


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	<u>E. Bowles/David Huff</u>	DATE	<u>9/12/2011</u>
VALIDATED	<u>Sawyer, Hilliker, Sobolewski</u>	DATE	<u>06/10/2011</u>
FACILITY REPRESENTATIVE	<u></u>	DATE	<u>7/15/11</u>
OPERATIONS MANAGER	<u>NA Exam Security</u>	DATE	<u> </u>
CONFIGURATION CONTROL	<u>NA Exam Security</u>	DATE	<u> </u>

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	
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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	<i>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.</i>
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	<i>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.</i>

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

Role Play

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

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
- Contacts PO and determines local pressure gauge is reading between 1850 and 1950 psi
- Determines 2RCS-RV47A adjustment is NOT required.

Role Play

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

602105 may alarm but will immediately clear

BOP, (cont.)

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

Role Play

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

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

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
- 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

BOP

- Recognizes the failure of the upper seal

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

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

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
 - **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

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

55% Power / 55 Mlb/hr core flow

Role Play

As I&C acknowledge the direction to adjust APRMs, Rod Blocks, and Rod Block Monitor setpoints

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.

RO, (cont.)

- Inserts the first four cram rods
- Reevaluates single loop P/F Map
- Performs N2-SOP-29, Attachment 1:
 - Determines closure of one or both flow control valves did not cause the sudden reduction in core flow
 - Determines the plant is not operating within the EXIT region
 - Determines the plant is operating in the heightened awareness region and >3 OPRMs are operable
 - May determine plant conditions are stable and reference N2-OP-29 for operating in single loop
 - Determines one recirc pump tripped and the plant is not operating in natural circulation
 - Verifies closed flow control valve for B RCS loop
 - Verifies RCS loop A is operating <41,800 gpm
 - Verifies operating loop jet pump flow is <56.9 Mlb/hr on B22-R611A, RECIRC LOOP 1A SUM JET PMP FLO meter
 - Contacts I&C for adjustment to APRMs, Rod Blocks, and Rod Block Monitor
 - Refers to N2-OP-29, Section H.6.0 for single loop operations.

Role Play

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

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.
- 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

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

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

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
- 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.

Role Play

If contacted as WWM and/or I&C, acknowledge the report

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

Note

Although RBM A is inoperable, it is only required to

SRO

- Acknowledges report from BOP
- May contact the SM for direction
- Directs bypassing RBM A per N2-OP-92.

- Contacts WWM and/or I&C

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

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

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

Note

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

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

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:

Role Play

As Radwaste, acknowledge the direction to operate all pumps for 2DER-TK2A

Role Play

As PO directed to energize 2WCS-MOV107, acknowledge the report.

RO, (cont.)

- Notifies Radwaste to operate all pumps for 2DER-TK2A.
- Places all four SDV high level bypass switches to bypass.
- Resets ARI per N2-OP-36B H.3.0 by depressing all four ARI reset pushbuttons
- Using scram reset switches, reset the scram and verifies all 8 pilot solenoid lights lit.
- 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
- 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

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

Role Play

If contacted as RW, report all RB Floor Drain Sump Pumps are running.

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.

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
- Contacts Radwaste and directs them to operate all RB Floor Drain Pumps
- Dispatches PO to investigate flooding in the RB
- Reports PO investigation results to SRO

Note

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

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.

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)

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

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:

Note

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

Note

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

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.

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
- 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
 - Attempts to throttle open 2CSH*MOV111
 - Determines 2CSH*MOV111 will not open
- Informs the SRO and dispatches a PO to manually open 2CSH*MOV111

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.

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:
 - Notifies the SRO that LPCI A is inoperable
 - Depresses RHR A manually out of service pushbutton
 - Places RHR A control switch in PTL
 - Contacts PO and directs them to open 2RHS*V71
 - Throttles open 2RHS*FV38A while maintaining >70 psig on the RHR discharge pressure meter
 - 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

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

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

Note

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.

SRO, (cont.)

- Determines drywell pressure is <1.68psig
- Determines SPWL is >192 feet
- **Directs BOP to open 7 ADS valves**

BOP

- Determines no ECCS pump is running
- **Goes to PNL628 and P631 and attempts to open 7 ADS valves using the 14 keylock switches**
- Determines at P601 that only 5 ADS valves opened
- Informs the SRO that only 5 ADS valves opened.

SRO

- 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.**

BOP

- 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.

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CONFIGURATION CONTROL	<u>NA Exam Security</u>	DATE	<u> </u>

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:	hzlcsbps2(2)==1 (HPCS red running indicating light is on)
		Command:	imf ED05B (0 0) true
c.	Event # 16	Event Action:	zar2r6231a<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: <input checked="" type="checkbox"/> N/A <input type="checkbox"/> .					
Other Comments:					
<ul style="list-style-type: none"> Recirculation flow adjustments may be made per Shift Manager direction at the recommendation of Reactor Engineering. 					
Step Prepared By: <u>Joe Engineer</u>		Today <u> </u>		Step Reviewed By: <u>John Engineer</u>	
RE/STA		Date		RE/STA/SRO	
Date				Date	
Approval to Perform Step: <u>Joe Manager</u>		Today <u> </u>		Step Completed By: <u> </u>	
Shift Manager		Date			
				SRO	
				Date	

INSTRUCTOR ACTIONS/
PLANT RESPONSE

OPERATOR ACTIONS

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	<i>This task is identified as critical because without operator action the plant will lose its ultimate heat sink.</i>
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	<i>This task is identified as critical because without operator action, RPV level will continue to lower until the fuel is no longer adequately cooled.</i>

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

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

Role Play

As PO directed to verify circuit breaker is on at 2FWS-PNL10A. Report that the breaker is on.

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
- Directs PO to verify power is available and breaker is on at 2NHS-MCC003-7C for LV10A
- 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:
 - 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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

Role Play

As WWM/SM acknowledge the report

BOP, (cont.)

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

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

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

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

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.

BOP

- Recognizes and reports the accumulator trouble alarms
- References AN603441:
 - Determines which accumulators have trouble alarms by looking at the full core display
 - References N2-OP-30, Section F.7.0
 - Contacts a PO and directs them to report accumulator pressures for the alarming accumulators
 - Reports to the SRO that Accumulator 18-31 is reading 910 psig, (may also direct SRO to TS 3.1.5)
 - 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:
 - Determines a RDS pump is not operating
 - Shifts RDS flow controller to manual and closes it
 - Determines trip of RDS pump was due to low suction pressure

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.

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**

Role Play

When contacted by the RO to verify seal flows and backfill flows, wait two minutes and say they are satisfactory.

Note

Approximately 4 minutes after trip of RDS pump, AN603316, Control Rod Temp. High will 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.

RO, (cont.)

- Contacts PO and directs them to swap RDS suction filters per N2-SOP-30, Section F.1.0
- Once PO reports back the suction filters have been swapped, restarts RDS*P1A
- Once an RDS pump is running, adjusts the RDS flow control valve so system flow is approximately 63 gpm
- Places RDS flow controller back in automatic
- 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

BOP

- Recognizes and reports high CRDM temperature alarm
- Contacts PO and dispatches them to monitor CRDM temperatures at 2RDS-TRS165

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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

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

Role Play

As PO dispatched to verify proper operation of the traveling screens and trash rakes per N2-OP-12, acknowledge report.

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

Note

If the crew places the mode switch in shutdown during this event, the next event will be automatically initiated.

SRO

- Acknowledges report
- Directs actions per appropriate ARPs

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

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
- **When intake bay level lowers to 234 feet, determines 2SWP*MOV77A & 77B failed to open automatically and manually opens them.**
- 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.

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

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:
 - Directs RO to inject with SLS per N2-OP-36A, Section H.1.0

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

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:
 - Starts the non-running RDS pump
 - Recognizes and reports trip of RDS pump which was just started
 - Places RDS flow controller in manual and fully open the flow control valve while observing running pump amps
 - Opens 2RDS-PV101 while observing running RDS pump amps
 - Reports to the SRO that CRD flow is maximized
- Injects with SLS as follows:
 - Places keylock switches for both SLS P1A and P1B in RUN.
 - Recognizes SLS P1A started as expected and all indications are normal

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

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

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

Note

As RPV pressure lowers, all low pressure systems will inject and RPV level will begin to rapidly rise.

SRO, (cont.)

- Determines there is no need to prevent LPCI or LPCS injection
- Determines suppression pool level is >192 feet
- **Directs BOP to open 7 ADS valves.**

BOP

- Acknowledges direction to open 7 ADS valves and performs the following:
 - Determines no SRVs are stuck open and an ECCS pump is running
 - **Arms and depresses both ADS pushbuttons for each division**
 - **Informs the SRO that 7 ADS valves are open**
- Verifies Division I and II ECCS systems inject when pressure is lowered sufficiently

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

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.

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.

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

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

INSTRUCTOR ACTIONS/
PLANT RESPONSE

OPERATOR ACTIONS

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

BOP, (cont.)

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

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):

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.

BOP, (cont.)

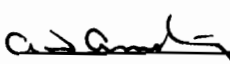
- Verifies open MOV90A(B)
- Verifies shut and overridden MOV24A(B)
- Verifies RHS A(B) is running
- Verifies open 2RHS*MOV33A(B)
- Throttles open 2SWP*MOV33A as necessary to establish service water flow to RHS heat exchanger
- Contacts RP to place RE-23A(B) in service
- May start a 5th service water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

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	<u>E. Bowles/David Huff</u>	DATE	<u>9/12/2011</u>
VALIDATED	<u>Sawyer, Hilliker, Sobolewski</u>	DATE	<u>06/07/2011</u>
FACILITY REPRESENTATIVE	<u></u>	DATE	<u>7/13/11</u>
OPERATIONS MANAGER	<u>NA Exam Security</u>	DATE	<u> </u>
CONFIGURATION CONTROL	<u>NA Exam Security</u>	DATE	<u> </u>

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:	hzslcspump1a(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 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> 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: <input checked="" type="checkbox"/> N/A <input type="checkbox"/> .					
Other Comments: <ul style="list-style-type: none"> Recirculation flow adjustments may be made per Shift Manager direction at the recommendation of Reactor Engineering. 					
Step Prepared By: <u>Joe Engineer</u>		<u>Today</u>		Step Reviewed By: <u>John Engineer</u>	
RE/STA		Date		RE/STA/SRO	
				Today	
				Date	
Approval to Perform Step: <u>Joe Manager</u>		<u>Today</u>		Step Completed By: _____	
Shift Manager		Date		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	<i>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.</i>
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	<i>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.</i>
CT-3.0 Given a failure of the reactor to SCRAM, the crew will insert control rods per N2-EOP-6, Attachment 14	<i>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</i>

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

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

BOP, (cont.)

- 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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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

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*

Note

When the RO attempts to insert the control rod, the rod will insert

Note

Once the rod is fully inserted, the SRO/RO may direct the BOP to take over actions for N2-SOP-08

CREW

- Recognizes and reports rod 22-47 drifting out

SRO

- Acknowledges report of rod 22-47 drifting out
- Directs RO to enter N2-SOP-08

RO

- Acknowledges direction to enter N2-SOP-08
- Determines power change is due to a drifting control rod
- Selects rod 22-47 and depresses the insert pushbutton
- 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

Note

When the RO releases the pushbutton, rod 22-47 will begin to drift out again.

Role Play

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.

Role Play

As PO directed to disarm rod 22-47, wait 2 minutes and inform the control room that rod 22-47 has been disarmed.

RO, (cont.)

- 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%
 - Releases the insert pushbutton
 - Determines the rod did not remain fully inserted
 - Re-depresses the insert pushbutton and fully inserts rod 22-47
 - 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
-
- May contact a PO and direct disarming rod 22-47 per N2-OP-30

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

Role Play

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

Role Play

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

BOP

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

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.

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.

BOP, (cont.)

- Determines the MG set is not running
- 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
- 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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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.

Role Play

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

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

INSTRUCTOR ACTIONS/ PLANT RESPONSE

OPERATOR ACTIONS

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

Critical Task-1.0 Given a failure of the reactor to SCRAM the crew will inhibit ADS per N2-EOP-C5

Critical Task-1.0 Given a failure of the reactor to SCRAM the crew will inhibit ADS per N2-EOP-C5

Role Play

As PO directed to prevent main turbine trip from RCIC, insert the following remote function:

TRG11 RC10, RCIC/MT TRIP INTERLOCK, FV=DEFEATED, DT=60

SRO

- Acknowledges scram report.
- Enters N2-EOP-RPV and then exits N2-EOP-RPV and enters 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:
 - **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:
 - Contacts PO and directs them to prevent main turbine trip from RCIC per N2-EOP-6, Attachment 2, Section 3.1
- Informs the SRO that the main turbine trip from RCIC has been prevented

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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 INITIATION 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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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

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

SRO, (cont.)

- 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.
- **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
- 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.

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

BOP, (cont.)

- 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:
 - Places CSL*P1, PMP 1, control switch in PULL-TO-LOCK
 - Arms and depresses LPCI A/LPCS MANUAL INITIATION pushbutton
 - Closes and overrides RHS*MOV24A, LPCI A INJECTION VLV and CSL*MOV104, PMP 1 INJECTION VLV
 - Places RHS*P1C, PMP 1C, control switch in PULL-TO-LOCK
 - Arms and depresses LPCI B & C MANUAL INITIATION pushbutton
 - 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.

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

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

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

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

Termination Cue:

- RPV level is <100 inches
- Control Rods are being manually driven into the core.

RO, (cont.)

- 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.

Facility: Nine Mile Point 2		Scenario No: NRC-4		Op-Test No: March 2012	
Examiners: _____			Operators: _____		
Initial Conditions: IC-156					
1. Reactor Power ~3% 2. Plant startup is in progress					
Turnover:					
1. Transfer the Reboiler Steam Supply to Main Steam IAW N2-OP-25 2. Continue plant startup and place the reactor mode switch to RUN					

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP) N (SRO)	Transfer Reboiler Steam to Main Steam N2-OP-25
2	N/A	R (RO) R (SRO)	Continue Startup by withdrawing control rods N2-OP-101A
3	RD07	C (RO) C (SRO)	Stuck Control Rod N2-OP-30
4	NM06	I (RO) I (SRO)	IRM D Fails Upscale N2-OP-92
5	MT01 CW01A CW01D	C (BOP) C (SRO) TS (SRO)	Seismic Event with SW Pumps trip ARPs, N2-SOP-90, T.S. 3.7.1
6	ED04G	C (BOP) C (SRO) TS (SRO)	Seismic aftershock causes RCIC trip and loss of Power to Div II switchgear. N2-SOP-03, T.S. 3.5.3
7	RC12	M (ALL)	RCIC steam leak into reactor building EOP-RPV, EOP-SC, SOP-101C
8	Overrides	C (BOP) C (SRO)	Failure of the RCIC steam line isolation valves to close manually. EOP-RPV, EOP-C2

*

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

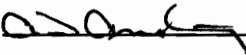
Facility: Nine Mile Point 2		Scenario No: NRC-4	Op-Test No: March 2012
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.5.d)		ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) Events 3, 4, 5, 6, 7, 8,		6	
2. Malfunctions after EOP entry (1-2) Event 8		1	
3. Abnormal events (2-4) Events 5, 6		2	
4. Major transients (1-2) Event 7		1	
5. EOPs entered/requiring substantive actions (1-2) Event 7 – EOP-RPV, EOP-SC		2	
6. EOP contingencies requiring substantive actions (0-2) Event 8 – EOP-C2		1	
7. Critical tasks (2-3)		2(3)	
CRITICAL TASK DESCRIPTIONS:			CRITICAL TASK JUSTIFICATION:
CT-1.0 Given secondary containment temperatures approaching a maximum safe value in one area, the crew will initiate a manual reactor scram IAW N2-EOP-RPV			<i>This task is identified as critical because without operator action to scram, the reactor will continue to provide energy to the RCIC steam line break and cause increased secondary containment temperatures and radiation levels.</i>
CT-2.0A Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves IAW N2-EOP-RPV and/or			<i>This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to wait until two or more areas are above maximum safe values before depressurizing the reactor. If the crew chooses to depressurize the reactor via the SRVs, then CT-2.0A does not have to be evaluated.</i>
CT-2.0B Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves IAW N2-EOP-C2			<i>This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to "anticipate blowdown" and depressurize the reactor to the main condenser. If the crew chooses to depressurize the reactor to the main condenser and are successful in preventing two areas from exceeding the maximum safe temperatures, then CT-2.0B does not have to be evaluated.</i>

NMP SIMULATOR SCENARIO

NMP2 2012 NRC SCENARIO #4

REV. 00

TRANSFER THE REBOILER STEAM SUPPLY TO MAIN STEAM, CONTINUE STRTUP, IRM UPSCALE, STUCK CONTROL ROD, SEISMIC EVENT WITH SERVICE WATER PUMP TRIP, LOSS OF DIV II SWGR, UNISOLABLE RCIC STEAM LEAK WITH RPV BLOWDOWN.

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

SCENARIO SUMMARY

Length: 1.5 hours

Initial Power Level: 3.0% with Mode Switch in STARTUP

The scenario begins at about 3.0% reactor power during a plant startup. The crew will transfer the Reboiler Steam Supply to Main Steam. After that occurs, the plant startup will continue with control rod withdrawal to raise power above 8%. While withdrawing rods a control rod will stick and the crew must respond by raising DRS drive water pressure IAW N2-OP-30. After the control rod is movable and the startup continues, an IRM will fail upscale.

After the IRM is addressed a, seismic event will occur causing one service water pump to trip. This will require a restart of a standby service water pump and entry to TS 3.7.1. N2-SOP-90 will also be entered to address the seismic event.

Once conditions are stabilized, there will be a seismic aftershock causing breaker 17-2 to fail open which will result in a loss of power to Div II Switchgear. The crew will take action per N2-SOP-03 to stabilize plant parameters, restore Service Water flow, drywell fans and Containment Monitoring. Additionally the aftershock will damage RCIC causing the turbine to trip and become inoperable. The SRO will be required to address Tech Spec 3.5.3.

The major transient begins when a pipe break causes a RCIC Steam Leak into Reactor Building. Automatic and manual attempts to isolate the RCIC steam line will be unsuccessful. Entry to EOP-SC is required and the reactor must be manually scrammed **(CRITICAL TASK)** before temperatures exceed a maximum safe value in one area.

Additionally, before Reactor Building temperatures exceed 212°F in two or more areas the crew can anticipate blowdown and open five bypass valves (**CRITICAL TASK**). If Reactor Building temperatures exceed 212°F in two or more areas an RPV Blowdown is required (**CRITICAL TASK**).

Termination Criteria: RPV depressurization in progress and secondary containment temperatures lowering

Major Procedures Exercised: N2-EOP-RPV, N2-EOP-SC, N2-EOP-C2, and N2-SOP-3

Mitigation Strategy: SC1 - Primary system leak in SC, exceed max safe level in 2 or more areas, Blowdown required

SIMULATOR SET UP

A. IC Number: 156, Batch File: n11scen4.bat

B. Presets/Function Key Assignments:

1. Malfunctions:

a.	RC11 , RCIC ISOLATION FAILURE, FV=TRUE	INSERTED
b.	NM06D , IRM D FAILS UPSCALE, FV=TRUE	TRG 1
c.	MT01 , SEISMIC ACCELERATION, FV=2	TRG 2
d.	CW01A , SWP A TRIP, FV=TRUE, DT=5	TRG 2
e.	RC06 , RCIC TURBINE TRIP, FV=TRUE, DT=3	TRG 3
f.	ED04G , SWG 17 FAULT, FV=TRUE, DT=10	TRG 3
g.	RC12 , RCIC STEAM LEAK IN RB, FV=35, RT=15:00	TRG 4

2. Remotes:

a.	None	
----	------	--

3. Overrides:

a.	01A2S041DI0365 , ICS*MOV121 SWITCH CLOSE, FV=OFF	INSERTED
b.	01A2S041DI0366 , ICS*MOV121 SWITCH OPEN, FV=OFF	INSERTED
c.	01A2S042DI0564 , ICS*MOV128 SWITCH CLOSE, FV=OFF	INSERTED
d.	01A2S042DI0418 , ICS*MOV128 SWITCH OPEN, FV=OFF	INSERTED

4. Annunciators:

a.	AN603214 , APRM TRIP SYSTEM DOWNSCALE, FV=OFF	INSERTED
----	--	-----------------

5. Event Triggers:

a.	Event # 10	Event Action:	hzardr602>0.863 (Drive water D/P greater than 300 psig)
		Command:	dmf RD07-26-27
b.	Event # 11	Event Action:	rdvposb(77)==96 (Rod 26-27 at position 6)
		Command:	imf RD07-26-27 (0 0) true

C. Equipment Out of Service

1. None

D. Support Documentation:

1. N2-OP-25, Section F.5.0
2. N2-OP-101A, marked up to step E.2.49.3
3. A2 Startup Rod Sequence marked up to RWM Step 16, rod 42-19

E. Miscellaneous:

1. No protected equipment
2. Ensure the >100% Rodline sign is removed.
3. Ensure that when IC 152 is loaded, the RWM latches on to RWM step 16, Rod 42-19 and there are no RWM rod blocks.

