February 17, 2000

NOTE TO: NRC Document Control Desk
Mail Stop 0-5-D-24

FROM: Beverly Michael, Licensing Assistant, Operator Licensing and Human Performance Branch, Division of Reactor Safety, Region II

SUBJECT: OPERATOR LICENSING EXAMINATIONS ADMINISTERED AT TURKEY POINT NUCLEAR PLANT- DOCKET NOS 50-250 AND 50-251

Operator Licensing Examinations were administered at the referenced facility. Attached, you will find the following information for processing through NUDOCS and distribution to the NRC staff, including the NRC PDR:

Item #1 - a) Facility submitted outline and initial exam submittal, designated for distribution under RIDS Code A070.

b) As given operating examination, designated for distribution under RIDS Code A070.

Item #2 - Examination Report with the as given written examination attached, designated for distribution under RIDS Code IE42.

Attachments: As stated

FINAL SUBMITTAL
FACILITY EXAMINATION OUTLINE

PLANT NAME: _____

REPORT NO.: _____

EXAMINATION DATES: _____

Chief Examiner: _____

Date of Receipt: _____

COPIES MADE AS NOTED BELOW:

[ ] PDR COPY (hold until exam is given & report is ready to be dispatched).

[ ] ORIGINAL FILED (in exam folders)

Florida Power & Light Co.

Turkey Point Nuclear Plant

1999 NRC Operating Exam
Simulator Scenario
Draft Redline Copies

September 13, 1999

NRC COPY

Combination INITIAL & FINAL - R2

DISTRIBUTION CODE
A070

Facility: Turkey Point Nuclear Plant **Scenario No.:** 1 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

Objectives: To evaluate the applicants' ability to use off-normal procedures for PZR pressure control channel PT-3-445 failing high followed by an unisolable leaking PZR PORV requiring a load reduction. Evaluate ability of operators to recognize & respond to a turbine first stage impulse pressure channel failing low. Emergency Operating Procedure use will be evaluated following the reactor trip for C S/G main steam line break inside Containment, failure of the main turbine to trip, 3B MSIV fails open, and a loss of all auxiliary and standby feedwater requiring RCS bleed and feed due to loss of secondary heat sink.

Initial Conditions: 100% power, EOL

Turnover: Maintain 100% power steady state operation. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input which is under I&C investigation. LT-3-498 & A AFW pump are both OOS for corrective maintenance. B AFW pump is aligned to train 2 and C AFW pump is aligned to train 1. No surveillance tests are in progress.

Event No.	Malf. No.	Event Type*	Event Description
1	TFH1TU45 = T	I (SRO) I (RO)	PT-3-445 fails high (PORV-3-456 closure required). K/A 027AA2.15 (3.7/4.0)
2	TVHV456 = 0.7 / 30 sec ramp TFH2906F = T conditional on IMH231C	C (SRO) C (RO)	PZR PORV-3-456 develops a leak and MOV-3-535 fails to close. K/A 010A2.03 (4.1/4.2)
3	N/A	N (SRO/BOP) R (RO)	Power reduction to hot standby. K/A 2.1.23 (3.9/4.0)
4	TFS1MAML = T	I (SRO) I (BOP)	PT-3-447 fails low. K/A 016A2.01 (3.0/3.1)
5	TVSBVL15 = 0.2/ 300 sec ramp TFU10005 = T TFSVVX6C = T	M (ALL)	3C S/G main steam line break resulting in reactor trip with failure of main turbine trip and 3B MSIV failing open. K/A 040AA1.01 (4.6/4.6), 040AA1.13 (4.2/4.2)
6	TFFXOILB = T / TAFF07=0.0	C (SRO) C (BOP)	Failure of the train 2 (B) AFW pump to automatically start and inability to align train 1 AFW steam supply from an intact S/G. K/A 061A2.04 (3.4/3.8)
7	from event 5 & 6	M (ALL)	Loss of secondary heat sink with bleed & feed required. K/A WE05EA1.1 (4.1/4.0)

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

FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 1
DESCRIPTION:	Main Steam Line Break (Inside Containment) / Loss of All Feedwater
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	04/27/99

REVIEWED BY:  6-11-99

Facility Reviewer Date

APPROVED BY: _____

NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. PT-3-445 failure high
   b. Unisolable PZR PORV leak
   c. Power reduction due to PZR leak
   d. PT-3-447 failure low
   e. Main steam line break
   f. Reactor trip with main turbine trip & 3B MSIV failures
   g. Loss of all auxiliary feed
   h. Loss of secondary heat sink with RCS bleed & feed

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 574 degrees F

Turnover: Maintain 100% power steady state operation. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input which is under I&C investigation. LT-3-498 & A AFW pump are both OOS for corrective maintenance. B AFW pump is aligned to train 2 and C AFW pump is aligned to train 1. No surveillance tests are in progress.

Synopsis: Shortly after shift turnover, PT-3-445 fails high causing PZR PORV PCV-3-456 to automatically open. Operators respond per 3-ONOP-041.5 by manually closing the opened PORV. Following stabilization of plant conditions (or completion of 3-ONOP-041.5 at evaluator discretion), that same PORV (PCV-3-456) develops a leak. Operators respond by attempting to close MOV-3-535 which trips on breaker overload leaving the leak unisolated. The crew re-enters 3-ONOP-041.5, evaluates Tech Specs and determines a plant shutdown is needed due to the unisolable PZR steam space leak (rate at Ops management direction). After a 5% power reduction (or as determined by the evaluator), PT-3-447 fails low. The resulting automatic rod insertion requires the operator to take rod control to manual per 3-ONOP-028. Once Technical Specifications have been consulted and the crew briefed on the effects of the failure, a steam break occurs on the 3C steam generator inside containment. The crew responds per 3-EOP-E-0 and addresses a failure of the main turbine to trip and a failure of the B AFW pump to start causing a loss of all auxiliary feed water (A AFW pump OOS, B AFW pump failed, C AFW pump aligned to the faulted steam generator for steam supply). Additionally, 3B MSIV fails to close manually from the console switch or in response to Main Steam Isolation Signal on high Containment pressure. Transition to 3-EOP-FR-H.1 is made in response to low steam generator levels (3B MSIV & turbine trip failures combined) with a loss of all AFW. Steam generator levels are sufficiently low to require RCS bleed and feed initiation. The exercise is concluded upon establishment of adequate RCS heat removal by bleed & feed (3-EOP-FR-H.1 step 24) or at the evaluator's discretion. The event is classified after scenario completion as a site area emergency per 0-EPIP-20101, Enclosure 1, category 5.

Event Summary:

EVENT #	DESCRIPTION
1	PT-3-445 fails high
2	PZR PORV-3-456 leak / MOV-3-535 overload trip
3	Power reduction
4	PT-3-447 fails low
5	3C S/G main steam line break/reactor trip/turbine trip & 3B MSIV failures
6	Loss of all auxiliary feed water (train 2 AFW pump start failure/AFSS-3-007 stuck shut)
7C	Loss of secondary heat sink (bleed & feed required)

Crew Critical Steps:

EVENT #		DESCRIPTION
5	1.	Manually actuate steam line isolation (buttons or MSIV switches) prior to orange path on subcriticality or integrity or transition to 3-EOP-ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).
7C	1.	When required, initiate RCS bleed and feed so that the RCS depressurizes sufficiently for HHSI injection flow to occur.

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - EOL
   b. Reactor power and power history - 100% steady state
   c. Turbine status - online
   d. Boron concentration - 51 ppm
   e. Temperature - 574 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Equilibrium for 100% power.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.7.1.2 Action 3 (30 days); A AFW pump bearing failure
   j. Clearances in effect - A AFW pump
   k. Significant problems/abnormalities - Condenser steam dumps in steam pressure (manual) control due to Tavg input problem. I&C investigating. C AFW pump aligned to train 1. LT-3-498 OOS; LT-3-496 selected for 3C S/G level control.
   l. Evolutions/maintenance for the coming shift - Maintain 100% power steady state operation.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 5 on RHR
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Pressure transmitter PT-3-445 fails high opening PORV PCV-3-456 and decreasing pressure. The problem is diagnosed and the PORV / block valve closed stopping the pressure decrease. The plant is stabilized and PT-3-445 is declared OOS.

INDICATIONS:

1. PT-3-445 failed high
2. PORV PCV-3-456 opens automatically
3. RCS pressure decreases
4. Annunciator A-4/1, PORV/SAFETY OPEN

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by ANPS
RCO		1. Recognizes & reports PZR press control problem
		2. Verifies PZR press control loop not failed - NO
		a. Checks PT-3-444 not failed.
		b. Recognizes PT-3-445 failed high.
		c. Closes PZR PORV PCV-3-456 and/or block valve MOV-3-535
		3. Verifies PZR PORVs closed
		4. Verifies PZR spray valves closed
		5. Verifies PZR safety valves closed
		6. Checks PZR pressure stable/increasing
		7. Checks PZR pressure above normal - NO
		8. Checks PZR pressure low/decreasing
		9. Maintains PZR pressure greater than 2000 psig

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 1 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		10. Verifies PZR heaters operable
		11. Checks if PZR PORV is leaking - NO
		12. Checks if leaking PZR safety is reducing pressure - NO
		13. Determines if RCS leak is reducing pressure - NO
		14. Checks if PZR pressure decreasing - NO
		15. Checks RCS pressure stable
		16. Checks if auto pressure control can be established
		17. Establishes auto pressure control
		18. Keeps ANPS informed of plant status
ANPS		1. Coordinates/directs performance of 3-ONOP-041.5
		2. Reviews Technical Specifications
		3. Ensures I&C notified
		4. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: A pressurizer PORV begins to leak reducing RCS pressure. 3-ONOP-041.5 is entered, but the associated block MOV trips on overload before the leak is isolated. Tech Specs are referenced and the decision made to shut down.

INDICATIONS:
1. Annunciator A-9/2, PZR CONTROL HI/LO PRESS
2. Annunciator A-4/1, PORV/SAFETY OPEN
3. Annunciator A-7/2, PZR PORV HI TEMP
4. RCS/PZR pressure decreasing
5. PZR PORV acoustic monitor flow indicators lit

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Verifies PZR PORV leak using acoustic monitors
		2. Informs ANPS of plant status
RCO		**1. Recognizes PZR PORV leaking and notifies ANPS**
		2. Performs 3-ONOP-041.5 actions at ANPS direction:
		a. Checks PT-3-444/445 not failed (445 failed but previously addressed)
		b. Checks PZR PORVs/safeties/spray vlvs closed
		c. Identifies leaking PZR PORV, attempts to manually close block valve and **reports loss of block valve position indication to ANPS**
		d. Determines PZR press < normal / decreasing
		e. Maintains PZR press > 2000 psig with PZR heaters ON - finds PZR press low but stable
		f. Determines PORV is leaking and not isolated
		g. Determines PZR safeties are not leaking
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Directs PZR safety leak response per 3-ONOP-041.5**
		a. Directs MOV-3-535 closure & response to ensuing overload trip including direction to locally reclose MOV-3-535 breaker (will not reclose)
		b. Ensures all PZR htrs on to keep pressure > 2000 psig
		c. Directs STA to perform RCS leak rate
		d. Concludes PZR pressure low/stable and > 2000 psig due to unisolable leaking PZR PORV
		2. Reviews T.S. 3.4.4 & 3.2.5 and determines action for leaking PORV can not be met requiring s/d to HSD (also DNB T.S. requires press >2200 psig in 2 hrs or power < 5% in following 4 hours)
		3. Informs NPS of plant status & requests electrical maintenance support with block MOV bkr

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: With reactor power initially at 100% power, a power reduction to Hot Standby is commenced in response to an unisolable PZR PORV leak.

INDICATIONS: 1. NPS/Ops Management direction

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Reduces turbine load IAW 3-ONOP-100 or 3-GOP-103
		a. Maintains Tref within 3°F of Tavg if rods in manual (1°F if rods in auto)
		b. Monitors gland seal steam pressure & directs local operation of supply/spillover as req'd
		2. Performs secondary plant s/d generator-load-dependent activities IAW 3-ONOP-100 or 3-GOP-103
		3. Performs activities as directed by ANPS
		a. Inhibits MIMS if in service
		b. Notifies Chemistry of need to sample RCS if reactor power reduced > 15%
		4. Keeps ANPS informed of plant status
RCO		1. Reduces rx power IAW 3-ONOP-100 or 3-GOP-103
		a. Calculates ρ change req'd to reduce power and borates at rate directed by ANPS
		b. Energizes PZR backup heaters
		c. Coordinates w/BOP to keep Tref w/i 3°F of Tavg w/rods in manual (1°F w/rods in auto)
		d. Observes AFD limitations
		e. Starts additional charging pump
		2. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 3 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Coordinates power reduction activities of RCO & BOP
		2. Performs other activities IAW 3-ONOP-100 or 3-GOP-103
		a. Evaluates Xe changes and directs boration rate changes as necessary
		3. Notifies System Dispatcher of load reduction
		4. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: First stage pressure transmitter PT-3-447 fails low. The crew recognizes the failure, selects PT-3-446 for control, and regains control of S/G level. The channel is declared OOS and compensatory actions taken per 3-ONOP-049.1.

INDICATIONS:

1. Failure low of PI-3-447 (VPA)
2. Control rods insert (if in auto rod control)
3. S/G levels decrease
4. Annunciators C-7/1(2)(3), SG A(B)(C) STEAMLINE HI FLOW
5. Annunciator C-8/3, STEAM DUMP ARMED/ACTUATED
6. Annunciator B-4/4, TAVG/TAVG-TREF DEVIATION

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes failure of PT-3-447 and responds as directed by ANPS a. Compares to other turb 1st stage impulse PT's b. Verifies no off-normal conditions on related indications 2. Notifies ANPS of failure 3. Takes manual control of S/G level if necessary
RCO		1. **Selects manual rod control (if in auto) in response to inward rod movement** (may refer to 3-ONOP-028) 2. Selects PT-3-446 as controlling channel 3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Directs stabilization of plant conditions. May suspend load reduction to perform actions of 3-ONOP-049.1 or may continue load reduction and trip bistables later.
		2. Directs compensatory action per 3-ONOP-049.1
		a. Verifies related instrument status
		b. Determines which bistables to trip and effects on plant of tripping bistables. Provides this info to RCO/BOP for guidance.
		c. Directs bypass of inputs to AMSAC
		3. Notifies NPS of plant status
		4. Ensures Tech. Spec. 3.3.1/2 requirements met
		5. Ensures I&C notification of PT-3-447 failure and directs initiation of PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 5 ~~&~~/6/1

BRIEF DESCRIPTION: In response to a 3C S/G steam break inside Containment, reactor trip and SI occur. Operators perform actions of 3-EOP-E-0. The auto & manual turbine trip fails. When MSIVs are closed/verified closed, 3B MSIV fails open. No AFW flow exists (no pumps available: A OOS, B start fail, C aligned to faulted S/G). Transition to FR-H.1 is made.

INDICATIONS:

1. Reactor trip & SI directed or actuates
2. Turbine stop valves & 3B MSIV remain open
3. GCBs do not open
4. 3B & C S/G Pressures dropping
5. Containment temperature & pressure rising
6. No AFW flow & AFW pump speeds at/near zero

CREW CRITICAL STEPS:

1. **Manually actuate steam line isolation (buttons or MSIV switches) prior to orange path on subcriticality or integrity or transition to 3-EOP-ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).**

POSITION	TIME	EXPECTED ACTIONS
BOP		**1. Performs IOAs in response to reactor trip with turbine trip failure per 3-EOP-E-0:**
		a. Verifies all turb. stop valves closed - NO
		1) Manually trips turb/verifies trip - NO
		2) Closes MSIVs/byp vlvs - 3B fails open
		b. Verifies MSR purge steam & steam stop MOVs closed with timing cam @ zero
		c. Verifies open Mid/East GCBs - NO
		1) Manually opens Mid/East GCBs (may also open exciter field breaker)
		2. Performs other 3-EOP-E-0 immediate actions:
		a. Verifies power to 3A/B/D 4kV buses and 3A/B/C/D/H 480V load centers.

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 ~~4~~/~~6~~ (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		**3. Performs 3-EOP-E-0 prompt actions at ANPS direction:**
		a. Verifies feedwater isolation
		b. Verifies AFW pumps running - NO
		1) Manually open valves to start 2 AFW pumps
		2) **Determines NO AFW pumps available (A OOS, B start fail & C steam supply from faulted S/G).** Dispatches local operators to check B AFW pump.
		c. Verifies proper ICW operation
		d. Checks if main steamlines should be isolated (already isolated in IOAs)- 3B MSIV still open
		e. Verifies all EDGs running
		4. Performs subsequent actions of 3-EOP-E-0 as directed by ANPS
		a. Directs SNPO to place PAHMS in service
		b. Verifies proper AFW alignment and flow - NO
		1) Checks S/G NR level >6%[32%] - NO
		2) Verifies AFW flow > 390 gpm - NO
		3) Manually starts pumps / directs ANPO/NPO valve realignment as directed by ANPS to get AFW > 390 gpm - NO
		5. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 ~~&~~ ~~6~~ (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs IOAs in response to rx trip per 3-EOP-E-0
		a. Verifies reactor tripped
		b. Checks if SI actuated/required - YES
		1) If not auto actuated, manually actuates SI & phase A as req'd by SI setpoint, PZR level or RCS subcooling
		c. Recognizes loss of subcooling and trips RCPs (if applicable)
		2. Performs prompt actions of 3-EOP-E-0
		a. Verifies containment isolation phase A
		b. Verifies SI pumps running
		c. Verifies proper CCW system operation
		d. Verifies containment cooling and containment/control room vent isolation
		e. Verifies containment spray & phase B isolation actuated if hi-hi CNMT pressure
		f. Trips all RCPs as required by phase B
		g. Verifies SI valve amber lights bright
		3. Recognizes loss of subcooling and trips RCPs per 3-EOP-E-0 (if applicable)
		4. Performs subsequent actions of 3-EOP-E-0 as directed by ANPS
		a. Resets & realigns SI then verifies SI flow
		5. Notifies ANPS of safety injection and cause
		6. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 ~~&~~ 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Directs response to reactor trip and failure of auto/manual turbine trip per 3-EOP-E-0**
		a. Verification of reactor trip
		b. Response to auto/manual turb. trip failure
		1) ensures closure of 3A & 3C MSIVs
		2) notes 3B MSIV failure to close and directs NLO investigation into problem
		3) ensures mid/east GCBs opened (may direct exciter field breaker opening)
		c. Determination of electric plant status
		d. Manual SI/phase A
		e. Monitors foldout page including direction to RCO to stop all RCPs if subcooling lost
		f. Directs trip of RCPs if phase B actuates
		g. Verifies at least 2 AFW pumps running - NO
		1) Directs local check of trn 2 (B) AFWP
		2) Directs local opening of 3-10-007 to align trn 2 stm to trn 1 (C) AFWP
		h. Response to loss of AFW flow & determination that no AFW pumps available.
		1) Evaluates field operator reports to determine no AFW pumps available
		2) Directs transition to 3-EOP-FR-H.1
		2. Informs NPS of plant status

EXPECTED OPERATOR ACTIONS

EVENT: #6

BRIEF DESCRIPTION: Feedwater flow (both main & AFW) has been completely lost following a 3C S/G main steam break in Containment. Plant conditions require entry into 3-EOP-FR-H.1. RCPs are stopped and feed and bleed is initiated (3C S/G faulted/dry & 3B S/G inventory lost thru failed MSIV to turbine which failed to trip).

INDICATIONS:
1. All steam generators less than 6[32]% level
2. Less than 390 gpm AFW flow
3. Wide range S/G levels decreasing (<22% on 3B & 3C S/Gs)

CREW CRITICAL STEPS:
1. **When required, initiate RCS bleed and feed so that the RCS depressurizes sufficiently for HHSI injection flow to occur.**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Performs actions of 3-EOP-FR-H.1 for RCS bleed & feed when secondary heat sink lost as directed by ANPS
		a. Resets CIS ΦA
		b. Verifies E-0 immediate and prompt actions
		c. Directs PAHMS placed in service per 3-OP-094
		d. Checks charging pumps aligned to offsite power
		e. Attempts to restore secondary heat sink
		f. Aligns equipment for hot standby conditions
		g. Checks if EDGs shold be stopped
		h. Checks for adequate secondary heat sink

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs actions of 3-EOP-FR-H.1 to restore feed flow as directed by ANPS
		a. Checks if secondary heat sink is required
		b. Stops all RCPs (should be stopped already)
		2. Performs actions of 3-EOP-FR-H.1 for RCS feed & bleed when secondary heat sink lost as directed by ANPS
		a. Actuates manual SI and CIS ΦA
		b. Verifies RCPs all stopped
		c. Verifies RCS feed path
		d. **Establishes RCS bleed path - PORVs/block valves open** (leaking PORV will open & failed block MOV never closed, so both PORV flow paths available)
		e. Verifies instrument air to containment
		f. Verifies adequate RCS bleed path
ANPS		**1. Directs performance of 3-EOP-FR-H.1 including RCS bleed and feed**
		2. Informs NPS of status of plant
		3. Classifies the event as a SITE AREA EMERGENCY per 0-EPIP-20101

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-6 ~~and perform steps B-D~~ or ~~use~~ static IC-1 which includes steps C & D below ~~and perform step B~~

B. Load scenario 35.

C. Following switch check, unfreeze the simulator, ~~and realign plant equipment as necessary such that condenser steam dumps are in steam pressure control, and LT-3-498 & A AFW pump are out of service. Place MIMS in service.~~

D. Perform the following
   1. Realign C AFW pump to train 1 & isolate A AFW pump (parameter controller composite trigger A AFW P).
   2. Place the condenser steam dump control selector switch to MANUAL.
   3. Take LT-3-498 out of service as follows:
      a. Ensure 3C S/G level control inputs are selected to LT-3-496.
      b. Fail LT-3-498 (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->STEAM GENERATOR->L-495->LT-498-> TRANSMITTER LOSS OF POWER->set TFF1MACP=T).
   4. Enter the following failures:
      a. Turbine trip failure (parameter controller direct trigger TFU10005=T).
      b. B AFW pump loss of governor oil (touch SYS MAT-> FEEDWATER->AUX F/W STEAM->IDA->GOV-B OIL LOSS FAILURE->set TFFXOILB=T).
      c. 3B MSIV failure to close (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->POV2605-> VALVE FAIL AS IS->set TFSVVX6C=T).

5. Freeze simulator

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags - A AFWP.

H. Information tags - Steam Dump Control Mode Selector Switch to MANUAL. Also move train 1 label from A AFW pump tachometer to C AFW pump tachometer beneath ann. panel X. Place a brown dot on LT-3-498. Info tag on 3C S/G level control level input to LT-3-49

I. Select 3A QSPDS to page 211 (SAT) and 3B QSPDS page 212 (RVL). Set ERDADS on the VPA ~~ERDADS~~ to TAVE/TREF (TAV) and RCO desk to ENVRN (ED3).

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

B. **PT-3-445 Fails High (event 1).**

1. **Initiation:** Shortly after turnover, enter the MOV-3-535 overload trip conditional (touch PRESURIZER LEVEL->MOV535-> THERMAL OVERLOAD-> set TFH2906F=T conditional on IMH231C) then actuate PT-3-445 failure high (parameter controller direct trigger TFH1TU45=T).

2. **Response:** Respond as NPS/NWE/I&C. As NPS/NWE, state that a work request will be generated and I&C will be notified. As I&C, reply that a planner will intiate a work package for troubleshooting & repair. In the event that an attempt is made to close MOV-3-535, it will trip on overload now rather than in event 2. See event 2 for the response to MOV-3-535 failure.

C. **PZR PORV-3-456 Leak / MOV-3-535 Overload Trip (event 2).**

1. **Initiation:** After completion of 3-ONOP-041.5, actuate the PZR PORV-3-456 leak (touch PRESSURIZER LEVEL->PORV456->LEAK BY -> set TVHV456=0.07/30 sec ramp). The leak is sized at 25-30 gpm to slowly reduce pressure to < 2200 psig.

2. **Response:** Once the leaking PORV has been identified, the RCO should attempt (if not done in event 1) to close the associated block MOV which will trip on overload as it starts to close. When asked as NPO/NWE to check out the MOV-3-535 breaker on 3B MCC, wait 1-3 minutes and report that the area around the breaker smells faintly like burnt insulation. If directed to attempt to close the breaker, delay action until after pressure < 2200 psig and reduce PORV-3-456 leakage to 15 gpm by setting TVHV456=0.036/60 sec ramp. (This leak rate will keep the acoustic monitor LEDs lit while allowing all PZR heaters to keep up with the effects of the leak without returning pressure to normal.) Then tell the crew that the switch won't stay in the ON position and the burnt insulation smell just got stronger. Respond as electrical maintenance when directed to investigate the breaker and respond after 5-7 minutes that the breaker internals appear burnt. Also state that the 3B MCC will have to be deenergized and a Containment entry performed to allow a complete damage evaluation and subsequent repair of the MOV and its breaker.
Acknowledge load dispatcher/plant management notifications of the required load reduction.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

D. **Power Reduction (event 3).**

1. **Initiation:** In response to event 2, the Operations Manager directs that an ONOP-100 shutdown be performed due to the inability to restore normal PZR pressure from the PORV leak.

2. **Response:** ~~Condenser tube leak~~ Leaking PORV response and initiation of load reduction is covered in event 2. Acknowledge notification as Chemistry of the need to sample the RCS in response to a 15% power change. Respond as field operator in response to notification of stopping secondary pumps and if requested to manually control gland seal steam pressure.

E. **PT-3-447 Fails Low (event 4).**

1. **Initiation:** After a 5% power reduction (or at lead examiner direction) ensure that rod control is in AUTO, then actuate PT-3-447 failure (parameter controller direct trigger TFSMAML=T).

2. **Response:** Respond as NPS, NWE or I&C to notification of PT-3-447 failure. As NPS/NWE state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will intiate a work package for troubleshooting & repair. Respond as NPO/NWE when directed to bypass AMSAC power 2 inputs by acknowledging the order, waiting 3-5 minutes, then bypassing the requested inputs (touch SYS MAT ->REACTOR->EAGLE21/AMSAC->AMSAC->PROCESSOR A&B NORMAL/BYPASS switches->set TCL4P2BA=T & TCL4P2BB=T->SYSTEM RESET). Report completion to the crew.

F. **3C S/G Main Steam Line Break / Reactor Trip / Turbine Trip & 3B MSIV Failures (event 5)**

1. **Initiation:** Once the crew has been briefed on the effects of the PT-3-447 failure, actuate the 3C S/G steam break in Containment (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->CONT LIQ & VENT PROCESS leak node for C steam line->LEAK INTO CONTAINMENT ->set TVSBVL15=0.2 on 300 sec ramp). Turbine trip, 3B MSIV & B AFW pump failures and A AFW pump OOS are entered during setup.

2. **Response:** When dispatched as field operator to check the B AFW pump, wait three minutes and tell crew that it appears that there is an oil leak on the governor and that there is oil spilled on the West end of the pump/pedestal. When asked to align train 2 steam to the C AFW pump, wait 2-4 minutes and state that the stem snapped on valve AFSS-3-007 and that the valve is stuck shut.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

F. **3C S/G Main Steam Line Break / Reactor Trip / Turbine Trip & 3B MSIV Failures (event 5 cont'd)**

2. **Response (cont'd):** If asked as maintenance about the status of the A AFW pump, state that pump end is disassembled with the impeller removed and bearings being replaced - ETR 3 days. Respond as maintenance if asked to investigate the B AFW pump governor oil leak and the AFSS-3-007 valve stem failure. Neither of these problems will be fixed during the scenario. Respond as SNPO to place PAHMs in service per 3-OP-094 (parameter controller trigger composite "PAHM"). After approximately 15 minutes inform the crew that PAHM is aligned. Respond as NPO to place unloaded EDGs in standby per 3-OP-023.

merge into event 5

G. **Loss of all Auxiliary Feedwater (event 6)**

1. **Initiation:** See event 5.

2. **Response:** See event 5.

H. **Loss of Secondary Heat Sink (bleed & feed required) (event 7).**

6

1. **Initiation:** A result of events 5 & 6 and the scenario setup, this event entered by procedural transition from 3-EOP-E-0 to 3-EOP-FR-H.1 (adverse containment with loss of all AFW). The 3B MSIV & turbine trip failures combine to reduce wide range level to < 22% in this (as well as the faulted 3C S/G) requiring performance of feed & bleed per 3-EOP-FR-H.1 step 2 CAUTION.

2. **Response:** Consistent with event 5.

III. TERMINATION CRITERIA:

A. Upon establishment of RCS bleed & feed (step 24 of 3-EOP-FR-H.1), **OR**

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TFS1MAML	T	-	-	-	PT-3-447 (turb 1st stg imp press ch IV) fails low
N	TFH1TU45	T	-	-	-	PT-3-445 (PZR press control channel) fails high
N	TFU10005	T	-	-	-	Turbine trip fails - auto & manual
Y	**"PAHM"**	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	0:30	-	Opens PAHM-002A
-	TAC2V02B	1.0	-	1:30	-	Opens PAHM-002B
-	TAAAV21	1.0	-	-	-	Opens HV-1
-	TAAAV22	1.0	-	-	-	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005
Y	**"A AFW P"**	-	-	-	-	**Removes A AFW pump from service & aligns C AFW pump to train 1**
-	TFFXCGVA	T	-	-	-	Fails A AFW pump governor closed
-	TFFXCTTA	T	-	-	-	Fails A AFW pump T&T valve (MOV6459A) closed
-	TAFK142	0.0	-	-	-	Closes 3-142 (A AFW pump dischg to train 1)
-	TAFK342	1.0	-	-	-	Opens 3-342 (C AFW pump dischg to train 1)
-	TAFK003	0.0	-	-	-	Closes AFPD-003 (C AFW pump dischg to train 2)
-	TAFF01C	0.0	-	-	-	Closes AFSS-001 (C AFW pump train 2 stm supply)
-	TAFF3082	0.0	-	-	-	Closes 3-082A (A AFW pump train 1 stm supply)
-	TAFF3086	1.0	-	-	-	Opens 3-086A (C AFW pump train 1 stm supply)
-	TAFF4082	0.0	-	-	-	Closes 4-082A (A AFW pump U4 train 1 stm supply)
-	TAFF4086	1.0	-	-	-	Opens 4-086A (C AFW pump U4 train 1 stm supply)

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-103	Power Operation to Hot Standby
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-028	Reactor Control System Malfunction
3-ONOP-041.5	Pressurizer Pressure Control Malfunction
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
~~3-ONOP-071.1~~	~~Secondary Chemistry Deviation from Limits~~
3-ONOP-100	Fast Load Reduction
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-FR-H.1	Response to Loss of Secondary Heat Sink
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book

EVALUATION SCENARIO CONTENT SUMMARY

1. Total Number of Malfunctions: 7

2. Malfunctions Occurring During EOP Performance: 2

   1. Turbine trip failure
   2. 3B MSIV failure

3. Abnormal Events: 3

   1. PT-3-445 fails high
   2. PORV-3-456 leak & MOV-3-535 failure to close
   3. PT-3-447 fails low

4. Major Transients: 2

   1. 3C S/G Steam Break in Containment
   2. Loss of secondary heat sink (B AFW start failure)

5. EOPs Used: 1

6. EOP Contingencies Entered: 1

7. Simulator Run Time: 90 minutes

8. EOP Run Time: 45 minutes

9. Crew Critical Tasks: 2

Facility: Turkey Point Nuclear Plant **Scenario No.:** 3 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to reduce load from 100% power per normal plant procedure. Evaluate ability of operators to recognize & respond to failure of PT-3-145 low causing PCV-3-145 to fail closed, failure of the controlling 3B S/G feed flow channel low and a sequential failure of both main feed pumps. Emergency Operating Procedure use will be evaluated for a failure of the reactor to automatically trip followed by a S/G tube rupture with complications during RCS depressurization.

Initial Conditions: 100% power, BOL

Turnover: Power reduction from 100% power is required to comply with T.S. 3.7.1.1 due to 3C S/G RV-3-1412 being declared OOS following review of testing documentation from the recent refueling outage. 3B EDG is OOS for corrective maintenance on the governor. FT-3-476 is OOS for calibration. Shift orders are to reduce power from 100% to 50% to comply with Technical Specifications for RV-3-1412 OOS.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (SRO/BOP) R (RO)	Reduce power from 100%. K/A 2.1.23 (3.9/4.0)
2	TFB1L5 = T TFB1PCH5=T	I (SRO) I (RO)	Letdown PT-3-145 fails low causing PCV-3-145 to fail closed. K/A 004A2.07 (3.4/3.7)
3	TFF1M86=T	I (SRO) I (BOP)	FT-3-486 (controlling 3B S/G feed flow channel) fails low resulting in need for manual control of associated FRV. K/A 035A2.04 (3.6/3.8)
4	TFU1L22D=T TVFABP1A= 1.0 2 min ramp TFFVP1B=T	C (ALL)	Sequential loss of both main feed pumps. K/A 054AA2.02 (4.1/4.4)
5	TFL2XASE=T TFL2XBSE=T TFL4AF=T	M (ALL)	Loss of main feed with failure of reactor to automatically trip. K/A 029EA1.14 (4.2/3.9)
6	TVHHSGC= 0.35 30sec ramp	M (ALL)	Steam Generator Tube Rupture. K/A 038 EA2.02 (4.5/4.8)
7	TFHV55CO=T & TFH244GH=T or TFHV456O=T / TFHV55AO=T	C (SRO) C (RO)	Normal spray valve / PZR PORV sticks open during RCS depressurization. K/A 038EA1.04 (4.3/4.1)

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

FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 3
DESCRIPTION:	Loss of Main Feedwater / Steam Generator Tube Rupture
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	05/05/99

REVIEWED BY: _____ 6-11-99
Facility Reviewer Date

APPROVED BY: _____
NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. Power reduction from 100%
   b. PT-3-145 failure low (loss of letdown)
   c. FT-3-486 failure ~~low~~ high (manual FRV control)
   d. Loss of main feed / auto turbine runback failure
   e. Reactor trip failure
   f. Steam generator tube rupture
   g. RCS cooldown & loss of depressurization control

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 574 degrees F

Turnover: Power reduction from 100% to 50% power is required due to 3C S/G safety valve RV-3-1412 declared OOS (per T.S. 3.7.1.1) due to errors found during review of testing documentation from the recent refueling outage. 3B EDG is OOS for corrective governor maintenance. FT-3-476 is OOS for calibration. No surveillance tests are in progress.

Synopsis: After a 5% power reduction (or at lead examiner direction) PT-3-145 fails low causing letdown PCV-3-145 to automatically close. Operators respond per 3-ARP-097.CR for annunciators A-5/5 & 6. After discovering PCV-3-145 is failed closed, the crew locally controls letdown pressure using bypass valve 3-309C. Following restoration of CVCS letdown, FT-3-486 fails ~~low~~ high. The crew must take manual control of 3B S/G feed flow. Once the plant is stabilized, 3B S/G level control returned to automatic, Technical Specifications consulted and the crew briefed on the effects of the failure, a sequential loss of both main feed pumps occurs. The crew responds per 3-EOP-E-0 and addresses a failure of the reactor to automatically trip. Transition to 3-EOP-FR-S.1 is made in response to the failure of reactor trip breakers to open either automatically or manually. Since AMSAC does not actuate, the reactor trips when the MG set input & output breakers are locally opened. In response to the trip, a tube ruptures on the 3C S/G. After finishing 3-EOP-FR-S.1 (during which an SI occurs due to the SGTR), the crew transitions to 3-EOP-E-0 and then to 3-EOP-E-3. Once the RCS depressurization has begun using a normal spray/PZR PORV, the opened valve sticks open. This requires tripping the running RCP for normal spray or closure of the PORV block valve if a PZR PORV was used to avoid entry into 3-EOP-ECA-3.1. The exercise is concluded upon establishment of increasing RCS pressure (3-EOP-E-3 step 26) or at the evaluator's discretion. The event is classified after scenario completion as an alert per 0-EPIP-20101, Enclosure 1, category 2.

Insert auto turbine runback failure

Event summary:

EVENT #	DESCRIPTION
1	Power reduction from 100%
2	PT-3-145 fails low (PCV-3-145 fails closed)
3	FT-3-486 fails ~~low~~ high (manual FRV control)
4	Sequential loss of both feed pumps/auto turb runback failure.
5	Loss of main feed / reactor fails to trip
6	Steam generator tube rupture
7	RCS cooldown & loss of depressurization control

Crew Critical Steps:

EVENT #		DESCRIPTION
5	1.	Insert negative reactivity into the core by one of the following methods prior to completing 3-EOP-FR-S.1 step 4: de-energizing CRDM MG sets, inserting RCCAs, or establishing emergency boration flow.
7	1.	Isolate feedwater flow into and steam flow out of a ruptured S/G prior to transitioning to 3-EOP-ECA-3.1.
	2.	Perform 3-EOP-E-3 cooldown and maintain temperature to meet following criteria: temperature is not too high to maintain required subcooling nor causes a severe challenge to subcriticality CSF.

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - BOL
   b. Reactor power and power history - 100% steady state
   c. Turbine status - online
   d. Boron concentration - 1298 ppm
   e. Temperature - 574 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Equilibrium for 100% power.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.3.1 Action 6 (bistables tripped); FT-3-476 OOS for cal
      - 3.7.1.1 Action b (4 hrs); RV-3-1412 OOS (3C S/G safety)
      - 3.8.1.1 Action b (72 hrs); 3B EDG OOS (governor)
   j. Clearances in effect - 3B EDG
   k. Significant problems/abnormalities - Power reduction required for RV-3-1412 OOS.
   l. Evolutions/maintenance for the coming shift - Reduce power from 100% down to 50% this shift.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 1; 100% power
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: With reactor power initially at 100% power, a power reduction to comply with Tech Specs for an inoperable S/G safety valve.

INDICATIONS: 1. Shift turnover

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Reduces turbine load IAW 3-GOP-103
		a. Maintains Tref within 3°F of Tavg if rods in manual (1°F if rods in auto)
		b. Monitors gland seal stm press & directs local supply/spillover control as needed
		2. Performs secondary plant shutdown generator-load-dependent activities IAW 3-GOP-103
		3. Performs activities as directed by ANPS
		a. Inhibits MIMS if in service
		b. Notifies Chemistry of need to sample RCS if reactor power reduced > 15%
		4. Keeps ANPS informed of plant status
RCO		1. Reduces reactor power IAW 3-GOP-103
		a. Calculates rx change needed for downpower
		b. Borates at rate directed by ANPS per 0-OP-046
		c. Energizes PZR backup heaters
		d. Coordinates w/BOP to keep Tref < 3°F from Tavg w/rods in manual (1°F if rods in auto)
		e. Observes AFD limitations
		f. Starts additional charging pump
		2. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 1 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Coordinates power reduction activities of RCO & BOP
		2. Performs other activities IAW 3-GOP-103
		a. Evaluates Xe changes and directs boration rate changes as necessary
		3. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: PT-3-145 fails low, causing PCV-3-145 to fail closed. Operators note the lifting of the letdown relief, and unsuccessfully attempt to take manual control of PCV-3-145 to open the valve. It must be bypassed locally to restore letdown.

INDICATIONS:

1. Annunciator A-5/5, CVCS HP LTDN LINE HI FLOW/ PRESS
2. Annunciator A-5/6, CVCS LP LTDN LINE RELIEF HI TEMP
3. PI-3-145 reading high
4. TE-3-141, RV-3-203 tailpipe temperature high (RV-3-203 relief flow to PRT)

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by the ANPS
RCO		1. Notes failure closed of PCV-3-145
		2. Attempts to manually open PCV-3-145
		3. Directs operator to investigate PCV-3-145 locally
		4. Closes all letdown orifices
		5. Directs operator to open 3-309C (PCV-3-145 bypass) to restore letdown flowpath
		6. Verifies TI-3-141 not increasing
		7. Directs operator to locally close 3-309A to isolate PCV-3-145
		8. Re-opens letdown orifices while throttling 3-309C to restore letdown flow if directed by ANPS
		9. Verifies TI-3-141 decreasing and FI-3-150 stable

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Directs recovery of letdown per 3-ARP-097.CR
		a. Annunciators A-5/5 & A-5/6
		2. Notifies other support groups (I&C, Maintenance, etc.) of PCV-3-145 failure
		3. Maintains NPS informed regarding plant status

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: A SG feedwater ~~low~~ high FT-3-486 (the controlling channel) fails ~~low~~. The 3B S/G FRV requires manual action to maintain stable plant conditions. The channel is called OOS and compensatory actions initiated per 3-ONOP-049.1.

INDICATIONS:
1. Annunciator C-5/2, SG B ~~STEAM~~ STEAM > FEED ~~FEED~~ FEED > STEAM
2. Annunciator C-6/2, SG B LEVEL DEVIATION
3. FI-3-486 fails ~~low~~ ~~flow~~ high

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes failure of FT-3-486 and responds as directed by ANPS a. Compares to other SG FT's b. Verifies no off-normal conditions on other SG PT's/FT's 2. Notifies ANPS of failure 3. **Takes manual control of FCV-3-488 to restore balanced steam/feed flow and stabilize SG level**
RCO		NONE
ANPS		1. Directs stabilization of plant conditions 2. Directs compensatory action per 3-ONOP-049.1 a. Verifies SG FT/PT status determination b. Determines which bistables to trip and effects on plant of tripping bistables. Provides this info to RCO/BOP for guidance. 3. Notifies NPS of plant status 4. Ensures Tech Spec requirements are met 5. Notifies I&C of FT-3-486 failure and directs initiation of PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: 3A S/G Feed Pump trips/is tripped on bearing failure and a runback fails to occurs. The operators respond ~~to the~~ turbine ~~runback~~ by manually running back the. During the runback, a shaft shear occurs on the 3B S/G Feed Pump. A loss of all feed flow occurs resulting in conditions requiring a reactor trip.

INDICATIONS:

1. Annunciator D-6/1, SGFP A/B MOTOR OVERLOAD TRIP
2. Annunciator D-5/4, SGFP A MOTOR BRG HI TEMP
3. Runback in progress (MW decreasing, etc.)
4. Annunciators C-5/1(2)(3), SG A(B)(C) STEAM > FEED
5. Annunciators C-6/1(2)(3), SG A(B)(C) LEVEL DEVIATION
6. Annunciators C-1/1(2)(3), SG A(B)(C) NARROW RANGE LO/LO-LO LEVEL
7. Annunciators C-1/4(5)(6), SG A(B)(C) LO-LO LEVEL TRIP
8. Annunciators C-5/4(5)(6), SG A(B)(C) LO LEVEL W/ STEAM>FEED TRIP
9. Annunciators D-5(6)/2, SGFP A(B) LO FLOW
10. Low current indicated on the 3B SGFP ammeter
11. Reduced feed flow after 3A SGFP trip. Zero feed flow indicated after 3B SGFP shaft shear.

POSITION	TIME	EXPECTED ACTIONS
BOP		1. ~~Recognizes 3A SGFP problem and informs ANPS~~ Redundant to 2
		2. Informs ANPS of 3A SGFP trip & turbine runback failure
		3. Verifies ~~runback~~ automatic actions & ~~secondary parameter status~~ (3-ONEP 028) including manually running back turbine
		4. Notes loss of feedwater flow & 3B SGFP lo amps (BOLD)
		5. Recommends reactor trip @ 15% SG level or loss of 2nd SGFP.
RCO		1. Assists BOP as directed by ANPS
		2. Verifies ~~runback~~ automatic actions (3-ONEP 028)
		3. Verifies primary parameters stable
		4. Trips rx @ 15% SG level or at ANPS direction

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Coordinates and directs response per 3-ARP-097.CR and 3-ONOP-089 ÷ direction to runback turbine.
		2. Notifies System and Duty Call Supervisor of situation
		3. Informs NPS of status of plant
		4. Directs troubleshooting effort on SGFPs, as time permits & auto turb runback
		5. When advised of loss of 3B SGFP, or SG level @ 15%, directs reactor trip

EXPECTED OPERATOR ACTIONS

EVENT: 5

BRIEF DESCRIPTION: Normal feed is lost but automatic and manual reactor trips fail and actions are taken IAW FR-S.1. AMSAC fails to actuate and the reactor must be locally tripped by breaker operation. A S/G tube rupture has occurred or is occurring.

INDICATIONS:
1. Loss of normal feedwater
2. S/G levels/feed flows decrease rapidly
3. Reactor trip directed or actuates
4. RTBs fail to open & breaker indication goes out

CREW CRITICAL STEPS:
1. **Insert negative reactivity into the core by one of the following methods prior to completing 3-EOP-FR-S.1 step 4: de-energizing CRDM MG sets, inserting RCCAs, or establishing emergency boration flow.**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes loss of normal feedwater
		2. Responds to reactor trip fail per 3-EOP-FR-S.1
		a. Verifies turbine trip
		b. Checks AFW pumps-all running
		c. Assists RCO w/control rod insertion & direction to NPO for local RTB/MG set trip
		d. Checks if turb/gen trips have occurred
		e. Checks S/G levels
		f. Checks for uncontrolled RCS cooldown
		g. Verifies 3-EOP-E-0 IOAs if auto SI & reactor subcritical
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Attempts manual reactor trip
		2. Responds to reactor trip fail per 3-EOP-FR-S.1
		a. Verifies reactor trip - NO - inserts control rods (BOP assists as necessary)
		b. Initiates emerg boration (if SI actuated, must reset SI for emerg boration flow)
		c. Verifies RCS pressure < 2335 psig
		d. Verifies Containment ventilation isolated
		e. Checks if reactor trip has occurred - NO
		g. Verifies dilution paths isolated
		h. Verifies CETC<1200°F & reactor subcritical
		i. Performs BOP actions during E-0 IOA verification
		3. Informs ANPS of plant status
		a. Identifies/reports AMSAC failure.
ANPS		1. Directs response to loss of normal FW/ATWS
		2. Directs response to ATWS per 3-EOP-FR-S.1
		a. Ensures no RCP trip until reactor subcrit. (even if CNMT phase B isolation)
		b. Ensures NPO notified to perform local reactor trip actions

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS (cont'd)		**3. Returns to procedure and step in effect (3-EOP-E-0) or transitions to FRP if appropriate**
		4. Classifies event as an ALERT (unless higher category event exists) per 0-EPIP-20101
		5. Informs NPS of plant status
		a. Reports AMSAC failure to NPS and/or NWE/I&C.

EXPECTED OPERATOR ACTIONS

EVENT: 6

BRIEF DESCRIPTION: In response to a loss of main feed, a reactor trip has occurred. Additionally, a 3C S/G tube rupture occurs concurrent with the reactor trip requiring an SI. Operators perform actions of 3-EOP-E-0.

INDICATIONS:
1. Reactor trip/SI directed or actuates
2. Rod bottom lights on
2. RTBs and bypass breakers open
4. Safety injection annunciator(s)
5. Safeguards equipment automatically starts

CREW CRITICAL STEPS: SEE EVENT 7

POSITION TIME EXPECTED ACTIONS

BOP

1. Responds to reactor trip per 3-EOP-E-0

a. Verifies turbine trip

b. Verifies power to 3A/B/D 4kV buses

c. Recognizes uncontrolled level increase in ruptured steam generator and isolates feed to it if level > 6%

d. Verifies feedwater isolation

e. Verifies AFW pumps running

f. Verifies proper ICW operation

g. Checks if main steamlines should be isolated

h. Verifies all EDGs running

i. Directs SNPO to place PAHMS in service

j. Verifies proper AFW alignment and flow

k. Checks RCS cold leg temperatures stable

l. Performs MSLB & SGTR diagnostics

2. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 6 (cont'd)

POSITION **TIME** **EXPECTED ACTIONS**

RCO

1. Responds to reactor trip per 3-EOP-E-0

a. Verifies reactor tripped

b. Checks if SI actuated/required (auto SI)

c. Recognizes loss of subcooling and trips RCPs (if applicable)

d. Verifies containment isolation phase A

e. Verifies SI pumps running

f. Verifies proper CCW system operation

g. Verifies containment cooling

h. Verifies containment and control room ventilation isolation

i. Verifies containment spray not required

j. Verifies SI valve amber lights bright

k. Resets & realigns SI

l. Verifies SI flow

m. Checks RCP seal cooling

n. Checks RCP cooling

o. Checks letdown/PORVs/spray valves closed

2. Notifies ANPS of safety injection and cause

3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Directs response to reactor trip per 3-EOP-E-0**
		a. Directs immediate actions
		b. Monitors foldout page items
		1) Direction to RCO to stop all RCPs if subcooling lost
		2) Direction to BOP to isolate feed flow to ruptured S/G if level > 6%
		c. Directs prompt actions
		d. Directs subsequent actions
		2. Transitions to appropriate plant procedure (3-EOP-E-3 or appropriate FRP)
		3. Informs NPS of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 7

BRIEF DESCRIPTION: An SGTR has occurred. The ruptured S/G atm steam dump is set to 1060 psig, the S/G verified isolated, and the RCS cooled down & depressurized. The depressurization method in use fails open requiring operator action.

INDICATIONS:
1. Local steam line and/or DAM-1 readings abnormal
2. Uncontrolled level increase in ruptured S/G

CREW CRITICAL STEPS:
1. **Isolate feedwater flow into and steam flow out of a ruptured S/G prior to transitioning to 3-EOP-ECA-3.1.**
2. **Perform 3-EOP-E-3 cooldown and maintain temperature to meet following criteria: temperature is not too high to maintain required subcooling nor causes a severe challenge to subcriticality CSF.**

POSITION	TIME	EXPECTED ACTIONS
BOP		**1. Performs actions of 3-EOP-E-3**
		a. Identifies ruptured S/G (3C)
		b. Controls ruptured S/G atm steam dump. Verifies closed if S/G press < 1060 psig.
		c. Isolates feed if ruptured S/G level >6%.
		d. Isolates AFWSS from ruptured S/G. Realigns for two trains of AFW if needed.
		e. Isolates misc flowpaths from ruptured S/G
		f. Closes ruptured S/G MSIV & bypass
		g. Checks if S/Gs are not faulted
		h. Maintains intact S/G levels 15-50%
		i. Resets ctmt isol phase A & B
		j. Verifies offsite power to all 4kV buses
		k. Verifies ruptured S/G isolated from intact S/Gs

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		l. Checks ruptured S/G pressure > 390 psig
		m. Performs RCS cooldown
		1. Determines req'd CET temp for cooldown
		2. Dumps steam at max rate until RCS < req'd CET temp, then stops cooldown
		n. Checks rupt S/G press stable or increasing
		3. Informs ANPS of plant status
RCO		**1. Performs actions of 3-EOP-E-3**
		a. Checks if RCPs should be stopped
		b. Verifies S/G B/D sample isol. valves closed
		c. Checks PORVs and block valves
		d. Verifies SI reset
		e. Verifies instrument air to containment
		f. Checks if RHR pumps should be stopped
		g. Establishes max charging flow
		h. Checks RCS subcooling > 50°F [230°F]
		i. Depressurizes RCS to minimize break flow and refill PZR
		1. Observes RCS subcooling/PZR lvl limits
		2. Manually closes normal spray/PORV when RCS < ruptured S/G pressure ✱ NO
		3. Manually trips RCP/closes PORV block MOV
		j. Checks RCS pressure increasing

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		2. Informs ANPS of plant status
		3. Recognizes loss of subcooling and trips RCPs per 3-EOP-E-3 (if applicable)
ANPS		**1. Directs response to ruptured S/G per 3-EOP-E-3**
		a. Monitors foldout page items including direction to RCO to stop all RCPs if subcooling lost
		b. Identifies & isolates ruptured S/G
		c. Cools & depressurizes RCS to minimize break flow
		d. Directs tripping RCP in response to normal spray valve failing open or closure of PORV block valve in response to PORV failing open
		2. Informs NPS of plant status

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-11. or static IC-2 which includes steps C+D below

B. Load scenario 49.

C. Following switch check, unfreeze the simulator. ~~Realign plant equipment to allow for FT-3-476 & 3B EDG out of service. Place MIMS in service.~~

D. Perform the following

1. Take 3B EDG OOS as follows: SYS MAT->STANDBY POWER & SYNC->EMERGENCY DIESEL LOGIC & PROT->3AB20->BREAKER POSITION->set TAQ5B20P=3->EMERGENCY DIESEL GENERATOR 3B->SELECTOR SWITCH 3B->set TAQ5LRSB=0
2. Take FT-3-476 OOS per 3-ONOP-049.1 as follows:
   a. In rack 24, trip bistables BS-3-478-A1/A2/D.
   b. Ensure 3A S/G level control inputs do not have FT-3-476 selected.
   c. Fail FT-3-476 low (touch SYS MAT->FEEDWATER-> MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES ->F-SG1->FT-476->FAIL LOW->set TFF1M76L=T).

