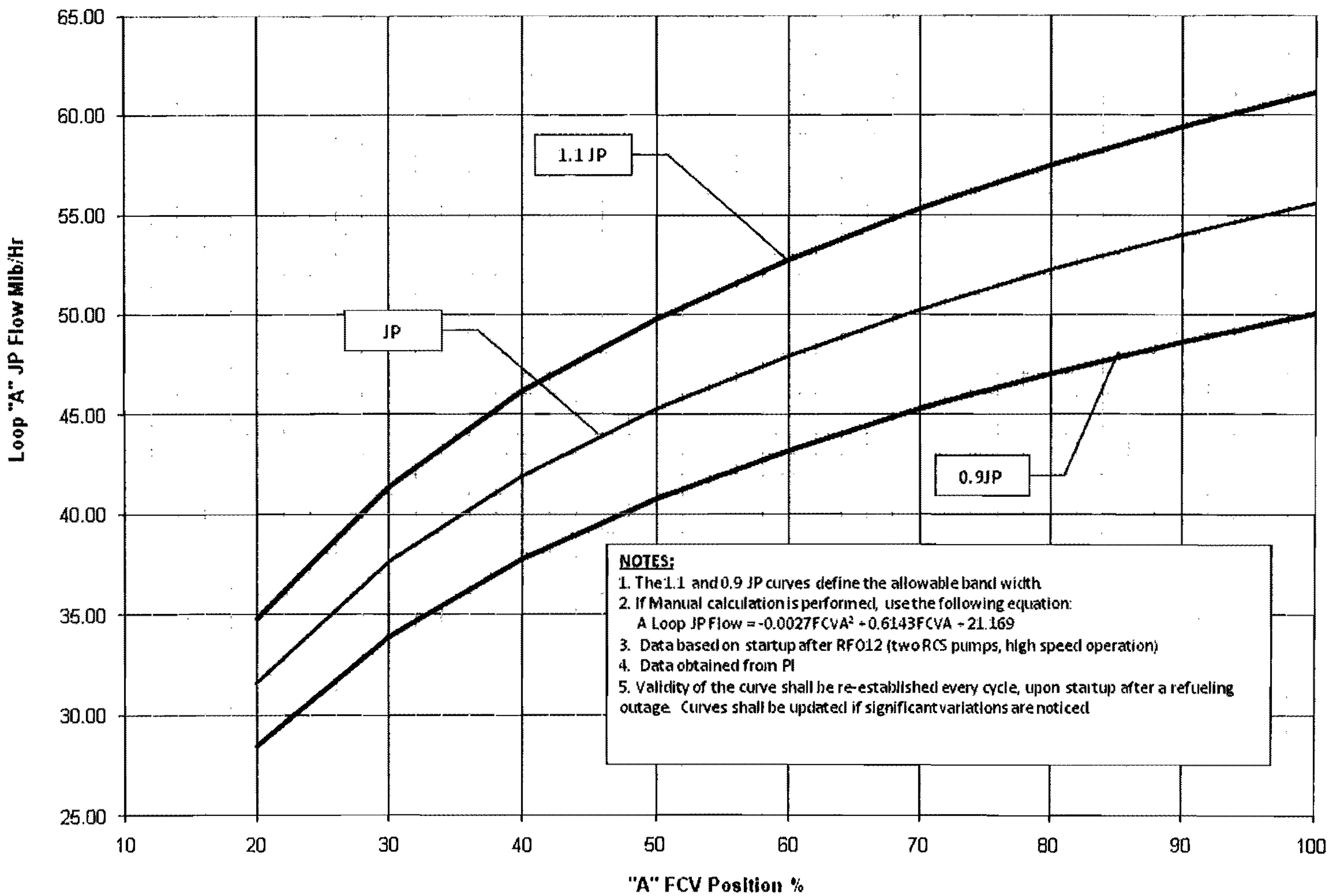
	Yes	No
• Loop A:	(✓)	(__)
• Loop B:	(✓)	(__)

γ

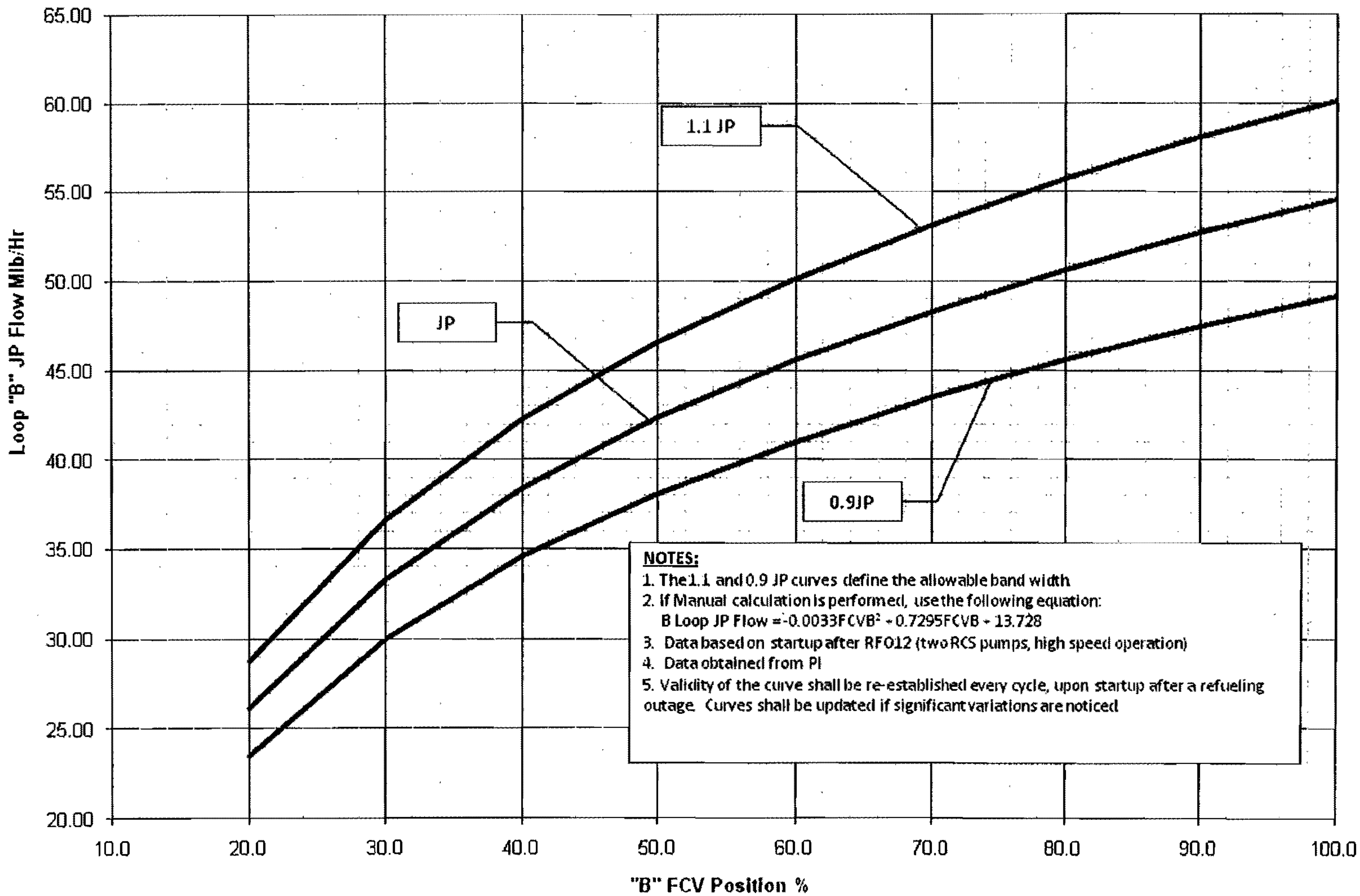
TABLE 10-1

Recirc Loop A				Recirc Loop B			
FCV A (%)	Loop A Jet Pump Flow (Mlb_m/Hr)	High Limit (Mlb_m/Hr)	Low Limit (Mlb_m/Hr)	FCV B (%)	Loop B Jet Pump Flow (Mlb_m/Hr)	High Limit (Mlb_m/Hr)	Low Limit (Mlb_m/Hr)
68	52	55	45	76	52	55	45

Predicted JP Loop A Flow By FCV Position (Two Loop Operation)



Predicted JP Loop B Flow By FCV Position (Two Loop Operation)



Initials

3.0 Comparison of Indicated Jet Pump Loop Flows to Predicted Jet Pump Loop Flows by Recirc Loop Drive Flows (TS SR 3.4.3.1.b)

3.1 Verify the Jet Pump Loop Flows have been recorded in Table 10-2. ___γ___

3.2 Obtain Recirc Loop Drive Flows as follows:

3.2.1 IF flow oscillations on recorder do NOT make an accurate reading difficult, record Recirc Loop Drive Flows from recorder B35-R614, RECIRC FLOW LOOP B/FLOW LOOP A, on 2CEC*PNL602, in Table 10-2.

N/A, TARS used due to flow oscillations.. (__) ___γ___

3.2.2 IF flow oscillations on recorder makes an accurate reading difficult, perform the following:

N/A, 2CEC*PNL602 recorder was used .... (✓)

a. Obtain a 1 min mean of PID 2045, RCS Loop A Flow using TARS Point ID 2672. ______

b. Record the value of Recirc Loop A Drive Flow in Table 10-2. ______

c. Obtain a 1 min mean of PID 2046, RCS Loop B Flow using TARS Point ID 2671. ______

d. Record the value of Recirc Loop B Drive Flow in Table 10-2. ______

e. Attach TARS plot to this procedure. ______

3.3 Determine the High AND Low Limits for Jet Pump Loop Flow as follows:

- For High Speed Pump Operation, perform 3.3.1 AND 3.3.2.
- For Low Speed Pump Operation, perform 3.3.3 AND 3.3.4.

3.3.1 Using the Recirc Loop A Drive Flow recorded in Table 10-2, obtain the Jet Pump Loop Flow High AND Low Limits for Loop A from Figure 10-3 AND record them in Table 10-2.

N/A, Recirc Pumps in Low Speed Operation.. (__) ___γ___

Initials

3.3.2 Using the Recirc Loop B Drive Flow recorded in Table 10-2, obtain the Jet Pump Loop Flow High AND Low Limits for Loop B from Figure 10-4 AND record them in Table 10-2.

N/A, Recirc Pumps in Low Speed Operation .... (__) γ

3.3.3 Using the Recirc Loop A Drive Flow recorded in Table 10-2, calculate the Jet Pump Loop Flow High AND Low Limits for Loop A using the following equation AND record them in Table 10-2.

NOTE: "WDA" in the equation is "A" Recirc Loop Drive Flow in gpm, NOT kgpm, and JP units as calculated are Mlbm/hr.

$JP = 12.197 + 0.0006WDA + 0.000000008WDA^2$
JP high limit = (1.1)JP
JP low limit = (0.9)JP

N/A, Recirc Pumps in High Speed Operation .... (✓) ______

______
I.V.

3.3.4 Using the Recirc Loop B Drive Flow recorded in Table 10-2, calculate the Jet Pump Loop Flow High and Low Limits for Loop B using the following equation AND record them in Table 10-2.

NOTE: "WDB" in the equation is "B" Recirc Loop Drive Flow in gpm, NOT kgpm, and JP units as calculated are Mlbm/hr.

$JP = 12.197 + 0.0006WDB + 0.000000008WDB^2$
JP high limit = (1.1)JP
JP low limit = (0.9)JP

N/A, Recirc Pumps in High Speed Operation .... (✓) ______

______
I.V.

Initials

3.4 Compare the actual Loop A AND Loop B Jet Pump Flows to the respective Loop High AND Low Limits, as recorded in Table 10-2, AND indicate below whether the actual values fall within the Limits:

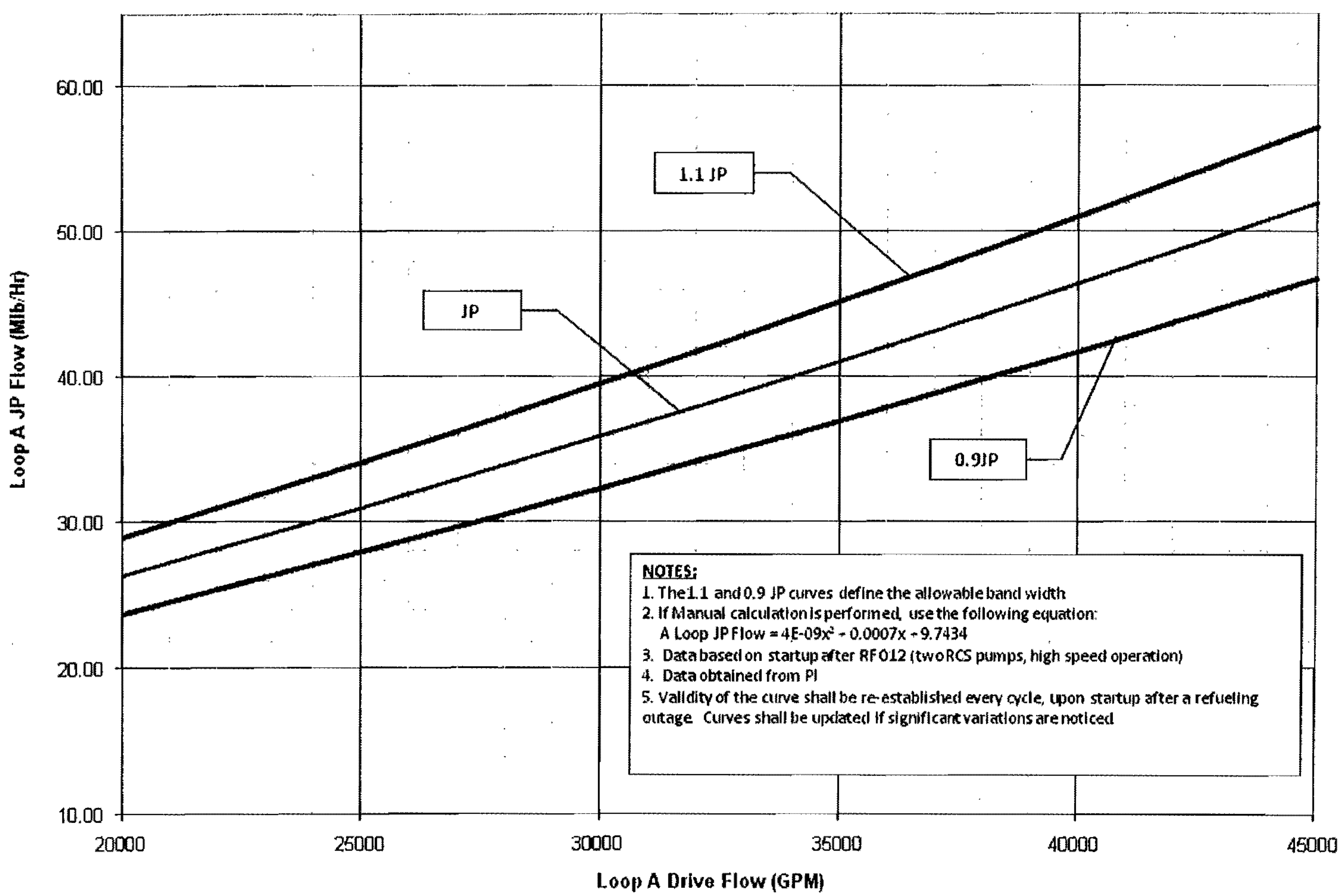
	Yes	No
• Loop A:	(✓)	(__)
• Loop B:	(✓)	(__)

r

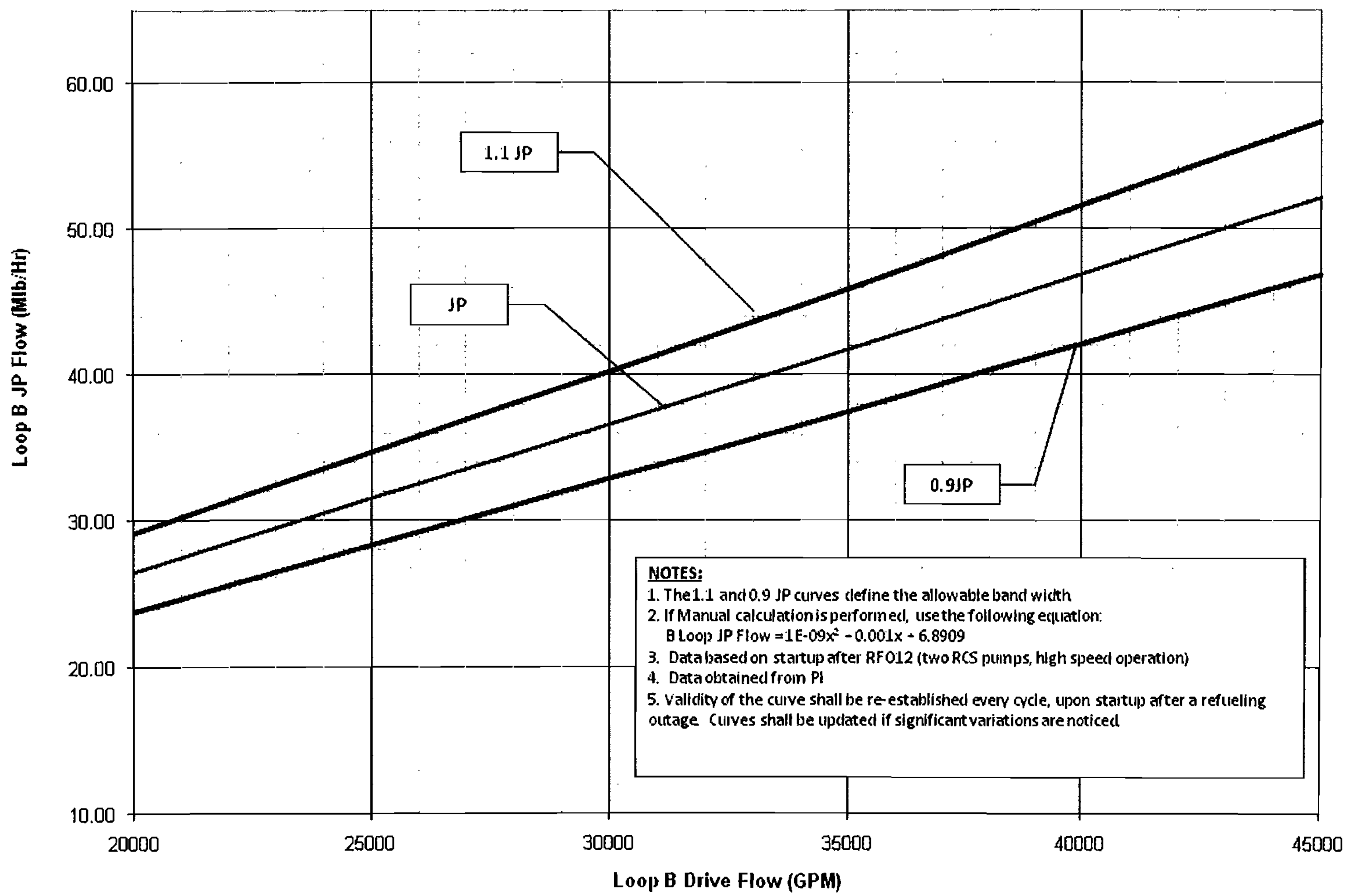
TABLE 10-2

Recirc Loop A				Recirc Loop B			
Recirc Loop A Drive Flow (Kgpm)	Loop A Jet Pump Flow (Mlb_m/Hr)	High Limit (Mlb_m/Hr)	Low Limit (Mlb_m/Hr)	Recirc Loop B Drive Flow (Kgpm)	Loop B Jet Pump Flow (Mlb_m/Hr)	High Limit (Mlb_m/Hr)	Low Limit (Mlb_m/Hr)
42	52	53.5	44	41	52	53	43

Loop A Drive Flow vs. Loop A JP Flow (Figure 10-3)



Loop B Drive Flow vs. Loop B JP Flow



Initials

4.0 Comparison of Individual Jet Pumps ΔP to Average Jet Pump Loop ΔP (TS SR 3.4.3.1.c)

NOTE: Due to cracking in the Jet Pump #6 sensing line (reference CR-2008-002793), the potential for failure of the sensing line exists. If the Jet Pump #6 sensing line fails such that it reads downcomer pressure, its D/P reading will show a step jump of ~8% to 9% above its baseline and the indicated loop flow and core flow will increase. Jet Pump #5 D/P and generator output will not change. Should the step jump in Jet Pump #6 be observed, in addition to following the guidance in N2-OP-29, a CR shall be initiated.