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 = 3%
- Rodline <100%
- RPV Pressure is 925 psig with 1 bypass valve partially open
- Reactor startup in progress per N2-OP-101A. Currently on step E.2.49.3
- Currently on A2 Up startup sequence, RWM Step 16, rod 42-19 withdrawing control rods from position 4 to position 8
- All LCOs are currently met

PART III: Remarks/Planned Evolutions:

- Transfer Reboiler steam supply to main steam per N2-OP-25, Section F.5.0. A PO is standing by at the Auxiliary Boilers and by 2CES-IPNL204
- Once the Reboiler steam supply has been transferred, raise reactor power using rods per the startup rod sequence and provided RMI to 8% in preparation for transferring the mode switch to run. 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			

Reactivity Maneuver: Reactor Startup

INITIAL CONDITIONS/STEP DESCRIPTION					
RE presence required in the Control Room? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
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
Core Flow	20 to 59 Mlb/hr	28 Mlb/hr	RWM	A2 Sequence	A2
Time	Today	Today			
Description of Step:					
1. Perform Reactor Startup in accordance with A2 startup sequence and appropriate procedures					
Critical parameters to be monitored DURING Step:					
Critical parameters not used must be deleted OR marked N/A					
Critical Parameter	Limit	Owner	Frequency	Contingency	
SRM Count Rates	3 doublings	RO	Continuous when SRMs inserted	Single Notch Withdrawal	
Rx Period	60 sec	RO	Continuous when SRMs inserted	Insert last control rod one notch	
RMI evaluated against approved power profile: <input checked="" type="checkbox"/> N/A <input type="checkbox"/> .					
Other Comments:					
• None					
Step Prepared By:		Joe Engineer	Today	Step Reviewed By:	
		RE/STA	Date	John Engineer	
				RE/STA/SRO	
				Today	
				Date	
Approval to Perform Step:		Joe Manager	Today	Step Completed By:	
		Shift Manager	Date		
				SRO	
				Date	

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CRITICAL TASK DESCRIPTIONS:	CRITICAL TASK JUSTIFICATION:
CT-1.0 Given secondary containment temperatures approaching a maximum safe value in one area, the crew will initiate a manual reactor scram IAW N2-EOP-RPV	<i>This task is identified as critical because without operator action to scram, the reactor will continue to provide energy to the RCIC steam line break and cause increased secondary containment temperatures and radiation levels.</i>
CT-2.0A Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves IAW N2-EOP-RPV and/or	<i>This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to wait until two or more areas are above maximum safe values before depressurizing the reactor. If the crew chooses to depressurize the reactor via the SRVs, then CT-2.0A does not have to be evaluated.</i>
CT-2.0B Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves IAW N2-EOP-C2	<i>This task is identified as critical because without operator action to depressurize the reactor, secondary containment integrity, the integrity of equipment located in the secondary containment, and continued safe operation of the plant cannot be assured. Note: The crew may choose to "anticipate blowdown" and depressurize the reactor to the main condenser. If the crew chooses to depressurize the reactor to the main condenser and are successful in preventing two areas from exceeding the maximum safe temperatures, then CT-2.0B does not have to be evaluated.</i>

EVENT 1, Transfer Reboiler Steam Supply to Main Steam

Role Play

As PO, when asked, provide indications from the Aux Boilers. Use normal operating indications from N2-OP-25, F.1.0 to respond to any additional requests for indications.

Role Play

As PO directed to depress the reset pushbuttons, wait 10 seconds and inform the control room that it has been complete

SRO

- Directs BOP to transfer Reboiler steam supply to Main Steam per N2-OP-25, Section F.5.0

BOP

- Acknowledges direction to transfer Reboiler steam supply to Main Steam
- Determines RPV pressure is 925 psig and one turbine bypass valve is opened at least 20%
- Determines an operator is stationed at the Auxiliary Boilers.
- Determines 2ASS-MOV148, MAIN STM TO AUX STM ISOL VLV is already open
- Closes 2ASS-AOV145, AUX BLR STM INLET VLV,
- Places the Reboiler 2ASS-STV112 and 2ESS-STV104 control switches in the AUTO
- Direct the local operator to depress the RESET PUSHBUTTONS on the 2CES-IPNL204
- Opens 2CNA-HV34A(B)
- Monitor for proper Reboiler operation
- Reports steam supply transferred.

EVENTS 2 and 3 - Withdraw rods to raise power, one rod sticks

Note

When rod 26-27 is moved from position 4 to position 6, **verify** the following **malfunction** is inserted:

RD07-26-27, ROD 26-27 STUCK

Role Play

If contacted as the SM/RE for direction, inform them to follow the appropriate procedures for a rod which fails to withdraw.

SRO

- Directs RO to raise reactor power to 8% using the A2 startup rod sequence and provided RMI

RO

- Monitors RPV, CRD and Nuclear Instruments
- Withdraws control rods IAW sequence using single notch withdrawal
- Determines and reports rod 26-27 is stuck at position 06

SRO

- Acknowledges report that rod 26-27 is stuck at position 06
- May contact SM/RE for direction
- Directs RO to respond to the stuck rod per N2-OP-30.

RO

- Acknowledges direction to respond to the stuck control rod per N2-OP-30
- References section H.1.2, Failure to Withdraw Using Single Notch Withdrawal.
- Attempts to withdraw rod 26-27 again while monitoring drive water flow

Note

Do to variations in drive water flow indications, the crew may determine that the insert portion of the DCV sequence is operating correctly and continue on H.1.2. If the crew determines the insert portion of the DCV sequence is operating correctly, then they will refer to section H.1.1 to continue trying to free the stuck rod. The actions are relatively the same, so either action is acceptable.

Note

When drive water pressure is raised above 300 psid, **verify deleted** the following **malfunction**:

RD07-26-27, ROD 26-27 STUCK

Note

Once rod 26-27 has been withdrawn to position 8, the Lead Evaluator may choose to either continue the startup to 8%, or may move on to the next event.

RO, (cont.)

- Determines one of the following:
 - Drive water flow was not approximately 4 GPM during the insert portion of the rod withdrawal.
- OR-
- Drive water flow was approximately 4 GPM during the insert portion of the rod withdrawal.
- May refers to section H.1.1, Failure to Insert
- Raises drive water pressure 50 psid by throttling shut on 2RDS-PV101
- Attempts to INSERT/WITHDRAW rod 26-27 one notch
- Determines rod 26-27 inserted/withdrew one notch
- Lowers drive water pressure back to 260 psid
- Withdraws rod 26-27 to position 08 if necessary.

EVENT 4 - IRM D Fails Upscale

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

**TRG1 NM06D, IRM D FAILS UPSCALE,
FV=TRUE**

The following annunciators alarm:

- 603301 IRM TRIP SYSTEM B
UPSCALE/INOPERABLE alarms
- 603402 RPS B NMS TRIP alarms
- 603410 RPS B AUTO TRIP alarms

Role Play

As SM, if contacted to discuss bypassing IRM D, acknowledge the report and direct the SRO to bypass IRM D

CREW

- Recognizes and reports IRM D failure upscale

SRO

- Acknowledges report of IRM D upscale
- Directs RO to respond per ARPs

RO

- Acknowledges direction to respond per ARPs
- Determines all other IRMs are reading normally
- Informs the SRO that the IRM may be bypassed

SRO

- Acknowledges report that the IRM may be bypassed
- May contact the SM and discuss bypassing the IRM
- Directs the RO to bypass IRM D and reset half scram on B RPS

RO

- Acknowledges direction to bypass IRM D
- Bypasses IRM D per N2-OP-92, H.2.0 as follows:
 - Determines no other IRMs are bypassed
 - Performs a Channel Check (IRMs within 2 decades) to verify NO other IRM is INOPERABLE for the division being bypassed.
 - Places the joystick to BYPASS
 - Verifies the BYPASS light is lit
- Resets the half scram on B side per N2-OP-97, H.2.0 as follows:
 - Places Reactor Scram Reset Logic B and Reactor Scram Reset Logic D switches to RESET
 - Verifies PILOT SCRAM VALVE SOLENOID white lights are lit for B, D, F and H.
- Informs the SRO that IRM D has been bypassed and the RPS B reset

SRO

- Acknowledges report of IRM D bypassed and RPS B reset
- May declare IRM D inoperable and reference TS 3.3.1.1
- Determines the plant is in Mode 2 and that at least 3 channels on RPS B are operable
- Determines no additional TS actions are required

Role Play

If contacted as WWM, I&C, or OCC, then
acknowledge the report and inform them you will
begin working on a troubleshooting plan

SRO, (cont.)

- May contact I&C, WWM, or OCC

EVENT 5 Seismic Event, one Service Water Pump trip

Note

Ensure several instructors are staged to shake the back of panels in conjunction with inserting the next malfunction to simulate an earthquake

When directed by the Lead Evaluator, **insert** the following **malfunctions** and **shake** the back of several panels:

TRG2 **MT01**, SEISMIC ACCELERATION,
FV=2
CW01A, SWP A TRIP, FV=TRUE,
DT=5

The following annunciators alarm:

- 842121, Seismic Acceleration Exceeded
- 601113, Service Water Pump 1A/1C/1E Auto Trip Fail to Start

This seismic event is considered an OBE based on computer point ERNSC02

CREW

- Recognizes and reports seismic event
- Recognizes and reports loss of SWP A

SRO

- Acknowledges report of seismic event and loss of SWP A
- Directs BOP to enter N2-SOP-90
- Directs RO/BOP to respond to trip of SWP 1A

Role Play

As PO contacted to provide indications on the Seismic Monitor Panel, wait 2 minutes and inform them that an amber light is lit on the Response Spectrum Annunciator section

Role Play

As POs contacted to perform walkdowns, acknowledge report. Wait 5 minutes and inform them that there appears to be no damage.

Role Play

As Unit 1 and JAF Control Rooms, respond that you did also feel the earthquake.

SRO, (cont.)

- References TS 3.7.1 and determines <4 operable service water pumps are in operation
- Enters condition E of TS 3.7.1 and determines he has 72 hours to restore 4 service water pumps to operation.

BOP

- Acknowledges direction to enter N2-SOP-90
- Review plant process computer and determines ERSNC02 computer point is in and determines the plant has exceeded the OBE
- May contact PO and direct them to provide indications at the Seismic Monitor Panel
- Informs the SRO that N2-SOP-90 requires a plant shutdown per N2-OP-101C
- Contacts POs and directs them to perform plant walkdowns of the following areas:
 - ECCS Pump Rooms
 - ECCS Piping
 - Refuel Floor/ Spent Fuel Pool
 - Emergency Switchgear/Diesels
 - Pipe Tunnel
- Contacts Unit 1 and JAF Control Rooms to communicate receipt of Seismic Event Indications

Role Play

As PO dispatched to place service water strainers in continuous backwash, wait 5 minutes and inform the control room that all operating pump strainers are in continuous backwash

Role Play

As I&C, acknowledge the direction to perform N2-IMP-ERS-001

Role Play

As Maintenance, acknowledge direction to perform N2-MSP-V001

Note

The SRO may assign either the RO or BOP to perform the actions of the Service Water Pump trip

Role Play

As PO dispatched to inspect SWP A, wait two minutes and inform them that the pump motor is abnormally hot to the touch and the breaker overcurrent flag is tripped.

Note

The SRO may direct starting either SWP E or F

BOP, (cont.)

- Directs PO to place all service water pump discharge strainers in continuous backwash in accordance with N2-OP-11, H.3.0
- Notifies I&C TO PERFORM N2-IMP-ERS-001, Post Event Data Retrieval
- May refer to N2-OP-86, Section H.1.0 to verify operability of Loose Parts Monitor
- Informs SRO to refer to TRM 3.3.7.2 and 3.7.6
- Contacts Maintenance and directs them to perform N2-MSP-V001

SRO

- Acknowledges report from BOP to refer to TRM 3.3.7.2 and 3.7.6

BOP/RO

- Acknowledges direction to respond to SWP A trip
- May contact PO and direct them to inspect SWP A pump and breaker
- References ARP 60113 and determines flows on the operating SWPs are >10,000 gpm
- Throttles shut on 2SWP*MOV74A, B, C to maintain flows <10,000 gpm
- Determines that time permits to start a SWP per N2-OP-11, Section E.2.0
- Contacts PO and directs him to perform prestart checks of SWP E(F)

**INSTRUCTOR ACTIONS/
PLANT RESPONSE**

OPERATOR ACTIONS

Note

P&L 13. States the following: With three operable and running SWP pumps, the plant shall restore 4 operable pumps to service in an expedited fashion. In this condition the plant is in a degraded state, see Tech Spec 3.7.1 for required actions.

Role Play

As PO directed to perform steps E.2.4 through E.2.6, wait one minute and inform the control room that those steps have been complete

Role Play

As Electrical Maintenance contacted for SWP A trip, inform them you will begin working on a troubleshooting plan.

BOP/RO, (cont.)

- Determines conditions in P&L 13.0 are met
- Verifies 2SWP*MOV74E(F) IS SHUT
- Contacts PO and directs them to perform N2-OP-11, Steps E.2.4 through E.2.6 for SWP E(F)
- Determines sufficient flow is available for each SWP to have at least 2500 gpm
- Starts SWP E(F) by placing control switch in NORMAL AFTER START
- Verifies the following parameters:
 - Red running light lit.
 - Pump Current is ≤ 76 amps.
 - 2SWP*MOV74E(F) opens fully.
 - ALL running Service Water Pump Flows are ≥ 2500 gpm.
- Informs SRO that SWP E(F) has been started
- May place SWP A control switch in PTL
- Contacts Electrical Maintenance
- Fully opens 2SWP*74B, C, and D

EVENT 6 – Seismic Aftershock and Loss of Div II Switchgear and RCIC Trip.**Note**

Ensure several instructors are staged to shake the back of panels in conjunction with inserting the next malfunction to simulate an earthquake

When directed by the Lead Evaluator, **insert** the following **malfunctions** and **shake** the back of several panels:

TRG3 **RC06**, RCIC TURBINE TRIP,
FV=TRUE, DT=3
ED04G, SWG 17 FAULT, FV=TRUE,
DT=10

Seismic aftershock

Loss of power to Division II SWG

Division II EDG starts up and powers the Div II SWG

The following annunciators alarm:

- 852240, 4KV BUS 103 Undervoltage
- 852536, 4KV BUS NNS 017 SPLY ACB 17-2 Auto Trip/FTC
- 852548, 4KV BUS NNS 017 Electrical Fault
- 601319, RCIC Valves Motor Overload
- 601301, RCIC Turbine Exhaust Press High

CREW

- Recognizes and reports seismic aftershock
- Recognizes and reports loss of Division II SWG and Div II EDG repowering the bus

Note

If the SRO directs the BOP/RO to reenter N2-SOP-90, respond to any Role Plays as per the previous event.

CREW, (cont.)

- Recognizes and reports RCIC turbine trip

SRO

- Acknowledges report of:
 - Seismic aftershock
 - Loss of Division II SWG
 - RCIC turbine trip
- May direct RO/BOP to reenter N2-SOP-90
- Directs BOP to enter N2-SOP-03

BOP/RO

- Acknowledges direction to reenter N2-SOP-90
- Takes actions per N2-SOP-90 as per the previous event

BOP

- Acknowledges direction to enter N2-SOP-03
- Determines both divisions did not lose power
- Determines Division II EDG started and power its bus
- Verifies Division I non-essentials are closing
- When Div II EDG power its bus, verifies the Division II non-essentials are closing and one Division II SWP starts
- Opens all non-essentials
- Starts SWP E
- May throttles 2SWP*MOV74B, C, and D to maintain SWP flows <10,000 gpm

Role Play

As PO directed to perform running checks and N2-OSP-LOG-W001, acknowledge the request

BOP, (cont.)

- Verifies the following parameters for Div II EDG:
 - Voltage approximately 4160 V
 - Frequency approximately 60 Hz
 - SWP Flow >780 gpm
- Restores pneumatics to the drywell as follows:
 - Opens 2IAS*SOV184
 - Opens 2IAS*SOV165
- Informs the SRO to review EPIP-EPP-02 for emergency classification
- Refers to N2-SOP-03, Attachment 1
- Restores DW cooling by restarting the following fans:
 - 2DRS-UC1A
 - 2DRS-UC1B
 - 2DRS-UC1C
 - 2DRS-UC1D
 - 2DRS-UC2A
 - 2DRS-UC2B
 - 2DRS-UC2C
 - 2DRS-UC2D
 - 2DRS-UC3A
- Contacts PO and directs them to perform:
 - Running checks on Division II EDG
 - N2-OSP-LOG-W001
- Restores CMS as follows:
 - Opens 2CMS*SOV61B (CONMTM ATM MON DW INBD ISOL SUPPLY)

Role Play

As RP, acknowledge direction to start RE10A and B

Note

At the Lead Evaluators discretion, once the SRO identifies TS 3.5.3 and the BOP has restored containment monitoring systems, the next event may be initiated

BOP, (cont.)

- Opens 2CMS*SOV61A (CONMTM ATM MON DW INBD ISOL SUPPLY)
- Opens 2CMS*SOV63A (CONMTM ATM MON DW INBD ISOL RETURN)
- Opens 2CMS*SOV63B (CONMTM ATM MON DW INBD ISOL RETURN)
- Verifies in standby the Div II H2/O2 Monitor in accordance with N2-OP-82
- Notifies Rad Protection to start 2CMS*RE10A and 10B AND verify the monitor is on line AND working properly

SRO

- References TS 3.5.3, Condition A and immediately determines HPCS is operable. Enters 14 day LCO to restore RCIC to operable status

EVENTS 7 and 8 - RCIC Steam Leak in RB with failure of RCIC to isolate requiring anticipating blowdown

Note

At the direction of the Lead Evaluator, the RCIC steam leak may be inserted earlier in the previous event.

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

TRG4 RC12, RCIC STEAM LEAK IN RB,
FV=25, RT=20:00

The following annunciator alarms:

851254 PROCESS AIRBORNE RAD MONT.

ACTIVATED

601157 RX BLDG GENERAL AREA TEMP HIGH

Note: H

CREW

- Recognizes and reports RB high temp

SRO

- Acknowledges report of high RB temperature
- Enters N2-EOP-SC on RB area temperature above an isolation setpoint
- Directs RO to evacuate the RB
- May direct BOP to verify the RB isolated as designed
- Directs BOP to monitor RB temperatures

Note

The RB isolated during the previous event due to loss of AC power, however the SRO may still direct the BOP to recheck the lineup.

BOP

- Acknowledges direction verify the RB isolated as designed and to monitor RB temperatures
- May verify the RB isolated as designed by performing the following:
 - Verifies closed the following dampers:
 - HVR*AOD1B, RX BLDG VENT SUPPLY AIR ISOL
 - HVR*AOD10B, REFUELING FLOOR EXHAUST ISOL
 - HVR*AOD9B, RX BLDG GENERAL AREA EXH FN DISCH ISOL DMPR
 - HVR*AOD1A, RX BLDG VENT SUPPLY AIR ISOL
 - HVR*AOD10A, REFUELING FLOOR EXHAUST ISOL
 - HVR*AOD9A, RX BLDG GENERAL AREA EXH FN DISCH ISOL DMPR
 - Verifies the following Emergency Recirculation System actions have occurred:
 - HVR*AOD6B(A), EMER RECIRC INLET DAMPER, is open
 - HVR*AOD34B(A), EMER RECIRC TEST DAMPER, is closed
 - SWP*AOV97B(A), RECIRC COOLING COIL FLOW RETURN, modulating

BOP, (cont.)

- HVR*UC413B(A),
RECIRCULATION FAN, is
running
- Verifies ALL Reactor Building Unit
Coolers NOT in PULL-TO-LOCK
are running
- Verifies the following Standby Gas
Treatment System actuations:
 - GTS*MOV1A, INLET RX BLDG
VENTILATION, open
 - GTS*AOV2A, TRAIN A INLET
VLV, open
 - GTS*FN1A, SBGTS FAN,
running
 - GTS*AOV3A, FAN 1A DISCH
ISOL VLV, open
 - GTS*MOV1B, INLET FROM RX
BLDG VENTILATION, open
 - GTS*AOV2B, TRAIN B INLET
VLV, open
 - GTS*FN1B, SBGTS FAN,
running
 - GTS*AOV3B, FAN 1B DISCH
ISOL VLV, open
- Confirms Reactor Building
differential pressure being
maintained at approximately -0.60
- Determines BOTH HVR*UC413A
AND 413B are running, and shuts
down either HVR*UC413A or B by
placing the control switch to STOP

INSTRUCTOR ACTIONS/
PLANT RESPONSE

OPERATOR ACTIONS

Note

As RCIC pipe chase temperature rises above 135F, WCS will isolate but RCIC will not isolate as expected.

- Monitors RB temperatures and determines WCS system isolated and RCIC system should have isolated
- Informs the SRO that RCIC should have isolated
- Attempts to manually isolate RCIC by taking the following keylock switch to shut on P601
 - 2ICS*MOV128
 - 2ICS*MOV121
- Reports to SRO that RCIC failed to isolate manually

RO

- Acknowledges direction to evacuate the RB
- Uses the GAITRONICS and evacuates the RB

SRO

- Acknowledges report of RCIC failing to isolate automatically and manually
- Determines a primary system is discharging into the RB
- Determines one RB area is above a maximum safe value
- **Enters N2-EOP-RPV and directs RO to place the mode switch in shutdown**

RO

- Acknowledges direction to place the mode switch in shutdown
- **Places mode switch in shutdown**
- Provides scram report to the SRO

CT-1.0 Given secondary containment temperatures approaching a maximum safe value in one area, the crew will initiate a manual reactor scram IAW N2-EOP-RPV

CT-1.0 Given secondary containment temperatures approaching a maximum safe

value in one area, the crew will initiate a manual reactor scram IAW N2-EOP-RPV

SRO

- Acknowledges scram report
- Directs RO to enter N2-SOP-101C
- Directs RO to maintain RPV water level 160 to 200 inches using feed and condensate
- Directs RO to maintain RPV pressure 800 to 1000 psig using EHC

RO

- Acknowledges direction to:
 - Enter N2-SOP-101C
 - Maintain RPV water level 160 to 200 inches using feed and condensate
 - Maintain RPV pressure 800 to 1000 psig using EHC
- Performs initial actions of N2-SOP-101C:
 - Verifies SDV vent and drain valves have closed
 - Verifies FWLC controlling level >154.3 inches
- May determine the scram can be reset and attempt to reset the scram:
 - Notifies Radwaste to operate all pumps for 2DER-TK2A.
 - Places all four SDV high level bypass switches to bypass.
 - Using scram reset switches, reset the scram and verifies all 8 pilot solenoid lights lit.

Role Play

As Radwaste, acknowledge the direction to operate all pumps for 2DER-TK2A

Role Play

As PO directed to energize 2WCS-MOV107, acknowledge the report.

Note

At this point the SRO may make the decision to "Anticipate Blowdown"

CT-2.0A Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves IAW N2-EOP-RPV

Note

If the evaluation team would like to see the crew enter N2-EOP-C2, then at the discretion of the Lead Evaluator, **modify** the following **malfunction** as necessary to cause a second area temperature to go above the maximum safe value:

RC12, RCIC STEAM LEAK IN RB

RO, (cont.)