Turbine runback failure (touch SYS MAT-> REACTOR-> TURBINE RUNBACKS SGFP RUNBACK INHIBIT-> SGFP BCP GOV & 2L RUNBACK INHIBIT-> TFU1LRED=T).

3. Enter the following failures:
   a. Reactor trip & AMSAC failure (touch SYS MAT-> REACTOR->ROD CONTROL ROD POSITION->ROD SPEED TO LOGIC CABINET->RXB->BREAKER FAILS AS IS->set TFL2XBSE=T->RXA->BREAKER FAILS AS IS->set TFL2XASE=T->SYS MAT->REACTOR->EAGLE 21/AMSAC-> AMSAC->FAIL TO ACTUATE->set TFL4AF=T).
4. Freeze simulator.

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags-Rack 24 (FT-3-476) and 3B EDG.

H. Information tags-None Brown dot on FT-3-476. Info tag on 3A SG level control FF input to FT-3

I. Select 3A QSPDS to page 211 (SAT) and 3B QSPDS to page 212 (2UL). Set ERDADS on VPA to TAVE/TR (TAV) and at the RCO desk to ENVIRN (EDS).

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

B. **Power reduction from 100% (event 1).**

1. **Initiation:** Crew should begin in response to shift turnover. If slow to begin, call as Operations Supervisor and prompt commencement of load reduction to 50% in one hour.

2. **Response:** Acknowledge load dispatcher/plant management notifications of the required load reduction. Respond as field operator in response to notification of starting/stopping plant equipment and, if asked, to manually control gland seal steam.

C. **PT-3-145 fails low (PCV-3-145 fails closed) (event 2).**

1. **Initiation:** After a 5% power change or at lead evaluator discretion, actuate the PT-3-145 failure (touch SYS MAT-> CHEMICAL VOLUME CONTROL SYSTEM->CVCS LETDOWN->P-145-> TRANSMITTER FAIL LOW->arm TFB1L5=T->RECALL->P-145->CONTROLLER FAIL HIGH->arm TFB1PCH5=T). Pressing MAST FAIL will cause PCV-3-145 to close and PC-145 to fail high.

2. **Response:** When asked as SNPO to investigate the PCV-3-145 failure, acknowledge the order, wait 2-4 minutes, then report the valve closed with no obvious malfunctions. If asked as I&C/Mechanical to investigate PT-3-145/PCV-3-145, say that a tech will be reassigned from a lower priority project and troubleshooting will begin as soon as possible thereafter. Provide no further progress towards fixing this failure.
When asked as SNPO to bypass PCV-3-145 using 3-309C, control valve position open/closed at crew direction using SYS MAT-> CHEMICAL VOLUME CONTROL SYSTEM->CVCS LETDOWN->PCV145->LEAK BY-> set TVBVLK06 as directed by the crew (0.1 per turn ordered). When asked to isolate PCV-3-145 using 3-309A, wait 2-4 minutes, then report completion to the crew.

D. **FT-3-486 fails ~~low~~ high (manual FRV control) (event 3).**

1. **Initiation:** As soon as letdown is restored and CVCS parameters stabilized, actuate FT-3-486 failure low by touching SYS MAT->FEEDWATER->MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES->F-SG2->FT486->FAIL ~~LOW~~ high->set TFF1M86~~L~~H=T. This failure requires manual operation of FCV-3-488 to restore 3B S/G level to program.

2. **Response:** Respond as NPS, NWE or I&C to notification of FT-3-486 failure. As NPS/NWE state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will intiate a work package for troubleshooting & repair.

Add to setup
SYS MAT → REACTOR →
T TRIP RUNBACKS →
SU ? RUNBACK INHIBIT →
SGFP BCR GOV ? ZL RUNBACK INHIBIT → TFU1CRRD=T

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

E. Sequential loss of both feed pumps (event 4).

auto for blue runback failure

1. Initiation: Once the secondary plant is stabilized with FCV-3-478 manually controlling feed to 3A S/G, actuate the bearing failure on the 3A SGFP by touching SYS MAT->FEEDWATER->MAIN FEEDWATER MENU->SGFP'S->3P1A->BEARING WEAR->set TVFABP1A=1.0/ 2:00 ramp. With the manual runback in progress actuate the shaft shear on 3B SGFP by touching 3P1B->SHEARED SHAFT->set TFFVP1B=T.

3AA03 failed is TFF1D1AM=T set TFF1D1AM=F cond on IMF1P1AT

Auto trip runback in progress

2. Response: Respond as NPO/NWE if requested to investigate the SGFPs. After 2-4 minutes, report the 3A SGFP outboard pump bearing has failed and the shaft appears to be seized. For 3B SGFP report the shaft broke between the pump and the motor. As Mechanical maintenance, acknowledge any requests for assistance with assurance that these failures will be investigated immediately. Acknowledge any reports to the NPS/ system dispatcher that Unit 3 is going off line.

F. Loss of main feed / reactor fails to trip (event 5)

1. Initiation: The loss of main feed is from event 4 and the reactor trip & AMSAC failures are part of the initial setup.

2. Response: When dispatched as field operator to locally open the RTBs/bypass RTBs/MG set breakers, wait until emergency boration has been established then touch SYS MAT->REACTOR->ROD CONTROL ROD POSITION->ROD SPEED TO LOGIC CABINET->3A->LOCAL CLOSE/TRIP(MECHANICAL)->set TCE6DQ7C=F->3B->LOCAL CLOSE/TRIP (MECHANICAL)->set TCE6DQ8C=F and insert the 3C S/G tube rupture using parameter controller direct trigger TVHHSGC=0.35 on a 30 sec ramp. Respond as SNPO when asked to verify dilution paths isolated. Wait 3-5 minutes and report dilution paths isolated.

G. Steam Generator tube rupture (event 6)

1. Initiation: See event 5.

2. Response: Respond as SNPO to place PAHMs in service per 3-OP-094 (parameter controller trigger composite "PAHM"). After 15-18 minutes inform the crew that PAHM is aligned. Respond as NPO to place unloaded EDGs in standby per 3-OP-023.
Respond if asked as Chemistry to sample S/Gs for activity and as HP for main steam line & SJAE surveys. After 8-10 minutes, report as HP detecting activity near the unit 3 SJAE and reading 3C main steam line radiation above background with parts of the turbine deck posted as contaminated. Request the crew warn plant personnel accordingly. Report as Chemistry that a quick check of the sample from 3C S/G shows activity.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

H. **PZR PORV fails open during RCS depressurization (event 7).**

1. **Initiation:** As a result of event 5, a 3C S/G tube rupture is in progress. Event 6 results in transition to 3-EOP-E-3. Arm the PZR spray valve PCV-3-455A failure open (touch SYS MAT-> REACTOR COOLANT SYSTEM->PRESSURIZER->PCV455A->FAIL OPEN->arm TFHV55AO=T->P444->PC444G->CONTROLLER FAIL HIGH->arm TFH244GH =T). Following RCS cooldown, depressurization is begun. If a PORV is opened, fail it that way by touching SYS MAT->REACTOR COOLANT SYSTEM->PRESSURIZER->PORV455C(456)->FAIL OPEN->set TFHV55CO(TFHV456O)=T. If an RCP is still running and normal spray valves are used, then fail PCV-3-455A (C loop) open by pressing MAST FAIL (also fails the associated controller to 100% calling RCO attention to the failure).

2. **Response:** When directed as NPO/NWE to realign 3B S/G steam supply to train 1, wait 3-5 minutes swap AFSS-3-006/7 positions using parameter controller composite trigger 006/007. Report to the crew when complete. If directed as NPO/NWE to deenergize and locally close MOV-3-1405, wait 3-5 minutes and do so using parameter controller composite trigger 1405ISO. This may be done immediately if MOV-3-1405 is closed from the console switch or after a 3-5 minute delay if it is closed locally. When directed as NPO/NWE to realign auxiliary steam supply to unit 4, wait 3-5 minutes and do so using parameter controller composite trigger AUX STM.
HP & Chemistry reports, when requested, should be consistent with event 6 and should all support identification of the 3C S/G tube rupture.

III. TERMINATION CRITERIA:

A. Upon establishment of increasing RCS pressure (step 26 of 3-EOP-E-3), **OR**

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TVHHSGC	0.35	-	-	0:30	3C S/G tube rupture (350 gpm)
Y	**"006/007"**	-	-	-	-	**Swaps positions of AFSS-3-006 & 007 to align 3B S/G to train 1 AFW steam supply**
-	TAFF07	1.0	-	0:15	-	Opens AFSS-3-007
-	TAFF06	0.0	-	0:30	-	Closes AFSS-3-006
Y	**"1405 ISO"**	-	-	-	-	**Deenergizes & closes MOV-3-1405 (3C S/G AFWSS)**
-	TFFXC05	T	-	-	-	Fails MOV-3-1405 closed
-	TCF5MA27	F	FXV1405 EQ 0	-	-	Opens breaker 3D01-27 when MOV-3-1405 reaches the closed position
Y	**"PAHM"**	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	1:00	0:30	Opens PAHM-002A
-	TAC2V02B	1.0	-	-	-	Opens PAHM-002B
-	TAAAV21	1.0	-	2:00	0:30	Opens HV-1
-	TAAAV22	1.0	-	3:00	0:30	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005
Y	**"AUX STM"**	-	-	-	-	**Realigns Aux Steam supply to Unit 4**
-	TAFF02	1.0	-	-	0:30	Opens SLWU-3-001
-	TAFF007	0.0	-	1:00	0:30	Closes 3-10-007

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-103	Power Operation to Hot Standby
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-E-3	Steam Generator Tube Rupture
3-EOP-FR-S.1	Response to Nuclear Power Generation / ATWS
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book
3-ONOP-089	Turbine Runback

EVALUATION SCENARIO CONTENT SUMMARY

1. Total Number of Malfunctions: ~~7~~ 8

2. Malfunctions Occurring During EOP Performance: 2

   1. Reactor trip/AMSAC failure
   2. PORV/normal spray valve fails open

3. Abnormal Events: ~~3~~ 4

   1. PT-3-145 fails low
   2. FT-3-486 fails ~~low~~ high
   3. 3A SGFP bearing failure
   4. And Turbine Runback failure.

4. Major Transients: 2

   1. Loss of main feed (3B SGFP shaft shear)
   2. 3C S/G tube rupture

5. EOPs Used: 2

6. EOP Contingencies Entered: 1

7. Simulator Run Time: 90 minutes

8. EOP Run Time: 45 minutes

9. Crew Critical Tasks: 3

Facility: Turkey Point Nuclear Plant **Scenario No.:** 4 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to raise load from 60% power per normal plant procedure. Evaluate ability of operators to recognize & respond to failure of the controlling 3A S/G steam flow channel high. Evaluate use of off-normal procedures for rod control Tref failing low and an RCP thermal barrier leak (with CCW return MOV malfunction) developing into an RCP high vibration problem requiring a reactor trip. Emergency Operating Procedure use will be evaluated for a large break LOCA followed by loss of offsite power . Finally, a failure of the running RHR pump occurs resulting in a loss of emergency coolant recirculation capability and RWST outflow is reduced.

Initial Conditions: 60% power, BOL

Turnover: Return to 100% power from 60% power is in progress to meet system peak demand following 3A SGFP breaker repair. The pump has been returned to service. The previous crew has just stabilized power for shift turnover. 3B EDG is OOS for corrective maintenance on the governor. FT-3-476 is OOS for calibration. Shift orders are to raise power from 60% to 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (SRO/BOP) R (RO)	Raise power from 60%. K/A 2.1.23 (3.9/4.0)
2	TFS1MWEH=T	I (SRO) I (BOP)	3A S/G controlling steam flow channel (FT-3-474) fails high. K/A 035A2.04 (3.6/3.8)
3	TFL1T8FP=T	I (SRO) I (RO)	Tref (TM-3-408F) fails low. K/A 001A1.02 (3.1/3.4)
4	TVKALTBB=0.3 TFKV626A=T then =F conditional on IMK1938C TAHUVBSB=21.0/ 3:00 ramp & TAHUVBMB=6.0/ 3:00 ramp	C (ALL)	RCP thermal barrier failure with failure of MOV-3-626 to automatically close on high flow. Reactor/RCP trip is required on high RCP vibration. K/A 026AA2.01 (2.9/3.5), 015/017AA1.06 (3.1/2.9) & AA1.23 (3.1/3.2)
5	TVHHCLB=2.0 / 0:05 delay / 0:30 ramp	M (ALL)	Large break LOCA. K/A 011EA2.01 (4.2/4.7)
6	TFP1S3GC=T	M (ALL)	Loss of offsite power. K/A 056AA1.05 (3.8/3.9)
7	TVMRPBRA=1.0/ 2:00 ramp	C (SRO) C(RO)	3A RHR pump trip (loss of emergency coolant recirculation). K/A WE11EA1.1 (3.9/4.0)

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

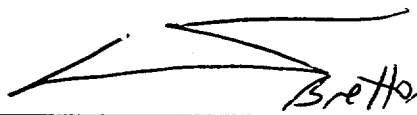
FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 4
DESCRIPTION:	Large Break Loss of Coolant Accident / Loss of Offsite Power
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	05/10/99

REVIEWED BY:  6-11-99

Facility Reviewer Date

APPROVED BY: _____

NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. Power increase from 60%
   b. FT-3-474 failure high (controlling channel)
   c. TM-3-408F failure low
   d. RCP themal barrier failure / MOV-3-626 auto close failure
   e. Large break LOCA
   f. Loss of offsite power
   g. 3A RHR pump trip (loss of emergency coolant recirculation)

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 561 degrees F

Turnover: Power increase from 60% to 100% power is in progress following main feed pump breaker repair. The system dispatcher has asked that this power increase be expedited to deal with an expected high peak demand towards the end of dayshift. 3B EDG is OOS for corrective governor maintenance. FT-3-476 is OOS for calibration. No surveillance tests are in progress.

Synopsis: After a 5% power increase (or at lead examiner direction) the controlling steam flow channel on 3A S/G (FT-3-474) fails ~~high~~ low causing FCV-3-478 to automatically ~~open~~ close. Operator action is required to manually control 3A S/G level and select the other steam flow channel for level control input. The crew responds per 3-ONOP-049.1. Once the plant is stabilized, Technical Specifications are consulted and the crew briefed on the effects of the failure. Next, TM-3-408F fails low generating erroneous Tref input to rod control. If rods are in AUTO, inward rod movement occurs and operators respond per 3-ONOP-028 taking rod control to manual. Following plant stabilization, the 3B RCP thermal barrier HX experiences a large leak and MOV-3-626 fails to automatically close on high flow. The operators respond per 3-ONOP-067 and 3-ONOP-041.1. 3-ARP-097.CR may also be used as time permits prior to ONOP entry. After thermal barrier return isolation, 3B RCP shaft vibration begins to increase enough to eventually require a reactor & 3B RCP trip per 3-ONOP-041.1. When 3B RCP is tripped, the leak becomes a large break loss of coolant accident on the B RCS loop. The crew responds per 3-EOP-E-0. After SI reset, a loss of offsite power occurs. Since the 3B EDG is OOS, only the 3A 4kV bus re-energizes on the EDG. Train A safeguards loads must be manually restarted. The crew transitions to 3-EOP-FR-P.1 momentarily and then to 3-EOP-E-1. Then, the 3A RHR pump trips causing a loss of all LHSI. If RWST level gets <155,000 gallons, transition is made to 3-EOP-ES-1.3. With no RHR pumps running whether in 3-EOP-E-1 or in 3-EOP-ES-1.3 transition is made to 3-EOP-ECA-1.1. The exercise is concluded upon reduction of SI flow to minimum (3-EOP-ECA-1.1 step 17), stopping all SI flow (3-EOP-ECA-1.1 step 30) or at the evaluator's discretion. The event is classified after scenario completion as a General Emergency per 0-EPIP-20101, Enclosure 1, category 1.

Event summary:

EVENT #	DESCRIPTION
1	Power increase from 60%
2	FT-3-474 fails high (fails) (3A S/G FRV opens (closes))
3	TM-3-408F fails low
4	3B RCP TBHX failure / MOV-3-626 auto close failure
5	Large break loss of coolant accident
6	Loss of offsite power (loss of 3B 4kV bus)
7	3A RHR pump trip (loss of emergency coolant recirc)

Crew Critical Steps:

EVENT #	DESCRIPTION
6	1. Ensure one train of safeguards is actuated and running prior to transitioning from from 3-EOP-E-0
7	1. Stop SI and RHR pumps upon reaching 60,000 gallons in the RWST 2. Make up to the RWST and minimize RWST outflow per 3-EOP-ECA-1.1

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - BOL
   b. Reactor power and power history - 100%→60% 4 hr ago
   c. Turbine status - online
   d. Boron concentration - 1390 ppm
   e. Temperature - 561 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Increasing following 100%→60% downpower 4 hr ago.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.3.1 Action 6 (bistables tripped); FT-3-476 OOS for cal
      - 3.8.1.1 Action b (72 hrs); 3B EDG OOS (governor)
   j. Clearances in effect - 3B EDG
   k. Significant problems/abnormalities - None
   l. Evolutions/maintenance for the coming shift - Return to 100% power this shift. Expedite to meet system peak.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 1; 100% power
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Unit is at reduced power (60%) and is directed to return to 100% power.

INDICATIONS:
1. Notification by System
2. Shift turnover

POSITION	TIME	EXPECTED ACTIONS
BOP		1. At 400-435 MW, starts the 2nd SGFP per 3-OP-074
		2. At 450 MW, starts the 2nd HDP per 3-OP-081 and verifies adequate heater drain flow
		3. Maintains Tref/Tavg approx equal during uppower
		4. Keeps ANPS informed of plant status
RCO		1. Prior to exceeding 70% power, consults with Reactor Engineering concerning MTC
		2. Maintains Tref/Tavg approx equal during uppower
		3. Prior to 90% power, verifies all rods within 12 steps of group step counter
		4. At steady state power with Tavg within 1□F of Tref, places rods in AUTO
		5. Verifies Gamma-Metric wide range power meter within 1.5% of PRNIs when rx power 98.5-100%
		6. Keeps ANPS informed of plant status
ANPS		1. Coordinates and directs uppower evolution
		2. Verifies MTC limits are met prior to exceeding 70% power
		3. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: 3A S/G controlling steam flow FT-3-474 fails ~~high~~ low. The 3A S/G FRV requires manual action to maintain stable plant conditions. The channel is called OOS and compensatory actions are initiated per 3-ONOP-049.1.

INDICATIONS:
1. Annunciator C-5/1, S/G A STEAM > FEED ~~C-6/2~~ C-4/1 S/G A FEED > STEAM
2. FI-3-474 off scale ~~high~~ low
3. FCV-3-478 ~~opening~~ closing in AUTO
4. ~~Increasing~~ Decreasing level in 3A S/G

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes failure of FT-3-474 and responds as directed by ANPS
		a. Compares to other SG FT's and verifies no off-normal conditions on other SG FT's
		2. Notifies ANPS of failure
		3. Takes manual control of FCV-3-478, restores steam/feed flow balance and stabilizes SG level
		4. Selects alternate SG steam FT channel for control and returns FCV-3-478 to automatic
RCO	NONE	
ANPS		1. Directs stabilization of plant conditions
		2. Directs compensatory action per 3-ONOP-049.1
		a. Verifies BOP determination of SG FT status
		b. Determines which b/s to trip and effects on plant of tripping b/s. Provides this info to RCO/BOP for guidance.
		3. Notifies NPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS (cont'd)		4. Ensures Tech Spec requirements are met
		5. Notifies I&C of FT-3-474 failure and directs initiation of PWO

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: TM-3-408F loses power. Rod control Tref fails low. Rods step in if in AUTO. The crew responds per 3-ARP-097.CR using 3-ONOP-028 as needed.

INDICATIONS:
1. Annunciator B-4/4, Tavg-Tref DEVIATION
2. Tavg input on Tavg-Tref recorder failed low
3. Control rods stepping in if in AUTO

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by ANPS.
RCO		1. Responds to TM-3-408F failure per 3-ARP-097.CR: a. Checks Tavg-Tref recorder (TR-3-408) and VPA Tavg & Pimp indication b. Places/verifies rods in MANUAL 2. **Responds to TM-3-408F failure per 3-ONOP-028** (if directed): **a. Places rods in MANUAL & adjusts rods to maintain Tavg = Tref** b. Verifies rod insertion limits not exceeded c. Checks for failure of TM-3-408F d. Initiates caution tag for rod control selector switch 3. Informs ANPS of plant status
ANPS		1. Directs response per 3-ARP-097.CR and uses 3-ONOP-028 as needed 2. Informs NPS/I&C of TM-3-408F failure 3. Directs PWO initiation

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: 3B RCP thermal barrier HX (TBHX) fails. PRMS R-3-17A/B alarms. MOV-3-626 fails to auto close on high flow requiring manual closure. 3-ONOP-067 & 041.1 are entered (as is 3-ARP-097.CR if time permits). After MOV-3-626 closure, shaft vibration increases requiring a reactor trip.

INDICATIONS:

1. PRMS R-3-17A and B alarm
2. CCW surge tank level increases
3. Annunciator H-1/4, PRMS HI RADIATION, actuates
4. Annunciator A-1/1, RCP THERMAL BARR COOLING WATER HI FLOW, alarms (MOV-3-626 fails)
5. Annunciator A-1/2, RCP THERMAL BARR COOLING WATER HI TEMP, alarms
6. Annunciator F-1/1, RCP MOTOR/SHAFT HI VIB

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Performs actions as directed per 3-ONOP-067:
		a. Checks R-3-17A/B alarm valid
		2. Performs actions as directed per 3-ONOP-041.1:
		a. In response to affected RCP TBHX ΔP low, verifies seal injection 6-13 gpm
		b. Recognizes/reports shaft high vibration condition (annunciator F-1/1)

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Recognizes RCP TBHX failure & informs ANPS
		2. Performs actions as directed by 3-ARP-097.CR:
		a. In response to annunciator A-1/1:
		1) Verifies/manually closes MOV-3-626
		2) Checks R-3-17A/B for increasing activity
		3) Contacts Chemistry for CCW activity sample
		b. In response to annunciator A-1/2:
		1) Checks CCW header flow & HX outlet temp.
		2) Checks R-3-17A/B increasing activity -YES- verifies seal injection & closes MOV-3-626
		3) Checks for #1 seal leakoff high flow
		4) Monitors thermal barrier ΔP, RCP temps
		c. Notifies ANPS to go to 3-ONOP-067 & 041.1
		3. Performs actions as directed per 3-ONOP-067:
		a. Verifies CCWST vent closed (RCV-3-609)
		b. Requests CCW activity sample from Chemistry

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**4. Performs actions as directed per 3-ONOP-041.1:**
		a. Monitors #1 seal leakoff, lower pump guide bearing, seal return & CCW supply temps.
		b. **If MOV-3-626 not yet closed** (3B RCP thermal barrier ΔP = 0 inches):
		1) Verifies proper seal injection flow
		2) Maintains thermal barrier cooling
		3) Checks #1 seal leakoff <Encl 1 limits
		4) Checks A-1/1, 1/2, 1/3 OFF - NO
		5) Checks CNMT ϕB isolation not actuated & RCP seal return temp < 235°F
		6) Checks R-17A/B normal - NO
		7) Manually closes MOV-3-626.
		c. Verifies shaft high vibration condition
		d. Trips reactor & affected RCP when directed
ANPS		**1. Directs mitigative actions IAW 3-ARP-097.CR, 3-ONOP-067 & 041.1**
		a. Directs MOV-3-626 closure
		b. Directs reactor trip followed by 3B RCP trip due to high shaft vibration (foldout)
		2. Informs NPS of plant status
		3. Directs announcement to stand clear of CCW piping

Add provision for D bus restoration from E-0 step 3 RNO or cont. 5

EXPECTED OPERATOR ACTIONS

EVENT: 5 & 6

BRIEF DESCRIPTION: In response to plant conditions, a reactor trip & SI has occurred. Operators perform actions of 3-EOP-E-0. Just before transition to 3-EOP-E-1, a loss of offsite power occurs requiring manual restart of train A ESF loads (SI reset & 3B EDG OOS). Transition is then made to 3-EOP-E-1.

INDICATIONS:

1. Reactor trip directed or actuates
2. Rod bottom lights on and RTBs/BYBs open
3. SI alarms & ESF equipment auto starts
4. Switchyard deenergizes & only train A safety electrical distribution reenergizes (3B EDG OOS)

CREW CRITICAL STEPS: 1. **Ensure one train of safeguards is actuated and running prior to transitioning from from 3-EOP-E-0**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Responds to reactor trip per 3-EOP-E-0

a. Verifies turbine trip

b. Verifies power to 3A/B/D 4kV buses

c. Verifies feedwater isolation

d. Verifies AFW pumps running

e. Verifies proper ICW operation

f. Checks if main stm lines should be isolated

g. Verifies EDGs all running

h. Directs SNPO to place PAHMS in service

i. Verifies proper AFW alignment and flow

j. Checks RCS cold leg temperatures stable

k. Performs MSLB & SGTR diagnostics

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		**2. Performs 3-EOP-E-0 foldout steps as directed including restoring ESF equipment to required configuration (train A only) after LOOP.**
		3. Informs ANPS of plant status
RCO		**1. Responds to reactor trip per 3-EOP-E-0**
		a. Verifies reactor tripped
		b. Manually actuates SI/ΦA if required
		c. Verifies containment isolation phase A
		d. Verifies SI pumps running
		e. Verifies proper CCW system operation
		f. Verifies containment cooling
		g. Verifies Cntmt and CR ventilation isolation
		h. Verifies Cntmt spray not required - NO
		1) Verifies containment spray actuation
		2) Verifies ϕB containment isolation
		3) Stops all RCPs (if still running)
		i. Verifies SI valve amber lights bright
		j. Resets/realigns SI & verifies SI flow
		k. Checks cooling of RCPs & RCP seals
		l. Checks letdown/PORVs/spray valves closed
		m. Performs LOCA diagnostics

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**2. Performs 3-EOP-E-0 foldout page steps as directed:**
		a. Recognizes loss of subcooling/ϕB actuation and trips RCPs per 3-EOP-E-0 (if needed)
		b. Starts train A ESF loads as directed by the ANPS following loss of offsite power.
		3. Notifies ANPS of safety injection and cause
ANPS		**1. Directs response to reactor trip per 3-EOP-E-0**
		a. Obtains verification of reactor trip
		b. Determines electric plant status
		c. Directs manual SI/phase A if required
		d. Monitors foldout page items:
		1) Direction to RCO to stop all RCPs if required by subcooling/ϕB actuation
		2) Following loss of offsite power, directs start of train A ESF loads.
		e. Directs prompt and subsequent actions
		2. Transitions to appropriate plant procedure (3-EOP-E-1 or appropriate FRP)
		3. Informs NPS as to status of plant

Adv 2.1 steps.

EXPECTED OPERATOR ACTIONS

EVENT: 7

BRIEF DESCRIPTION: With a large break LOCA/LOOP, only train A ESF is running (3B EDG OOS). From E-0, FR-P.1 is briefly entered followed by either FR-Z.1 if needed and/or E-1 after which 3A RHRP trips. If RWST level < 155 kgal, ES-1.3 is entered. With no RHR pumps, ECA-1.1 is entered.

INDICATIONS:
1. Cntmt radiation & sump lvl indications abnormal
2. Safety injection actuated and injecting
3. RWST level dropping (<155kgal for EOP-ES-1.3)
4. RCS cold leg temperature (<290°F for EOP-FR-P.1)
5. Annunciator H-6/3, RHR PP A/B MOTOR OVERLOAD
6. Annunciator H-6/4, RHR PP A/B TRIP

CREW CRITICAL STEPS:
1. **Stop SI pumps upon reaching 60,000 gallons in the RWST**
2. **Make up to the RWST and minimize RWST outflow per 3-EOP-ECA-1.1**

POSITION **TIME** **EXPECTED ACTIONS**

BOP

1. Performs actions of 3-EOP-E-1 as directed:
   a. Checks S/G fault, S/G levels & sec. rad.
   b. Resets cntmt isol ϕA/B & verifies IA press.
   c. Checks chg pump power from offsite - NO - power available for only two chg pumps
   d. Checks for presence of MSLB (SG pressures)
   e. Checks if EDGs should be stopped - NO

~~4. Performs actions of 3-EOP-FR-Z.1 (if directed) a. Checks & ... isolated faulted SG - NO per 3-EOP-FR-Z.1 (if directed) b. Assists RCO as directed~~

2. Step. Assists RCO with ~~3-EOP-ES-1.3~~ EOP's as directed.

3. ~~Performs actions of 3-EOP-ECA-1.1 as directed:~~
   ~~a.~~ Maintains intact S/G levels 15-50% per 3-EOP-ECA-1.1 as directed
   ~~b. Assists RCO as directed~~

~~5~~ 4. Step. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs actions of 3-EOP-FR-P.1 as directed:
		a. Checks RCS press > 650psig - NO - RHR flow > 1000gpm
		2. Performs actions of 3-EOP-E-1 as directed:
		a. Checks PORVs and block valves
		b. Verifies SI-reset
		c. Checks for max chg flow (2 pumps)
		d. Checks if SI should be terminated - NO
		e. Checks if cntmt spray should be stopped
		f. Checks if RHR pumps should be stopped - NO
		g. Verifies cold leg recirc capability - NO
		h. Identifies RWST lvl <155kgal & informs ANPS
		3. Performs actions of 3-EOP-ES-1.3 as directed:
		a. Verifies SI reset
		b. Takes 3B CSP to PTL; MOV-3-880B deenergized
		c. Checks 3A HHSIP running, takes RHRPs to PTL
		d. Verifies RHR aligned for injection
		e. Stops chg pumps if VCT m/u not available
		f. Establishes hot leg recirc capability
		g. Closes U3 HHSIP recirc to RWST valves
		h. Stops U4 HHSIPs & isolates from U3 HHSI

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**3. Performs actions of 3-EOP-ES-1.3 as directed (cont'd):**
		i. Verifies cold leg recirc valves energized
		j. Verifies RHR alt dischg isolated
		k. Realigns RHR suction from RWST to CNMT sump
		l. Verifies CNMT recirc sump level
		m. Verifies adequate CCW for RHR cooling
		n. Starts one RHR pump - NO
		4. Performs actions of 3-EOP-ECA-1.1 as directed:
		a. Checks CL recirc capability available - NO
		b. Aligns makeup to the RWST
		c. Verifies only two ECCs running & at least one computer room chiller running
		d. If RWST level < 60kgal, then stops running HHSI, charging and containment spray pumps
		e. Reduces containment cooling as directed
		f. Verifies SI reset
		g. Establishes one HHSI pump running
		h. Verifies no RWST -> Sump backflow
		i. Checks RCS subcooling (approx. zero)
		j. Establishes minimum SI as directed
		65. Informs ANPS of plant status

5. Performs actions of 3-EOP-FR-Z.1 (if directed)
a. Verifies ECPs stopped with all NCC's OFF/ISOLATED.
b. Verifies CNMT Ch A/B VPB valve white lights all bright.
c. Verifies CNMT/CR Vent Isol.
d. Checks CL Recirc Capability - NO

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Determines 3-EOP-FR-P.1 n/a for LBLOCA
		2. Directs response to LBLOCA per 3-EOP-E-1:
		a. Directs max charging aligned (2 pumps)
		b. Transitions to appropriate procedure or FRP if required by red/orange path CSFST
		1) 3-EOP-FR-Z.1 if CNMT press > 20 PSIG
		2) 3-EOP-ES-1.3 if RWST < 155kgal
		~~2) 3-EA~~
		3) 3-EOP-ECA-1.1 for loss of both RHRPs
		3. If applicable, directs response to LBLOCA per 3-EOP-ES-1.3 but determines no RHR pumps operable and transition required to 3-EOP-ECA-1.1
		4. Directs response to LBLOCA per 3-EOP-ECA-1.1:
		a. Directs addition of makeup to the RWST
		b. Determines RCS cooldown not applicable
		c. If RWST level > 60 kgal:
		1) Reduces containment spray to minimum
		2) Verifies no backflow from RWST to sump & determines RCP could not be started
		3) Determines minimum SI flow (figure 1) & directs NLO action accordingly
		d. If RWST level < 60 kgal, stops all HHSI pumps, cnmt spray pumps & charging pumps
		5. Classifies event as a GENERAL EMERGENCY (RCS leak > chg w/cnmt press>20psig) per 0-EPIP-20101
		6. Informs NPS of status of unit

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-24, or static IC-3 which includes steps C & D below. except for setting conditional TFKV626A=F/IMK1938C.

B. Load scenario 65.

C. Following switch check, unfreeze the simulator. ~~Realign plant equipment to allow for FT-3-476 & 3B EDG out of service. Place MIMS in service.~~

D. Perform the following
   1. Take 3B EDG OOS (parameter controller direct triggers TAQ5B20P=3 & TAQ5LRSB=0)
   2. Take FT-3-476 OOS per 3-ONOP-049.1 as follows:
      a. In rack 24, trip bistables BS-3-478-A1/A2/D.
      b. Select FT-3-477 for 3A S/G level control
      c. Fail FT-3-476 low (touch SYS MAT->FEEDWATER-> MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES ->F-SG1->FT-476->FAIL LOW->set TFF1M76L=T).
   3. Enter the following failures:
      a. MOV-626 auto close failure (touch SYS MAT-> COMMON SERVICES->COMPONENT COOLING->CCW TO RCP.. ->FCV626->FAIL AS IS->set TFKV626A=T and set conditional TFKV626A=F/IMK1938C).
   4. Freeze Simulator

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags-Rack 24 (FT-3-476) and 3B EDG.

H. Information tags-None Brown dot a FT-3-476. Info tag on 3A SG level control FF input to FT-3-47

I. Select 3A GSPDS to page 211 (SAT) and 3B GSPDS to page 212 (RVL). Set ERDADS #on UPA to TAVE/TREF (TAV) and at the RCO desk to ENV2U(ED3).

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

B. **Power increase from 60% (event 1).**

1. **Initiation:** Crew should begin in response to shift turnover. If slow to begin, call as System Dispatcher and prompt commencement of load increase.

2. **Response:** Acknowledge load dispatcher/plant management notifications of the load increase. Respond as field operator in response to notification of starting/stopping plant equipment and as Reactor Engineering concerning MTC (reply that MTC is within limits and that power may increase above 70%).

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

C. **FT-3-474 fails ~~high~~ low (3A S/G FRV ~~opens~~ closes) (event 2).**

1. **Initiation:** After a 5% power change or at lead evaluator discretion, fail FT-3-474 (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->F-474->FT474-> TRANSMITTER FAIL ~~HIGH~~ low-> set TFS1MWEH=T). This will ~~open~~ close FCV-3-478. Manual control must be taken to stabilize 3A S/G level until FT-3-475 can be selected and 3A S/G level control returned to AUTO.

2. **Response:** As NPS/NWE state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will intiate a work package for troubleshooting & repair.

D. **TM-3-408F fails low (event 3).**

1. **Initiation:** Following event 2 crew brief, with 3A S/G level stabilized and rod control in AUTO (or at lead examiner discretion), actuate TM-3-408F (rod control Tref) failure low by touching SYS MAT->REACTOR->ROD CONTROL ROD POSITION->TM408F->T REF PROGRAM POWER LOSS->set TFL1T8FP=T. This fails the rod control unit Tref input thus requiring manual rod control.

2. **Response:** Respond as NPS/NWE/I&C to notification of TM-3-408F failure. As NPS/NWE state that a work request will be generated and I&C will be notified. As I&C, reply that a planner will intiate a work package for troubleshooting/repair.

E. **3B RCP TBHX failure / MOV-3-626 auto close failure (event 4).**

1. **Initiation:** Once the plant is stabilized with manual rod control, actuate the 3B RCP TBHX leak by touching SYS MAT->COMMON SERVICES->COMPONENT COOLING-> CCW TO RCP...->LVTBB->VALVE PORT AREA->set TVKALTBB=0.3. The MOV-3-626 failure was entered in the scenario setup. When MOV-3-626 is closed, begin ramping 3B RCP shaft vibration up to the reactor trip setpoint (touch SYS MAT->REACTOR COOLANT SYSTEM-> REACTOR COOLANT PUMPS->RCP B->IDA->RCP VIBRATION S->set TAHUVBSB=21.0/3:00 ramp-> IDA->RCP VIBRATION M->set TAHUVBMB=6.0/3:00 ramp).

2. **Response:** Acknowledge requests for SNPO/NWE assistance with MOV-3-626 or verification of RCP seal injection flows. If directed, these flows may be adjusted using SYS MAT-> REACTOR COOLANT SYSTEM->REACTOR COOLANT PUMPS->CV297A(B)(C)-> VALVE PORT AREA->set TAHN97A(B)(C)=value as directed by crew.
Acknowledge notification to NPS/system dispatcher of U3 trip (3-ONOP-041.1 directs reactor/3B RCP trip on high vibration).
Acknowledge direction as Chemistry to sample CCW for activity (RCS inleakage). After 10-15 minutes, report CCW activity with counting in progress.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

E. 3B RCP TBHX failure / MOV-3-626 auto close failure (event 4 cont'd).

2. **Response (cont'd):** As HP, direction may be received to survey CCW piping for increased radiation levels. After 8-10 minutes, report radiation above background exists on CCW piping. Request PA announcements be made for personnel to stand clear of CCW piping (if not made already).

F. Large break loss of coolant accident (event 5)

1. **Initiation:** When the 3B RCP is tripped in response to event 4, actuate the large break LOCA using parameter controller direct trigger TVHHCLB=2.0/5 sec delay/30 sec ramp..

2. **Response:** Respond as HP if directed to survey the main steam lines and outside containment. After 10-15 minutes, report elevated general area radiation in all areas near containment. When requested as SNPO to place PAHMs in service, report alignment completion after 10-15 minute delay (parameter controller trigger composite "PAHM").

G. Loss of offsite power (loss of 3B 4kV bus) (event 6)

1. **Initiation:** Just before the diagnostic steps (27-29) in 3-EOP-E-0, actuate a ground on the unit 3 startup transformer using parameter controller direct trigger TFP1S3GC=T.

2. **Response:** After losing U3 S/U xfmr, the crew may request U4 RCO realignment of U4 HHSIP suctions to U3 RWST. After 8-10 minutes, carry this out using parameter controller trigger composite "SIALIGN". If asked as U4 RCO, state that U4 is at 100% power. If asked as NPO/NWE to investigate U3 S/U xfmr, after 2-4 minutes report actuation of the ground (64) relay. If asked to reset the relay, state that it will not reset.
If directed to perform Att. 2 of 3-ONOP-004.3, verify the 3AC16 & 3AC01 local blue power available lights ON. Then, 4-6 minutes later, report that breaker 3AC13 is misaligned in its cubicle and can not be fully racked in. Respond as Electrical Maintenance if asked to troubleshoot, but do not repair it.

H. 3A RHR pump trip (loss of emergency coolant recirc) (event 7).

1. **Initiation:** ~~Shortly after the~~ Immediately after ~~Back~~ transition from 3-EOP-E-~~1~~ E-P.1 to ~~3-EOP-FR-P.1 and back~~ then back to 3-EOP-E-1, actuate increasing bearing wear on the 3A RHR pump using SYS MAT->SAFETY SYSTEM->RHR PROCESS->P3A->RHR PP 3A->BEARING WEAR->set TVMRPBRA=1.0/~~2:00~~ 1:00 ramp. This will ~~eventually~~ cause the pump to trip on overcurrent.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

H. **3A RHR pump trip (loss of emergency coolant recirc) (event 7 cont'd)**

2. **Response:** When directed as SNPO to check out the 3A RHR pump, wait 1-3 minutes and report as follows:
- If the pump is still running, state that the pump is much noisier than usual and getting worse.
- If the pump has tripped, state that top of the motor casing is very hot with burnt insulation smell in the room. The pump shaft will not rotate (seized) by hand.

If asked as mechanical maintenance about the status of 3B EDG, state that the governor is disassembled and could not be made ready before tomorrow dayshift at the earliest.
Respond as HP as in event 5. Surveys may be expanded to include all around containment. When directed as Chemistry to take periodic S/G activity samples request S/G sample MOV's be opened to permit this. Also acknowledge request as Chemistry to locally check DAM-1 monitor and align PASS. No secondary activity should be reported to the crew during this scenario.
LCV-3-115C is deenergized requiring local closure to allow charging pump suction from the RWST per 3-EOP-E-1 step 10(touch SYS MAT->CHEMICAL VOLUME CONTROL SYSTEM->CVCS CHARGING->MOV115C->LOCAL CLOSE/TRIP(MECH)->set TCB162MC=F-> MOV115C->FAIL CLOSE->set TFBVC62=T.
If directed as NPO/SNPO to close in cold leg recirc breakers per 3-EOP-E-1 step 17 or 3-EOP-ES-1.3 step 10, after a 1-3 minute delay, actuate parameter controller trigger composite "CLRECBKR". Note that only train A has power available. If directed, local operation of train B valves outside containment (MOV-3-862B/863B/864B only) can be accomplished using the RHR PROCESS & SI PROCESS system mimics and taking each valve to FAIL OPEN with a 3-5 minute delay per valve.
After transition to 3-EOP-ECA-1.1, respond as SNPO when directed to manipulate 3-356/365A/365B. Touch SYS MAT->CHEMICAL VOLUME CONTROL SYSTEM->CVCS MAKEUP->365B->VALVE PORT AREA->set TABM365B=1.0 (356 already closed & 365A not simulated) allowing 3-5 minutes before reporting completion. Also respond as SNPO when directed to throttle valve 3-888B for minimum SI flow from 3A HHSIP. Touch SYS MAT->SAFETY SYSTEM->SAFETY INJECTION PROC-> 888B->VALVE PORT AREA->TAMH888B=0.05 (300 gpm) initially with additional throttling (=0.025 for 200 gpm) as directed. Allow 2-4 minutes before reporting the initial valve repositioning.

III. TERMINATION CRITERIA:

A. Upon reduction of SI flow to minimum or trip of all pumps with RWST suction (step 17 or 30 of 3-EOP-ECA-1.1), **OR**

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TVHHCLB	2.0	-	0:05	0:30	Actuates LBLOCA on B RCS loop.
N	TAQ5LRSB	0	-	-	-	Takes 3B EDG LOCAL/NORMAL switch to OFF
N	TAQ5B20P	3	-	-	-	Racks out 3B EDG output breaker 3AB20
N	TFP1S3GC	T	-	-	-	Trips ground (64) relay on U3 startup xfmr
Y	**"CLRECBKR"**	-	-	-	-	**Closes cold leg recirc breakers (E-1 step 17 or ES-1.3 step 10)**
-	TCM2D06M	T	-	-	-	Closes bkr 30621 (MOV-3-866B)
-	TCM2D04M	T	-	0:15	-	Closes bkr 30605 (MOV-3-864B)
-	TCM1D03M	T	-	0:30	-	Closes bkr 30615 (MOV-3-750)
-	TCM1D10M	T	-	0:45	-	Closes bkr 30616 (MOV-3-862B)
-	TCM1D12M	T	-	1:00	-	Closes bkr 30626 (MOV-3-863B)
-	TCM1D09M	T	-		-	Closes bkr 30720 (MOV-3-862A)
-	TCM1D11M	T	-	0:15	-	Closes bkr 30726 (MOV-3-863A)
-	TCM1D04M	T	-	0:30	-	Closes bkr 30731 (MOV-3-751)
-	TCM2D05M	T	-	0:45	-	Closes bkr 30732 (MOV-3-866A)
-	TCM2D03M	T	-	1:00	-	Closes bkr 30712 (MOV-3-864A)
Y	**"SIALIGN"**	-	-	-	-	**Aligns U4 HHSI pumps suction to U3 RWST**
-	TAMH1V46	1.0	-	0:02	-	Opens valve 3-892A
-	TAMH1V41	1.0	-	0:45	-	Opens valve 3-870A
-	TAMH1V37	0.0	-	1:20	-	Closes valve 4-864C
-	TAMH4856	0.0	-	2:20	-	Closes valves 4-856A&B
Y	**"PAHM"**	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	0:30	-	Opens PAHM-002A
-	TAC2V02B	1.0	-	1:30	-	Opens PAHM-002B
-	TAAAV21	1.0	-	-	-	Opens HV-1
-	TAAAV22	1.0	-	-	-	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-301	Hot Standby to Power Operation
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-028	Reactor Control System Malfunction
3-ONOP-041.1	Reactor Coolant Pump Off-Normal
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
3-ONOP-067	Radioactive Effluent Release
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-E-1	Loss of Reactor or Secondary Coolant
3-EOP-ES-1.3	Transfer to Cold leg Recirculation
3-EOP-ECA-1.1	Loss of Emergency Coolant Recirculation
3-EOP-FR-P.1	Response to Imminent Pressurized Thermal Shock Condition
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book

3-EOP-FR-Z.1 Response to High Containment Pressure

EVALUATION SCENARIO CONTENT SUMMARY

1. Total Number of Malfunctions: 7

2. Malfunctions Occurring During EOP Performance: 1

   1. 3A RHR pump trip / loss of emergency coolant recirc

3. Abnormal Events: 4

   1. FT-3-474 fails ~~high~~ low
   2. TM-3-408 fails low
   3. RCP thermal barrier failure
   4. MOV-3-626 auto close failure

4. Major Transients: 2

   1. Large break loss of coolant accident
   2. Loss of offsite power

5. EOPs Used: 2

6. EOP Contingencies Entered: 1

7. Simulator Run Time: 90 minutes

8. EOP Run Time: 45 minutes

9. Crew Critical Tasks: 3

Florida Power & Light Co.

Turkey Point Nuclear Plant

1999 NRC Operating Examination
Categories A, B, & C

September 13, 1999

MASTER

DISTRIBUTION CODE
A070

FINAL SUBMITTAL - R2
"G"

Facility: Turkey Point Date of Examination: 08/30/99
Examination Level: RO / SRO Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Shift staffing requirements	JPM #03201027102, Identify overtime eligibility (RO)(New)
		JPM #03201027101, Identify overtime eligibility (SRO)(New)
	Plant parameters verification-QPTR	JPM #01059006200, Calculate Quadrant Power Tilt Ratio (QPTR) (RO/SRO)(Modified from bank)
A.2	Tagging and clearances	JPM #01201013100, Write equipment clearance orders (RO/SRO)(Modified from bank)
A.3	Radiation exposure limits	JPM #24094001510, Assess personnel exposure to determine if/how valve alignment can be completed (RO/SRO)(New)
A.4	Emergency communications	JPM #02001013401, Make emergency notifications (as communicator, complete forms) (RO)(Modified from bank)
	Emergency protective action recommendations	JPM #02201054406, Evaluate protective action recommendations (PARs) (SRO)(New)

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

N/A

INITIATING CUE:

YOU ARE THE NWE AND YOU MUST EVALUATE THE 3 ATTACHED "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS".

IN SECTION II OF EACH CHECKLIST, CHECK THE APPROPRIATE YES/NO BOX.

IF THERE ARE NO VIOLATIONS OF ANY TECHNICAL SPECIFICATION OVERTIME GUIDELINES, SIGN THE FORM AS THE NWE REVIEWER.

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 1 was required to work the hours shown below.
Date Name

Come to work early to assist in plant startup.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
								4.00	2.00	4.00			
MID	1.50	1.50	1.50	1.50				2.50		2.50			
	4.00	4.00	4.00	4.00									
DAY	4.00	4.00	4.00	4.00			2.00						
PEAK	2.50	2.50	2.50	2.50			4.00	1.50	1.50				
							4.00	4.00	4.00				
Totals	12.00	12.00	12.00	12.00	0.00	0.00	10.00	12.00	7.50	6.50	0.00	0.00	0.00

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO # 1 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 2 was required to work the hours shown below.
Date Name

Call-out for Reactor Protection Periodic Surveillance

Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
							4.00	4.00	4.00	4.00			
MID	1.50	1.50	1.50	1.50			4.00	2.50	2.50	2.50			
	4.00	4.00	4.00	4.00									
DAY	4.00	4.00	4.00	4.00									
PEAK	2.50	2.50	2.50	2.50			1.50	1.50	1.50				
							4.00	4.00	4.00				
Totals	12.00	12.00	12.00	12.00	0.00	0.00	13.50	12.00	12.00	6.50	0.00	0.00	0.00

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO #2 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 3 was required to work the hours shown below.
Date Name

Call out to ensure minimum shift complement.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	↓ 09/16	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID							4.00	4.00	4.00	4.00	4.00	4.00	4.00
	1.50	1.50						2.50	2.50	2.50	2.50	2.50	2.50
DAY	4.00	4.00											
	4.00	4.00											
PEAK	2.50	2.50					1.50	1.50	1.50	1.50	1.50	1.50	
							4.00	4.00	4.00	4.00	4.00	4.00	
Totals	12.00	12.00	0.00	0.00	0.00	0.00	9.50	12.00	12.00	12.00	12.00	12.00	6.50

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO #3 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

JOB PERFORMANCE MEASURE WORKSHEET-JPM #03201027101

JOB CLASSIFICATION: NUCLEAR WATCH ENGINEER

JPM TITLE: IDENTIFY OVERTIME ELIGABILITY

JPM NUMBER: 03201027101 JPM TYPE: NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 1.67 COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

JPM REV. DATE: 08/24/99

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. EACH SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST HAS THE CORRECT "YES/NO" BOXES IN SECTION II CHECKED.

2. THE OPERATOR DOES NOT SIGN ANY OF THE CHECKLISTS WITH TECHNICAL SPECIFICATION OVERTIME VIOLATIONS.

REQUIRED MATERIALS:

3 "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS"

REFERENCES:

1. 0-ADM-200, CONDUCT OF OPERATIONS
2. TECHNICAL SPECIFICATIONS SECTION 6.2.2

TERMINATING CUES:

ALL CHECKLISTS COMPLETED AND RETURNED BY OPERATOR TO EXAMINER.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

N/A

INITIATING CUE:

YOU ARE THE NWE AND YOU MUST EVALUATE THE 3 ATTACHED "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS".

IN SECTION II OF EACH CHECKLIST, CHECK THE APPROPRIATE YES/NO BOX.

IF THERE ARE NO VIOLATIONS OF ANY TECHNICAL SPECIFICATION OVERTIME GUIDELINES, SIGN THE FORM AS THE NWE REVIEWER.

( ) ELEMENT: 1

COMPARE HOURS WORKED TO REQUIREMENTS.

STANDARDS:

__1. REVIEWED THE SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST TO VERIFY THAT THE AVAILABLE OVERTIME WOULD NOT CAUSE THE INDIVIDUALS TO EXCEED ANY OF THE FOLLOWING "HOURS WORKED" RESTRICTIONS:

A. > 16 CONSECUTIVE HOURS
B. > 16 HOURS IN A 24 HOUR PERIOD
C. > 24 HOURS IN A 48 HOUR PERIOD
D. > 72 HOURS IN ANY 7 DAY PERIOD

EVALUATOR'S NOTES:

NOTE: All three checklists have problems related to Technical Specification overtime requirements.