4.1 Record value for each Jet Pump ΔP in Loop A, as read on2CEC-PNL619 (H13-P619), in Table 10-3. γ

4.2 Calculate Loop A Average Jet Pump ΔP for AND record in Table 10-3. γ

4.3 Divide each Loop A Jet Pump ΔP by Loop A Average Jet Pump ΔP AND record the resulting Individual to Average ΔP Ratios in Table 10-3. γ

4.4 For ALL Jet Pumps in Loop A, compare each Jet Pump's Individual to Average ΔP Ratio to the Limits given in Table 10-3 AND indicate below whether the actual values are within the Limits:

Jet Pump	Yes	No
1	(✓)	(_)
2	(✓)	(_)
3	(✓)	(_)
4	(✓)	(_)
5	(✓)	(_)
6	(✓)	(_)
7	(✓)	(_)
8	(✓)	(_)
9	(✓)	(_)
10	(✓)	(_)

γ

Initials

4.5 Record value for each Jet Pump ΔP in Loop B, as read on 2CEC-PNL619 (H13-P619), on Table 10-3. γ

4.6 Calculate Loop B Average Jet Pump ΔP for AND record on Table 10-3. γ

4.7 Divide each Loop B Jet Pump ΔP by Loop B Average Jet Pump ΔP AND record the resulting Individual to Average ΔP Ratios in Table 10-3. γ

4.8 For ALL Jet Pumps in Loop B, compare each Jet Pump's Individual to Average ΔP Ratio to the Limits given in Table 10-3 AND indicate below whether the actual values are within the Limits:

Jet Pump	Yes	No
11	(✓)	(__)
12	(✓)	(__)
13	(__)	(✓)
14	(✓)	(__)
15	(✓)	(__)
16	(✓)	(__)
17	(✓)	(__)
18	(✓)	(__)
19	(✓)	(__)
20	(✓)	(__)

γ

TABLE 10-3 (Low Speed Operation)

Jet Pump	2CEC-PNL619 Indication	Individual to Average ΔP Ratio	Low Limit	High Limit
Loop A				
1	%		0.83	1.24
2	%		0.69	1.05
3	%		0.82	1.24
4	%		0.78	1.17
5	%		0.89	1.33
6	%		0.88	1.32
7	%		0.78	1.17
8	%		0.77	1.15
9	%		0.78	1.17
10	%		0.77	1.16
Total	%	Total ÷ 10 = __________ % Loop A Average Jet ΔP Pump		
Loop B				
11	%		0.83	1.24
12	%		0.78	1.17
13	%		0.79	1.19
14	%		0.76	1.15
15	%		0.85	1.28
16	%		0.88	1.31
17	%		0.81	1.21
18	%		0.77	1.16
19	%		0.73	1.09
20	%		0.81	1.21
Total	%	Total ÷ 10 = __________ % Loop B Average Jet ΔP Pump		
Calc Performed By (Initials):		Independently Verified By (Initials):		

TABLE 10-3 (40-74% Power)

Jet Pump	2CEC-PNL619 Indication	Individual to Average ΔP Ratio	Low Limit	High Limit
Loop A				
1	%		0.82	1.23
2	%		0.71	1.06
3	%		0.79	1.19
4	%		0.76	1.14
5	%		0.88	1.32
6	%		0.90	1.35
7	%		0.76	1.14
8	%		0.76	1.14
9	%		0.80	1.2
10	%		0.81	1.21
Total	%	Total ÷ 10 = _________ % Loop A Average Jet ΔP Pump		
Loop B				
11	%		0.83	1.24
12	%		0.76	1.14
13	%		0.78	1.17
14	%		0.74	1.11
15	%		0.88	1.32
16	%		0.91	1.36
17	%		0.79	1.18
18	%		0.79	1.18
19	%		0.74	1.11
20	%		0.79	1.18
Total	%	Total ÷ 10 = _________ % Loop B Average Jet ΔP Pump		
Calc Performed By (Initials):		Independently Verified By (Initials):		

TABLE 10-3 (75-100% Power)

Jet Pump	2CEC-PNL619 Indication		Individual to Average ΔP Ratio	Low Limit	High Limit
Loop A					
1	43	%	1.03	0.83	1.25
2	36	%	0.86	0.71	1.06
3	40	%	0.96	0.79	1.19
4	40	%	0.96	0.76	1.14
5	46	%	1.10	0.88	1.32
6	48	%	1.15	0.89	1.34
7	40	%	0.96	0.77	1.15
8	40	%	0.96	0.77	1.15
9	40	%	0.96	0.79	1.19
10	42	%	1.01	0.81	1.22
Total	415	%	Total ÷ 10 = 41.5 % Loop A Average Jet ΔP Pump		
Loop B					
11	41	%	1.03	0.82	1.23
12	39	%	0.98	0.76	1.14
13	30	%	0.75	0.77	1.16
14	38	%	0.95	0.76	1.14
15	44	%	1.11	0.87	1.31
16	46	%	1.16	0.93	1.40
17	41	%	1.03	0.79	1.18
18	39	%	0.98	0.78	1.17
19	40	%	1.01	0.74	1.10
20	38	%	0.95	0.77	1.16
Total	396	%	Total ÷ 10 = 39.6 % Loop B Average Jet ΔP Pump		
Calc Performed By (Initials):			Independently Verified By (Initials):		

NRC ADMIN RO JPM CO-2
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Determine Heatup Rate During Startup

Revision: NRC 2012

Approvals:

_____________ / 9/15/11 Facility Representative Date		NA Exam Security / General Supervisor Date Operations (Designee)
NA Exam Security / Configuration Control Date		

Performer:________________________________(RO)

Trainer/Evaluator:___________________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 15 minutes   Time Critical Task: No   Alternate Path Task: No

Start Time: ________   Stop Time:_________   Completion Time:_________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator's Signature:______________________________   Date:_____________

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

Classroom

Simulator Set-up (if required):

N/A

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

Directions to Operators:
Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-OP-101A, Plant Startup
2. N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 7, HEATUP/COOLDOWN DATA SHEET

3. NUREG 1123 K/A 2.1.43 (4.1) Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

Tools and Equipment:

1. None

Task Standard:

Calculate RCS heatup rate and determine heatup rate has been exceeded.

Initial Conditions:

1. A Reactor Startup is in progress.
2. N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 7, HEATUP/COOLDOWN DATA SHEET has been implemented.
3. Readings for 12:30 are as follows:
   a. RPV Pressure: 262 psig
   b. Recirc Loop A Temperature: 410°F
4. Ask the operator for any questions.

Initiating Cues:

"(Operator's name), document and analyze the 12:30 readings on N2-OSP-RCS-@001, Attachment 7. Report the results to the CRS."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct sections of the procedure ***Cue:*** *If candidate asks why the Target Pressure and Temperature are not listed for the 12:30 reading, inform him that the RO forgot to perform that step last reading.*	Obtains a copy of N2-OSP-RCS-@001 and references the following sections: ❑ Section 6.0, Precautions and Limitations ❑ Section 8.1 ❑ Attachment 7	Sat/Unsat
3. WHEN data is recorded, calculate heatup OR cooldown rate AND record	Calculates heatup rate for last 15 minute interval: Heatup rate = (410°F – 384°F)*(4) = 104°F/hour Records heatup rate on Attachment 7	**Pass/Fail**
4. IF the calculated heatup or cooldown rate for the time interval exceeds 100°F/HR, THEN action must be taken to ensure that the limit of ≤ 100°F in any 1-hour period is not exceeded	Recognizes heatup rate for the time interval exceeds 100°F/hour Calculates heatup rate for preceeding hour: Heatup rate = (410°F – 309°F)/(1 hour) = 101°F/hour	**Pass/Fail**

Performance Steps	Standard	Grade
5. Determines if heatup rate is less than or equal to 100°F in any 1-hour period	Determines heatup rate is above limit	**Pass/Fail**
6. Initial and date Attachment 7 to indicate acceptance criteria is not met	Marks heatup rate as Unsat and initials Attachment 7	Sat/Unsat
7. Contact the CRS or SM and notify them that the plant heatup rate acceptance criteria is not met	Informs CRS or SM that the plant heatup rate acceptance criteria is not met	Sat/Unsat

RECORD STOP TIME ___________

~~Section Performed (circle one) 8.1 8.2 8.3~~

KEY - Do not Handout

Time (15 Min Intervals)	RPV Press	* Reactor Coolant Temperature: Recirc Loop Temp Loop A	Recirc Loop Temp Loop B	RHR Loop Temp Loop A	RHR Loop Temp Loop B	# H/U or C/D Rate	H/U – C/D rate & P - T Acceptable per Step: 8.1.5, 8.2.5 or 8.3.6 Sat	Unsat	Initial	*** Target Pressure	*** Target Temperature	Independant verification (SRO/STA)
1000	23	266				N/A	✓		TRH	[redacted]		
1015	30	274				32	✓		TRH	43	291	DH
1030	33	279				20	✓		TRH	51	299	DH
1045	37	284				20	✓		TRH	56	304	DH
1100	41	287				12	✓		TRH	61	309	DH
1115	51	299				48	✓		TRH	65	312	DH
1130	61	309				40	✓		TRH	80	324	DH
1145	87	329				80	✓		TRH	94	334	DH
1200	133	357				112	✓		TRH	127	354	DH
1215	190	384				108	✓		TRH	185	382	DH
(1230)	(262)	(410)				(104)		(✓)	(Initials)	(260)	(409)	

* Temperature corresponding to Downcomer temperature in accordance with Step 4.6.

\# H/U or C/D = (Current Temperature – Previous Temperature) X 4 = __ °F/ Hr.

** If Heat up of cool down rate exceeds 100°F/ Hr. then notify the CRS/SM immediately.

*** Target Temperature and pressure is calculated for the next reading to ensure the rolling one hour average heatup/Cooldown rate does not exceed 100°F/ Hr. An SRO/STA must independently verify the calculated Target Temperature and Pressure. This is not required when maintaining temperature/pressure stable.

- KEY - Do not Handout

Turnover Sheet

Initial Conditions:

1. A Reactor Startup is in progress.
2. N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 7, HEATUP/COOLDOWN DATA SHEET has been implemented.
3. Readings for 12:30 are as follows:
   a. RPV Pressure: 262 psig
   b. Recirc Loop A Temperature: 410°F

Initiating Cues:

"(Operator's name), document and analyze the 12:30 readings on N2-OSP-RCS-@001, Attachment 7. Report the results to the CRS."

NINE MILE POINT NUCLEAR STATION UNIT 2

SURVEILLANCE TEST PROCEDURE

N2-OSP-RCS-@001

REVISION 08

RCS PRESSURE/TEMPERATURE VERIFICATION

TECHNICAL SPECIFICATION REQUIRED

Approved by: R. C. Godley — Manager Operations — for R.C. — 3-5-04 Date

Effective Date: 03/09/2004

TYPE 2 PROCEDURE CHANGE EVALUATION

PCE Number

Part 1 - Description

A. Procedure No.	Revision	Title
N2-OSP-RCS_@001	08	RCS PRESSURE/TEMPERATURE VERIFICATION

B. Change Summary and Reason: ☐ Continued on Attached

Modified Heatup/Cooldown data sheet to include a columns target temperatures and pressures and an SRO/STA verification.

C. Reason: ☐ Result of mod, DDC or other document ______ ☐ Related CR No:______ ☒ Other

Explanation:

Provides additional barriers against exceeding 100 degree per hour limit.

D. Duration: ☒ Permanent ☐ One-Time-Only

E. PM/ST Changes? ☐ Yes, change submitted ☒ No

F. CDS Changes? ☐ Yes, NIP-PRO-03 Att 4 Submitted ☒ No

G. Pages Affected: 3, 6, 7, 22

H. Preparer:

Print Name: Ben Kaye Phone: 4496

Sign Name: [signature] Date: 11/14/08

Part 2 - Review/Approval

Refer to PCE Criteria on Attachment 3 (Back of this form).

	(Print Name, Initial and Date)
A. Technical Verifier Can NOT perform QR	John Tothaker / [initials] / 11/14/8
B. Cross-Discipline Review ☒ N/R Use criteria on back of form	/ /
C. QR Review ☐ N/R Can NOT perform Tech Verification Completed per NIP-PRO-03/ CNG-OP-1.01-1004	Steve Nicolaos / [initials] / 11-14-08

D. 10 CFR 50.59 Reviews: ☐ N/R Based on Attachment 3, Criteria Number ______, or check one of the following:

☑ Applicability Determination – Attached

☐ 50.59 Screen – Attached ☐ 50.59 Evaluation Number ______

	(Print Name, Initial and Date)
E. Technical Review Committee Chairperson (for Special Test Procedures only) Approval ☑ N/R	/ /
F. RPO Review and Approval** IF qualified may perform Tech Verif OR QR.	T. Tanguay / [initials] / 11/14/8 Is Training or other actions required? ☒ No ☐ Yes*
G. Manager, Director or General Supervisor Approval Return to RPO for incorporation. IF qualified may perform Tech Verif or QR	H. Strahley / [initials] / 11/14/08

* RPO, If training or other actions are required per Section 3.6, complete Attachment 5.

** Note: Prior to approving PCE form the RPO shall verify required cross disciplinary reviews have been completed per Section 3.5.1 2B of this procedure.

LIST OF EFFECTIVE PAGES

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
Coversheet .		19			
i		20			
ii		21			
1		22			
2		23			
3		24			
4		25			
5		26			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

TABLE OF CONTENTS

SECTION		PAGE
1.0	PURPOSE	1
2.0	TECHNICAL SPECIFICATIONS	1
3.0	REFERENCES AND COMMITMENTS	2
4.0	GENERAL TEST METHODS	2
5.0	TEST EQUIPMENT	3
6.0	PRECAUTIONS AND LIMITATIONS	4
7.0	PREREQUISITES	5
8.0	PROCEDURE	6
	8.1 Rx Startup/Shutdown (Heatup/Cooldown)	6
	8.2 Non-Nuclear Heatup	7
	8.3 Hydrostatic Test or System Leakage Test	7
9.0	RETURN TO NORMAL	8
10.0	ACCEPTANCE CRITERIA	9
ATTACHMENT 1:	TEST PERSONNEL SIGNATURE AND INITIAL LOG	11
ATTACHMENT 2:	HYDROSTATIC AND SYSTEM LEAKAGE TEST CURVE	12
ATTACHMENT 3:	NON-NUCLEAR HEATUP	14
ATTACHMENT 4:	NON-NUCLEAR COOLDOWN	16
ATTACHMENT 5:	CORE CRITICAL CURVE - HEATUP	18
ATTACHMENT 6:	CORE CRITICAL CURVE - COOLDOWN	20
ATTACHMENT 7:	HEATUP/COOLDOWN DATA SHEET	22
ATTACHMENT 8:	SATURATED STEAM TABLES	23
ATTACHMENT 9:	REACTOR COOLANT TEMPERATURE (DOWNCOMER WATER TEMP) ALTERNATE METHOD A	25
ATTACHMENT 10:	REACTOR COOLANT TEMPERATURE (DOWNCOMER WATER TEMP) ALTERNATE METHOD B	26

1.0 <u>PURPOSE</u>

1.1 Provide instructions for monitoring reactor coolant pressure and temperature during heatup and cooldown to ensure Technical Specification heatup and cooldown limits are met.

1.2 Provide instructions for monitoring reactor vessel pressure and metal temperature during heatup and cooldown to ensure critical operation pressure limits and vessel thermal limits meet Technical Specifications.

1.3 <u>Applicability</u>

This procedure is required to be current at all times during the operations listed below.