- As necessary, resets setpoint setdown per general actions flowchart or per N2-OP-3, section H.1.0
- Maintains RPV water level 160 to 200 inches using feed and condensate
- As necessary inserts SRMs and IRMs
- May direct energizing 2WCS-MOV107
- May shutdown HWC
- Maintains RPV pressure 800-1000 psig using EHC

BOP

- Continues to monitor RB temperatures.
- Determines and reports a second RB area temperature is rising and approaching a maximum safe value

SRO, (Anticipate Blowdown)

- Acknowledges report of second RB area temperature approaching a maximum safe value
- **Directs the RO to open 5 main turbine bypass valves**

RO

- Acknowledges direction to open 5 main turbine bypass valves

CT-2.0A Given secondary containment temperatures approaching or above maximum safe values in one area, the crew will open 5 main turbine bypass valves IAW N2-EOP-RPV

Note

The BOP should continue to monitor temperatures until he verifies all RB temperatures are lowering. If a second area temperature goes above a maximum safe value, then a blowdown MUST be performed per N2-EOP-C2 and Critical Task 2.0B must be evaluated

CT-2.0B Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves IAW N2-EOP-C2

RO, (cont.)

- Using the Bypass Opening Jack Increase Pushbutton, opens 5 bypass valves
- Informs the SRO that 5 bypass valves are open

BOP

- Continues to monitor RB temperatures
- If temperatures continue to rise, informs the SRO that a second area temperature is above the maximum safe value

SRO, (N2-EOP-C2)

- Acknowledges report of a second area temperature above a maximum safe value
- Enters N2-EOP-C2
- Determines the reactor will stay shutdown without boron
- Determines drywell pressure is <1.68 psig
- Determines suppression pool level is above 192 feet
- Directs BOP to open 7 ADS valves

BOP

- Acknowledges direction to open 7 ADS valves.
- Determines no ECCS pump is running

CT-2.0B Given secondary containment temperatures above maximum safe values in two areas, the crew will open 7 ADS valves IAW N2-EOP-C2

TERMINATION CRITERIA:

RPV depressurization in progress and secondary containment temperatures lowering

BOP, (cont.)

- Takes control switches to OPEN at BOTH 2CEC*PNL628 and 2CEC*PNL631 UNTIL a total of 7 SRVs are open:
 - MSS*PSV137
 - MSS*PSV127
 - MSS*PSV126
 - MSS*PSV121
 - MSS*PSV134
 - MSS*PSV130
 - MSS*PSV129
- Reports to the SRO that 7 ADS valves are open.

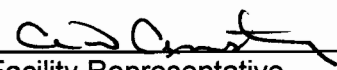
NRC JPM S-1
Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Align SBGTS Train "A" to the Drywell

Revision: NRC 2012

Task Number: 2000070501

Approvals:

 / 9/15/11
Facility Representative Date

NA EXAM SECURITY /
General Supervisor Date
Operations (Designee)

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, SBTG 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. <i>Evaluator Acknowledge repeat back providing correction if necessary.</i>	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-OP-61A obtained. Precautions & limitations reviewed & section H.1.0 referenced.	Sat/Unsat
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Note: If necessary, instructor cue operator that time does not permit the filling out of attachment 3.

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
<p>5. At 2CEC*PNL870, start SBGTS "A".</p> <p><i>The following alarms actuate:</i></p> <p>870110 SBGTS TRAIN A AIR FLOW LOW</p> <p>870102 SBGTS TRAIN A HTR CHAN 1A DIFF TEMP LO</p>	<p>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.</p>	Pass/Fail
<p>6. At CEC*PNL870, verify the following:</p> <ul style="list-style-type: none"> • GTS*MOV1A opens • GTS*AOV2A opens • GTS*AOV3A opens • GTS*FN1A starts 	<p>At P870, verify</p> <p>GTS*MOV1A, GTS*AOV2A, GTS*AOV3A open GTS*FN1A starts Observe Red Light ON, Green Light OFF.</p>	Sat/Unsat
<p>7. Verify that chemistry is standing by to start the sampling required during the vent.</p> <p>Cue: <i>If requested, inform Operator that Chemistry is preparing to sample during the vent.</i></p>	<p>Contacts Chemistry to prepare to sample during the vent per ODCM Table D3.2.1-1</p>	Sat/Unsat
<p>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</p>	<p>Checks that RB diff pressure is stable</p>	Sat/Unsat
<p>9. At CEC*PNL873, verify the following valves closed:</p> <ul style="list-style-type: none"> • CPS*AOV104 • CPS*AOV105 • CPS*AOV110 • CPS*AOV111 • GTS*SOV102 • GTS*AOV101 	<p>At P873, verify valves closed by observing Green Light ON and Red Light OFF.</p>	Sat/Unsat

Performance Steps	Standard	Grade
10. At CEC*PNL875, verify the following valves closed: <ul style="list-style-type: none"> • 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. <i>Cue: When contacted respond as Chemistry and acknowledge the direction to start ODCM Table D3.2.1-1 required sampling</i>	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: <ul style="list-style-type: none"> • 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.”

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 Date
Operations (Designee)

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
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5. Remote Functions:

a.	RC02, RCIC LEVEL 8, FV=DEFEATED	INSERTED
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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
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8. Event Triggers:

a.	Event # 1	Event Action:	zdr cvs07(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. <i>Evaluator Acknowledge repeat back providing correction if necessary.</i>	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	<ul style="list-style-type: none"> Opens ICS*MOV120, TURBINE STEAM SUPPLY VLV. (Red light ON, Green light OFF) Observes E51-C002-M1 and verifies speed is rising Verifies open ICS*MOV143, Pmp Minimum flow to Suppression Pool, (Red light ON, Green light OFF). 	Pass/Fail Sat/Unsat 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
<ul style="list-style-type: none"> RCIC Turbine speed rises on E51-C002-M1 	Observes E51-C002-M1 and verifies speed is rising	Sat/Unsat
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • Observes E51-C002-M1 and maintains speed >1500 rpm • Observes E51-R606 and maintains flow between 400 and 600 gpm 	Pass/Fail 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: <ul style="list-style-type: none"> • 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"

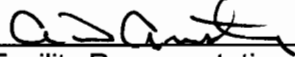
NRC JPM S-3
Constellation Energy Group
NINE MILE POINT UNIT 2
OPERATOR JOB PERFORMANCE MEASURE

Title: Shift Running Instrument Air Compressors

Revision: NRC 2012

Task Number: 2780040101

Approvals:

 / 9/15/11
Facility Representative Date

NA EXAM SECURITY /
General Supervisor Date
Operations (Designee)

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 158
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 2
b.	IA04A , IAS COMPRESSOR LAG AUTO START FAILURE, FV=TRUE	INSERTED
c.	IA04B , IAS COMPRESSOR BACKUP AUTO START FAILURE, FV=TRUE	INSERTED

4. Event Triggers:

a.	Event # 2	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. <i>Evaluator Acknowledge repeat back providing correction if necessary</i>	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: <ul style="list-style-type: none">• Verify OFF/OPERATE switch in OPERATE• Verify UNLOAD/NORMAL switch in NORMAL• Confirm fault indicator lamps extinguished	Requests an in-plant operator to verify that IAS-C3B is ready to start.	Sat/Unsat

Cue: Report that the OFF/OPERATE switch is in OPERATE, the UNLOAD/NORMAL switch is in NORMAL, and all fault indicator lights are OFF

4) Slowly open 2CCP-V523	Request that the in-plant operator slowly open 2CCP-V523	Sat/Unsat
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Cue: Report that 2CCP-V523 is open

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
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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: <ul style="list-style-type: none"> • 2IAS-PI25B, Oil Pressure >20 psig • 2IAS-PI41B, Intercooler Press. ~40 psig • 2IAS-PI24B, Comp. Disch. Press. 125 psig <p>Cue: When asked, Oil pressure is >20 psig, intercooler pressure is 40 psig, and discharge pressure is <125 psig</p>	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	Contacts operator and directs them to slowly close 2CCP-V523	Sat/Unsat
Cue: Report 2CCP-V523 is closed		
10) Verify off-going compressor UNLOAD/NORMAL switch in UNLOAD	Contacts operator and directs them to place A compressor UNLOAD/NORMAL switch to UNLOAD	Sat/Unsat
Cue: Report A compressor UNLOAD/NORMAL switch is in UNLOAD		
11) Slowly open off-going 2CCP-V520, 2CCP-SOV87A bypass line isolation	Contacts operator and directs them to open 2CCP-V520.	Sat/Unsat
Cue: Report that 2CCP-V520 is open		

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



Facility Representative Date 9/13/12

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer: _____ (RO/SRO)

Trainer/Evaluator: _____

Evaluation Method: ☒ Perform ☐ Simulate

Evaluation Location: ☐ Plant ☒ 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. <i>Evaluator Acknowledge repeat back providing correction if necessary</i>	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
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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
<ul style="list-style-type: none"> At least 2 booster pumps running. 	Observes 3 boosters running at P851	Sat/Unsat
<ul style="list-style-type: none"> 2FWR-FV2s closed 	Observes REACTOR FD P1A, P1B and P1C RECIRC VLV POSN indicators at 0% VALVE POSITION on P851	Sat/Unsat
<ul style="list-style-type: none"> Output of the following controllers in manual with 0% output: <ul style="list-style-type: none"> FWS-HIC55s 	At P603: Verifies HIC55A in Manual at 0% output	Sat/Unsat
	Verifies HIC55B in Manual at 0% output	Sat/Unsat
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> <ul style="list-style-type: none"> 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
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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."

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

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3.4 Commitments

<u>Sequence Number</u>	<u>Commitment Number</u>	<u>Description</u>
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.

ATTACHMENT 10: TWO LOOP JET PUMP OPERABILITY VERIFICATION

Sheet 1 of 15

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 $\leq 85\%$ for FCV A AND $\leq 95\%$ 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..... () 8

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 $\leq 85\%$ for FCV A and $\leq 95\%$ 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..... ()

Y

- Table 10-1

Y

- Table 10-2

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.
- 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.

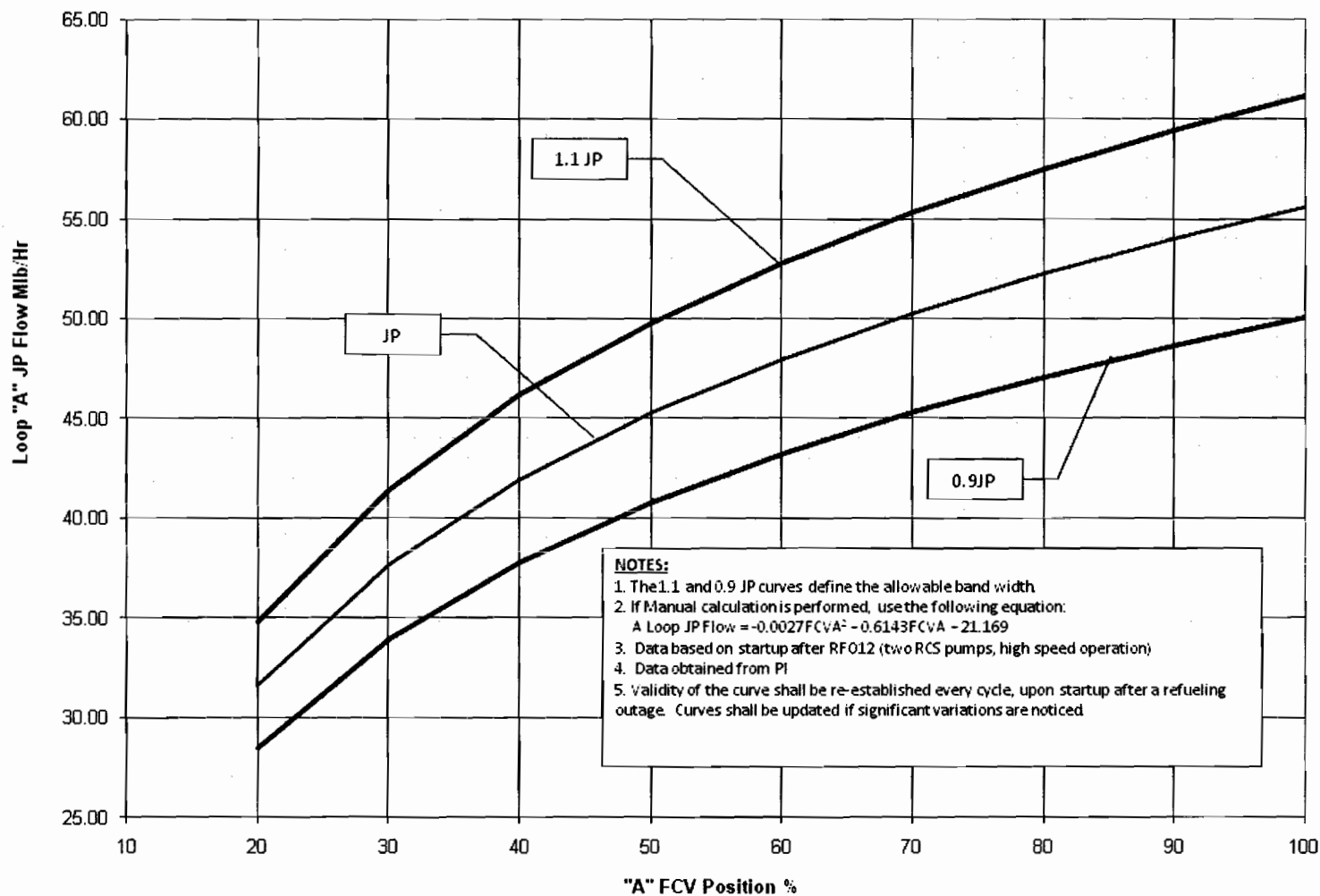
2.4 Compare the actual Loop A AND Loop B Jet Pump Flows to the respective Loop High AND Low Limits, as recorded in Table 10-1, AND indicate below whether the actual values fall within the Limits:

- | | <u>Yes</u> | <u>No</u> |
|-------------------|------------|-----------|
| • Loop A: (✓) () | (✓) | () |
| • Loop B: (✓) () | (✓) | () |

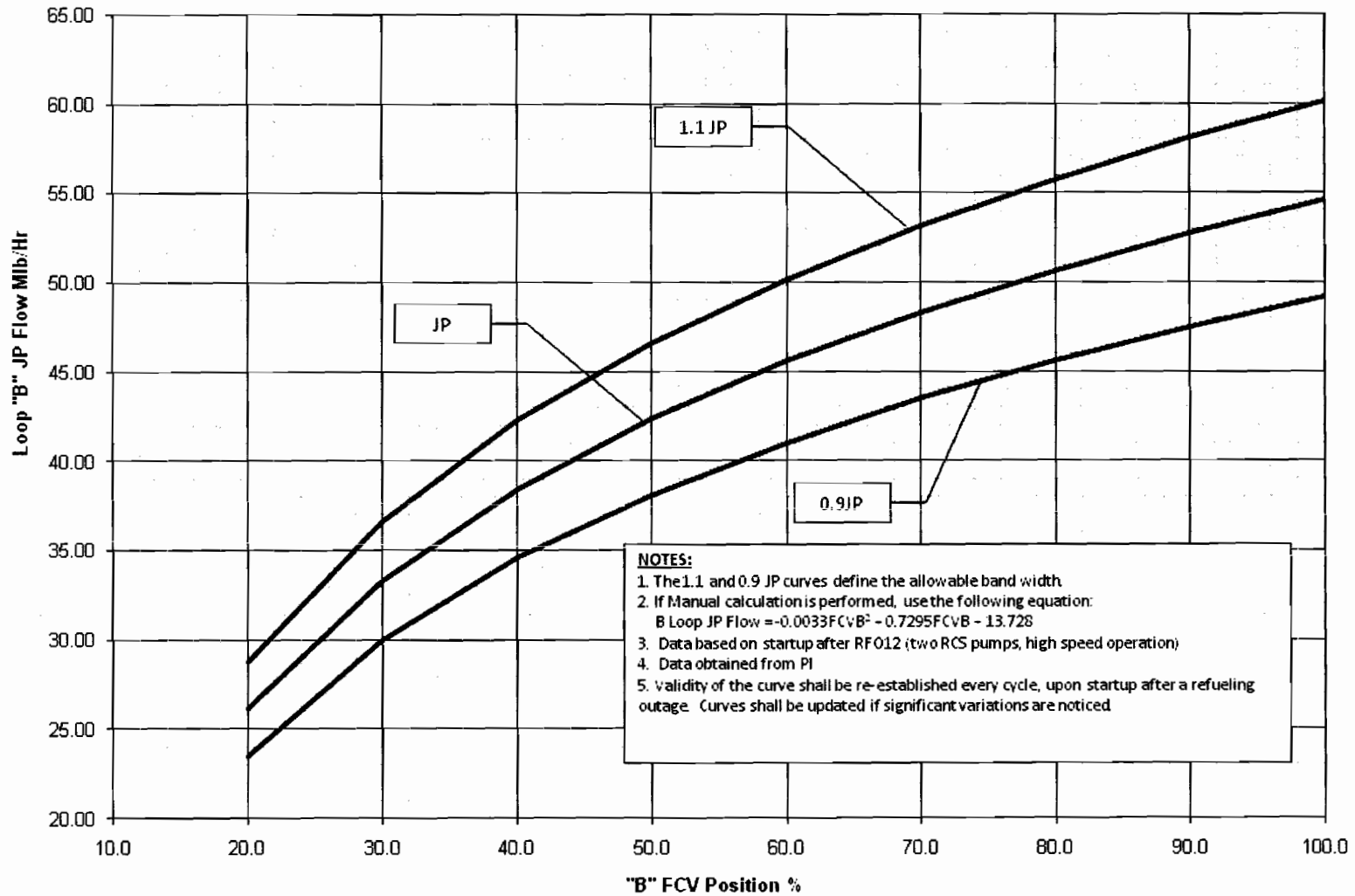
TABLE 10-1

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.

8

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..... ()

8

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 ()

8

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 ()

8

- 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.

$$JP = 12.197 + 0.0006WDA + 0.000000008WDA^2$$

$$JP \text{ high limit} = (1.1)JP$$

$$JP \text{ low limit} = (0.9)JP$$

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.

$$JP = 12.197 + 0.0006WDB + 0.000000008WDB^2$$

$$JP \text{ high limit} = (1.1)JP$$

$$JP \text{ low limit} = (0.9)JP$$

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:

- | | <u>Yes</u> | <u>No</u> |
|---------------|------------|-----------|
| • Loop A: (✓) | (✓) | () |
| • Loop B: (✓) | (✓) | () |

Y

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)

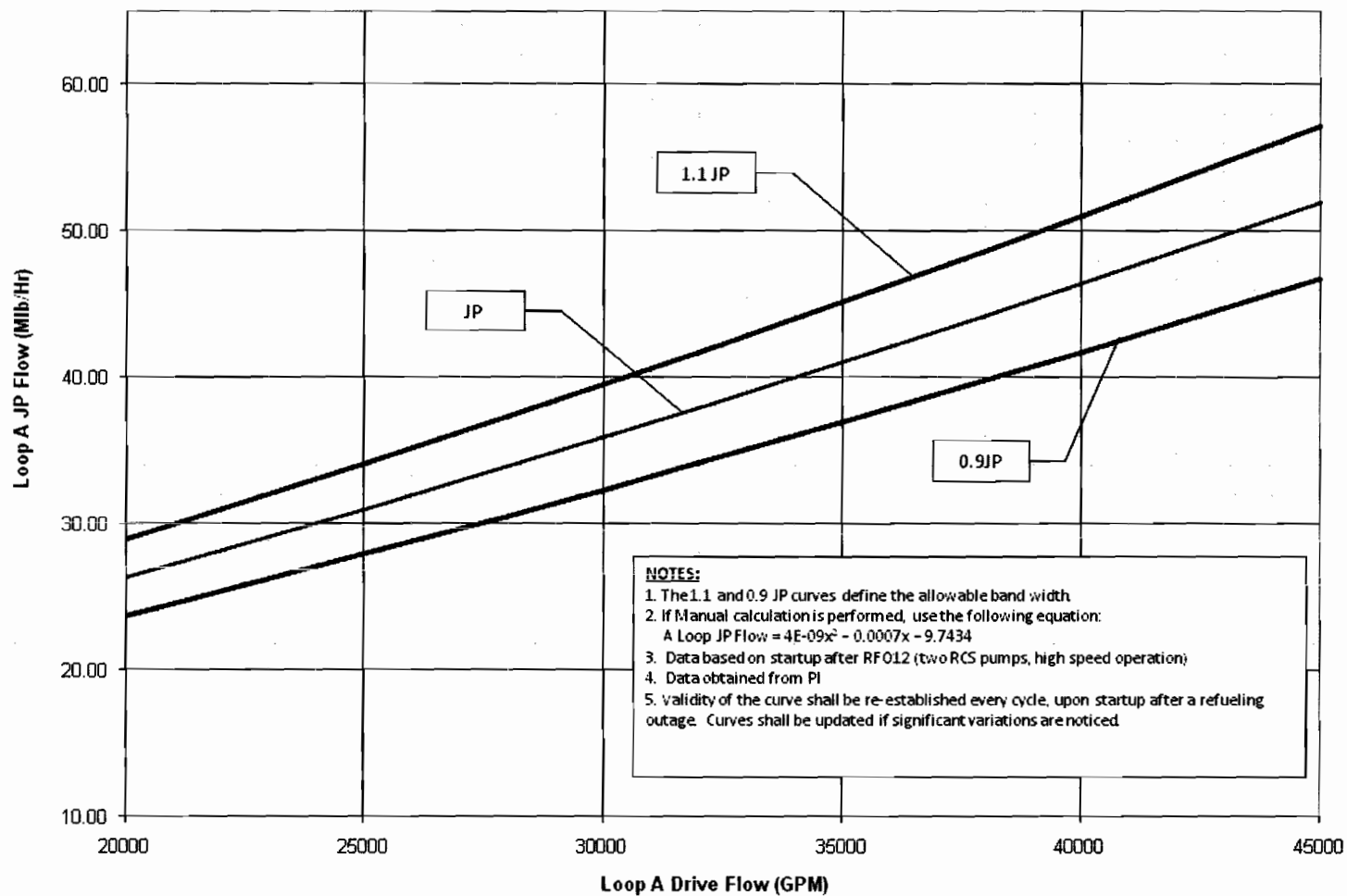
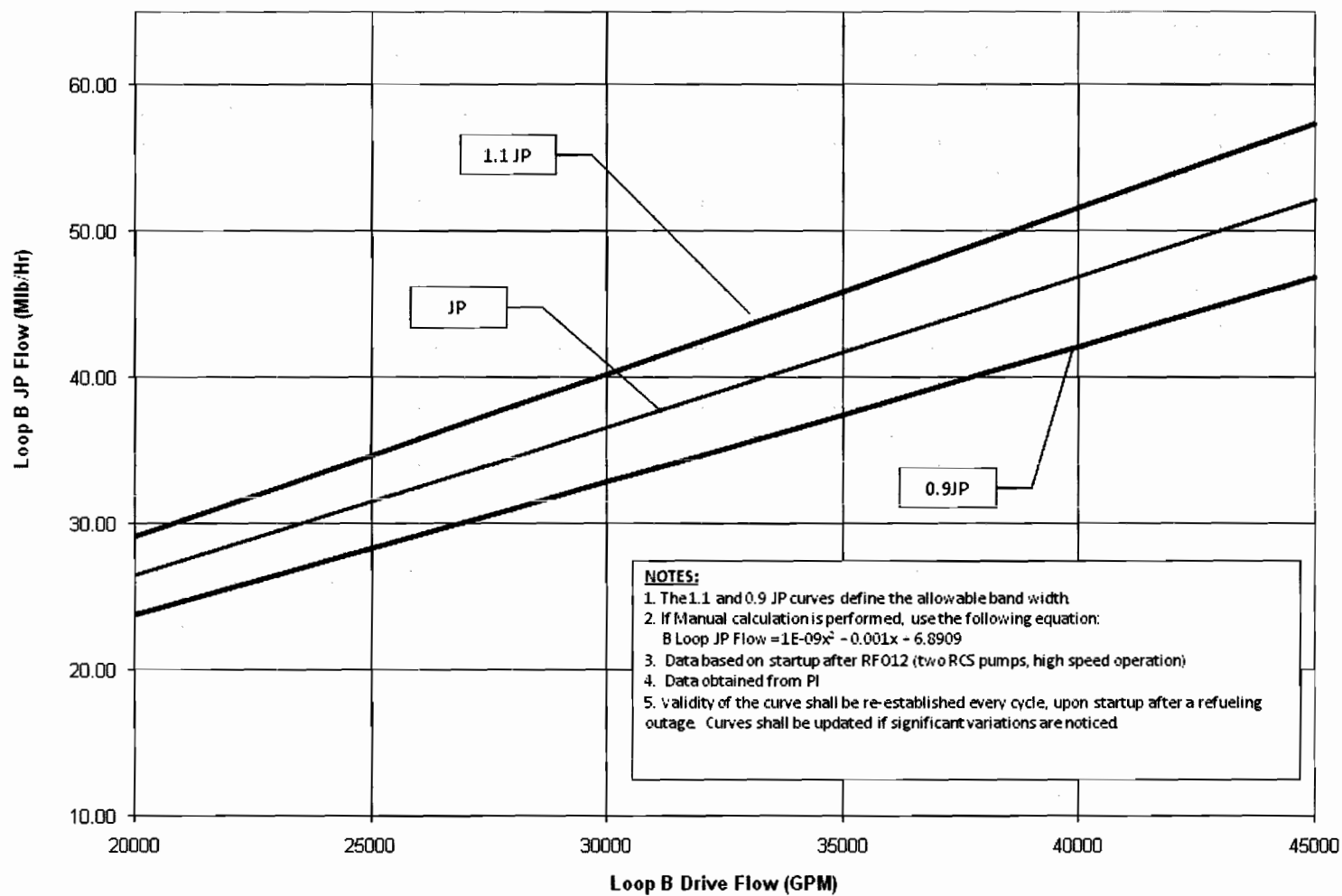