(C) ELEMENT: 2

DETERMINE THAT NO INDIVIDUALS ARE ELIGIBLE TO FILL THE SHIFT VACANCY.

STANDARDS:

__1. CHECKED THE FOLLOWING BOXES ON THE SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST.

RCO #1	BOX A)	YES	RCO #2	BOX A)	NO
	BOX B)	YES		BOX B)	NO
	BOX C)	NO		BOX C)	YES
	BOX D)	NO		BOX D)	NO

RCO #2	BOX A)	NO
	BOX B)	NO
	BOX C)	NO
	BOX D)	YES

__2. DECLINED TO SIGN THE "REVIEWED BY NPS/NWE" SIGNATURE BLOCK.

EVALUATOR'S NOTES:

NOTE: Operator 1 is not eligible because the additional hours would exceed 16 consecutive hours and 16 hours in any 24 hour period.

Operator 2 is not eligible because the additional hours would exceed 24 hours in any 48 hour period.

Operator 3 is not eligible because the additional hours would exceed 72 hours in 7 days.

Tell the operator that the JPM is completed.

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 1 was required to work the hours shown below.
Date Name

Come to work early to assist in plant startup.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID								4.00	2.00	4.00			
	1.50	1.50	1.50	1.50				2.50		2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00			2.00						
PEAK	2.50	2.50	2.50	2.50			4.00	1.50	1.50				
							4.00	4.00	4.00				
Totals	12.00	12.00	12.00	12.00	0.00	0.00	10.00	12.00	7.50	6.50	0.00	0.00	0.00

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☒	☐
B)	Greater than 16 hours in any 24 hour period?	☒	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☒
D)	Greater than 72 hours in any 7 day period?	☐	☒

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO # 1 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 2 was required to work the hours shown below.
Date Name

Call-out for Reactor Protection Periodic Surveillance
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID							4.00	4.00	4.00	4.00			
	1.50	1.50	1.50	1.50			4.00	2.50	2.50	2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00									
PEAK	2.50	2.50	2.50	2.50			1.50	1.50	1.50				
							4.00	4.00	4.00				
Totals	12.00	12.00	12.00	12.00	0.00	0.00	13.50	12.00	12.00	6.50	0.00	0.00	0.00

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☒
B)	Greater than 16 hours in any 24 hour period?	☐	☒
C)	Greater than 24 hours in any 48 hour period?	☒	☐
D)	Greater than 72 hours in any 7 day period?	☐	☒

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO #2 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 3 was required to work the hours shown below.
Date Name

Call out to ensure minimum shift complement.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID							4.00	4.00	4.00	4.00	4.00	4.00	4.00
	1.50	1.50						2.50	2.50	2.50	2.50	2.50	2.50
DAY	4.00	4.00											
	4.00	4.00											
PEAK	2.50	2.50					1.50	1.50	1.50	1.50	1.50	1.50	
							4.00	4.00	4.00	4.00	4.00	4.00	
Totals	12.00	12.00	0.00	0.00	0.00	0.00	9.50	12.00	12.00	12.00	12.00	12.00	6.50

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☒
B)	Greater than 16 hours in any 24 hour period?	☐	☒
C)	Greater than 24 hours in any 48 hour period?	☐	☒
D)	Greater than 72 hours in any 7 day period?	☒	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. RCO # 3 Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Admin RCO Individual Preparing Checklist Reviewed by NPS/NWE

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

N/A

INITIATING CUE:

YOU ARE THE RCO AND YOU MUST EVALUATE THE 3 ATTACHED "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS".

IN SECTION II OF EACH CHECKLIST, CHECK THE APPROPRIATE YES/NO BOX.

IF THERE ARE NO VIOLATIONS OF ANY TECHNICAL SPECIFICATION OVERTIME GUIDELINES, SIGN THE FORM AS THE INDIVIDUAL ACCEPTING OVERTIME/SHIFT TRADE.

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 1 was required to work the hours shown below.
Date Name

Come to work early to assist in plant startup.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID								4.00	2.00	4.00			
	1.50	1.50	1.50	1.50				2.50		2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00			2.00						
PEAK	2.50	2.50	2.50	2.50			4.00	1.50	1.50				
							4.00	4.00	4.00				
Totals	*12.00*	*12.00*	*12.00*	*12.00*	*0.00*	*0.00*	*10.00*	*12.00*	*7.50*	*6.50*	*0.00*	*0.00*	*0.00*

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Individual Preparing Checklist Reviewed by NPS/NWE

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 2 was required to work the hours shown below.
Date Name

Call-out for Reactor Protection Periodic Surveillance
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID							4.00	4.00	4.00	4.00			
	1.50	1.50	1.50	1.50			4.00	2.50	2.50	2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00									
PEAK	2.50	2.50	2.50	2.50			1.50	1.50	1.50				
							4.00	4.00	4.00				
Totals	12.00	12.00	12.00	12.00	0.00	0.00	13.50	12.00	12.00	6.50	0.00	0.00	0.00

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Individual Preparing Checklist Reviewed by NPS/NWE

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 3 was required to work the hours shown below.
Date Name

Call out to ensure minimum shift complement.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
							4.00	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*
MID	*1.50*	*1.50*						*2.50*	*2.50*	*2.50*	*2.50*	*2.50*	*2.50*
DAY	*4.00*	*4.00*											
	4.00	*4.00*											
PEAK	*2.50*	*2.50*					*1.50*	*1.50*	*1.50*	*1.50*	*1.50*	*1.50*	
							4.00	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*	
Totals	*12.00*	*12.00*	*0.00*	*0.00*	*0.00*	*0.00*	*9.50*	*12.00*	*12.00*	*12.00*	*12.00*	*12.00*	*6.50*

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☐
B)	Greater than 16 hours in any 24 hour period?	☐	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☐
D)	Greater than 72 hours in any 7 day period?	☐	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Individual Preparing Checklist Reviewed by NPS/NWE

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: IDENTIFY OVERTIME ELIGABILITY

JPM NUMBER: 03201027102 JPM TYPE: NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 1.67 COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

JPM REV. DATE: 08/30/99

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. EACH SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST HAS THE CORRECT "YES/NO" BOXES IN SECTION II CHECKED.

2. THE OPERATOR DOES NOT SIGN ANY OF THE CHECKLISTS WITH TECHNICAL SPECIFICATION OVERTIME VIOLATIONS.

REQUIRED MATERIALS:

3 "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS"

REFERENCES:

1. 0-ADM-200, CONDUCT OF OPERATIONS
2. TECHNICAL SPECIFICATIONS SECTION 6.2.2

TERMINATING CUES:

ALL CHECKLISTS COMPLETED AND RETURNED BY OPERATOR TO EXAMINER.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

N/A

INITIATING CUE:

YOU ARE THE RCO AND YOU MUST EVALUATE THE 3 ATTACHED "SHIFT TRADE/OVERTIME GUIDELINES CHECKLISTS".

IN SECTION II OF EACH CHECKLIST, CHECK THE APPROPRIATE YES/NO BOX.

IF THERE ARE NO VIOLATIONS OF ANY TECHNICAL SPECIFICATION OVERTIME GUIDELINES, SIGN THE FORM AS THE INDIVIDUAL ACCEPTING OVERTIME/SHIFT TRADE.

( ) ELEMENT: 1

COMPARE HOURS WORKED TO REQUIREMENTS.

STANDARDS:

__1. REVIEWED THE SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST TO VERIFY THAT THE AVAILABLE OVERTIME WOULD NOT CAUSE THE INDIVIDUALS TO EXCEED ANY OF THE FOLLOWING "HOURS WORKED" RESTRICTIONS:

A. > 16 CONSECUTIVE HOURS
B. > 16 HOURS IN A 24 HOUR PERIOD
C. > 24 HOURS IN A 48 HOUR PERIOD
D. > 72 HOURS IN ANY 7 DAY PERIOD

EVALUATOR'S NOTES:

NOTE: All three checklists have problems related to Technical Specification overtime requirements.

(C) ELEMENT: 2

DETERMINE THAT NO INDIVIDUALS ARE ELIGIBLE TO FILL THE SHIFT VACANCY.

STANDARDS:

__1. CHECKED THE FOLLOWING BOXES ON THE SHIFT TRADE/OVERTIME GUIDELINES CHECKLIST.

RCO #1	BOX A)	YES	RCO #2	BOX A)	NO
	BOX B)	YES		BOX B)	NO
	BOX C)	NO		BOX C)	YES
	BOX D)	NO		BOX D)	NO

RCO #2	BOX A)	NO
	BOX B)	NO
	BOX C)	NO
	BOX D)	YES

__2. DECLINED TO SIGN THE "INDIVIDUAL ACCEPTING OVERTIME/SHIFT TRADE" SIGNATURE BLOCK.

EVALUATOR'S NOTES:

NOTE: Operator 1 is not eligible because the additional hours would exceed 16 consecutive hours and 16 hours in any 24 hour period.

Operator 2 is not eligible because the additional hours would exceed 24 hours in any 48 hour period.

Operator 3 is not eligible because the additional hours would exceed 72 hours in 7 days.

Tell the operator that the JPM is completed.

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 1 was required to work the hours shown below.
Date Name

Come to work early to assist in plant startup.
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID								4.00	2.00	4.00			
	1.50	1.50	1.50	1.50				2.50		2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00			2.00						
PEAK	2.50	2.50	2.50	2.50			4.00	1.50	1.50				
							4.00	4.00	4.00				
Totals	*12.00*	*12.00*	*12.00*	*12.00*	*0.00*	*0.00*	*10.00*	*12.00*	*7.50*	*6.50*	*0.00*	*0.00*	*0.00*

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☒	☐
B)	Greater than 16 hours in any 24 hour period?	☒	☐
C)	Greater than 24 hours in any 48 hour period?	☐	☒
D)	Greater than 72 hours in any 7 day period?	☐	☒

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Individual Preparing Checklist Reviewed by NPS/NWE

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 2 was required to work the hours shown below.
Date Name

Call-out for Reactor Protection Periodic Surveillance
Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	09/16 ↓	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
MID							4.00	4.00	4.00	4.00			
	1.50	1.50	1.50	1.50			4.00	2.50	2.50	2.50			
DAY	4.00	4.00	4.00	4.00									
	4.00	4.00	4.00	4.00									
PEAK	2.50	2.50	2.50	2.50			1.50	1.50	1.50				
							4.00	4.00	4.00				
Totals	*12.00*	*12.00*	*12.00*	*12.00*	*0.00*	*0.00*	*13.50*	*12.00*	*12.00*	*6.50*	*0.00*	*0.00*	*0.00*

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☒
B)	Greater than 16 hours in any 24 hour period?	☐	☒
C)	Greater than 24 hours in any 48 hour period?	☒	☐
D)	Greater than 72 hours in any 7 day period?	☐	☒

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline. Individual Accepting Overtime/Shift Trade	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline. Individual Preparing Checklist Reviewed by NPS/NWE

KEY

SHIFT TRADE / OVERTIME GUIDELINES CHECKLIST

I. On 09/16/99, RCO # 3 was required to work the hours shown below.
Date Name

Call out to ensure minimum shift complement.

Reason for Overtime

NOTE:

Hours worked/scheduled shall be entered in the Overtime Manager Program. Hand written entries on this form are not permitted unless the Overtime Manager Program is OOS.

DATE	09/10	09/11	09/12	09/13	09/14	09/15	↓ 09/16	09/17	09/18	09/19	09/20	09/21	09/22
DAY	-7	-6	-5	-4	-3	-2	1	+2	+3	+4	+5	+6	+7
							4.00	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*
MID	*1.50*	*1.50*						*2.50*	*2.50*	*2.50*	*2.50*	*2.50*	*2.50*
DAY	*4.00*	*4.00*											
	4.00	*4.00*											
PEAK	*2.50*	*2.50*					*1.50*	*1.50*	*1.50*	*1.50*	*1.50*	*1.50*	
							4.00	*4.00*	*4.00*	*4.00*	*4.00*	*4.00*	
Totals	*12.00*	*12.00*	*0.00*	*0.00*	*0.00*	*0.00*	*9.50*	*12.00*	*12.00*	*12.00*	*12.00*	*12.00*	*6.50*

II. 0-ADM-200 GUIDELINES

		YES	NO
A)	Greater than 16 consecutive hours?	☐	☒
B)	Greater than 16 hours in any 24 hour period?	☐	☒
C)	Greater than 24 hours in any 48 hour period?	☐	☒
D)	Greater than 72 hours in any 7 day period?	☒	☐

III.

I have reviewed my work history & future schedule shown above. It is correct and will NOT result in my violating any Technical Specification Overtime Guideline.	I have reviewed the work history & future schedule shown above. It will NOT result in violating any Technical Specification Overtime Guideline.
	Individual Preparing Checklist
Individual Accepting Overtime/Shift Trade	Reviewed by NPS/NWE

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 IS IN MODE 1 AT 100% POWER.

INITIATING CUE

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO DETERMINE THE QUADRANT POWER TILT RATIO (QPTR).

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: DETERMINE QUADRANT POWER TILT RATIO (QPTR)

JPM NUMBER: 01059006200 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

STATIC IC-7 OR IC-1 WITH THE FOLLOWING OVERRIDES:

STYL INST->A3->N41(816), N42(818), N43(819, N44(822)->OVERRIDE->POWER RANGE DET CURRENT(Det A on left, Det B on right)->VALUE->SET VALUES AS FOLLOWS:

N41A N1:A5M1 = 0.00203
N41B N1:A5M2 = 0.00165

N42A N1:B5M1 = 0.00151
N42B N1:B5M2 = 0.00160

N43A N1:C5M1 = 0.001615
N43B N1:C5M2 = 0.00130

N44A N1:D6M1 = 0.00181
N44B N1:D6M2 = 0.00166

TASK STANDARDS:

1. UPPER AND LOWER DETECTOR CURRENTS RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.

2. 100% POWER CURRENT VALUES OBTAINED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.

3. UPPER AND LOWER SECTION NORMALIZED CURRENT VALUES ARE CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.

4. UPPER AND LOWER SECTION NORMALIZED AVERAGE CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.

5. UPPER AND LOWER SECTION TILT RATIOS CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.

6. HIGHEST SECTION QUADRANT POWER TILT RATIO (QPTR) DETERMINED.

REQUIRED MATERIALS:

1. 3-OSP-059.10, DETERMINATION OF QUADRANT POWER TILT RATIO
2. MOL PLANT CURVE BOOK
3. Calculator

REFERENCES:

1. 3-OSP-059.10, DETERMINATION OF QUADRANT POWER TILT RATIO

TERMINATING CUES:

NIS QUADRANT POWER TILT RATIO (QPTR) HAS BEEN DETERMINED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 IS IN MODE 1 AT 100% POWER.

INITIATING CUE

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO DETERMINE THE QUADRANT POWER TILT RATIO (QPTR).

EVALUATOR'S NOTES:

NOTE: Provide the operator with access to the MOL Plant Curve Book.

( ) **ELEMENT: 1**

OBTAIN THE REQUIRED MATERIALS.

STANDARDS:

__1. 3-OSP-059.10 HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.

CUE: ***When the need to check for OTSCs is recognized, tell the operator, "There are no outstanding OTSCs on 3-OSP-059.10."***

__2. OBTAINED MOL PLANT CURVE BOOK.

EVALUATOR'S NOTES:

NOTE 1: Provide the operator with a copy of 3-OSP-059.10 once it has been identified.

NOTE 2: The Operator will not be able to check for OTSCs in the simulator in the usual manner.

(C) **ELEMENT: 2**

RECORD THE POWER RANGE DETECTOR CURRENTS.

STANDARDS:

__1. REVIEWED NOTES PRIOR TO STEP 7.1.

__2. ENTERED DATE, TIME AND INITIALS INTO ATTACHMENT 1, STEP 1.
[Step 7.1.1]

__3. READ THE UPPER AND LOWER DETECTOR CURRENTS FOR PR N-41 THROUGH N-44.

__4. UPPER AND LOWER DETECTOR CURRENTS FOR CHANNELS N-41 THRU N-44 HAVE BEEN RECORDED IN THE APPLICABLE SECTION OF ATTACHMENT 1.
[Step 7.1.1 & Att. 1, Step 2]

	N-41	N-42	N-43	N-44
UPPER DETECTOR (DETECTOR A)	200 µamps	150 µamps	160 µamps	180 µamps
LOWER DETECTOR (DETECTOR B)	165 µamps	160 µamps	130 µamps	165 µamps

EVALUATOR'S NOTES:

NOTE 1: The values given above have been preset into the meters. The analog meters are difficult to read, but the operators values should approximate those shown.

NOTE 2: None of the NOTES preceding Step 7.1 apply with all 4 NIS Power Ranges in service.

NOTE 3: Only Standard 4 is critical to this Element.

(C) **ELEMENT: 3**

RECORD 100% POWER CURRENT VALUES.
[Step 7.1.2, Step 7.1.3 & Att 1, Step 2]

STANDARDS:

__1. 100% DETECTOR CURRENT VALUES FROM THE PLANT CURVE BOOK HAVE BEEN RECORDED IN APPLICABLE SECTION OF ATTACHMENT 1.

	N-41	N-42	N-43	N-44
UPPER DETECTOR	205 µamps	155 µamps	154 µamps	184 µamps
LOWER DETECTOR	169 µamps	160 µamps	127 µamps	167 µamps

EVALUATOR'S NOTES:

NOTE: Ensure operator uses MOL simulator plant curve.

(C) **ELEMENT: 4**

CALCULATE UPPER AND LOWER SECTION NORMALIZED CURRENT VALUES [Step 7.1.4 and Att 1, Step 2]

STANDARDS:

__1. DIVIDED EACH DETECTOR CURRENT BY ITS ASSOCIATED 100% POWER CURRENT VALUE.

SIMULATOR VALUES: (Det A = Upper, Det B = Lower)

		Actual/Normal				Ratio
N-41	Det A	200	/	205	=	.9756
	Det B	165	/	169	=	.9763
N-42	Det A	150	/	155	=	.9677
	Det B	160	/	160	=	1.0000
N-43	Det A	160	/	154	=	1.0390
	Det B	130	/	127	=	1.0236
N-44	Det A	180	/	184	=	.9783
	Det B	165	/	167	=	.9880

__2. RECORDED NORMALIZED CURRENT VALUES IN THE APPROPRIATE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 5**

CALCULATE UPPER AND LOWER SECTIONS NORMALIZED AVERAGE POWER. [Step 7.1.4 & Att 1, Step 2 & 3]

STANDARDS:

__1. ADDED ALL UPPER SECTION NORMALIZED DETECTOR CURRENTS. [Att. 1, Step 2]

Upper Detector Normalized Current Sum
.9756 + .9677 + 1.0390 + .9783 = 3.9606

__2. ADDED ALL LOWER SECTION NORMALIZED DETECTOR CURRENTS. [Att. 1, Step 2]

Lower Detector Normalized Current Sum
.9763 + 1.0000 + 1.0236 + .9880 = 3.9879

__3. DIVIDED UPPER SECTION TOTAL NORMALIZED CURRENT BY THE NUMBER OF DETECTORS IN SERVICE.
[Att. 1, Step 3]

Upper Detector Normalized Power
3.9606/4 = .9902

__4. DIVIDED LOWER SECTION TOTAL NORMALIZED CURRENT BY THE NUMBER OF DETECTORS IN SERVICE.
[Att. 1, Step 3]

Lower Detector Normalized Power
3.9879/4 = .9970

__5. ALL CALCULATED VALUES RECORDED IN THE APPLICABLE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 6**

CALCULATE UPPER AND LOWER SECTION TILT RATIOS.
[Step 7.1.4 & Att 1, Step 4]

STANDARDS:

__1. DETERMINED THE LARGEST UPPER SECTION NORMALIZED DETECTOR CURRENT.

From Attachment 1, Step 2: 1.0390

__2. DIVIDED THE LARGEST UPPER SECTION NORMALIZED CURRENT BY THE AVERAGE UPPER SECTION NORMALIZED POWER.

Upper Detector QPTR
1.0390/.9902 = 1.049

__3. DETERMINE THE LARGEST LOWER SECTION NORMALIZED DETECTOR CURRENT.

From Attachment 1, Step 2: 1.0236

__4. DIVIDED THE LARGEST LOWER SECTION NORMALIZED CURRENT BY THE AVERAGE LOWER SECTION NORMALIZED POWER.

Lower Detector QPTR
1.0236/.9970 = 1.0267

__5. RECORDED RATIOS IN THE APPROPRIATE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

DETERMINE TECH SPEC 3.2.4 COMPLIANCE

STANDARDS:

__1. RECORDED HIGHEST SECTION QPTR AS THE ACTUAL NIS QPTR VALUE IN ATTACHMENT 1, STEP 5.

Upper Section Tilt Ratio: 1.049

__2. CIRCLED "YES" OR "NO" TO INDICATE IF NIS QPTR IS LESS THAN OR EQUAL TO 1.02 (TS 3.2.4). [Att 1, Step 6]

NO

__3. ENTERED NAME, DATE, AND TIME IN ATTACHMENT 1, STEP 6.

EVALUATOR'S NOTES:

NOTE: Standard 3 is not critical to this element.

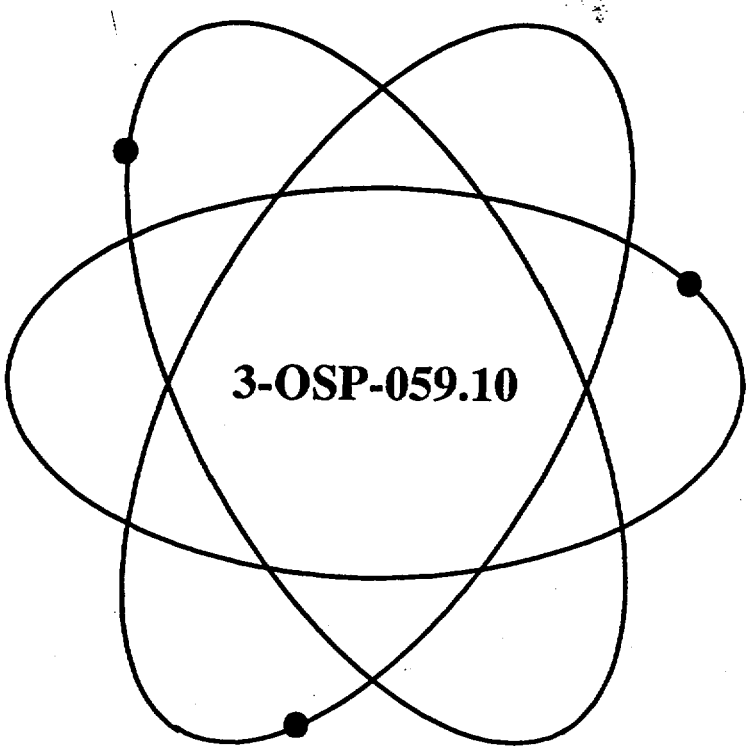
Tell the operator that the JPM is completed.

Florida Power & Light Company

Turkey Point Nuclear Plant

This procedure may be affected by an OTSC (On The Spot Change) verify information prior to use.
Date verified _____ Initials _____

Unit 3



Title:

Determination of Quadrant Power Tilt Ratio

Safety Related Procedure	
Responsible Department:	Operations
Revision Approval Date:	5/6/99
Periodic Review Due:	10/2/03

***RTSs** 90-2499P, 92-1723P, 93-0617, 93-1080, 93-1539, 94-0687, 94-1436P, 98-0181, 98-0274P*
***PC/M** 92-031*
***OTSCs** 0617-93, 0912-96, 0358-98, 0566-98, 0171-99*

/JBS/ld/lr/lr

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TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure provides the prerequisites, precautions, limitations and instructional guidance to determine the actual Quadrant Power Tilt Ratio (QPTR). This surveillance satisfies the requirements of Reference Step 2.1.1.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Technical Specifications

1. Section 3.2.4
2. Section 4.2.4.1
3. Section 4.2.4.2
4. Section 4.3.3.2
5. Section 1.23
6. Section 3.02
7. Table 3.3-1

2.1.2 Procedures

1. 3-ONOP-059.9, Excessive Quadrant Power Tilt Ratio
2. 0-OP-059.4, Operation of the Movable Incore Detectors
3. 3-OSP-059.5, Power Range Nuclear Instrumentation Shift Checks and Daily Calibration
4. 0-OSP-059.13, Core Map Analysis and Peaking Factor Verification

2.1.3 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. Rx-25, Program Thermdat Documentation

2.2 Records Required

2.2.1 The date, time, and section completed shall be logged in the Reactor Control Operator (RCO) logbook(s). Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.)

2.2.2 Route completed copies of the below listed item(s) to Reactor Supervisor for review prior to transmittal to QA Records:

1. Attachment 1
2. Attachment 2
3. Attachment 3
4. Plant Curve Book, Section 5, Figure 11, Thermocouple QPTR Calculation or equivalent

2.2.3 Completed copies of the below listed item(s) document the compliance with Technical Specification surveillance requirements and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. Attachment 1
2. Attachment 2
3. Attachment 3
4. Plant Curve Book, Section 5, Figure 11, Thermocouple QPTR Calculation or equivalent

2.2.4 Completed copies of the below listed item(s) shall be retained in the Nuclear Plant Supervisor's file until the next performance of that section, enclosure, or attachment:

1. None

2.3 Commitment Documents

2.3.1 None

3.0 PREREQUISITES

3.1 None

4.0 PRECAUTIONS/LIMITATIONS

4.1 The following annunciators are automatically defeated at power levels less than 50 percent:

4.1.1 B 2/2 - POWER RANGE UPPER DET HI FLUX DEV/AUTO DEFEAT

4.1.2 B 2/3 - POWER RANGE LOWER DET HI FLUX DEV/AUTO DEFEAT

4.2 **IF** reactor power is greater than 50 percent **AND** both of the following annunciators are operable, **THEN** the excore NIS QPTR, Subsection 7.1 or 7.2 of this procedure shall be performed at least once per 7 days. (N/A for Incore Thermocouple QPTR when RTP is less than 75 percent of RTP)

4.2.1 B 2/2 - POWER RANGE UPPER DET HI FLUX DEV/AUTO DEFEAT

4.2.2 B 2/3 - POWER RANGE LOWER DET HI FLUX DEV/AUTO DEFEAT

4.3 **IF** reactor power is greater than 50 percent **AND** any of the following annunciators are **NOT** operable, **THEN** Subsection 7.1 or 7.2 of this procedure should be performed at least once per 8 hours **AND** shall be performed at least once per 12 hours. [Tech Spec 3.0.2 applies]

4.3.1 B 2/2 - POWER RANGE UPPER DET HI FLUX DEV/AUTO DEFEAT

OR

4.3.2 B 2/3 - POWER RANGE LOWER DET HI FLUX DEV/AUTO DEFEAT

4.4 **IF** either Annunciator B 2/2 **OR** B 2/3 of Subsection 4.3 is declared out of service for 8 hours, **AND** NIS QPTR can NOT be performed, **THEN** notify Reactor Engineering that a core exit thermocouple QPTR **OR** a flux map utilizing Subsection 7.3 will be required within 4 hours, to comply with the 12 hour ACTION statement [Tech Spec 4.2.4.2]. [Tech Spec 3.0.2 applies]

4.5 **IF** reactor power is less than 75 percent **AND** 1 power range nuclear instrument detector is out of service, **THEN** the excore NIS QPTR using the remaining 3 operable power range channels, Subsection 7.1 or 7.2 of this procedure should be performed at least once per 8 hours **AND** shall be performed at least once per 12 hours. [Tech Spec 3.0.2 applies]

4.6 **IF** reactor power is greater than or equal to 75 percent **AND** 1 power range nuclear instrument detector is out of service, **THEN** the excore NIS QPTR should be performed at least once per 8 hours **AND** shall be performed at least once per 12 hours using: [Tech Spec 3.0.2 applies]

4.6.1 The remaining three operable power range channels,

AND EITHER

4.6.2 Two sets of four symmetric thimble locations (E11, H03, C08, L11, H13, E05, N08 and L05)

OR

4.6.3 A full-core flux map consisting of at least 16 thimbles with 2 per quadrant

4.6.4 A core exit thermocouple QPTR calculation

4.7 **IF** the one power range nuclear instrumentation detector is declared out of service longer than 8 hours, **THEN** notify Reactor Engineering that a core exit thermocouple QPTR **OR** a flux map utilizing Subsection 7.3, will be required within 4 hours to comply with the 12 hour ACTION statement [Tech Spec 4.2.4.2]. [Tech Spec 3.0.2 applies]

4.8 **IF** reactor power is greater than 50 percent **AND** the actual QPTR is greater than 2.0 percent, **THEN** this procedure shall be performed at least once per hour.

4.9 Prior to taking a nuclear instrumentation drawer out of service to install new currents, a QPTR shall be performed using Attachment 2 with 4 power range nuclear instrumentation detectors. This QPTR will satisfy the intent of Tech Spec Table 3.3-1, Item 2, ACTION STATEMENT 2c. and will confirm that QPTR is within the limit for the next 12 hours. A QPTR using core exit thermocouple QPTR **OR** the flux mapping system is not required per Tech Spec 4.2.4.2. This evolution should be repeated prior to each time an NIS drawer is taken out of service.

4.10 **IF** reactor Power is greater than 75 percent, **THEN** the THERMOCOUPLE QPTR, Subsection 7.3 should be performed once per 7 days. (N/A when less than 75 percent RTP)

5.0 SPECIAL TOOLS/EQUIPMENT

5.1 **IF** the NIS QPTR is calculated to be greater than 2.0 percent using detector currents, **THEN** a Digital Voltage Multi Meter will be needed.

6.0 ACCEPTANCE CRITERIA

6.1 The actual QPTR is less than or equal to 1.02 percent.

7.0 PROCEDURE

NOTES

- *At least three power range nuclear instrumentation channels must be in service to calculate QPTR using excore detectors.*
- *If only three excore NIS channels are in service, Subsections 7.1 and 7.3 or Subsections 7.2 and 7.3 shall be performed. (N/A for Incore Thermocouple QPTR when RTP is less than 75 percent)*
- *If only 3 excore NIS channels are in service, and reactor power is greater than or equal to 75 percent, Subsections 7.1 and 7.3, or Subsections 7.2 and 7.3 shall be performed within 12 hours.*
- *Tech Spec 3.0.2 applies to this procedure if either:*

  (a) The one power range nuclear instrumentation detector declared out of service, or

  (b) Annunciator B 2/2 - POWER RANGE UPPER DET HI FLUX DEV/AUTO DEFEAT or Annunciator B 2/3 - POWER RANGE LOWER DET HI FLUX DEV/AUTO DEFEAT declared out of service.

  Is returned to service within the specified time interval of Tech Spec 3/4.2.4, completion of the ACTION requirements of Tech Spec is NOT required.
- *If reactor power is greater than or equal to 75 percent and the 1 power range nuclear instrument detector declared out of service in Subsection 4.6 is declared back in service within 12 hours, the actions of Subsection 4.6 do NOT apply.*

7.1 Determine NIS QPTR using ATTACHMENT 1 as follows:

7.1.1 Read and record the top and bottom detector current for all in service power range nuclear instrumentation channels (meter face).

7.1.2 Record the 100 percent power current values for each in service power range nuclear instrumentation detector.

7.1.3 Refer to plant curve book for the 100 percent power current values.

7.1.4 Complete calculations on Attachment 1.

7.1.5 **IF** QPTR is treater than 2.0 percent, **THEN** perform Subsection 7.2.

NOTES

- *If a core exit THERMOCOUPLE QPTR is desired, Subsection 7.3 may be performed at any time.*
- *A satisfactory THERMOCOUPLE QPTR is not required to satisfy the weekly surveillance as per Tech Spec 4.2.4.1a.*

7.3 **IF** any power range nuclear instrumentation channel is **NOT** in service **AND** reactor power is greater than or equal to 75 percent, **THEN** direct Reactor Engineering to verify, within 12 hours, NIS QPTR as follows:

7.3.1 Obtain a copy or the equivalent of Plant Curve Book, Section 5, Figure 11, THERMOCOUPLE QPTR CALCULATION, for Unit 3.

7.3.2 Record the temperature for all 16 core exit thermocouple locations specified on THERMOCOUPLE QPTR CALCULATION using QSPDS or ERDADS display and complete calculations.

7.3.3 **IF** any of the 16 core exit thermocouples listed on THERMOCOUPLE QPTR CALCULATION is **NOT** in service, **THEN** perform the following:

1. DO NOT USE THERMOCOUPLE QPTR CALCULATION to calculate QPTR.

NOTE

A minimum of 16 detector thimbles with a minimum of 2 detector thimbles per core quadrant are required to be operable to calculate QPTR using the Movable Incore Detection System except when using the following 2 sets of 4 symmetric thimbles:

C8, N8, E5, L5, E11, L11, H3 AND H13 [Technical Specification 3.3.3.2]

2. Determine QPTR using two sets of four symmetric thimble locations using 0-OSP-059.13, CORE MAP ANALYSIS AND PEAKING FACTOR VERIFICATION, **AND** complete Attachment 3.

OR

3. Determine QPTR using full-core flux map (at least 16 thimbles with 2/Quadrant minimum) using 0-OSP-059.13, CORE MAP ANALYSIS AND PEAKING FACTOR VERIFICATION, **AND** complete Attachment 3.

OR

4. Revise the Plant Curve Book, Section 5, Figure 11, utilizing 16 operable thermocouples **AND** return to Step 7.3.1.

7.4 **IF** the actual QPTR is greater than 2.0 percent, **OR** Subsection 7.3 can NOT be performed within 12 hours, **THEN** go to 3-ONOP-059.9, EXCESSIVE QUADRANT POWER TILT RATIO, **AND** notify Rx Engineering.

7.5 Verify all log entries specified in Subsection 2.2 have been recorded.

7.6 Notify the NPS/ANPS of the results of this procedure.

END OF TEXT

ATTACHMENT 1
(Page 1 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

1. Date: _____ Time _____ Initials: _____

2. Determination normalized detector currents:

Upper Section Normalized Detector Currents			
N41 Top Current	=	micro amps	=
100 Percent Top Current		micro amps	
N42 Top Current	=	micro amps	=
100 Percent Top Current		micro amps	
N43 Top Current	=	micro amps	=
100 Percent Top Current		micro amps	
N44 Top Current	=	micro amps	=
100 Percent Top Current		micro amps	
Upper Section Normalized Current Total =			

Lower Section Normalized Detector Currents			
N41 Bottom Current	=	micro amps	=
100 Percent Bottom Current		micro amps	
N42 Bottom Current	=	micro amps	=
100 Percent Bottom Current		micro amps	
N43 Bottom Current	=	micro amps	=
100 Percent Bottom Current		micro amps	
N44 Bottom Current	=	micro amps	=
100 Percent Bottom Current		micro amps	
Lower Section Normalized Current Total =			

ATTACHMENT 1
(Page 2 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

3. Determination average normalized power:

Average Upper Section Normalized Power
Upper Section Normalized Current Total / Upper detectors used (3 or 4) = _____ =

Average Lower Section Normalized Power
Lower Section Normalized Current Total / Lower detectors used (3 or 4) = _____ =

4. Determine QPTR:

Upper Section Tilt Ratio
Largest Upper Section Normalized Detector Current / Average Upper Section Normalized Power = _____ =

Lower Section Tilt Ratio
Largest Lower Section Normalized Detector Current / Average Lower Section Normalized Power = _____ =

5. NIS QPTR = highest Section QPTR = _____

6. NIS QPTR is less than or equal to 1.02 [TS 3.2.4] (Circle one): NO YES

Performed by: _____ Date: _____ Time: _____

Reviewed by: _____

Approved by: _____
(NPS or ANPS)

KEY

ATTACHMENT 1
(Page 1 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

1. Date: _____ Time _____ Initials: _____

2. Determination normalized detector currents:

Upper Section Normalized Detector Currents				
N41 Top Current / 100 Percent Top Current	=	200 micro amps / 205 micro amps	=	.9756
N42 Top Current / 100 Percent Top Current	=	150 micro amps / 155 micro amps	=	.9677
N43 Top Current / 100 Percent Top Current	=	160 micro amps / 154 micro amps	=	1.0390
N44 Top Current / 100 Percent Top Current	=	180 micro amps / 184 micro amps	=	.9783
Upper Section Normalized Current Total			=	3.9606

Lower Section Normalized Detector Currents				
N41 Bottom Current / 100 Percent Bottom Current	=	165 micro amps / 169 micro amps	=	.9763
N42 Bottom Current / 100 Percent Bottom Current	=	160 micro amps / 160 micro amps	=	1.0000
N43 Bottom Current / 100 Percent Bottom Current	=	130 micro amps / 127 micro amps	=	1.0236
N44 Bottom Current / 100 Percent Bottom Current	=	165 micro amps / 167 micro amps	=	.9880
Lower Section Normalized Current Total			=	3.9879

ATTACHMENT 1
(Page 2 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

3. Determination average normalized power:

Average Upper Section Normalized Power			
Upper Section Normalized Current Total / Upper detectors used (3 or 4)	=	3.9606 / 4	= .9902

Average Lower Section Normalized Power			
Lower Section Normalized Current Total / Lower detectors used (3 or 4)	=	3.9879 / 4	= .9970

4. Determine QPTR:

Upper Section Tilt Ratio			
Largest Upper Section Normalized Detector Current / Average Upper Section Normalized Power	=	1.0390 / .9902	= 1.049

Lower Section Tilt Ratio			
Largest Lower Section Normalized Detector Current / Average Lower Section Normalized Power	=	1.0236 / .9970	= 1.0267 (~~70~~)

5. NIS QPTR = highest Section QPTR = 1.049

6. NIS QPTR is less than or equal to 1.02 [TS 3.2.4] (Circle one): (NO) YES

Performed by: _____ Date: _____ Time: _____

Reviewed by: _____

Approved by: _____
(NPS or ANPS)

/JBS/ld/lr/lr

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 IS AT 80 % POWER WHEN IT BECOMES NECESSARY TO PERFORM MAINTENANCE ON THE MOTOR FOR MOV-3-1404, 3B STM. SUPPLY TO AUX. FEEDWATER PUMPS.

2. THE UNIT 3 ANPS HAS REVIEWED A CLEARANCE REQUEST ON MOV-3-1404.

3. THE CLEARANCE REQUEST HAS BEEN GIVEN TO THE ADMIN RCO WITH DIRECTIONS TO RESEARCH AND WRITE A CLEARANCE ORDER.

4. PCON IS NOT AVAILABLE FOR CLEARANCE RESEARCH AND PREPARATION.

5. ALL TECHNICAL SPECIFICATION ISSUES ASSOCIATED WITH THE REMOVAL FROM SERVICE OF MOV-3-1404 HAVE ALREADY BEEN ADDRESSED.

INITIATING CUE:

YOU ARE THE ADMIN RCO AND YOU HAVE BEEN DIRECTED TO RESEARCH AND WRITE A CLEARANCE ORDER TO MECHANICAL MAINTENANCE ON MOV-3-1404 TO REMOVE THE MOTOR FROM THE VALVE.

ATTACHMENT 4 (Page 1 of 2)

CLEARANCE ORDER

Unit No. 03		Ind Verif Required (Y/N) Y
Clear.Order #	System #	Originator
3-99-05-085		RCO NAME HERE

Principal Equipment

Instructions

Clearance Approval Signatures

Assistant Nuclear Plant Supv Ind Review/Authorization _____ (Signature) — Safety Related ☐ Risk Significant ☐

Nuclear Plant Supervisor Authorization (Non-Outage) Notification (Outage) _____ (Signature) (N/A if not Tech Spec or Safety related) — Tech Spec Related ☐ Load Threatening ☐ Load Limiting ☐

Issued By	IV'd By	Released By	IV'd By

Dept	Controller Acceptance	Date/Time	Controller Release	Date/Time
Ops				
Mech				
Elec				
I&C				
Const				
Tech				
Relay				
other				

ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS

ATTACHMENT 4
(Page 2 of 2)

Clearance #: 3-99-05-085

CLEARANCE ORDER

ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01201013100

JOB CLASSIFICATION: RCO

JPM TITLE: WRITE EQUIPMENT CLEARANCE ORDERS

JPM NUMBER: 01201013100 JPM TYPE: NORMAL PATH

JPM REV. DATE: 08/31/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. THE CLEARANCE ORDER IS RESEARCHED.

2. THE REQUIRED CLEARANCE INFORMATION IS ENTERED ON THE CLEARANCE ORDER FORM.

REQUIRED MATERIALS:

1. 0-ADM-212, IN-PLANT EQUIPMENT CLEARANCE ORDERS
2. ACCESS TO PLANT P&IDs
3. BLANK CLEARANCE ORDER FORM

REFERENCES:

1. 0-ADM-212, IN-PLANT EQUIPMENT CLEARANCE ORDERS

TERMINATING CUES:

THE CLEARANCE ORDER FORM IS COMPLETED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 IS AT 80 % POWER WHEN IT BECOMES NECESSARY TO PERFORM MAINTENANCE ON THE MOTOR FOR MOV-3-1404, 3B STM. SUPPLY TO AUX. FEEDWATER PUMPS.

2. THE UNIT 3 ANPS HAS REVIEWED A CLEARANCE REQUEST ON MOV-3-1404.

3. THE CLEARANCE REQUEST HAS BEEN GIVEN TO THE ADMIN RCO WITH DIRECTIONS TO RESEARCH AND WRITE A CLEARANCE ORDER.

4. PCON IS NOT AVAILABLE FOR CLEARANCE RESEARCH AND PREPARATION.

5. ALL TECHNICAL SPECIFICATION ISSUES ASSOCIATED WITH THE REMOVAL FROM SERVICE OF MOV-3-1404 HAVE ALREADY BEEN ADDRESSED.

INITIATING CUES:

YOU ARE THE ADMIN RCO AND YOU HAVE BEEN DIRECTED TO RESEARCH AND WRITE A CLEARANCE ORDER TO MECHANICAL MAINTENANCE ON MOV-3-1404 TO REMOVE THE MOTOR FROM THE VALVE.

( ) **ELEMENT: 1**

RESEARCH THE CLEARANCE ORDER.

STANDARDS:

__1. OBSERVED MOV-1404 PLACARD ON THE CONSOLE TO DETERMINE BREAKER NUMBER.

Cue: When the operator has identified how to determine the breaker number for MOV-1404, tell the operator: "Breaker number 30833."

__2. REVIEWED P&ID 5613-M-3075, SHT.1.

__3. REVIEWED P&ID 5613-M-3072, SHT. 1.

EVALUATOR'S NOTES:

NOTE: This clearance would normally be written in the Control Room. Operations' practice is to determine breaker numbers from the component placard.

(C) **ELEMENT: 2**

ENTER BREAKER 30833 ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (1)

__2. ENTERED THE CLEARANCE TAG NUMBER. (1)

__3. ENTERED THE COMPONENT ID NUMBER: 30833

__4. ENTERED THE COMPONENT NAME: "480V BKR TO MOV-3-1404 AFW PUMP STM SUPPLY MOV".

__5. ENTERED THE ISSUED ACTION REQUIRED:" PLACE IN OFF."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

NOTE 3: Standard 2 is not critical to this element.

(C) **ELEMENT: 3**

ENTER INLET ISOLATION VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (2)

__2. ENTERED THE CLEARANCE TAG NUMBER. (2)

__3. ENTERED THE COMPONENT ID NUMBER: 3-10-219.

__4. ENTERED THE COMPONENT NAME: "MAIN STEAM LINE B TO AFW PUMP STEAM SUPPLY STOP CHECK VALVE".

__5. ENTERED THE ISSUED ACTION REQUIRED:" LOCK CLOSE." (See Note 1.)

EVALUATOR'S NOTES:

NOTE 1: It is Operations' practice to relock any valve that is normally locked when the valve is placed on a clearance. This is done to prevent losing the lock. It is not required by ADM-212. Therefore the relocking of the valve while on clearance is not critical to this Standard.

NOTE 2: Steps can be done in any order.

NOTE 3: The exact wording shown for the component name is not critical.

NOTE 4: Standard 2 is not critical to this element.

(C) **ELEMENT: 4**

ENTER OUTLET ISOLATION VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (3)

__2. ENTERED THE CLEARANCE TAG NUMBER. (3)

__3. ENTERED THE COMPONENT ID NUMBER: AFSS-3-006.

__4. ENTERED THE COMPONENT NAME: "ISO VLV IN STM SUPPLY HDR TO AUX FW TURBINES"

__5. ENTERED THE ISSUED ACTION REQUIRED: "LOCK CLOSE." (See Note 1.)

EVALUATOR'S NOTES:

NOTE 1: It is Operations' practice to relock any valve that is normally locked when the valve is placed on a clearance. This is done to prevent losing the lock. It is not required by ADM-212. Therefore the relocking of the valve while on clearance is not critical to this Standard.

NOTE 2: Steps can be done in any order.

NOTE 3: The exact wording shown for the component name is not critical.

NOTE 4: Standard 2 is not critical to this element.

(C) **ELEMENT: 5**

ENTER OUTLET ISOLATION VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (3)

__2. ENTERED THE CLEARANCE TAG NUMBER. (3)

__3. ENTERED THE COMPONENT ID NUMBER: AFSS-3-007.

__4. ENTERED THE COMPONENT NAME: "ISO VLV IN STM SUPPLY HDR TO AUX FW TURBINES"

__5. ENTERED THE ISSUED ACTION REQUIRED: "LOCK CLOSE." (See Note 1.)

EVALUATOR'S NOTES:

NOTE 1: It is Operations' practice to relock any valve that is normally locked when the valve is placed on a clearance. This is done to prevent losing the lock. It is not required by ADM-212. Therefore the relocking of the valve while on clearance is not critical to this Standard.

NOTE 2: Steps can be done in any order.

NOTE 3: The exact wording shown for the component name is not critical.

NOTE 4: Standard 2 is not critical to this element.

(C) **ELEMENT: 6**

ENTER STEAM TRAP INLET VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (5)

__2. ENTERED THE CLEARANCE TAG NUMBER. (5)

__3. ENTERED THE COMPONENT ID NUMBER: ST-3-1412A

__4. ENTERED THE COMPONENT NAME: "S/G B STM TO AFW PP TURBINE ST INLET ISOL VLV."

__5. ENTERED THE ISSUED ACTION REQUIRED: "CLOSE."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

NOTE 3: Standard 2 is not critical to this element.

(C) **ELEMENT: 7**

ENTER STEAM TRAP BYPASS VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (6)

__2. ENTERED THE CLEARANCE TAG NUMBER. (6)

__3. ENTERED THE COMPONENT ID NUMBER: ST-3-1412C

__4. ENTERED THE COMPONENT NAME: "S/G B STM TO AFW PP TURBINE ST BYPASS VLV."

__5. ENTERED THE ISSUED ACTION REQUIRED: "CLOSE."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

NOTE 3: Standard 2 is not critical to this element.

( ) **ELEMENT: 8**

ENTER CONTROL ROOM CONSOLE CONTROL SWITCH ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER. (7)

__2. ENTERED THE CLEARANCE TAG NUMBER. (N/A)

__3. ENTERED THE COMPONENT ID NUMBER: MOV-3-1404 CONTROL SWITCH

__4. ENTERED THE COMPONENT NAME:" AUX FW PMPS STM SUPPLY MTR OP ISOL VLV CNTL SW"

__5. ENTERED THE ISSUED ACTION REQUIRED: "HANG INFORMATION TAG."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

Inform the operator that this JPM is now completed.