2.0 <u>TECHNICAL SPECIFICATIONS</u>

2.1 <u>Surveillance Requirements</u>

2.1.1 SR 3.4.11.1, RCS Pressure and Temperature (P/T) Limits

2.1.2 SR 3.4.11.2, RCS Pressure and Temperature (P/T) Limits

2.2 <u>Limiting Condition for Operations</u>

2.2.1 ITS 3.4.11, RCS Pressure and Temperature (P/T) Limits

2.3 <u>Frequency</u>

This procedure shall be performed during the following operations:

- Heatup
- Cooldown
- Hydrostatic Test above the normal heatup/cooldown limits
- System Leakage Test above the normal heatup/cooldown limits

3.0 REFERENCES AND COMMITMENTS

3.1 Licensee Documentation

3.1.1 USAR Volume 13, Section 5.3.2

3.2 Commitments

3.2.1 INPO SER 5-93 "Reactor Press-Temperature Limits Exceeded"

3.3 Other

3.3.1 MPM Research Consulting, Leak/Hydro Test Curve for Nine Mile Point Unit 2, Docno MPM-298406

3.3.2 Tech Spec Amendment Number 110 Pressure/Temperature Limit Curves (TAC NO. MC0331)

4.0 GENERAL TEST METHODS

4.1 Perform only the section applicable to the evolution being performed:

4.1.1 Rx Startup/Shutdown (Heatup/Cooldown) Section 8.1

4.1.2 Non-nuclear heatup Section 8.2

4.1.3 Hydrostatic Test or System Leakage Test Section 8.3

4.2 Read reactor vessel pressure using only one of the following instruments:

- Pressure Recorder C33-R609, REACTOR PRESSURE, on P603
- Pressure Indicator C33-R605, RX PRESS WIDE RANGE, on P603
- Pressure Recorder B22-R623A(B), (2ISC*PR1623A(B)), on 2CEC*PNL601
- Computer Point FWSPA101

4.3 To obtain reactor coolant temperature (Downcomer Water Temp) read operating recirc loop temperature using the following data points on Temperature Recorder B35-R650 at P602. If both loops are operating, use only one instrument. Recirc suction temp is the preferred monitoring point for determining Downcomer Water Temperature.

- Loop A: Channel 1, RCS LOOP A SUCTION
- Loop B: Channel 6, RCS LOOP B SUCTION

4.3.1 Alternate Method A - see Attachment 9

4.3.2 Alternate Method B - see Attachment 10

4.4 IF Residual Heat Removal is operating, and there is no Rx Recirc pump running, read operating RHR loop temperature using the following data points on Temperature Recorder E12-R601 at P601.

- Loop A: Point 1, RHR INLET TO HX A
- Loop B: Point 2, RHR INLET TO HX B

4.5 If there are no Rx Recirc or Shutdown Cooling Pumps in operation and reactor coolant temperature is greater than or equal to 212°F, record temperature by converting the reactor vessel pressure reading to temperature using Attachment 8 - Saturated Steam Table.

4.6 Downcomer Water Temperature as used on Attachments 2 thru 6 shall be in the following order of preference:

a. Rx Recirc Suction temperature

b. RHS SDC Inlet temperature

c. Rx Pressure Saturation temperature

4.7 Calculate heatup AND cooldown rates by multipling the change in temperature from the last data entry by 4. 8/4/11 K

4.8 Use of Not Applicable (N/A) OR Not Required (N/R) for Procedure Steps

4.9 N/A OR N/R may be used where the procedure specifically allows it; or,

4.10 N/A OR N/R may be used to eliminate steps not applicable to the evolution specified in Section 7.0. Document the reason for using N/A or N/R in Remarks.

5.0 TEST EQUIPMENT

None

6.0 PRECAUTIONS AND LIMITATIONS

6.1 Heatup and cooldown rates shall be maintained within the following limits:

- Maximum heatup of 100°F in any one hour
- Maximum cooldown of 100°F in any one hour
- RCS temperature change during system leakage and hydrostatic testing is ≤ 20°F in any 1 hour period when the RCS pressure and RCS temperature are not within the limits (to the right of the curve) of Attachment 3 or Attachment 4 (non-nuclear H/U or C/D), as applicable. Heatup and Cooldown limits specified above apply when within the limits of Attachment 3 or Attachment 4, as applicable.

6.2 Reactor coolant pressure and temperature shall be maintained to the right of the pressure/temperature curve for the associated evolution shown on Attachments 2, 3, 4, 5, and 6. A tabular representation of the associated pressure/temperature curves is provided with each curve and may be used to determine the curve location.

6.3 The Station Shift Supervisor (SSS) shall be notified immediately when a step cannot be completed as stated OR if acceptance criteria are not met.

6.4 All personnel involved in test shall fill out Attachment 1, Test Personnel Signature and Initial Log. This will document responsible personnel have read AND thoroughly understand its contents prior to taking data OR performing calculations.

6.5 The reactor coolant temperature and pressure shall be determined to be within applicable criticality region of Attachments 5 and 6 within 15 minutes before withdrawal of control rods to bring the reactor to criticality and at least once per 30 minutes during system heatup. Provided the water level is in the normal range for power operation (178.3" - 187.3" NR indication) the core may be critical when left of the criticality limit line (within the cross-hatched region in Attachments 5 and 6), as long as pressure is maintained below 312 psig.

6.6 Only those parameters described in Steps 4.3 - 4.5 shall be used to measure Rx Coolant temperature (Downcomer water temp.).

6.7 Without forced circulation (RCS Pumps or RHS SDC) in addition to monitoring dome press/temp for CDR and P-T limits, monitor bottom head drain temperature.

6.8 Data taking and verification should occur more often than the Technical Specification required frequencies. For example, take data and verify the acceptance criteria met every 15 minutes instead of 30 minutes. This will allow for reaction time to a missed reading, a questionable reading, or a reading that is trending poorly.

Initials

7.0 PREREQUISITES

7.1 Specify the reason for test performance:

Reactor heatup TRH

7.2 Verify permanent plant instrumentation is calibrated using PMST Database. Mark unused instruments N/A.

Parameter	Instrument ID Number	Cal. Due Date
REACTOR PRESSURE	C33-R609 (2ISC*PT109)	12/21/11
REACTOR PRESSURE WIDE RANGE	C33-R605 (2ISC*PT108)	12/21/11
REACTOR PRESSURE	B22-R623A (2ISC*PT6A)	12/5/11
REACTOR PRESSURE	B22-R623B (2ISC*PT6B)	12/5/11
RCS LOOP A SUCTION	B35-R650 (Channel 1) (2RCS-TE13A)	1/15/12
RCS LOOP B SUCTION	B35-R650 (Channel 6) (2RCS-TE13B)	1/15/12
RHR INLET TO HX A	E12-R601 (Point 1) (2RHS*TE10A)	1/7/12
RHR INLET TO HX B	E12-R601 (Point 2) (2RHS*TE10B)	1/7/12

TRH

7.3 Obtain Station Shift Supervisor (SSS) permission to perform this test and log

JM /
SSS

PLANT IMPACT: NONE

7.4 Notify Chief Shift Operator (CSO) of start of test.

EB /
CSO

7.5 Record test start date and time.

Today
Date

0700
Time

8.0 PROCEDURE

8.1 Rx Startup/Shutdown (Heatup/Cooldown)

NOTE: Refer to Section 4 for data requirements.

8.1.1 Record the required data on Attachment 7, Heatup/Cooldown Data Sheet.

8.1.2 Record data at the following times:

a. Within 15 minutes prior to withdrawal of control rods to bring the reactor critical.

b. At the beginning of heatup OR cooldown.

c. Every 15 minutes during heatup OR cooldown.

8.1.3 WHEN data is recorded, calculate heatup OR cooldown rate AND record.

8.1.4 IF the calculated heatup or cooldown rate for the time interval exceeds 100°F/HR, THEN action must be taken to ensure that the limit of ≤ 100°F in any 1-hour period is not exceeded.

8.1.5 Ensure the following acceptance criteria are met:

NOTE: Refer to Precautions and Limitations Step 6.5 for operation in the cross-hatched region of Attachments 5 and 6.

a. Downcomer Water Temperatures are to the right of the criticality limit line on Attachments 5, or 6 as applicable.

b. Heatup rate is less than or equal to 100°F in any 1-hour period.

8.1.6 Initial and date Attachment 7 to indicate acceptance criteria is met.

8.2 Non-Nuclear Heatup

NOTE: Refer to Section 4 for data requirements.

8.2.1 Record the required data on Attachment 7, Heatup/Cooldown Data Sheet.

8.2.2 Record data at the following times:

a. At least once every 30 minutes

b. At the beginning of heatup OR cooldown.

c. Every 15 minutes during heatup OR cooldown.

8.2.3 WHEN data is recorded, calculate heatup OR cooldown rate AND record.

8.2.4 IF the calculated heatup OR cooldown rate for the time interval exceeds 100°F/HR, THEN action must be taken to ensure that the limit of ≤ 100°F in any 1-hour period is NOT exceeded.

8.2.5 Ensure the following acceptance criteria are met:

a. Downcomer Water Temperatures are to the right of the minimum temperature line on Attachment 3, Non-nuclear Heatup.

b. Heatup OR cooldown rate is less than or equal to 100°F in any 1-hour period. (N/A for heatup when performing Hydrostatic or System Leakage Test.)

8.2.6 Initial and date Attachment 7 to indicate acceptance criteria is met.

8.3 Hydrostatic Test or System Leakage Test

NOTE: Refer to Section 4 for data requirements.

8.3.1 Record the required data on Attachment 7, Heatup/Cooldown Data Sheet.

8.3.2 Record data at the following times:

a. At the beginning of heatup OR cooldown.

b. Every 15 minutes during heatup OR cooldown.

c. Every 15 minutes during inservice leak and hydrostatic testing operations.

8.3.3 WHEN data is recorded, calculate heatup OR cooldown rate AND record.

8.3.4 IF the calculated heatup rate for the time interval exceeds 20°F/HR, THEN action must be taken to ensure that the limit of 20°F in any 1-hour period is NOT exceeded. RCS temperature change during system leakage and hydrostatic testing is ≤ 20°F in any 1 hour period when the RCS pressure and RCS temperature are not within the limits (to the right of the curve) of Attachment 3 or Attachment 4, as applicable.

8.3.5 Heatup Rate is ≤ 100 °F/Hr. when RCS pressure AND RCS temperature are within the limits (to the right of the curve) of Attachment 3.

8.3.6 Cooldown Rate is ≤ 100 °F/Hr. when RCS pressure AND RCS temperature are within the limits (to the right of the curve) of Attachment 4.

8.3.7 Ensure the following acceptance criteria are met:

a. Downcomer Water Temperatures are to the right of the minimum temperature line on Attachment 2, Hydrostatic And System Leakage Test Curve.

b. RCS temperature change during system leakage and hydrostatic testing is ≤ 20°F in any 1 hour period when the RCS pressure and RCS temperature are NOT within the limits (to the right of the curve) of Attachment 3 or Attachment 4, as applicable. When RCS pressure and RCS temperature are within the limits (to the right of the curve) of Attachment 3 or Attachment 4, normal Heatup and Cooldown limits of 100°F apply as appropriate.

c. After the test is completed, reduce pressure to within the limits of Attachment 3, OR Attachment 4, for heatup or cooldown, as applicable.

8.3.8 Initial and date Attachment 7 to indicate acceptance criteria is met.

9.0 <u>RETURN TO NORMAL</u>

		Initials
9.1	Ensure all test personnel have signed Attachment 1, Test Personnel Signature and Initial Log.	______
9.2	Notify CSO of test completion.	______ / ______ CSO
9.3	Record test stop date and time.	

______________ ______________
Date Time

10.0 ACCEPTANCE CRITERIA

10.1 If any acceptance criteria is exceeded, enter Action Statement required by Technical Specifications.

10.2 For Section 8.1 and 8.2, heatup/cooldown rates are less than or equal to 100°F in any 1-hour period for each data entry. Mark N/A if performing Section 8.3.

SATISFACTORY (__) UNSATISFACTORY (__) N/A (__)

10.3 For Section 8.3;

- RCS temperature change during system leakage and hydrostatic testing is less than or equal to the applicable limit based on operational conditions during testing.
  Mark N/A if performing Section 8.1 OR 8.2.

  SATISFACTORY (__) UNSATISFACTORY (__) N/A (__)

10.4 Downcomer Water Temperatures are to the right of the minimum temperature line for the associated pressure/temperature curve for each data entry.

SATISFACTORY (__) UNSATISFACTORY (__) N/A (__)

10.5 SSS Review

(__) All test documentation completed

(__) Satisfactory

(__) Unsatisfactory (Immediately notify Operations Manager or alternate. Record explanation in Remarks.

Person Notified: ________________________

10.5 (Cont)

Remarks: ______________________________

SSS Signature

Date

10.6 Second SRO Review

Second SRO Signature

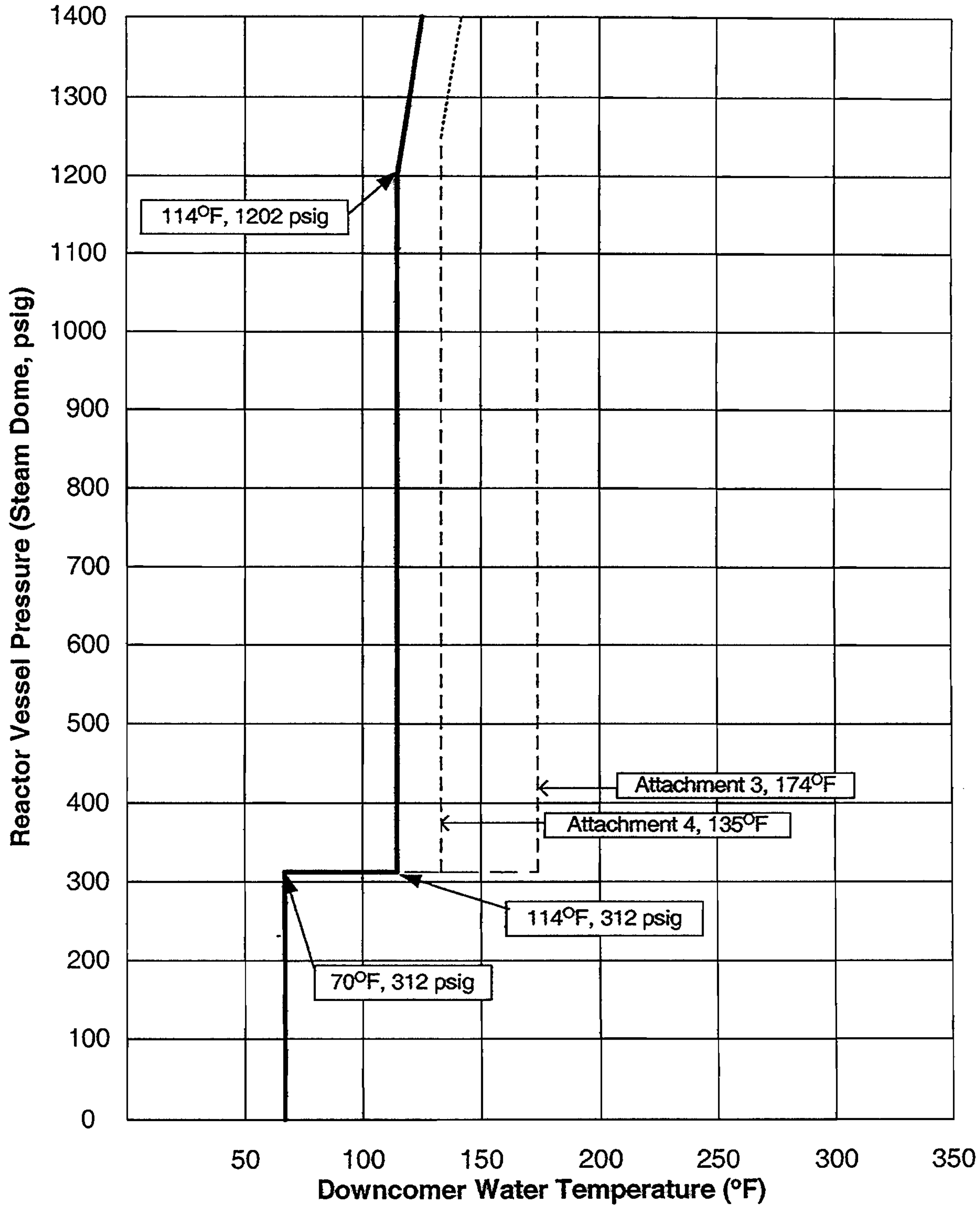
Date

ATTACHMENT 1: TEST PERSONNEL SIGNATURE AND INITIAL LOG

Page 1 of 1

PRINTED NAME	SIGNATURE	INITIALS
Tom Hooper	[illegible signature]	TRH
John Meier	[illegible signature]	JM
Ed Bowles	Ed Bowles	EB
David Huff	David Huff	DH

ATTACHMENT 2: HYDROSTATIC AND SYSTEM LEAKAGE TEST CURVE

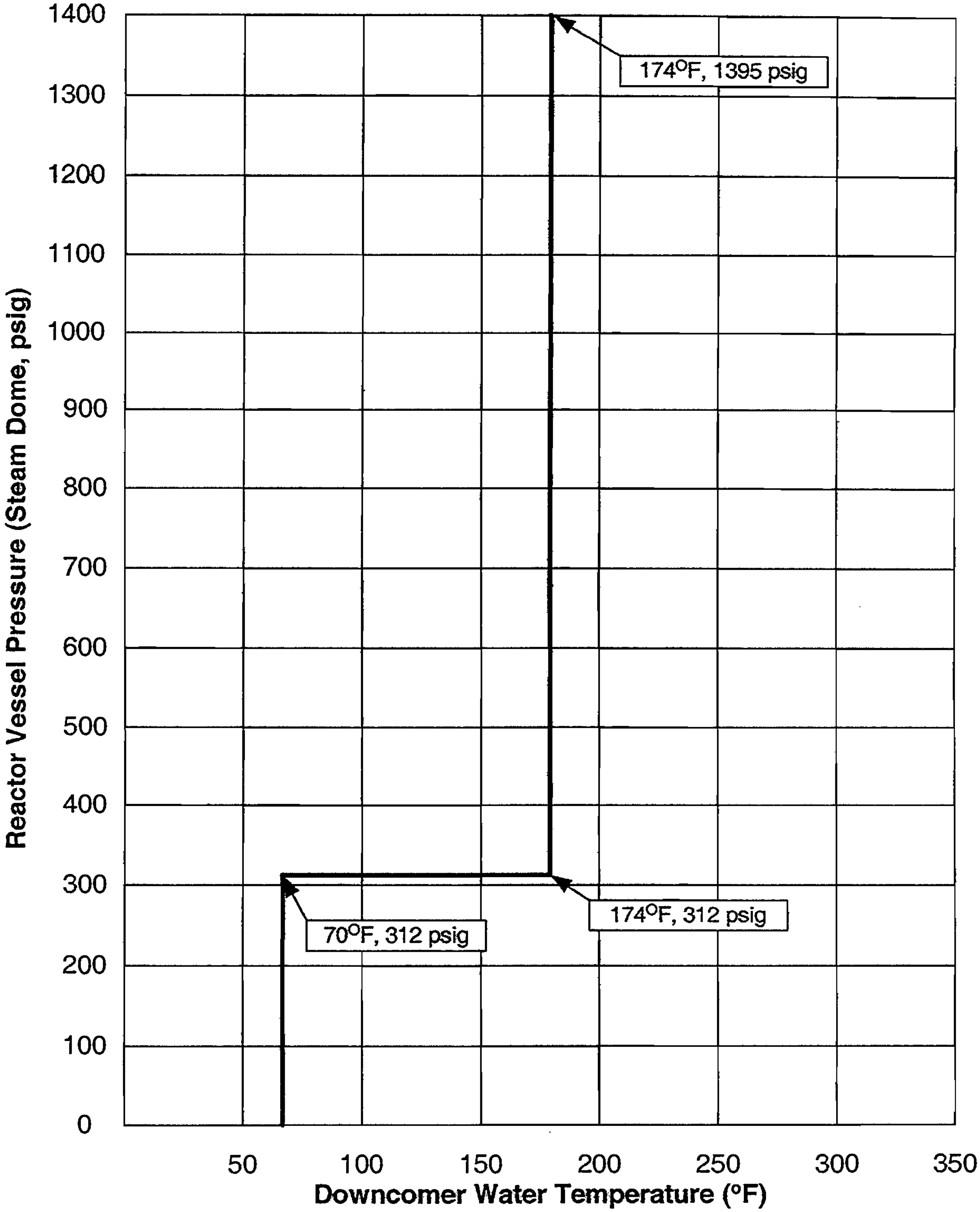


ATTACHMENT 2 (Cont)