FIGURE 10-4

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 on 2CEC-PNL619 (H13-P619), in Table 10-3.

8

4.2 Calculate Loop A Average Jet Pump ΔP for AND record in Table 10-3.

8

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.

8

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:

<u>Jet Pump</u>	<u>Yes</u>	<u>No</u>
1	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
2	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
3	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
4	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
5	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
6	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
7	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
8	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
9	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
10	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)

8

Initials

- 4.5 Record value for each Jet Pump ΔP in Loop B, as read on 2CEC-PNL619 (H13-P619), on Table 10-3.
- 4.6 Calculate Loop B Average Jet Pump ΔP for AND record on Table 10-3.
- 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.
- 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:

<u>Jet Pump</u>	<u>Yes</u>	<u>No</u>
11	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
12	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
13	(<input type="checkbox"/>)	(<input checked="" type="checkbox"/>)
14	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
15	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
16	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
17	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
18	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
19	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)
20	(<input checked="" type="checkbox"/>)	(<input type="checkbox"/>)

ATTACHMENT 10 (Cont)

TABLE 10-3 (Low Speed Operation)

Sheet 13 of 15

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):		

ATTACHMENT 10 (Cont)

TABLE 10-3 (40-74% Power)

Sheet 14 of 15

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):		

ATTACHMENT 10 (Cont)

TABLE 10-3 (75-100% Power)

Sheet 15 of 15

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 \div 10 = <u>41.5</u> % 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	36	%	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 \div 10 = <u>39.6</u> % Loop B Average Jet ΔP Pump		
Calc Performed By (Initials):			Independently Verified By (Initials):		

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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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: <i>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.</i>	Obtains a copy of N2-OSP-RCS-@001 and references the following sections: <ul style="list-style-type: none"> <input type="checkbox"/> Section 6.0, Precautions and Limitations <input type="checkbox"/> Section 8.1 <input type="checkbox"/> Attachment 7 	Sat/Unsat
3. WHEN data is recorded, calculate heatup OR cooldown rate AND record	Calculates heatup rate for last 15 minute interval: $\text{Heatup rate} = (410^{\circ}\text{F} - 384^{\circ}\text{F}) \times (4) = 104^{\circ}\text{F}/\text{hour}$ 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: $\text{Heatup rate} = (410^{\circ}\text{F} - 309^{\circ}\text{F}) / (1 \text{ hour}) = 101^{\circ}\text{F}/\text{hour}$	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 _____

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.”

ATTACHMENT 7: HEATUP/COOLDOWN DATA SHEET

Section Performed (circle one) (8.1) 8.2 8.3

Page 1 of 1

Time (15 Min Intervals)	RPV Press	* Reactor Coolant Temperature				#	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	Independent verification (SRO/STA)
						H/U						
		Recirc Loop Temp		RHR Loop Temp		or C/D						
		Loop A	Loop B	Loop A	Loop B	Rate	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
(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.

NINE MILE POINT NUCLEAR STATION UNIT 2

SURVEILLANCE TEST PROCEDURE

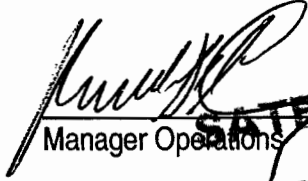
N2-OSP-RCS-@001

REVISION 08

RCS PRESSURE/TEMPERATURE VERIFICATION

TECHNICAL SPECIFICATION REQUIRED

Approved by:
R. C. Godley


Manager Operations

**SATELITE MASTER
COPY
TRAINING ONLY**

3-5-04
Date

Effective Date: 03/09/2004

ATTACHMENT 2: TYPE 2 PROCEDURE CHANGE EVALUATION

TYPE 2 PROCEDURE CHANGE EVALUATION	PCE Number
---	------------

Part 1 - Description

A. Procedure No. <div style="text-align: center; font-size: 1.2em;">N2-OSP-RCS_@001</div>	Revision <div style="text-align: center; font-size: 1.2em;">08</div>	Title <div style="text-align: center; font-size: 1.2em;">RCS PRESSURE/TEMPERATURE VERIFICATION</div>
B. Change Summary and Reason: <input type="checkbox"/> Continued on Attached Modified Heatup/Cooldown data sheet to include a columns target temperatures and pressures and an SRO/STA verification.		
C. Reason: <input type="checkbox"/> Result of mod, DDC or other document <input type="checkbox"/> Related CR No: _____ <input checked="" type="checkbox"/> Other		
Explanation: Provides additional barriers against exceeding 100 degree per hour limit.		
D. Duration: <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> One-Time-Only E. PM/ST Changes? <input type="checkbox"/> Yes, change submitted <input checked="" type="checkbox"/> No F. CDS Changes? <input type="checkbox"/> Yes, NIP-PRO-03 Att 4 Submitted <input checked="" type="checkbox"/> No G. Pages Affected: <u>3, 6, 7, 22</u>		
H. Preparer: Print Name: <u>Ben Raye</u> Phone: <u>4496</u> Sign Name: <u>[Signature]</u> Date: <u>11/14/08</u>		

Part 2 - Review/Approval Refer to PCE Criteria on Attachment 3 (Back of this form).

A. Technical Verifier Can NOT perform QR	(Print Name, Initial and Date) <u>John Tofthacker</u> <u>JS</u> <u>11/14/08</u>
B. Cross-Discipline Review <input checked="" type="checkbox"/> N/R Use criteria on back of form	(Print Name, Initial and Date) _____
C. QR Review <input type="checkbox"/> N/R Can NOT perform Tech Verification Completed per NIP-PRO-03/ CNG-OP-1.01-1004	(Print Name, Initial and Date) <u>Steve Nicolaos</u> <u>SN</u> <u>11-14-08</u>
D. 10 CFR 50.59 Reviews: <input type="checkbox"/> N/R Based on Attachment 3, Criteria Number _____, or check one of the following: <input checked="" type="checkbox"/> Applicability Determination - Attached <input type="checkbox"/> 50.59 Screen - Attached <input type="checkbox"/> 50.59 Evaluation Number _____	
E. Technical Review Committee Chairperson (for Special Test Procedures only) Approval <input checked="" type="checkbox"/> N/R	(Print Name, Initial and Date) _____
F. RPO Review and Approval** IF qualified may perform Tech Verif <u>OR</u> QR.	(Print Name, Initial and Date) <u>T. TANGUY</u> <u>TT</u> <u>11/14/08</u> Is Training or other actions required? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes*
G. Manager, Director or General Supervisor Approval Return to RPO for incorporation.	(Print Name, Initial and Date) <u>H. Strahly</u> <u>HS</u> <u>11/14/08</u>
IF qualified may perform Tech Verif or QR	

* 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.

ATTACHMENT 3: PCE CRITERIA

"CHANGE OF INTENT" CRITERIA

If any of the questions can be answered "Yes," then the change shall be considered a Change of Intent and the change shall be processed as a revision.

Will the proposed change add a new task, evolution or section to the procedure that was NOT previously performed in the procedure?

Will the proposed Change affect the procedure's margin of nuclear or personnel safety by:

1. Altering what is to be accomplished by the procedure in a safety significant-manner?
2. Altering the methods by which the objectives are accomplished in a safety-significant manner?
3. Altering the sequence of steps in a safety-significant manner?
4. Removing or modifying an initial condition in a safety-significant manner?
5. Altering the objectives of the procedure in a safety-significant manner?
6. Removing or modifying acceptance criteria or limitations in a safety-significant manner?
7. Removing or modifying a precaution in a safety-significant manner?
8. Modifying a commitment annotated in the procedure in a safety-significant manner?
9. Resulting in a change in material not supported by approved engineering?
10. Resulting in the implementation of a Temporary Plant Configuration Change that affects Nuclear Safety?

10 CFR 50.59 REVIEW CRITERIA

A 10CFR50.59 Review for PCEs is NOT REQUIRED if one or more of the following conditions are met:

1. Corrections of minor, obvious errors to **existing** component numbers (such as those that are obvious because no such component exists, obvious transposition, obvious due to the sequence of information, missing OR incorrect safety class designators ("")) that have not been changed as a result of design change, configuration change, OR a new Appendix B determination.
2. Strictly editorial corrections to text that do not alter the technical content such as:
 - Correcting misspelled words
 - Correcting step, figure, or attachment numbers
 - Correcting revision or page numbers
 - Updating phone numbers
3. The change enhances or further defines **existing** information that in no way alters the technical approach (such as improving or adding location information, nomenclature, cubical numbers).
4. Addition of commitment annotations (step protection) to **existing** information and associated commitment references.
5. Addition of sign-off and or verification blocks to **existing** steps. Addition of check-off blocks to **existing** steps for the purpose of place keeping

A 10CFR50.59 Review (at least a Screen) is REQUIRED for PCEs issued against maintenance procedures if they add or change "important" information. Important information includes, but is not limited to, acceptance criteria and/or the operation and control of SSCs other than those being "maintained" (See DER 2005-539). Consult section 4.2.2 of NAI-DSE-01 for more information. Note that in the context of 10CFR50.59, maintenance procedures include procedures for implementing surveillances and inspections, including those required by the Technical Specifications.

CROSS DISCIPLINARY REVIEW CRITERIA

Cross-disciplinary review is required as follows:

- (C4) 1. Changes to Special Test Procedures (review to be performed per CNG-OP-1.01-1004)
- (C2) 2. Changes, deletes, OR adds "LSFT" protected steps (review to be performed by System Engineering)
- (C6) 3. Changes, deletes, OR adds "ASME" or "IST" protected steps or modifies the test method (review to be performed by IST group and ASME Section XI Programs Group)
4. Changes, deletes, OR adds a temporary alteration (review to be performed by System Engineering)
5. Changes, deletes, OR adds "EOP" or "SOP" protected steps (review to be performed by EOP or SOP Coordinator respectively)
6. Changes to "EOPs" or "EOP" support procedures (review to be performed by EOP Coordinator).
7. Changes to "SOPs" or "SOP" support procedures (review to be performed by SOP Coordinator).
- (C5) 8. Changes to the Special Evolution designation of a procedure per GAP-OPS-117 (review to be performed by the GS System Engineering).
9. As required per NIP-PRO-03 Attachment 2, Cross Disciplinary Review AND Input Requirements. (review to be performed by appropriate cross-disciplinary organization)
10. Adds, removes, OR changes the normal configuration of a plant component (review to be performed by Operations SOMS administrator).
11. Changes, deletes OR adds job duration or job resources, (review to be performed by Work Planning supervision).
12. Changes, deletes OR adds to task or evolution risk assessment, (review to be performed by Probability Risk Assessment Group).

LIST OF EFFECTIVE PAGES

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ii		21			
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2		23			
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1.0 PURPOSE

- 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 Applicability

This procedure is required to be current at all times during the operations listed below.

2.0 TECHNICAL SPECIFICATIONS

2.1 Surveillance Requirements

- 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 Limiting Condition for Operations

- 2.2.1 ITS 3.4.11, RCS Pressure and Temperature (P/T) Limits

2.3 Frequency

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 multiplying the change in temperature from the last data entry by 4.

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

8/11/18
N/A

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 $\leq 20^\circ\text{F}$ 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.

7.0 PREREQUISITES

7.1 Specify the reason for test performance:

Reactor heatupTRH7.2 Verify permanent plant instrumentation is calibrated using PMST Database.
Mark unused instruments N/A.

<u>Parameter</u>	<u>Instrument ID Number</u>	<u>Cal. Due Date</u>
REACTOR PRESSURE	C33-R609 (2ISC*PT109)	<u>12/21/11</u>
REACTOR PRESSURE WIDE RANGE	C33-R605 (2ISC*PT108)	<u>12/21/11</u>
REACTOR PRESSURE	B22-R623A (2ISC*PT6A)	<u>12/5/11</u>
REACTOR PRESSURE	B22-R623B (2ISC*PT6B)	<u>12/5/11</u>
RCS LOOP A SUCTION	B35-R650 (Channel 1) (2RCS-TE13A)	<u>1/15/12</u>
RCS LOOP B SUCTION	B35-R650 (Channel 6) (2RCS-TE13B)	<u>1/15/12</u>
RHR INLET TO HX A	E12-R601 (Point 1) (2RHS*TE10A)	<u>1/7/12</u>
RHR INLET TO HX B	E12-R601 (Point 2) (2RHS*TE10B)	<u>1/7/12</u>

TRH

7.3 Obtain Station Shift Supervisor (SSS) permission to perform this test and log

JM /
SSSPLANT IMPACT: NONE

7.4 Notify Chief Shift Operator (CSO) of start of test.

EB /
CSO

7.5 Record test start date and time.

Today
Date0700
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 $\leq 100^\circ\text{F}$ 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.

7/11/11

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 $\leq 100^\circ\text{F}$ 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 $\leq 20^\circ\text{F}$ 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 $\leq 100^\circ\text{F}/\text{Hr.}$ 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 $\leq 100^\circ\text{F}/\text{Hr.}$ 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:
- Downcomer Water Temperatures are to the right of the minimum temperature line on Attachment 2, Hydrostatic And System Leakage Test Curve.
 - RCS temperature change during system leakage and hydrostatic testing is $\leq 20^\circ\text{F}$ 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.
 - 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 RETURN TO NORMAL

- 9.1 Ensure all test personnel have signed Attachment 1, Test Personnel Signature and Initial Log.

Initials

- 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

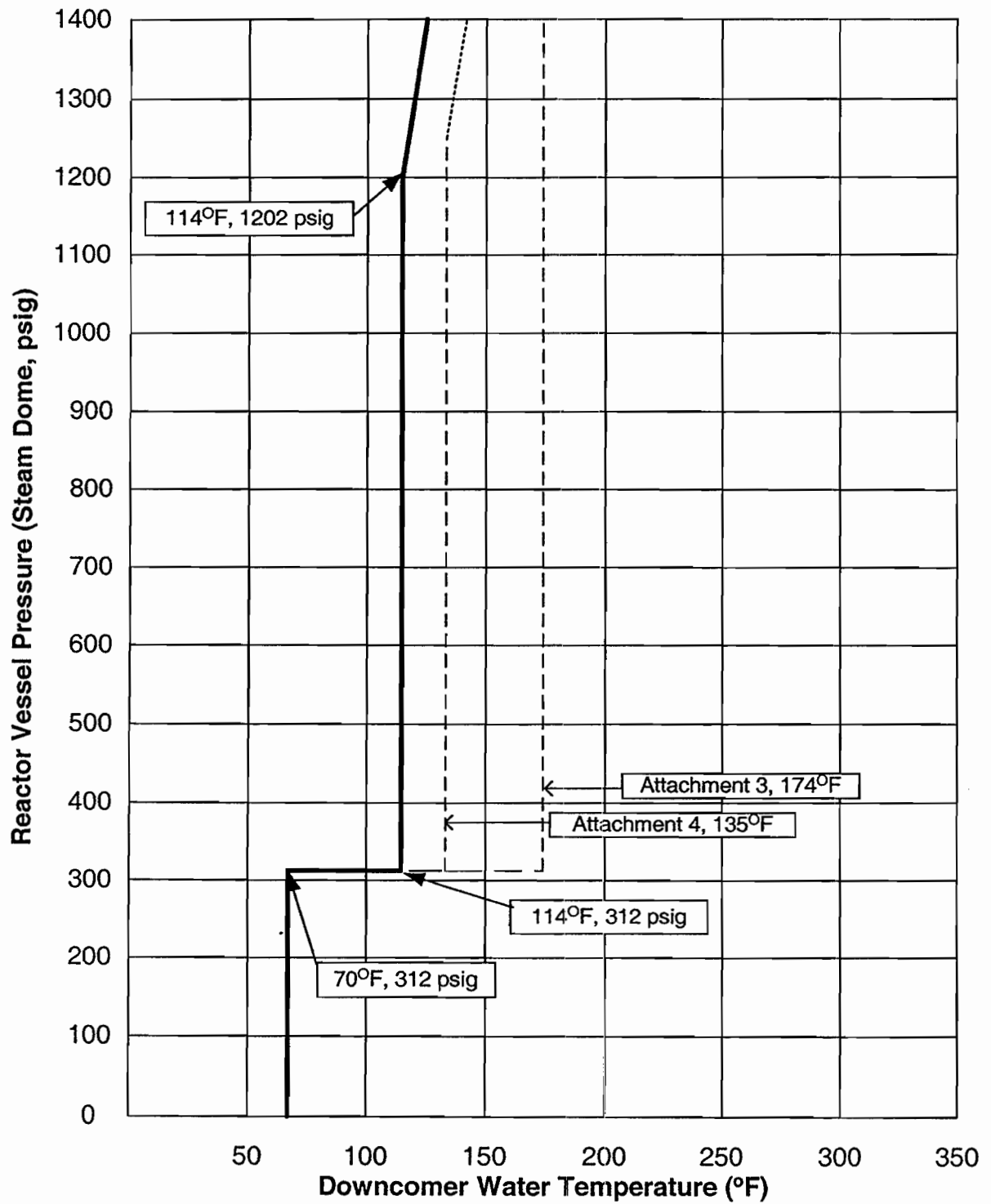
Second SRO Signature

Date

ATTACHMENT 1: TEST PERSONNEL SIGNATURE AND INITIAL LOG

Page 1 of 1[illegible]