ATTACHMENT 4 (Page 1 of 2)

CLEARANCE ORDER

Unit No. 03		Ind Verif Required (Y/N) Y
Clear.Order #	System #	Originator
3-99-05-084	075	RCO NAME HERE

Principal Equipment

MOV-3-1404 POWER SUPPLY BKR AND UPSTREAM AND DOWNSTREAM ISOLATION VLVS

Instructions

REFER TO TECH SPECS PRIOR TO ISSUING CLEARANCE
(NO TAG ON HANDWHEEL-REMOVING MOTOR)

Clearance Approval Signatures

Assistant Nuclear Plant Supv Ind Review/Authorization _____ (Signature)

Nuclear Plant Supervisor Authorization (Non-Outage) Notification (Outage) _____ (Signature)

(N/A if not Tech Spec or Safety related)

Safety Related ☒
Risk Significant ☒
Tech Spec Related ☒
Load Threatening ☐
Load Limiting ☐

Issued By	IV'd By	Released By	IV'd By

Dept	Controller Acceptance	Date/Time	Controller Release	Date/Time
Ops				
Mech				
Elec				
I&C				
Const				
Tech				
Relay				
other				

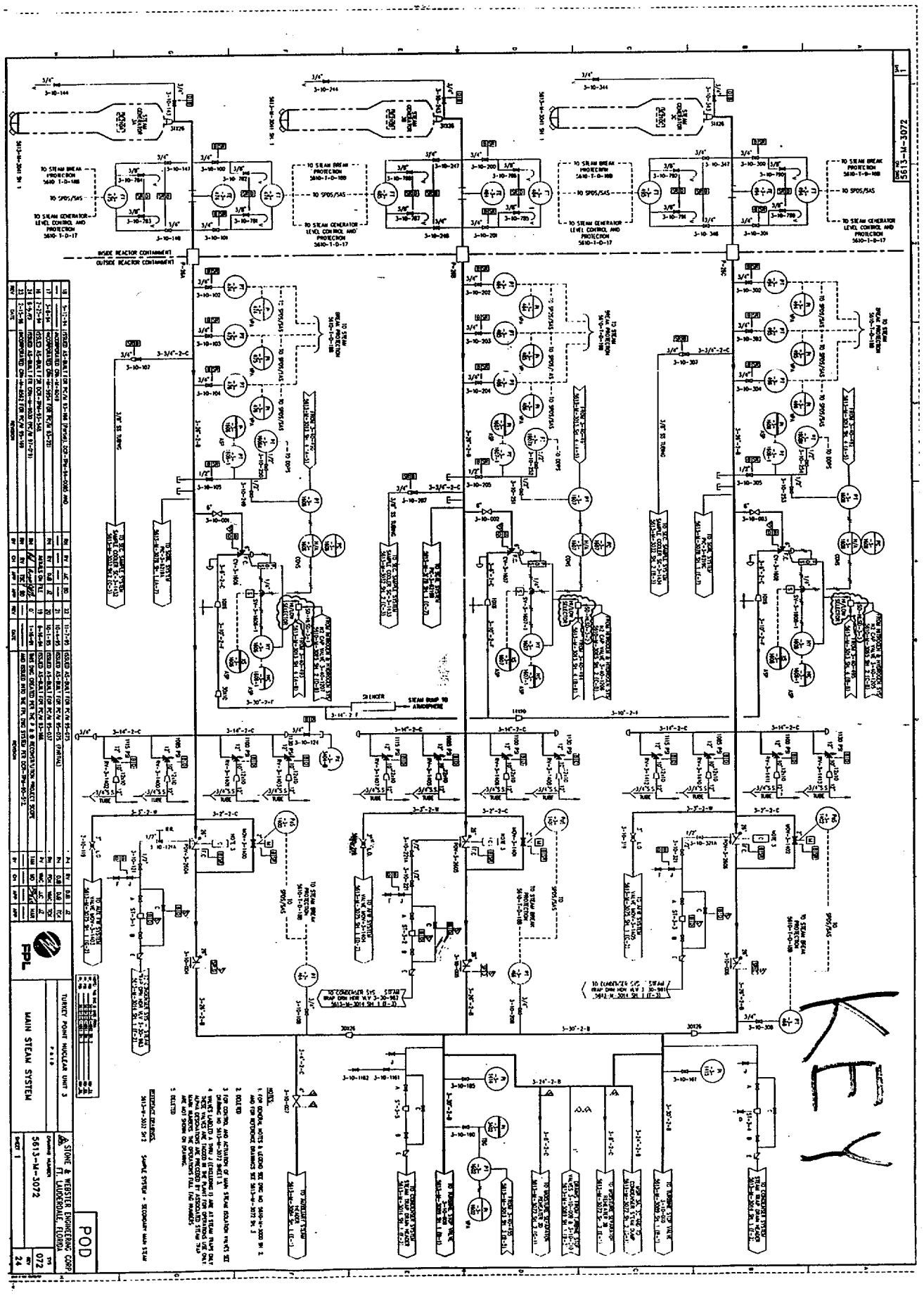
ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS
1		1	30833 480V BKR TO MOV-3-1404 AFW PUMP STM SUPPLY MOV	PLACE IN OFF							
2		2	3-10-219 MAIN STEAM LINE B TO AFW PUMP STEAM SUPPLY STOP CHECK VALVE	LOCK CLOSE							
3		3	AFSS-3-006 ISO VLV IN STM SUPPLY HDR TO AUX FW TURBINES	LOCK CLOSE							

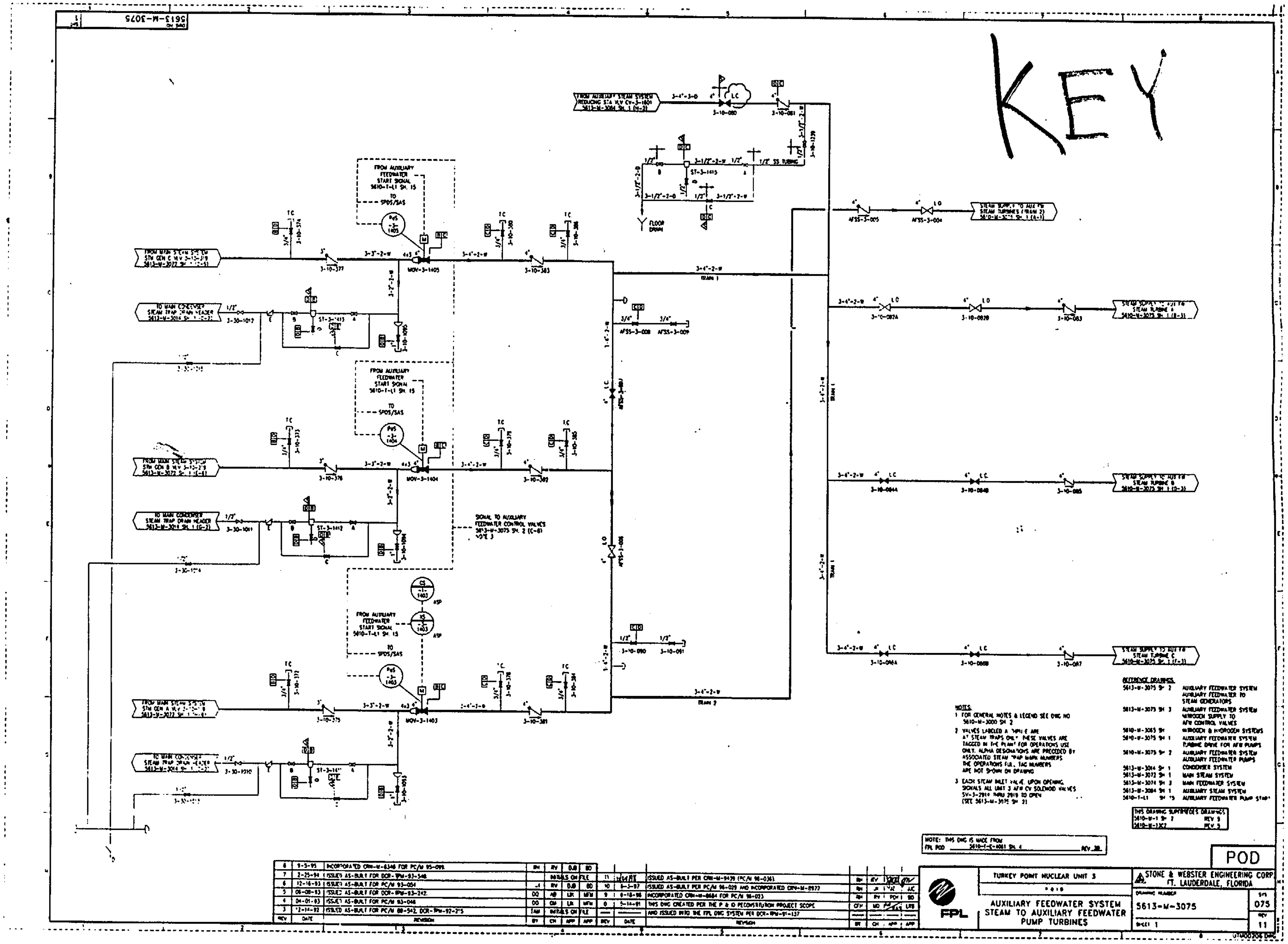
ATTACHMENT 4
(Page 2 of 2)

Clearance #: 3-99-05-084

CLEARANCE ORDER

ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS
4		4	AFSS-3-007 ISO VLV IN STM SUPPLY HDR TO AUX FW TURBINES	LOCK CLOSE							
5		5	ST-3-1412A S/G B STM TO AFW PP TURBINE ST INLET ISOL VLV	CLOSE							
6		6	ST-3-1412C S/G B STM TO AFW PP TURBINE ST BYPASS VLV	CLOSE							
7		-	HOV-3-1404-CONTROL SWITCH AUX FW PMPS STM SUPPLY HTR OP ISO VLV CNTL SW	HANG INFORMATION TAG							


MAIN STEAM SYSTEM
TURKEY POINT NUCLEAR UNIT 3
FPL
STONE & WEBSTER ENGINEERING CORP.
FT. LAUDERDALE, FLORIDA
5613-M-3072
SHEET 1
POD
SAMPLE SYSTEM - SECONDARY MAIN STEAM
INSIDE REACTOR CONTAINMENT
OUTSIDE REACTOR CONTAINMENT
TO STEAM GENERATOR LEVEL CONTROL AND PROTECTION 5610-1-0-17
TO STEAM BREAK PROTECTION 5610-1-0-188
TO SPDS/SAS
TO CONDENSER
TO AUXILIARY STEAM
TO TURBINE TOP VALVE
TO MOISTURE SEPARATOR REHEATER
TO TURBINE GLAND SEAL
TO AUXILIARY FEEDWATER PUMP TURBINE
TO STEAM GENERATOR BLOWDOWN
TO CONDENSATE STORAGE TANK
TO ATMOSPHERE


KEY
NOTES:
1 FOR GENERAL NOTES & LEGEND SEE DWG NO 5610-M-3000 SH 2
3 EACH STEAM INLET VALVE, UPON OPENING, SIGNALS ALL UNIT 3 AFW CV SOLENOID VALVES SV-3-2914 THRU 2919 TO OPEN (SEE 5613-M-3075 SH 2)
REFERENCE DRAWINGS
5613-M-3075 SH 2 AUXILIARY FEEDWATER SYSTEM AUXILIARY FEEDWATER TO STEAM GENERATORS
5613-M-3075 SH 3 AUXILIARY FEEDWATER SYSTEM NITROGEN SUPPLY TO AFW CONTROL VALVES
5613-M-3014 SH 1 CONDENSER SYSTEM
5613-M-3072 SH 1 MAIN STEAM SYSTEM
5613-M-3074 SH 3 MAIN FEEDWATER SYSTEM
5613-M-3084 SH 1 AUXILIARY STEAM SYSTEM
NOTE: THIS DWG IS MADE FROM FPL POD
POD
TURKEY POINT NUCLEAR UNIT 3
AUXILIARY FEEDWATER SYSTEM
STEAM TO AUXILIARY FEEDWATER
PUMP TURBINES
FPL
STONE & WEBSTER ENGINEERING CORP
FT. LAUDERDALE, FLORIDA
5613-M-3075
075
11
SHEET 1

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 HAS EXPERIENCED A VALID SAFETY INJECTION SIGNAL.

2. THE POST ACCIDENT HYDROGEN MONITOR HAS BEEN PLACED IN SERVICE PER 3-OP-094, SECTION 7.1 WITH THE EXCEPTION OF VALVES PAHM-3-002A AND PAHM-3-002B WHICH APPEAR TO HAVE BROKEN REACH RODS.

3. YOUR ALLOWABLE DOSE MARGIN LIMIT IS 1850 MR.

4. A SURVEY MAP IS AVAILABLE OF THE 10 FT. ELEVATION, SHOWING DOSE RATES AND ONE WAY TRAVEL TIME TO REACH THE VALVES FOR EACH OF 3 POSSIBLE ROUTES.

5. HEALTH PHYSICS PERSONNEL ARE CURRENTLY UNAVAILABLE TO PROVIDE ASSISTANCE.

INITIATING CUE:

YOU HAVE BEEN DIRECTED TO DETERMINE:

1) WHICH ROUNDTRIP PATH WOULD RESULT IN THE LOWEST RADIATION EXPOSURE.

2) IF PAHM-3-002A AND PAHM-3-002B CAN BE OPENED LOCALLY BY YOU WITHOUT EXCEEDING YOUR DOSE MARGIN LIMIT.

SURVEY DATA:

Valves are located at Survey Map Location 'A'.
Estimated time at the valves: 2 minutes.
Dose rate at the valves: 12 R/hr.

Survey Map Area	One Way Travel Time (min.)	Average Dose Rate (R/hr)
B	1	2
C	12	8
D	2	4
E	7	12
F	1	6
G	4	18

RESULTS:

Identify the Lowest Exposure Path:

_____ #3 RHR Pits _____ #4 RHR Pits _____ West End

Can the Alignment be completed within your Dose Margin Limit?

_____ Yes _____ NO

DATE _____

TIME _____

ECH _____

WP # _____

POSTED AS FOLLOWS :

(R) RADIATION AREA
(H) HIGH RAD AREA
(L) LOCKED HIGH RAD AREA
(A) AIRBORNE AREA
(C) CONTAMINATED AREA
(M) RADIOACTIVE MATERIAL
( ) _____

(B) RESPIRATORY PRO. REQUIRED
(F) HOT PARTICLE AREA
(N) NOTIFY H.P. PRIOR TO ENTRY
(S) SURVEY METER REQUIRED
( ) _____
( ) _____

___ = GENERAL AREA DOSE RA (mrem/hr -
* = CONTACT DOSE RATE
○ = SMEAR LOCATION
△ = NEUTRON DOSE RATE (mrem/hr -
□ = BETA DOSE RATE (mrem/hr -
----- = RAD BOUNDARY
-o-o-o- = CONTAMINATION BOUNDARY

INSTRUMENT	SER. #

REVIEWED BY: _____

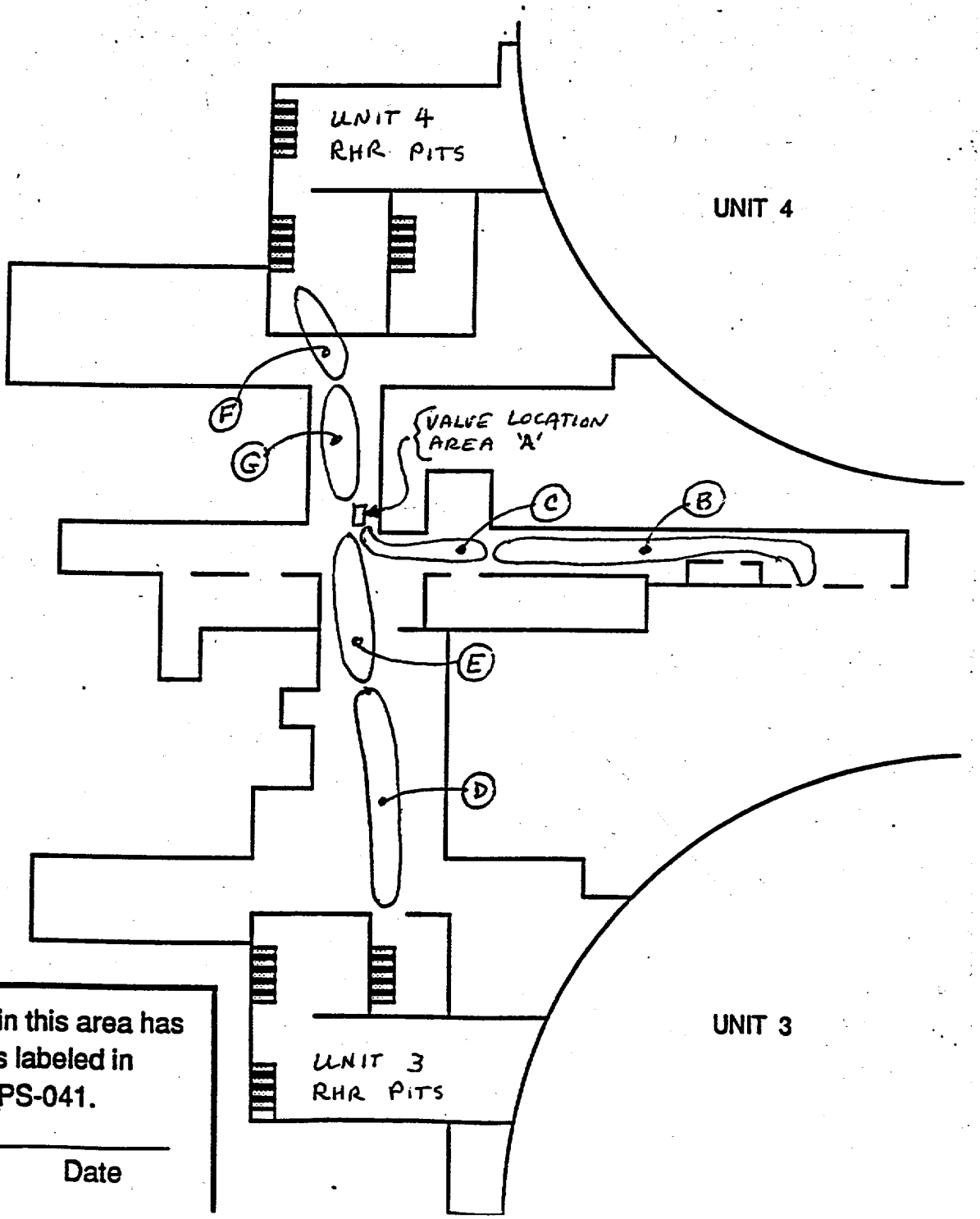
PAGE ___ of ___

SMEARS dpm/100 cm^2

1 _____	6 _____	11 _____	16 _____	21 _____	26 _____
2 _____	7 _____	12 _____	17 _____	22 _____	27 _____
3 _____	8 _____	13 _____	18 _____	23 _____	28 _____
4 _____	9 _____	14 _____	19 _____	24 _____	29 _____
5 _____	10	15	20	25	30

REMARKS _____

REFER TO LOCAL AREA POSTINGS FOR ADDITIONAL INFORMA



Radioactive Material in this area has been inspected and is labeled in accordance with O-HPS-041.

_____

HP Technician Date

JOB CLASSIFICATION: SNPO

JPM TITLE: PLACE UNIT 3 POST-ACCIDENT HYDROGEN MONITOR IN SERVICE

JPM NUMBER: 24094001510

JPM REV. DATE: 08/31/99

NUCLEAR SAFETY IMPORTANCE: 4.50

COMBINED IMPORTANCE: 4.50

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

DETERMINED THERE IS NO SUCCESS PATH FOR OPENING VALVES WITHOUT EXCEEDING DOSE MARGIN LIMITS.

REQUIRED MATERIALS:

1. 10 FOOT ELEVATION SURVEY MAP WITH ESTIMATED TRANSIT TIMES
2. CALCULATOR

REFERENCES:

NONE

TERMINATING CUES:

DETERMINED THERE IS NO SUCCESS PATH FOR OPENING VALVES.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 HAS EXPERIENCED A VALID SAFETY INJECTION SIGNAL.

2. THE POST ACCIDENT HYDROGEN MONITOR HAS BEEN PLACED IN SERVICE PER 3-OP-094, SECTION 7.1 WITH THE EXCEPTION OF VALVES PAHM-3-002A AND PAHM-3-002B WHICH APPEAR TO HAVE BROKEN REACH RODS.

3. YOUR ALLOWABLE DOSE MARGIN LIMIT IS 1850 MR.

4. A SURVEY MAP IS AVAILABLE OF THE 10 FT. ELEVATION, SHOWING DOSE RATES AND ONE WAY TRAVEL TIME TO REACH THE VALVES FOR EACH OF 3 POSSIBLE ROUTES.

5. HEALTH PHYSICS PERSONNEL ARE CURRENTLY UNAVAILABLE TO PROVIDE ASSISTANCE.

INITIATING CUES:

YOU HAVE BEEN DIRECTED TO DETERMINE:

1) WHICH ROUNDTRIP PATH WOULD RESULT IN THE LOWEST RADIATION EXPOSURE.

2) IF PAHM-3-002A AND PAHM-3-002B CAN BE OPENED LOCALLY BY YOU WITHOUT EXCEEDING YOUR DOSE MARGIN LIMIT.

( ) **ELEMENT: 1**

CALCULATE EXPOSURE AT VALVE.

STANDARDS:

__1. (12 R/HR) (1000 MR/R) (1 HR/60 MIN) (2 MIN) = 400 MR

EVALUATOR'S NOTES:

NOTE: The operator may perform the calculations in any order.

( ) **ELEMENT: 2**

CALCULATE EXPOSURE FROM UNIT 4 RHR PITS.

STANDARDS:

__1. (6 R/HR) (1000 MR/R) (1 HR/60 MIN) (1 MIN) (2 TRIPS) = 200 MR.

__2. (18 R/HR) (1000 MR/R) (1 HR/60 MIN) (4 MIN) (2 TRIPS) = 2400 MR

__3. (200 MR) + (2400 MR) + (400 MR) = 3000 MR TOTAL DOSE.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3000 mr.

( ) **ELEMENT: 3**

CALCULATE EXPOSURE FROM UNIT 3 RHR PITS.

STANDARDS:

__1. (4 R/HR) (1000 MR/R) (1 HR/60 MIN) (2 MIN) (2 TRIPS) = 267 MR.

__2. (12 R/HR) (1000 MR/R) (1 HR/60 MIN) (7 MIN) (2 TRIPS) = 2800 MR.

__3. (267 MR)+(2800 MR)+(400 MR)= 3467 MR TOTAL DOSE.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3467 mr

( ) **ELEMENT: 4**

CALCULATE EXPOSURE FROM PIPEWAY WEST END.

STANDARDS:

__1. (2 R/HR) (1000 MR/R) (1 HR/60 MIN) (1 MIN) (2 TRIPS) = 67 MR.

__2. (8 R/HR) (1000 MR/R) (1 HR/60 MIN) (12 MIN) (2 TRIPS) = 3200 MR.

__3. (67 MR)+(3200 MR)+(400 MR)= 3667 MR.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3667 mr.

(C) **ELEMENT: 5**

DETERMINE LOWEST EXPOSURE PATH.

STANDARDS:

__1. COMPARED RESULTS OF THREE CALCULATIONS AND DETERMINED THE PATH FROM UNIT 4 RHR PITS TO BE THE LOWEST EXPOSURE.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 6**

COMPARE EXPOSURE TO MARGIN.

STANDARDS:

__1. COMPARED EXPOSURE TO MARGIN AND DETERMINED ALIGNMENT COULD NOT BE MADE WITHIN ALLOWABLE MARGIN OF 1850 MR.

EVALUATOR'S NOTES:

TERMINATE JPM AT THIS POINT

ANSWER KEY

SURVEY DATA:

Valves are located at Survey Map Location 'A'.
Estimated time at the valves: 2 minutes.
Dose rate at the valves: 12 R/hr.

Survey Map Area	One Way Travel Time (min.)	Average Dose Rate (R/hr)
B	1	2
C	12	8
D	2	4
E	7	12
F	1	6
G	4	18

RESULTS:

Identify the Lowest Exposure Path:

#3 RHR Pits	#4 RHR Pits	West End
	X	

Can the Alignment be completed within your Dose Margin Limit?

Yes	NO
	X

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 IS INITIALLY AT 100 % POWER.

2. A SMALL BREAK LOCA OCCURS, > 50 GPM LEAKAGE AND WITHIN CHARGING PUMP CAPACITY, AT 0700 ON 06/18/99.

3. THE NPS DECLARES AN ALERT AT 0710.

4. THE COMMUNICATOR STARTS TO FILL OUT THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM AT 0711.

5. THE NRC RESIDENT IS NOTIFIED OF THE EVENT AT 0713.

6. THE NPS/EC APPROVES THE STATE FORM AT 0720.

7. THE COMMUNICATOR CONTACTS/NOTIFIES THE STATE/COUNTIES AT 0722.

8. METEOROLOGICAL DATA IS AS FOLLOWS:

10 METER TOWER		**SOUTH DADE TOWER**	
WIND SPEED	10 MPH	WIND SPEED	12 MPH
WIND DIRECTION	213°	WIND DIRECTION	210°
SIGMA THETA	4.0°	DELTA T	-0.6

INITIATING CUE:

YOU ARE THE COMMUNICATOR AND YOU HAVE BEEN DIRECTED TO COMPLETE THE ATTACHED STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

ATTACHMENT 1
(Page 1 of 2)

STATE OF FLORIDA NOTIFICATION MESSAGE FORM FOR NUCLEAR POWER PLANTS

☐ THIS IS A DRILL ☐ THIS IS AN ACTUAL EMERGENCY

1. A. Time/Date_____ B. Reported by: (Name/Title)_____
C. Message Number_____ D. From: ☐ Control Room ☐ TSC ☐ EOF

2. SITE ☐ CRYSTAL RIVER UNIT 3 ☐ ST LUCIE UNIT 1 ☐ TURKEY POINT UNIT 3
☐ ST LUCIE UNIT 2 ☐ TURKEY POINT UNIT 4

3. ACCIDENT CLASSIFICATION
☐ NOTIFICATION OF UNUSUAL EVENT ☐ SITE AREA EMERGENCY
☐ ALERT ☐ GENERAL EMERGENCY

4. CURRENT EMERGENCY DECLARATION TIME:_____ DATE:_____

5. INCIDENT DESCRIPTION OR UPDATE

_____

_____

6. INJURIES A. ☐ Contaminated_____ B. ☐ Non-contaminated_____

7. RELEASE STATUS:
A. ☐ No Release (Go to Item 11) C. ☐ A Release is occurring - expected duration_____
B. ☐ Potential (Possible) Release D. ☐ A Release occurred, but stopped - duration_____

8. *RELEASE RATE
A. ☐ NOBLE GASES:_____ Curies per second ☐ Measured ☐ Default
B. ☐ IODINES:_____ Curies per second ☐ Measured ☐ Default
C. ☐ Release within normal operating limits.

9. *TYPE OF RELEASE IS (Blanks are for specific nuclides, if available, i.e., I-131, Cs-137, etc.)
A. ☐ Radioactive gases_____ C. ☐ Radioactive liquids_____
B. ☐ Radioactive airborne particulates_____ D. ☐ Other_____

10. * PROJECTED OFFSITE DOSE RATE

DISTANCE	THYROID DOSE RATE (CDE)	TOTAL DOSE RATE (TEDE)
1 Mile (Site boundary)	_____ mrem/hr	_____ mrem/hr
2 Miles	_____ mrem/hr	_____ mrem/hr
5 Miles	_____ mrem/hr	_____ mrem/hr
10 Miles	_____ mrem/hr	_____ mrem/hr

11. METEOROLOGICAL DATA
A. Wind direction (from)_____ degrees C. Wind speed_____ MPH
B. Sectors affected_____ D. Stability class_____

12. UTILITY RECOMMENDED PROTECTIVE ACTIONS
A. ☐ No recommendations at this time.
B. ☐ Notify the public to take the following protective actions:
(Note: If message refers to 360° radius, use the word "ALL" under sectors.)

MILES	NO ACTION	SHELTER/SECTORS	EVACUATE/SECTORS
0 - 2			
2 - 5			
5 - 10			

13. HAS EVENT BEEN TERMINATED?: A. ☐ NO B. ☐ YES: Time_____ Date_____

RM/EC Approval: _____ Time_____ Date_____

14. MESSAGE RECEIVED BY: Name_____ Time_____ Date_____

* This information may not be available on initial notifications

*F-439/1:2

*/3:3/JR/dt/lr/ev

JOB CLASSIFICATION: ANPS/NPS

JPM TITLE: MAKE EMERGENCY NOTIFICATIONS

JPM NUMBER:02001013401 JPM TYPE:

JPM REV. DATE: 09/02/99 ALTERNATE PATH

NUCLEAR SAFETY IMPORTANCE: 4.33 TIME DEPENDENT

COMBINED IMPORTANCE: 4.33

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

STATE OF FLORIDA NOTIFICATION MESSAGE FORM COMPLETED

REQUIRED MATERIALS:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

REFERENCES:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

TERMINATING CUES:

COMPLETION OF REQUIRED FORMS

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 IS INITIALLY AT 100 % POWER.

2. A SMALL BREAK LOCA OCCURS, > 50 GPM LEAKAGE AND WITHIN CHARGING PUMP CAPACITY, AT 0700 ON 06/18/99.

3. THE NPS DECLARES AN ALERT AT 0710.

4. THE COMMUNICATOR STARTS TO FILL OUT THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM AT 0711.

5. THE NRC RESIDENT IS NOTIFIED OF THE EVENT AT 0713.

6. THE NPS/EC APPROVES THE STATE FORM AT 0720.

7. THE COMMUNICATOR CONTACTS/NOTIFIES THE STATE/COUNTIES AT 0722.

8. METEOROLOGICAL DATA IS AS FOLLOWS:

10 METER TOWER		**SOUTH DADE TOWER**	
WIND SPEED	10 MPH	WIND SPEED	12 MPH
WIND DIRECTION	213°	WIND DIRECTION	210°
SIGMA THETA	4.0°	DELTA T	-0.6

INITIATING CUE:

YOU ARE THE COMMUNICATOR AND YOU HAVE BEEN DIRECTED TO COMPLETE THE ATTACHED STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

(C) **ELEMENT: 1**

ENTER EVENT INFORMATION IN THE STATE OF FLORIDA NOTIFICATION FORM (ATT. 1)

STANDARDS:

__1. CHECKED THE DRILL BOX.

__2. ENTERED THE TIME AND DATE (0711/6-18-99). [Step 1A]

__3. ENTERED THE NEXT SEQUENTIAL MESSAGE NUMBER. [Step 1C]

__4. CHECKED FROM CONTROL ROOM. [Step 1D]

__5. CHECKED TURKEY POINT UNIT 3. [Step 2]

__6. CHECKED THE ACCIDENT CLASSIFICATION (ALERT). [Step 3]

__7. ENTERED THE TIME AND DATE OF THE CLASSIFICATION 0710 ON 06/18/99. [Step 4]

__8. ENTERED A BRIEF BUT INFORMATIVE EVENT DESCRIPTION. [Step 5]

e.g. *"Plant in mode 1 and RCS leakage > 50 gpm and RCS leakage within available charging pump capacity"*

__9. LEFT INJURIES BLANK. [Step 6]

EVALUATOR'S NOTES:

NOTE 1: Only standards 6, 7 and 8 are critical to this element.

NOTE 2: The operator's event description in Standard 8 does not have to exactly match the example given above. At a minimum the operator should include "RCS leakage > 50 gpm" or words to that effect.

( ) **ELEMENT: 2**

ENTER RELEASE INFORMATION IN THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

__1. CHECKED 'NO RELEASE'.
[Step 7A]

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 3**

ENTER METEOROLOGICAL DATA ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

STANDARDS:

__1. ENTERED WIND DIRECTION (213 deg.).
[Step 11A]

__2. ENTERED SECTORS AFFECTED (A,B,C,D).
[Step 11B]

__3. ENTERED WIND SPEED (10 mph).
[Step 11C]

__4. ENTERED STABILITY CLASS NEUTRAL (D).
[Step 11D]

EVALUATOR'S NOTES:

NOTE: Standards 2 and 4 are critical to this Element.

(C) ELEMENT: 4

ENTER PROTECTIVE ACTION RECOMMENDATIONS ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

STANDARDS:

__1. CHECKED APPROPRIATE BOX...NO RECOMMENDATIONS AT THIS TIME.
[Step 12A]

EVALUATOR'S NOTES:

None

( ) ELEMENT: 5

ENTER EVENT TERMINATION STATUS ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

STANDARDS:

__1. CHECKED APPROPRIATE BOX ...NO
[Step 13]

EVALUATOR'S NOTES:

NONE

( ) **ELEMENT: 6**

ENTER EC APPROVAL ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

STANDARDS:

__1. SIGNATURE, TIME AND DATE ENTERED (0720, 6/18/99).

EVALUATOR'S NOTES:

NONE

( ) **ELEMENT: 7**

ENTER STATE AND COUNTY WARNING POINTS NOTIFICATION INFORMATION.

STANDARDS:

__1. MESSAGE RECEIVED BY, DATE AND TIME HAVE BEEN ENTERED ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM.

EVALUATOR'S NOTES:

NONE

Tell the student the JPM is complete.

KEY

ATTACHMENT 1
(Page 1 of 2)

STATE OF FLORIDA NOTIFICATION MESSAGE FORM FOR NUCLEAR POWER PLANTS

☐ THIS IS A DRILL ☑ THIS IS AN ACTUAL EMERGENCY

1. A. Time/Date 0711/6-18-99 B. Reported by: (Name/Title)
C. Message Number 001 D. From: ☑ Control Room ☐ TSC ☐ EOF

2. SITE ☐ CRYSTAL RIVER UNIT 3 ☐ ST LUCIE UNIT 1 ☑ TURKEY POINT UNIT 3
☐ ST LUCIE UNIT 2 ☐ TURKEY POINT UNIT 4

3. ACCIDENT CLASSIFICATION
☐ NOTIFICATION OF UNUSUAL EVENT ☐ SITE AREA EMERGENCY
☑ ALERT ☐ GENERAL EMERGENCY

4. CURRENT EMERGENCY DECLARATION TIME: 0710 DATE: 6/18/99

5. INCIDENT DESCRIPTION OR UPDATE PLANT IN MODE 1 AND RCS LEAKAGE >50 GPM AND RCS LEAKAGE WITHIN AVAILABLE CHARGING PUMP CAPACITY

6. INJURIES A. ☐ Contaminated _____ B. ☐ Non-contaminated _____

7. RELEASE STATUS:
A. ☑ No Release (Go to Item 11) C. ☐ A Release is occurring - expected duration _____
B. ☐ Potential (Possible) Release D. ☐ A Release occurred, but stopped - duration _____

8. *RELEASE RATE
A. ☐ NOBLE GASES: _____ Curies per second ☐ Measured ☐ Default
B. ☐ IODINES: _____ Curies per second ☐ Measured ☐ Default
C. ☐ Release within normal operating limits.

9. *TYPE OF RELEASE IS (Blanks are for specific nuclides, if available, i.e., I-131, Cs-137, etc.)
A. ☐ Radioactive gases _____ C. ☐ Radioactive liquids _____
B. ☐ Radioactive airborne particulates _____ D. ☐ Other _____

10. * PROJECTED OFFSITE DOSE RATE

DISTANCE	THYROID DOSE RATE (CDE)	TOTAL DOSE RATE (TEDE)
1 Mile (Site boundary)	_____ mrem/hr	_____ mrem/hr
2 Miles	_____ mrem/hr	_____ mrem/hr
5 Miles	_____ mrem/hr	_____ mrem/hr
10 Miles	_____ mrem/hr	_____ mrem/hr

11. METEOROLOGICAL DATA
A. Wind direction (from) 213 degrees C. Wind speed 10 MPH
B. Sectors affected A B C D D. Stability class NEUTRAL (D)

12. UTILITY RECOMMENDED PROTECTIVE ACTIONS
A. ☑ No recommendations at this time.
B. ☐ Notify the public to take the following protective actions:
(Note: If message refers to 360° radius, use the word "ALL" under sectors.)

MILES	NO ACTION	SHELTER/SECTORS	EVACUATE/SECTORS
0 - 2			
2 - 5			
5 - 10			

13. HAS EVENT BEEN TERMINATED?: A. ☑ NO B. ☐ YES: Time _____ Date _____

RM/EC Approval: initials Time 0720 Date 6/18/99

14. MESSAGE RECEIVED BY: Name NAME Time 0722 Date 6/18/99

* This information may not be available on initial notifications

*F-439/1:2

*/3:3/JR/dt/lr/ev

ATTACHMENT 1
(Page 2 of 2)

KEY

STATE OF FLORIDA NOTIFICATION MESSAGE FORM FOR NUCLEAR POWER PLANTS

SECTOR REFERENCE:

The chart below can be used to determine sectors affected by a radiological release, through comparison wit wind direction from the meteorological recorders in the Control Room.

If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), and additional secto should be added to the protective action recommendations. For example, if the wind direction is from 78° then the affected sectors for PARs should be L, M, N; and P.

SECTOR INFORMATION:

WIND SECTOR	WIND FROM	DEGREES	WIND TOWARD	SECTORS AFFECTED
[A]	N	348-11	S	HJK
[B]	NNE	11-33	SSW	JKL
[C]	NE	33-56	SW	KLM
[D]	ENE	56-78	WSW	LMN
[E]	E	78-101	W	MNP
[F]	ESE	101-123	WNW	NPQ
[G]	SE	123-146	NW	PQR
[H]	SSE	146-168	NNW	QRA
[J]	S	168-191	N	RAB
[K]	SSW	191-213	NNE	ABC
[L]	SW	213-236	NE	BCD
[M]	WSW	236-258	ENE	CDE
[N]	W	258-281	E	DEF
[P]	WNW	281-303	ESE	EFG
[Q]	NW	303-326	SE	FGH
[R]	NNW	326-348	SSE	GHJ

STABILITY CLASSIFICATION REFERENCE:

The below chart can be used to determine atmospheric stability classification for notification to the State of Florida. Primary method is from ΔT via the South Dade (60 meter) tower. Backup method is from Sigma Theta via the Ten Meter Tower. If neither meteorological tower is available, Stability Classification shall be determined using data from National Weather Service (See EPIP-20126, Off-site Dose Calculations).

CLASSIFICATION OF ATMOSPHERIC STABILITY:

Stability Classification	Pasquill Categories	Primary Delta T (°F)	Backup Sigma Theta Range (Degrees)
Extremely unstable	A	$\Delta T \leq -1.7$	22.5 or more
Moderately unstable	B	$-1.7 < \Delta T \leq -1.5$	17.5 to 22.4
Slightly unstable	C	$-1.5 < \Delta T < -1.4$	12.5 to 17.4
Neutral	D	$-1.4 < \Delta T \leq -0.5$	7.5 to 12.4
Slightly stable	E	$-0.5 < \Delta T \leq 1.4$	3.8 to 7.4
Moderately stable	F	$1.4 < \Delta T \leq 3.6$	2.1 to 3.7
Extremely stable	G	$3.6 < \Delta T$	2.0 or less

Meteorological information needed to fill out Section 11 on the Notification Message Form is available from the Dose Calculation Worksheet (EPIP-20126). The Worksheet shall be filled out by Chemistry and given to the Emergency Coordinator.

*F-439/2:2

*/3:3/JR/dt/lr/ev

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. A GENERAL EMERGENCY HAS BEEN DECLARED.

2. AVERAGE CET TEMPERATURE INDICATES 650°F.

3. CONTAINMENT PRESSURE INDICATES 3.5 PSIG.

4. CHRRMS INDICATES 1.1 X 10^3 R/HR.

5. CONTAINMENT LEAKAGE THAT EXCEEDS TECHNICAL SPECIFICATIONS HAS BEEN IN PROGRESS FOR APPROXIMATELY THREE HOURS.

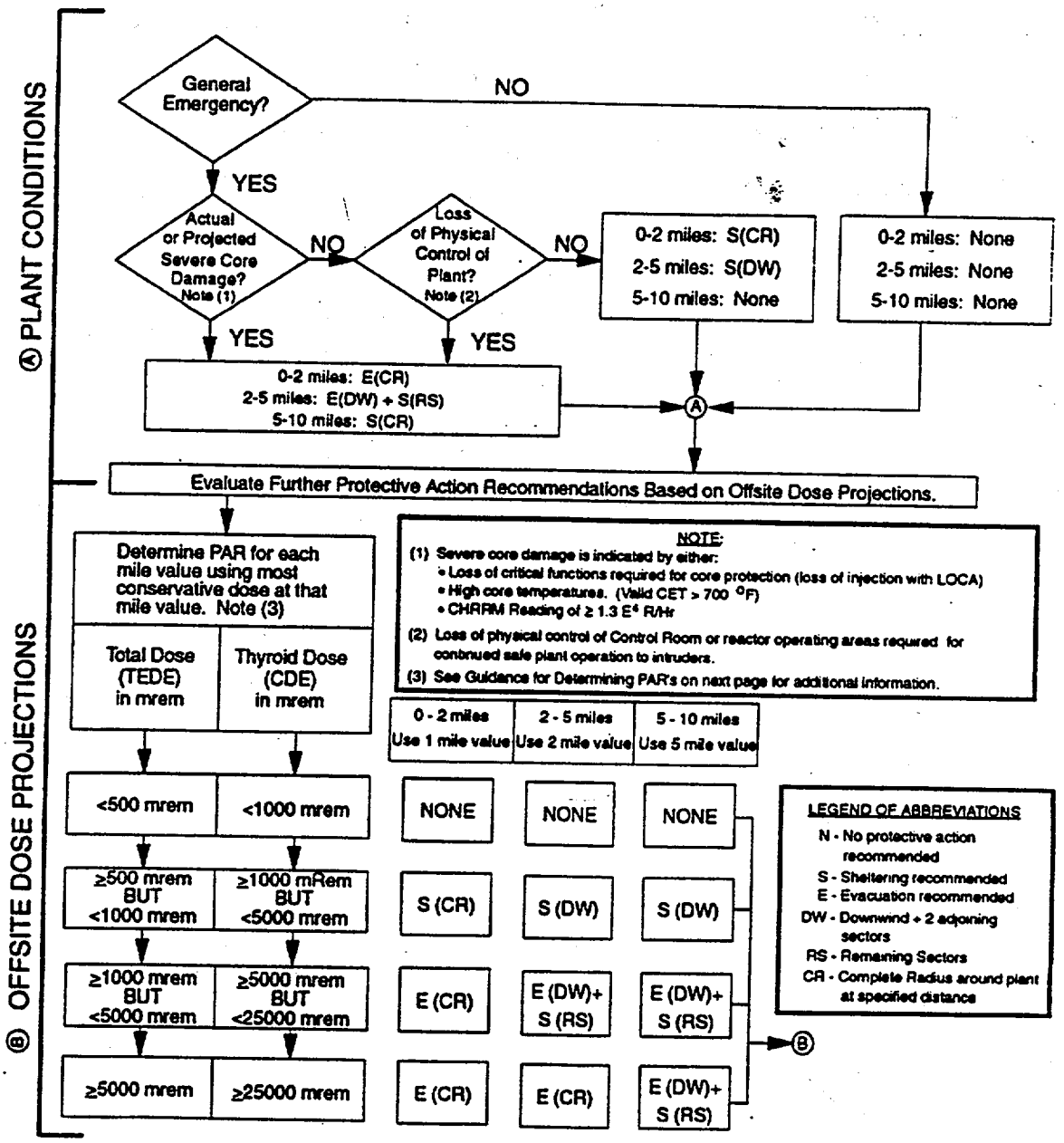
6. THE FOLLOWING OFF-SITE DOSES HAVE BEEN DETERMINED:

	1 MILE	2 MILE	5 MILE
TOTAL DOSE	1100 MREM	900 MREM	300 MREM
THYROID DOSE	4800 MREM	5100 MREM	1100 MREM

INITIATING CUE:

AS THE EMERGENCY COORDINATOR, DETERMINE PROTECTIVE ACTION RECOMMENDATIONS (PARs).

ATTACHMENT 3
(Page 1 of 4)
GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)
Worksheet



SUMMARY		0 - 2 Mi.	2 - 5 Mi.	5 - 10 Mi.
Ⓐ	PARs based on - Plant Conditions			
Ⓑ	PARs based on - Total Dose (TEDE)			
	PARs based on - Thyroid Dose (CDE)			
	Most Conservative PARs of Ⓐ & Ⓑ			

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*/3:3/JR/dt/lr/ev

JOB PERFORMANCE MEASURE WORKSHEET-JPM #02201054406

JOB CLASSIFICATION: ANPS/NPS

JPM TITLE: EVALUATE PROTECTIVE ACTION RECOMMENDATIONS

JPM NUMBER: 02201054406 JPM TYPE: NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 4.33 COMBINED IMPORTANCE: 4.33

TIME VALIDATION: 10 MINUTES

JPM REV. DATE: 08/05/99

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: __X__ SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

THE MOST CONSERVATIVE PAR HAS BEEN SELECTED FOR EACH MILE SECTOR (0-2, 2-5, 5-10), BASED ON CURRENT PLANT CONDITIONS AND/OR OFF-SITE DOSE ESTIMATES.

REQUIRED MATERIALS:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

REFERENCES:

1. 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR
2. 0-EPIP-20126, OFF-SITE DOSE CALCULATIONS

TERMINATING CUES:

THE MOST CONSERVATIVE PAR HAS BEEN EVALUATED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, asK them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. A GENERAL EMERGENCY HAS BEEN DECLARED.
2. AVERAGE CET TEMPERATURE INDICATES 650°F.
3. CONTAINMENT PRESSURE INDICATES 3.5 PSIG.
4. CHRRMS INDICATES 1.1 X 10^3 R/HR.
5. CONTAINMENT LEAKAGE THAT EXCEEDS TECHNICAL SPECIFICATIONS HAS BEEN IN PROGRESS FOR APPROXIMATELY THREE HOURS.
6. THE FOLLOWING OFF-SITE DOSES HAVE BEEN DETERMINED:

	1 MILE	2 MILE	5 MILE
TOTAL DOSE	1100 MREM	900 MREM	300 MREM
THYROID DOSE	4800 MREM	5100 MREM	1100 MREM

INITIATING CUES:

AS THE EMERGENCY COORDINATOR, DETERMINE PROTECTIVE ACTION RECOMMENDATIONS (PARs).

( ) ELEMENT: 1

LOCATE ATTACHMENT 3 IN 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR.

STANDARDS:

__1. ATTACHMENT 3 HAS BEEN LOCATED.

EVALUATOR'S NOTES:

NOTE: When the operator identifies Attachment 3 of 0-EPIP-20101, provide a working copy of the attachment.

(C) ELEMENT: 2

DETERMINE PARS FOR 0-2, 2-5, & 5-10 MILE SECTORS BASED ON PLANT CONDITIONS AND OFF-SITE DOSES.

STANDARDS:

__1. PARS SELECTED FOR EACH SECTOR HAVE BEEN BASED ON PLANT CONDITIONS.

__2. PARS SELECTED FOR EACH SECTOR HAVE BEEN BASED ON DOSE VALUES PROVIDED BY THE CHEMISTRY DEPARTMENT.

__3. THE MOST LIMITING DOSE HAS BEEN USED FOR PAR DETERMINATION.

__4. THE PAR ENTERED HAS BEEN DETERMINED USING ATTACHMENT 3, 0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR.

EVALUATOR'S NOTES:

NOTE 1: ONLY STANDARD 3 IS CRITICAL TO THIS ELEMENT.

NOTE 2: THE FOLLOWING PARS SHOULD HAVE BEEN SELECTED:

	0-2	2-5	5-10
Plant Conditions:	S(CR)	S(DW)	NONE
Total Dose:	E(CR)	S(DW)	NONE
Thyroid Dose:	S(CR)	E(DW)+S(RS)	S(DW)
Summary:	E(CR)	E(DW)+S(RS)	S(DW)

Inform the operator that the JPM has been completed.

ATTACHMENT 3
(Page 1 of 4)
GUIDANCE FOR DETERMINING PROTECTIVE ACTION RECOMMENDATIONS (PARs)
Worksheet

KEY

Ⓐ PLANT CONDITIONS

General Emergency? — NO → 0-2 miles: None; 2-5 miles: None; 5-10 miles: None

YES → Actual or Projected Severe Core Damage? Note (1) — NO → Loss of Physical Control of Plant? Note (2) — NO → 0-2 miles: S(CR); 2-5 miles: S(DW); 5-10 miles: None

Actual or Projected Severe Core Damage? Note (1) — YES → 0-2 miles: E(CR); 2-5 miles: E(DW) + S(RS); 5-10 miles: S(CR)

Loss of Physical Control of Plant? Note (2) — YES → 0-2 miles: E(CR); 2-5 miles: E(DW) + S(RS); 5-10 miles: S(CR)

Ⓐ

Ⓑ OFFSITE DOSE PROJECTIONS

Evaluate Further Protective Action Recommendations Based on Offsite Dose Projections.

Determine PAR for each mile value using most conservative dose at that mile value. Note (3)

Total Dose (TEDE) in mrem	Thyroid Dose (CDE) in mrem	0 - 2 miles Use 1 mile value	2 - 5 miles Use 2 mile value	5 - 10 miles Use 5 mile value
<500 mrem	<1000 mrem	NONE	NONE	NONE
≥500 mrem BUT <1000 mrem	≥1000 mRem BUT <5000 mrem	S (CR)	S (DW)	S (DW)
≥1000 mrem BUT <5000 mrem	≥5000 mrem BUT <25000 mrem	E (CR)	E (DW)+ S (RS)	E (DW)+ S (RS)
≥5000 mrem	≥25000 mrem	E (CR)	E (CR)	E (DW)+ S (RS)

Ⓑ

NOTE:
(1) Severe core damage is indicated by either:
- Loss of critical functions required for core protection (loss of injection with LOCA)
- High core temperatures. (Valid CET > 700 °F)
- CHRRM Reading of ≥ 1.3 E⁴ R/Hr

(2) Loss of physical control of Control Room or reactor operating areas required for continued safe plant operation to intruders.

(3) See Guidance for Determining PARs on next page for additional information.

LEGEND OF ABBREVIATIONS
- N - No protective action recommended
- S - Sheltering recommended
- E - Evacuation recommended
- DW - Downwind + 2 adjoining sectors
- RS - Remaining Sectors
- CR - Complete Radius around plant at specified distance

SUMMARY

		0 - 2 Mi.	2 - 5 Mi.	5 - 10 Mi.
Ⓐ	PARs based on - Plant Conditions	S (CR)	S (DW)	None
Ⓑ	PARs based on - Total Dose (TEDE)	E (CR)	S (DW)	None
	PARs based on - Thyroid Dose (CDE)	S (CR)	E (DW) + S (RS)	S (DW)
	Most Conservative PARs of Ⓐ & Ⓑ	E (CR)	E (DW) + S (RS)	S (DW)

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*/3:3/JR/dt/lr/ev

Facility: Turkey Point Date of Examination: 08/30/99
Exam Level: RO / SRO(I) Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Sys.064/JPM #01023006300, Perform emergency diesel generator normal start test	(M) (A) (S)	6
b. Sys.015/JPM #01059003100, Adjust high flux at S/D alarm	(D) (S) (L)	7
c. Sys.061/JPM #01075025501, S/D AFW pumps during EOPs	(N) (S) (L)	4
d Sys.010/JPM #01041029301, Respond to low pressurizer pressure	(N) (A) (S)	3
e. Sys.029/JPM #01067009300, Respond To High Containment Radiation (Purge Isolation Failure)	(N) (A) (S)	8
f. Sys. 007/ JPM # 01041012101, Reduce PRT Temperature	(D) (S)	5
g. Sys.003/JPM #01050004309, Respond to a loss of RHR flow	(D) (A) (S)	4

B.2 Facility Walk-Through

a. Sys. 006/JPM #24050032500, Realign opposite units' HHSI pumps during loss of all AC-SI required	(D) (R)	2
b. Sys.062/JPM #14003026101, Transfer instrument bus load from CVT to normal inverter (external transfer)	(M)	6
c. Sys.008/JPM #24030009300, Align emergency service water to the charging pumps	(D) (R)	8

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE 3A EDG NORMAL START TEST IS REQUIRED TO BE PERFORMED FROM THE CONTROL ROOM.

2. THE PROCEDURE HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.

3. ALL APPLICABLE PREREQUISITES HAVE BEEN SATISFIED. [Step 7.1.1.1]

4. 0-OSP-023.3, "EQUIPMENT OPERABILITY VERIFICATION WITH AN EMERGENCY DIESEL GENERATOR INOPERABLE," HAS BEEN COMPLETED. [Step 7.1.1.2]

5. THE 3A EDG IS IN NORMAL STANDBY. [Step 7.1.1.3]

6. THE NPS HAS AUTHORIZED PERFORMANCE OF THE EDG TEST. [Step 7.1.1.4]

7. ATTACHMENT 5 AND SECTION 1 OF ATTACHMENT 2 OF 3-OSP-023.1 HAVE BEEN COMPLETED. [Step 7.1.2.1]

8. COMMUNICATIONS HAVE BEEN ESTABLISHED WITH THE NPO WHO IS PERFORMING LOCAL EDG PRE-START CHECKS. [Step 7.1.2.2]

INITIATING CUE:

YOU ARE THE RCO AND HAVE BEEN NOTIFIED BY THE NPO THAT ALL PRESTART CHECKS AND ALIGNMENTS HAVE BEEN SATISFACTORILY COMPLETED THROUGH STEP 7.1.2.17.

JOB CLASSIFICATION: RCO

JPM TITLE: PERFORM THE EMERGENCY DIESEL GENERATOR NORMAL START TEST

JPM NUMBER:01023006300 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 15 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

BOOTH OPERATOR:

STEPS 1 THROUGH 3 ARE SATISFIED BY USING STATIC IC-4.

1. **RESET TO IC-1.**

2. **INSERT 3A EDG GOVERNOR FAILURE BY TOUCHING STYL INST-> A302->TRANSFORMERS & EDG 767->OVERRIDE->A DIESEL GEN SPD CHANGER->EDG 3A HYD/ELEC RAISE (SPEED)->ARM IMQ5GCRA=T.**

3. **LEAVE SIMULATOR FROZEN UNTIL READY TO BEGIN.**

TASK STANDARDS:

1. THE EDG WILL BE SYNCHRONIZED TO THE BUS IN ACCORDANCE WITH 3-OSP-023.1.

2. THE EDG WILL BE EMERGENCY STOPPED BEFORE REACHING THE 1/2 HOUR EXCEPTIONAL RATING OF 3050 KW.

REQUIRED MATERIALS:

1. 3-OSP-023.1, DIESEL GENERATOR OPERABILITY TEST
2. TWO-WAY RADIO (OPTIONAL COMMUNICATIONS DEVICE)

REFERENCES:

3-OSP-023.1, DIESEL GENERATOR OPERABILITY TEST

TERMINATING CUES:

EMERGENCY STOP OF THE EDG.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE 3A EDG NORMAL START TEST IS REQUIRED TO BE PERFORMED FROM THE CONTROL ROOM.
2. THE PROCEDURE HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.
3. ALL APPLICABLE PREREQUISITES HAVE BEEN SATISFIED. [Step 7.1.1.1]
4. 0-OSP-023.3, "EQUIPMENT OPERABILITY VERIFICATION WITH AN EMERGENCY DIESEL GENERATOR INOPERABLE," HAS BEEN COMPLETED. [Step 7.1.1.2]
5. THE 3A EDG IS IN NORMAL STANDBY. [Step 7.1.1.3]
6. THE NPS HAS AUTHORIZED PERFORMANCE OF THE EDG TEST. [Step 7.1.1.4]
7. ATTACHMENT 5 AND SECTION 1 OF ATTACHMENT 2 OF 3-OSP-023.1 HAVE BEEN COMPLETED. [Step 7.1.2.1]
8. COMMUNICATIONS HAVE BEEN ESTABLISHED WITH THE NPO WHO IS PERFORMING LOCAL EDG PRE-START CHECKS. [Step 7.1.2.2]

INITIATING CUES:

YOU ARE THE RCO AND HAVE BEEN NOTIFIED BY THE NPO THAT ALL PRESTART CHECKS AND ALIGNMENTS HAVE BEEN SATISFACTORILY COMPLETED THROUGH STEP 7.1.2.17.