NON-CRITICAL HYDROTEST TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)
< 70	And	70	0
> 70		< 114	312
114		> 350	1202
115			1217
116			1235
117			1253
118			1271
119			1290
120			1308
121			1326
122			1344
123			1362
124			1381
125			1400

ATTACHMENT 3: NON-NUCLEAR HEATUP

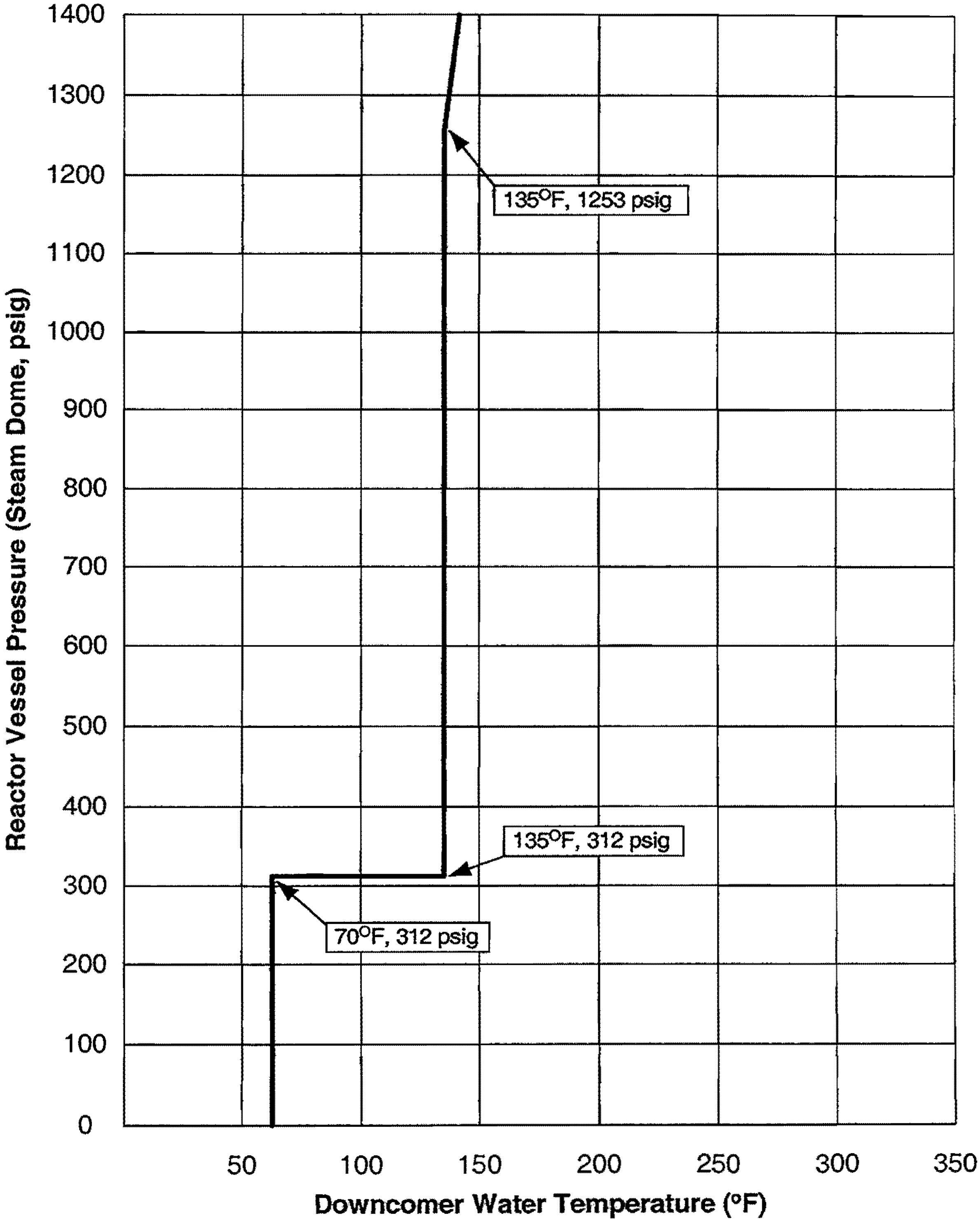


ATTACHMENT 3 (Cont)

NON-CRITICAL HEATUP TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)
< 70°F	And	70°F	0
> 70°F	And	< 175°F	312
175°F	And	> 350°F	1395

ATTACHMENT 4: NON-NUCLEAR COOLDOWN

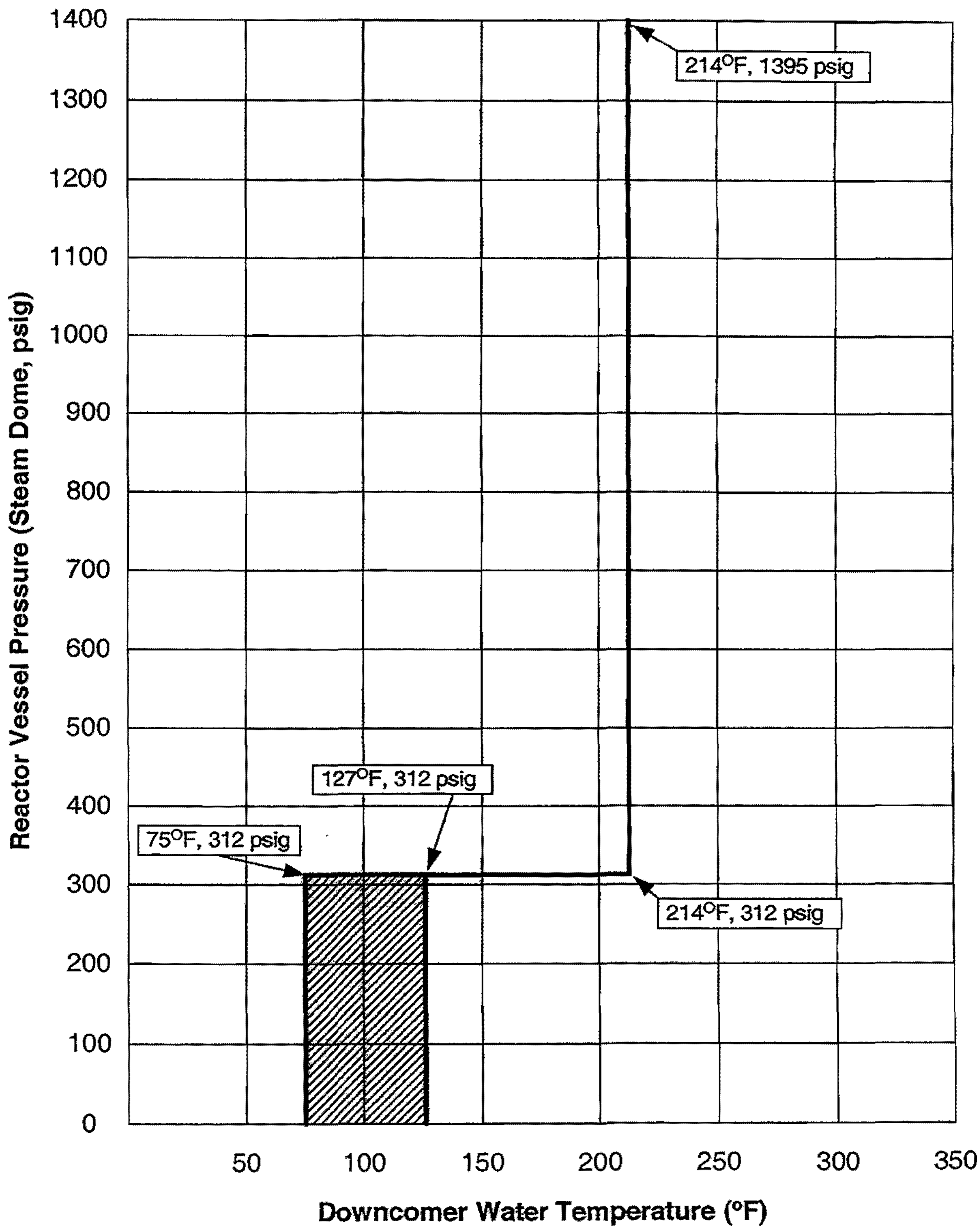


ATTACHMENT 4 (Cont)

NON-CRITICAL COOLDOWN TABLE

<table>
<tr><th colspan="3">Downcomer Temperature (°F) between:</th><th>Maximum Steam Dome Pressure (psig)</th></tr>
<tr><td>< 70°F</td><td rowspan="10">And</td><td>70°F</td><td>0</td></tr>
<tr><td>> 70°F</td><td>< 135°F</td><td>312</td></tr>
<tr><td>135°F</td><td rowspan="8">> 350°F</td><td>1253</td></tr>
<tr><td>136°F</td><td>1273</td></tr>
<tr><td>137°F</td><td>1294</td></tr>
<tr><td>138°F</td><td>1315</td></tr>
<tr><td>139°F</td><td>1335</td></tr>
<tr><td>140°F</td><td>1356</td></tr>
<tr><td>141°F</td><td>1376</td></tr>
<tr><td>142°F</td><td>1397</td></tr>
</table>

ATTACHMENT 5: CORE CRITICAL CURVE - HEATUP

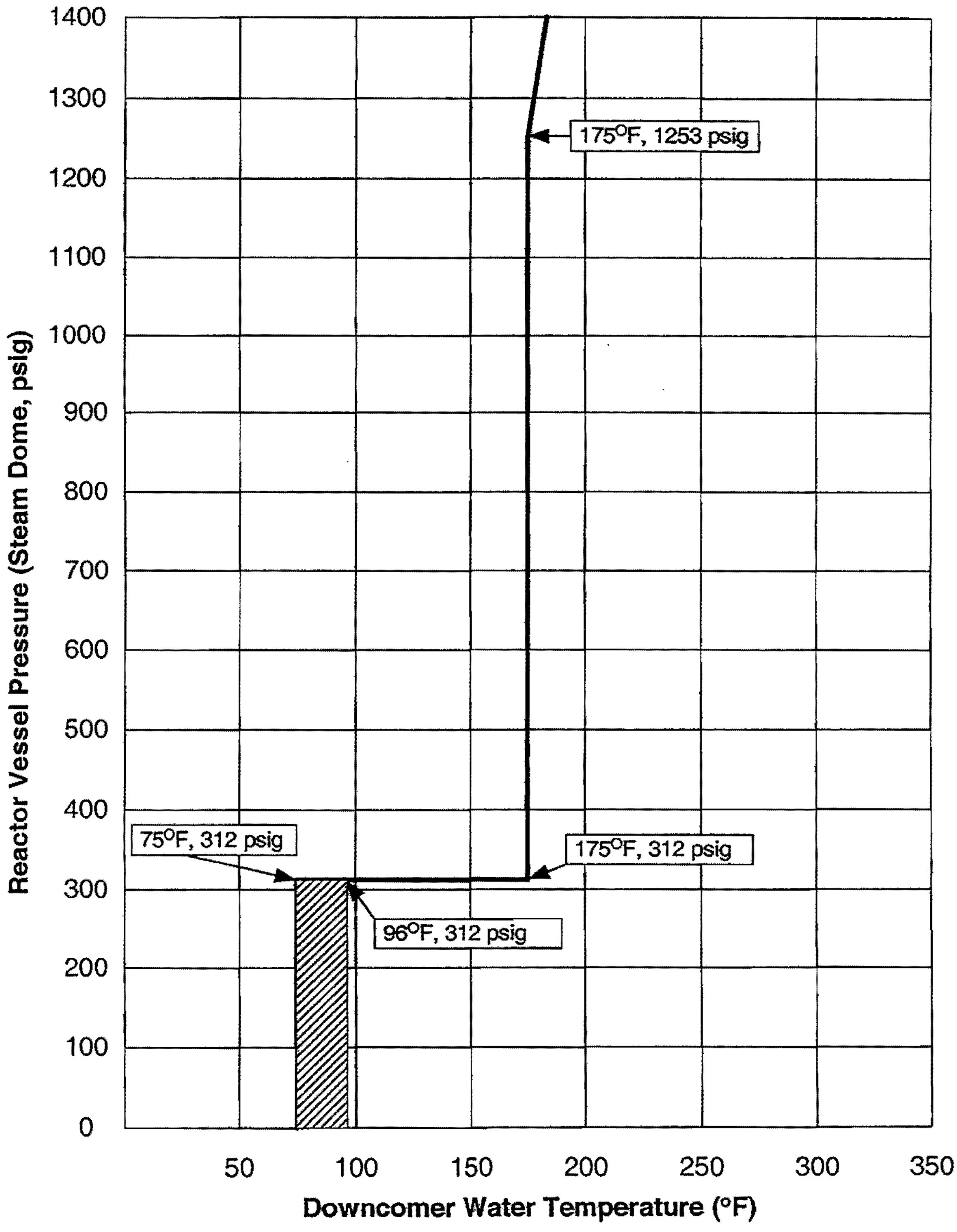


ATTACHMENT 5 (Cont)

CRITICAL HEATUP TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)
< 75°F	And	75°F	0
> 75°F		< 214°F	312
214°F		>350°F	1395

ATTACHMENT 6: CORE CRITICAL CURVE - COOLDOWN



ATTACHMENT 6 (Cont)

CRITICAL COOLDOWN TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)
< 75°F	And	75°F	0
> 75°F		< 175°F	312
175°F		> 350°F	1253
176°F			1273
177°F			1294
178°F			1315
179°F			1335
180°F			1356
181°F			1376
182°F			1397

ATTACHMENT 7: HEATUP/COOLDOWN DATA SHEET

Section Performed (circle one) 8.1 8.2 8.3

Time (15 Min Intervals)	RPV Press	* Reactor Coolant Temperature				# H/U or C/D Rate	H/U – C/D rate & P - T Acceptable per Step: 8.1.5, 8.2.5 or 8.3.6		Initial	*** Target Pressure	*** Target Temperature	Independant verification (SRO/STA)
		Recirc Loop Temp		RHR Loop Temp								
		Loop A	Loop B	Loop A	Loop B		Sat	Unsat				
1000	23	266				N/A	✓		TRH			
1015	30	274				32	✓		TRH	43	291	DH
1030	33	279				20	✓		TRH	51	299	DH
1045	37	284				20	✓		TRH	56	304	DH
1100	41	287				12	✓		TRH	61	309	DH
1115	51	299				48	✓		TRH	65	312	DH
1130	61	309				40	✓		TRH	80	324	DH
1145	87	329				80	✓		TRH	94	334	DH
1200	133	357				112	✓		TRH	127	354	DH
1215	190	384				108	✓		TRH	185	382	DH

* Temperature corresponding to Downcomer temperature in accordance with Step 4.6.

\# H/U or C/D = (Current Temperature – Previous Temperature) X 4 = __ °F/ Hr.

** If Heat up of cool down rate exceeds 100°F/ Hr. then notify the CRS/SM immediately.

*** Target Temperature and pressure is calculated for the next reading to ensure the rolling one hour average heatup/Cooldown rate does not exceed 100°F/ Hr. An SRO/STA must independently verify the calculated Target Temperature and Pressure. This is not required when maintaining temperature/pressure stable.