ATTACHMENT 2: HYDROSTATIC AND SYSTEM LEAKAGE TEST CURVE

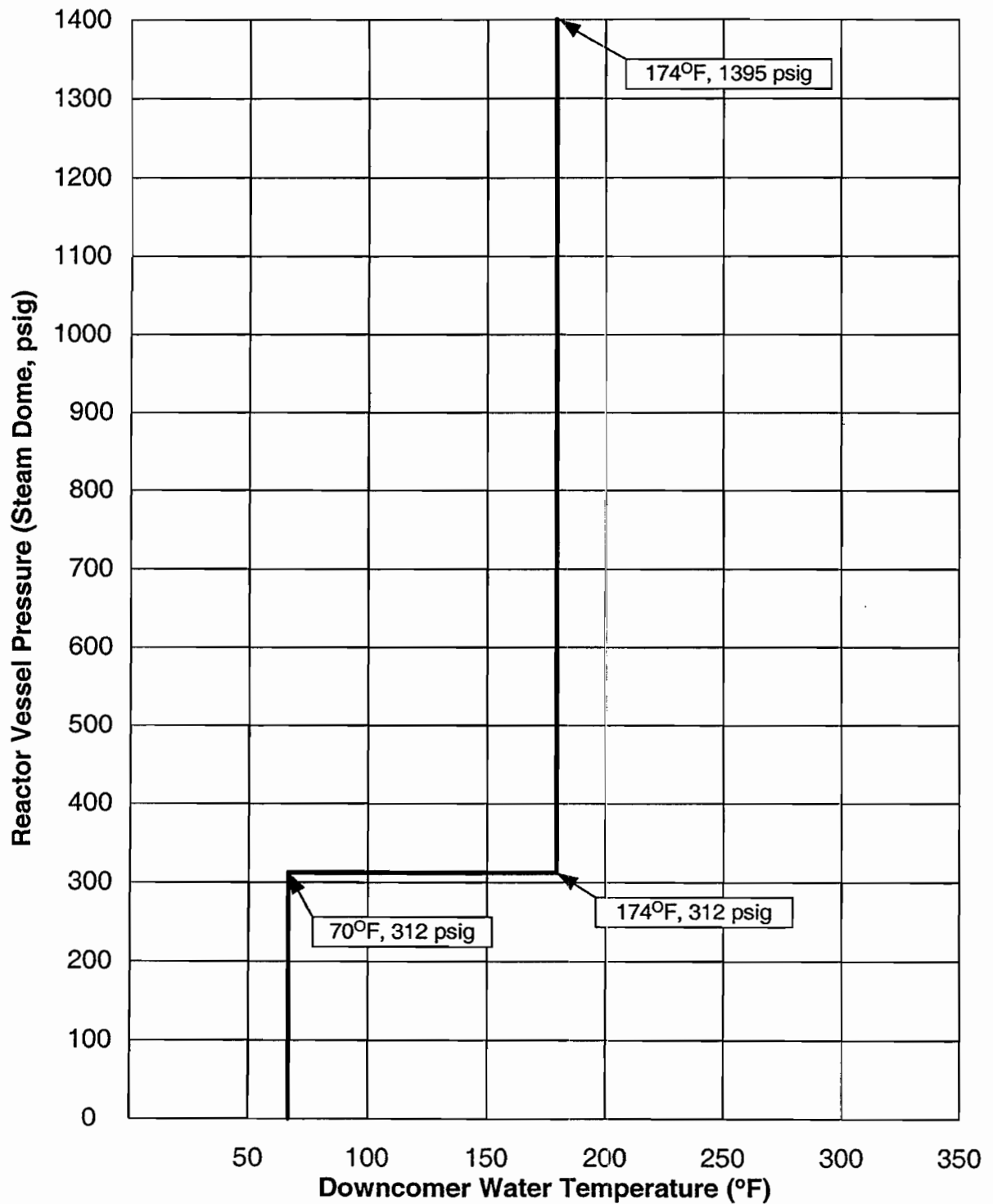


ATTACHMENT 2 (Cont)

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

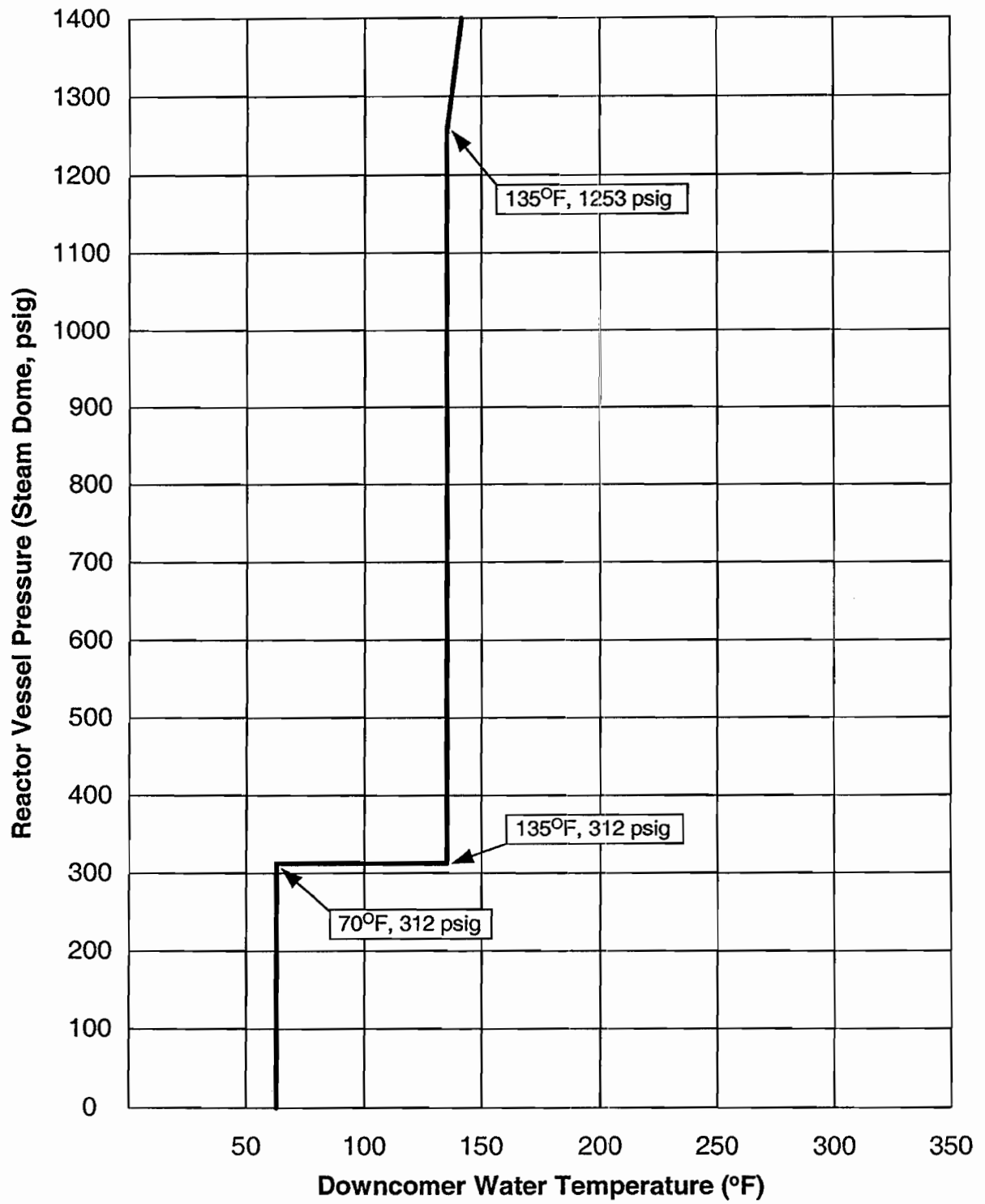


ATTACHMENT 3 (Cont)

NON-CRITICAL HEATUP TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)	
< 70°F	And	70°F	0	
> 70°F		< 175°F	312	
175°F		> 350°F	1395	

ATTACHMENT 4: NON-NUCLEAR COOLDOWN

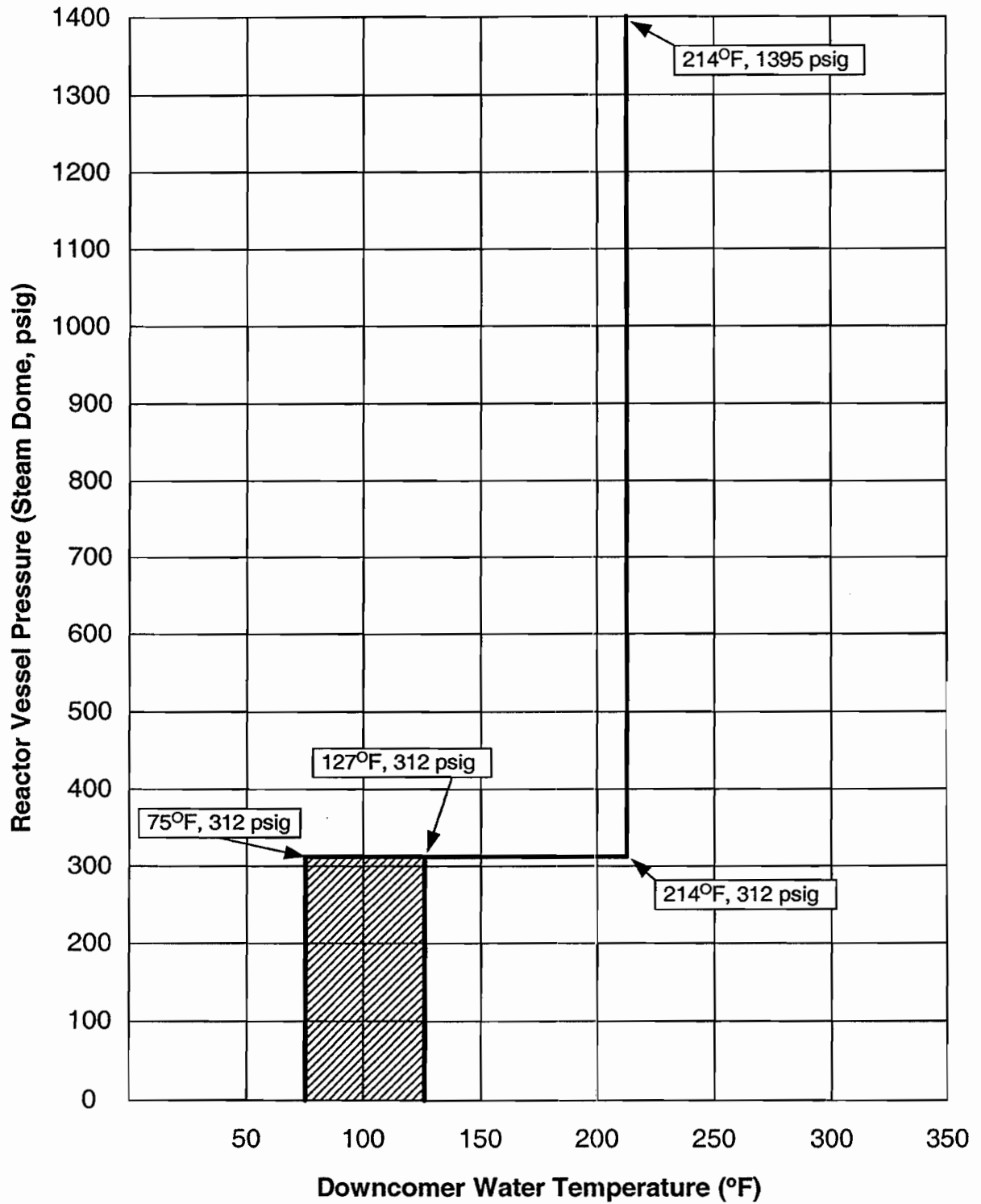


ATTACHMENT 4 (Cont)

NON-CRITICAL COOLDOWN TABLE

Downcomer Temperature (°F) between:			Maximum Steam Dome Pressure (psig)
< 70°F	And	70°F	0
> 70°F		< 135°F	312
135°F		> 350°F	1253
136°F			1273
137°F			1294
138°F			1315
139°F			1335
140°F			1356
141°F			1376
142°F			1397

ATTACHMENT 5: CORE CRITICAL CURVE - HEATUP



ATTACHMENT 7: HEATUP/COOLDOWN DATA SHEET

Section Performed (circle one) (8.1) 8.2 8.3

Page 1 of 1

Time (15 Min Intervals)	RPV Press	* Reactor Coolant Temperature				#	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	Indepentant verification (SRO/STA)
						H/U or C/D						
		Recirc Loop Temp		RHR Loop Temp		Rate	Sat	Unsat				
		Loop A	Loop B	Loop A	Loop B							
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.

7/14/15

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

ATTACHMENT 8 (Cont)

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: REACTOR COOLANT TEMPERATURE (DOWNCOMER WATER TEMP)
ALTERNATE METHOD B

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.

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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	Proper communications used for repeat back (CNG-HU-1.01-1001)	Sat/Unsat

RECORD START TIME _____

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*P1A instead of 2SLS*P1B	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							

Attachment 8, Tag List

CLEARANCE		CLEARANCE NO. 34576						Page 2 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*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						Page 3 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*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							

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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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: <input type="checkbox"/> Name <input type="checkbox"/> Date <input type="checkbox"/> Unit 2 <input type="checkbox"/> Time of Notification <input type="checkbox"/> 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: <input type="checkbox"/> GAltronic <input type="checkbox"/> Phone <input type="checkbox"/> 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 GAltronic in "Merge" mode	Places the GAltronic 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: "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)." <i>Role Play: As the Fire Brigade Leader reply that, "the Fire Brigade is on the scene. The individual may be contaminated and is unconscious."</i>	Depresses station alarm button, and after approximately 10 seconds, depresses alarm off button Makes Fire Brigade announcement Repeats station alarm and announcement Leaves GAltronic in "MERGE"	Sat/Unsat Pass/Fail Sat/Unsat Sat/Unsat
6. Notify the SM <i>Role Play: As the SM, acknowledge the report.</i> <i>Role Play: As the Fire Brigade Leader, report that the Mechanic is unconscious and potentially contaminated. Request an ambulance and an RP Tech.</i>	Notifies the SM of the reported situation	Pass/Fail
7. Contact Radiation Protection <i>Role Play: As the RP Tech state that, "Radiation Protection assistance is at the scene and has determined that the Mechanic is contaminated."</i>	Contacts Radiation Protection and requests that they report to the scene of the medical emergency	Pass/Fail
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 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
<p>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.</p>		
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
<p>Role Play: As the Site Security Supervisor acknowledge the request.</p>		
11. Contact Oswego Hospital.	Contacts the Oswego Hospital, informs them of the number of patients and requests setup of the REA	Pass/Fail
<p>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.</p>		
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
<p>Role Play: Acknowledge as SM request to perform notifications.</p>		

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: <i>As the Security Shift Supervisor acknowledge the request.</i>		
Role Play: <i>As the Fire Brigade Leader, report that the contaminated injured person has left the site and is proceeding to Oswego Hospital in the ambulance.</i>		
15. Inform the SM that the emergency is terminated.	Informs the SM that the contaminated injured person has left the site and is proceeding to Oswego Hospital in an ambulance.	Sat/Unsat
Role Play: <i>As the SM, acknowledge the report.</i>		
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."

NINE MILE POINT NUCLEAR STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-EPP-04

REVISION 17

PERSONNEL INJURY OR ILLNESS

TECHNICAL SPECIFICATION REQUIRED

Approved by:
J. Kaminski


Director Emergency Planning

11/24/09
Date

THIS IS A FULL REVISION

PERIODIC REVIEW, 5/7/2010, NO CHANGE

Effective Date: Dec 11, 2009

PERIODIC REVIEW DUE DATE: May 2011

ATTACHMENT 1: CRO MEDICAL EMERGENCY CHECKLIST

NAME:	DATE:	UNIT: <input type="checkbox"/> 1 <input type="checkbox"/> 2
-------	-------	---

TIME OF NOTIFICATION _____ LOCATION OF MEDICAL EMERGENCY _____ Completed N/A

NOTE: If making emergency announcements via GAltronic, always place in Merge mode.

1. Notify the Fire Brigade Leader, provide incident details ☐ ☐

Request from Fire Brigade Leader if need to Sound the Station Alarm for Fire Brigade Response ☐ ☐

Announcement to be made for fire brigade response:

"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)" ☐ ☐

Repeat the station alarm and the announcement ☐ ☐

Leave in Merge Mode until event termination.

2. Notify the SM..... ☐ ☐

3. Take ANY of the following actions, IF requested by the Fire Brigade Leader:

A. IF Radiation Protection assistance is required, THEN contact RP and request that they report to the scene of the medical emergency..... ☐ ☐

B. IF an ambulance and/or rescue is required (refer to attachment 4), THEN:

1. Contact Oswego County 911 Center at 343-1313 and request an ambulance and/or rescue vehicle be sent to the Nine Mile Point Constellation Energy Security Checkpoint, 350 Lake Road..... ☐ ☐

NOTE: IF patient is contaminated OR potentially contaminated, THEN inform 911 Center of this.

2. 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..... ☐ ☐

3. WHEN the Fire Brigade Leader has requested setup of the Hospital Radiation Emergency Area (REA), OR WHEN the patient is contaminated or potentially contaminated, THEN:

a. Contact Oswego Hospital at 349-5522 ☐ ☐

b. Inform them of the number of patients..... ☐ ☐

c. Request setup of the REA..... ☐ ☐

ATTACHMENT 1 (Cont)

NOTE: If hospital requests patient status OR extent of injuries
AND this information is known, it may be given to the hospital.

Completed N/A

- C. **IF** transportation by NMP vehicle is requested, **THEN** request that the SM notify the injured persons supervisor to obtain the necessary vehicle and driver..... ☐ ☐
- D. If it is necessary for the RP Technician to accompany the ambulance, **THEN**
1. Request permission from the SM for the RP Technician to accompany the ambulance ☐ ☐
2. Transmit that permission to the RP Technician at the incident scene..... ☐ ☐
3. Contact the RP Supervisor, inform him of the incident and direct them to the hospital ☐ ☐
4. Inform the SM that an evaluation of required staffing should be performed and, if necessary, action taken to restore staffing levels..... ☐ ☐
- E. **IF** the incident requires transportation by ambulance
THEN request Shift Manager contact Plant General Manager and provide details within 1 hour of incident..... ☐ ☐
- F. **IF** the incident involves a contaminated injury/illness AND requires transportation,
THEN: Direct Security Shift Supervisor to contact Supervisor, Communications and provide details of the incident..... ☐ ☐
- G. **WHEN** the patient has left the site OR when the Fire Brigade Leader indicates the emergency is terminated,
THEN inform the SM that the emergency is terminated ☐ ☐
- H. **WHEN** notified that the emergency is terminated,
IF an announcement was made indicating a medical emergency was in progress
THEN sound station alarm and announce medical emergency has been terminated..... ☐ ☐
- I. **IF** any Medical/Rescue Equipment was used during the emergency,
THEN FBL will perform EPMP-EPP-02, Emergency Equipment Inventories and Checklists for the applicable attachments (2A-2G) and reconcile any missing supplies with Site Medical..... ☐ ☐

ATTACHMENT 4: MEDICAL RESPONSE FLOW CHART

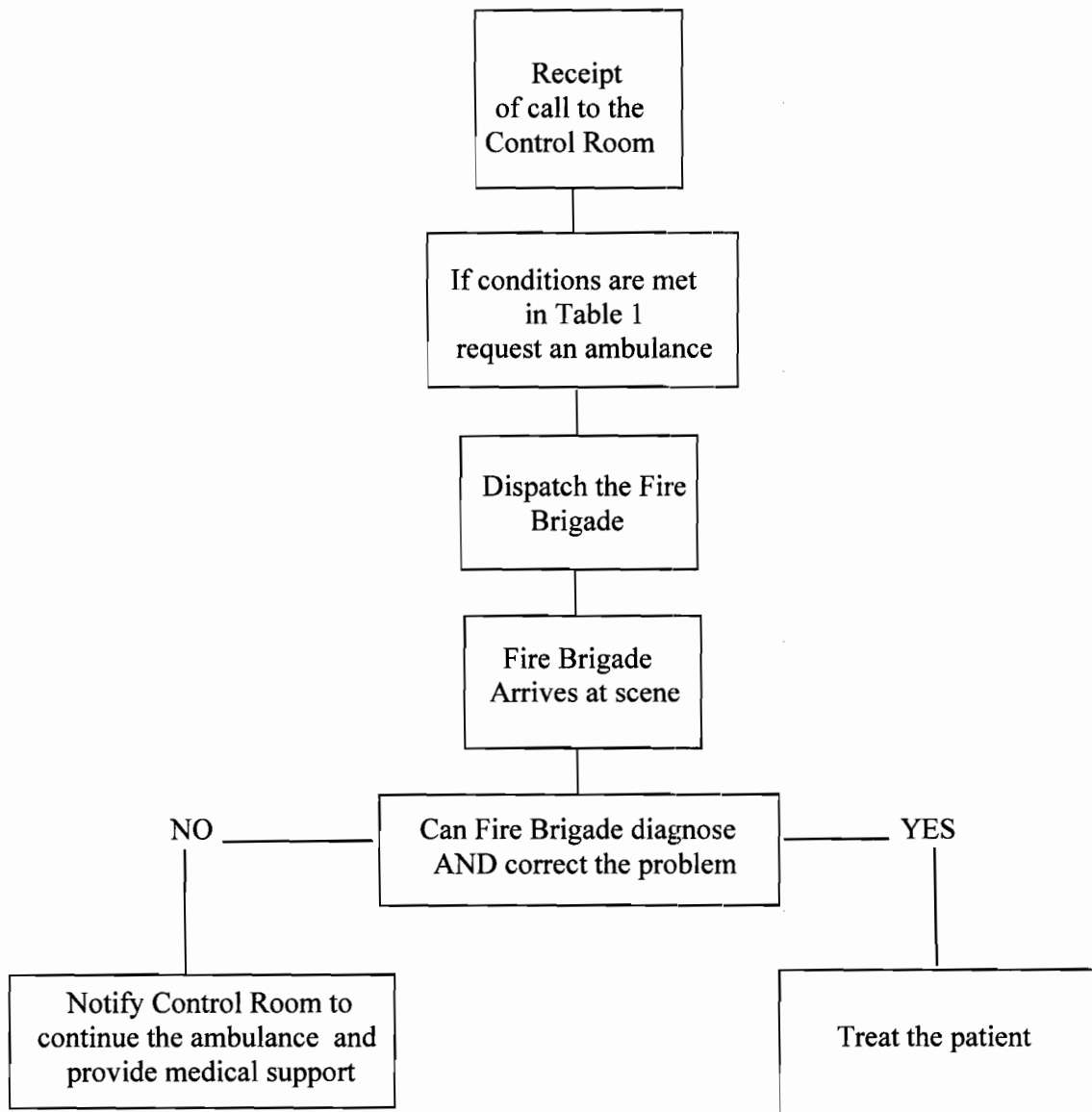


Table 1

Examples of reasons to request an ambulance:

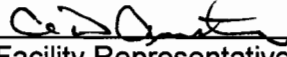
1. Fall > 10 feet
2. Severe injury (based on judgment)
3. Significant blood loss
4. Broken bone (based on judgment)
5. Serious burns
6. Unconscious or altered state of consciousness
7. Difficulty breathing
8. Chest pain
9. Multiple patients

Patient refusal can only be addressed by the site nurse or qualified ambulance personnel. Refusal of transport needs to be documented on a Patient Care Report (PCR) form or equivalent.