( ) **ELEMENT: 1**

PERFORM CONTROL ROOM EDG PRESTART VERIFICATION.

STANDARDS:

__1. VERIFIED 3A EDG LOCKOUT RESET BLUE LIGHT AT VPA IS ON AND NOT FLASHING.
[Step 7.1.2.18]

__2. PRESTART VERIFICATIONS PERFORMED AT CONSOLE AS FOLLOWS:
[Step 7.1.2.19]

__A. VERIFIED 3A EDG EMERGENCY STOP/EMERGENCY START CONTROL SWITCH IS IN THE MID POSITION.
[Step 7.1.2.19.a]

__B. VERIFIED 3A EDG NORMAL STOP/NORMAL START CONTROL SWITCH IS IN THE MID POSITION.
[Step 7.1.2.19.b]

__C. VERIFIED 3A EDG READY-TO-START RED LIGHT IS ON.
[Step 7.1.2.19.c]

__D. VERIFIED 3A EDG NORMAL CONTROL WHITE LIGHT IS ON.
[Step 7.1.2.19.d]

__E. VERIFIED 3A EDG ENGINE IDLING AMBER LIGHT IS OFF.
[Step 7.1.2.19.e]

__F. VERIFIED 3A EDG SPEED CHANGER IS IN THE MID POSITION.
[Step 7.1.2.19.f]

__G. VERIFIED 3A EDG VOLT REGULATOR IS IN THE MID POSITION.
[Step 7.1.2.19.g]

__H. VERIFIED THE EDG A SYNC TO 3A 4KV BUS 3AA20 SYNCHROSCOPE IS OFF.
[Step 7.1.2.19.h]

__I. CHECKED EDG A TO 3A 4KV BUS 3AA20 BREAKER GREEN LIGHT IS ON WITH THE CONTROL SWITCH IN MID POSITION AND SHOWING A GREEN FLAG.
[Step 7.1.2.19.i]

__J. VERIFIED THE 3A STEAM GENERATOR FEED PUMP IS RUNNING.
[Step 7.1.2.19.j]

__K. VERIFIED THE 3A CONDENSATE PUMP IS RUNNING.
[Step 7.1.2.19.k]

__L. VERIFIED THE 3A HEATER DRAIN PUMP IS RUNNING.
[Step 7.1.2.19.l]

__3. CHECKED EDG ANNUNCIATORS F 8/2, 8/3, 8/4, AND 8/5 TO BE CLEAR.
[Step 7.1.2.20]

__4. DETERMINED THAT 3A DIESEL OIL TRANSFER PUMP SWITCH REPOSITIONING IS NOT REQUIRED.
[Step 7.1.2.21]

EVALUATOR'S NOTES:

NOTE: The operator will review the NOTES prior to Step 7.1.2.22 and may pre-stage a field operator at the Electric Fuel Priming Pump/Fuel Oil Manifold Pressure Gauge.

(C) **ELEMENT: 2**

START THE 3A EDG.

STANDARDS:

__1. PLACED THE NORMAL STOP/NORMAL START CONTROL SWITCH TO NORMAL START.
[Step 7.1.2.22]

__2. VERIFIED WITH THE NPO THAT THE ELECTRIC FUEL PRIMING PUMP STARTED WHEN THE 3A EDG STARTED.
[Step 7.1.2.22.a]

BOOTH OPERATOR CUE: When directed by the operator to inspect the electric fuel priming pump, report back that the pump operated satisfactorily.

__3. VERIFIED THE EDG STARTS AND ACCELERATES TO IDLE SPEED (A EDG ENGINE IDLING AMBER LIGHT IS ON).
[Step 7.1.2.23]

__4. DIRECTED THE FIELD OPERATOR TO PERFORM STEPS 7.1.2.24 THRU 7.1.2.27.

BOOTH OPERATOR CUE: Once the amber idling light goes out, as the field operator, state "Steps 7.1.2.24 thru 27 have been completed".

EVALUATOR'S NOTES:

NOTE: Only Standard 1 is critical to this element.

( ) **ELEMENT: 3**

RECORD AFTER START (NO LOAD) DATA.
[Step 7.1.2.28]

STANDARDS:

__1. PERFORMED WHEN THE EDG HAS ACCELERATED TO RATED SPEED.

__2. NOTIFIED FIELD OPERATOR TO PERFORM ATTACHMENT 2.

BOOTH OPERATOR CUE: ACKNOWLEDGE RCO's DIRECTION TO PERFORM ATTACHMENT 2.

__3. RECORDED THE APPLICABLE PARAMETERS ON THE AFTER START (NO LOAD) SECTION OF ATTACHMENT 1:

A. TIME EDG REACHES 900 RPM
B. EDG VOLTAGE
C. EDG HERTZ

EVALUATOR'S NOTES:

NOTE: The operator will review the CAUTIONS PRIOR TO Step 7.1.2.29.

(C) **ELEMENT: 4**

SYNCHRONIZE 3A EDG TO THE 3A 4KV BUS.

STANDARDS:

__1. PERFORMED THE FOLLOWING ACTIONS TO MATCH EDG OUTPUT PARAMETERS TO THE SYSTEM GRID:
[Step 7.1.2.29.a->g]

__A. PLACED THE EDG A SYNC TO 3A 4KV BUS 3AA20 SWITCH TO ON.
[Step 7.1.2.29.a]

__B. CHECKED THE WHITE SYNC LIGHTS TO BE CYCLING ON.
[Step 7.1.2.29.b]

__C. ADJUSTED INCOMING VOLTAGE TO MATCH RUNNING VOLTAGE.
[Step 7.1.2.29.c]

__D. ADJUSTED EDG SPEED UNTIL SYNC SCOPE INDICATOR IS ROTATING SLOWLY IN THE FAST DIRECTION.
[Step 7.1.2.29.d]

__E. ADJUSTED VOLTAGE SO INCOMING IS SLIGHTLY HIGHER THAN RUNNING.
[Step 7.1.2.29.e]

__F. VERIFIED ALL 3 PHASES OF EDG OUTPUT VOLTAGE AND 4 KV BUS VOLTAGE TO BE APPROXIMATELY EQUAL.
[Step 7.1.2.29.f]

__G. VERIFIED 3A EDG FREQUENCY IS BETWEEN 58.8 AND 61.2 HZ.
[Step 7.1.2.29.g]

__2. WHEN SYNC SCOPE INDICATOR IS POINTING TO 12 O'CLOCK, CLOSED EDG OUTPUT BREAKER.
[Step 7.1.2.29.h]

__3. VERFIED EDG OUPUT BREAKER IS CLOSED (GREEN LIGHT OFF AND RED LIGHT ON).
[Step 7.1.2.29.h.1]

__4. PLACED THE EDG BKR 3AA20 SYNCHRONIZING SWITCH TO OFF.
[Step 7.1.2.29.i]

__5. INCREASED EDG LOAD TO 1.0 MW (1000 KW) ON EDG 3A MW METER.
[Step 7.1.2.29.j]

__6. ADJUSTED EDG VOLTAGE AS REQUIRED TO PLACE EDG REACTIVE LOAD IN THE LAG.
[Step 7.1.2.29.k]

__7. DIRECTED THE NPO TO INSPECT THE EDG FOR LEAKS OR ABNORMALITIES.
[Step 7.1.2.30]

BOOTH OPERATOR CUE: ACKNOWLEDGE RCO's DIRECTION TO INSPECT THE EDG.

EVALUATOR'S NOTES:

NOTE: Standards 1.A and 2 are critical to this element.

(C) **ELEMENT: 5**

ATTEMPT TO INCREASE EDG LOAD TO TEST OPERATING LOAD.

STANDARDS:

__1. RAISED 3A EDG LOAD.
[Step 7.1.2.31]

EVALUATOR'S NOTES:

BOOTH OPERATOR: When 3A EDG load reaches 1200 Mw, fail EDG governor so load continues to increase by pressing "mast fail".

(C) **ELEMENT: 6**

SHUTDOWN THE EDG.

STANDARDS:

__1. ATTEMPTED TO CONTROL EDG LOAD - UNSUCCESSFUL.

__2. PLACED EDG EMERGENCY STOP/EMERGENCY START CONTROL SWITCH TO EMERGENCY STOP PRIOR TO REACHING 3050 KW.

EVALUATOR'S NOTES:

NOTE: Operator may attempt "normal stop". This is not cause for failure as long as "emergency stop" is ultimately used.

NOTE: Standard 1 is not critical to this element

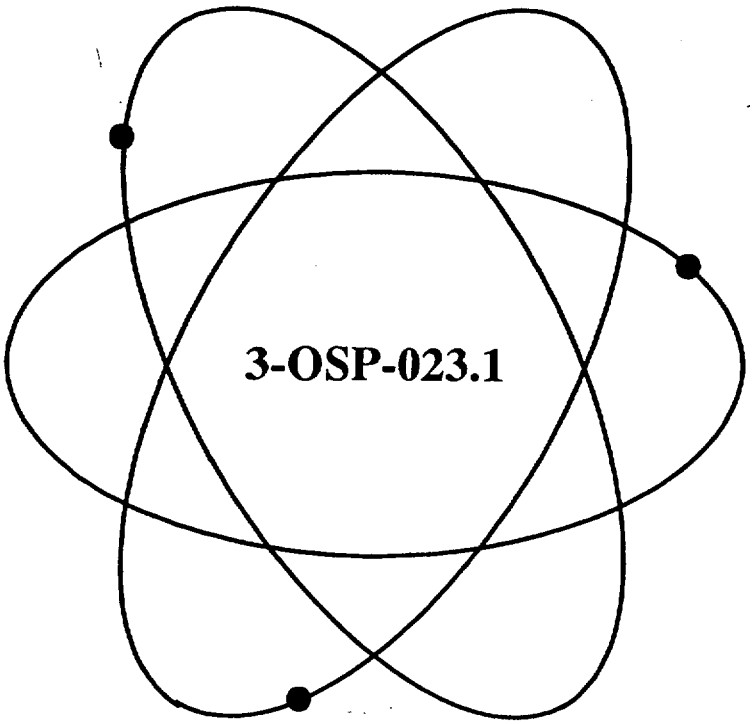
Tell the operator that the JPM is completed.

Florida Power & Light Company

Turkey Point Nuclear Plant
Unit 3

This procedure may be affected by an OTSC (On The Spot Change), verify information prior to use

Date Verified _____ Initials _____



Title:

Diesel Generator Operability Test

Safety Related Procedure	
Responsible Department:	Operations
Revision Approval Date:	6/23/99
Periodic Review Due:	10/20/02

RTSs *91-1584P, 91-2025, 91-2480, 91-3039, 91-3190, 92-1159P, 92-1168P, 92-1356P, 92-2132P, 93-0118P, 93-1194, 93-1361, 94-0065P, 94-0215P, 94-0260P, 94-0910P, 94-1446P, 96-0523, 96-1176P, 97-0027, 97-0954P, 97-0614P, 98-0710P, 98-0891P, 98-0910P, 98-0950P, 98-0972P, 99-0174, 99-0323P*

PC/Ms *86-155, 87-264, 89-159, 89-542, 93-142, 96-064, 96-089, 98-004, 98-028*

OTSCs *0059-93, 0545-93, 0629-93, 0299-94, 0371-94,0475-94,0547-94, 0596-94, 0040-95, 0335-95, 0683-95, 0789-95, 0500-96, 0677-96, 0743-96, 0862-96, 0517-97, 0440-98, 0237-99*

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OTSCs Incorporated by Word Processing

	OTSC Number	Originator	Safety Review By	Approved By	Approved By (NPS)	PNSC No.	Approval Date
1	0114-98	B. Stamp	G. Marsh	D. Morris	G. Murphy	N/A	4/11/98

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1.0 PURPOSE

1.1 This procedure provides the prerequisites, precautions/limitations, and instructional guidance for testing the operability of the Unit 3 Emergency Diesel Generators (EDG) to satisfy the surveillance requirements of Reference 2.1.1.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Technical Specifications

1. 4.8.1.1.2.a
2. 4.8.1.1.2.b
3. 4.8.1.1.2.c
4. 4.8.1.2 (partial)

2.1.2 FSAR

1. Section 8, Electrical Systems

2.1.3 Plant Drawings

1. 5613-M-3022, Sh 1, EDG Engine and Oil System DG 3A Air Starting System
2. 5613-M-3022, Sh 2, EDG Engine and Oil System DG 3B Air Starting System
3. 5613-M-3022, Sh 3, EDG Engine and Oil System DG 3A Fuel Oil
4. 5613-M-3022, Sh 4, EDG Engine and Oil System DG 3B Fuel Oil
5. 5613-M-3022, Sh 5, EDG Engine and Oil System DG 3A LO and Cooling Water
6. 5613-M-3022, Sh 6, EDG Engine and Oil System DG 3B LO and Cooling Water

2.1.4 Quality Instructions/Procedures

1. 0-ADM-034, Oil and Hazardous Material Emergency Response Plan and Spill Prevention, Control and Countermeasure (SPCC) Plan
2. 3-OP-023, Emergency Diesel Generator
3. 0-OSP-022.4, EDG Fuel Oil Transfer Pump Inservice Test
4. 3-OSP-023.2, Diesel Generator 24 Hour Full Load Test and Load Rejection
5. 0-OSP-023.3, Equipment Operability Verification with an Emergency Diesel Generator Inoperable
6. 3-PMM-022.2, Emergency Diesel Generator Quarterly Preventive Maintenance

2.1.5 Vendor/Technical Manuals

1. Schoonmaker, Instruction Manual for 2800KW, Emergency Diesel Electric Generator

2.1.6 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. PC/M 87-264, EDG 3B/4B, EDG 3A/4A and New EDG Building Tie-ins
2. PC/M 86-155, Addition of EDG Air Start Motors
3. PC/M 89-159, Flood Protection for EDG Fuel Oil Transfer Pumps
4. Power Systems telecopy letter, 11/11/87, Harry W. Falter to William Bryan
5. Morrison-Knudsen Company, Inc., telecopy letter, 7/21/88, Ken Lewis to W. E. Raasch
6. S. T. Hale to A. T. Zielonka, letter JPNS-D/S-PTN-91-0806, Unit 3 EDG Oil Level
7. J. M. Donis to T. A. Finn, letter PTN-TECH-91-128, 6/14/91, Verifying the Lubricating Oil Inventory in Storage
8. NCR N-92-0194, 4B EDG Trip
9. PC/M 93-142, Replacement of Instrumentation Tubing Material from Copper to SS and the Replacement of the Low Prelube and Air Start Tank Pressure Switches on 3A and 3B EDGs

2.1.6 (Cont'd)

10. Tech Spec Position Statement Number 94-001

11. JPNS-PTN-94-0470, Turkey Point Units 3 and 4 Emergency Diesel Generator (EDG) Cooling Water System

12. JPN-CSI-93-445, Turkey Point Units 3 and 4 EDG Testing

13. JPN-PTN-SENS-95-052, Safety Evaluation for Revision of Unit 3 Diesel Fuel Oil Transfer System Technical Specification Bases

14. PC/M 96-064, Minor Drawing Enhancements, CRN E-15591 and CRN E-15604

15. E.A. Thompson to J.C. Trejo, letter PTN-ENG-97-0465, Use of Chromates in Emergency Diesel Generator Cooling Water Systems

16. PC/M 96-089, Piping Alteration for Makeup Water Source Change to Unit 3A and B EDG Cooling Water System

17. Turkey Point Units 3/4 - Issuance of amendments regarding diesel fuel oil storage and transfer (TAC Nos. M97376/377) PLA-135

18. PC/M 98-028, Replacement of U-3 Diesel Oil Transfer Pump Piping

19. PC/M 98-004, Emergency Diesel Generator Duplex Fuel Filter Replacement

2.2 Records Required

2.2.1 The date, time and section completed shall be logged in the Reactor Control Operator (RCO) logbook. Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.).

2.2.2 Completed copies of the QA Record Page(s) for the below listed item(s) document the compliance with Technical Specification surveillance requirements and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. Subsection 7.1

2. Subsection 7.2

3. Subsection 7.3

4. Subsection 7.4

5. Subsection 7.5

2.2.2 (Cont'd)

6. Subsection 7.6
7. Attachment 1
8. Attachment 2
9. Attachment 3
10. Attachment 4
11. Attachment 5
12. Attachment 6

2.2.3 Completed copies of the below listed item(s) shall be transmitted to the Engineering Department EDG System Engineer and the IST Coordinator (Attachment 2 only) for data trending in accordance with applicable administrative programs:

1. Subsection 7.5, QA Record Page
2. Subsection 7.6, QA Record Page
3. Attachment 1
4. Attachment 2

2.2.4 Completed pages of the attachment listed below, that have the TAG column checked (√), shall be copied and transmitted to the Labeling Coordinator:

1. Attachment 5
2. Attachment 6

2.3 Commitment Documents

2.3.1 INPO Finding (OP. 3-1) 1989, Plant Status Controls, Final Response

2.3.2 LER 250-88-022-0, Diesel Generators Inoperable Due to Planned Maintenance and Fuel Filter Flow Restriction (CTRAC 88-2846)

3.0 PREREQUISITES

3.1 The Unit 3 EDG to be demonstrated operable is in the Normal Standby Condition using the applicable section of 3-OP-023, EMERGENCY DIESEL GENERATOR.

3.2 Plant records and schedules have been consulted to determine the method by which the Unit 3 EDG is to be tested.

3.3 Communications are available between the Unit 3 EDG building and the Control Room.

3.4 No other major operating evolutions are in progress or planned during the time required to test the EDG.

3.5 Ensure no maintenance activities in progress on the Unit 3 main generator lockout circuit or either of the following breakers:

3.5.1 Unit 3 Mid Bus Generator Breaker 8W68

3.5.2 Unit 3 East Bus Generator Breaker 8W33

4.0 PRECAUTIONS/LIMITATIONS

4.1 For test purposes the generator load shall not exceed 2750 KW and generator current shall not exceed 477 amps. (Basic overload rating)

4.2 The electric motor driven soak back pump shall be in operation at all times when the engine is not running. This is necessary to provide turbocharger prestart lubrication and post shutdown bearing cooling.

4.3 Do not allow the engine to run unloaded at 900 rpm for periods in excess of 4.5 hours. The Diesel Generators should not be operated at less than 25 percent load due to the accumulation of lube oil in the exhaust during light load operation (souping). Depending on the amount of souping that has taken place, an exhaust fire could result when the engine is suddenly loaded, raising exhaust temperatures quickly.

4.4 After 4.5 cumulative hours of operation at synchronous speed at loads between 0 and 20 percent (0-500KW), the engine shall be run at a minimum of 40 percent load for at least 30 minutes to clean out the oil residual that accumulates in the exhaust stack.

4.5 After 8 hours of continuous operation at idle speed the engine shall be run at a minimum of 40 percent load for at least 30 minutes to clean out the oil residual that accumulates in the exhaust stack.

4.6 During testing, only one of the Unit 3 Emergency Diesel Generators shall be paralleled with the off-site transmission network at a time.

4.7 Caution shall be used when paralleling Emergency Diesel Generators with system grid.

4.8 During testing, only one of the Emergency Diesel Generators for each unit shall have its MASTER CONTROL Switch in the LOCAL position with the RAPID START/AUTO START Bypass Switch positioned to BYPASS. When the switches are in this configuration the Emergency Diesel Generator will not automatically start upon loss of bus voltage or a Safety Injection signal.

4.9 When the Emergency Diesel Generators are in Standby Mode, Governor Control switches and Voltage Control switches at Local and Control Room panels should not be operated. Actuation of these switches will alter the preset speed or voltage settings.

4.10 All alarms shall be investigated promptly and corrective action taken to assure availability of the Unit 3 Emergency Diesel Generators.

4.11 Technical Specification requirements shall be observed and any deviation from these requirements shall be reported immediately to the Nuclear Plant Supervisor Technical Specifications should be consulted for any change in system status.

4.12 Hearing protection shall be worn in the EDG rooms when operating the Emergency Diesel Generator.

4.13 The Nuclear Plant Supervisor shall be notified immediately if any acceptance criteria is not met or any malfunction or abnormal conditions occur. This information shall also be recorded in the Remarks Section of the applicable attachment.

4.14 The following will automatically start the Emergency Diesel Generators from a normal standby condition:

4.14.1 Safety Injection Signal

4.14.2 Loss of voltage on the diesels associated 4160V AC bus.

4.14.3 Sustained undervoltage on either of the diesels associated 480V AC Vital Load Centers.

4.15 The Diesel Generator B Alternate Shutdown Isolation Switches, XS-3DG (3B12B1) and Normal-Isolate (3C370D), shall be in the NORMAL position.

4.16 Maintenance activities on the main generator lockout circuits or the Unit 3 main generator breaker can result in a trip of the diesel generator breakers.

4.17 The fuel oil duplex filter is to be operated in the single element mode. If the fuel oil pressure reaches the Hi Alert Range, the filter control valve should be switched to the opposite side, placing a clean filter element in service.

4.18 The EDGs may be restarted within 15 minutes after shutdown if the lube oil temperature is greater than 155°F. Routine starts should not be attempted for 15 minutes to 3 hours following a run or until the lube oil temperature decreases to 155°F or lower.

4.19 Automatic or manual starting of any of the following pumps while an EDG is paralleled to the bus can cause EDG trip and possible damage:

4.19.1 Reactor Coolant Pump

4.19.2 Circulating Water Pump

4.19.3 Steam Generator Feed Pump

4.19.4 Condensate Pump

4.19.5 Heater Drain Pump

4.20 Due to the possibility of inadvertently removing an Emergency Diesel Generator from service while performing maintenance on starting air systems, the NPS should perform an operability assessment on starting air. This evaluation should take into account the last time the train that is to be left in service was tested.

4.21 In a case in which either a set of EDG air start motors or associated air receivers are declared OOS, refer to Tech Spec Position Statement Number 94-001, for guidance on the associated EDGs operability requirements.

4.22 The EDG idling speed of 450 rpm is an optimum value. Idling speeds of 350 rpm to 550 rpm are acceptable. Specific values for Engine Idling Speed are not a part of EDG acceptance criteria for operation.

4.23 A minimum of two Air Reservoirs are required to be available for each set of Air Start Motors as per design basis. One pair of Air Reserviors cannot be used to provide air to both sets of Air Start Motors.

4.24 During a loss of Instrument Air or isolation of Instrument Air to the EDG day tanks, sufficient fuel is provided to allow approximately 15 hours of full load operation after a low day tank level alarm. The EDGs remain operable during this event and 3-ONOP-013, Loss of Instrument Air, provides instructions for hand loading open the day tank isolation valve if needed.

4.25 The EDG Cooling System contains chromium and its compounds which are known carcinogens. Avoid inhalation or contact with skin and eyes.

4.26 Any waste generated containing chromium is a hazardous waste and must be placed in the designated satellite accumulation drum.

4.27 Observe information identified on applicable Material Safety Data Sheets (MSDS) prior to handling and disposal of hazardous materials. Oil, cooling water, or other hazardous materials shall not be disposed of via the contaminated drain system, contact the HMC.

4.28 The EDG is to be declared out-of-service if the EDG Room Exhaust Fan fails to start and the outdoors ambient temperature is greater than 95°F. I I

5.0 SPECIAL TOOLS/EQUIPMENT

5.1 Calibrated Stopwatch (for Rapid Start)

5.2 Bucket or other container suitable for collecting fuel oil from the day tanks.

6.0 ACCEPTANCE CRITERIA

6.1 The fuel oil level in each Unit 3 Diesel Oil Day Tank and Skid Tank. combined, shall be greater than or equal to 2000 gallons.

6.2 The Unit 3 Main Fuel Oil Storage Tank fuel oil usable volume shall be greater than or equal to 38,000 gallons (Greater than or equal to 21 feet 10 inches). If using temporary fuel tank due to main storage tank cleaning, then refer to Technical Specification Section 3/4.8.1 for guidance.

6.3 During the January, April, July and October EDG test runs, the fuel transfer pump shall be demonstrated to start automatically and transfer fuel from the main fuel oil storage tank to the day tank. The fuel transfer pump shall not allow annunciation of the Hi/Lo day tank level alarm. Should this alarm annunciate, manually shut off the pump.

6.4 During the semi-annual rapid start test the EDG shall start and reach a generator voltage of 3740 to 4580 volts and frequency of 58.8 to 61.2 Hz in 15 seconds or less.

6.5 The EDG shall be synchronized, loaded to between 2300 KW and 2500 KW, and operated for at least 60 minutes with the Cooling Water System operating within design limits during steady state operation.

6.6 The EDG flowpath Systems (Fuel Oil, Air Start, etc) shall be properly aligned for standby of the EDG.

6.7 Upon completion of testing, the EDG shall be left in standby state.

6.8 Each day tank and skid tank shall be checked for, and drained of, any accumulated water after operation of the EDG for greater than or equal to 1 hour.

6.9 The lubricating oil inventory in the engine sump shall be greater than or equal to 1/2 inch below the full dipstick mark at hot idle.

6.10 At least 4 drums of lubricating oil (M&S 022-76965-0/Stock Code 0025096-3) dedicated to each Emergency Diesel Generator and the capability to transfer the lube oil into the Unit 3 EDG (hand pump and hose in storage box) shall be in storage in the stores warehouse (AREA ZB 1A).

6.11 The Air Start System check valve for the selected air start motors shall open to allow the EDG to start.

6.12 EDG Room Exhaust Fan starts and operates during the duration of the EDG run.

7.0 PROCEDURE

NOTE

Subsection 7.1 should be used for the monthly 3A EDG operability test except when utilizing Subsection 7.3, 3A EDG Local Rapid Start Test that is required every 184 days and should be performed every March and September.

7.1 3A EDG Normal Start Test

CAUTION

3A EDG is inoperable during the starting air isolation and engine barring checks performed in this section. B Train ESF equipment is required to be operable prior to using this section for testing 3A EDG. If B Train ESF equipment is out of service, 3A EDG may be tested using the rapid start test in Subsection 7.3.

INITIALS
CK'D VERIF

Date/Time Started:_____/_____

7.1.1 Initial Conditions

____ 1. All applicable prerequisites as listed in Section 3.0 are satisfied.

____ 2. Verify completion of 0-OSP-023.3, Equipment Operability Verification with an Emergency Diesel Generator Inoperable.

____ 3. 3A EDG is in Normal Standby Condition according to Subsection 5.1 of 3-OP-023, Emergency Diesel Generator.

____ 4. Permission has been obtained from the Nuclear Plant Supervisor to perform this section.

INITIALS
CK'D VERIF

7.1.2 Procedure Steps

NOTE

The valve alignment verification performance may be waived if the EDG is NOT being tested for the Tech Spec Periodic Surveillance AND a previous alignment verification is valid.

____ 1. Verify 3A EDG Systems flowpath alignment by performing Attachment 5, **AND** record performance on Attachment 2, Section 1.

____ 2. Establish communication between the Control Room **AND** the Unit 3 Diesel Generator Building.

3. At the Fuel Oil Transfer Pump Area, perform the following:

____ a. Verify 3A Diesel Oil Transfer Pump 3P10A control switch is in AUTO.

____ b. Verify the Unit 3 Main Fuel Oil Storage Tank level is greater than or equal to 21 feet, 10 inches **AND** record level on Attachment 2, Section 1.

4. Perform the following at 3A EDG:

NOTE

Makeup to EDG 3A Clg System Root Valve, 3-20-449A, is located on the lower northwest corner of the radiator grating (outside) and is operated via a reach rod protruding through the grating.

____ a. Check the Cooling Water Surge Tank level to be between the low and full marks for the STOP condition on the tank level gauge.

____ b. **IF** the water level is low, **THEN** add water to the radiator using the applicable section of 3-OP-023, EMERGENCY DIESEL GENERATOR.

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

NOTE

The skid tank gravity fills and stops filling automatically when full.

____ c. Check LI-3-3402A, EDG 3A Fuel Oil Skid Tank Level Ind, to be greater than 200 gallons (on top of the skid tank) **AND** record volume on Attachment 2, Section 1.

____ d. **IF** necessary to fill the skid tank, **THEN** depress the PUSH TO FILL pushbutton.

NOTES

- *Normal lube oil cooler outlet oil temperature should be between 110°F and 120°F.*
- *Minimum temperature for EDG operation is 85°F.*

____ e. Check TI-3-442A, EDG 3A Lube Oil Clr Oil Temp Ind, to be greater than or equal to 100°F.

____ f. Verify the dual Fuel Filter Selector Valve has a single element selected.

____ g. Check the Governor oil level to be above the mark on the sight glass.

____ h. Verify the Governor Speed Droop control knob is set to 0 percent.

____ i. Verify the Governor Load Limit control knob is set to the MAX FUEL position.

____ j. Verify the 3A Diesel Generator Overspeed Trip Lever is reset (i.e., pulled down to latch).

____ k. Verify the Governor Select switch on panel 3C370A is selected to ELECT.

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

l. Test the Reflash Annunciator Panels on 3C370C by performing the following:

____ (1) Depress the TEST (T) pushbutton on RA-1 **AND** check that all alarm lights flash.

____ (2) Depress the ACKNOWLEDGE (A) pushbutton on RA-1 **AND** check that all alarm lights go OFF except those previously in alarm.

____ (3) Depress the TEST (T) pushbutton on RA-2 **AND** check that all alarm lights flash.

____ (4) Depress the ACKNOWLEDGE (A) pushbutton on RA-2 **AND** check that all alarm lights go OFF except those previously in alarm.

NOTE

The engine oil level can only be accurately measured when the engine is hot and idling.

____ m. Verify the 3A engine oil level is greater than or equal to 1/2 inch below the full dipstick mark (Center North side of EDG).

____ n. Verify 3A EDG Starting Air Compressor oil level is between the level marks on the dipstick.

____ o. Verify 3A EDG Air Start Dryer Moisture Indicator, MI-3-6416A, desiccant is blue. (East side, waist level)

p. Verify starting air pressure is between 225 psig and 238 psig on each of the following **AND** record on Attachment 2:

____ (1) 3A EDG Air Reservoir Tanks A and B Press Ind, PI-3-3690A

____ (2) 3A EDG Air Reservoir Tanks C and D Press Ind, PI-3-3693A

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

q. Open each of the following valves until the piping is clear of moisture, **THEN** Close the valves:

____ (1) 3A EDG Air Reservoir Tank A Drain, 3-70-267A

____ (2) 3A EDG Air Reservoir Tank B Drain, 3-70-268A

____ (3) 3A EDG Air Reservoir Tank C Drain, 3-70-270A

____ (4) 3A EDG Air Reservoir Tank D Drain, 3-70-271A

____ r. Verify oil level is at midpoint in the 3A Diesel Generator Oil Bath Air Filter sightglasses (nine).

____ s. Verify the air filter inlets are free of debris.

____ t. Verify 3A EDG Crankcase Air Box Drain, 3-70-255A, open approximately 25 percent **AND** verify a container is in place to catch any effluents.

____ u. Verify the Emerg Fuel Cutoff, 3-70-131A, red trip handle is pushed in (not tripped) (West side of Engine Panel).

____ v. Verify engine cooling water temperature is between 120°F and 160°F as indicated on TI-3-446A, EDG 3A Clg Wtr Lube Oil Inlet Temp, on the instrument manifold at the front of the engine.

5. Perform the following at 3A EDG Electrical Control Panel 3C12A:

____ a. Verify the Voltmeter Switch is NOT selected to OFF.

____ b. Verify the Ammeter Switch is NOT selected to OFF.

____ c. Verify the RAPID START/AUTO START Bypass keylock switch is in the NORMAL position.

CAUTION

When the Diesel Generator is stopped, the GOVERNOR CONTROL Switch should NOT be operated. If the switch is NOT in the MID position the Nuclear Plant Supervisor is required to be notified immediately.

____ d. Check the GOVERNOR CONTROL Switch to be in the MID (neutral) position.

INITIALS
CK'D VERIF

7.1.2.5 (Cont'd)

____ e. **IF** the GOVERNOR CONTROL Switch is **NOT** in the MID position, **THEN** notify the Nuclear Plant Supervisor.

CAUTION

When the Diesel Generator is stopped, the VOLTAGE ADJUST CONTROL Switch should NOT be operated. If the switch is NOT in the MID position, the Nuclear Plant Supervisor is required to be notified immediately.

____ f. Check the VOLTAGE ADJUST CONTROL Switch to be in the MID (neutral) position.

____ g. **IF** the VOLTAGE ADJUST CONTROL Switch is **NOT** in the MID position, **THEN** notify the Nuclear Plant Supervisor.

____ h. Verify the MASTER CONTROL Switch is in the NORMAL position.

____ i. Verify the EDG Bkr 3AA20 Control Switch is in the MID (neutral) position with a green flag.

____ j. Verify the EDG Bkr 3AA20 GREEN light is ON.

____ k. Verify the EDG Bkr 3AA20 Synchronizing Switch is in OFF.

____ l. Verify the D/G Lockout Relay 186/DG (orange handle)is RESET.

m. Verify the following relay targets are CLEAR:

____ (1) Loss Of Excitation Relay 140 (LFA)

____ (2) Voltage Relay

____ (3) Reverse Power Relay

____ (4) Generator Overcurrent Relay Phases A, B, & C (3 relays)

____ (5) Differential Relay Phases A, B, & C (3 relays)

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

6. Perform the following at 3A EDG Engine Control Panel 3C13A:

____ a. Verify the Immersion Heater Control and Pump Motor Switch is ON.

____ b. Verify the 3A EDG Starting Air Compressor control switch is in AUTO.

____ c. Depress the ALARM TEST and HORN SILENCE pushbuttons **AND** check that all alarm lights are operable.

____ d. **IF** air compressor is not running, **THEN** check the Air Compressor Off GREEN light to be ON.

____ e. **IF** air compressor is running in AUTO, **THEN** check the Air Compressor On RED light to be ON.

____ f. Check the Skid Tank Level, Hi RED light to be OFF.

____ g. Check the Skid Tank Level, Lo RED light to be OFF.

____ h. Check the Local WHITE light to be OFF.

____ i. Check the Normal WHITE light to be ON.

INITIALS
CK'D VERIF

7.1.2.6 (Cont'd)

NOTE

If the following conditions are satisfied, the diesel generator Ready to Start WHITE light will be ON:

EDG Governor is selected to ELECT.
Lockout Relay is reset.
Skid Tank level is not low.
Starting air pressure is greater than 215 psig.
Engine prelube oil pressure is greater than 15 psig.
Engine prelube oil temperature is greater than 100 °F
EDG exciter field breaker is closed.
Control Power fuses are OK.
Emergency Stop Signal is NOT present.
Engine speed is less than 600 rpm.
MASTER CONTROL Switch is NOT in OFF.

____ j. Check the Ready To Start WHITE light to be ON.

____ k Check the Low Start Air Press RED light to be OFF.

____ l. Check the Control Power On GREEN light to be ON.

____ m. Check the Overspeed Trip WHITE light to be OFF.

____ n. Check the Hot Engine Alarm RED light to be OFF.

____ o. Check the Hi Crankcase Pressure AMBER light to be OFF.

____ p. Check the Low Water Pressure Trip AMBER light to be OFF.

____ q. Check the Low Lube Oil Pressure AMBER light to be OFF.

____ r. Check the Low Lube Oil Temp WHITE light to be OFF.

____ s. Check the Start Failure WHITE light to be OFF.

INITIALS
CK'D VERIF

7.1.2.6 (Cont'd)

CAUTION

When the Diesel Generator is stopped, the GOVERNOR CONTROL Switch should NOT be operated. If the switch is NOT in the MID position, the Nuclear Plant Supervisor is required to be notified immediately.

____ t. Check the GOVERNOR CONTROL Switch to be in the MID (neutral) position.

____ u. **IF** the GOVERNOR CONTROL Switch is **NOT** in the MID position, **THEN** notify the Nuclear Plant Supervisor.

____ v. Verify the NORMAL STOP/START control switch is in the MID (neutral) position.

____ w. Verify the IDLE RELEASE/START control switch is in the MID (neutral) position.

____ x. Verify the EMERG STOP/START control switch is in the MID (neutral) position.

y. Record the following prestart information on Attachment 2, Section 2:

____ (1) 3A EDG Start counter reading (inside 3C13A).

____ (2) EDG-A Total Hour Meter reading.

(3) Oil pressure indicated on 3A Diesel Gen Lube Oil Pp After filter Pressure Ind, PI-3-207A, obtained by:

____ (a) Open 3A EDG Lube Oil To Turbocharger and Gear Train PI-3-207A Isol, 3-70-288A.

____ (b) Record indicated oil pressure.

____ ____ (c) Close 3A EDG Lube Oil To Turbocharger and Gear Train PI-3-207A Isol, 3-70-288A.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

____ 7. Place the RAPID START/AUTO START Bypass keylock switch to BYPASS.

CAUTION

With the MASTER CONTROL Switch in OFF, ALL Start Signals to the Diesel Generator are Disabled.

NOTE

Placing the MASTER CONTROL switch to the OFF or LOCAL position will cause Control Room Annunciator F8/5, EDG A MASTER CONTROL SW OFF-NORMAL to actuate.

____ 8. Notify the Unit 3 RCO that the MASTER CONTROL Switch is being turned OFF.

____ 9. Place the MASTER CONTROL Switch in OFF.

10. Perform the following to ensure the engine cylinders are clear of any fluids or other contaminants:

a. Unlock and close the following air start isolation valves:

____ (1) 3A EDG Starting Air Right Side Isolation, 3-70-261A.

____ (2) 3A EDG Starting Air Left Side Isolation, 3-70-300A.

____ b. Open the engine test cocks (twenty).

____ c. Observe the state of the area around each test cock (e.g., oily, discolored, or evidence of previous drainage).

____ d. Obtain the manual engine barring tool from the North wall of the 3B EDG Room.

____ e. Remove the North cover for access to the flywheel area of 3A EDG.

____ f. Manually bar-over 3A EDG one complete revolution.

____ g. Replace the North flywheel cover.

INITIALS
CK'D VERIF

7.1.2.10 (Cont'd)

____ h. Inspect for fluids or other substances exhausted from any engine cylinder test cock (twenty places).

____ i. **IF** any abnormal findings at the engine cylinder test cocks are identified, **THEN** notify the Nuclear Plant Supervisor.

____ ____ j. Close the engine cylinder test cocks (twenty).

k. Open one Air Start Isolation Valve as follows: (N/A valve not opened)

____ ____ (1) Even month - Open and Lock 3A EDG Starting Air Right Side Isolation Valve, 3-70-261A.

____ ____ (2) Odd month - Open and Lock 3A EDG Starting Air Left Side Isolation Valve, 3-70-300A.

l. Verify air pressure is approximately 190 psig on one of the following gauges **AND** record on Attachment 2, Section 2. (N/A PI not being used):

____ (1) Even month - Air to Pinion Engaging Air Motors, PI-3-205A.

____ (2) Odd month - Air to Pinion Engaging Air Motors, PI 3-3691A.

____ m. Return the barring tool to the North wall of the 3B EDG room.

NOTE

The Cooling Water System contains chromates, and if any cooling system leakage is observed, the NPS and Chemistry are required to be notified.

____ n. Perform a general inspection around the 3A Diesel Engine and its auxiliaries **AND** notify the Nuclear Plant Supervisor of any signs of significant leakage.

____ o. Place clean white rags over the air start motor exhausts (4).

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

In order to prevent start failures of the 3A EDG, IVs in Substep 7.1.2.10 are required to be completed prior to continuing on with this section of the procedure.

____ 11. Verify independent verification requirements in Substep 7.1.2.10 have been completed prior to proceeding with this procedure.

NOTE

Returning the MASTER CONTROL switch to the NORMAL position will cause Control Room Annunciator F 8/5, EDG A MASTER CONTROL SW OFF-NORMAL to clear.

____ 12. Notify the Unit 3 RCO that the MASTER CONTROL Switch is being returned to NORMAL.

____ 13. Place the MASTER CONTROL switch to NORMAL.

____ 14. Place the RAPID START/AUTO START Bypass keylock switch to NORMAL.

____ 15. Verify the diesel generator radiator is free from debris.

CAUTION

Do not place hands on or near fan belt.

____ 16. Verify the diesel fan belt is in good condition (i.e., not frayed, twisted, etc.) and positioned properly in the pulley grooves.

____ 17. Verify the day tank level is between 4 feet 10 inches and 6 feet 2 inches on LG-3-1428A, A-Diesel Gen Day Tank Level Gauge (at the 3A EDG Day Tank (3T23A) Room) **AND** record level on Attachment 2, Section 1.

____ 18. At Unit 3 Control Room VPA, verify the 3A-EDG Lockout Reset BLUE light is ON.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

19. At Unit 3 Control Room Console, perform the following:

____ a. Verify the 3A Diesel Generator EMERGENCY STOP/EMERGENCY START control switch is in the MID (neutral) position.

____ b. Verify the 3A Diesel Generator NORMAL STOP/NORMAL START control switch is in the MID (neutral) position.

____ c. Check 3A Diesel Generator Ready To Start RED light to be ON.

____ d. Check 3A Diesel Generator Normal Control WHITE light to be ON.

____ e. Check 3A Diesel Generator Engine Idling AMBER light to be OFF.

____ f. Verify the 3A Diesel Gen Speed Changer is in the MID (neutral) position.

____ g. Verify the 3A Diesel Gen Volt Regulator is in the MID (neutral) position.

____ h. erify the EDG A Sync to 3A 4KV Bus 3AA20 Synchroscope Control Switch is OFF.

____ i. Check the EDG A to 3A 4KV Bus 3AA20 Breaker GREEN light to be ON, the control switch in the MID position **AND** the control switch has a green flag.

____ j. Verify the 3A Steam Generator Feed Pump is running **OR** is racked out **OR** both Steam Generator Feed Pumps are secured.

____ k. Verify the 3A Condensate Pump is running **OR** is racked out **OR** all Condensate Pumps are secured.

____ l. Verify the 3A Heater Drain Pump is running **OR** is racked out **OR** all Heater Drain Pumps are secured.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

20. Check that the following Control Room annunciators are clear:

____ a. F 8/2, EDG A TROUBLE

____ b. F 8/3, EDG A BKR OVERCURRENT TRIP

____ c. F 8/4, DIESEL OIL DAY TANK A HI/LO LEVEL

____ d. F 8/5, EDG A MASTER CONTROL SW OFF-NORMAL

____ 21. **IF** this run is during January, April, July, or October, **THEN** position the 3A Diesel Oil Transfer Pump 3P10A control switch to OFF.

NOTES

- *When the 3A EDG Normal Stop/Normal Start switch is placed to the Normal Start position (spring return to normal), the 3A EDG will start and accelerate to idle speed, (450 rpm), and maintain for 60 seconds before releasing to accelerate to full speed, (900 rpm).*
- *When the 3A EDG accelerates to full speed, the following actions occur:*

  a) The DG 3A Ready to Start RED light will go OFF. (600 rpm)

  b) The generator field will flash. (800 rpm)
- *Substep 7.1.2.22.a will require an Operator to be at the Electric Fuel Priming Pump or the Fuel Oil Manifold Pressure Gauge.*
- *Electric Fuel Priming Pump will start when performing Substep 7.1.2.22 and stop in less than 4 seconds.*

____ 22. Momentarily place the 3A EDG NORMAL STOP/NORMAL START switch to NORMAL START (spring return to normal).

____ a. Verify the Electric Fuel Priming Pump started when 3A EDG was started by monitoring the Fuel Oil Pressure Gauge **OR** watching the pump shaft.

____ 23. Verify the 3A EDG starts and accelerates to idle speed, 450 rpm (the DG3A Engine Idling AMBER light will be ON when the engine reaches idle speed).

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

A lack of oil on the rags indicates a failure of the lubricators for the Air Start Motors. Foreign particles (Rust, dirt, etc.) may indicate impending Air Start Motor failure.

____ 24. Remove and inspect the rags placed over the Air Start Motor exhausts for evidence of oil and foreign particles.

____ 25. **IF** NO oil is present **OR** there is evidence of foreign particles on the rags, **THEN** notify the Nuclear Plant Supervisor of a possible air start malfunction.

CAUTION

Loss of crankcase vacuum in conjunction with a decrease of one or more cylinder exhaust pyrometer reading(s) could be indicative of fuel oil line or fitting failure in the crankcase area and fuel oil intrusion of the lube oil. When fuel oil intrusion is substantiated by the smell of fuel oil at the lube oil dipstick opening, the EDG is required to be shut down and not restarted until lube oil quality (absence of fuel oil) is determined to be acceptable.

NOTE

Guidelines for Determining EDG Crankcase Vacuum/Pressure are provided in Enclosure 2.

____ 26. Slowly Open 3A EDG Crankcase Vacuum Gauge, PI-3-6679A, Isol, 3-70-283A.

____ 27. While the diesel is running, periodically monitor crankcase vacuum at PI-3-6679A.

____ a. **IF** the diesel crankcase vacuum is lost in conjunction with a decrease of one or more cylinder exhaust pyrometer readings, **THEN** notify the Nuclear Plant Supervisor that the diesel should be shutdown **AND** the lube oil quality checked.

28. **WHEN** 3A EDG reaches rated speed (900 rpm), **THEN** record the After Start data on the following attachments:

____ a. Attachment 1, Section 2

____ b. Attachment 2, Section 3

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

CAUTIONS

- ***The Diesel Generator should NOT be operated at rated speed (900 rpm) and unloaded for extended periods of time (over 4.5 hours). A minimum of 25 percent of load should be applied in a timely manner to reduce the possibility of SOUPING which can result in an exhaust system fire.***
- ***The following guidelines are required to be followed to reduce the probability of EDG overload conditions without Main Generator Lockout protection:***

  1) If the 3A 4KV bus is NOT powered via the auxiliary transformer (3AA02 open) special attention is required to be given to the 3A EDG operating parameters during parallel operation to the system and the EDG is required to be tripped upon indication of impending overload.

  2) If the 3A 4KV bus is powered via the auxiliary transformer (3AA02 closed) no special precautions are required as protection is provided by the Main Generator Lockout.

  3) Starting any of the following pumps may cause an EDG paralleled to the affected 4160V bus to trip and may damage the EDG:

  a) Reactor Coolant Pump

  b) Condensate Pump

  c) Steam Generator Feed Pump

  d) Heater Drain Pump

  e) Circulating Water Pump

29. Perform the following to match 3A EDG output parameters to the system grid:

____ a. Place the EDG A Sync to 3A 4KV Bus 3AA20 switch to ON.

____ b. Check the WHITE synchronizing lights to be cycling ON.

____ c. Using the A Diesel Gen Volt Regulator, adjust Incoming to match Running indicated voltage.

INITIALS
CK'D VERIF

7.1.2.29 (Cont'd)

____ d. Using the A Diesel Gen Speed Changer, adjust engine speed so that the pointer on the Synchroscope is rotating slowly in the FAST direction.

____ e. Using the A Diesel Gen Volt Regulator, adjust Incoming voltage slightly higher than Running voltage.

____ f. Using the A Diesel Kilovolts indicator and 3A 4KV Bus Voltmeter, verify voltages are approximately equal between the 3A Diesel Generator output **AND** the 3A 4KV Bus for all three phases.

____ g. Verify 3A Diesel Generator frequency is between 58.8 and 61.2 Hz on the A Diesel Hertz indicator.

____ h. **WHEN** the Synchroscope pointer is at 12 o'clock position, **THEN** close the diesel generator breaker by placing the EDG A to 3A 4KV Bus 3AA20 switch to the CLOSE position (spring return to normal).

____ (1) Verify the Diesel Generator Breaker 3AA20 has closed (Breaker GREEN light is OFF and RED light is ON).

____ i. Place the EDG Bkr 3AA20 Synchronizing Switch to OFF.

____ j. Turn the A Diesel Gen Speed Changer in the RAISE direction **AND** slowly increase diesel generator load to approximately 1.0 MW (1000 KW) on A Diesel Megawatts indicator.

INITIALS
CK'D VERIF

7.1.2.29 (Cont'd)

NOTE

The following voltage adjustment will place the generator reactive load in lag.

k. Perform the following to adjust the reactive load:

____ (1) While monitoring the A Diesel Amps indicator, momentarily position the A Diesel Gen Volt Regulator to RAISE.

(2) **IF** A Diesel Amps increased, **THEN** perform the following:

____ (a) Slowly LOWER the voltage until amps stop decreasing and start to increase (lead).

____ (b) Slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

OR

____ (3) **IF** A Diesel Amps decreased, **THEN** slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

NOTE

The Cooling Water System contains chromates, and if any cooling system leakage is observed, the NPS and Chemistry are required to be notified.

____ 30. Perform the following at 3A EDG:

____ a. Inspect the EDG for any leaks or abnormalities.

____ b. Inspect the bucket under the air box drain for any additional accumulation of fluids resulting from the start **AND** record results on Attachment 2, Section 2.

____ c. **IF** Cooling Water System leakage is observed, **THEN** plug floor drains under air skid and on south side of engine.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

CAUTION

The EDG load shall not exceed 2750 KW and generator amperage shall not exceed 477 amps.

31. Perform the following in the Control Room:

____ a. Turn the A Diesel Gen Speed Changer in the RAISE direction **AND** increase diesel generator load until it is between 2.3 and 2.5 MW (2300-2500 KW).

NOTE

The following voltage adjustment will place the generator reactive load in lag.

b. Perform the following to adjust the reactive load:

____ (1) While monitoring the A Diesel Gen Amps indicator, momentarily position the A Diesel Gen Volt Regulator to RAISE.

(2) **IF** A Diesel Amps increased, **THEN** perform the following:

____ (a) Slowly LOWER the voltage until amps stop decreasing and start to increase (lead).

____ (b) Slowly RAISE the voltage until A Diesel amps increase (Slightly in lag).

OR

____ (3) **IF** A Diesel Amps decreased, **THEN** slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

A change in 3A EDG Day Tank level on A Diesel Gen Oil Day Tank Lvl Gauge, LG3-1428A, should occur during diesel operation. A failure of the day tank indicated level to change may be indicative of an isolated or malfunctioning level indicator.

32. At 3A EDG, verify day tank level is being maintained within the following limits (N/A in January, April, July, and October during the transfer pump check):

____ a. Day Tank, LG-3-1428A

(1) Minimum level: 4 feet 10 inches

(2) Maximum level: 6 feet 2 inches

33. Verify skid tank level is being maintained by Auto Transfer of fuel from Day Tank to Skid Tank as follows:

____ a. Skid Tank, LI-3-3402A

(1) Minimum level: 50 to 100 gal (EDG operating) 200 gal (EDG in standby)

(2) Maximum level: 235 gal (EDG in standby)

34. Verify open both air start isolation valves as follows:

____ ____ a. Open and Lock 3A EDG Starting Air Right Side Isolation Valve, 3-70-261A. (Valve should already be open in Even months)

____ ____ b. Open and Lock 3A EDG Starting Air Left Side Isolation Valve, 3-70-300A. (Valve should already be open in Odd months)

35. Verify air pressure is approximately 190 psig on the following gauges **AND** record on Attachment 2, Section 2:

____ a. Air to Pinion Engaging Air Motors, PI-3-205A

____ b. Air to Pinion Engaging Air Motors, PI-3-3691A

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

The test of the Diesel Oil Transfer Pump Auto Start Circuit is to be performed during the Jan, Apr, July and Oct EDG Surveillance Test, or when directed to be performed by the IST Coordinator. This Substep 7.1.2.36 may be marked N/A when not required.