ATTACHMENT 8: SATURATED STEAM TABLES

PRESS PSIA	TEMP °F	PRESS PSIA	TEMP °F	PRESS PSIA	TEMP °F
14.7	212	84	315	154	361
16.0	216	86	317	156	362
18.0	222	88	319	158	363
20.0	228	90	320	160	364
22	233	92	322	162	365
24	238	94	323	164	366
26	242	96	325	166	367
28	246	98	326	168	367
30	250	100	328	170	368
32	254	102	329	172	369
34	258	104	331	174	370
36	261	106	332	176	371
38	264	108	333	178	372
40	267	110	335	180	373
42	270	112	336	182	374
44	273	114	337	184	375
46	276	116	339	186	376
48	278	118	340	188	377
50	281	120	341	190	378
52	284	122	343	192	378
54	286	124	344	194	379
56	288	126	345	196	380
58	291	128	346	198	381
60	293	130	347	200	382
62	295	132	349	205	384
64	297	134	350	210	386
66	299	136	351	215	388
68	301	138	352	220	390
70	303	140	353	225	392
72	305	142	354	230	394
74	307	144	355	235	396
76	309	146	356	240	397
78	310	148	357	245	399
80	312	150	358	250	401
82	314	152	359	255	403

PRESS PSIA	TEMP °F	PRESS PSIA	TEMP °F	PRESS PSIA	TEMP °F
260	404	520	471	870	528
265	406	530	473	880	529
270	408	540	475	890	531
275	409	550	477	900	532
280	411	560	479	910	533
285	413	570	481	920	535
290	414	580	483	930	536
295	416	590	484	940	537
300	417	600	486	950	538
305	419	610	488	960	540
310	420	620	490	970	541
315	422	630	491	980	542
320	423	640	493	990	543
325	425	650	495	1000	545
330	426	660	497	1010	546
335	428	670	498	1020	547
340	429	680	500	1030	548
345	430	690	501	1040	549
350	432	700	503	1050	551
360	434	710	505	1060	552
370	437	720	506	1070	553
380	440	730	508	1080	554
390	442	740	509	1090	555
400	445	750	511	1100	556
410	447	760	512	1110	557
420	449	770	514	1120	559
430	452	780	515	1130	560
440	454	790	517	1140	561
450	456	800	518	1150	562
460	459	810	520	1160	563
470	461	820	521	1170	564
480	463	830	522	1180	565
490	465	840	524	1190	566
500	467	850	525	1200	567
510	469	860	527		

ATTACHMENT 9: REACTOR COOLANT TEMPERATURE (DOWNCOMER WATER TEMP) ALTERNATE METHOD A

Initials/Date

1.0 THE FOLLOWING STEPS WILL MEASURE RCS SUCTION FROM 2RCS-TE13A/B

2.0 If recorder B35-R650 is not operating or greater accuracy is desired, request I&C connect a thermocouple reader(s).

N/A .... (__) _____/_____

3.0 For RCS Loop A Suction Temp - Connect Thermocouple Test Box to B35-R650 at P602:

TS21 Term 1 (Blue) .... (__)
TS21 Term 2 (Red) .... (__) _____/_____

_____/_____
Ind. Verif.

4.0 For RCS Loop B Suction Temp - Connect Thermocouple Test Box to B35-R650 at P602:

TS21 Term 13 (Blue) .... (__)
TS21 Term 14 (Red) .... (__) _____/_____

_____/_____
Ind. Verif.

5.0 When monitoring is complete, request I&C remove thermocouple test box(s) from B35-R650 at P602:

TS21 Term 1 (Blue) .... (__)
TS21 Term 2 (Red) .... (__)
TS21 Term 13 (Blue) .... (__)
TS21 Term 14 (Red) .... (__) _____/_____

_____/_____
Ind. Verif.

ATTACHMENT 10: <u>REACTOR COOLANT TEMPERATURE (DOWNCOMER WATER TEMP)</u>
<u>ALTERNATE METHOD B</u>

Initials/Date

1.0 THE FOLLOWING STEPS WILL MEASURE RCS SUCTION FROM 2RCS-TE12A/B

2.0 If recorder B35-R650 is not operating or greater accuracy is desired request I&C connect a thermocouple reader(s).

N/A .... (__) ______/______

3.0 For RCS Loop A Suction Temp - Connect Thermocouple Test Box to Terminal CLE at P612:

TS CLE, CJC (Blue) .... (__)
TS CLE, CJC (Red) .... (__) ______/______

______/______
Ind. Verif.

4.0 For RCS Loop B Suction Temp - Connect Thermocouple Test Box to Terminal CLF at P612:

TS CLF, CJC (Blue) .... (__)
TS CLF, CJC (Red) .... (__) ______/______

______/______
Ind. Verif.

5.0 When monitoring is complete, request I&C remove thermocouple test box(s) from CLE/CLF at P612:

TS CLE, CJC (Blue) .... (__)
TS CLE, CJC (Red) .... (__)
TS CLF, CJC (Blue) .... (__)
TS CLF, CJC (Red) .... (__) ______/______

______/______
Ind. Verif.

NRC ADMIN RO JPM EC
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Determine adequacy of Clearance for SLC | Revision: NRC 2012

Approvals:

___________________ / 9/15/4
Facility Representative Date

NA Exam Security / ________
General Supervisor Operations (Designee) Date

NA Exam Security / ________
Configuration Control Date

Performer:____________________(RO)

Trainer/Evaluator:______________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 15 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:_________ Completion Time:_________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:______________________________ Date:_____________

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

Classroom

Simulator Set-up: (if required):

None

Directions to the Instructor/Evaluator:

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

Directions to Operators:

Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. N2-OP-36A
2. CNG-OP-1.01-1007, Clearance and Safety Tagging
3. S-ODP-OPS-0201, Tagout Generation
4. P&ID-36A
5. Tech Spec 3.1.7
6. NUREG 1123, Rev. 2 K/A G 2.2.14 (3.9) Knowledge of the process for controlling equipment configuration or status.

Tools and Equipment:

1. None

Task Standard: Identifies isolation boundary discrepancies and that both trains of SLC are inoperable under the proposed isolation boundary.

Initial Conditions:

1. The plant is in MODE 1.
2. A hydraulic and rotational clearance is being applied to SLS*P1B for corrective maintenance on the pump.
3. eSOMs is unavailable.
4. The clearance is being processed manually in accordance with CNG-OP-1.01-1007, Clearance and Safety Tagging.
5. Ask Operator if they have any questions.

Initiating cue:

"(Operator's name), review for adequacy the proposed hydraulic and rotational isolations of Standby Liquid Control Pump 1B. Document the results of your review on the turnover sheet."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat

RECORD START TIME ____

Performance Steps	Standard	Grade
1. Consults reference documents to determine effect of the given component lineup	May refer to any of the following documents to review Attachment 1, Tag List N2-OP-36A P & ID 36 CNG-OP-1.01-1007 S-ODP-OPS-0201	Sat/Unsat
2. Identifies motor breaker tagging discrepancy	Determines that the proposed clearance erroneously opens the breaker to 2SLS*P1**A** instead of 2SLS*P1**B**	**Pass/Fail**
3. Identifies suction isolation valve tagging discrepancy	Determines that the proposed clearance erroneously tags 2SLS*V9, 2SLS*P1B SUCTION ISOL, in the OPEN position	**Pass/Fail**
4. Identifies discharge test connection valve tagging discrepancy	Determines that the proposed clearance erroneously tags 2SLS*V169, 2SLS*P1B DISH CHECK VLV TEST CONN, in the CLOSED position	**Pass/Fail**

TERMINATING CUE: Identifies tagging discrepancies.

RECORD STOP TIME_____

Turnover Sheet

Initial Conditions:

1. The plant is in MODE 1.
2. A clearance is being applied to SLS*P1B for corrective maintenance on the pump.
3. eSOMs is unavailable.
4. The clearance is being processed manually in accordance with CNG-OP-1.01-1007, Clearance and Safety Tagging.

Initiating cue:

"(Operator's name), review for adequacy the proposed hydraulic and rotational isolations of Standby Liquid Control Pump 1B. Document the results of your review on the turnover sheet."

Results of Review:

Attachment 8, Tag List

CLEARANCE		CLEARANCE NO. 34576										Page 1 of 3
Component to be Worked: "B" Liquid Poison Injection Pump, SLS*P1B												
Location ID **Location Description** **Physical Location**	Tag Serial No.	Tag Type	Place. Seq.	Place. Config	Place. First Verifier	Place. Second Verifier	Rest. Seq.	Rest. Config	Rest. First Verifier	Rest. Second Verifier	Tag Notes	
2SLS*P1B PMP 1B KEYLOCK SWITCH 2CEC*PNL601	001	Danger	1	AUTO / STOP								
2EHS*MCC102-16D STANDBY LIQUID CONT PUMP A RB Elev 240 North Aux Bay	002	Danger	2	OFF								
2SLS*V15 2SLS*P1B DISCHARGE VALVE EL 292 BY 2SLS*P1B	003	Danger	3	CLOSED								
2SLS*V51 2SLS*P1B DISCHARGE HDR ISOL DOWNSTREAM OF 2SLS*VEX3B	004	Danger	4	CLOSED								

Page 2 of 3

Attachment 8, Tag List

CLEARANCE		CLEARANCE NO. 34576									
Component to be Worked: "B" Liquid Poison Injection Pump, SLS*P1B								Page 2 of 3			
Location ID **Location Description** **Physical Location**	Tag Serial No.	Tag Type	Place. Seq.	Place. Config	Place. First Verifier	Place. Second Verifier	Rest. Seq.	Rest. Config	Rest. First Verifier	Rest. Second Verifier	Tag Notes
2SLS*V53 2SLS*P1B DISCHARGE HDR CROSS TIE ISOL EL 294 NORTH OF 2SLS*P1B	005	Danger	5	CLOSED							
2SLS*V9 2SLS*P1B SUCTION ISOL EL 292 NW OF SLS STORAGE TANK	006	Danger	6	OPEN							
2SLS*V24 2SLS*P1B DISCHARGE HDR DRAIN VLV BY 2SLS*P1B	007	Danger	7	CLOSED							

Attachment 8, Tag List

CLEARANCE		CLEARANCE NO. 34576									
Component to be Worked: "B" Liquid Poison Injection Pump, SLS*P1B									Page 3 of 3		
Location ID **Location Description** **Physical Location**	Tag Serial No.	Tag Type	Place. Seq.	Place. Config	Place. First Verifier	Place. Second Verifier	Rest. Seq.	Rest. Config	Rest. First Verifier	Rest. Second Verifier	Tag Notes
2SLS*V168 2SLS*P1B DISH CHECK VLV TEST CONN EL 291 BY 2SLS*P1B	008	Danger	8	OPEN AND UNPLUGGED							
2SLS*V169 2SLS*P1B DISH CHECK VLV TEST CONN EL 291 BY 2SLS*P1B	009	Danger	9	CLOSED							
2SLS*V47 2SLS*P1B SUCTION PRESS TEST CONN EL 291 BY 2SLS*P1B	010	Danger	10	OPEN AND UNPLUGGED							

NRC ADMIN RO JPM EP
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Perform RO Actions for an Injured and Contaminated Person Revision: NRC 2012

Approvals:

13/14/12		NA Exam Security /	
Facility Representative	Date	General Supervisor Operations (Designee)	Date
NA Exam Security /			
Configuration Control	Date		

Performer:________________________________(RO)

Trainer/Evaluator:____________________________

Evaluation Method: Perform

Evaluation Location: Simulator

Expected Completion Time: 15 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:_________ Completion Time:_________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluators Signature:______________________________ Date:_____________

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

Simulator

Simulator Set-up (if required):

None

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

Directions to Operators:
Read Before Every JPM Performance:

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

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

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

References:

1. EPIP-EPP-04 and Attachment 1
2. NUREG 1123 K/A 2.4.12 (4.0) Knowledge of general operating crew responsibilities during emergency operations

Tools and Equipment:

1. None

Task Standard:

Complete Attachment 1 of EPIP-EPP-04 when notified of an injured and contaminated person in the plant.

Initial Conditions:

1. The plant is operating at 100% power.
2. You have just received a report that a Mechanic has passed out in between the “B” & “C” Condensate Pumps.
3. The Mechanic is bleeding from the left arm and respiration is shallow.

Initiating Cues:

“(Operator’s name), perform the required actions as the RO in accordance with EPIP-EPP-04, Attachment 1.”

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure	Obtains a copy of EPIP-EPP-04 and references Attachment 1	Sat/Unsat
Note: *Provide blank Attachment 1*		
2. Records information at the top of Attachment 1	Records: ❑ Name ❑ Date ❑ Unit 2 ❑ Time of Notification ❑ Location of Medical Emergency	Sat/Unsat
3. Notify the Fire Brigade Leader, provide incident details	Notifies the Fire Brigade Leader and provides incident details via any of the following: ❑ GAltronics ❑ Phone ❑ Radio	**Pass/Fail**
Role Play: *As Fire Brigade Leader inform the candidate to sound the station alarm for fire brigade response.*		

Performance Steps	Standard	Grade
4. Place GAltronics in "Merge" mode	Places the GAltronics in the "MERGE" mode by placing the switch on the Communications Console in the Control Room to the "MERGE" position	Sat/Unsat
5. Sound station alarm for approximately 10 seconds and announce:	Depresses station alarm button, and after approximately 10 seconds, depresses alarm off button	Sat/Unsat
"Attention, attention all personnel, This is (a Drill / an actual event), the Fire Brigade is directed and any available Qualified EMT is requested to report to ___________ in response to a medical emergency. I repeat this is (a drill / an actual event)."	Makes Fire Brigade announcement	**Pass/Fail**
	Repeats station alarm and announcement	Sat/Unsat
	Leaves GAltronics in "MERGE"	Sat/Unsat
Role Play: *As the Fire Brigade Leader reply that, "the Fire Brigade is on the scene. The individual may be contaminated and is unconscious."*		
6. Notify the SM	Notifies the SM of the reported situation	**Pass/Fail**
Role Play: *As the SM, acknowledge the report.*		
Role Play: *As the Fire Brigade Leader, report that the Mechanic is unconscious and potentially contaminated. Request an ambulance and an RP Tech.*		
7. Contact Radiation Protection	Contacts Radiation Protection and requests that they report to the scene of the medical emergency	**Pass/Fail**
Role Play: *As the RP Tech state that, "Radiation Protection assistance is at the scene and has determined that the Mechanic is contaminated."*		
8. If an ambulance is requested refer to Medical Response Flow Chart (Attachment 4)	Refers to Attachment 4, Medical Response Chart	Sat/Unsat
9. Contact Oswego County 911 Center at 8-343-1313 and request an ambulance or rescue vehicle be sent to the Nine Mile Point Constellation Energy Security Checkpoint, 350 Lake Road	Contact 911 Center via phone and requests an ambulance	**Pass/Fail**

Performance Steps	Standard	Grade
***Role Play:** As the 911 Center Operator acknowledge the request and that the person for transport is contaminated. State that an ambulance will be on the way shortly.*		
10. Contact Security Shift Supervisor (5222 or 2872) and request a security force member to respond to the event location AND inform them of the impending ambulance arrival	Contacts Security Shift Supervisor, requests a security force member be sent to the Condensate Pump Bay and informs them of the impending ambulance arrival	**Pass/Fail**
Role Play: As the Site Security Supervisor acknowledge the request.		
11. Contact Oswego Hospital. ***Role Play:** As the Oswego Hospital Representative acknowledge the report of the situation and state that the REA will be setup. Report that it is necessary for the RP Tech to accompany the ambulance.*	Contacts the Oswego Hospital, informs them of the number of patients and requests setup of the REA	**Pass/Fail**
12. Request permission from SM for the RP Tech to accompany the ambulance	Requests permission from the SM for the RP Technician to accompany the ambulance	Sat/Unsat
***Role Play:** As the SM, grant permission for the RP Tech to go with ambulance.*	Informs the RP Technician that they have SM permission to accompany the ambulance	Sat/Unsat
***Role Play:** As RP Tech, acknowledge SM permission to go to hospital.*	Informs the RP Supervisor of the incident and directs them to the hospital	Sat/Unsat
***Role Play:** As RP supervisor, acknowledge information.*	Informs the SM that an evaluation of required staffing should be performed	Sat/Unsat
***Role Play:** As SM, acknowledge request to evaluate shift staffing.*	Requests the SM contact the Plant General Manager and provide details within one hour of incident.	Sat/Unsat
13. Request SM perform notifications per the Station Specific Notification Requirements	Requests SM perform notifications per the Station Specific Notification Requirements	Sat/Unsat
***Role Play:** Acknowledge as SM request to perform notifications.*		

Performance Steps	Standard	Grade
14. Direct Security Shift Supervisor to contact Senior Communications Consultant and provide details of the incident	Directs Security Shift Supervisor to contact Senior Communications Consultant and provide details of the incident	Sat/Unsat
Role Play: *As the Security Shift Supervisor acknowledge the request.*		
Role Play: *As the Fire Brigade Leader, report that the contaminated injured person has left the site and is proceeding to Oswego Hospital in the ambulance.*		
15. Inform the SM that the emergency is terminated. ***Role Play:*** *As the SM, acknowledge the report.*	Informs the SM that the contaminated injured person has left the site and is proceeding to Oswego Hospital in an ambulance.	Sat/Unsat
16. Sound the Station Alarm and announce that the medical emergency has been terminated.	Sounds the Station Alarm and announces that the medical emergency has been terminated	Sat/Unsat

TERMINATING CUE: The medical emergency has been terminated.

RECORD STOP TIME __________

Turnover Sheet

Initial Conditions:

1. The plant is operating at 100% power.
2. You have just received a report that a Mechanic has passed out in between the "B" & "C" Condensate Pumps.
3. The Mechanic is bleeding from the left arm and respiration is shallow.

Initiating Cues:

"(Operator's name), perform the required actions as the RO in accordance with EPIP-EPP-04, Attachment 1."

NRC ADMIN SRO JPM CO-1
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Determine Plant Impact for Inoperable Unit Cooler   Revision: NRC 2012

Approvals:

[signature] / 3/14/12		NA Exam Security /	
Facility Reviewer	Date	General Supervisor Operations (Designee)	Date

NA Exam Security /	
Configuration Control	Date

Performer:____________________(SRO)

Trainer/Evaluator:______________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 25 minutes   Time Critical Task: No   Alternate Path Task: No

Start Time: ________   Stop Time:_________   Completion Time:_________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:________________________________   Date:_____________

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

Classroom

Simulator Set-up:

N/A

Directions to the Instructor/Evaluator:

None

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail.**
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-53E, Standby Switchgear / Battery Room Ventilation System
2. N2-OSP-SWP-Q004, Division 2 Service Water Operability Test
3. PID 11F and 53F
4. Tech Specs 3.8.7 and 3.8.8
5. K/A 2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation (4.4)

Tools and Equipment:

None

Task Standard: Determines 2HVC*UC107 is inoperable. Determines 2VBA*UPS2D must be declared inoperable. Determines operability must be restored within 24 hours.

Initial Conditions:

1. The plant is operating at 100% power.
2. While taking building rounds, an operator notices the Division II switchgear basement area is warmer than normal.
3. Upon investigation, operators found 2SWP*AOV574 BSMT CABLE SPRDR AREA UNIT COOLER supply valve shut.
4. All attempts to re-open 2SWP*AOV574 have failed.
5. Ask the operator for any questions.

Initiating cue:

"(Operator's name), determine the impact of this valve failure on plant operations."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference documents	Reviews any of the following as necessary: • N2-OP-53E • N2-OSP-SWP-Q004 • PID 53F • PID 11F • Technical Specifications and Bases	Sat/Unsat
3. Determines impact of 2SWP*AOV574 failure ***Note:*** *2SWP*AOV574 is the service water admission valve for 2HVC*UC107.*	Determines that failure of 2SWP*AOV574 in the closed position makes 2HVC*UC107 unavailable	**Pass/Fail**
4. Determines impact of 2HVC*UC107 unavailability ***Note:*** *2HVC*UC107 provides cooling for area around 2VBA*UPS2D. N2-OP-53E P&L 6 requires declaring the UPS inop if this unit cooler is unavailable.* ***Cue:*** *If asked, inform the operator that UPS 2D is in operation.*	Determines that 2VBA*UPS2D is inoperable due to unavailability of 2HVC*UC107	**Pass/Fail**

Performance Steps	Standard	Grade
5. Determines Technical Specification impact ***Note:*** *N2-OP-53E attachment 1 may be used to assist in determining Tech Spec impact.* ***Note:*** *If the operator determines no actions are required because they assume UPS 2B is in service, inform the operator that UPS 2D is in service and to reexamine any plant impact.*	References TS 3.8.7 ❑ IAW T.S. 3.8.7, Inverters - Operating, determines one emergency UPS inverter is inoperable. Enters condition A which requires restoration of UPS to operable status within 24 hours	**Pass/Fail**

TERMINATING CUE: Determines 2HVC*UC107 is inoperable. Determines 2VBA*UPS2D must be declared inoperable. Determines operability must be restored within 24 hours.