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:

<u></u>	<u>1 9 / 1 5 / 1 1</u>	<u>NA Exam Security</u>	<u>/</u>
Facility Representative	Date	General Supervisor Operations (Designee)	Date

<u>NA Exam Security</u>	<u>/</u>
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
<p>1. Provide repeat back of initiating cue.</p> <p><i>Evaluator acknowledge repeat back providing correction if necessary</i></p> <p>EVALUATOR to provide JPM Attachment 1 Data Sheet and copy of N2-OSP-LOG-D001 Attachment 10 to candidate.</p>	<p>Proper communications used for repeat back (CNG-HU-1.01-1001)</p>	<p>Sat/Unsat</p>
<p>RECORD START TIME _____</p>		
<p>2. • Obtain a copy of the reference procedure and review/utilize the correct section.</p>	<p>Obtains N2-OSP-LOG-D001 Attachment 10, Two Loop Jet Pump Operability Verification</p>	<p>Sat/Unsat</p>
<p>Note: The attached key shows N2-OSP-LOG-D001 completed as described in JPM steps 3-20</p>		
<p>3. • Record Recirc Pump Speed by checking appropriate choice</p>	<p>Using information from JPM initial conditions, determines that Recirc Pump speed is 60 Hz and records in Step 1.0</p>	<p>Sat/Unsat</p>
<p>4. • Record Recirc FCV Positions in Table 10-1</p>	<p>Records Recirc FCV Positions in Table 10-1: Loop A – 68 Loop B – 76</p>	<p>Sat/Unsat</p>
<p>5. • Record Summed Jet Pump Loop Flows from indicators B22-R611A and B22-R611B in Table 10-1 and Table 10-2</p>	<p>Records Summed Jet Pump Loop Flows in Table 10-1 and Table 10-2: Loop A – 52 Loop B – 52</p>	<p>Sat/Unsat</p>
<p>6. • Using the Recirc FCV Position for</p>	<p>Records flow limits for Loop A in Table 10-</p>	<p>Sat/Unsat</p>

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 <ul style="list-style-type: none"> <input type="checkbox"/> Jet pump 1 = 1.03 <input type="checkbox"/> Jet pump 2 = 0.86 <input type="checkbox"/> Jet pump 3 = 0.96 <input type="checkbox"/> Jet pump 4 = 0.96 <input type="checkbox"/> Jet pump 5 = 1.10 <input type="checkbox"/> Jet pump 6 = 1.15 <input type="checkbox"/> Jet pump 7 = 0.96 <input type="checkbox"/> Jet pump 8 = 0.96 <input type="checkbox"/> Jet pump 9 = 0.96 <input type="checkbox"/> 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 39.1	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 <ul style="list-style-type: none"> <input type="checkbox"/> Jet pump 11 = 1.03 <input type="checkbox"/> Jet pump 12 = 0.98 <input type="checkbox"/> Jet pump 13 = 0.75 <input type="checkbox"/> Jet pump 14 = 0.95 <input type="checkbox"/> Jet pump 15 = 1.11 <input type="checkbox"/> Jet pump 16 = 1.16 <input type="checkbox"/> Jet pump 17 = 1.03 <input type="checkbox"/> Jet pump 18 = 0.98 <input type="checkbox"/> Jet pump 19 = 1.01 <input type="checkbox"/> 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 _____

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 pump 12	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:

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

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:

 / 5/15/11
Facility Reviewer Date

NA Exam Security /
General Supervisor Date
Operations (Designee)

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 8 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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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: <ul style="list-style-type: none"> • 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
<p>5. Determines Technical Specification impact</p> <p>Note: N2-OP-53E attachment 1 may be used to assist in determining Tech Spec impact.</p> <p>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.</p> <p>TERMINATING CUE: Determines 2HVC*UC107 is inoperable. Determines 2VBA*UPS2D must be declared inoperable. Determines operability must be restored within 24 hours.</p> <p>RECORD STOP TIME_____</p>	<p>References TS 3.8.7</p> <p>□ 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</p>	<p>Pass/Fail</p>

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:

C. D. Smith 10/15/11
Facility Representative Date

NA Exam Security /
General Supervisor Date
Operations (Designee)

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.
2. If a Work Hour Limits Waiver would be required for any individual(s), state the work hour limit(s) which would be exceeded IAW CNG-SE-1.01-1002.

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, and blank 10 CFR 26 Work Hour Limits Waiver form.

Performance Steps	Standard	Grade
1. Provide repeat back of initiating cue <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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 RO #2 – Not Eligible – Would work more than 72 hours in a 7 day period RO #3 – Eligible	 Pass/Fail Pass/Fail 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 _____

Turnover Sheet

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.
2. If a Work Hour Limits Waiver would be required for any individual(s), state the work hour limit(s) which would be exceeded IAW CNG-SE-1.01-1002.

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

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

	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		

Attachment C – Answer Key

	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):			
<input type="checkbox"/> > 16 work hours in any 24-hour period <input type="checkbox"/> > 26 work hours in any 48-hour period <input checked="" type="checkbox"/> > 72 work hours in any 7-day period <input type="checkbox"/> < 10-hour (consecutive hours) break between successive work periods <input type="checkbox"/> < 34-hour (consecutive hours) break between in any 9-day period <input type="checkbox"/> Minimum Day Off Requirements <div style="margin-left: 20px;"> <input type="checkbox"/> On-Line <input type="checkbox"/> Outage </div>			
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?			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, then waiver is not valid.			
Submitted By:	_____	_____	_____
	(Name)	(Signature)	(Date) / (Time)
	Print Name	Signature	Date Time

Attachment 1, 10CFR26 Work Hour Limits Waiver

Section 1 - Requests (To be completed by Cognizant Supervisor)			
Cognizant Supervisor: _____ <div style="text-align: center; font-size: small;">Print</div>			
Date/Time Waiver Initiated: _____ / _____ <div style="display: flex; justify-content: space-around; font-size: small;">DateTime</div>			
1) Identify the individual who will exceed a 10CFR26 Work Hours Limit: Name: _____ Department: _____			
Date to Start: _____ Time to Start: _____			
Date to End: _____ Time to End: _____			
2) Identify all the limit(s) that will be exceeded by placing a check mark by the limit(s):			
<div style="display: flex; flex-direction: column; gap: 5px;"><div><input type="checkbox"/> >16 work hours in any 24-hour period</div><div><input type="checkbox"/> >26 work hours in any 48-hour period</div><div><input type="checkbox"/> >72 work hours in any 7-day period</div><div><input type="checkbox"/> < 10-hour (consecutive hours) break between successive work periods</div><div><input type="checkbox"/> < 34-hour (consecutive hours) break between in any 9-day period</div><div><input type="checkbox"/> Minimum Day Off Requirements</div><div style="display: flex; gap: 20px;"><div><input type="checkbox"/> Online</div><div><input type="checkbox"/> Outage</div></div><div>Required number of days off: _____</div><div>Shift schedule applied to individual _____ - hour shift</div></div>			
3) Identify the work activity for which the waiver will be issued: Description: _____ _____ _____			
Circumstances that caused the need for exceeding limits: _____ _____ _____ _____			
Is Waiver required to address conditions that are adverse to safety? <div style="display: flex; align-items: center; gap: 10px;"><div><input type="checkbox"/> Yes</div><div><input type="checkbox"/> No</div><div>If no, then waiver is not valid.</div></div>			
Submitted By: _____ / _____ <div style="display: flex; justify-content: space-between; font-size: small; margin-top: 5px;">Print NameSignatureDateTime</div>			

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Constellation Energy Nuclear Group Fleet Administrative Procedure

CNG-SE-1.01-1002

FATIGUE MANAGEMENT AND WORK HOUR CONTROLS

Revision 00301

This Procedure is EXEMPT from 10 CFR 50.59 / 10 CFR 72.48 Reviews

Tech Spec Related

INFORMATION USE

Applicable To:

- ☒ **Calvert Cliffs Nuclear Power Plant, Units 1 and 2**
- ☒ **Nine Mile Point Nuclear Station, Units 1 and 2**
- ☒ **R.E. Ginna Nuclear Power Plant**

Procedure Owner Group: Nuclear Safety and Security

SUMMARY OF ALTERATIONS

Revision Change Summary of Revision or Change

003	00	Major revision to incorporate PCR 2010-0187. Summary of changes: <ul style="list-style-type: none">• Added references at Steps 2.1.H, 2.2.C and 2.2.E• Added note to definition of covered work in Step 3.9• Revised scope of work hour limits in Steps 5.2.A.1 and 5.2.A.2• Added Step 5.6.C to address handling and disposition of the new Attachment 10 SSC Exemption form (see below)• Added Step 5.7.A.13 to address NRC Fatigue Rule inspection recommendation (NMP CR 2010-000135)• Added Steps 7.1 through 7.4 to address record retention for forms generated by the procedure• Added (new) Attachment 10, Exemption of SSC from Covered Work Status
	01	PCR 2010-0063, Editorial Change to align the definition of "Call-in" with the definition in CNG-SE-1.01-100 1, FFD program.

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1.0 INTRODUCTION

1.1 Purpose

- A. The purpose of this procedure is to implement the requirements for managing fatigue and controlling work hours in accordance with 10CFR26, Subpart I, Managing Fatigue. The requirements of this procedure are intended to provide reasonable assurance that worker fatigue will be avoided and that all individuals will be able to safely perform their duties and maintain the health and safety of the public.
- B. This procedure establishes the following:
 - The process for implementing the work hour limits for individuals performing work subject to 10CFR26.205, Work Hours
 - The process used for managing fatigue
 - The process used for handling self-declarations of fatigue
 - The method and process used to perform fatigue assessments
 - The method and process used to schedule, track, and calculate work hours
 - The conditions for and process used to authorize a waiver of work hour controls
 - The training, recordkeeping, reporting, and review requirements of 10CFR26.203, General Provisions
- C. Work hours shall be scheduled to be consistent with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.

1.2 Scope/Applicability

- A. This procedure addresses fatigue management and work hour controls.
 - 1. Fatigue management requirements (such as Self-Declaration and Fatigue Assessment) are part of the overall Fitness for Duty (FFD) program requirements and apply to all Constellation Energy Nuclear Group (CENG) employees and contractors/vendors who:
 - a. Have unescorted access to protected areas (even if their current location is not on-site)
 - OR
 - b. Are required to physically report to the Technical Support Center or the Emergency Operations Facility in accordance with the CENG station-specific Emergency Plan and procedures (even if their current location is not on-site or they do not have unescorted access).
- 2. Work Hour Controls (such as Work Hour Limits and Waivers) apply only to CENG employees and contractors/vendors that perform or direct covered work.

3. All hours worked (such as, both covered and non-covered work), except as noted in Section 5.5, must be counted as hours accumulated toward the work hour limitations specified in 10CFR26, Subpart I, for covered workers. Work activities on both covered and non-covered systems, structures, and components (SSCs) contribute toward personnel fatigue, therefore, all work hours are considered in the accumulated time related to work hour limitations.
- B. This procedure is applicable to:
 - Calvert Cliffs Nuclear Power Plant (CCNPP)
 - R.E. Ginna Nuclear Power Plant (Ginna)
 - Nine Mile Point Nuclear Station (NMP)

2.0 REFERENCES

2.1. Developmental References

- A. 10CFR26, Fitness for Duty Program
- B. 10CFR26, Subpart I, Managing Fatigue
- C. CNG-SE-1.01-1001, Fitness for Duty Program
- D. NEI 03-01, Nuclear Power Plant Access Authorization Program
- E. NEI 03-04, Guideline for Plant Access Training
- F. NEI 06-11, Rev 1, Managing Personnel Fatigue at Nuclear Power Reactor Sites
- G. Regulatory Guide 5.73, Fatigue Management for Nuclear Power Plant Personnel
- H. CNG-AM-1.01-1023, Maintenance Rule Program

2.2. Performance References

- A. 10CFR26, Subpart I, Managing Fatigue
- B. 10CFR26.717, Fitness For Duty Program Performance Data
- C. CNG-AM-1.01-2000, Scoping and Identification of Critical Components
- D. CNG-OM-1.01-1000, Outage Management
- E. CNG-OP-4.01-1000, Integrated Risk Management
- F. CNG-QL-1.01-1004, Quality Audit Process
- G. CNG-QL-1.01-1007, Quality Performance Assessment Process
- H. CNG-SE-1.01-1001, Fitness for Duty

3.0 DEFINITIONS

3.1. Backward Shift Rotation

This is the rotation of the start of the shift from days to night to swings.

3.2. Break

An interval of time that falls between successive work periods, during which the individual does not perform any duties for CENG other than one period of shift turnover at either the beginning or end of a shift, but not both. This means that one period of shift turnover can be considered as part of the break.

3.3. Call-in

Direction communicated when calling individuals to report for an unscheduled work tour to a designated work location at a designated time.

3.4. Circadian Variation in Alertness and Performance

The increases and decreases in alertness and cognitive/motor functioning caused by human physiological processes (for example, body temperature, release of hormones) that vary on an approximately 24-hour cycle.

3.5. Condition Adverse to Safety

A condition which, in the informed opinion of the Duty Shift Manager or station senior level manager with requisite signature authority, could jeopardize the safety of the station. Waivers are considered appropriate if required to mitigate conditions adverse to safety. If rule compliance would result in the following types of conditions, it would be appropriate to consider using the waiver process:

- A. Compliance with the work hour requirement would violate other Nuclear Regulatory Commission (NRC) requirements such as minimum on-site staffing.
 - 1. Staffing below minimum allowed by Technical Specifications or Appendix R requirements.
- B. Compliance with the work hour requirement would delay recovery of failed plant equipment necessary for maintaining plant safety.
 - 1. A condition which would cause a forced reactor shutdown, power reduction, or similar action as a result of exceeding a time limit for a Technical Specification LCO. For example:
 - Shutdown LCO of 72 hours or less in duration
 - Shutdown LCO of greater than 72 hours in duration if the maintenance issue is of sufficient complexity to challenge the LCO window

NOTE

If the unplanned change in reactor power greater than 20% has already occurred, and the plant is stable, then the condition is NOT a "condition adverse to safety".

- 2. A condition which could result in an unplanned change in reactor power of greater than 20% of full power.
- 3. A delay in recovery from a challenge to a safety system function required for shutdown safety.
 - For example: A delay in recovery from an actual loss of reactor core cooling during outages.

- C. Compliance with the work hour requirement would result in an increase in PRA Risk Level above the threshold for Orange, where insufficient time is available to manage compliance with the rule without a waiver.
- D. Compliance with the work hour requirements would result in an unacceptable increase in consequences to personal safety, ALARA or environmental compliance.

3.6. Condition Adverse to the Maintenance of Site Security

A condition which, in the informed opinion of the Security Shift Supervisor or station senior level manager with requisite signature authority, could jeopardize the security of the station. Included are conditions that require additional security staffing to support emergent unplanned activities that require security modifications or repair activities that significantly affect regulated security systems, or that require additional security staffing to provide reasonable assurance that the public health and safety and common defense and security continue to be adequately protected, and where compliance with the Fatigue Rule inhibits compliance with other NRC regulations or orders.

- A. Some situations that would constitute a "condition adverse to the maintenance of site security" include (Note: these examples are not meant to be all-inclusive.):
 - 1. Adverse weather conditions requiring extensive security compensatory measures (greater than 30% of the minimum shift number).
 - 2. Loss of sufficient components or operational capabilities of the security system requiring extensive security compensatory measures (greater than 30% of the minimum shift number).
 - 3. Loss of power to the security system requiring extensive security compensatory measures (greater than 30% of the minimum shift number).
 - 4. Any condition that would require additional security staffing to support a station-specific threat that could not be supported if work hour limits were adhered to.

3.7. Contractor/Vendor

Any company or any individual not employed by CENG who is providing work or services to CENG either by contract, purchase order, oral agreement, or other arrangement.

3.8. Covered Worker

Any individual who is granted unescorted access to the protected area and performs covered work.

3.9. Covered Work

Personnel performing the following activities (see Attachment 5, Scope Determination Examples, for guidance in determining covered work activities):

- Operating or on-site directing of the operation of power block equipment.
- Maintenance or on-site directing of the maintenance of power block equipment.

NOTE

Specific SSCs in the power block (except Safety Related SSCs) may be exempted from covered work by completing the exemption request in Attachment 10, Exemption of SSC from Covered Work Status. SSCs identified by CNG-AM-1.01-2000 (Scoping and Identification of Critical Components) as "critical" cannot be exempted.

- Radiation Protection (RP) duties required as a member of the on-site Emergency Response Organization (ERO) minimum shift complement.
- Security duties as an armed security force officer, alarm station operator, response team leader, or watchperson; and
- Fire brigade member who is responsible for understanding the effects of fire and fire suppressants on safe shutdown capability.

3.10. Day Off

A calendar day during which the individual does not start a work shift.

3.11. Deviation

A departure from the requirements included in 10CFR26 Subpart I which could be a violation of the Fatigue Rule requirements or could lead to a violation of the Fatigue Rule requirements.

3.12. Directing

The exercise of control over a work activity by an individual who is directly involved in the execution of the work activity and makes technical decisions for that activity without subsequent technical review or is ultimately responsible for the correct performance of that work activity. Individuals who provide specific communication to a front line worker without review by cognizant line supervision concerning WHAT the worker should do, HOW the worker should do it, or WHEN the worker should perform the task is considered to be directing that work. In the case of operations and maintenance activities, persons directing front line workers are considered covered workers.

3.13. Fatigue

The degradation in an individual's cognitive and motor functions as a result of inadequate rest:

- Acute Fatigue: Fatigue from causes (for example, restricted sleep, sustained wakefulness, task demands) occurring within the past 24 hours.
- Cumulative Fatigue: The increase in fatigue over consecutive sleep-wake periods resulting from inadequate rest.

3.14. Incidental Duties

Work activities occasionally performed off-site (including phone calls and work required by supervisor to complete off-site) that are required by CENG but do not exceed a cumulative 30 minutes in a single break period. Any scheduled activity performed off-site (for example, online meetings, and teleconferences) does not qualify as incidental duties.

3.15. Increased Threat Condition

An increase in protective measure level, relative to the lowest protective measure level applicable to the station during the previous 60 days, as promulgated by an NRC advisory.

3.16. Maintenance

For the purpose of defining covered work, maintenance includes on-site modification, surveillance, post-maintenance testing, corrective maintenance, and preventive maintenance of SSCs. Work hour controls may apply to maintenance performed outside of the protected area (such as switchyards).

3.17. Nap or Restorative Sleep

A need to establish accommodations for restorative, uninterrupted sleep of at least one half hour in a designated area.

3.18. Non-Incidental Duties

Work activities performed off-site (including phone calls and work required by supervisor to complete off-site) that are required by CENG and exceed a cumulative 30 minutes in a single break period.

3.19. Off-Site

Any area outside the Owner Controlled Area (OCA).

3.20. On-Site

Inside the Owner Controlled Area.

3.21. Protected Area

An area encompassed by physical barriers and to which access is controlled.

3.22. Power Block Equipment

Power block equipment includes all SSCs required for the safe and reliable operation of the station. Including all safety-related and balance-of-plant systems and components required for the operation of the station, including radioactive waste processing and storage and switchyard equipment maintained by the station. SSCs required to maintain federal or state regulatory compliance should be included in this grouping. It does not include buildings or structures that support station staff, such as offices or storage structures, or the heating, ventilation, and air conditioning (HVAC) and support systems focused only on habitability of those structures.

3.23. Security System Outage

The loss of sufficient components and operational capabilities of the security system that impacts security's ability to provide resources required for compensatory measures to comply with physical security and safeguards contingency plans. These planned or unplanned outages could be the result of equipment degradation/failure, adverse weather conditions, loss of power, or structural damage to the Security System.

3.24. Self-Declaration of Fatigue

A formal statement by an individual to their supervisor that they are not fit to perform their duties for any part of a shift because of fatigue.

3.25. Senior Level Manager

Plant General Manager (PGM) or designee.

3.26. Shift Cycle

A series of consecutive work shifts and days off that is planned to repeat regularly, thereby constituting a continuous shift schedule. The term shift cycle is also used to describe the period over which Minimum Days Off (MDO) requirements is calculated. Although an assigned shift cycle may be of any duration, for the purposes of calculating Minimum Days Off (MDO) requirements, a maximum period of six (6) weeks is allowed.

3.27. Shift Schedule

A measure of the average daily shift duration over a particular Shift Cycle:

- Eight Hour Shift Schedule: A schedule that averages not more than nine (9) hours per workday over the entire shift cycle.
- Ten Hour Shift Schedule: A schedule that averages more than nine (9) hours, but not more than 11 hours per workday over the entire shift cycle.
- Twelve Hour Shift Schedule: A schedule that averages more than 11 hours per workday over the entire shift cycle.

3.28. Shift Turnover

Activities necessary to safely transfer information and responsibilities between two or more individuals between shifts. Shift turnover activities may include, but are not limited to, discussions of the status of plant equipment and the status of ongoing activities, such as extended tests of safety systems and components. Turnover may include time necessary to prepare for specific job requirements (for example, arming and disarming times for security officers to support turnover).

3.29. Supervisory Fatigue Assessment

A face-to-face assessment to determine that there is reasonable assurance that an individual will be able to safely and competently perform their duties.

3.30. Systems, Structures and Components (SSC)

A generic term for nuclear plant equipment, such as walls, floors, roofs, tanks, systems, subsystems, trains, subcomponents, parts, pumps, valves, motors, pipes, hangers, snubbers, nuts and bolts.

3.31. Tactical Exercise

A security-related force-on-force simulation used to evaluate and demonstrate the capability to defend target sets against selected attributes and characteristics of an adversary.

3.32. Unit Outage

The duration the reactor unit is disconnected from the electrical grid. When multiple breaker closures are part of outage completion, the last breaker closure establishes the completion of the unit outage for Fatigue Rule work hour purposes.

3.33. Unplanned Unit Outage

A unit outage to accommodate emergent equipment issues for which there was less than a forty-two day planning period to adjust personnel work schedules.

3.34. Waivers

The process for exceeding individual work hour limits which is justified for limited circumstances in which an Operations Shift Manager or station senior level manager with requisite signature authority determines that the waiver is necessary to mitigate or prevent a condition adverse to safety, or a Security Shift Supervisor or station senior level manager with requisite signature authority determines that the waiver is necessary to maintain station security.

3.35. Work Hour Controls

The regulatory requirements in 10CFR26.205, Work Hours.

3.36. Work Hours Exclusion

Time that may be excluded from an individual's calculated work hours. These periods are defined in Section 5.5.C, Time Excluded from Work Hour Calculations.

4.0 RESPONSIBILITIES**4.1. Plant General Manager (PGM)/Designee**

- A. Ensures a review (Attachment 8, Station Effectiveness Review) is performed and a report submitted at least once per calendar year to evaluate the effectiveness of the control of work hours. This review, which consists of Condition Reports (CRs), Waivers, and Fatigue Assessments, shall include:
 - 1. Evaluating staffing levels to ensure individual work hours are managed with the objective of preventing impairment from fatigue due to the duration, frequency, or sequencing of successive shifts.
 - 2. Evaluating the performance of individuals to ensure that assigned shift schedules and shift cycles are effective in preventing impairment from fatigue.
 - 3. Reviewing the station's performance in adhering to assigned shift schedules and shift cycles.
 - 4. Ensuring that issues identified in the annual review are addressed in the Corrective Action Program.