____ 36. Monitor the Diesel Oil Day Tank Level on LG-3-1428A, A Diesel Gen Day Tank Level Gauge during the 3A EDG run.

a. **WHEN** the level decreases to approximately 5 feet 1 inch, **THEN** perform Substep 7.1.2.36.b, **OR** Substeps 7.1.2.36.c and 7.1.2.36.d:

CAUTION

Do not use Substep 7.1.2.36.b if the level of the Day Tank is above 5 feet 6 inches.

b. Perform the following steps if necessary to prevent a long run of the EDG to prove auto starting of its associated fuel oil transfer pump: (N/A if not performed)

____ (1) Position the 3A Diesel Oil Transfer Pump 3P10A Control Switch to AUTO.

____ (2) Remove the drain cap on Valve 3-70-129A, Diesel oil day tank level tree drain.

____ (3) Close Valve 3-70-128A, Diesel oil day tank level tree lower isolation valve.

____ (4) Establish communications with a pump watch at 3P10A.

____ (5) Place a bucket under Valve, 3-70-129A, Diesel oil day tank level tree drain.

____ (6) Open Valve 3-70-129A, Diesel oil day tank level tree drain.

____ (7) **WHEN** the level on the level tree achieves approximately 5 feet 1 inch, **THEN** verify with the pump watch that the Transfer Pump 3P10A has started.

INITIALS
CK'D VERIF

7.1.2.36.b (Cont'd)

CAUTION

DO NOT OVERFILL THE DAY TANK.

____ ____ (8) **WHEN** the Transfer Pump 3P10A has started, **THEN** close Valve 3-70-129A, Diesel oil day tank level tree drain.

____ ____ (9) Open Valve 3-70-128A, Diesel oil day tank level tree lower isolation valve.

____ ____ (10) Verify that the pump stops at approximately 5 feet 11 inches.

____ ____ (11) Replace the drain cap on 3-70-129A, Diesel oil drain tank level tree drain.

____ ____ (12) Verify the 3A Diesel Oil Transfer Pump transfers fuel from the storage tank to the day tank **AND** record results on Attachment 2, Section 1.

____ (13) **IF** this method is used to verify the Diesel Oil Transfer Pump Auto start circuit, **THEN** N/A Substeps 7.1.2.36.c and 7.1.2.36.d.

____ (14) Dispose of fuel oil in the satellite drum located in the Waste building.

____ c. Position the 3A Diesel Oil Transfer Pump 3P10A Control Switch to AUTO.

NOTE

Verification that the 3A Diesel Oil Transfer Pump transfers fuel from the storage tank to the day tank satisfies the IST exercise-open test for Diesel Oil to Day Tank Control Valve, CV-2046A.

____ d. Verify the 3A Diesel Oil Transfer Pump starts, transfers fuel from the storage tank to the day tank **AND** record results on Attachment 2, Section 1.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

During the performance of this procedure in January, April, July, and October, an IST exercise closure test of the 3A Air Receiver Supply Check Valves is required to be performed. The 3A EDG does not need to be running to perform this closure test. (N/A this step if test is not being performed in January, April, July or October)

37. During the performance of this procedure in January, April, July, and October, verify closure of 3A Air Receiver Supply Check Valves, 3-70-274A and 3-70-276A, as follows:

____ a. Verify the 3A Air Compressor is NOT in operation.

____ b. Place the 3A Air Compressor control switch, located on the 3A EDG Control Panel, in OFF.

____ c. Verify that the EDG 3A Air Compressor is NOT aligned to the EDG 3B Air Receiver Tanks.

____ d. Close or verify closed 3A Air Compressor Cross-Tie Valve, 3-70-279A.

____ e. Verify 3A EDG Starting Air Purifier Outlet Valve 3-70-410A, open.

____ f. Open 3A EDG Air Start Dryer Outlet PI-3-6456A Test Connection Isolation Valve, 3-70-433A.

NOTE

If significant air leakage is noted, the IST Coordinator is required to be notified for appropriate corrective action requirements.

____ g. Check for the absence of gross leakage at Test Connection Isolation Valve, 3-70-433A, (verifies that 3-70-274A and 3-70-276A are fully closed) **AND** record results on Attachment 2, Section 1.

____ h. **IF** significant air leakage is noted, **THEN** notify the IST Coordinator of the leakage.

____ ____ i. Close 3A EDG Air Start Dryer Outlet PI-3-6456A Test Connection Isolation Valve, 3-70-433A.

INITIALS
CK'D VERIF

7.1.2.37 (Cont'd)

____ ____ j. Place the 3A Air Compressor control switch in AUTO.

38. Record 3A EDG operating parameters data on the following attachments for the time intervals specified:

____ a. Attachment 1, Section 2.

____ b. Attachment 2, Section 3.

____ 39. Check the 3A Diesel Generator operating parameters to be within the normal ranges as listed on Attachment 2, Section 3.

____ a. Check the Cooling Water System is operating within limits **AND** record results on Attachment 2, Section 1.

NOTE

If this test is being performed in January, April, July, and October, while performing the diesel oil transfer pump auto start check, the EDG may need to be run longer than one hour if necessary to verify fuel transfer pump operation.

____ 40. While maintaining required 3A EDG output between 2.3 and 2.5 MW, operate the 3A Diesel Generator loaded for a minimum of one hour or as directed by the Nuclear Plant Supervisor **AND** record on Attachment 1, Section 1.

41. Verify the following attachment sections have been completed:

____ a. Attachment 1, Section 2

____ b. Attachment 2, Section 3

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

42. **WHEN** at least one hour has elapsed, **OR** longer if necessary for the transfer pump auto start check, **THEN** perform the following in the Control Room (3C02):l

CAUTION

Diesel generator load should not be reduced to less than 0.20 megawatts (200 KW).

____ a. Turn the A Diesel Gen Speed Changer in the LOWER direction **AND** decrease diesel generator load to approximately 0.20 MW indicated on A Diesel Gen Megawatts.

____ b. Open the 3A Diesel Generator Breaker, 3AA20, by placing the EDG A to 3A 4KV Bus 3AA20 switch to the TRIP position (spring return to normal).

____ (1) Verify EDG A to 3A 4KV Bus 3AA20, has opened (Breaker GREEN light is ON and RED light is OFF).

____ c. Using the A Diesel Gen Volt Regulator, adjust voltage to approximately 4.16 KV (4160 volts) on all three phases.

____ d. Using the A Diesel Gen Speed Changer, adjust engine speed to 60 Hz (900 rpm).

NOTES

- *When the 3A EDG Normal Stop/Normal Start switch is placed to NORMAL STOP (spring return to normal), 3A diesel generator will decelerate to idle speed, (450 rpm). The diesel generator will idle for approximately 20 minutes (cooldown cycle) and then shutdown. During this interval the DG3A Engine Idling AMBER light will be ON.*
- *The DG3A Ready To Start RED light will energize when engine speed decreases to less than 600 rpm.*

____ 43. Momentarily place the 3A EDG NORMAL STOP/NORMAL START switch in the NORMAL STOP position (spring return to normal).

____ a. Check that the DG3A Engine Idling AMBER light is ON.

____ b. Check that the DG3A Ready to Start RED light energizes as 3A Diesel Generator decelerates.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

____ 44. Verify 3A Diesel Generator decelerates to idle speed, 450 rpm (Tachometer on 3A EDG Engine Control Panel 3C13A).

NOTES

- *Accurate oil sump level readings can ONLY be taken with the EDG Hot and Idling.*
- *Lube oil should be added if the sump level decreases to 1/2 inch below the full dipstick mark.*

____ 45. Direct an operator to verify the Diesel Engine Oil Sump level is greater than or equal to 1/2 inch below the full dipstick mark while 3A Diesel Generator is idling. (Center North side of EDG)

____ a. Verified 3A Diesel Engine Oil Sump level is greater than or equal to 1/2 inch below the full dipstick mark **AND** record results on Attachment 2, Unit 3 EDG Local Data Sheet, Section 1.

46. **WHEN** 3A Diesel Generator has stopped following the idle period of approximately 20 minutes, **THEN** perform the following in the Control Room:

____ a. Verify the DG3A Engine Idling AMBER light is OFF.

____ b. Verify Annunciator F 8/4, DIESEL OIL DAY TANK A HI/LO LEVEL is clear.

47. Direct an operator to perform the following at the Unit 3 Diesel Generator Building:

____ ____ a. Position, or verify the 3A Diesel Oil Transfer Pump 3P10A switch in AUTO.

____ b. At 3A EDG Engine Control Panel 3C13A, record the Total Hour Meter reading on Attachment 2, Section 2.

____ c. At the generator, check the generator bearings for excessive heat by touching the bearing housings (each end).

____ ____ d. Close 3A EDG Crankcase Vacuum Gauge PI-3-3379A Isol, 3-70-283A.

INITIALS
CK'D VERIF

7.1.2.47 (Cont'd)

____ ____ e. On the West wall of 3A EDG Room, verify the 3A EDG Room Ventilation Fan, 3V34A, Control Switch is in AUTO.

NOTES

- *Contact status can be verified by ensuring that the stabs of the relay are visible and in the lower position.*
- *The Cooling Water System contains chromates, and if any cooling system leakage is observed, the NPS and Chemistry are required to be notified.*

____ f. Verify that the FFC relay contacts are in the open position, at the 3E04A cabinet.

____ g. Direct the operator at 3A EDG to inspect for leaks or abnormalities.

____ (1) **IF** Cooling Water System leakage is observed, **THEN** plug floor drains under air skid and on south side of engine.

48. Check for and drain any accumulated water from the 3A Diesel Oil Day Tank, 3T23A, as follows:

____ a. Position a bucket or other suitable container under the day tank level tree drain.

____ b. Verify 3A Diesel Oil Day Tank Level Tree Drain, 3-70-129A, is closed.

____ c. Remove the pipe cap from the day tank level tree drain line.

NOTE

To prevent excessive drainage of diesel fuel oil in the following step, be prepared to observe the fluid to determine presence of water (if any).

____ d. Slowly open 3A Diesel Oil Day Tank Level Tree Drain, 3-70-129A.

____ e. Verify all water (if present) is drained from the 3A Diesel Oil Day Tank, 3T23A.

INITIALS
CK'D VERIF

7.1.2.48 (Cont'd)

____ ____ f. Close 3A Diesel Oil Day Tank Level Tree Drain, 3-70-129A.

____ g. Replace the pipe cap on the day tank level tree drain line.

____ h. Remove the drained liquid from the day tank room.

____ i. Document water removal from the 3A Diesel Oil Day Tank, 3T23A, in Attachment 2, Section 1.

____ j. Record 3A Diesel Oil Day Tank level from **A Diesel** Gen Day Tank Level Gauge, LG-3-1428A, on Attachment 2, Section 1.

49. Check for and drain any accumulated water from the 3A EDG Skid Tank as follows:

____ a. Position the hose from the skid tank drain into a bucket or other suitable container.

NOTE

To prevent excessive drainage of diesel fuel oil in the following step, be prepared to observe the fluid to determine presence of water (if any).

____ b. Slowly open 3A EDG Skid Tank Drn, 3-70-041A.

____ c. Verify all water (if present) is drained from the 3A EDG Skid Tank.

____ ____ d. Close 3A EDG Skid Tank Drn, 3-70-041A.

____ e. Document water removal from the 3A EDG Skid Tank on Attachment 2, Section 1.

____ f. Dispose of the collected fluid in the appropriate manner.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

Verification of an increase in the 3A EDG Skid Tank level upon actuating the PUSH-TO-FILL pushbutton satisfies the exercise - open In-service test requirement for 3A EDG Skid Tank Solenoid Valve, SV-3522A.

____ 50. Fill the 3A EDG Skid Tank to greater than 200 gallons by depressing the PUSH-TO-FILL pushbutton until at least 200 gallons are indicated on EDG 3A Fuel Oil Skid Tank Level Ind, LI-3-3402A.

____ a. Record EDG 3A Fuel Oil Skid Tank Level Ind, LI-3-3402A, on Attachment 2, Section 1.

____ 51. Complete Attachment 3, to verify 3A EDG is returned to standby condition **AND** record performance on Attachment 2, Section 1.

____ 52. Contact the stores warehouse to confirm four drums of lubricating oil Stock Number 25098-2 (M&S 022-76975-7) are dedicated to the 3A Diesel Generator **AND** the hand pump and hose storage box are in storage.

____ a. Record on Attachment 2, Section 1.

____ 53. Inform the Unit 3 RCO of no further intent to test the Emergency Diesel Generator.

____ 54. Notify the Nuclear Plant Supervisor of completion of this test.

____ 55. Verify all log entries specified in Subsection 2.2 have been recorded.

____ 56. Complete the QA Record Page **AND** all appendices required for the performance of this test.

QA RECORD PAGE

(Page 1 of 1)

7.1 3A EDG Normal Start Test

Test Completed Satisfactorily: YES ☐ NO* ☐

* Provide reason why test was NOT completed satisfactorily in the REMARKS Section.

REMARKS: _____

_____

_____

_____

_____

_____

Date/Time Started _____/_____ Date/Time Completed _____/_____

PERFORMED BY (Print)	INITIALS	VERIFIED BY (Print)	INITIALS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

I have reviewed the requirements of this procedure and it has been satisfactorily performed. All supporting data is contained in the attached data package. Any deviation(s) or OTSC(s) utilized in the performance of this procedure has (have) been listed in the Remarks Section.

REVIEWED BY: _____ DATE: _____

Nuclear Plant Supervisor or SRO Designee

ATTACHMENT 1
(Page 1 of 3)

UNIT 3 EDG CONTROL ROOM DATA SHEET

QA RECORD PAGE

(Page 1 of 3)

EDG _____ Date/Time Started _____
(3A or 3B)

Section 1-EDG Control Room Tech Spec Required Data

Ref Step No	Data Required	Acceptance Criteria	Data	Initials
7.1.2.40 7.2.2.40 7.3.2.34 7.4.2.34	Time operated between 2300 KW and 2500 KW	Greater than or equal to 60 minutes (4.8.1.1.2.a.5)	_____ Min	_____

Acceptance Criteria met satisfactorily:

_____
Unit 3 RCO *Date/Time*

ATTACHMENT 2
(Page 7 of 9)
UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 7 of 8)

Section 3 - EDG Operating Data (Cont'd)

Cylinder Exhaust Pyrometers*

Parameter	After Start (No Load)	**After Reaching 2.3-2.5 MW (2300-2500 KW)	15 minutes After 2.3-2.5 MW (2300-2500 KW)	30 minutes After 2.3-2.5 MW (2300-2500 KW)	45 minutes After 2.3-2.5 MW (2300-2500 KW)	1 hour After 2.3-2.5 MW (2300-2500 KW)
Time	N/A					
PARAMETER/ CYLINDER						
1/1	N/A					
2/2	N/A					
3/3	N/A					
4/4	N/A					
5/5	N/A					
6/6	N/A					
7/7	N/A					
8/8	N/A					
9/9	N/A					
10/10	N/A					
11/20	N/A					
12/19	N/A					
13/18	N/A					
14/17	N/A					
15/16	N/A					
16/15	N/A					
17/14	N/A					
18/13	N/A					
19/12	N/A					
20/11	N/A					

* To obtain temperature indication for any cylinder with an inoperable pyrometer, a contact pyrometer should be used to obtain the external temperature of the affected cylinder and of another cylinder with an operable pyrometer whose external temperature is comparable to that of the affected cylinder. These contact pyrometer readings should be obtained and recorded for the 30 minutes after 2.3-2.5 MW interval only.

** These recorded readings (in the After Reaching 2.3-2.5 MW column) are for trending purposes only, the associated acceptance criteria is not applicable due to non-stable thermal conditions during engine heat-up. These readings are still required to be taken.

ATTACHMENT 1
(Page 3 of 3)

UNIT 3 EDG CONTROL ROOM DATA SHEET

QA RECORD PAGE

(Page 3 of 3)

REMARKS: _____

_____

_____

_____

_____

_____

Date/Time Completed: _____ / _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY _____
Nuclear Plant Supervisor or SRO Designee

REVIEWED BY _____
STA

REVIEWED BY and
EDG Log Updated: _____
Engineering Department Diesel Component Specialist

ATTACHMENT 2
(Page 1 of 9)

UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 1 of 8)

EDG_____ Date/Time Started_____

Section 1 - EDG Local Tech Spec Required Data

Test Equipment:

Stopwatch:_____/_____/_____
I.D. Number Cal. Due

Ref Step No	Data/Action Required	Acceptance Criteria	Data	Initials
7.1.2.1 7.2.2.1 7.3.2.1 7.4.2.1	EDG Flowpath Alignment Verification	System aligned for EDG Standby (4.8.1.1.2.a.6)	_____ Sat. or Unsat.	_____
7.1.2.3.b 7.2.2.3.b 7.3.2.3.b 7.4.2.3.b	Main Fuel Oil Storage Tank Level	Greater than 38,000 gal. (≥21 feet 10 inches) (4.8.1.1.2.a.2)	_____ Lvl.	_____
7.1.2.4.c 7.2.2.4.c 7.3.2.4.c 7.4.2.4.c	Fuel Oil Skid Tank Level LI-3-3402A(B)	Greater than 200 gallons	_____ Gal.	_____
7.1.2.17 7.2.2.17 7.3.2.10 7.4.2.10	Diesel Oil Day Tank Level - Prestart LG-3-1428A(B)	Greater than 4 feet 10 inches Note 1 (4.8.1.1.2.a.1)	_____ Ft/In	_____

Note 1 - This level is conservative. The tank will hold 4000 gallons and the bottom of the sightglass is above the midpoint of the tank. Any visible level in the sightglass will satisfy the Tech Spec requirement for 2000 gallons in the skid and day tanks combined.

ATTACHMENT 2
(Page 2 of 9)
UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 2 of 8)

Section 1 - EDG Local Tech Spec Required Data

Ref Step No	Data/Action Required	Acceptance Criteria	Data	Initials
7.3.2.16.f 7.4.2.16.f	Time from start to 3740 to 4580 volts and 58.8 to 61.2 Hz	Less than or equal to 15 seconds (4.8.1.1.2.a.4) (semi-annually)	_____ Sec	_____
7.1.2.36.b.12 7.1.2.36.d 7.2.2.36.b.12 7.2.2.36.d 7.3.2.30.b.12 7.3.2.30.d 7.4.2.30.b.12 7.4.2.30.d	3A (3B) Diesel Oil Transfer Pump tested	Pump starts automatically and transfers fuel from the storage tank to the day tank (4.8.1.1.2.b) (quarterly)	_____ Sat or Unsat	_____
7.1.2.37.g 7.2.2.37.g 7.3.2.31.g 7.4.2.31.g	Exercise closure test of 3A (3B) Air Receiver Supply Check Valves	Verify absence of gross leakage	_____ Sat or Unsat	_____
7.1.2.39.a 7.2.2.39.a 7.3.2.33.a 7.4.2.33.a	Cooling System operated within design limits	All temperatures recorded in Section 3 of this attachment within acceptance criteria (4.8.1.1.2.a.5)	_____ Sat or Unsat	_____
7.1.2.45.a 7.2.2.45.a 7.3.2.38 7.4.2.38	Lubricating oil inventory in engine sump	Greater than or equal to one-half inch below the full dipstick mark (4.8.1.1.2.a.3 partial)	_____ Sat or Unsat	_____
7.1.2.48.i 7.2.2.48.i 7.3.2.40.i 7.4.2.40.i	Accumulated water drained from the Diesel Oil Day Tank	Day Tank checked for accumulated water and drained if necessary (4.8.1.1.2.c)	_____ Completed	_____
7.1.2.48.j 7.2.2.48.j 7.3.2.40.j 7.4.2.40.j	Diesel Oil Day Tank Level - Post Run LG-3-1428A(B)	Greater than 4 feet 10 inches Note 1 (4.8.1.1.2.a.1)	_____ Ft/In	_____

Note 1 - This level is conservative. The tank will hold 4000 gallons and the bottom of the sightglass is above the midpoint of the tank. Any visible level in the sightglass will satisfy the Tech Spec requirement for 2000 gallons in the skid and day tanks combined.

ATTACHMENT 2
(Page 3 of 9)

UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 3 of 8)

Section 1 - EDG Local Tech Spec Required Data

Ref Step No	Data/Action Required	Acceptance Criteria	Data	Initials
7.1.2.49.e 7.2.2.49.e 7.3.2.41.e 7.4.2.41.e	Accumulated Water Drained from the Skid Tank	Skid tank checked for accumulated water and drained if necessary (4.8.1.1.2.c)	_____ Sat. or Unsat.	_____
7.1.2.50.a 7.2.2.50.a 7.3.2.42.a 7.4.2.42.a	Fuel Oil Skid Tank Level LI-3-3402A(B)	Greater than 200 gallons	_____ Gal.	_____
7.1.2.51 7.2.2.51 7.3.2.43 7.4.2.43	EDG Standby Condition	EDG is left in Standby Condition (4.8.1.1.2.a.6)	_____ Completed	_____
7.1.2.52 7.2.2.52 7.3.2.44 7.4.2.44	EDG lubricating oil in storage and oil transfer capability	4 drums of lubricating oil stock number 25098-2 (M&S-022-76975-7) are dedicated to the EDG-Hand pump/hose storage box - available (4.8.1.1.2.a.3 partial)	_____ Sat. or Unsat.	_____

Acceptance Criteria has been met:

_____ _____
NPS Signature *Date/Time*

_____ _____
IST Coordinator *Date/Time*

ATTACHMENT 2
(Page 4 of 9)

UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 4 of 8)

Section 2 - EDG Standby Data

Ref Step No	Data/Action Required	Acceptable Criteria	Data	Initials
7.1.2.4.q.1 7.2.2.4.q.1 7.3.2.4.p.1 7.4.2.4.p.1	Air Reservoir Tanks A and B Pressure PI-3-3690A(B)	Between 225 and 238 psig	_____ psig	_____
7.1.2.4.p.2 7.2.2.4.q.2 7.3.2.4.p.2 7.4.2.4.p.2	Air Reservoir Tanks C and D Pressure PI-3-3693A(B)	Between 225 and 238 psig	_____ psig	_____
7.1.2.6.y.1 7.2.2.6.y.1 7.3.2.6.y.1 7.4.2.6.y.1	EDG Start Counter Reading	Recorded prior to start of EDG	_____ Starts	_____
7.1.2.6.y.2 7.2.2.6.y.2 7.3.2.6.y.2 7.4.2.6.y.2	EDG-A(B) Total Hour Meter Reading	Recorded prior to start of EDG	_____ Hours	_____
7.1.2.6.y.3 7.2.2.6.y.3 7.3.2.6.y.3 7.4.2.6.y.3	Diesel Gen Lube Oil Pump Afterfilter Pressure PI-3-207A(B)	Greater than 15 psig	_____ psig	_____
7.1.2.10.l.1 7.2.2.10.l.1 7.3.2.7.a 7.4.2.7.a	Air to Pinion Engaging Air Motors PI-3-205A(B)	Between 175 and 200 psig	_____ psig	_____

ATTACHMENT 2
(Page 5 of 9)

UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 5 of 8)

Section 2 - EDG Standby Data

Ref Step No	Data/Action Required	Acceptable Criteria	Data	Initials
7.1.2.10.l.2 7.2.2.10.l.2 7.3.2.7.b 7.4.2.7.b	Air to Pinion Engaging Air Motors PI-3-3691A(B)	Between 175 and 200 psig	_____ psig	_____
7.1.2.30.b 7.2.2.30.b 7.3.2.24.a 7.4.2.24.a	Accumulation from airbox drain checked	No evidence of fuel or water and only minimal amount of oil	_____ Sat. or Unsat.	_____
7.1.2.35.a 7.2.2.35.a 7.3.2.29.a 7.4.2.29.a	Air to Pinion Engaging Air Motors PI-3-205A(B)	Between 175 and 200 psig	_____ psig	_____
7.1.2.35.b 7.2.2.35.b 7.3.2.29.b 7.4.2.29.b	Air to Pinion Engaging Air Motors PI-3-3691A(B)	Between 175 and 200 psig	_____ psig	_____
7.1.2.47.b 7.2.2.47.b 7.3.2.39.c 7.4.2.39.c	EDG-A(B) Total Hour Meter Reading	Recorded following EDG run	_____ Hours	_____

ATTACHMENT 2(Page 6 of 9)
UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 6 of 8)

Section 3 - EDG Operating Data

1 OTSC 0114-98

Parameter	After Start (No Load)	After Reaching 2.3-2.5 MW (2300-2500 KW)	15 minutes After 2.3-2.5 MW (2300-2500 KW)	30 minutes After 2.3-2.5 MW (2300-2500 KW)	45 minutes After 2.3-2.5 MW (2300-2500 KW)	1 hour After 2.3-2.5 MW (2300-2500 KW)
Time						
Radiator Inlet TI-3-444A(B) (195°F)*	N/A					
Lube Oil Pressure PI-3-3671A(B) 75 psi						
Fuel Oil Pressure PI-3-3670A(B) (15 to 40 psi)**						
Engine Cooling Water Inlet TI-3-447A(B) (130°F) *	N/A					
Crankcase Vacuum PI-3-6679A(B) (0.1 to 8 in H20)	N/A					
Cooling Water Surge Tank LG-3-1436A(B) (>low RUN mark)						
EDG Room Exhaust fan Running (YES)						
LO Cooler Inlet TI-3-443A(B) (245°F) *	N/A					
LO Cooler Outlet TI-3-442A(B)	N/A					
LO Clr In TI-3-443A(B)(-) LO Clr Out TI-3-442A(B) (10°F) *	N/A					
Skid Tank Fuel Volume LI-3-3402A(B) (50 gal)						
Engine Cooling Water Outlet TI-3-448A(B) (195°F) *	N/A					
Radiator Outlet TI-3-445A(B)	N/A					
Eng Cool Wtr Out TI-3-448A(B)(-) Radiator Out TI-3-445A(B) (10°F) *	N/A					
EDG Room Exhaust Fan Running (Y/N)						
Ambient Air Temp. (Reference Only)	N/A		N/A		N/A	
No visual Coolant Leakage from the 3A EDG Radiator. N/A for the 3B EDG.	N/A		N/A	N/A	N/A	N/A

* These recorded readings in the After Start (No Load) and After Reaching 2.3-2.5 MW columns are for trending purposes only, the associated acceptance criteria is not applicable due to non-stable thermal conditions during the engine heat-up. These readings are still required to be taken.

** Fuel oil pressure may exceed 40 psi during engine warmup and loading (After Start and After Reaching 2.3-2.5 MW). Pressure between 40 and 50 psi during this period does not require fuel oil filter element replacement if acceptable pressure is maintained for the remainder of the test. These readings are still required to be taken.

/4:6/FRZ/ms/sw/ev

ATTACHMENT 1
(Page 2 of 3)
UNIT 3 EDG CONTROL ROOM DATA SHEET

QA RECORD PAGE

(Page 2 of 3)

Section 2 - EDG Operating Data

Time Interval	Time	Volts (3740 to 4580)	Hertz (58.8 to 61.2)	Amps < 477	Load 2.3 to 2.5 MW (2300 to 2500 KW)
After Start (No Load)				N/A	N/A
After Reaching 2300 KW - 2500 KW					
15 minutes After 2300 KW - 2500 KW					
30 minutes After 2300 KW - 2500 KW					
45 minutes After 2300 KW - 2500 KW					
1 hour After 2300 KW - 2500 KW					

Acceptable Limits:

Readings should be recorded within 3 minutes of the intervals specified.

Volts should be maintained between 3740 to 4580 volts.

Frequency should be maintained between 58.8 to 61.2 Hz.

Amps should not exceed 477 amps.

Load should be maintained between 2.3 to 2.5 MW (2300 to 2500 KW).

Acceptable Limits Maintained:

_____
Unit 3 RCO *Date/Time*

ATTACHMENT 2
(Page 8 of 9)

UNIT 3 EDG LOCAL DATA SHEET

QA RECORD PAGE

(Page 8 of 8)

REMARKS: _____

_____

_____

_____

_____

_____

Date/Time Completed: _____ / _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY _____
Nuclear Plant Supervisor or SRO Designee

REVIEWED BY and
EDG Log Updated: _____
Engineering Department Diesel Component Specialist

ATTACHMENT 2
(Page 9 of 9)
UNIT 3 EDG LOCAL DATA SHEET

Section 3 - EDG Operating Data (Cont'd)

Acceptance Criteria:

Ambient Air Temperature recorded for reference only.

Lube Oil Cooler Inlet Temperature less than or equal 245°F.

Lube Oil Cooler Outlet Temperature at least 10°F below Lube Oil Cooler Inle Temperature.

Radiator Inlet Temperature less than 195°F.

Radiator Outlet Temperature at least 10°F below Engine Outlet Temperature.

Engine Cooling Water Inlet greater than or equal 130°F.

Engine Cooling Water Outlet less than or equal 195°F.

*Crankcase Vacuum between 0.1 and 8.0 inches water.

Skid Tank Fuel Volume greater than 50 gallons without level alarm(s) actuated.

*Exhaust Pyrometer Temperatures less than 1100°F on all cylinders with no more than 200°F difference between highest and lowest recorded temperatures.

Fuel Oil Pressure:

Acceptable Range	15 to 40 psig
Alert Ranges	Lo 10 to 15 psig Hi 40 to 50 psig (after 15 minutes at 2500 KW or greater)
Required Action Ranges	Lo less than 10 psig after engine start. Hi greater than 50 psig

IF fuel oil pressure is detected in either of the Alert Ranges, THEN a plant work order should be initiated for the appropriate corrective action (i.e., if low, clean suction strainer; if high, the fuel oil filter control valve should be switched to the opposite side and replace fuel oil filters). Corrective actions should be taken prior to the next scheduled run, but, SHALL be taken prior to a planned outage of the other EDG. IF between the required action ranges, THEN the EDG is operable. The EDG shall be declared out-of-service if pressure is less than 10 psig or greater than 50 psig. [Commitment - Step 2.3.5]

---

*Sudden degradation of Crankcase Vacuum and/or Exhaust Pyrometer Temperature indication could be indicative of fuel oil intrusion of the EDG lube oil. WHEN either or both of these possible indicators are in conjunction with the smell of fuel oil at the lube oil dipstick opening, THEN the EDG should be shutdown, the lube oil sampled for presence of fuel oil, and appropriate corrective actions taken prior to restart.

ATTACHMENT 3
(Page 1 of 3)

3A EDG STANDBY STATUS VERIFICATION DATA SHEET

QA RECORD PAGE

(Page 1 of 1)

3A EDG Aligned for Standby Operation: YES ☐ NO* ☐

* Provide reason in REMARKS Section.

REMARKS: _____

_____

_____

_____

_____

_____

Date/Time Started: _____/_____ Date/Time Completed: _____/_____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____
_____	_____

I have reviewed this procedure and it has been satisfactorily performed. Any deviation(s) or OTSC(s) utilized in the performance of this procedure has (have) been listed in the Remarks Section.

REVIEWED BY _____ DATE _____
Nuclear Plant Supervisor or SRO Designee

ATTACHMENT 3
(Page 2 of 3)

3A EDG STANDBY STATUS VERIFICATION DATA SHEET

Component Location	Component Description	Required Status	Checked (Initials)
3A EDG Engine Control Panel	Air Comp Off or Air Comp On Light	ON	
	Normal Light	ON	
	Ready-To-Start Light	ON	
	Power On Light	ON	
	3A Starting Air Compressor Switch	AUTO	
	Emergency Fuel Cut Off (behind Panel)	Pushed In	
3A EDG Electrical Control Panel	RAPID START/AUTO START BYPASS Switch	NORMAL	
	MASTER CONTROL Switch	Normal	
	Emergency Diesel Generator Brkr 3AA20	Green Light ON	
	D/G Lockout Relay 186/DG	Mid Position (no orange flag)	
West Wall of 3A EDG Room	3AEDG Room Ventilation Fan 3V34A Control Switch	AUTO	
3A EDG Room	Engine Starting Air Press - PI-3-3690A	225-238 psig	
	Engine Starting Air Press - PI-3-3693A	225-238 psig	
Panel 3C370A	Governor Select Switch	ELECT	

ATTACHMENT 3
(Page 3 of 3)

3A EDG STANDBY STATUS VERIFICATION DATA SHEET

Component Location	Component Description	Required Status	Initials
3A 4160V Switchgear Room/Breaker 3AA20	Emergency Diesel Gen 3A To 3A 4160V Bus	Racked In	
	Remote-Local Switch	Remote	
	White Light	ON	
	Green Light	ON	
Unit 3 Control Console	3A Diesel Gen Ready-To-Start Light	ON	
	3A Diesel Gen Normal Control Light	ON	
	3A Diesel Gen 4KV Bus 3A 3AA20	Green Light ON	
Unit 3 VPA	Diesel Gen Lockout Reset Light	ON	
	Annunciator F-7/6, 4KV BUS A/B TIE BKR OVERCURRENT TRIP	Clear	
	Annunciator F-8/2, EDG A TROUBLE	Clear	
	Annunciator F-8/3, EDG A BKR OVERCURRENT TRIP	Clear	
Unit 3 VPA	Annunciator F-8/4, DIESEL OIL DAY TANK A HI/LO LEVEL	Clear	
	Annunciator F-8/5, EDG A MASTER CONTROL SW OFF-NORMAL	Clear	

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT IN MODE 3.

2. NIS SOURCE RANGES ARE OPERATIONAL.

3. ALL PREREQUISITES ARE MET.

INITIATING CUE:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059003100

JOB CLASSIFICATION: RCO

JPM TITLE: ADJUST HIGH FLUX AT SHUTDOWN ALARM

JPM NUMBER: 01059003100 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

THE FOLLOWING BOOTH INSTRUCTION STEPS ARE SATISFIED BY IC-5 (DO NOT PRESS MAST FAIL - WILL ACTUATE ARMED MALFUNCTIONS):

- **Reset to IC-3**
- **Unfreeze simulator**
- **Trip reactor**
- **Acknowledge alarms**
- **Stabilize plant**
- **Freeze simulator until exam begins**

TASK STANDARDS:

1. THE HIGH FLUX AT SHUTDOWN ALARM IS SET APPROXIMATELY 1/2 DECADE ABOVE EXISTING COUNT RATE.

REQUIRED MATERIALS:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

REFERENCES:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

TERMINATING CUES:

1. THE HIGH FLUX AT SHUTDOWN ALARM SETPOINT IS VERIFIED CORRECT FOR THE SHUTDOWN SOURCE RANGE COUNT RATE.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT IN MODE 3.
2. NIS SOURCE RANGES ARE OPERATIONAL.
3. ALL PREREQUISITES ARE MET.

INITIATING CUES:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

( ) **ELEMENT: 1**

OBTAIN COPY OF 3-OSP-059.6.

STANDARDS:

__1. OBTAINED PROCEDURE 3-OSP-059.6.

CUE: Provide procedure when correctly identified.

__2. VERIFIED PROCEDURE 3-OSP-059.6 AGAINST OTSC INDEX.

EVALUATOR'S NOTES:

NOTE 1: OTSCs cannot be verified in the simulator.

NOTE 2: Operator may review sections 2, 3 and 4 of 3-OSP-059.6

( ) **ELEMENT: 2**

RECORD METER READING.
[Step 7.1.1]

STANDARDS:

__1. NIS CHANNEL N-31 CPS NEUTRON LEVEL READING WAS RECORDED.

EVALUATOR'S NOTES:

NOTE: The analog meter is difficult to read precisely. Initial reading will be approximately 200 cps.

(C) **ELEMENT: 3**

POSITION SELECTOR SWITCHES.
[Steps 7.1.2 through 7.1.5]

STANDARDS:

__1. AUDIO COUNT RATE CHANNEL SELECTOR SWITCH ON NIS PANEL N-34 PLACED TO "SR N-32."
[Step 7.1.2]

__2. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "BYPASS."
[Step 7.1.3]

__3. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "BLOCK."
[Step 7.1.4]

__4. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "LEVEL ADJ."
[Step 7.1.5]

EVALUATOR'S NOTES:

NOTE: Performance of Steps 2, 3, and 4 will cause NIS related annunciators to alarm. These are expected alarms and can be acknowledged without further action.

(C) **ELEMENT: 4**

CALCULATE HIGH FLUX AT SHUTDOWN ALARM SETPOINT.

STANDARDS:

__1. ALARM SETPOINT CALCULATED AT 1/2 DECADE ABOVE THE SOURCE RANGE COUNT RATE FROM STEP 7.1.1 (3.16 x N-31 CPS). [Step 7.1.6]

__2. CALCULATED ALARM SETPOINT RECORDED IN PROCEDURE [Step 7.1.6]

EVALUATOR'S NOTES:

NOTE 1: 3.16 x 200 = 632 (6.32×10^2)

NOTE: Standard 2 is not critical to this element.

(C) **ELEMENT: 5**

ADJUST N-31 INDICATED CPS TO THE CALCULATED SETPOINT. [Step 7.1.7]

STANDARDS:

__1. "LEVEL ADJ" POTENTIOMETER ON NIS PANEL N-31 ADJUSTED SO THAT CPS METER INDICATES THE CALCULATED ALARM SETPOINT.

EVALUATOR'S NOTES:

NOTE: Operator will adjust the potentionmeter until meter reading is approximately 6.32×10^2 cps.

(C) **ELEMENT: 6**

ADJUST HIGH FLUX AT SHUTDOWN BISTABLE TRIP SETPOINT.
[Step 7.1.8]

STANDARDS:

__1. NIS PANEL N-31 DRAWER OPENED.
[Step 7.1.8.1]

__2. ADJUSTED TRIP POTENTIOMETER IN DRAWER (CARD NC103 HIGH FLUX AT SHUTDOWN) FULLY CLOCKWISE.
[Step 7.1.8.2]

__3. ADJUSTED TRIP POTENTIOMETER COUNTERCLOCKWISE UNTIL THE "HIGH FLUX AT SHUTDOWN" STATUS LIGHT ON THE FRONT OF THE DRAWER COMES ON.
[Step 7.1.8.3]

__4. NIS PANEL N-31 DRAWER CLOSED.
[Step 7.1.8.4]

EVALUATOR'S NOTES:

NOTE: Standard 4 is not critical to this element.

(C) **ELEMENT: 7**

VERIFY HIGH FLUX AT SHUTDOWN BISTABLE SETPOINTS.
[Step 7.1.9]

STANDARDS:

__1. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED COUNTERCLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED OFF.
[Step 7.1.9.1]

__2. CPS NEUTRON LEVEL ALARM RESET READING RECORDED.
[Step 7.1.9.2]

__3. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED CLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED ON.
[Step 7.1.9.3]

__4. CPS NEUTRON LEVEL ALARM READING RECORDED.
[Step 7.1.9.4]

__5. COMPARISON MADE TO DETERMINE IF ACCEPTANCE CRITERIA WAS MET USING ENCLOSURE 1.
[Step 7.1.9.5]

EVALUATOR'S NOTES:

NOTE: For Standard 5, the comparison is accomplished by plotting the alarm setpoint on the "Alarm Value" line. A vertical line is traced from the point of intersection. The intersections of this traced vertical line with the other diagonal lines on Enclosure 1 will determine the acceptable values of the alarm value and reset value.

For example if the alarm value was set at 632 cps, the acceptance criteria for the alarm value will be between approximately 520 cps and 830 cps. The reset value will be between approximately 250 cps and 410 cps.

(C) **ELEMENT: 8**

RETURN SOURCE RANGE DRAWER TO NORMAL
(Steps 7.1.10 through 7.1.13)

STANDARDS:

__1. ON NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED FULLY COUNTERCLOCKWISE.
[Step 7.1.10]

__2. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "NORMAL."
[Step 7.1.11]

__3. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "NORMAL."
[Step 7.1.12]

__4. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "NORMAL."
[Step 7.1.13]

EVALUATOR'S NOTES:

Inform the operator that the JPM has been completed.

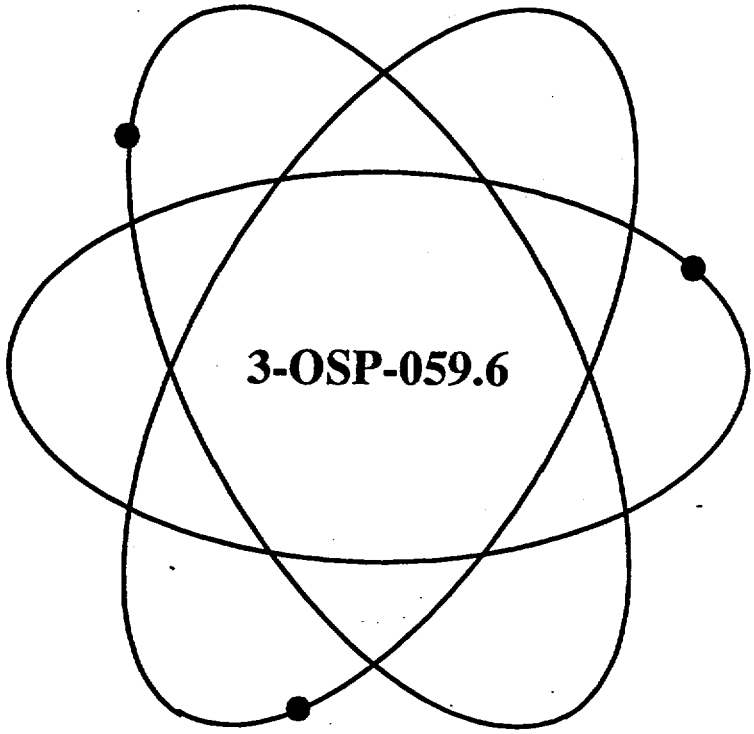
Florida Power & Light Company

Turkey Point Nuclear Plant

CONTROLLED DOCUMENT
NO. # 34

Unit 3

This procedure may be affected by an O T.S.C. (On The Spot Change) verify information prior to use.
Date verified _____ Initials _____



3-OSP-059.6

Title:

High Flux at Shutdown

Safety Related Procedure

Responsible Department:	Operations
Revision Approval Date:	7/18/96
Periodic Review:	7/17/01

RTSs 88-0382P, 89-3593, 92-2097P, 96-0429P

/TNM/dt/lr/bvc

LIST OF EFFECTIVE PAGES

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/TNM/dt/lr/bvc

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1.0 PURPOSE

1.1 This procedure provides instructional guidance to set the High Flux at Shutdown alarm following reactor shutdown and periodic readjustment of the alarm setpoint during extended shutdown periods.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Final Safety Analysis Report, Section 7.4, Nuclear Instrumentation

2.1.2 Plant Procedures

1. 0-ADM-215, Plant Surveillance Tracking Program
2. 3-GOP-103, Power Operation to Hot Standby
3. 3-ONOP-059.5, Source Range Nuclear Instrumentation Malfunction
4. 0-OP-003.3, 120V Vital Instrument AC System
5. 0-OSP-200.1, Schedule of Plant Checks and Surveillances

2.1.3 Nuclear Instrumentation System Technical Manual

2.2 Records Required

2.2.1 The date, time and section completed shall be logged in the Reactor Control Operator (RCO) logbook(s). Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.).

2.2.2 Completed copies of the below listed item(s) constitute Quality Assurance Records and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. Section 7.0

2.2.3 Completed copies of the below listed section(s), enclosure(s), and attachment(s) shall be retained in the Nuclear Plant Supervisor's file until the next performance of that section, enclosure, or attachment.

1. None

2.3 Commitment Documents

2.3.1 None

3.0 PREREQUISITES

3.1 Instrument AC Panels 3P06 and 3P07 should be powered from their normal sources per 0-OP-003.3, 120V Vital Instrument AC System, during this test.

3.2 The unit is in Operational Mode 3, Hot Standby; Mode 4, Hot Shutdown; Mode 5, Cold Shutdown; or Mode 6, Refueling.

3.3 All Instruments and Control devices are in service for the Source Range NI System operation with no surveillance required, outstanding PWOs, clearances, or temporary system alterations that affect system operability as per the following:

3.3.1 0-ADM-215, Plant Surveillance Tracking System and 0-OSP-200.1, Schedule of Plant Checks and Surveillances (No surveillances have exceeded the date required on the Surveillance Use of Grace Sheet.)

3.3.2 Temporary System Alteration (TSA) Log

3.3.3 Clearance Log

3.3.4 Out-of-Service Log

3.4 Source range count rate is stable.

4.0 PRECAUTIONS/LIMITATIONS

4.1 At least one high flux at shutdown channel should be in service providing automatic containment evacuation alarm protection for personnel safety.

4.2 The source range NIS channels should be energized for at least one hour prior to adjusting the high flux at shutdown alarm.

5.0 SPECIAL TOOLS/EQUIPMENT

5.1 None

6.0 ACCEPTANCE CRITERIA

6.1 High Flux at Shutdown alarm setpoint is approximately one-half decade above the flux level during shutdown.

7.0 PROCEDURE

7.1 Source Range Channel N-31

INIT Date/Time Started:_____

—— 7.1.1 Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31)

N-31_____CPS

—— 7.1.2 Place AUDIO COUNT RATE CHANNEL, CHANNEL SELECTOR switch to SR N32 (NIS panel N-34).

—— 7.1.3 Place LEVEL TRIP switch to BYPASS (NIS panel N-31).

—— 7.1.4 Place HIGH FLUX AT SHUTDOWN switch in BLOCK (NIS panel N-31).

—— 7.1.5 Place OPERATIONS SELECTOR switch to LEVEL ADJ (NIS panel N-31).

—— 7.1.6 Calculate the High Flux at Shutdown alarm setpoint at one-half decade above the SOURCE RANGE CPS NEUTRON LEVEL recorded in Step 7.1.1:

3.16 x CPS = _____ Alarm CPS

—— 7.1.7 Adjust LEVEL ADJ potentiometer clockwise to obtain the calculated Alarm CPS indication on SOURCE RANGE CPS NEUTRON LEVEL meter (NIS panel N-31)

7.1.8 Adjust the High Flux at Shutdown bistable trip setpoint as follows:

—— 1. Open the SOURCE RANGE drawer (NIS panel N-31).

—— 2. Adjust TRIP potentiometer fully clockwise (card NC103 HIGH FLUX AT SHUTDOWN, inside N-31 drawer).

—— 3. Adjust TRIP potentiometer counter clockwise until HIGH FLUX AT SHUTDOWN status light (N-31 drawer front) turns ON.

—— 4. Close the SOURCE RANGE drawer (NIS panel N-31).

INITIALS
CK'D VERIF

7.1.9 Verify the High Flux at Shutdown bistable setpoints as follows:

____ 1. Adjust LEVEL ADJ potentiometer (N-31 drawer front) counterclockwise until HIGH FLUX AT SHUTDOWN status light turns OFF.

____ 2. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm reset.

_____ Reset CPS

____ 3. Adjust LEVEL ADJ Potentiometer (N-31 drawer front) clockwise until HIGH FLUX AT SHUTDOWN status light turns ON.

____ 4. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm trip.

_____ Alarm CPS

____ 5. Verify the alarm and reset CPS are within acceptance criteria range indicated on Enclosure 1.

____ ____ 7.1.10 Adjust LEVEL ADJ potentiometer (NIS panel N-31) fully counterclockwise.

____ ____ 7.1.11 Place OPERATION SELECTOR switch (NIS panel N-31) to NORMAL.

____ ____ 7.1.12 Place LEVEL TRIP switch (NIS panel N-31) to NORMAL.

____ ____ 7.1.13 Place HIGH FLUX AT SHUTDOWN switch (NIS panel N-31) to NORMAL

INITIALS
CK'D VERIF

7.2 Source Range Channel N-32

____ 7.2.1 Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-32)

N-32 _____ CPS

____ 7.2.2 Place AUDIO COUNT RATE CHANNEL, CHANNEL SELECTOR switch to SR N31 (NIS panel N-34).

____ 7.2.3 Place LEVEL TRIP switch to BYPASS (NIS panel N-32).

____ 7.2.4 Place HIGH FLUX AT SHUTDOWN switch in BLOCK (NIS panel N-32).

____ 7.2.5 Place OPERATIONS SELECTOR switch to LEVEL ADJ (NIS panel N-32).

____ 7.2.6 Calculate the High Flux at Shutdown alarm setpoint at one-half decade above the SOURCE RANGE CPS NEUTRON LEVEL recorded in Step 7.2.1 as follows:

3.16 x CPS = _____ Alarm CPS

____ 7.2.7 Adjust LEVEL ADJ potentiometer clockwise to obtain the calculated Alarm CPS indication on SOURCE RANGE CPS NEUTRON LEVEL meter (NIS panel N-32)

7.2.8 Adjust the High Flux at Shutdown bistable trip setpoint as follows:

____ 1. Open the SOURCE RANGE drawer (NIS panel N-32).

____ 2. Adjust TRIP potentiometer fully clockwise (card NC103 HIGH FLUX AT SHUTDOWN, inside N-32 drawer).

____ 3. Adjust TRIP potentiometer counter clockwise until HIGH FLUX AT SHUTDOWN status light (N-32 drawer front) turns ON.

____ 4. Close the SOURCE RANGE drawer (NIS panel N-32).

INITIALS
CK'D VERIF

7.2.9 Verify the High Flux at Shutdown bistable setpoints as follows:

—— 1. Adjust LEVEL ADJ potentiometer (N-32 drawer front) counterclockwise until HIGH FLUX AT SHUTDOWN status light turns OFF.

—— 2. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-32) for High Flux at Shutdown alarm reset.

———— Reset CPS

—— 3. Adjust LEVEL ADJ Potentiometer (N-32 drawer front) clockwise until HIGH FLUX AT SHUTDOWN status light turns ON.

—— 4. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-32) for High Flux at Shutdown alarm trip.

———— Alarm CPS

—— 5. Verify the alarm and reset CPS are within acceptance criteria range indicated on Enclosure 1.

—— —— 7.2.10 Adjust LEVEL ADJ potentiometer (NIS panel N-32) fully counterclockwise.

—— —— 7.2.11 Place OPERATION SELECTOR switch (NIS panel N-32) to NORMAL.

—— —— 7.2.12 Place LEVEL TRIP switch (NIS panel N-32) to NORMAL.

—— —— 7.2.13 Place HIGH FLUX AT SHUTDOWN switch (NIS panel N-32) to NORMAL

INITIALS
CK'D VERIF

—— 7.3 Notify the Nuclear Plant Supervisor of completion of this surveillance.

—— 7.4 Verify all log entries specified in Subsection 2.2 have been recorded.