RECORD STOP TIME__________

Turnover Sheet

Initial Conditions:

1. The plant is operating at 100% power.
2. While taking building rounds, an operator notices the Division II switchgear basement area is warmer than normal.
3. Upon investigation, operators found 2SWP*AOV574 BSMT CABLE SPRDR AREA UNIT COOLER supply valve shut.
4. All attempts to re-open 2SWP*AOV574 have failed.

Initiating cue:

"(Operator's name), determine the impact of this valve failure on plant operations."

NRC ADMIN SRO JPM CO-2
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Determine Personnel Overtime Availability IAW CNG-SE-1.01-1002 Revision: NRC 2012

Approvals:

[signature] / 3/14/12		NA Exam Security /	
Facility Representative	Date	General Supervisor Operations (Designee)	Date
NA Exam Security /			
Configuration Control	Date		

Performer:________________(SRO)

Trainer/Evaluator:________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 35 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:________________ Date:________

Recommended Start Location:

Classroom

Simulator Set-up:

None

Directions to the Instructor/Evaluator:

None

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified in grading areas as **Pass/Fail**.
2. During Evaluated JPM:
   - Self verification shall be demonstrated.
3. During Training JPM:
   - Self verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. NUREG 1123, 2.1.5 (3.9)
2. CNG-SE-1.01-1002

Tools and Equipment:

1. Calculator

Task Standard: Determine personnel availability for overtime IAW CNG-SE-1.01-1002.

Initial Conditions:

1. The plant is shutdown for a refueling outage.
2. Current time is 1830 on November 27, 2011.
3. An Operator scheduled to work the day shift on November 28, 2011 has called in sick for that shift.
4. In order to support minimum control room staffing requirements, personnel overtime will be required for the day shift on November 28, 2011 from 0630-1830.
5. All the overtime hours will be spent performing control room activities.
6. November 14, 2011 through November 28, 2011 is a fixed 15-day period for work hour rule considerations.
7. EmpCenter is NOT available.
8. Instructor to ask operator for any questions.

Initiating Cues:

1. From the provided list of personnel working hours, determine who is eligible to work a complete 12 hour shift beginning at 0630 on November 28 without exceeding the limits of CNG-SE-1.01-1002.

   -AND-

2. Complete Attachment B

Additional Conditions (to be provided later):

1. ROs #1 and #3 have not been able to be contacted.
2. RO #2 is the only operator available and will be required to work.
3. Instructor to ask operator for any questions.

Additional Cue (to be provided later):

1. Complete CNG-SE-1.01-1002, Attachment 1, 10 CFR 26 Work Hour Limits Waiver, Section 1, for RO #2 to cover this shift on November 28.

Note: Provide Attachments A & B.

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME __________		
2. Obtain a copy of the reference procedure and review/utilize the correct section of the procedure	CNG-SE-1.01-1002 obtained	Sat/Unsat

Performance Steps	Standard		Grade
3. Reviews work hours for Reactor Operators #1 thru #3	Determines the following:		
	RO #1 –	Eligible	**Pass/Fail**
	RO #2 –	Not Eligible – Would work more than 72 hours in a 7 day period	**Pass/Fail**
	RO #3 –	Eligible	**Pass/Fail**

<u>Cue:</u> Give additional cue sheet and blank CNG-SE-1.01-1002 Attachment 1 Section 1. Direct the SRO to complete CNG-SE-1.01-1002, Attachment 1 for RO #2.

4. Completes CNG-SE-1.01-1002 Attachment 1 Section 1 for RO #2	Completes CNG-SE-1.01-1002 Attachment 1 Section 1 for RO #2, per attached key	**Pass/Fail**

<u>Note:</u> Only items 1) and 2) of CNG-SE-1.01-1002 Attachment 1 Section 1 are deemed critical for evaluation of this step.

TERMINATING CUE: JPM Attachment B completed and CNG-SE-1.01-1002 Attachment 1 Section 1 completed for RO #2.

RECORD STOP TIME __________

Answer Key (Do NOT provide to Candidate)

	Eligible to work without a Work Hour Limits Waiver? (Yes/No)	**If No, what work hour limit(s) would be exceeded IAW CNG-SE-1.01-1002?**
RO #1	Yes	N/A
RO #2	No	Would work more than 72 hours in last 7 days (11/22-11/28)
RO #3	Yes	N/A

KEY Attachment 1, 10 CFR 26 Work Hour Limits Waiver KEY

Section 1 - Requests
(To be completed by Cognizant Supervisor)

Cognizant Supervisor: (Name)
Print

Date/Time Waiver Initiated: (Date) / (Time)
Date Time

1) Identify the individual who will exceed a 10 CFR 26 Work Hours Limit:

Name:	RO #2	Department:	Operations
Date to Start:	11/28/2011	Time to Start:	0630
Date to End:	11/28/2011	Time to End	1830

2) Identify all the limit(s) that will be exceeded by placing a check mark by the limit(s):

- ☐ > 16 work hours in any 24-hour period
- ☐ > 26 work hours in any 48-hour period
- ☒ > 72 work hours in any 7-day period
- ☐ < 10-hour (consecutive hours) break between successive work periods
- ☐ < 34-hour (consecutive hours) break between in any 9-day period
- ☐ Minimum Day Off Requirements

  ☐ On-Line ☐ Outage

  Required number of days off: ______

  Shift schedule applied to individual ______ - hour shift

3) Identify the work activity for which the waiver will be issued. Give description:

Control Room Activities (or similar)

Circumstances that caused the need for exceeding limits:

Worker Called in Sick (or similar)

Is Waiver required to address conditions that are adverse to safety?

☒ Yes ☐ No **If no, then waiver is not valid.**

Submitted By:	(Name)	(Signature)	(Date) /	(Time)
	Print Name	Signature	Date	Time

KEY (DO NOT PROVIDE TO CANDIDATE)

Turnover Sheet (First)

Initial Conditions:

1. The plant is shutdown for a refueling outage.
2. Current time is 1830 on November 27, 2011.
3. An Operator scheduled to work the day shift on November 28, 2011 has called in sick for that shift.
4. In order to support minimum control room staffing requirements, personnel overtime will be required for the day shift on November 28, 2011 from 0630-1830.
5. All the overtime hours will be spent performing control room activities.
6. November 14, 2011 through November 28, 2011 is a fixed 15-day period for work hour rule considerations.
7. EmpCenter is NOT available.

Initiating Cues:

1. From the provided list of personnel working hours, determine who is eligible to work a complete 12 hour shift beginning at 0630 on November 28 without exceeding the limits of CNG-SE-1.01-1002.

   -AND-

2. Complete Attachment B

Turnover Sheet (Second)

Additional Conditions:

1. ROs #1 and #3 have not been able to be contacted.
2. RO #2 is the only operator available and will be required to work.
3. Instructor to ask operator for any questions.

Additional Cue:

1. Complete CNG-SE-1.01-1002, Attachment 1, 10 CFR 26 Work Hour Limits Waiver, Section 1, for RO #2 to cover this shift on November 28.

Attachment A – Work Hours (Okay to give to candidate)

RO #1																		
11/10	11/11	11/12	11/13	11/14	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28
OFF	0630 - 1830	0630 - 1830	OFF	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	OFF	OFF	0630 - 1830	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	?

RO #2																		
11/10	11/11	11/12	11/13	11/14	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28
OFF	0630 - 1830	0630 - 1830	OFF	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	OFF	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	?

RO #3																		
11/10	11/11	11/12	11/13	11/14	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28
0630 - 1830	0630 - 1830	OFF	0630 - 1830	OFF	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	OFF	OFF	0630 - 1830	0630 - 1830	0630 - 1830	0630 - 1830	OFF	?

Attachment B – Answer Sheet (Okay to give to candidate)

	Eligible to work without a Work Hour Limits Waiver? (Yes/No)	If No, what work hour limit(s) would be exceeded IAW CNG-SE-1.01-1002?
RO #1		
RO #2		
RO #3		

NRC ADMIN SRO JPM EC
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

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

Revision: NRC 2012

Approvals:

_____ / 5/15/12
Facility Representative Date

NA Exam Security /
General Supervisor Operations (Designee) Date

NA Exam Security /
Configuration Control Date

Performer:______________________________(SRO)

Trainer/Evaluator:______________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 20 minutes Time Critical Task: No Alternate Path Task: No

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:______________________________ Date:____________

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

Classroom

Simulator Set-up:

NA

Directions to the Instructor/Evaluator

To be performed as an administrative JPM with two parts (Part A and Part B)

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**.
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-42, Offgas System
2. ODCM D.3.3.2, Radioactive Gaseous Effluent Monitoring Instrumentation
3. K/A 2.2.38 (4.5) Knowledge of conditions and limitations in the facility license

Tools and Equipment:

None

Task Standard: 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.

Initial Conditions:

1. Reactor power is 45% with power ascension in progress.
2. Both OFG*RE13A and OFG*RE13B were previously OPERABLE and in-service.
3. Both OFG*RE13A and OFG*RE13B indications have just failed downscale.
4. Troubleshooting has not yet commenced.
5. Ask the operator for any questions.

Initiating cue:

"(Operator's name), determine the required actions for the failed Offgas radiation monitors."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME ________		
PART A		
2. Obtain a copy of the reference procedure and review/utilize the correct section	ODCM obtained; Section D.3.3.2 and Bases B.3.3.2 are referenced	Sat/Unsat
3. Determines ODCM requirements	Refers to Table 3.3.2-1:	Sat/Unsat
	Determines that CONDITIONS B and C are applicable	Sat/Unsat
***Cue:** If asked, during the course of this JPM, inform the candidate that flow indications are unaffected.*	Per Condition B, determines that the inoperable OFG Radiation Monitors must be restored to OPERABLE status within 30 days	Sat/Unsat
***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*	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 within 24 hours of sample completion	**Pass/Fail**
	Determines that tripping both channels of OFG*RE13A and B would isolate OFG	Sat/Unsat

Performance Steps	Standard	Grade
	requiring a shutdown	

Part B

Evaluator: *When the candidate determines the ODCM sample requirements, provide the candidate with the attached Additional Turnover Sheet and initiating cue.*

Performance Steps	Standard	Grade
1. Obtain a copy of the applicable reference documents and review/ utilize the correct sections	Reviews ODCM Section 3.0, Applicability.	Sat/Unsat
	Reviews Tech Spec Section 1.3, Completion Times.	Sat/Unsat
2. Determines required sample times ***Note:*** *TS 1.3 example 1.3-7 provides an illustration for the required completion times.*	Determines first sample is due by 18:00 today	**Pass/Fail**
	Determines second sample is due by 06:00 tomorrow, with an allowable extension of 3 hours (as late as 09:00)	**Pass/Fail**

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

RECORD STOP TIME___________

Turnover Sheet (First)

Initial Conditions:

1. Reactor power is 45% with power ascension in progress.
2. Both OFG*RE13A and OFG*RE13B were previously OPERABLE and in-service.
3. Both OFG*13A and OFG*13B indications have just failed downscale.
4. Troubleshooting has not yet commenced.

Initiating cue:

> "(Operator's name), determine the required actions for the failed Offgas radiation monitors."

Additional Turnover Sheet (Second)

Initial Conditions:

1. OFG*RE13A/B were declared inoperable at 06:00 today

Initiating Cue:

"(Operator's name), determine the **latest** time that the first sample is due. Then based upon this time, determine the **latest** time the next sample can be taken."

NRC ADMIN SRO JPM RC
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Radiological Requirements Related to Operator Inspection of High Radiation Areas

Revision: NRC 2012

Approvals:

[signature] / 9/15/4	NA Exam Security /
Facility Representative Date	General Supervisor Operations (Designee) Date
NA Exam Security /	
Configuration Control Date	

Performer:________________________________(SRO)

Trainer/Evaluator:________________________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 30 minutes   Time Critical Task: No   Alternate Path Task: No

Start Time: ________   Stop Time:________   Completion Time:________

JPM Overall Rating: Pass   Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:________________________________   Date:____________

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

Classroom

Simulator Set-up:

N/A

Directions to the Instructor/Evaluator:

N/A

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. NUREG 1123, 2.3.12, RO 3.2, SRO 3.7
2. GAP-RPP-01
3. GAP-RPP-02
4. GAP-RPP-07
5. GAP-RPP-08
6. S-RAP-RPP-0703

Tools and Equipment:

1. Survey map for RWCU Pump P1A Room
2. Standing RWP for non-High Radiation Areas only

Task Standard: Radiological requirements related to inspection of the RWCU Pump P1A Room are identified.

Initial Conditions:

1. The plant is operating at 100% power.
2. An operator must perform a valve lineup in the RWCU Pump P1A Room.
3. An RWP and survey map are provided.
4. There are no steam leaks in the room.
5. The operator's current year-to-date exposure is 1800 mrem TEDE.
6. The operator will be performing work for 2 hours in an average radiation field of 150 mrem/hr.
7. Ask the operator for any questions.

Initiating cue:

"(Operator's name), address the radiological aspects of performing this lineup and record your findings on the provided scorecard."

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME __________		
Note: A score card is attached to this JPM identifying the items for the candidate to identify.		
2. Obtain a copy of the reference procedure and review/utilize the correct section	GAP-RPP-01, GAP-RPP-02, GAP-RPP-07, GAP-RPP-08 and S-RAP-RPP-0703 referenced as necessary	Sat/Unsat
3. Addresses radiological aspects of entering RWCU Pump P1A Room for inspection	Reviews RWP / Survey Map and determines the following:	
	The radiological classification of area: **HIGH RADIATION AREA** (GAP-RPP-08)	**Pass/Fail**
	Key to be obtained: **H-20-2** (RP map)	Sat/Unsat
	The highest contact dose rate in the area and location: **230 mrem/hour, on the pump** (RP Map)	**Pass/Fail**
	The highest dose rate at 30cm and location: **210 mrem/hour, northeast corner piping** (RP Map)	**Pass/Fail**

Performance Steps	Standard	Grade
	The RWP required to be used: **A Specific RWP should be requested** (GAP-RPP-02)	**Pass/Fail**
	The administrative dose limit will be exceeded and **additional approvals are required** prior to performing the work 1800 + 150 x 2 = 2100 mrem (Administrative limit is 2000 mrem)	**Pass/Fail**
Cue: *If SRO candidate correctly identified need for additional dose extension approval, provide candidate with SRO only cue sheet.*		
4. Locates S-RAP-RPP-0703 Attachment 1	References S-RAP-RPP-0703 and determines attachment 1 is the required form for the dose extension	**Pass/Fail**
5. Determines required approvals for dose extension	Identifies required approvals as Department Manager and General Supervisor Radiation Protection (GAP-RPP-07)	**Pass/Fail**

TERMINATING CUE: Radiological requirements related to performing a lineup in the RWCU Pump P1A Room are identified.

RECORD STOP TIME____________

Answer Key

NOTE: THIS IS THE EXAMINER SCORECARD.
DO NOT PROVIDE TO THE CANDIDATE.

Answer the following when performing this task:

[redacted]

Classify the area (check one):

☐ Radiation Area
✓ **High Radiation Area**
☐ Locked High Radiation Area
☐ Very High Radiation Area

[redacted]

Designate the key to be obtained:

H-20-2

[redacted]

Designate the highest contact dose rate and the location:

230 mrem/hour, on the pump

[redacted]

Designate the highest dose rate at 30 cm and the location:

210 mrem/hour, northeast corner piping

[redacted]

Designate the RWP required to be used (check one):

☐ The provided RWP is acceptable
✓ **Specific RWP should be requested**

[redacted]

Evaluate delta exposure (check one):

☐ Acceptable
✓ **Additional approval(s) required**

[redacted]

Answer Key

Answer KEY

NOTE: THIS IS THE EXAMINER SCORECARD.
DO NOT PROVIDE TO THE CANDIDATE.

Answer the following when performing this task:

[redacted]

Identify the form required to be completed for the dose extension.

S-RAP-RPP-0703 attachment 1

[redacted]

Check all appropriate boxes below for the approvals required for this dose extension.

✓ **Department Manager**
✓ **General Supervisor Radiation Protection**
☐ Plant General Manager
☐ Site Vice President

Answer Key

Turnover Sheet

Initial Conditions:

1. The plant is operating at 100% power.
2. An operator must perform a valve lineup in the RWCU Pump P1A Room.
3. An RWP and survey map are provided.
4. There are no steam leaks in the room.
5. The operator's current year-to-date exposure is 1800 mrem TEDE.
6. The operator will be performing work for 2 hours in an average radiation field of 150 mrem/hr.

Initiating cue:

"(Operator's name), address the radiological aspects of performing this lineup and record your findings on the provided scorecard."

Additional Cue:

"(Operator's name), identify the form required to be completed for the dose extension and the levels of approval needed for the dose extension. Record your findings on the scorecard below."