4.2. Department Managers

- A. Establishes shift schedules and shift cycles that maintain individual work hours within work hour limits.
- B. Provide guidelines for the overtime selection process, including those required by union contracts and the fatigue management requirements outlined in this procedure, as well as other procedures related to Fitness for Duty (FFD).

Answer: The System Engineer is providing information to the Supervisor of a maintenance crew. The Maintenance Supervisor in this case would be responsible for deciding what information is to be acted on and for directing the maintenance activities associated with the job. The System Engineer is not directing and therefore not performing covered work.

- b. **Example 2:** A Diesel Generator (DG) System Engineer is supporting a diesel generator system work window by providing technical decisions in the field directly to workers who are acting on the input without subsequent review or challenge by the Maintenance Supervisor. Is the System Engineer directing?

Answer: Yes, the System Engineer is directing as defined by the rule as the covered workers are taking and acting on the input provided by the Engineer without subsequent review, challenge, or decision-making processing by a Supervisor.

- c. **Example 3:** The Reactor Engineer is required by station procedures to be present during fuel movement. The Reactor Engineer's function is to observe the fuel movement activity and provide technical recommendations to the fuel handling SRO. Is the Reactor Engineer a covered worker?

Answer: The Reactor Engineer is not directing, they are providing technical information and observing and therefore not conducting covered work. The fuel handling SRO would be directing and is a covered worker.

5.2. Managing Hours Worked

A. Work Hour Limits

1. The following limits apply to all covered workers regardless of plant status:

a. Work Hour Limits:

- (1) No more than 16 work hours in any 24-hour period.
- (2) No more than 26 work hours in any 48-hour period.
- (3) No more than 72 work hours in any 7-day period.

2. The following work hour breaks apply to covered workers regardless of plant status:

- (1) At least a 10-hour break between successive work periods, or an 8-hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- (2) A 34-hour break in any 9 day period.

B. Minimum Days Off (MDO)

1. In addition to the above work hour limits, individual workers shall meet the Minimum Days Off (MDO) requirements in the tables below:

On Line Minimum Days Off Requirements

Work Groups	8 Hr Shifts ⁽¹⁾ (days per week)	10 Hr Shifts ⁽¹⁾ (days per week)	12 Hr Shifts ⁽¹⁾ (days per week)
Maintenance	1	2	2
Operations ⁽²⁾	1	2	2.5
RP and Chemistry ⁽³⁾	1	2	2.5
Security	1	2	3

(1) Averaged over the shift cycle, not to exceed six (6) weeks.

(2) Includes Fire Brigade member who is responsible for understanding the effects of fire and fire suppressants on safe shutdown capability.

(3) Performing Radiation Protection or Chemistry duties required as a member of the on-site emergency response organization minimum shift complement.

NOTE

- Transition to outage MDO requirements is optional. Personnel can continue to adhere to on-line requirements at the discretion of management.
- CENG uses the less restrictive on-line MDO rule (1 day off in any 7-day period) when working 8-hour shifts during an outage as allowed by NEI 06-11 and endorsed by Reg. Guide 5.73.

Outage Minimum Days Off Requirements

Work Groups	8 Hr Shifts ⁽¹⁾	10 Hr Shifts ⁽¹⁾	12 Hr Shifts ⁽¹⁾
Maintenance	1 day off/any 7-day period	1 day off/any 7-day period	1 day off/any 7-day period
Operations ⁽²⁾	1 day off/any 7-day period	3 days off in each successive 15-day period ⁽⁴⁾	3 days off in each successive 15-day period ⁽⁴⁾
RP and Chemistry ⁽³⁾	1 day off/any 7-day period	3 days off in each successive 15-day period ⁽⁴⁾	3 days off in each successive 15-day period ⁽⁴⁾
Security	1 day off/any 7-day period	4 days off in each successive 15-day period ⁽⁴⁾	4 days off in each successive 15-day period ⁽⁴⁾

(1) Averaged over the shift cycle, not to exceed six (6) weeks.

(2) Includes Fire Brigade member who is responsible for understanding the effects of fire and fire suppressants on safe shutdown capability.

(3) Performing Radiation Protection or Chemistry duties required as a member of the on-site emergency response organization minimum shift complement.

(4) The last fixed period in an outage will have a high probability of not being a full 15 day period. It is expected that in this last period personnel will be scheduled in such a way that time off has some distribution, although it is not considered an MDO violation unless the covered worker works more than the maximum allowable days in a full 15 day period (12 days for operators and 11 days for security personnel) in this shortened fixed cycle.

5.2.B (Continued)

2. On-line MDO requirements are calculated by averaging the total hours worked during the shift cycle over the number of days worked. For calculation purposes, a shift cycle can be up to 6 weeks in length. Any partial work days will be considered a work day.
3. Security MDO is considered more conservative than Operations MDO which in turn is considered more conservative than Maintenance MDO. Particularly when a worker may move between performing multiple functions, they may be assigned the more conservative MDO requirements and not attempt to change back and forth between MDO rules.
 - a. For example, an operator performing both operations functions and maintenance functions associated with refueling should be left on Operations MDO requirements and be considered in full compliance with the rule.
 - (1) The following refueling personnel shall follow Operations MDO outage requirements:
 - (a) Fuel Handling Supervisor (SRO)
 - (b) Refueling Machine (RFM) operator
4. A shift cycle of less than one week, typically applicable to short term contractors, is insufficient to calculate MDO. Application of other portions of the Fatigue Rule (such as Fatigue Assessment and Self-Declaration) is sufficient to ensure well rested workers.
5. Short term contractor shift cycles should be developed considering the length of time the contractor is anticipated to be performing covered work, recognizing the scope of work may be completed early or the contractor could leave on their own accord. As long as the worker has not exceeded the maximum number of allowable days in their assigned shift cycle before they depart the site, it is NOT considered a violation even though their days off would not be documented within the CENG tracking software (EmpCenter).

NOTE

EmpCenter software will calculate MDO using one of two methods (fixed or rolling). Fixed cycles are calculated over sequential periods not to exceed 42 days. Rolling evaluation periods not to exceed 42 days roll on a daily basis verifying MDO requirements are met over the past evaluation period. Particularly to accommodate transitions into and out of outages, evaluation period durations and use of fixed and rolling periods can be adjusted and used in combination to satisfy rule requirements.

6. Outage MDO requirements apply to the first 60 days of a Unit Outage; after this 60-day period expires, normal on-line MDO requirements will apply.
 - a. Transition to Outage MDO rules shall not begin prior to breaker opening and shall end by the final breaker closure prior to power ascension. Delaying this transition to a point after breaker opening or transition back to on-line MDO requirements prior to breaker closure is acceptable.
 - b. The 60 day period clock is reset at the start of each discrete Unit Outage.

5.2.B (Continued)

7. The 60-day outage period may be extended seven days for an individual for each 7-day block during which they work 48 hours or less. Multiple 7-day extensions may be given to an individual as long as the 7-day blocks are not overlapping.
8. While one unit is disconnected from the grid and one unit is operating, all covered workers can work outage hours with the following exceptions:
 - a. Two Reactor Operators (RO) and Two Senior Reactor Operators (SRO) assigned to the controls for the operating unit while the other unit is in an outage.
 - b. Workers exclusively assigned to the on-line unit, other than the four required at the controls of the operating unit, are not required to work on-line hours. Participation in planning, turnovers, briefings or work involving outage unit or common systems will enable personnel to work outage hours.
9. While one unit is disconnected from the grid and one unit is operating, relief should be provided to the operating unit with operators working non-outage work hours. Otherwise the following can be applied:
 - a. An operator who has been working outage work hours and has had 2 days off in the previous 7-day period may provide relief to the operator at the controls (RO) or the senior operator in the control room (SRO) of the operating unit, if an appropriately qualified operator who has been working non-outage work hours is not immediately available to provide relief. If an operator who has been working outage work hours and has had 2 days off in the previous 7-day period is not immediately available, an operator who has been working outage hours may provide:
 - (1) Short-term relief (up to 2 hours) for the operator at the controls or the senior operator in the control room without a waiver,
OR
 - (2) Longer term relief (more than 2 hours) under a waiver of the MDO requirement that is applicable to the shift schedule (for example, 8-, 10-, or 12-hour shifts) for personnel assigned to the operating unit.
10. Eligibility to work outage hours should be established on an individual or defined group basis. Eligibility should be evaluated each 15 days for each individual or defined group during the outage.
11. For security personnel during the first 60 days of an unplanned security system outage or Increased Threat Condition, the security personnel need not meet the outage or on-line minimum days off requirements.
 - a. The 60-day period clock is reset at the start of each discrete Security System Outage or Increased Threat Condition.

5.8. Waivers

- A. Waivers apply only to CENG employees and contractors/vendors that perform or direct covered work.
- B. All hours worked (both covered and non-covered work), except as noted in Section 5.5, must be counted as hours accumulated toward the work hour limitations specified in 10CFR26, Subpart I, for covered workers. Work activities on both covered and non-covered systems, structures, and components (SSCs) contribute toward personnel fatigue, therefore, all work hours are considered in the accumulated time related to work hour limitations.
- C. If the work to be performed is not covered work, station management can elect to remove the worker from the covered worker population, work the task in question without processing a waiver, and then return the worker in to the covered worker population. Prior to returning the individual to covered worker status, the individual is required to have met all work hour limits and controls for the current shift cycle.
- D. Waivers shall be processed on an individual basis. There is no provision for processing group waivers.
- E. Station management shall rely on the granting of waivers only to address circumstances that could not have been reasonably controlled.
- F. Waivers may be granted when the following requirements are met:
 - 1. An Operations Shift Manager or a station senior-level manager, with requisite signature authority, determines that the waiver is necessary to mitigate or prevent a condition adverse to safety.
 - OR
 - 2. A Security Shift Supervisor or a station senior-level manager, with requisite signature authority, determines that the waiver is necessary to maintain site security.
 - AND
 - 3. The cognizant supervisor assesses the individual face-to-face using Attachment 2, Fatigue Assessment, and determines that there is reasonable assurance that the individual will be able to safely and competently perform their duties during the additional work period for which the waiver will be granted.
 - a. Supervisors may not perform the face-to-face fatigue assessment more than four (4) hours before the individual begins performing any work under the waiver.
 - b. The supervisor performing the assessment shall have completed fatigue assessment training and shall be qualified to direct the work (or related work) to be performed by the individual.
 - c. At a minimum, the fatigue assessment must address:
 - (1) The potential for acute and cumulative fatigue, considering the individual's work history for at least the last 14 days
 - (2) The potential for circadian degradations in alertness and performance, considering the time of the day for which the waiver is granted

- (3) The potential for fatigue-related degradations in alertness and performance to affect covered functions, and
 - (4) Whether any controls and conditions must be established under which the individual will be permitted to perform work.
 - d. The supervisor shall document the bases for individual waivers. The documented basis for a waiver must include a description of the circumstances that necessitate the waiver, a statement of the scope of work and time period for which the waiver is approved, and the bases for the determinations made in Steps 5.8.F.1, and 5.8.F.2 of this section.
 - 4. Waivers and associated supervisory fatigue assessments shall be documented using the EmpCenter fatigue management software.
- G. Processing a Waiver

NOTE

In the absence of the immediate supervisor, the Operations Shift Manager is authorized to process a waiver in accordance with the instructions in Step 5.8.G.

1. The immediate supervisor shall initiate the waiver using the EmpCenter software OR by completing Section 1 (Requests) of Attachment 1, 10CFR26 Work Hour Limits Waiver. However, if Attachment 1 is used, the waiver must be documented post-event in the EmpCenter software. The following information shall be included in the waiver request:
 - a. Supervisor's name
 - b. Date and time that the waiver request was initiated
 - c. The time period for which the waiver is requested
 - d. Name and department for the individual who will exceed work hour controls
 - e. The specific work hour limits or controls that will be exceeded
 - f. A description of the work activity (refer to Attachment 3, Examples of Outage Activities, for examples of outage activities and covered worker eligibility for outage work hour limitations)
 - g. A description of the circumstances that necessitate the waiver request

NOTE

If the condition is determined to NOT be adverse to safety or the maintenance of site security, then the waiver is NOT valid and work hour limits shall NOT be exceeded.

2. In accordance with Step 5.8.F.1 or 5.8.F.2, an Operations Shift Manager, a Security Shift Supervisor, or a station senior-level manager with requisite signature authority shall determine that the waiver is necessary to mitigate or prevent either:
 - a. Condition Adverse to Safety

- b. Condition Adverse to the Maintenance of Site Security
- 3. The immediate supervisor shall conduct a face-to-face fatigue assessment and complete Section 2 of Attachment 1, 10CFR26 Work Hour Limits Waiver, in accordance with Step 5.8.F.3.
- 4. The supervisor shall determine if there is reasonable assurance that the individual will be able to safely and competently perform assigned duties during the additional work period for which the waiver will be granted.
- 5. The supervisor shall determine if there should be any controls and conditions on the individual that will be assigned duties during the additional work period for which the waiver will be granted.
 - a. If the supervisor determines that there is reasonable assurance that the individual will be able to safely and competently perform their duties during the additional work period for which the waiver will be granted, they will present the waiver request to an Operations Shift Manager, a Security Shift Supervisor, or a station senior-level manager for approval.
- 6. As applicable, an Operations Shift Manager, a Security Shift Supervisor, or a station senior-level manager with requisite signature authority shall complete Section 3 (Authorization to Exceed Work Hour Limits) of Attachment 1, 10CFR26 Work Hour Limits Waiver.
 - a. The basis for the determination made in Step 5.8.G.2 shall be documented in Section 3 of Attachment 1.
- 7. The immediate supervisor shall complete Section 4 (Supervisor Closeout Review) of Attachment 1, 10CFR26 Work Hour Limits Waiver, promptly after the waiver period has ended.
- 8. The immediate supervisor shall forward the completed Attachment 1 to Security (FFD) for recordkeeping and reporting.

5.9. Training and Examination

- A. Individuals who have unescorted access to protected areas shall receive training and complete an examination to demonstrate an understanding of fatigue and fatigue management policies and procedures on an annual basis. The Manager-Training shall ensure that 10CFR26 Subpart I training shall include but not be limited to the following objectives:
 - 1. Knowledge of the contributors to worker fatigue
 - 2. Circadian variation in alertness and performance
 - 3. Indications and risk factors for common sleep disorders
 - 4. Shift work strategies for obtaining adequate rest
 - 5. Effective use of fatigue countermeasures
 - 6. Ability to identify symptoms of worker fatigue and contributors to decreased alertness in the workplace

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:

Facility Representative C. D. [Signature] Date 1/9/15/4

NA Exam Security /
General Supervisor Date
Operations (Designee)

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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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: <i>If asked, during the course of this JPM, inform the candidate that flow indications are unaffected.</i>	Per Condition B, determines that the inoperable OFG Radiation Monitors must be restored to OPERABLE status within 30 days	Sat/Unsat
Note: <i>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.</i>	Per Condition C, determines one of the following: <ul style="list-style-type: none"> • C.1 - Must place the nonfunctional channels in the tripped condition within 12 hours OR	Pass/Fail
Cue: <i>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</i>	<ul style="list-style-type: none"> • 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 	

Performance Steps	Standard	Grade
	Determines that tripping both channels of OFG*RE13A and B would isolate OFG requiring a shutdown	Sat/Unsat
Part B		
Evaluator: When the candidate determines the ODCM sample requirements, provide the candidate with the attached Additional Turnover Sheet and initiating cue.		
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	Determines first sample is due by 18:00 today	Pass/Fail
Note: TS 1.3 example 1.3-7 provides an illustration for the required completion times.		
	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

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

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:

C. D. Smith / 9/15/7
Facility Representative Date

NA Exam Security /
General Supervisor Date
Operations (Designee)

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 <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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) Key to be obtained: H-20-2 (RP map) The highest contact dose rate in the area and location: 230 mrem/hour, on the pump (RP Map) The highest dose rate at 30cm and location: 210 mrem/hour, northeast corner piping (RP Map)	Pass/Fail Pass/Fail 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 _____		

**NOTE: THIS IS THE EXAMINER SCORECARD.
DO NOT PROVIDE TO THE CANDIDATE.**

Answer the following when performing this task:	
1. Pass/Fail	
Classify the area (check one): <input type="checkbox"/> Radiation Area <input checked="" type="checkbox"/> High Radiation Area <input type="checkbox"/> Locked High Radiation Area <input type="checkbox"/> Very High Radiation Area	
2. Sat/Unsat	
Designate the key to be obtained: H-20-2	
3. Pass/Fail	
Designate the highest contact dose rate and the location: 230 mrem/hour, on the pump	
4. Pass/Fail	
Designate the highest dose rate at 30 cm and the location: 210 mrem/hour, northeast corner piping	
5. Pass/Fail	
Designate the RWP required to be used (check one): <input type="checkbox"/> The provided RWP is acceptable <input checked="" type="checkbox"/> Specific RWP should be requested	
6. Pass/Fail	
Evaluate delta exposure (check one): <input type="checkbox"/> Acceptable <input checked="" type="checkbox"/> Additional approval(s) required	

**NOTE: THIS IS THE EXAMINER SCORECARD.
DO NOT PROVIDE TO THE CANDIDATE.**

Answer the following when performing this task:	
1. Pass/Fail	
Identify the form required to be completed for the dose extension.	
S-RAP-RPP-0703 attachment 1	
2. Pass/Fail	
Check all appropriate boxes below for the approvals required for this dose extension.	
<input checked="" type="checkbox"/> Department Manager	
<input checked="" type="checkbox"/> General Supervisor Radiation Protection	
<input type="checkbox"/> Plant General Manager	
<input type="checkbox"/> Site Vice President	

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. <input type="checkbox"/> Department Manager <input type="checkbox"/> General Supervisor Radiation Protection <input type="checkbox"/> Plant General Manager <input type="checkbox"/> Site Vice President

SCORECARD

Answer the following when performing this task:	
1.	Classify the area (check one): <input type="checkbox"/> Radiation Area <input type="checkbox"/> High Radiation Area <input type="checkbox"/> Locked High Radiation Area <input type="checkbox"/> 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): <input type="checkbox"/> The provided RWP is acceptable <input type="checkbox"/> Specific RWP should be requested
6.	Evaluate delta exposure (check one): <input type="checkbox"/> Acceptable <input type="checkbox"/> 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

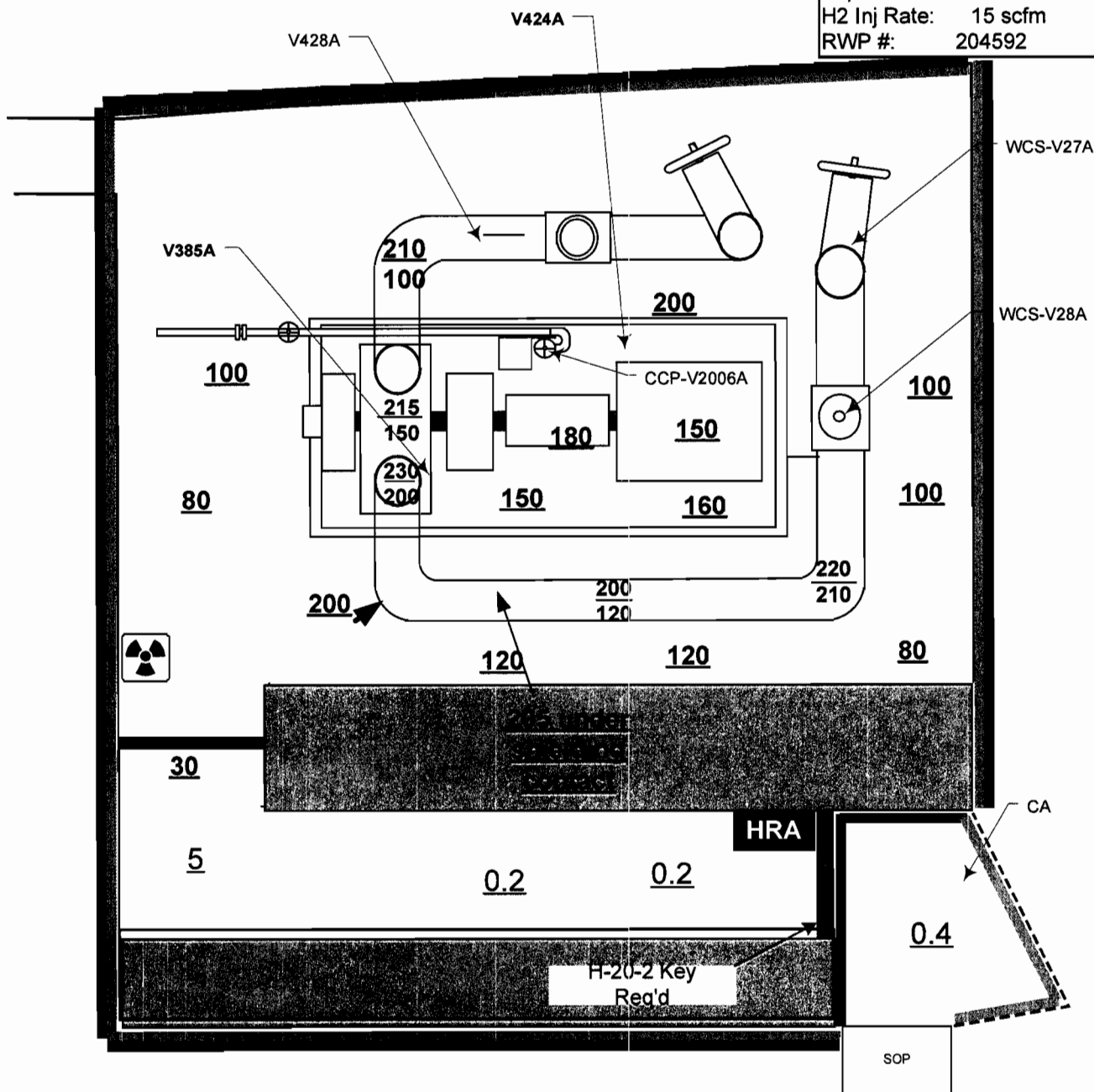
⊙ - location of LAW

--- 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: No	Locked High Radiation Area: No	High Contamination Area: No	
Alarm Settings			
Dose (mrem) 20	Back-Off Dose (mrem) 16	Dose Rate (mrem/hr) 80	
Locations			
Buildings Protected Area	Elevations All elevations	Rooms All ROOMS OR AREAS	
Radiological Conditions - Initial Survey Data - See RP for Current Conditions			
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	
RWP Requirements			
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.		
Additional Instructions			
Instructions:			
Approvals			
Approver Title	Name		Date
RAD PROTECTION SUPERVISOR	COLE, JOHN R		12/29/2009
Attachments			
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 Date
Operations (Designee)

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 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:

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 H₂O.
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.”