REMARKS: _____

Date/Time Completed: _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____

INDEPENDENTLY VERIFIED BY (Print)	INITIALS
_____	_____
_____	_____

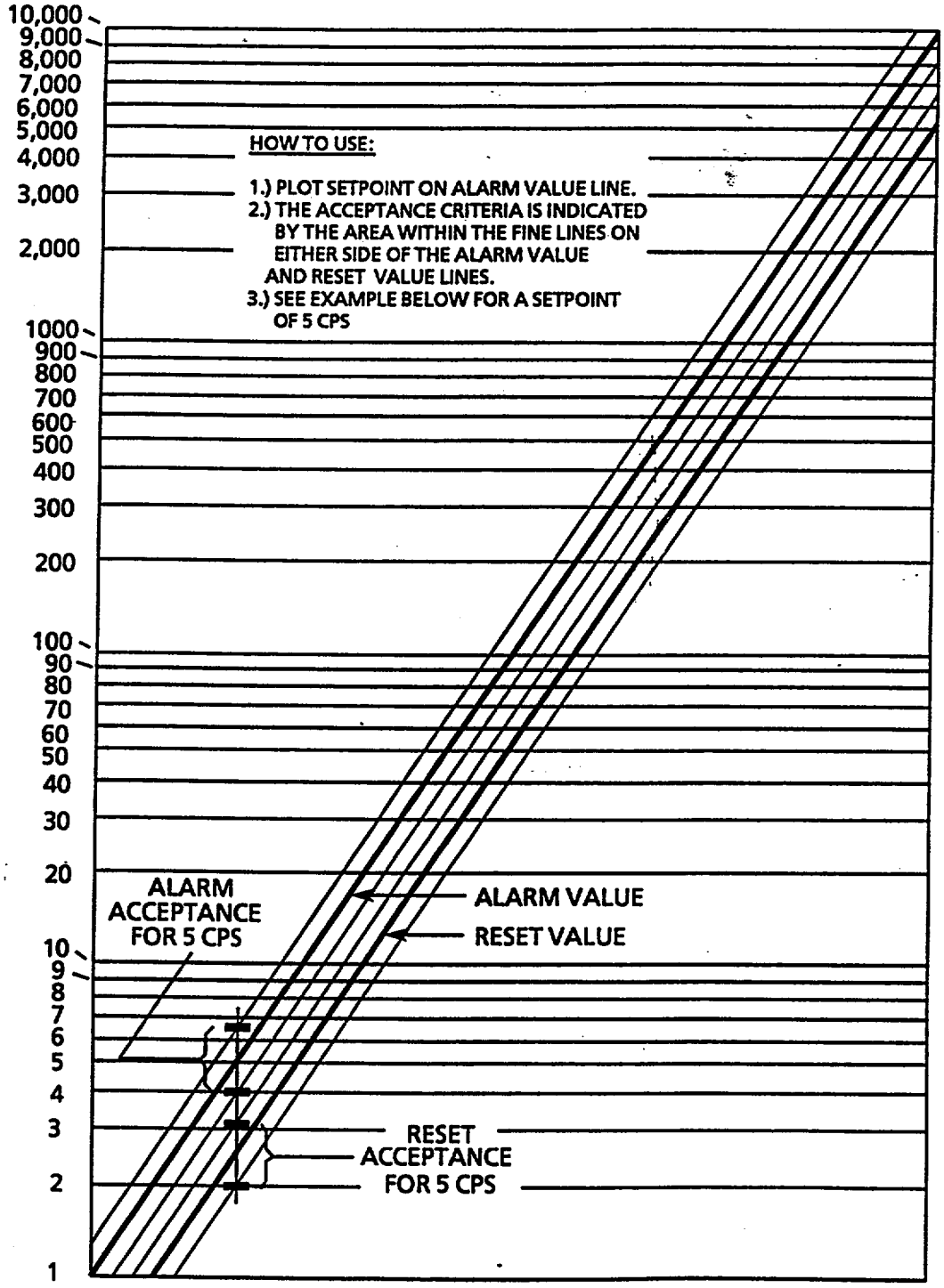
REVIEWED BY: _____
Nuclear Plant Supervisor or SRO Designee

END OF TEXT

/TNM/dt/lr/bvc

ENCLOSURE 1
(Page 1 of 1)

HIGH FLUX AT SHUTDOWN
ACCEPTANCE CRITERIA FOR ALARM AND RESET



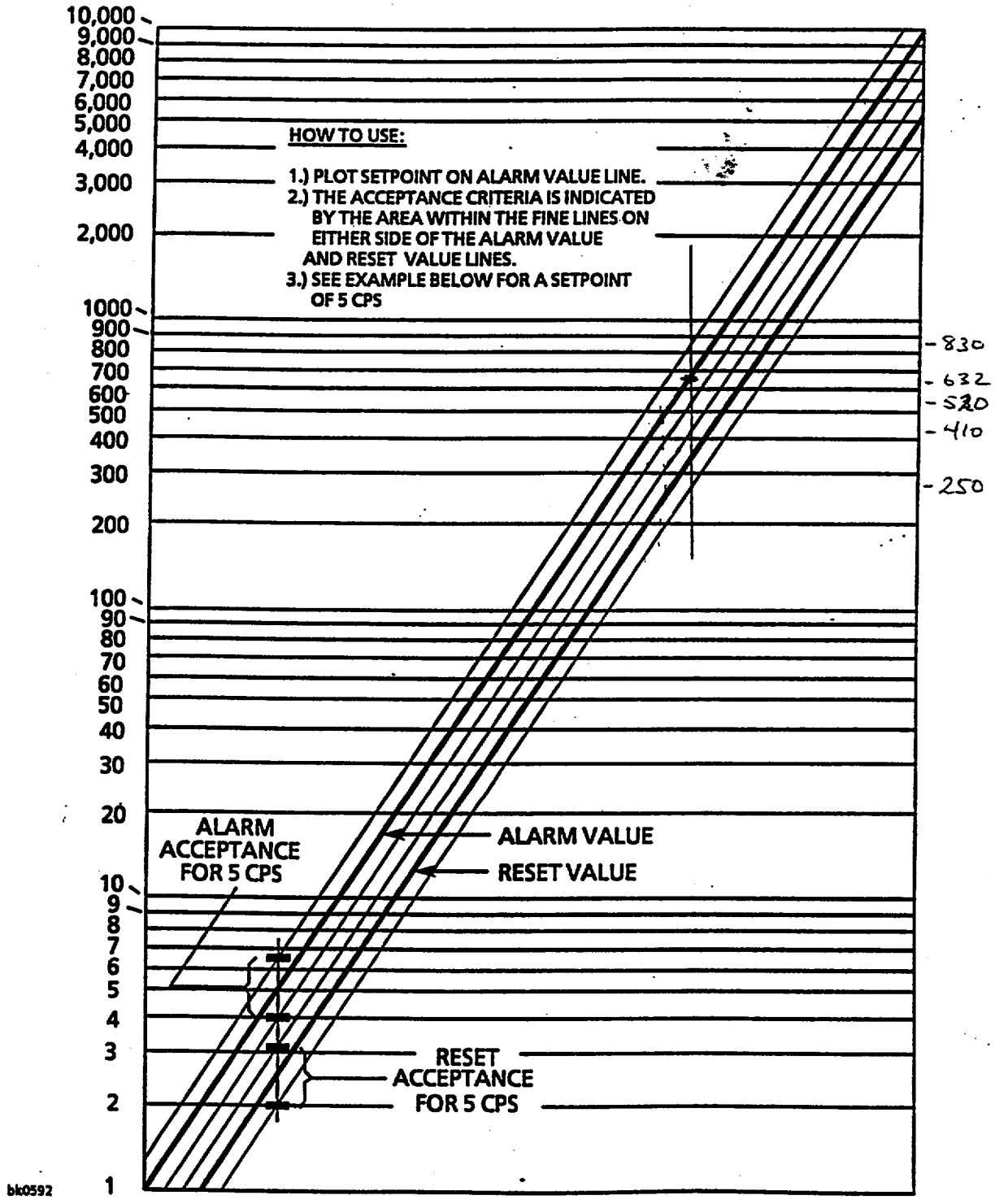
FINAL PAGE

/TNM/dt/lr/bvc

KEY

ENCLOSURE 1
(Page 1 of 1)

HIGH FLUX AT SHUTDOWN
ACCEPTANCE CRITERIA FOR ALARM AND RESET



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JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT IN MODE 3.

2. NIS SOURCE RANGES ARE OPERATIONAL.

3. ALL PREREQUISITES ARE MET.

INITIATING CUE:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059003100

JOB CLASSIFICATION: RCO

JPM TITLE: ADJUST HIGH FLUX AT SHUTDOWN ALARM

JPM NUMBER: 01059003100 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/17/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

THE FOLLOWING BOOTH INSTRUCTION STEPS ARE SATISFIED BY IC-5 (DO NOT PRESS MAST FAIL - WILL ACTUATE ARMED MALFUNCTIONS):

- **Reset to IC-3**
- **Unfreeze simulator**
- **Trip reactor**
- **Acknowledge alarms**
- **Stabilize plant**
- **Freeze simulator until exam begins**

TASK STANDARDS:

1. THE HIGH FLUX AT SHUTDOWN ALARM IS SET APPROXIMATELY 1/2 DECADE ABOVE EXISTING COUNT RATE.

REQUIRED MATERIALS:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

REFERENCES:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

TERMINATING CUES:

1. THE HIGH FLUX AT SHUTDOWN ALARM SETPOINT IS VERIFIED CORRECT FOR THE SHUTDOWN SOURCE RANGE COUNT RATE.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT IN MODE 3.
2. NIS SOURCE RANGES ARE OPERATIONAL.
3. ALL PREREQUISITES ARE MET.

INITIATING CUES:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

( ) **ELEMENT: 1**

OBTAIN COPY OF 3-OSP-059.6.

STANDARDS:

__1. OBTAINED PROCEDURE 3-OSP-059.6.

CUE: Provide procedure when correctly identified.

__2. VERIFIED PROCEDURE 3-OSP-059.6 AGAINST OTSC INDEX.

EVALUATOR'S NOTES:

NOTE 1: OTSCs cannot be verified in the simulator.

NOTE 2: Operator may review sections 2, 3 and 4 of 3-OSP-059.6

( ) **ELEMENT: 2**

RECORD METER READING.
[Step 7.1.1]

STANDARDS:

__1. NIS CHANNEL N-31 CPS NEUTRON LEVEL READING WAS RECORDED.

EVALUATOR'S NOTES:

NOTE: The analog meter is difficult to read precisely. Initial reading will be approximately 75 cps.

(C) **ELEMENT: 3**

POSITION SELECTOR SWITCHES.
[Steps 7.1.2 through 7.1.5]

STANDARDS:

__1. AUDIO COUNT RATE CHANNEL SELECTOR SWITCH ON NIS PANEL N-34 PLACED TO "SR N-32."
[Step 7.1.2]

__2. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "BYPASS."
[Step 7.1.3]

__3. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "BLOCK."
[Step 7.1.4]

__4. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "LEVEL ADJ."
[Step 7.1.5]

EVALUATOR'S NOTES:

NOTE: Performance of Steps 2, 3, and 4 will cause NIS related annunciators to alarm. These are expected alarms and can be acknowledged without further action.

(C) **ELEMENT: 4**

CALCULATE HIGH FLUX AT SHUTDOWN ALARM SETPOINT.

STANDARDS:

__1. ALARM SETPOINT CALCULATED AT 1/2 DECADE ABOVE THE SOURCE RANGE COUNT RATE FROM STEP 7.1.1 (3.16 x N-31 CPS). [Step 7.1.6]

__2. CALCULATED ALARM SETPOINT RECORDED IN PROCEDURE [Step 7.1.6]

EVALUATOR'S NOTES:

NOTE 1: 3.16 x 75 = 237 (2.37×10^2)

NOTE: Standard 2 is not critical to this element.

(C) **ELEMENT: 5**

ADJUST N-31 INDICATED CPS TO THE CALCULATED SETPOINT. [Step 7.1.7]

STANDARDS:

__1. "LEVEL ADJ" POTENTIOMETER ON NIS PANEL N-31 ADJUSTED SO THAT CPS METER INDICATES THE CALCULATED ALARM SETPOINT.

EVALUATOR'S NOTES:

NOTE: Operator will adjust the potentionmeter until meter reading is approximately 2.37×10^2 cps.

(C) **ELEMENT: 6**

ADJUST HIGH FLUX AT SHUTDOWN BISTABLE TRIP SETPOINT.
[Step 7.1.8]

STANDARDS:

__1. NIS PANEL N-31 DRAWER OPENED.
[Step 7.1.8.1]

__2. ADJUSTED TRIP POTENTIOMETER IN DRAWER (CARD NC103 HIGH FLUX AT SHUTDOWN) FULLY CLOCKWISE.
[Step 7.1.8.2]

__3. ADJUSTED TRIP POTENTIOMETER COUNTERCLOCKWISE UNTIL THE "HIGH FLUX AT SHUTDOWN" STATUS LIGHT ON THE FRONT OF THE DRAWER COMES ON.
[Step 7.1.8.3]

__4. NIS PANEL N-31 DRAWER CLOSED.
[Step 7.1.8.4]

EVALUATOR'S NOTES:

NOTE: Standard 4 is not critical to this element.

(C) **ELEMENT: 7**

VERIFY HIGH FLUX AT SHUTDOWN BISTABLE SETPOINTS.
[Step 7.1.9]

STANDARDS:

__1. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED COUNTERCLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED OFF.
[Step 7.1.9.1]

__2. CPS NEUTRON LEVEL ALARM RESET READING RECORDED.
[Step 7.1.9.2]

__3. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED CLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED ON.
[Step 7.1.9.3]

__4. CPS NEUTRON LEVEL ALARM READING RECORDED.
[Step 7.1.9.4]

__5. COMPARISON MADE TO DETERMINE IF ACCEPTANCE CRITERIA WAS MET USING ENCLOSURE 1.
[Step 7.1.9.5]

EVALUATOR'S NOTES:

NOTE: For Standard 5, the comparison is accomplished by plotting the alarm setpoint on the "Alarm Value" line. A vertical line is traced from the point of intersection. The intersections of this traced vertical line with the other diagonal lines on Enclosure 1 will determine the acceptable values of the alarm value and reset value.

For example if the alarm value was set at 237 cps, the acceptance criteria for the alarm value will be between approximately 200 cps and 310 cps. The reset value will be between approximately 100 cps and 170 cps.

(C) **ELEMENT: 8**

RETURN SOURCE RANGE DRAWER TO NORMAL
(Steps 7.1.10 through 7.1.13)

STANDARDS:

__1. ON NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED FULLY COUNTERCLOCKWISE.
[Step 7.1.10]

__2. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "NORMAL."
[Step 7.1.11]

__3. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "NORMAL."
[Step 7.1.12]

__4. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "NORMAL."
[Step 7.1.13]

EVALUATOR'S NOTES:

Inform the operator that the JPM has been completed.

KEY

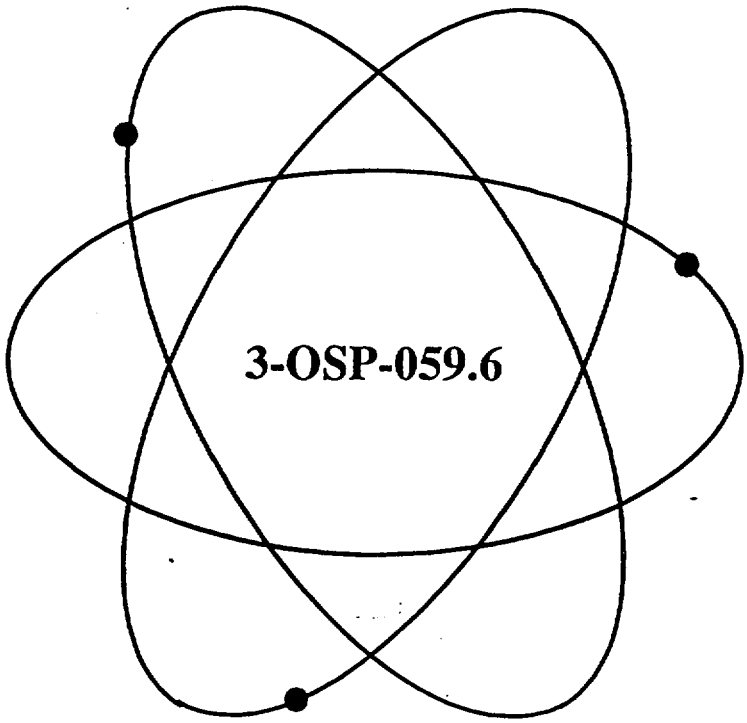
Florida Power & Light Company

CONTROLLED DOCUMENT
NO. # 34

Turkey Point Nuclear Plant

Unit 3

This procedure may be affected by an O T.S.C. (On The Spot Change) verify information prior to use.
Date verified _____ Initials _____



Title:

High Flux at Shutdown

Safety Related Procedure

Responsible Department:	Operations
Revision Approval Date:	7/18/96
Periodic Review:	7/17/01

RTSs 88-0382P, 89-3593, 92-2097P, 96-0429P

/TNM/dt/lr/bvc

7.0 PROCEDURE

7.1 Source Range Channel N-31

INIT

Date/Time Started: 9/17/99

—— 7.1.1 Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31)

N-31 75 CPS

—— 7.1.2 Place AUDIO COUNT RATE CHANNEL, CHANNEL SELECTOR switch to SR N32 (NIS panel N-34).

—— 7.1.3 Place LEVEL TRIP switch to BYPASS (NIS panel N-31).

—— 7.1.4 Place HIGH FLUX AT SHUTDOWN switch in BLOCK (NIS panel N-31).

—— 7.1.5 Place OPERATIONS SELECTOR switch to LEVEL ADJ (NIS panel N-31).

—— 7.1.6 Calculate the High Flux at Shutdown alarm setpoint at one-half decade above the SOURCE RANGE CPS NEUTRON LEVEL recorded in Step 7.1.1:

3.16 x CPS = 237 Alarm CPS

—— 7.1.7 Adjust LEVEL ADJ potentiometer clockwise to obtain the calculated Alarm CPS indication on SOURCE RANGE CPS NEUTRON LEVEL meter (NIS panel N-31)

7.1.8 Adjust the High Flux at Shutdown bistable trip setpoint as follows:

—— 1. Open the SOURCE RANGE drawer (NIS panel N-31).

—— 2. Adjust TRIP potentiometer fully clockwise (card NC103 HIGH FLUX AT SHUTDOWN, inside N-31 drawer).

—— 3. Adjust TRIP potentiometer counter clockwise until HIGH FLUX AT SHUTDOWN status light (N-31 drawer front) turns ON.

—— 4. Close the SOURCE RANGE drawer (NIS panel N-31).

INITIALS
CK'D VERIF

7.1.9 Verify the High Flux at Shutdown bistable setpoints as follows:

____ 1. Adjust LEVEL ADJ potentiometer (N-31 drawer front) counterclockwise until HIGH FLUX AT SHUTDOWN status light turns OFF.

____ 2. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm reset.

≈ 100-170 Reset CPS

____ 3. Adjust LEVEL ADJ Potentiometer (N-31 drawer front) clockwise until HIGH FLUX AT SHUTDOWN status light turns ON.

____ 4. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm trip.

≈ 200-310 Alarm CPS

____ 5. Verify the alarm and reset CPS are within acceptance criteria range indicated on Enclosure 1.

____ ____ 7.1.10 Adjust LEVEL ADJ potentiometer (NIS panel N-31) fully counterclockwise.

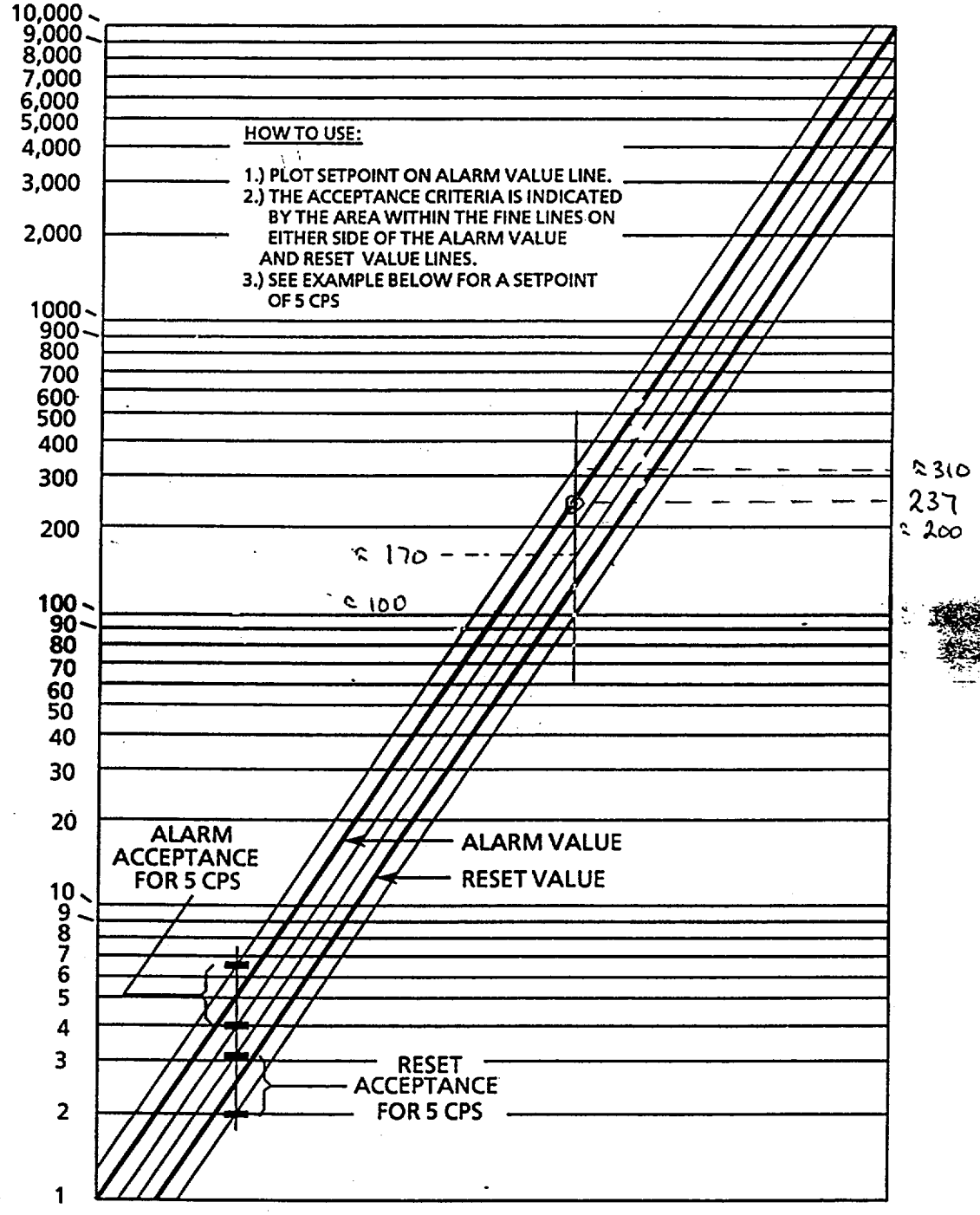
____ ____ 7.1.11 Place OPERATION SELECTOR switch (NIS panel N-31) to NORMAL.

____ ____ 7.1.12 Place LEVEL TRIP switch (NIS panel N-31) to NORMAL.

____ ____ 7.1.13 Place HIGH FLUX AT SHUTDOWN switch (NIS panel N-31) to NORMAL

ENCLOSURE 1
(Page 1 of 1)

HIGH FLUX AT SHUTDOWN
ACCEPTANCE CRITERIA FOR ALARM AND RESET



FINAL PAGE

/TNM/dt/lr/bvc

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 EXPERIENCED A LOSS OF OFF SITE POWER.

2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.

3. EOP(S) ARE IN PROGRESS.

4. 3A AND 3B 4KV BUSES HAS JUST BEEN TRANSFERED FROM THE EDGs TO THE STARTUP TRANSFORMER.

5. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM.

INITIATING CUE:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 22 OF EOP-ES-0.1.

JOB CLASSIFICATION: RCO

JPM TITLE: SHUTDOWN AFW PUMP(S) DURING EMERGENCY PLANT OPERATIONS
JPM NUMBER: 01075025501 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 0.00
COMBINED IMPORTANCE: 0.00
TIME VALIDATION: 5 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

STATIC IC-6 SATISFIES BOOTH INSTRUCTIONS 1 THROUGH 4:

1. **Reset to IC-60.**
2. **Press NO OP and unfreeze frozen models. Run AFW flow to maximum and feed S/Gs to >25%.**
3. **Parallel EDGs and S/U transformer and place 4KV buses on the S/U transformer. Shutdown (normal stop) EDGs.**
4. **When S/G levels >25%, reduce AFW flow to zero.**
5. **Freeze simulator until ready to begin.**

TASK STANDARDS:

1. "C" AFW PUMP SHALL BE SHUTDOWN AND A SECOND PUMP ALSO SHUTDOWN

REQUIRED MATERIALS:

1. 3-OP-075, AUXILIARY FEEDWATER SYSTEM

REFERENCES:

1. 3-OP-075, AUXILIARY FEEDWATER SYSTEM

TERMINATING CUES:

THE "C" AND A SECOND AFW PUMP HAVE BEEN SHUTDOWN.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 EXPERIENCED A LOSS OF OFF SITE POWER.
2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.
3. EOP(S) ARE IN PROGRESS.
4. 3A AND 3B 4KV BUSES HAS JUST BEEN TRANSFERED FROM THE EDGs TO THE STARTUP TRANSFORMER.
5. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM FOR S/G FEED.

INITIATING CUES:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 22 OF EOP-ES-0.1.

( ) **ELEMENT: 1**

OBTAIN 3-OP-075, SECTION 6.2, FOR SHUTTING DOWN AN AFW PUMP DURING PERFORMANCE OF THE EOPs.

STANDARDS:

__1. OBTAINED A COPY OF 3-OP-075, SECTION 6.2.

__2. VERIFIED PROCEDURE IN OTSC BOOK.

EVALUATOR'S NOTES:

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner. When the need to check for OTSCs is recognized, tell the operator, ***"There are no outstanding OTSCs on 3-OP-075."***

(C) **ELEMENT: 2**

RESET AFW ACTUATION SIGNALS.
[Steps 6.2.2.1 & 6.2.2.2]

STANDARDS:

__1. RESET AMSAC AND VERIFIED THE RED AMSAC ACTUATED LIGHT IS OUT ON PANEL 3C04 (VPA).
[Step 6.2.2.1.a]

__2. CHECKED IF SI HAS BEEN RESET.
[Step 6.2.2.1.b]

__3. CHECKED IF LOSS OF VOLTAGE SIGNAL HAS BEEN RESET AS INDICATED BY BOTH S/U TRANSF. BREAKERs BEING CLOSED.
[Step 6.2.2.1.c]

__4. GREEN-FLAGGED STOPPED SGFP SEMAPHORES.
[Step 6.2.2.1.d]

__5. CHECKED IF NR S/G LEVEL IN ALL 3 S/Gs IS GREATER THAN 15%.
[Step 6.2.2.1.e]

EVALUATOR'S NOTES:

NOTE: Standards 1 and 4 are critical to this Element.

( ) **ELEMENT: 3**

REVIEW PROCEDURE STEPS 6.2.2.2 & 6.2.2.3 FOR APPLICABILITY.

STANDARDS:

__1. REVIEWED STEP 6.2.2.2 AND RECOGNIZED ALL AFW ACTUATION SIGNALS ARE RESET.

__2. REVIEWED STEP 6.2.2.3 AND TRANSITIONED CORRECTLY TO 6.2.2.4.

EVALUATOR'S NOTES:

NOTE: The operator does not transition forward to Step 6.2.2.7 because all 3 AFW pumps are running.

(C) **ELEMENT: 4**

SHUTDOWN "C" AUXILIARY FEEDWATER PUMP.

STANDARDS:

__1. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.4 AND CHOSE "C" AFW PUMP TO SHUTDOWN FIRST.

__2. MOMENTARILY PLACED THE T&T CONTROL SWITCH FOR THE "C" AFW PUMP TO CLOSED.
[Step 6.2.2.4]

EVALUATOR'S NOTES:

NOTE: Standard 2 is critical to this element.

( ) **ELEMENT: 5**

REVIEW STEP 6.2.2.5 FOR APPLICABILTY.

STANDARDS:

__1. REVIEWED STEP 6.2.2.5 AND DETERMINED IT TO NOT BE APPLICABLE AND WENT FORWARD TO STEP 6.2.2.6.

EVALUATOR'S NOTES:

NOTE: STEP 6.2.2.5 IS NOT APPLICABLE BECAUSE ALL AFW ACTUATION SIGNALS ARE RESET.

(C) **ELEMENT: 6**

SHUTDOWN A SECOND AUXILIARY FEEDWATER PUMP.

STANDARDS:

__1. RECOGNIZED A CONTINUOUS AVERAGE FLOW OF 60 GPM CANNOT BE MAINTAINED ON THE REMAINING AFW PUMPS. [Step 6.2.2.6]

Cue: ***"A continuous average AFW flow of 60 GPM cannot be maintained on the remaining AFW pumps and the NPS directs the shutdown of a second AFW pump."***

__2. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.7.

__3. DIRECTED FIELD OPERATOR TO STAND BY THE AFW PUMP STEAM SUPPLY MOV BREAKER. [Step 6.2.2.7.a]

BOOTH OPERATOR CUE: ***Report back as the field operator that you are in position at the breaker***

__4. CLOSED THE AFW PUMP STEAM SUPPLY MOV (MOV-3-1405). [Step 6.2.2.7.b]

__5. DIRECTED THE FIELD OPERATOR TO LOCALLY OPEN THE BREAKER TO THE STEAM SUPPLY MOV. [Step 6.2.2.7.c]

Booth Operator: **sys mat->feedwater->aux f/w steam. Touch MOVs -> Breaker LOA local close/trip (mech)->MOV-1405 set TCF5MA27=F->MOV-1404 set TCF5M527=F->MOV-1403 set TCF5MB28=F**

BOOTH OPERATOR CUE: ***Report back as the field operator that the breaker is open.***

__6. DIRECTED THE FIELD OPERATOR TO RESET THE GOVERNOR FOR THE PUMP JUST SHUTDOWN. [Step 6.2.2.7.d]

BOOTH OPERATOR CUE: ***Report back as the field operator that the AFW pump governor is reset.***

EVALUATOR'S NOTES:

NOTE 1: Standard 4 is written on the premise the operator will opt to stop the "A" AFW pump. If the operator decides to stop the "B" AFW pump instead, then two steam supply MOVs, MOV-1403 and MOV-1404 will be the valves the operator must close.

NOTE: Standard 4 is critical to this element.

Tell the operator that the JPM is completed.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT IN MODE 3, ALL CONDITIONS NORMAL.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01041029301

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO LOW PRESSURIZER PRESSURE

JPM NUMBER: 01041029301 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 5 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

STATIC IC-5 MAY BE USED IN PLACE OF THE FOLLOWING INSTRUCTIONS:

1. **RESET TO IC-3. TOUCH PRESSURIZER LEVEL->P444-> PT444->TRANSMITTER FAIL HIGH->ARM TFH1TU44=T-> RECALL->PC444G->CONTROLLER FAIL HIGH->ARM TFH244GH=T. OPEN TRIP BREAKERS, ACKNOWLEDGE ALARMS & STABILIZE PLANT. FREEZE SIMULATOR UNTIL READY TO BEGIN.**

2. **PT-444 fails high and PZR Spray valve PCV-455A controller remains at 100% demand even after the master controller has been placed in manual and driven to zero demand.**

INITIATING CUES:

OBSERVATION OF ANY OF THE FOLLOWING SYMPTOMS:

1. ANN. A9/2: PZR CONTROL HI/LO PRESS

2. ANN. A9/5: PZR PRESSURE CONTROLLER HI OUTPUT

3. INDICATED PRESSURIZER PRESSURE < 2235 PSIG

4. PI 444 NOT IN AGREEMENT WITH OTHER RCS PRESSURE INSTRUMENTATION

TASK STANDARDS:

1. ACTIONS TO STABILIZE PZR PRESSURE PERFORMED FOR THE FAILED PRESSURE TRANSMITTER PER 3-ONOP-041.5.

2. WHEN PRESSURE REDUCTION CAN NOT BE CONTROLLED, REQUIRED ACTIONS OF 3-ONOP-041.5 SHALL BE PERFORMED.

REQUIRED MATERIALS:

1. 3-ONOP-041.5
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

REFERENCES:

1. 3-ONOP-041.5, PRESSURIZER PRESSURE CONTROL MALFUNCTION
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

TERMINATING CUES:

1. 3C RCP IS TRIPPED PER 3-ONOP-041.5 TO STABILIZE PRESSURIZER PRESSURE.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT IN MODE 3, ALL CONDITIONS NORMAL.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

BOOTH INSTRUCTIONS:

Shortly after simulator is taken to run, press MAST FAIL to insert PT444 & PCV-3-455A failures.

(C) **ELEMENT: 1**

TAKE REQUIRED ACTIONS TO STABILIZE PRESSURE TRANSIENT.

STANDARDS:

__1. COMPARED PI-444 AND PI-445 AND DETERMINED PT-444 HAS FAILED HIGH.
[Step 1.a & 1.b]

__2. CLOSED PCV-455C USING CONSOLE CONTROL SWITCH.
[Step 1.a.RNO(1)]

__3. TOOK MANUAL CONTROL OF PC-444J AND DROVE CONTROLLER DEMAND DOWN.
[Step 1.a.RNO(2)]

__4. RECOGNIZED PZR SPRAY VALVE CONTROLLER, PCV-455A, AT 100% OPEN DEMAND AND PRESSURE STILL DECREASING.
[Step 1.a.RNO(2)]

__5. TOOK MANUAL CONTROL OF PZR SPRAY VALVE, PCV-455A AND ATTEMPTED TO CLOSE PCV-455A.

EVALUATOR'S NOTES:

NOTE 1: Standards 2, 3, & 5 are Critical to this element.

NOTE 2: Operator should perform these Immediate Action Steps from memory.

NOTE 3: When the Operator drives the master controller closed, PCV-455B controller will follow it. PCV-455C will remain at 100% output until the operator takes manual control of the spray valve.

( ) **ELEMENT: 2**

CHECK BOTH PZR PORVS CLOSED.
[Step 2]

STANDARDS:

__1. OBSERVED GREEN LIGHT INDICATION FOR PORV-455C AND PORV-456 ON THE CONSOLE.

EVALUATOR'S NOTES:

NOTE 1: Both PORVs will display green light indication.

NOTE 2: Operator should perform these Immediate Action Steps from memory.

( ) **ELEMENT: 3**

VERIFIED PZR SPRAY VALVES CLOSED.

STANDARDS:

__1. OBSERVED PZR PRESSURE STILL DECREASING. [Step 3]

__2. PLACED PZR SPRAY VALVE PCV-455A CONTROLLER IN MANUAL AND ATTEMPTED TO CLOSE.

__3. VERIFIED NORMAL SPRAY VALVE PCV-455B AND AUX. SPRAY VALVE, CV-3-311, CLOSED.

EVALUATOR'S NOTES:

NOTE 1: The Operator may also place PCV-455B in MANUAL and attempt to close it. PCV-455B is already closed, so this action will be of no consequence.

NOTE 2: The operator may have already attempted to close spray valves while performing Step 1 RNO. It does not matter if the action to close PCV-455A is done during Step 1 or Step 3.

NOTE 3: Operator should perform these Immediate Action Steps from memory.

( ) **ELEMENT: 4**

OBTAIN PROCEDURE.

STANDARDS:

___1. OBTAINED COPY OF 3-ONOP-041.5, PRESSURIZER PRESSURE CONTROL MALFUNCTION.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 5**

CHECK PZR SAFETY VALVES CLOSED.

STANDARDS:

__1. CHECKED PZR PORV/SAFETY ACOUSTIC MONITOR LIGHTS - OFF. [Step 4.a]

__2. CHECKED PZR SAFETY LINE TEMPERATURE INDICATIORS AT OR NEAR NORMAL. [Step 4.b]

EVALUATOR'S NOTES:

NOTE 1: Acoustic Monitor indicators on the PRMS cabinets will be OFF.

NOTE 2: PZR Safety Line temperatures will be normal.

( ) **ELEMENT: 6**

EVALUATE PZR PRESSURE.

STANDARDS:

__1. DETERMINED IF PRZ PRESSURE WAS ABOVE, BELOW, OR AT NORMAL PRESSURE AND IF IT WAS INCREASING OR DECREASING OR STABLE.
[Step 5 & 6]

__2. BASED ON DECREASING PZR PRESSURE, TRANSITIONED TO STEP 10.
[Step 6. RNO]

__3. AT STEP 10, RECONFIRMED PZR PRESSURE WAS DECREASING.

__4. REVIEWED STEP 11 & STEP 11 RNO FOR APPLICABILITY AND CONTINUED ON TO STEP 12.

Cue: ***If the operator identifies the need to refer to E-0, say: "E-0 will be handled by another operator. Continue with ONOP-041.5."***

EVALUATOR'S NOTES:

NOTE 1: PZR pressure will be decreasing slowly.

NOTE 2: The Reactor is already tripped (both RTBs open).

( ) **ELEMENT: 7**

CHECKED PZR HEATERS OPERATION.

STANDARDS:

__1. VERIFIED ALL PZR HEATERS - ON.
[Step 12.a]

__2. CHECKED PZR HEATERS CAPABLE OF MAINTIANING PRESSURE.
[Step 12.b]

__3. DISPATCHED OPERATOR TO PERFORM ATTACHMENT 1, PZR HEATER OUTPUT WORKSHEET & NOTIFY THE ELECTRICAL DEPARTMENT.
[Step 12 RNO b. & c.]

Cue: Inform operator that the ANPS will coordinate performance of Attachment 1.

EVALUATOR'S NOTES:

NOTE: Operator may not perform Standard 3 because it is based on suspected diminished PZR heater output. The Operator will recognize that the real reason for decreasing PZR pressure is the stuck open spray valve.

( ) **ELEMENT: 8**

CHECK IF A PORV IS LEAKING.

STANDARDS:

__1. CONCLUDED NO PORV WAS LEAKING BASED ON PZR RELIEF LINE TEMPERATURES, PRT LEVEL, PRT TEMPERATURE, PRT PRESSURE AND PORV/SAFETY ACOUSTIC MONITORS.
[Step 13]

__2. TRANSITIONED TO STEP 15.
[Step 13 RNO]

EVALUATOR'S NOTES:

NOTE: PORV Tail Pipe temperatures may be elevated due to the earlier lifting of PORV PCV-455C. The Operator should still conclude no PORV is leaking.

( ) **ELEMENT: 9**

CHECK IF A PZR SAFETY IS LEAKING.

STANDARDS:

__1. MONITORED PZR SAFETY LINE TEMPERATURES, PRT CONDITIONS AND ACOUSTIC MONITORS AND CONCLUDED NO SAFETIES WERE LEAKING.
[Step 15]

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 10**

CHECK FOR RCS LEAKAGE CAUSING PRESSURE TO DECREASE.

STANDARDS:

__1. REQUESTED ASSISTANCE TO MONITOR RCS LEAKAGE USING 3-OSP-041.1.
[Step 16]

CUE: Role play as the NPS and say "Another operator will perform OSP-041.1. Continue with ONOP-041.5."

__2. DETERMINED PRESSURIZER PRESSURE WAS DECREASING.
[Step 17]

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 11**

DETERMINE IF A STUCK OPEN PZR SPRAY VALVE IS PREVENTING PRESSURE STABILIZATION.

STANDARDS:

__1. REVERIFIED OPEN INDICATION ON PCV-455A CONTROLLER.
[Step 18]

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 12**

REDUCE PZR SPRAY FLOW.

STANDARDS:

__1. RECONFIRMED SPRAY VALVES IN MANUAL WITH B LOOP NORMAL SPRAY AND AUX SPRAY VALVES CLOSED.
[Step 19.a]

__2. RECONFIRMED REACTOR SHUTDOWN.
[Step 19.b]

__3. STOPPED THE 3C RCP.
[Step 19.c]

CUE: ***When the Operator expresses the need to use OP-041.1 to stop the 3C RCP, as the NPS, say "OP-041.1 has already been reviewed. The RCP is ready to be stopped."***

__4. CHECKED PRESSURE TO BE STABLE.
[Step 19.d]

EVALUATOR'S NOTES:

NOTE 1: Only Standard 3 is Critical to this Element.

NOTE 2: Step 19.c tells the Operator to stop the RCP using 3-OP-041.1. This event would normally be handled using a team approach. In the interest of time, the NPS intervenes and tells the operator to trip the RCP after the operator identifies the need to use the OP.

NOTE 3: With pressurizer heaters on, Step 19.d will be satisfied because pressure will slowly increase following 3C RCP trip.

Terminate the JPM at this time.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.

2. ALL SYSTEMS ARE IN THEIR NORMAL ALIGNMENT EXCEPT A CONTAINMENT PURGE IS IN PROGRESS IN PREPARATION FOR A CONTAINMENT ENTRY SCHEDULED FOR NEXT SHIFT.

INITIATING CUE:

AS THE RCO, RESPOND TO PLANT CONDITIONS.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01067009300

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO PROCESS RADIATION MONITOR ALARM(S)

JPM NUMBER: 01067009300 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 3.00
COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

STATIC IC-8 SATISFIES THE FOLLOWING INSTRUCTIONS 3 1 THRU 4:

1. **Reset to IC-1; Place simulator in run; Touch sys mat-> containment->sampling & prms->2600->fuse loa->set TCC1XEPF=T->2601->fuse loa->set TCC1LAGF=T->2602->fuse loa->set TCC1XEQF=T->2603->fuse loa->set TCC1LAHF=T;**

2. **Open POV-3-2602/3; Open POV-3-2600/1; Start U-3 purge exhaust fan; Start U-3 purge supply fan.**

3. **Block auto operation of containment and control room ventilation isolation on an R-11/12 alarm as follows: sys mat->reactor->safeguards actuation logic->containment isolation->CIV11->fail to actuate->set TFL3V11=T->CIV1-> fail to actuate->TFL3V1=T.**

4. **Block Dampers D-11A and D-11B to prevent manual opening by the operator. SYS MAT->Common Services->HVAC-> D11A->Fail as is->TFKG11AA=T->D11B->Fail as is ->TFKG11BA=T.**

5. **Freeze simulator.**

6. **Install white placards on VPB switches for POV-2600->2603.**

TASK STANDARDS:

1. THE ALARMING CHANNEL WILL BE IDENTIFIED.

2. THE ALARM CONDITION WILL BE VALIDATED BY CHECKING THE AFFECTED PRMS CHANNEL.

3. AUTO ACTIONS ASSOCIATED WITH THE PRMS ALARM WILL BE VERIFIED.

REQUIRED MATERIALS:

1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE

REFERENCES:

1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE
2. 3-ARP-097.CR, WINDOW H-1/4 & WINDOW 3/6

TERMINATING CUES:

1. ONOP-067 ACTIONS COMPLETED TO MITIGATE THE EVENT AND ISOLATE THE SOURCE OF THE RELEASE.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.

2. ALL SYSTEMS ARE IN THEIR NORMAL ALIGNMENT EXCEPT A CONTAINMENT PURGE IS IN PROGRESS IN PREPARATION FOR A CONTAINMENT ENTRY SCHEDULED FOR NEXT SHIFT.

INITIATING CUE:

AS THE RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

NOTE 1: The operator may make a plant wide announcement per the Fold Out page, Item #1, to warn personnel of a potential radiation release.

NOTE 2: Elements 4 and 5 may be performed early based on when the operator reviews and applies the Fold Out page.

BOOTH OPERATOR:

Shortly after simulator taken to run, Touch sys mat->containment->sampling & prms->R12->rad transmitter drift coefficient->set TVCMMD2=0.04/1min ramp

( ) **ELEMENT: 1**

OBTAIN PROCEDURE.

STANDARDS:

__1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE, OBTAINED.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 2**

VALIDATE THE PRMS HI RADIATION ALARM.

STANDARDS:

__1. REVIEWED NOTES PRIOR TO STEP 1.

__2. IDENTIFIED THE ALARMING PRMS CHANNEL AS R-12 BY OBSERVING THE R-12 RED HIGH LED ON.
[Step 1]

__3. REVIEWED NOTES PRIOR TO STEP 2 AND NOTED STEP 2.b WAS NOT APPLICABLE FOR AN R-12 ALARM.

__4. CHECKED CHANNEL READOUT INDICATING > ALARM SETPOINT (R-11/R-12 Setpoints are posted on the drawer face.)
[Step 2a]

__5. DEPRESSED C/S PUSHBUTTON AND CHECKED PROPER RESPONSE FOR A SOURCE CHECK.
[Step 2c]

__6. CHECKED FAIL INDICATOR TO BE OFF - *NOT APPLICABLE TO R-11 & R-12*
[Step 2d]

__7. CHECKED DISPLAY AND RECORDER READING **NOT** FAILED LOW.
[Step 2d]

__8. CHECKED RM-80 GREEN MONITOR LIGHT TO BE ON.
[Step 2d]

__9. REVIEWED CAUTION AND NOTES PRIOR TO STEP 3.

__10. TRANSITIONED TO STEP 16 BASED ON STEP 3 RNO.
[Step 3]

EVALUATOR'S NOTES:

NOTE: Due to high level, source check response may not be visible.

( ) **ELEMENT: 3**

CHECK FOR R-11/12 HIGH ALARMS.
[Step 16a]

STANDARDS:

__1. CHECKED R-11 RED HIGH LED - ON.
(NO)

__2. CHECKED R-11 PART ALARM MONITOR PUSHBUTTON - FLASHING.
(NO)

__3. CHECKED R-12 RED HIGH LED - ON.
(YES)

__4. CHECKED R-12 GAS ALARM MONITOR PUSHBUTTON - FLASHING.
(YES)

__5. CHECKED R-11/12 DISPLAY READING - GREATER THAN OR EQUAL TO ALARM SETPOINT.
(NO/YES)

(R-11/R-12 Setpoints are posted on the drawer face.)

EVALUATOR'S NOTES:

NOTE: Regarding Standards 2 & 4;

Once pressed, R-12 pushbutton will no longer flash.

(C) **ELEMENT: 4**

VERIFY CONTAINMENT VENTILATION ISOLATION.
[Step 16b & Att.1, page 1 of 2]

STANDARDS:

1. CHECKED CONTAINMENT VENTILATION ISOLATION. (All switch locations on VPB)

   __A. STOPPED CONT. PURGE AIR SUPPLY FAN.

   __B. STOPPED CONT. PURGE AIR EXHAUST FAN.

   __C. CLOSED POV-2600, CONT. PURGE SUPPLY ISOLATION (OC).

   __D. CLOSED POV-2601, CONT. PURGE SUPPLY ISOLATION (IC).

   __E. CLOSED POV-2602, CONT. PURGE EXHAUST ISOLATION (OC).

   __F. CLOSED POV-2603, CONT. PURGE EXHAUST ISOLATION (IC).

   __G. CLOSED CV-2826, CONT. INSTRUMENT AIR BLEED (OC).

   __H. CLOSED CV-2819, CONT.INSTRUMENT AIR BLEED (IC).

EVALUATOR'S NOTES:

NOTE 1: Because the R-12 alarm failed to initiate Containment and Control Room Ventilation, the operator will have to manually align the listed equipment.

NOTE 2: The operator may have performed these actions immediately upon entering the procedure in response to Fold Out Page Item 2.

(C) **ELEMENT: 5**

VERIFY CONTROL ROOM VENTILATION ISOLATION.
(Step 16b & Att.1, page 2 of 2)

STANDARDS:

1. CHECKED CONTROL ROOM VENTILATION ISOLATION.
(All switch locations on Control Room Ventilation System panel.)

__A. CLOSED D-1A, VENTILATION INLET DAMPER.

__B. CLOSED D-1B, VENTILATION INLET DAMPER.

__C. STOPPED EF-9, TOILET EXHAUST FAN.

__D. STOPPED EF-20, KITCHEN EXHAUST FAN.

__E. CLOSED D-14, TOILET EXHAUST DAMPER.

__F. CLOSED D-22, KITCHEN EXHAUST DAMPER.

__G. STARTED CONTROL ROOM EMERGENCY VENTILATION SUPPLY FAN, SF1B.

__H. OPENED D-2, EAST INLET DAMPER.

__I. OPENED D-3, WEST INLET DAMPER.

EVALUATOR'S NOTES:

NOTE: As with the Containment Ventilation Isolation, Control Room Ventilation Isolation failed to occur and the components must be manually aligned.

(C) **ELEMENT: 6**

IDENTIFY DAMPERS D-11A AND D-11B FAILED CLOSED.
(Attach. 1 Page 2 of 2)

STANDARDS:

__1. Observed green light on/red light off indication after attempting to open damper D-11A.

__2. Observed green light on/red light off indication after attempting to open damper D-11B.

__3. Reported failed dampers D-11A and D-11B to the NPS.

Cue: ***As the NPS, acknowledge the report of the failed dampers D-11A and D-11B.***

EVALUATOR'S NOTES:

NOTE 1: Standards 1 and 2 are critical to this Element.

TERMINATE THE JPM AT THIS POINT.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. PRT TEMPERATURE IS IN EXCESS OF 120 DEG F.

2. ALL APPLICABLE PREREQUISITES FOR SECTION 3.0 OF THE APPLICABLE PROCEDURE ARE SATISFIED.

INITIATING CUE:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO REDUCE PRT TEMPERATURE TO <120 DEG F.

JOB CLASSIFICATION: RCO

JPM TITLE: REDUCE PRT TEMPERATURE

JPM NUMBER: 01041012101 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 2.00

TIME VALIDATION: 15 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:__X__ SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

STATIC IC-9 INCLUDES THE FOLLOWING PRT INSTRUMENT OFFSETS:

Reset to IC-1->SYS MAT->REACTOR COOLANT SYSTEM->PRESSURIZER RELIEF TANK->T-471->RTD OFFSET IN OUTPUT->SET TVH14710=0.05-> L-470→LT-470->OFFSET IN OUTPUT->SET TVH1P70O=0.08

TASK STANDARDS:

1. PRESSURIZER RELIEF TANK TEMPERATURE REDUCED.

REQUIRED MATERIALS:

1. 3-OP-041.3, PRESSURIZER RELIEF TANK
2. RCO LOG BOOK

REFERENCES:

1. 3-OP-041.3, PRESSURIZER RELIEF TANK

TERMINATING CUES:

1. PRT LEVEL HAS BEEN REDUCED TO 68% OR EARLIER AT THE DISCRETION OF THE EXAMINER.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. PRT TEMPERATURE IS IN EXCESS OF 120 DEG F.

2. ALL APPLICABLE PREREQUISITES FOR SECTION 3.0 OF THE APPLICABLE PROCEDURE ARE SATISFIED.

INITIATING CUES:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO REDUCE PRT TEMPERATURE TO <120 DEG F.

( ) ELEMENT: 1

OBTAIN 3-OP-041.3.

STANDARDS:

__1. 3-OP-041.3 HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.

CUE: ***When the need to check for OTSCs is recognized, tell the operator: "There are no outstanding OTSCs on 3-OP-041.3.***

EVALUATOR'S NOTES:

NOTE 1: Provide the operator with a copy of the procedure once it has been identified.

NOTE 2: The operator will not be able to check for OTSCs in the simulator in the usual manner.

(C) ELEMENT: 2

RAISE PRT LEVEL.

STANDARDS:

__1. REVIEWED CAUTIONS PRIOR TO STEP 7.2.2.1 FOR APPLICABILITY AND CONTINUED.

__2. INITIATED PRT FILL TO 83% AS FOLLOWS: (Step 7.2.2.1)

__a. PRT MAKEUP VALVE, CV-519B, OPENED. (Console) (Step 7.2.2.1.a)

__b. PRIMARY WATER TO CNTMT ISOL, CV-519A, OPENED. (VPA) (Step 7.2.2.1.b)

__3. PRT LEVEL MONITORED ON LI-3-470. (Console)

__4. FILL TERMINATED AT APPROXIMATELY 83% AS FOLLOWS: (Step 7.2.2.2)

__a. PRIMARY WATER TO CNTMT ISOL, CV-519A CLOSED. (Step 7.2.2.2.a)

__b. PRT MAKEUP VALVE, CV-519B CLOSED. (Step 7.2.2.2.b)

EVALUATOR'S NOTES:

NOTE 1: Parts a. and b. of Standards 2 and 4 are critical to this element.

NOTE 2: Two alarms are expected:

I 5/6, PRI WATER STANDBY PUMP RUNNING AND
A 7/1, PRT HI/LO LEVEL HI PRESS/TEMP (Reflash).

The operator will acknowledge these alarms and continue.

(C) ELEMENT: 3

INITIATE PRT LEVEL DRAIN TO 68%.