Answer the following when performing this task:
1.
Identify the form required to be completed for the dose extension.
2.
Check all appropriate boxes below for the approvals required for this dose extension. ☐ Department Manager ☐ General Supervisor Radiation Protection ☐ Plant General Manager ☐ Site Vice President

SCORECARD

Answer the following when performing this task:
1.
Classify the area (check one): ☐ Radiation Area ☐ High Radiation Area ☐ Locked High Radiation Area ☐ Very High Radiation Area
2.
Designate the key to be obtained:
3.
Designate the highest contact dose rate and the location:
4.
Designate the highest dose rate at 30 cm and the location:
5.
Designate the RWP required to be used (check one): ☐ The provided RWP is acceptable ☐ Specific RWP should be requested
6.
Evaluate delta exposure (check one): ☐ Acceptable ☐ Additional approval(s) required

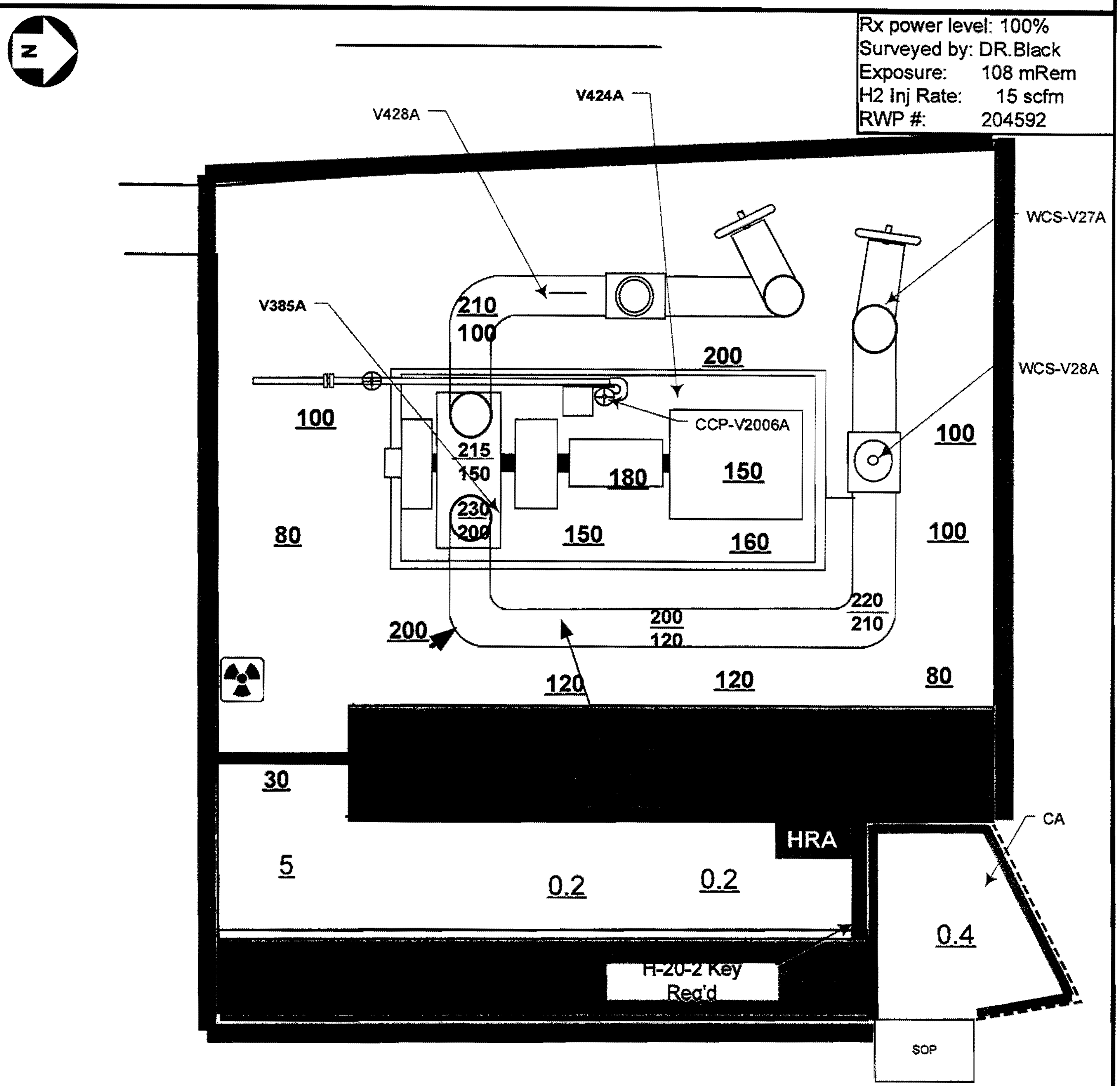
13A	Reactor Building 215' WCS * P1A Room	Survey #: 2RB-25378 Date : 04/03/04@2300 Page : of

- mRem/hr general area
β– mRad/hr general area
@ cont - dose rate @ contact with component
@ 30cm - dose rate @ 30cm from component

(#) -contamination in dpm/100cm²
(#) -contamination on component in dpm/100cm²
[#] - location of LAW
- - - boundary

No β– detected unless otherwise noted.

Rx power level: 100%
Surveyed by: DR.Black
Exposure: 108 mRem
H2 Inj Rate: 15 scfm
RWP #: 204592



Instrument	Inst. #	Cal Due date
RO-2	5780	01/29/05

Radiation Work Permit

Constellation Energy

Nine Mile Point Nuclear Station
Save Dose - Self Check - Always Work Safely

RWP Title: Inspections, Tours, Rounds, Maintenance and Surveillances in the RCA (NOT for High Radiation or Locked High Radiation Areas)	**RWP Number:** 210000 Rev. 00

RWP Type: LOW RISK RWP	**ALARA Review Number:** 210000	**Comments:** Unit 2 Standing RWP.

High Radiation Area:	Locked High Radiation Area:	High Contamination Area:
No	No	No

Dose (mrem)	**Back-Off Dose** (mrem)	**Dose Rate** (mrem/hr)
20	**16**	**80**

Buildings	Elevations	Rooms
Protected Area	All elevations	All ROOMS OR AREAS

Description	Value	Unit of Measure
General Area	0.2 to 60	mRem/hr
Loose Contamination on floor	<400	dpm/100cm2
General Area airborne radioactivity level	<0.3	DAC

Requirement Groups	Descriptions
CONTAMINATION CONTROL	Keep RP informed of work methods and notify RP prior to venting/draining evolutions or other system breach
	No entries above arms reach unless specifically approved by RP
	RP to survey all tools and equipment prior to removal from Contaminated area.
DOSIMETRY	Electronic dosimeter (ED) and DLR
EXPOSURE CONTROL	Keep Radiation Protection informed of work methods and job location changes.
	In High Noise areas, check Electronic Dosimeter frequently.
PROTECTIVE CLOTHING	RP may change protective clothing, respirator, or other requirements as work scope, location, and conditions change.
	Protective clothing required in contaminated areas only.
	One Full Set: Hood, cotton liners, rubber (or leather) gloves, cotton booties, rubber shoe covers, coveralls. Cassi/Gortex or equivalent may be used in lieu of coveralls.

Instructions:

Approver Title	Name	Date
RAD PROTECTION SUPERVISOR	COLE, JOHN R	12/29/2009

N/A

NRC ADMIN SRO JPM EP
Constellation Energy Nuclear Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Classify Emergency Event and Determine Protective Action Recommendations

Revision: NRC 2012

Approvals:

9/15/11
Facility Representative Date

NA Exam Security
General Supervisor Operations (Designee) Date

NA Exam Security
Configuration Control Date

Performer:____________________(SRO)

Trainer/Evaluator:____________________

Evaluation Method: Perform

Evaluation Location: Classroom

Expected Completion Time: 25 minutes Time Critical Task: Yes Alternate Path Task: No

Start Time: ________ Stop Time:________ Completion Time:________

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if <u>any</u> critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:____________________ Date:________

Recommended Start Location:

Classroom

Simulator Set-up:

N/A

Directions to the Instructor/Evaluator:

Provide Candidate with SM/ED package, EPIP-EPP-02 attachments 1 and 2, along with the cue sheet.

Directions to Operators:

Read Before Every JPM Performance:

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

Read Before Each Evaluated JPM Performance:

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

Read Before Each Training JPM Performance:

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

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**.
2. During Evaluated JPM:
    - Self-verification shall be demonstrated.
3. During Training JPM:
    - Self-verification shall be demonstrated.
4. Steps marked with a • can be performed in any order.

References:

1. NUREG 1123, 2.4.44, 4.4
2. EPIP-EPP-02
3. EPIP-EPP-08
4. EPIP-EPP-18
5. EPIP-EPP-20
6. EPMP-EPP-0102

Tools and Equipment:

None

Task Standard:

Classify and declare the event within 15 minutes of the time that indications are available to the Candidate that an EAL has been exceeded and make all appropriate notifications within 15 minutes of the time the event is declared, including Protective Action Recommendations.

Initial Conditions:

1. The plant was operating at 100% power on day shift when a LOCA occurred with a loss of all high pressure injection.
2. The Reactor Mode Switch was placed in SHUTDOWN five minutes ago.
3. All rods fully inserted into the core.
4. Drywell pressure is 14 psig and slowly lowering with Drywell Sprays in service.
5. An RPV Blowdown has been performed.
6. Reactor water level is -5 inches and slowly rising.
7. Reactor pressure is 300 psig and lowering.
8. Drywell radiation levels are 65,000 R/hr and slowly rising.
9. Reactor Building D/P is -0.6 inches H_2O.
10. HVR exhaust radiation monitors read at normal background levels.
11. Main Stack effluent radiation monitors read at normal background levels.
12. Instructor to ask the operator for any questions.

Initiating cue:

"(Operator's name), based on the above conditions, determine the event classification per EPIP-EPP-02 and complete steps 1 through the first bullet of step 9 of EPIP-EPP-18, Attachment 1, SM/ED Checklist. This is a time critical JPM."

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue *Evaluator acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat
RECORD START TIME __________		
2. Obtain a copy of EPIP-EPP-02 attachments 1 and 2, and Shift Manager emergency paperwork and review/utilize the correct section	EPIP-EPP-02 attachments 1 and 2, and Shift Manager emergency paperwork is obtained	Sat/Unsat
3. Enters EPIP-EPP-18, Attachment 1, SM/ED Checklist and fills out the attachment as follows:	Obtains copy of EPIP-EPP-18, Attachment 1, SM/ED Checklist	Sat/Unsat
Note: *See attached answer key for help in grading.*		
a. •Enters Name, Date, and Unit	Enters Name, Date, and checks Unit 2 at the top of Attachment 1. Circles "This is a Drill" in Block 1.	Sat/Unsat
b. •Classifies the emergency	Determines conditions for EAL 1.3.3 are met and classifies the event as a General Emergency.	**Pass/Fail**
c. •Determines the classification does not affect the site.	Checks N/A in Block 3	Sat/Unsat

Performance Steps	*Standard*	*Grade*
d. Announces to the Control Room Staff that a General Emergency Exists and the candidate is assuming the role of the Emergency director.	Declares a General Emergency within 15 minutes of the JPM start time. Time of Declaration: ___________ **Note:** Time difference below must be 15 minutes or less: JPM start time: ________	**Pass/Fail**
e. •Calls the Communications Aide, Chem. Tech., and RP Tech to the Control Rooms	Calls the Communications Aide, Chem. Tech., and RP Tech to the Control Rooms	Sat/Unsat
Role Play: *As Comm. Aide, Chem. Tech., and RP Tech, acknowledge the direction to report to the control room.*		
f. •Contacts the Unit 1 SM to inform them of emergency and get the status of Unit 1.	Circles OPERATING in Block 6.	Sat/Unsat
Role Play: *As Unit 1 SM, acknowledge the report of an emergency and inform them that Unit 1 is operating at 100%*		
g. •Directs the Unit 1 SM to notify the ERO via ENRONS per EPIP-EPP-20, Attachment 4.	Circles "Staff Normal Emergency Facilities for an Emergency" in Block 6 and directs the Unit 1 SM to Notify the ERO via ENRONS per EPIP-EPP-20, Attachment 4.	**Pass/Fail**
h. •Uses Figure 1 flowchart to determine appropriate evacuation and accountability requirements.	Determines per Figure 1 that an Exclusion Area Evacuation and Accountability are required to be performed.	Sat/Unsat
Cue: *If asked, inform the candidate that evacuation is safe to perform.*		
i. •Directs the appropriate announcement be made per Attachment 2.	Fills out Attachment 2, Emergency Announcement per attached key and directs the Comm. Aide to make the announcement.	Sat/Unsat
Role Play: *As Comm. Aide, acknowledge the direction to make the emergency announcement.*		

Performance Steps	Standard	Grade
j. Determines Protective Action Recommendations (PARs), completes EPIP-EPP-20 Part 1 Notification Fact Sheet, and provides to Communications Aide.	Determines PARs, completes Part 1 Notification per attached key, and provides completed form to Communications Aide. **For the purposes of grading this step, only blocks 3 through 7, 9 and 10 are required to be filled out correctly to receive a PASS.** **Note:** Time difference must be 15 minutes or less: Time of Declaration (from JPM step 3.d): _______ Time EPIP-EPP-20 Part 1 Notification Fact Sheet is complete: _______	**Pass/Fail**

TERMINATING CUE: Part 1 Notification Fact Sheet completed.

RECORD STOP TIME___________

Attachment 1, SM/ED Checklist

Name:	Date:	Unit ☐ 1 ☒ 2
(NAME)	(Date)	

NOTES: 1. All steps should be performed. Use N/A if appropriate

		Completed	N/A
1	This is a Drill / This is an Actual Emergency (circle one)	✓	
2	Classify the emergency per EPIP-EPP-01 or EPIP-EPP-02 (within 15 minutes of indications available in control room)	✓	
3	If classification potentially affects the site then contact the opposite Unit SM and determine who has the lead		✓
4	Announce to the Control Room Staff you are now declaring an emergency and assuming SM/ED position and duties. For example: "Attention for an update. I am declaring a (state emergency classification level) at time (state time) due to (state reason). I am the Shift Manager/Emergency Director. The most likely escalation criterion is (state criteria, if applicable). End of update."	✓	
Note:	**IF** the announcement for a ground attack has been made as required by EPIP-EPP-10, **THEN:** Make no further announcements until safety is assured through coordination with security.		
5	Call the Communications Aide, Chem. Tech, and RP Tech to the Control Rooms	✓	
6	Contact the opposite Unit Control Room and: • Inform SM of Drill / Actual Emergency (circle one) and Emergency Classification	✓	
	• Obtain Opposite Unit Status: Operating / Shutdown (date) _______ at (time) _______	✓	
Note:	Assure the safety of the ERO before making ERO Notifications. ERO response to Alternate Emergency Duty Location should be considered, if necessary.		
	• Direct the opposite Unit SM to notify the ERO (ERONS) per EPIP-EPP-20, Attachment 4; and activate the facilities as follows (N/A if ERO previously contacted to report): (circle one) ○ None ○ Staff Alternate Emergency Facilities ○ Staff Normal Emergency Facilities as a Precaution ○ Staff Normal Emergency Facilities for an Emergency ○ Staff the EOF and JIC only ○ Staff the OCC only ○ Staff the TSC and OSC only	✓	
7	Using Attachment 1, Figure 1 Flowchart, determine the appropriate evacuation and accountability	✓	
8	Direct the appropriate announcement to be made using Attachment 2 of this procedure	✓	

Answer KEY
Do not hand out

Answer Key - Do not Hand out

		Completed	N/A
Notes:	• Time of shutdown is used by NMP and Offsite agencies Dose Assessment programs for source term decay and as an indicator of potential escalation • PARs must be communicated to NYS and Oswego County within 15 minutes of declaration of General Emergency		
9	Complete the following in accordance with EPIP-EPP-20: • Part 1 Notification Fact Sheet (provide to Comm Aide). Include information from other unit, as applicable	✓	
	• NRC Notification Worksheets (Immediately after notification of the appropriate state or local agencies and not later than one hour after declaration of the event)		
	• For events affecting both units, direct other Unit SM to complete NRC notification worksheet for their Unit, and notify the NRC		
10	Verify completion of notifications in accordance with EPIP-EPP-20: • State and County via RECS (within 15 minutes of declaration)		
	• ERO via ERONS (verify through unaffected unit SM)		
	• NRC via ENS		
11	Complete Figure 2, Turnover Checklist		
	• Fax to TSC at ext. 2111		
	• Fax to EOF at 593-5951		
	• Fax to JIC at 592-3850		
	• Fax to OSC at ext. 2590		
	• When called by the TSC Manager, turn over the status of the plant emergency using information provided on Figure 2.		
	• When called by the ED/RM, turn over the status of the plant emergency using information provided on Figure 2.		
12	Implement appropriate Site Emergency Procedures per Attachment 8	CONTINUOUS	
13	Track personnel dispatched into the field, and for what task, until turned over to the TSC.		
14	If an emergency is declared that involves any type or size Loss of Coolant Accident (LOCA) at Unit 2, the Unit 2 SM shall advise the Unit 1 SM to initiate the Unit 1 Control Room Emergency Ventilation system **(U2 Only)**		
15	Review and approve news releases as required		
16	Following activation of the OSC, direct shift personnel and other available operations personnel not assigned control room or DCT functions to report to the OSC for assignment in accordance with EPIP-EPP-22.		
17	When contacted by the ED/RM for turnover, provide a plant status update and turnover the following responsibilities: ☐ Any further classifications and declarations ☐ Determining need for Exclusion Area Evacuation ☐ Authorization for emergency workers to exceed normal radiation exposure limits ☐ Notification to off-site emergency management agencies (State / County / NRC) ☐ Making PARs as necessary to offsite emergency management agencies.		

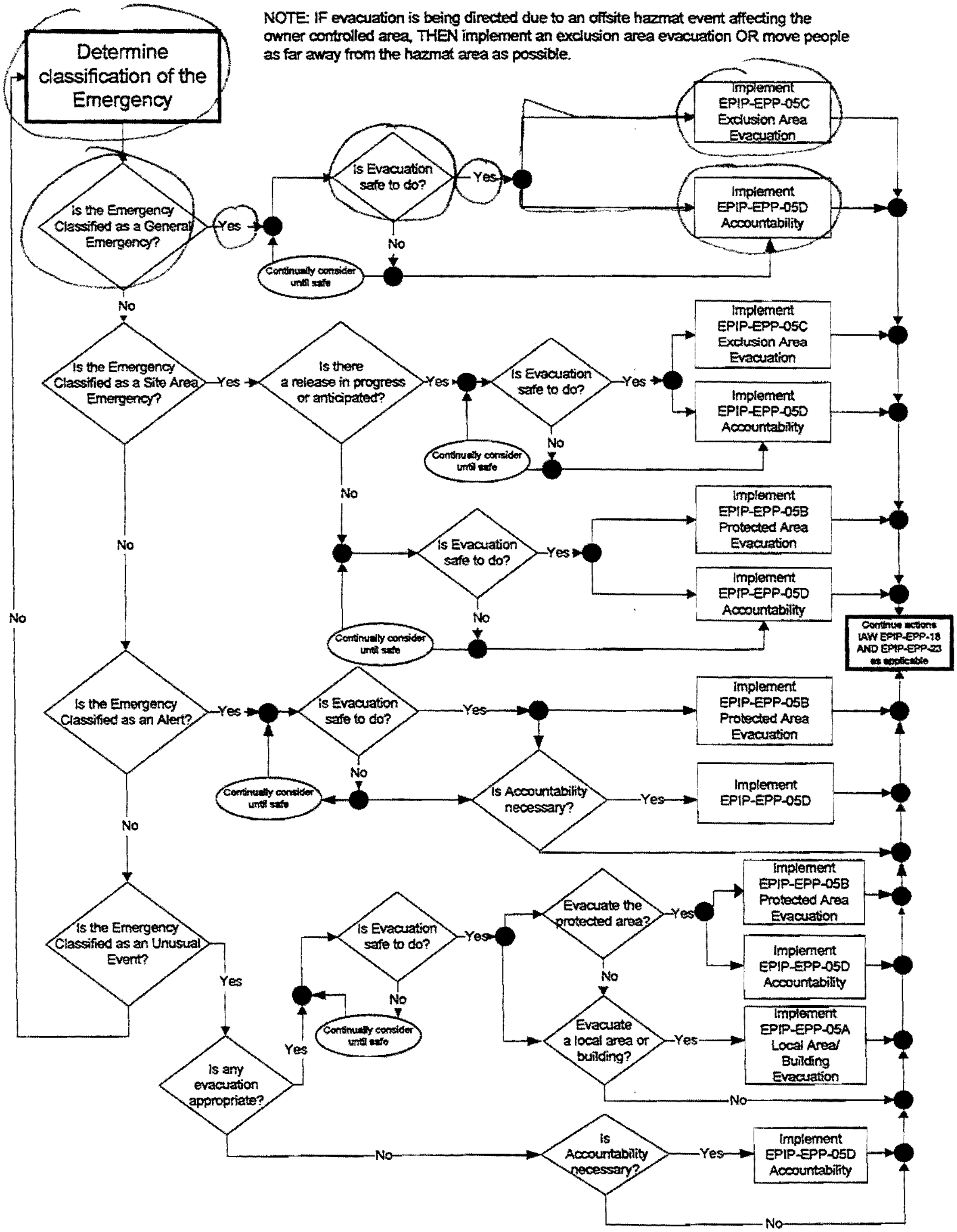
End of JPM

Answer key - Do not hand out

FIGURE 1

EVACUATION/ACCOUNTABILITY FLOWCHART

NOTE: IF evacuation is being directed due to an offsite hazmat event affecting the owner controlled area, THEN implement an exclusion area evacuation OR move people as far away from the hazmat area as possible.