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>
1. Provide repeat back of initiating cue <i>Evaluator acknowledge repeat back providing correction if necessary</i>	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.		

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>
j. Determines Protective Action Recommendations (PARs), completes EPIP-EPP-20 Part 1 Notification Fact Sheet, and provides to Communications Aide.	<p>Determines PARs, completes Part 1 Notification per attached key, and provides completed form to Communications Aide.</p> <p>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.</p> <p><u>Note:</u> Time difference must be 15 minutes or less:</p> <p>Time of Declaration (from JPM step 3.d):</p> <p>_____</p> <p>Time EPIP-EPP-20 Part 1 Notification Fact Sheet is complete:</p> <p>_____</p>	Pass/Fail

TERMINATING CUE: Part 1 Notification Fact Sheet completed.

RECORD STOP TIME_____

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 H₂O.
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

KEY

Attachment 1, SM/ED Checklist

Name: (NAME)	Date: (Date)	Unit <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2
-----------------	-----------------	---

NOTES:

1 All steps should be performed. Use N/A if appropriate

		Completed	N/A
1	This is a <u>Drill</u> 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: <ul style="list-style-type: none"> Inform SM of <u>Drill</u> Actual Emergency (circle one) and Emergency Classification Obtain Opposite Unit Status: <ul style="list-style-type: none"> <u>Operating</u> 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.			
	<ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> None Staff Alternate Emergency Facilities Staff Normal Emergency Facilities as a Precaution <u>Staff Normal Emergency Facilities for an Emergency</u> 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	✓	

KEY

ACTIVATION AND DIRECTION OF THE EMERGENCY PLANS

EPIP-EPP-18

Revision 02001

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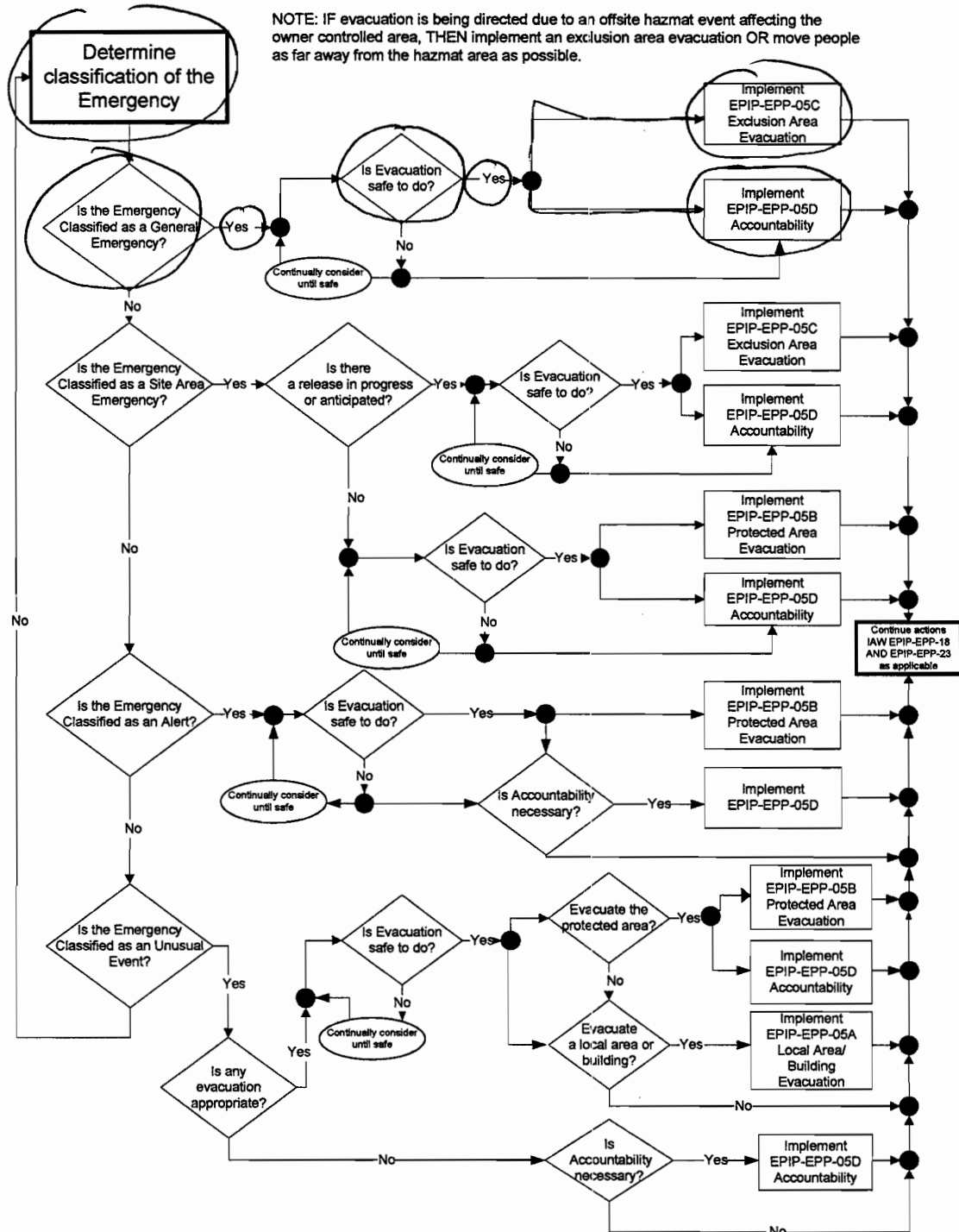
Page 2 of 5

		Completed	N/A
Notes: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 <u>for their Unit</u>, and notify the NRC 	✓	
10	Verify completion of notifications in accordance with EPIP-EPP-20: <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <u>status</u> of the plant emergency using information provided on Figure 2. When called by the ED/RM, turn over the <u>status</u> 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: <ul style="list-style-type: none"> <input type="checkbox"/> Any further classifications and declarations <input type="checkbox"/> Determining need for Exclusion Area Evacuation <input type="checkbox"/> Authorization for emergency workers to exceed normal radiation exposure limits <input type="checkbox"/> Notification to off-site emergency management agencies (State / County / NRC) <input type="checkbox"/> Making PARs as necessary to offsite emergency management agencies. 		

End of JPM

FIGURE 1

EVACUATION/ACCOUNTABILITY FLOWCHART



Attachment 2, Emergency Announcement

DATE: <u>(Date)</u> TIME: <u>(Time)</u>
INSTRUCTIONS: (check boxes to select appropriate announcement, consider crossing out rows not used)
1. PLACE GAITRONICS IN MERGE.
2. SOUND THE APPROPRIATE ALARM: <input type="checkbox"/> Station alarm for 10 seconds. <input checked="" type="checkbox"/> Evacuation Alarm for 10 seconds. (When <u>any</u> 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 <input checked="" type="checkbox"/> a drill <input type="checkbox"/> an actual emergency. Nine Mile Point <input type="checkbox"/> Unit 1 is experiencing: <input checked="" type="checkbox"/> Unit 2 is experiencing: <input type="checkbox"/> "An Unusual Event due to _____" <input type="checkbox"/> "An Alert emergency condition due to _____" <input type="checkbox"/> "A Site Area Emergency due to _____" <input checked="" type="checkbox"/> "A General Emergency due to <u>high Drywell radiation (or similar)</u> " <input checked="" type="checkbox"/> b. <u>If this is the first announcement for an Alert or higher, then always add</u> <i>"All Emergency Response Organization personnel are to report to their Emergency Response Facilities and card in."</i>
4. FOR A CREDIBLE INSIDER SECURITY THREAT, ADD (Only do step 4 once) <input type="checkbox"/> 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 <input type="checkbox"/> "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 <u>or</u> if evacuation unsafe and only do step 6 once.) <input type="checkbox"/> "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) <input type="checkbox"/> "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-----

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 GAltronics in merge mode for the duration of the event.

14. Upon completion return this attachment to the EP Dept.

[N0306]

EMERGENCY NOTIFICATIONS

EPIP-EPP-20

Revision 02600

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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."												
<input type="checkbox"/> State Emergency Communications Center (SECC)		<input type="checkbox"/> Oswego County Warning Point		<input type="checkbox"/> JA Fitzpatrick Power Plant (not req'd in 15 min)								
				<input type="checkbox"/> 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 <u>(B.)</u> An Exercise									
		3.	The Emergency Classification is: A. Unusual Event C. Site Area Emergency E. Emergency Terminated B. Alert <u>(D.)</u> General Emergency F. Other: _____									
		4.	This Emergency Classification was declared on:(date) <u>(Date)</u> at(time - 24 hr) <u>(Time)</u>									
		5.	Release of radioactive Materials due to the classified event: <u>(A.)</u> No release B. Release below federal limits (ODCM), <input type="checkbox"/> To atmosphere <input type="checkbox"/> To Water C. Release above federal limits (ODCM), <input type="checkbox"/> To atmosphere <input type="checkbox"/> 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 <u>(B.)</u> Evacuate and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System. <u>(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)</u> 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.	<table border="1"> <tr> <td>X</td> <td>U1</td> <td rowspan="3">EAL # <u>1.33</u></td> </tr> <tr> <td></td> <td>U2</td> </tr> <tr> <td></td> <td>Site</td> </tr> </table>	X	U1	EAL # <u>1.33</u>		U2		Site	Brief event description and other significant information: (if necessary. Do not repeat EAL description) <u>(Optional brief description)</u>	
X	U1	EAL # <u>1.33</u>										
	U2											
	Site											
		8.	Reactor Status: Unit 1: <u>(A.)</u> Operating B. Shutdown (date) _____ at (time - 24 hr clock) _____ Unit 2: A. Operating <u>(B.)</u> Shutdown (date) <u>(Date)</u> at (time - 24 hr clock) <u>(Time)</u>									
		9.	A. Elevated wind speed <u>10</u> miles/hr at 200 ft B. Ground wind speed <u>5</u> miles/hr at 30 ft.									
		10.	A. Elevated wind direction (from) <u>93</u> degrees at 200 ft. B. Ground wind direction (from) <u>93</u> degrees at 30 ft.									
		11.	Stability Class: A B C <u>(D)</u> 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		<input type="checkbox"/> State Emergency Communications Center (SECC)		<input type="checkbox"/> Oswego County Warning Point								
				<input type="checkbox"/> JA Fitzpatrick Power Plant								
				<input type="checkbox"/> Unaffected NMP Unit								
THEN STATE: "Nine Mile Point out at time: _____" (time -- 24 hr clock)												
Approved by: (SM/ED or ED/RM): _____												
Print name: <u>(NAME)</u> Signature: <u>(Signature)</u>												

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 breach 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)

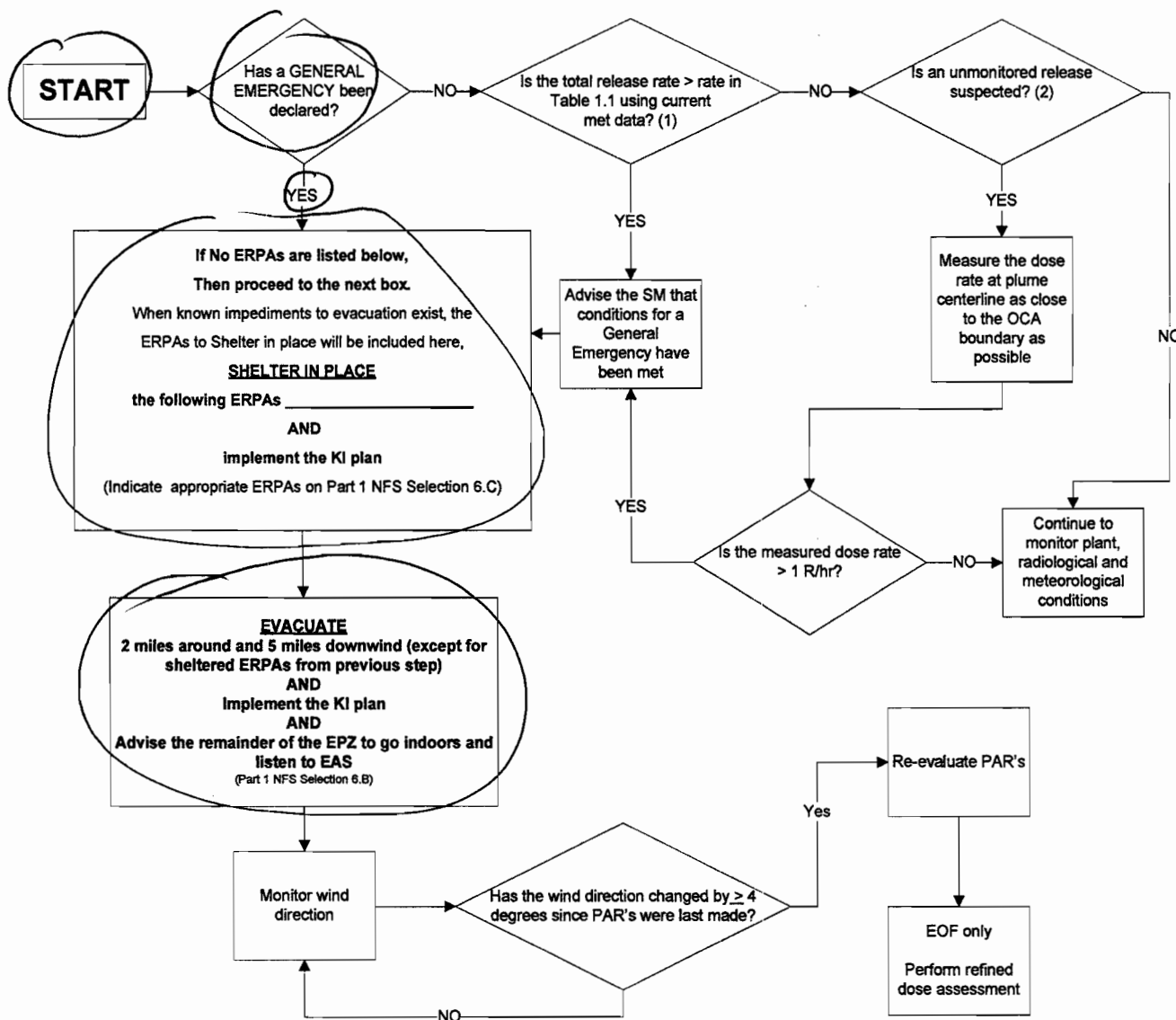
12. **Communications Aide or Comm Coordinator** completes this row listing name and the commercial telephone they use.13. SM/ED or ED/RM signs the Part 1 Notification Fact Sheet **AND** provides to Communications Aide or Communications Coordinator, noting the time that the initial roll call must be completed. (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

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)	+	Elevated Release Rate (Ci/s)	=	IF ≥ 1 , A General Emergency Exists
Table 1.1 Ground Release Rate (Ci/s)		Table 1.1 Elevated Release Rate (Ci/s)		
_____	+	_____	=	

(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

Attachment 1, Tables - INITIAL DOSE ASSESSMENT AND PROTECTIVE ACTIONS

TABLE 1.1 - GENERAL EMERGENCY RELEASE RATES

Ground Release (Ci/s)					Elevated Release (Ci/s)				
Wind Speed (mi/h)	Stability Class				Wind Speed (mi/h)	Stability Class			
	A	B/C	D	E/F/G		A	B/C	D	E/F/G
0-3	1333	213	119	38	0-3	2041	1124	3030	769
4-6	3226	286	143	48	4-6	3703	909	769	769
7-9	5556	526	250	83	7-9	5882	1515	1075	1250
10-13	7692	769	357	117	10-13	7692	2083	1388	1724
14-17	10753	1075	500	164	14-17	11494	2857	1818	2273
18-21	13514	1389	667	213	18-21	14286	3704	2273	2778
>21	16393	1667	833	256	>21	17241	4348	2632	3226

TABLE 1.2 – AFFECTED ERPAs

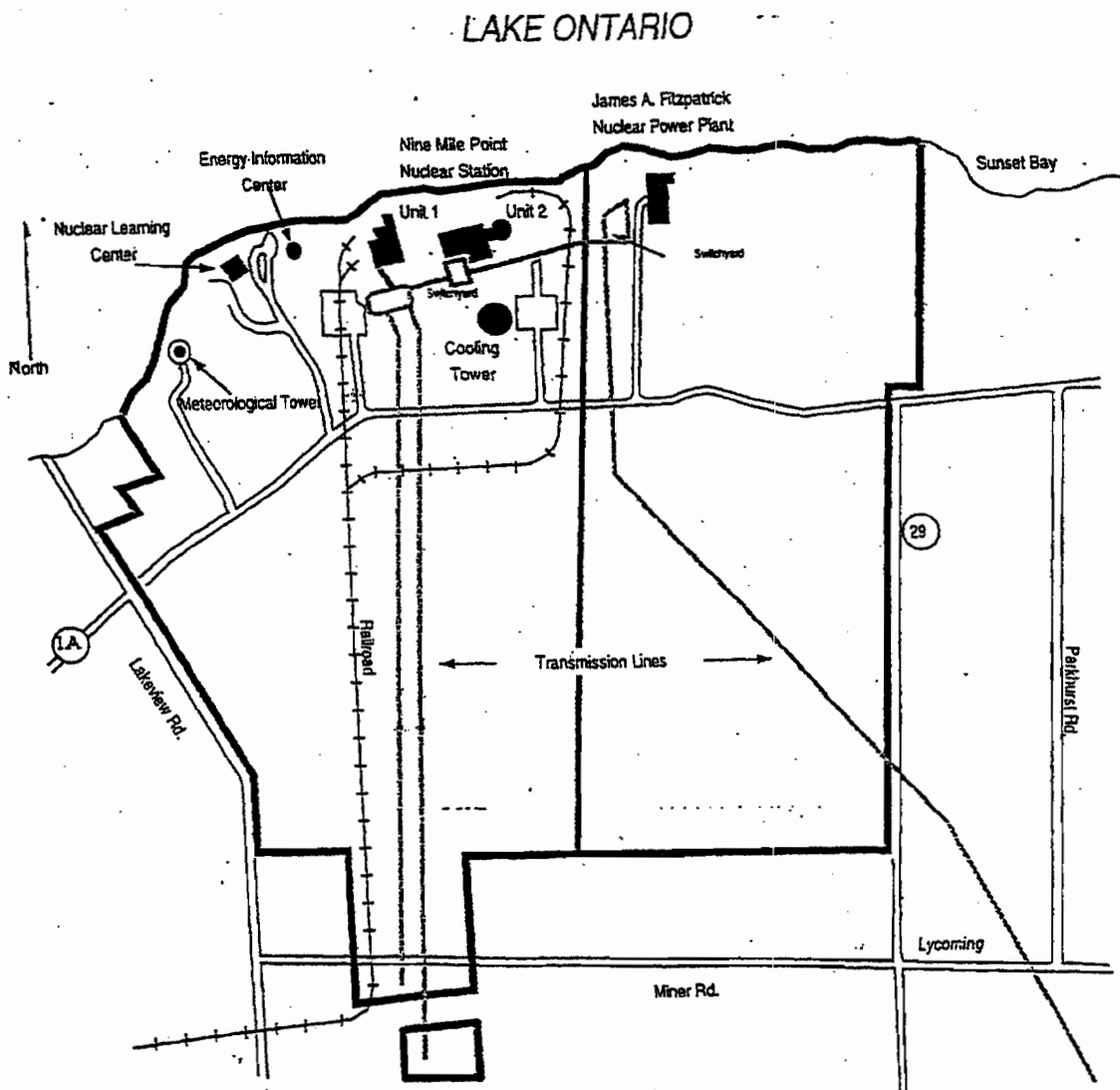
Wind Direction From	2 Miles Around and 5 Miles Downwind
214 to 222	1, 2, 3, 26, 27
223 to 233	1, 2, 3, 26, 27
234 to 240	1, 2, 3, 7, 26, 27
241 to 254	1, 2, 3, 4, 7, 26, 27
255 to 262	1, 2, 3, 4, 7, 26, 27
263 to 278	1, 2, 3, 4, 7, 9, 26, 27
279 to 292	1, 2, 3, 4, 5, 7, 9, 26, 27
293 to 305	1, 2, 3, 4, 5, 7, 9, 10, 26, 27
306 to 311	1, 2, 3, 4, 5, 7, 9, 10, 26, 27
312 to 332	1, 2, 3, 4, 5, 7, 9, 10, 26, 27
333 to 340	1, 2, 3, 4, 5, 9, 10, 11, 26, 27
341 to 349	1, 2, 3, 4, 5, 9, 10, 11, 26, 27
350 to 356	1, 2, 3, 5, 6, 9, 10, 11, 26, 27
357 to 0 0 to 12	1, 2, 3, 5, 6, 9, 10, 11, 26, 27
13 to 20	1, 2, 3, 5, 6, 10, 11, 26, 27
21 to 51	1, 2, 3, 5, 6, 10, 11, 26, 27
52 to 56	1, 2, 3, 5, 6, 11, 26, 27
57 to 61	1, 2, 3, 5, 6, 11, 26, 27
62 to 70	1, 2, 3, 6, 11, 26, 27
71 to 89	1, 2, 3, 6, 26, 27
90 to 95	1, 2, 3, 6, 26, 27
96 to 114	1, 2, 3, 26, 27
115 to 146	1, 2, 3, 26, 27
147 to 213	1, 2, 3, 26, 27

TABLE 1.3 - EPA 400 Protective Action Guidelines (EPA PAGs)

PAR	TEDE (rem)	CDE _T (rem)
Evacuate	> 1	> 5
Shelter in place	Shelter only if evacuation is not practical due to impediments	

Attachment 1, Figure 1.4 – SITE BOUNDARY MAP

Site Boundary Map



Attachment 1, Figure 1.5 – ERPA MAP