Answer Key
Do not hand out

Answer Key
Do not hand out

Attachment 2, Emergency Announcement

DATE: (Date)
TIME: (Time)

INSTRUCTIONS: (check boxes to select appropriate announcement, consider crossing out rows not used)

1. PLACE GAITRONICS IN MERGE.

2. SOUND THE APPROPRIATE ALARM:

- ☐ Station alarm for 10 seconds.
- ☒ Evacuation Alarm for 10 seconds. (When any evacuation is being ordered)

3. ANNOUNCE ONLY THOSE ITEMS CHECKED: (Provide short description of the reason for classification, not the whole EAL)

a. *"Attention. Attention all personnel. This is ☒ a drill ☐ an actual emergency.*

Nine Mile Point☐ Unit 1 is experiencing: ☒ Unit 2 is experiencing:

- ☐ *"An Unusual Event due to ______"*
- ☐ *"An Alert emergency condition due to ______"*
- ☐ *"A Site Area Emergency due to ______"*
- ☒ *"A General Emergency due to* high Drywell radiation (or similar) *"*

☒ b. **If this is the first announcement for an Alert or higher, then always add**

"All Emergency Response Organization personnel are to report to their Emergency Response Facilities and card in."

4. FOR A CREDIBLE INSIDER SECURITY THREAT, ADD (Only do step 4 once)

☐ Secure all non-essential activities in vital areas, the two person line of sight vital area access rules are now in effect.

5. FOR A LOCAL AREA EVACUATION, ADD

☐ *"An evacuation of: ______*

is being ordered due to: ______

All personnel are to leave the (Unit 1/2) (area) staying clear of ______

and report to ______

6. FOR ACCOUNTABILITY WITHOUT EVACUATION, ADD (only use with 4 above or if evacuation unsafe and only do step 6 once.)

☐ *"Accountability is being performed in the Protected Area. All personnel shall report to an onsite assembly area, card in and remain in the area until further notice."*

7. FOR A PROTECTED AREA EVACUATION, ADD (Only do step 7 once)

☐ *"All personnel not assigned emergency response duties shall evacuate the Protected Area and report to the P-Building. and remain at this location until further notice".*

----CONTINUED NEXT PAGE----

Answer Key
Do not hand out

Answer Key
Do not hand out

Page 2 of 2

Attachment 2, Emergency Announcement (Continued)

8. FOR AN EXCLUSION AREA EVACUATION, ADD (Only do step 8 once)

☒ a. *"All personnel not assigned emergency response duties shall evacuate the Nine Mile Point Exclusion Area immediately and report to:"* (select appropriate)

optional → ☒ 1. *"Offsite Assembly Area located on Howard Road in Volney, Maps may be obtained from security as you exit."*

OR

→ ☒ 2. ______________________________(*provide other location as appropriate)*

OR

☒ 3. *"Home"*

☐ b. **IF NECESSARY ADD:**
(If radioactive release is in progress, then obtain plume direction from Chem Tech and check appropriate box below)

☐ *Personnel are to leave the area heading west towards Oswego then turn south.*

☐ *Personnel are to leave the area heading south as soon as possible.*

☐ ____
(Detail other directions as appropriate)

9. IF APPROPRIATE, ADD: (Only do step 9 once)

☒ a. *"Personnel in protective clothing should"* (select appropriate):

optional → ☒ 1. *"Leave the area removing PCs as indicated at the step off pad."*

→ ☒ 2. *"Leave the area immediately and obtain Radiation Protection assistance at the access control point.*

10. IF APPROPRIATE, ADD:

☒ a. *"There is no eating, drinking, or smoking within the protected area until further notice."*

☐ b. *(Only done if "10a" has been done) Eating, drinking, smoking are now permitted within the Protected Area.*

11. ALWAYS ADD:

☒ *"I repeat this is a drill."*
☐ *"I repeat this is an actual emergency."*

12. Repeat the alarm and entire announcement so that all specified steps of the specific announcement are made 2 (two) times.

13. Leave GAItronics in merge mode for the duration of the event.

14. Upon completion return this attachment to the EP Dept. **[N0306]**

Answer Key
Do not hand out

Answer Key

Do not hand out

Attachment 1A: Nine Mile Point Nuclear Station Notification Fact Sheet - Part 1

INITIAL ROLL CALL MUST BE COMPLETED BY: (Time) *(TIME)*

Sheet 1 of 5

(Do not say items in italics)

*Pick up the phone, press A *, wait about 10 seconds, then say.* **"This is to report an incident at Nine Mile Point, standby for roll call."**

□ State Emergency Communications Center (SECC)	□ Oswego County Warning Point	□ JA Fitzpatrick Power Plant (not req'd in 15 min)	□ Unaffected NMP Unit (not req'd in 15 min)	**Notification #**

Step Changed	Step Read	Step	
		1.	**This message is being transmitted on:**(date)______ at (time -24 hr)______ via: **A.** RECS **B.** Other
		2.	**This is:** **A.** An actual emergency **B.** An Exercise
		3.	**The Emergency Classification is:** **A.** Unusual Event **C.** Site Area Emergency **E.** Emergency Terminated **B.** Alert **D.** General Emergency **F.** Other: ______
		4.	**This Emergency Classification was declared on:** (date) (Date) at(time - 24 hr) (Time)
		5.	**Release of radioactive Materials due to the classified event:** **A.** No release **B.** Release **below** federal limits (ODCM), □ To atmosphere □ To Water **C.** Release **above** federal limits (ODCM), □ To atmosphere □ To Water **D.** Unmonitored release requiring evaluation.
		6.	**The following Protective Actions are recommended to be implemented as soon as practical:** **A.** No need for protective actions outside the site boundary **B.** Evacuate and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 **C.** Shelter-in-place and implement the KI Plan for the following ERPAs AND all remaining ERPAs monitor the Emergency Alert System 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
		7.	U1 / U2 X / Site — **EAL #** 1.33 — **Brief event description and other significant information:** (if necessary. Do not repeat EAL description) (Optional brief description)
		8.	**Reactor Status:** Unit 1: **A.** Operating **B.** Shutdown (date)____ at (time - 24 hr clock)____ Unit 2: **A.** Operating **B.** Shutdown (date) (Date) at (time - 24 hr clock) (Time)
		9.	**A. Elevated wind speed** 10 miles/hr at 200 ft **B. Ground wind speed** 5 miles/hr at 30 ft.
		10.	**A. Elevated wind direction** (from) 93 degrees at 200 ft. **B. Ground wind direction** (from) 93 degrees at 30 ft.
		11.	**Stability Class:** A B C D E F G
		12.	**Reported by:** (Communicator name)______ at Tel. No. (315)____

ASK "Does Oswego County or New York State need further clarification on any information? (provide as appropriate) **THEN "This is the end of the message, standby for verification roll call".**

Check those involved in verification roll call	□ State Emergency Communications Center (SECC)	□ Oswego County Warning Point	□ JA Fitzpatrick Power Plant	□ Unaffected NMP Unit

THEN STATE: **"Nine Mile Point out at time:** ______" (time – 24 hr clock)

Approved by: (SM/ED or ED/RM):
Print name: (NAME) Signature: (Signature)

Answer Key

Answer Key
Do not hand out

Attachment 1A: Instructions- Completing the Notification Fact Sheet - Part 1

NOTES: 1. Complete all applicable sections

2. For all updates (all notifications except the initial), check all boxes that have changed since last notification.

3. Steps NOT flagged **Communications Aide or Comm Coordinator** are completed by **SM/ED** or **ED/RM**

\# INSTRUCTIONS

1. **Communications Aide or Comm Coordinator** completes this row using date and time that number was dialed.(A then *)
2. Indicate actual emergency or exercise (drill) by circling as appropriate.
3. Indicate by circling: A-D Classification Level, OR E. If event is terminated, OR F. Other , describe in item 7 block.
4. Indicate the date and time (24 hr clock) the event was declared (time announced to the Control room staff). For event termination, enter date/time event was terminated.
5. Request Chemistry Technician provide release information then indicate by circling applicable letter (A, B, C, or D)

NOTE: This section applies to a release of radioactive materials that took place DUE to the classified event. **IF** a radioactive material release is taking place and it is **unknown** if it is related to the event, **THEN** assume the release is the result of the event.

A. No Release: There is no release related to the declared event.

B. Release below federally approved operating limits (ODCM) : A release is in progress due to the event AND the release rate has been determined (by any means available) to NOT exceed ODCM **[C1]**. Indicate if to water or to atmosphere.(use check box)

C. Release above federally approved operating limits (ODCM): A release is in progress due to the event AND the release rate has been determined (by any means available) to exceed ODCM. **[C1]** Indicate if to water or to atmosphere.(use check box)

D. Unmonitored release requiring evaluation: Evidence exists of a release from a pathway from which a release cannot be readily determined or has bypassed all effluent monitors (examples: Emergency Condenser vents, steam or air passing blowout panels, Rx Bldg pressurized/containment breech to atmosphere, radioactive materials entering storm drains,) or if instrumentation used to determine release status has become unavailable. If monitoring teams are in place when the release is occurring or potentially occurring, then it would not be considered an unmonitored release.

6. Reference EPIP-EPP-08, Attachment 1 and indicate Protective Action Recommendations by circling A, B, or C as appropriate:

A. No need for protective actions

B. Evacuate and implement the KI Plan for the following ERPAs and Shelter all remaining ERPAs. Circle the appropriate ERPAs as recommended by Dose Assessment Advisor/ODAM.

C. Shelter in place - Circle the appropriate ERPAs when long term known impediments have affected the ability to evacuate ERPAs. Those ERPAs will be listed in EPIP-EPP-08.

7. In the box provided for Item #7, check the Unit that has the emergency. Write the classification EAL #. If the emergency is a site-wide event, (not specific to either Unit's plant conditions) then check Site. Enter Additional Information per Notes below.

NOTES:

- Do not repeat the EAL description here.
- Provide any other conditions that could have an effect on future classifications / event or termination prognosis.
- **Do not write in all applicable EALs**- only those that impact present conditions. Other Units' status may be indicated here.
- If the event requires no additional explanation, the Additional Information section may be left blank. Consider what other information could be helpful to offsite agencies in determining further actions they should take.
- Describe reason for selection of unmonitored release requiring evaluation.

8. Provide reactor status at both units. If unit is shutdown (subcritical below the heating range), provide date and time of shutdown. Each unit's status is provided regardless of whether an emergency has been declared at the opposite unit.

9, 10,& 11. Obtain 15 minute average meteorological data from the Dose Assessment Advisor and record. (use elevated Stability class)

12. **Communications Aide or Comm Coordinator** completes this row listing name and the commercial telephone they use.

13. SM/ED or ED/RM signs the Part 1 Notification Fact Sheet **AND** provides to Communications Aide or Communications Coordinator, noting the time that the initial roll call must be completed. (at top of page)

For termination of Unusual Events only,

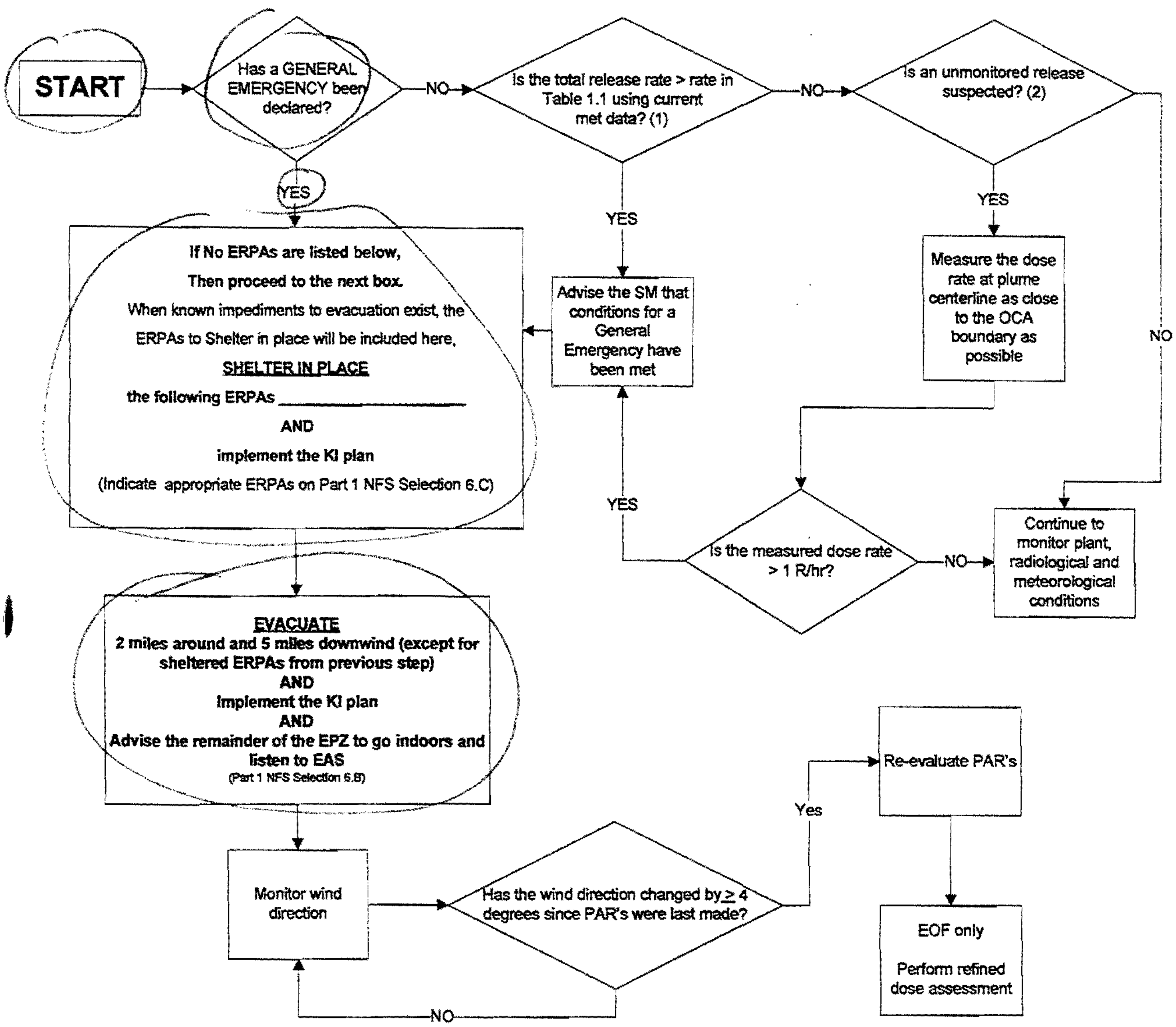
1. Complete Part I - Notification Fact Sheet (Attachment 1A) through Line 4. Indicate date/time of termination on line 4 and:
   a. Sign where appropriate
   b. Provide to the Communications Aide or Comm. Coordinator

Answer Key

Answer Key

Do not hand out

Attachment 1, INITIAL DOSE ASSESSMENT AND PROTECTIVE ACTIONS



(1) Use this formula if release has both a ground and elevated component:

Ground Release Rate (Ci/s) / Table 1.1 Ground Release Rate (Ci/s)	+	Elevated Release Rate (Ci/s) / Table 1.1 Elevated Release Rate (Ci/s)	=	IF ≥ 1, A General Emergency Exists
____________	+	____________	=	

(2) When to suspect an unmonitored release
- (U1) Emergency Condenser tube rupture
- TB overpressure due to significant steam leak
- Steam or coolant release outside Primary Containment and Rx Bldg is positive

Answer Key

Turnover Sheet

Initial Conditions:

1. The plant was operating at 100% power when a LOCA occurred during the day with a loss of all high pressure injection.
2. The Reactor Mode Switch was placed in SHUTDOWN five minutes ago.
3. All rods fully inserted into the core.
4. Drywell pressure is 14 psig and slowly lowering with Drywell Sprays in service.
5. An RPV Blowdown has been performed.
6. Reactor water level is -5 inches and slowly rising.
7. Reactor pressure is 300 psig and lowering.
8. Drywell radiation levels are 65,000 R/hr and slowly rising.
9. Reactor Building D/P is -0.6 inches H_2O.
10. HVR exhaust radiation monitors read at normal background levels.
11. Main Stack effluent radiation monitors read at normal background levels.

Initiating cue:

"(Operator's name), based on the above conditions, determine the event classification per EPIP-EPP-02 and complete steps 1 through the first bullet of step 9 of EPIP-EPP-18, Attachment 1, SM/ED Checklist. This is a time critical JPM."

Meteorological Data	
Wind speed from 30' level	5.0 mph
Wind speed from 200' level	10.0 mph
Wind direction from 30' level	93°
Wind direction from 200' level	93°
Stability class from 30' level	D
Stability class from 200' level	D