STANDARDS:

__1. DIRECTED SNPO TO CLOSE RCDT TO PUMP SUCTION, LCV-1003A. (Step 7.2.2.3.a)

BOOTH OPERATOR CUE: As the SNPO, acknowledge the order to close LCV-1003 at the WB Panel.

BOOTH INSTRUCTIONS:
SYS MAT->WASTE DISPOSAL->LIQUID WASTE DISPOSAL ->LCV1003A->LOCAL HANDSWITCH->SET TAA21003=0.

__2. OPENED PRT DRAIN VALVE, CV-523. (Console) (Step 7.2.2.3.b)

__3. DIRECTED SNPO TO START EITHER A OR B RCDT PUMP. (Step 7.2.2.3.c)

BOOTH OPERATOR CUE: As the SNPO, acknowledge the order to start a RCDT pump.

BOOTH INSTRUCTIONS:
A RCDT PUMP->LOCAL HANDSWITCH->->SET TAA2PTA=2.

__4. RECORDED PUMP SELECTED. (Step 7.2.2.3.c)

EVALUATOR'S NOTES:

NOTE 1: Standards 1, 2, & 3 are critical to this element.

NOTE 2: When the operator has completed all critical standards, the examiner may terminate the JPM even if PRT level has not reached 68%

Inform operator that JPM has been completed.

Florida Power & Light Company

Turkey Point Nuclear Plant

Unit 3

This procedure may be affected by an O T S C (On The Spot Change) verify information prior to use.
Date verified ________ Initials ________

3-OP-041.3

Title:

Pressurizer Relief Tank

Safety Related Procedure	
Responsible Department:	Operations
Revision Approval Date:	10/23/98
Periodic Review Due:	9/15/02

RTSs *86-0951, 87-2437, 87-2521, 87-1579, 88-0627, 89-3274, 91-0831, 93-0835P, 93-1150P, 94-0319P, 96-1414P, 97-0004P, 96-1198P, 98-0231P*
OTSCs *7626, 0768-96, 0475-98, 0476-98*
PC/Ms *89-581, 95-102*

LIST OF EFFECTIVE PAGES

Page	Revision Date
1	10/23/98
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TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure provides the prerequisites, precautions/limitations, and instructions for the startup/normal operations and infrequent operation of the Pressurizer Relief Tank. (PRT)

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Technical Specifications

1. None

2.1.2 FSAR, Section 4.2.2, Reactor Coolant System Components

2.1.3 Operating Diagrams

1. 5613-M-3041, Reactor Coolant System
2. 5613-M-3061, Waste Disposal System Liquids

2.1.4 Operating Procedures

1. 0-ADM-215, Plant Surveillance Tracking Program
2. 3-OP-041.2, Pressurizer Operation
3. 3-OP-061.3, Reactor Coolant Drain Tank System
4. 0-OSP-200.1, Schedule of Plant Checks and Surveillances

2.1.5 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. PC/M 89-581, Containment Isolation Features Design Basis Implementation
2. PC/M 95-102, Abandonment of the C07 Panel and Sample Train Reconfiguration
3. Setpoint Change #88, PRT Operating Bands and Pressure/Temp. High Alarms
4. Precautions, Limitations, and Setpoints, Section A.14

2.2 Records Required

2.2.1 The date, time and section completed shall be logged in the Reactor Control Operator (RCO) logbook. Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.).

2.2.2 Completed copies of the below listed item(s) constitute Quality Assurance Records and shall be transmitted to QA Records for Retention in accordance with Quality Assurance Records Program requirements:

1. Section 5.0
2. Section 7.0
3. Attachment 1

2.2.3 Completed copies of the below listed item(s) shall be retained in the Nuclear Plant Supervisor's file until the next performance of that section, enclosure, or attachment.

1. Attachment 1

2.2.4 Completed attachments listed below, that have the TAG column checked (√), shall be copied and transmitted to the Labeling Coordinator:

1. Attachment 1

2.3 Commitment Documents

2.3.1 None

3.0 PREREQUISITES

3.1 The following systems are operable or in operation to support operation of the PRT:

3.1.1 All plant electrical systems are operable to supply power and control functions to support Pressurizer Relief Tank operation.

3.1.2 Primary Water System

3.1.3 Waste Disposal System

3.1.4 Nitrogen Supply System

3.2 The Pressurizer Relief Tank valve alignment has been verified by completion of Attachment 1.

3.3 All instruments and control devices are in service for the Pressurizer Relief Tank operation with no surveillance required, outstanding PWOs, clearances, or temporary system alterations **that affect system operability** as per the following:

3.3.1 0-ADM-215, Plant Surveillance Tracking Program and 0-OSP-200.1, Schedule of Plant Checks and Surveillances (No surveillances have exceeded the date required on the surveillance use of grace sheet.)

3.3.2 Temporary System Alteration (TSA) Log

3.3.3 Clearance Log

3.3.4 Out-of-Service Log

3.4 If performing Subsection 7.4, Removing Air from the PRT Following Maintenance, then maintenance assistance will be required.

4.0 PRECAUTIONS/LIMITATIONS

4.1 Water temperature should not exceed 120°F during normal operations.

4.2 Pressure should not exceed 10.0 psig during normal operations.

4.3 Oxygen concentration shall be maintained below 2 percent by volume.

4.4 Water level should be maintained between 68 percent and 83 percent.

4.5 All work in a radiation area shall be performed in accordance with the requirements of the Radiation Work Permit and ALARA program.

4.6 Hydrogen concentration shall be less than 4 percent by volume prior to the PRT being opened to atmosphere for maintenance.

5.0 STARTUP/NORMAL OPERATION

5.1 Establishing Normal Conditions

INITIALS
CK'D VERIF

Date/Time Started: _____

5.1.1 Initial Conditions

____ 1. All applicable prerequisites listed in Section 3.0 have been satisfied.

5.1.2 Procedure Steps

CAUTION

If Containment Isolation or Safety Injection signal is actuated, CV-3-519B must be closed to ensure containment integrity.

1. Establish the normal water level of 68 to 83 percent by opening the following valves:

____ a. Primary Water To Cntmt Isol, CV-3-519A

____ b. PRT Makeup Valve, CV-3-519B

2. **WHEN** PRT level is between 68 and 83 percent, **THEN** close the following:

____ ____ a. PRT Makeup Valve, CV-3-519B

____ ____ b. Primary Water to Cntmt Isol, CV-3-519A

____ 3. Adjust the Nitrogen Regulator, PCV-3-473, to establish the normal operating cover gas pressure of at least 6 psig.

____ 4. Verify that the oxygen content is less than 2 percent of volume as indicated on the gas analyzer.

____ 5. Verify all log entries specified in Subsection 2.2 have been logged.

Date/Time Completed: _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY: _____
Nuclear Plant Supervisor or SRO Designee

6.0 SHUTDOWN

6.1 None

7.0 INFREQUENT OPERATION

7.1 Draining the PRT

INITIALS
CK'D VERIF

Date/Time Started: _____

7.1.1 Initial Conditions

____ 1. All applicable prerequisites in Section 3.0 are satisfied.

____ 2. An excessive level exists or maintenance is to be performed.

CAUTION

Changes in PRT level with a PORV open, may affect RCS draindown level indication.

7.1.2 Procedure Steps

____ 1. Close the RCDT to Pump Suction Valve, LCV-3-1003A.

____ 2. Open the PRT Drain Valve, CV-3-523.

____ 3. Start either RCDT pump, 3A or 3B. Pump Started: _____

____ 4. **WHEN** the desired level is attained, **THEN** stop the RCDT pump.

____ ____ 5. Close the PRT Drain Valve, CV-3-523.

____ 6. Place the RCDT to Pump Suction Valve, LCV-3-1003A, to AUTO.

____ 7. Verify all log entries specified in Subsection 2.2 have been logged.

Date/Time Completed: _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY: _____
Nuclear Plant Supervisor or SRO Designee

7.2 Reducing PRT Liquid Temperature

INITIALS
CK'D VERIF

Date/Time Started: _____

7.2.1 Initial Conditions

—— 1. All applicable prerequisites listed in Section 3.0 are satisfied.

—— 2. PRT liquid temperature is in excess of 120°F.

7.2.2 Procedure Steps

CAUTIONS

- ***When adding Primary Water to the PRT, level and pressure shall be closely monitored to prevent overpressurization of the PRT.***
- ***If a Containment Isolation or Safety Injection signal is actuated, CV-3-519B must be closed to ensure containment integrity.***

1. Increase the PRT level to 83 percent with Primary Water by opening the following valves:

—— a. PRT Makeup Valve, CV-3-519B

—— b. Primary Water To Cntmt Isol, CV-3-519A

2. **WHEN** PRT level reaches 83 percent, **THEN** close the following valves:

—— —— a. Primary Water To Cntmt Isol, CV-3-519A

—— —— b. PRT Makeup Valve, CV-3-519B

INIT

7.2.2 (Cont'd)

3. Drain the PRT to 68 percent by performing the following steps:

____ a. Locally close the RCDT to Pump Suction, LCV-3-1003A.

____ b. Open the PRT Drain Valve, CV-3-523.

____ c. Locally start either RCDT Pump, 3A or 3B. Pump started. _____

____ d. **WHEN** 68 percent level is reached, **THEN** stop the RCDT pump.

____ ____ e. Close the PRT Drain Valve, CV-3-523.

____ ____ f. Locally place the RCDT to Pump Suction Valve, LCV-3-1003A, to AUTO.

____ 4. Repeat Substeps 7.2.2.1 through 7.2.2.3, as necessary, until a satisfactory temperature of less than or equal to 120°F is attained. (Use additional procedure sections as necessary to document repeating substeps.)

____ 5. Verify all log entries specified in Subsection 2.2 have been logged.

Date/Time Completed: _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY: _____
Nuclear Plant Supervisor or SRO Designee

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 4.
2. RCS TEMPERATURE IS APPROXIMATELY 300°F.
3. RCS PRESSURE IS APPROXIMATELY 300 PSIG.
4. THE RHR SYSTEM IS IN SERVICE.
5. A STANDBY SG FEED PUMP IS SUPPLYING THE S/Gs.
6. NO EQUIPMENT IS OUT OF SERVICE.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO LOSS OF RHR

JPM NUMBER: 01050004309 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 2.50

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

MAY USE STATIC IC-10. 3A RHR PUMP SHAFT SHEAR IS ARMED. PRESS MAST FAIL TO ACTUATE.

1. **Reset to IC-30 (on RHR 300#/300 deg.).**
2. **Place simulator in run and ensure annunciators are acknowledged.**
3. **Adjust FC-605 as needed to obtain 3500 to 3700 gpm on FI-605 and freeze simulator until ready to begin.**
4. **When the operator has completed turnover, shear the shaft on the operating RHR pump.**
   SYS MAT->SAFETY SYSTEM->RHR PROCESS->3A RHR PUMP (P3A) ->RHR PP 3A->SHEARED SHAFT->SET TFMUM01S:T
5. **HANG YELLOW COLD SHUTDOWN PLACARDS ON THE FOLLOWING ECCS MOVs: 865 A,B,C/866A,B/869.**
6. **INSTALL WHITE PLACARDS ON MOVs 750 & 751 &862 A,B.**

TASK STANDARDS:

1. CORE REMAINS COVERED.
2. CORE COOLING RESTORED.

REQUIRED MATERIALS:

1. 3-ONOP-050

REFERENCES:

1. 3-ONOP-050, LOSS OF RHR
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

TERMINATING CUES:

RCS COOLING ESTABLISHED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 4.
2. RCS TEMPERATURE IS APPROXIMATELY 300°F.
3. RCS PRESSURE IS APPROXIMATELY 300 PSIG.
4. THE RHR SYSTEM IS IN SERVICE.
5. A STANDBY SG FEED PUMP IS SUPPLYING THE S/Gs.
6. NO EQUIPMENT IS OUT OF SERVICE.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

NOTE 1: Upon receiving the RHR HX HI/LO FLOW annunciator, the operator may opt to manually stop the affected RHR pump after observing the low amps/red light condition of the pump. This is an acceptable response.

NOTE 2: The operator may reference the ARP for annunciator H-6/2, RHR Hx HI/LO FLOW, prior to performing ONOP-050.

The ARP will direct the operator to verify:

1) FI-605 indicated flow (VPB),
2) demanded positions for HCV-758/FCV-605 (VPB),
3) MOV-750/751 & MOV=744A/B lights (VPB),
4) RHR pump amps

before transition is directed to ONOP-050.

( ) **ELEMENT: 1**

DIRECT SNPO TO LOCALLY MONITOR PUMPS.
[ONOP-050, Step 1]

STANDARDS:

__1. SNPO DIRECTED TO STAND BY THE RHR PUMPS AND ESTABLISH RADIO CONTACT WITH THE CONTROL ROOM.

__2. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

BOOTH OPERATOR-AS SNPO:
CUE: Acknowledge operator's notification and establish communications.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 2**

DIRECT STA TO MONITOR HEATUP RATE.
[Step 2]

STANDARDS:

__1. STA DIRECTED TO MONITOR HEATUP RATE.

__2. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

CUE: Acknowledge notification as STA.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 3**

CHECK MOV-750/751 OPEN.
[Step 3]

STANDARDS:

__1. MOV-750/751 VERIFIED OPEN ON VPB.
(RED LIGHTS ON)

__2. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 4**

OBTAIN 3-ONOP-050.

STANDARDS:

__1. PROCEDURE OBTAINED.

__2. CAUTIONS/NOTES AND STEPS 1 THROUGH 3 REVIEWED TO ENSURE COMPLETION.

EVALUATOR'S NOTES:

NOTE: The ANPS would typically obtain the procedure and direct activities from this point. For the purposes of this JPM, the operator will work from the procedure.

( ) **ELEMENT: 5**

VERIFY MOV-744A/744B OPEN.
[Step 4]

STANDARDS:

__1. MOV-744A/744B VERIFIED OPEN ON VPB.
(RED LIGHTS ON)

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 6**

CHECK RHR PUMPS RUNNING.
[Step 5]

STANDARDS:

__1a. OBSERVED RED LIGHT INDICATION AND LOW AMPS ON THE OPERATING RHR PUMP AND STOPPED THE OPERATING RHR PUMP.

OR, IF THE OPERATING RHR PUMP HAD BEEN STOPPED EARLIER:

__1b. OBSERVED GREEN LIGHT INDICATION AND ZERO AMPS ON BOTH RHR PUMPS ON VPB.

EVALUATOR'S NOTES:

NOTE 1: At this step in the procedure, the required condition is to have zero RHR pumps running and the operator transition to Step 5 RNO column.

NOTE 2: If the operator had not previously stopped the operating RHR pump, it is a critical standard to stop it at this time. If the pump was stopped earlier, this element is NOT critical.

(C) **ELEMENT: 7**

CLOSE HCV-758.
[Step 5, RNO a]

STANDARDS:

__1. HCV-758 MANUALLY CLOSED AT VPB.

EVALUATOR'S NOTES:

HCV-758 is manually closed by adjusting its potentiometer until controller demand is zero.

(C) **ELEMENT: 8**

CLOSE FCV-605.
[Step 5, RNO b]

STANDARDS:

__1. FCV-605 MANUALLY CLOSED AT VPB.

EVALUATOR'S NOTES:

NOTE 1: MOV-750 and MOV-751 have previously been verified open. There is no change in their condition. [Step 5, RNO c]

NOTE 2: FCV-605 is closed by placing its controller in manual and forcing closed with the ∇ pushbutton or by leaving the controller in automatic and adjusting the potentiometer until the controller demand is zero.

(C) **ELEMENT: 9**

START AN RHR PUMP.
[Step 5, RNO d & e]

STANDARDS:

__1. RESTART OF PREVIOUSLY OPERATING RHR PUMP WAS NOT ATTEMPTED.

__2. STARTED THE STANDBY RHR PUMP AT VPB.

EVALUATOR'S NOTES:

NOTE: The operator will not attempt to start the RHR pump with the sheared shaft. The standby RHR pump will start.

NOTE: Standard 1 is not critical to this element.

(C) **ELEMENT: 10**

RETURN FCV-605 TO AUTO.
[Step 5, RNO g]

STANDARDS:

__1. FCV-605 RETURNED TO AUTOMATIC OPERATION AT THE DESIRED FLOW.

EVALUATOR'S NOTES:

NOTE 1: Desired flow, as determined by 3-OP-050, is between 3500 and 3700 gpm. Minimum acceptable RHR flow is 3000 gpm (ref. Step 15 of ONOP-050).

NOTE 2: If FCV-605 potentiometer setting has not been changed, depressing the AUTO pushbutton on FC-605 will automatically return flow to the pre-event value of 3500-3700 gpm.

If FCV-605 potentiometer setting has been changed, the operator will have to readjust the potentiometer until 3500 to 3700 gpm is obtained.

(C) **ELEMENT: 11**

ADJUST HCV-758 AS NECESSARY TO CONTROL RCS TEMPERATURE.
[Step 5, RNO h]

STANDARDS:

__1. HCV-758 POTENTIOMETER ADJUSTED TO CONTROL RCS TEMPERATURE AT VPB.

EVALUATOR'S NOTES:

Note 1: Standard 1 is only critical if RCS temperatures are increasing. If necessary, the operator will adjust HCV-758 controller while monitoring RCS loop temperature to stabilize RCS temperature.

( ) **ELEMENT: 12**

VERIFY RHR PUMPS NOT CAVITATING.
[Step 6]

STANDARDS:

__1. RUNNING RHR PUMP AMPS VERIFIED TO BE STABLE AT VPB.

__2. RHR LOOP FLOW VERIFIED TO BE STABLE AT VPB.

__3. NOISE VERIFIED TO BE NORMAL BY CONTACTING THE SNPO AT THE RUNNING RHR PUMP.

BOOTH OPERATOR-AS SNPO:
CUE: Report back that the operating pump sounds normal.

EVALUATOR'S NOTES:

NOTE: There will be no evidence of cavitation.

( ) **ELEMENT: 13**

VERIFY AUTOMATIC RHR FLOW CONTROL OPERATION.
[Step 7a]

STANDARDS:

__1. FCV-605 VERIFIED MAINTAINING DESIRED FLOW (APPROX. 3500 TO 3700 GPM) IN AUTOMATIC ON VPB.

EVALUATOR'S NOTES:

NOTE: After verifying RHR flow is normal, the operator will transition to Step 18.

( ) **ELEMENT: 14**

MAINTAIN STABLE PLANT CONDITIONS (Step 18)

STANDARDS:

__1. RCS TEMPERATURE VERIFIED TO BE STABLE OR DECREASING.

__2. Tavg MAINTAINED AT DESIRED TEMPERATURE.

EVALUATOR'S NOTES:

Tell the operator that the JPM is completed.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. ONLY ONE(1) HHSI PUMP IS AVAILABLE ON UNIT #3 WHICH HAS EXPERIENCED AN SI SIGNAL.

2. OPERATORS ARE PERFORMING 3-EOP-ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED.

3. THE UNIT 4 RCO HAS BEEN DIRECTED TO PERFORM ATTACHMENT 1 OF 3-EOP-ECA-0.2 FOR UNIT 3.

INITIATING CUE

YOU ARE THE SNPO AND YOU HAVE BEEN DIRECTED TO:

1) PERFORM 3-EOP-ECA-0.2, ATTACHMENT 1, TO ALIGN UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST.

2) NOTIFY THE UNIT 4 RCO WHEN LOCAL VALVE MANIPULATIONS OF ATTACHMENT 1 ARE COMPLETE.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT 1
(Page 1 of 1)

REALIGNMENT OF UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST

1. Isolate Unit 4 High-Head SI Pumps From Unit 4 RWST

a. Locally open SI pump suction inter-tie valves

- 870A, High-Head SI Pump Suction Header Sectionalizing Valve
- 870B, SI Pump Suction Cross-Connect Valve

b. Locally unlock and open high-head SI Pump Mini Flow Recirc Cross-Connect Valves

- 892A
- 892B

c. Unlock and close Unit 4 RWST Outlet valve

- 4-864C

d. Turn ON control power **AND** close Unit 4 High-Head SI Pump Recirc To RWST valves

- MOV-4-856A
- MOV-4-856B

e. Turn OFF control power to Unit 4 High-Head SI Pump Recirc To RWST valves

- MOV-4-856A
- MOV-4-856B

2. Notify Unit 3 RCO That This Attachment Has Been Completed

FINAL PAGE

JOB CLASSIFICATION: SENIOR NUCLEAR PLANT OPERATOR

JPM TITLE: REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST DURING A LOSS OF ALL AC POWER WITH SI REQUIRED ON UNIT 3

JPM NUMBER: 24050032500 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. THE HHSI ALIGNMENT HAS BEEN COMPLETED AS DIRECTED.
2. THE UNIT 4 RCO HAS BEEN INFORMED OF THE HHSI ALIGNMENT STATUS.

REQUIRED MATERIALS:

1. 3-EOP-ECA-0.2, LOSS OF ALL A.C.POWER RECOVERY WITH SI REQUIRED (ATTACHMENT 1)
2. UNIT 4 ICCS KEYS
3. COMMON ICCS KEYS

REFERENCES:

1. 3-EOP-ECA-0.2, LOSS OF ALL A.C.POWER RECOVERY WITH SI REQUIRED

TERMINATING CUES:

THE RCO HAS BEEN NOTIFIED OF ALIGNMENT COMPLETION.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. ONLY ONE(1) HHSI PUMP IS AVAILABLE ON UNIT #3 WHICH HAS EXPERIENCED AN SI SIGNAL.

2. OPERATORS ARE PERFORMING 3-EOP-ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED.

3. THE UNIT 4 RCO HAS BEEN DIRECTED TO PERFORM ATTACHMENT 1 OF 3-EOP-ECA-0.2 FOR UNIT 3.

INITIATING CUE

YOU ARE THE SNPO AND YOU HAVE BEEN DIRECTED TO:

1) PERFORM 3-EOP-ECA-0.2, ATTACHMENT 1, TO ALIGN UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST.

2) NOTIFY THE UNIT 4 RCO WHEN LOCAL VALVE MANIPULATIONS OF ATTACHMENT 1 ARE COMPLETE.

(C) **ELEMENT: 1**

LOCALLY OPEN THE HHSI CROSS-TIE VALVES.

STANDARDS:

__1. HIGH-HEAD SI PUMP SUCTION HEADER SECTIONALIZING VALVE 870A HAS BEEN OPENED LOCALLY.
[Att. 1, Step 1.a]

CUE: ***When the valve has been identified and the operator has stated the required actions, confirm the required actions by stating:***

"The stem is fully up and the valve will not turn any more in the counter clockwise direction."

__2. SI PUMP SUCTION CROSS-CONNECT VALVE 870B HAS BEEN OPENED LOCALLY.
[Att. 1, Step 1.a]

CUE: ***Once the valve has been identified and the operator has stated the required actions, confirm the required actions by stating:***

"The stem is fully up and the valve will not turn any more in the counter clockwise direction."

__3. HIGH-HEAD SI PUMP MINI FLOW RECIRC CROSS-CONNECT VALVES(892A AND 892B) HAVE BEEN UNLOCKED AND OPENED LOCALLY.
[Att. 1, Step 1.b]

CUE: ***When the valves have been identified and the operator has stated the required actions, confirm the required actions by stating:***

"The valves will not turn any more in the counter clockwise direction."

EVALUATOR'S NOTES:

1. Valves 870A and 870B are rising stem valves. The operator should state that he will turn the handwheel on each valve counter-clockwise until it stops and the stem will be in the full-up position.

2. Valves 892A and 892B are knocker valves with color coded ICCS locks. The operator will need to unlock and remove the lock and then turn the valve handle in the counter-clockwise direction until it stops.

(C) **ELEMENT: 2**

CLOSE 4-864C.

STANDARDS:

RWST OUTLET VALVE 4-864C IS UNLOCKED AND CLOSED
[Att. 1, Step 1.c]

CUE: When the operator has located the valve and identified the required actions, confirm the required actions by stating:

"The stem is fully down and the valve will not turn anymore in the clockwise direction."

EVALUATOR'S NOTES:

1. Valve 4-864C is a rising stem valve. The operator should state that he will turn the handwheel on the valve clockwise until it stops and the stem will be in the full-down position.

(C) **ELEMENT: 3**

NOTIFY RCO.

STANDARDS:

RCO NOTIFIED OF ALIGNMENT COMPLETION.

CUE: Acknowledge notification as the RCO using repeat back and stating that you will complete Attachment 1.

EVALUATOR'S NOTES:

Tell the operator that the JPM is complete.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. CVT 4Y07A IS POWERING VITAL AC INSTRUMENT BUS 4P09.

2. 4D NORMAL INVERTER IS IN STANDBY AND READY FOR LOADING.

3. ALL APPLICABLE PROCEDURE PREQUISITES ARE SATISFIED.

INITIATING CUE:

YOU ARE THE NPO AND YOU HAVE BEEN DIRECTED BY THE NWE TO TRANSFER VITAL AC INSTRUMENT BUS 4P09 FROM THE CVT TO THE 4D INVERTER (EXTERNAL TRANSFER).

JOB CLASSIFICATION: NPO

JPM TITLE: TRANSFER INSTRUMENT BUS LOAD FROM CVT TO NORMAL INVERTER (EXTERNAL TRANSFER)

JPM NUMBER: 14003026101 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/03/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 45 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. 4D NORMAL INVERTER IS POWERING 4P09 INSTRUMENT AC BUS.
2. CVT 4Y07A IS BACK IN STANDBY.

REQUIRED MATERIALS:

1. O-OP-003.3, 120V VITAL INSTRUMENT AC SYSTEM

REFERENCES:

1. O-OP-003.3, 120V VITAL INSTRUMENT AC SYSTEM

TERMINATING CUES:

4D NORMAL INVERTER IS POWERING VITAL INSTRUMENT BUS 4P09.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. CVT 4YO7A IS POWERING VITAL AC INSTRUMENT BUS 4P09.

2. 4D NORMAL INVERTER IS IN STANDBY AND READY FOR LOADING.

3. ALL APPLICABLE PROCEDURE PREQUISITES ARE SATISFIED.

INITIATING CUES:

YOU ARE THE NPO AND YOU HAVE BEEN DIRECTED BY THE NWE TO TRANSFER VITAL AC INSTRUMENT BUS 4P09 FROM THE CVT TO THE 4D INVERTER (EXTERNAL TRANSFER).

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIAL.

STANDARDS:

__1. PROCEDURE 0-OP-003.3 OBTAINED.

__2. PROCEDURE VERIFIED AGAINST OTSC INDEX.

*Cue: **Once procedure has been correctly identified and the need to verify procedure against the OTSC Index has been expressed, provide the operator with the procedure.***

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 2**

VERIFY 4D NORMAL INVERTER IS NOT SUPPLYING A VITAL INSTRUMENT AC BUS.
[Step 7.6.2.1]

STANDARDS:

__1. REVIEWED NOTE PRIOR TO STEP 7.6.2.1.

__2. INSTRUMENT AC SELECTOR SWITCH 4P09A VERIFIED IN THE "ALTERNATE" POSITION PER TABLE 13 ON PAGE 52.

*CUE: **Indicate on the switch that it is in the position specified by the operator.***

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 3**

DETERMINE WHICH INSTRUMENT AC SELECTOR SWITCH SHOULD BE USED.
[Step 7.6.2.2]

STANDARDS:

__1. SELECTION MADE AS INDICATED ON TABLE 14 ON PAGE 53.

__2. SELECTION RECORDED IN SPACE PROVIDED ON STEP 7.6.2.2.

EVALUATOR'S NOTES:

NOTE: The Operator should have selected Instrument AC Selector Switch 4P09A.

( ) **ELEMENT: 4**

VERIFY NORMAL POWER AVAILABLE LIGHT IS ON.
[Step 7.6.2.3.a]

STANDARDS:

__1. NORMAL POWER AVAILABLE LIGHT VERIFIED ON.

CUE: Point to the light specified by the operator and say "ON."

EVALUATOR'S NOTES:

The Operator should have gone to the South wall of the Cable Spreading Room and located 4P09A Instrument AC Selector Switch Panel.

( ) **ELEMENT: 5**

TEST THE SYNCH VERIFICATION LIGHT.
[Step 7.6.2.3.b]

STANDARDS:

__1. SYNCH SWITCH PLACED TO SYNCH LAMP TEST POSITION.

CUE: Point to the position indicated by the operator.

__2. SYNCH VERIFICATION LIGHT VERIFIED TO COME ON.

CUE: After the Operator identifies the indication, point to the light and say 'ON'.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 6**

PERFORM A SYNCH CHECK.
[Step 7.6.2.3.c]

STANDARDS:

__1. THE SYNCH SWITCH WAS PLACED TO SYNCH CHECK PUSH POSITION.

Cue: ***Point to the position indicated by the operator.***

__2. REVIEWED NOTE PRIOR TO STEP.
[Step 7.6.2.3.c(2)]

__3. THE SYNCH SWITCH WAS DEPRESSED AND HELD.
[Step 7.6.2.3.c(2)]

Cue: ***After the Operator identifies the required switch position, point to the switch and say "DEPRESSED AND HELD."***

__4. THE SYNCH VERIFICATION LIGHT VERIFIED OFF
[Step 7.6.2.3.c(3)]

Cue: ***After the Operator identifies the required indication, point to the Sync Verification light and say "OFF."***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

POSITION THE INSTRUMENT AC SELECTOR SWITCH TO NORMAL. [Step 7.6.2.3.d]

STANDARDS:

__1. TABLE 14 ON PAGE 53 USED TO IDENTIFY 4P09A INSTRUMENT AC SELECTOR SWITCH.

__2. 4P09A INSTRUMENT AC SELECTOR SWITCH WAS PLACED TO THE NORMAL POSITION INDICATED BY TABLE 14.

Cue: ***When identified, point to the switch position indicated.***

EVALUATOR'S NOTES:

NOTE 1: 4P09A should be identified and aligned to "NORMAL".

NOTE 2: Standard 1 is NOT critical.

(C) **ELEMENT: 8**

PLACE ALTERNATE SOURCE TRANSFER SWITCH 4Y07B TO BACKUP TO NORMAL INVERTER (4Y07)4D POSITION.
[Step 7.6.2.3.e]

STANDARDS:

__1. TABLE 15 ON PAGE 54 WAS USED TO DETERMINE REQUIRED POSITION.

__2. ALTERNATE SOURCE TRANSFER 4Y07B SWITCH WAS UNLOCKED AND POSITIONED TO THE BACKUP TO NORMAL INVERTER (4Y07)4D POSITION AS DIRECTED BY TABLE 15.

Cue: ***When correctly identified, point at the switch position indicated.***

EVALUATOR'S NOTES:

NOTE 1: Only Standard 2 is critical to this element.

NOTE 2: The operator should have left the Cable Spreading Room and gone to the Inverter Room which is located behind the Control Room. Alternate Source Transfer Switch, 4Y07B, is located on the West wall.

NOTE 3: For the conditions of this evolution, Switch 4Y07B will initially be in the "BACKUP TO SPARE INVERTER (4Y06) DS" and should be positioned to "BACKUP TO NORMAL INVERTER (4Y07) 4D."

Note: ELEMENT #9 requires opening the front of the inverter control cabinet which presents some risk of electrical shock.

You may choose to have the operator describe where the switch is, what it looks like, and how to operate it rather than opening the cabinet.

OR

You may ask permission from the on-shift NPS to open the cabinet door of an inverter that is not carrying load.

(C) **ELEMENT: 9**

PLACE THE SYNCH REFERENCE SELECTOR SWITCH (SW-2) IN THE 4D INVERTER TO THE NORMAL (DOWN) POSITION. [Step 7.6.2.4]

STANDARDS:

Cue: ***If NPS permission cannot be obtained to open an Inverter cabinet, tell the Operator to describe this switch manipulation. Do not allow the operator to open the cabinet.***

__1. SWITCH SW-2 WAS POSITIONED IN THE NORMAL (DOWN) POSITION.

Cue: ***Confirm to the Operator the Sync reference selector switch (SW-2) is in the normal down position.***

EVALUATOR'S NOTES:

NOTE: The switch is a toggle switch, on the inside of the cabinet door. For the conditions of this evolution, switch SW-2 will initially be in the EXTERNAL (UP) position.

( ) **ELEMENT: 10**

VERIFY PROPER INDICATIONS ON THE NORMAL INVERTER.

STANDARDS:

__1. IN SYNCH LIGHT VERIFIED ON.
[Step 7.6.2.5.a]

CUE: ***When identified by the operator, point at the light and say "ON."***

__2. ALTERNATE SOURCE AVAILABLE LIGHT VERIFIED ON.
[Step 7.6.2.5.b]

CUE: ***When identified by the operator, point at the light and say "ON."***

__3. SYNC REFERENCE NORMAL LIGHT ON.
[Step 7.6.2.5.c]

CUE: ***When identified by the operator, point at the light and say "ON."***

__4. STATIC SWITCH OUTPUT LOAD VERIFIED LESS THAN 63 AMPS.
[Step 7.6.2.5.d]

CUE: ***Point to an output < 63 amps on the meter.***

__5. INVERTER OUTPUT VOLTAGE VERIFIED BETWEEN 119 TO 125 VAC.
[Step 7.6.2.5.e]

CUE: ***Point to an output of 120 VAC on the meter.***

__6. DC INPUT VOLTAGE VERIFIED BETWEEN 125V TO 138V DC.
[Step 7.6.2.5.f]

CUE: Point to an input of 128 VDC on the meter.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 11**

VERIFY THE OFF-NORMAL LIGHTS ARE OFF.
[Step 7.6.2.5.g]

STANDARDS:

___1. DC VOLTAGE LOW LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__2. LINE #1 TO GROUND LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__3. LINE #2 TO GROUND LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__4. ALTERNATE SOURCE SUPPLYING LOAD LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__5. REVERSE POLARITY LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__6. FAN FAILURE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__7. LOW AC VOLTAGE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__8. SYNC REFERENCE EXTERNAL LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__9. OUT OF SYNCH LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__10. HIGH TEMPERATURE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__11. MANUAL BYPASS SW IN ALTERNATE SOURCE TO LOAD POSITION LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

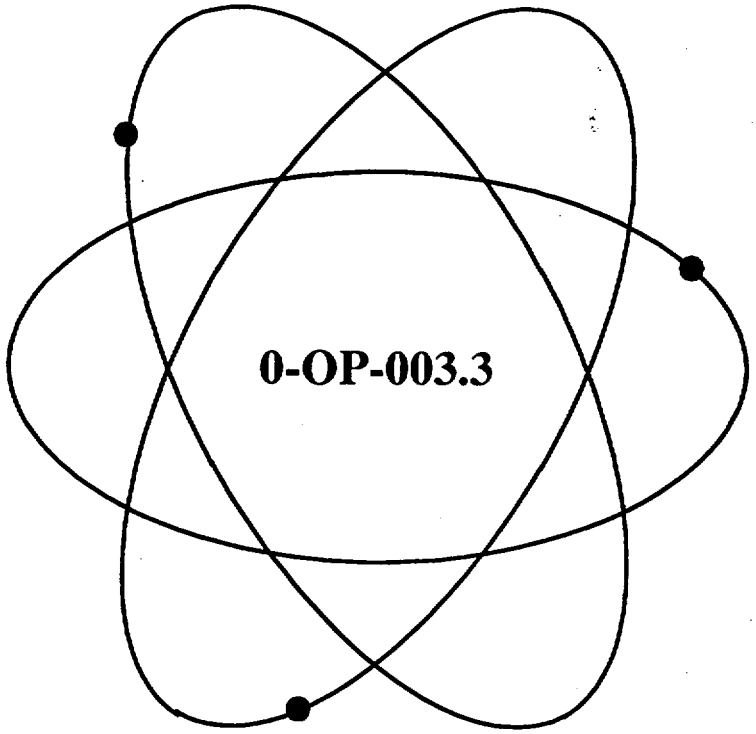
EVALUATOR'S NOTES:

Terminate the JPM at this point.

Florida Power & Light Company

Turkey Point Nuclear Plant

This procedure may be affected by an O T S C (On The Spot Change) verify information prior to use.
Date verified_____ Initials_____



Title:

120V Vital Instrument AC System

Safety Related Procedure	
Responsible Department:	Operations
Revision Approval Date:	7/30/99
Periodic Review Due:	2/1/01

RTSs *90-0700, 91-1379P,91-1532, 91-1889, 91-2430, 91-2442, 91-2827 91-3108, 92-0587, 93-0401P, 93-0415P, 93-1581, 95-1259, 96-0087P, 96-0723P, 96-1317, 97-0035, 97-1015, 97-1334P, 98-0156*
PC/Ms *83-199, 83-154, 83-200, 85-143, 81-157, 88-196, 88-197, 88-530 89-253 89-112, 89-462,89-168, 89-169, 87-264, 88-530, 92-073, 92-181,91-075, 94-037, 94-062, 95-102, 97-036, 98-025*
OTSCs *9538, 9660, 10239, 10299, 0469-93, 0552-93, 0519-94, 0027-95, 0030-95, 0343-99*

*1:4/MBS/jm/bvc/lr

LIST OF EFFECTIVE PAGES

OTSCs Incorporated by Word Processing:

	OTSC Number	Originator	Safety Review By	Approved By	Approved By (NPS)	PNSC No.	Approval Date
1	0141-98	R. Adamson	G. Marsh	K. Miller	G. Murphy	N/A	5/13/98

Page	Revision Date	Page	Revision Date	Page	Revision Date	Page	Revision Date
1	07/30/99	33	07/09/98	65	05/13/98	97	01/27/97
2	07/30/99	34	10/14/96	66	01/27/97	98	01/27/97
3	01/27/97	35	07/09/98	67	01/27/97	99	01/27/97
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29	02/02/96	61	01/27/97	93	01/27/97		
30	02/02/96	62	05/13/98	94	01/27/97		
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*/1:4/MBS/jm/bvc/lr

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1.0 PURPOSE

1.1 This procedure provides the prerequisites, precautions/limitations, and instructional guidance for startup/normal operation, shutdown and infrequent operation of the 120V Vital Instrument AC System.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Technical Specification

1. Section 3.8.3.1, On-site Power Distribution - Operating
2. Section 3.8.3.2, On-site Power Distribution - Shutdown

2.1.2 FSAR Section 8.2.2, Station Electrical System

2.1.3 Plant Procedures

1. 0-ADM-215, Plant Surveillance Tracking Program
2. 3/4-ONOP-003.6, Loss of 120V Vital Instrument Panel 3P06 (4P06)
3. 3/4-ONOP-003.7, Loss of 120V Vital Instrument Panel 3P07 (4P07)
4. 3/4-ONOP-003.8, Loss of 120V Vital Instrument Panel 3P08 (4P08)
5. 3/4-ONOP-003.9, Loss of 120V Vital Instrument Panel 3P09 (4P09)
6. 0-OSP-200.1, Schedule of Plant Checks and Surveillances

2.1.4 Elementary Diagrams/Lists

1. 5610-E-11, 125V DC and 120V AC, Single Line Diagram, Sheet 1
2. 5610-E-12, 125V DC and 120V AC, Single Line Diagram, Sheet 2
3. 5610-T-E-1592, 125V DC and 120V Instrument A.C. Electrical Distribution, Sheet 1

2.1.4 (Cont'd)

4. Breaker List 5610-E-855
5. Load Lists 5613(4)-E-671 |
6. Load Lists 5613(4)-E-672 |
7. Load Lists 5613(4)-E-673 |
8. Load Lists 5613(4)-E-674 |

2.1.6 Bechtel Job 5177-372, Evaluation of Loads on 120V Vital AC Panel

2.1.7 SCI Inverter Model SV 12075/TS950NBA/TS750MB/SYNC Box Instrumentation and Operating Manual with drawings, 5177-306-E-854.1-34.2

2.1.8 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. PC/M 81-157, No. 3 Addition of SAS/SPDS
2. PC/M 83-117 Vital AC Inverter Replacement
3. PC/M 83-154, Alternate Shutdown Capability for Appendix R Modifications - Unit 3
4. PC/M 83-155 Alternate Shutdown Capability for Appendix R Modifications - Unit 4
5. PC/M 83-199, Reactor Excore Neutron Flux Monitoring System
6. PC/M 85-143, Breaker/Fuse Coordination Modification
7. PC/M 87-264, EDG 3B/4B, EDG 3A/4A and New Edg Building Tie-ins
8. PC/M 88-196, Inadvertent Actuation of PRMS Relays R-11 and R-12
9. PC/M 88-197, Inadvertent Actuation of PRMS Relays R-11 and R-12
10. PC/M 89-112, Boric Acid Blend Flow Converter Relocation
11. PC/M 89-253, Breaker List Update

2.1.8 (Cont'd)

12. PC/M 92-073, Addition of Reverse Power Relay and Main Generator Protection Modifications

13. PC/M 92-181, Elimination of Turbine Runback on Dropped Rod

14. DEEP 88-530, Breaker List Updating for NCRs and REAs

15. MEP 91-075, Issue of Inverter Load List Drawings

16. FPL Letter No. JPN-91-5228, Turkey Point Units 3 and 4 Vital AC Voltage Requirement for Westinghouse Equipment, File No. PTP 100-2

17. FPL Letter No. JPN-PTP-90-0978, Turkey Point 3 and 4 Vital Inverter Output Voltage Tolerances, dated March 30, 1990

18. PC/M 83-200, Installation of Rx Excore Neutron Flux Monitoring System

19. PC/M 94-037, Component Cooling Water Surge Tank Level Transmitter Replacement

20. PC/M 94-062, Component Cooling Water Surge Tank Level Transmitter Replacement - Unit 3

21. PC/M 97-036, Minor Drawing Enhancement

22. PC/M 95-102, Abandonment of the C-07 Panel and Sample Train Reconfiguration

23. PC/M 98-025, Repowering of RHR Interlock PC-3/4-600X | OTSC 0141-98

2.2 Records Required

2.2.1 The date, time and section completed shall be logged in the Reactor Control Operator (RCO) logbook. Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.)

2.2.2 Completed copies of the QA Record Page(s) for the below listed item(s) constitute Quality Assurance Records and shall be transmitted to QA Records and be retained in accordance with Quality Assurance Records Program requirements:

1. Section 5.0
2. Section 6.0
3. Section 7.0
4. Attachments 1 through 19

2.2.3 Completed copies of the below listed item(s) shall be retained in the Nuclear Plant Supervisor's file until the next performance of that section, enclosure, or attachment:

1. Attachments 1 through 19

2.2.4 Completed attachments listed below, that have the TAG column checked (√), shall be copied and transmitted to Operations Support.

1. Attachments 1 through 19

2.3 Commitment Documents

2.3.1 LER 250-88-032, Control Room and Containment Ventilation Isolation Due to Opening Wrong Breaker

3.0 PREREQUISITES

3.1 The 125V Vital DC System is operable to provide power and control functions to support 120V Instrument AC System operation.

3.2 The 120V Vital Instrument AC System breaker alignment has been verified by the completion of the following attachments:

3.2.1 Attachment 1, CVT Breaker Alignment

3.2.2 Attachment 2, 120V Vital Instrument AC Panel 3PO6 Normal Alignment

3.2.3 Attachment 3, 120V Vital Instrument AC Subpanel 3P21 Normal Breaker Alignment

3.2.4 Attachment 4, 120V Vital Instrument AC Panel 3P07 Normal Alignment

3.2.5 Attachment 5, 120V Vital Instrument AC Subpanel 3P22 Normal Breaker Alignment

3.2.6 Attachment 6, 120V Vital Instrument AC Panel 3PO8 Normal Alignment

3.2.7 Attachment 7, 120V Vital Instrument AC Subpanel 3P23 Normal Breaker Alignment

3.2.8 Attachment 8, 120V Vital Instrument AC Panel 3PO9 Normal Alignment

3.2.9 Attachment 9, 120V Vital Instrument AC Subpanel 3P24 Normal Breaker Alignment

3.2.10 Attachment 10, 120V Vital Instrument AC Panel 4P06 Normal Alignment

3.2.11 Attachment 11, 120V Vital Instrument AC Subpanel 4P21 Normal Breaker Alignment

3.2.12 Attachment 12, 120V Vital Instrument AC Panel 4PO7 Normal Alignment

3.2.13 Attachment 13, 120V Vital Instrument AC Subpanel 4P22 Normal Breaker Alignment

3.2.14 Attachment 14, 120V Vital Instrument AC Panel 4PO8 Normal Alignment

3.2.15 Attachment 15, 120V Vital Instrument AC Subpanel 4P23 Normal Breaker Alignment

3.2.16 Attachment 16, 120V Vital Instrument AC Panel 4PO9 Normal Alignment

3.2.17 Attachment 17, 120V Vital Instrument AC Subpanel 4P24 Normal Breaker Alignment

3.2.18 Attachment 18, 120V Vital Instrument AC Panel 4P93 Normal Alignment (Alternate Shutdown System)

3.2.19 Attachment 19, 120V Vital Instrument AC Panel 3P93 Normal Alignment (Alternate Shutdown System)

Variations from normal alignment will exist if spare inverter AS, BS, CS, or DS is in service: The Instrument AC Selector Switch (3PO6A, 3PO7A, 3PO8A, 3PO9A, 4PO6A, 4PO7A, 4PO8A, 4PO9A) for the Vital Instrument AC bus being supplied by the spare inverter will be in the Alternate Supply Standby Static Inverter position.

3.3 All instruments and control devices are in service for the 120V Vital Instrument AC System operation with no surveillance required, outstanding PWOs, clearances, or Temporary System Alterations **that affect system operability** as per the following:

3.3.1 0-ADM-215, Plant Surveillance Tracking Program and 0-OSP-200.1, Schedule of Plant Checks and Surveillances (No surveillances have exceeded the date required on the missed surveillance sheet.)

3.3.2 Temporary System Alteration (TSA) Log

3.3.3 Clearance Log

3.3.4 Out of Service Log

4.0 PRECAUTIONS/LIMITATIONS

4.1 Before changing system status, Technical Specifications should be consulted for 120V Vital Instrument AC System requirements for that plant mode.

4.2 Low voltage on an in-service 120V Vital Instrument AC Inverter will result in a loss of vital equipment and instrumentation on the associated bus.

4.3 Each spare Instrument AC inverter (AS, BS, CS, or DS) can replace either of two normal supply inverters. A spare inverter must never be aligned to supply two vital instrument AC buses simultaneously.

4.4 All Instrument AC Selector Switches are located in the cable spreading room. These switches are of the make-before-break type.

4.5 The 120V Vital Instrument AC System is comprised of energized electrical components. When operating this equipment, caution should be used.

4.6 The 120V Vital Instrument AC Inverters are provided with slow current limiting devices which will allow inverter voltage to return automatically after an overload.

4.7 On a loss of Inverter, the loads should auto-transfer to the CVT associated with that inverter.

4.8 Alternate Source Transfer Switches and Remote Sync Selector Switches are located in the Inverter Room.

4.9 Only one instrument bus may be powered by a CVT, at any one time. All other instrument busses must be powered from an inverter, as governed by Technical Specification 3.8.3.1, Action C.

4.10 Refer to 3/4-ONOP-003.6, 003.7, 003.8, 003.9 for a listing of instrumentation powered from each Vital Panel.

4.11 All instrumentation powered by the instrument busses is operable while any instrument bus is powered by a CVT. No maintenance or testing should be performed on any instruments during this time. The purpose of this restriction is to preclude the possibility of inhibiting a safety function or causing an inadvertent safeguard actuation during a loss of offsite power.

4.12 During energization of large loads or QSPDS circuits, an automatic transfer to CVT may occur due to static switch sensitivity and characteristics. If the inverter voltage, frequency and current are in the normal ranges following this transfer, the inverter output shall be transferred back to the Normal supply. Any parameter outside of the normal range should be reported to the NPS immediately.

4.13 Technical Specification Section 3.8.3.1 provides the minimum margin of safety for the Vital AC distribution system. When operating on a CVT, the associated vital inverter or the spare inverter shall be placed in service within 24 hours.

4.14 After an inverter failure has occurred which requires the use of a CVT, all construction efforts in the area must be halted until an inverter is restored to service. This is to preclude construction activities from disabling a redundant inverter.

4.15 Unit startup shall not commence if a CVT is in service powering an instrument bus.

4.16 The Alternate Source Transfer Switches are under administrative control and shall be locked at all times except during switching.

4.17 The internal Sync Reference Selector Switch (SW-2) for the 4 spare inverters shall be in the EXTERNAL (UP) position except when the spare inverter is placed in service and the applicable CVT has been transferred to the spare, at which time the switch is placed in the NORMAL (DOWN) position.

4.18 When a spare inverter is in service to power a bus, the Alternate Source Transfer Switch will be locked in the Backup to Spare Inverter position.

4.19 The Manual Bypass Switch is a make before break type. Caution should be exercised while making a load transfer with this switch. CVT and Inverter must be verified in sync prior to the load transfer.

4.20 Both channels of ICCS (QSPDS) are required to be operable in accordance with Technical Specification Section 3/4.3.3.5. If required to remove one channel of ICCS (QSPDS) from service the other channel shall be verified to be operable prior to removing a channel from service.

4.21 Alternate Shutdown System 120V Vital Instrument AC Panel, 4P93 shall be energized from Inverter 4B (4Y02), Normal Supply or from Inverter BS (4Y04), Alternate Supply (Breaker CB7).

4.22 When the test pushbutton is depressed on Panel 4P93A or 3P93A the power supply will transfer to the standby source. If the normal source is available the power supply will transfer back automatically in 25 seconds.

4.23 Alternate Shutdown System 120V Vital Instrument AC Panel, 3P93 shall be energized from Inverter 3C (3Y05), Normal Supply or from Inverter CS (3Y06), Alternate Supply (Breaker CB7).

4.24 If a channel of ICCS (QSPDS) becomes deenergized, it will be necessary to reset the CET Hi Temperature Alarm Setpoint in accordance with OP-14004.8, Use of the QSPDS - Inadequate Core Cooling Monitor, to the value required for existing plant conditions upon re-energization due to the default value being 650°F. The requirements for the CET Hi Temperature Alarm Setpoint are as follows:

Unit Mode	Alarm Setpoint
1, 2, or 3	700°F
4	≤350°F
5 or 6	≤200°F
Reduced Inventory	≤10 °F above designated temperature for reduced inventory and not >140°F

7.6 Transfer of Bus Load from CVT to Normal Inverter (External Transfer)

INITIALS
CK'D VERIF

Transfer from Inverter _____ Date/Time Started: _____/_____

NOTE

To transfer load from CVT to Inverter (internal transfer) refer to Subsection 7.4.

7.6.1 Initial Conditions

—— 1. All applicable prerequisites listed in Section 3.0 are satisfied.

NOTE

Enclosure 1 provides a reference for Typical Normal Vital AC Inverter Switch Locations, or Enclosure 2 provides a reference for Typical Spare Vital AC Inverter Switch Locations as applicable.

—— 2. The applicable Normal Inverter is in Standby in accordance with Subsection 5.1 of this procedure.

7.6.2 Procedure Steps

NOTE

When operating on a CVT, the associated vital inverter or the spare inverter is required to be placed in service within 24 hours to comply with Technical Specification 3.8.3.1.

—— 1. Verify that the applicable Normal Inverter is **NOT** supplying a Vital Instrument AC bus by verifying the Instrument AC Selector Switch alignment per Table 13.

INITIALS
CK'D VERIF

7.6.2 (Cont'd)

NOTE

Initials should be entered for the applicable inverter. N/A should be entered for all others.

TABLE 13

For 120V Vital Instrument AC Inverter	Verify in ALTERNATE	Verify in NORMAL	Verify in NORMAL	INIT
3A (3Y01)	3P07A	-----	-----	
4A (4Y01)	4P07A	-----	-----	
3B (3Y02)	3P08A	-----	-----	
4B (4Y02)	4P08A	-----	-----	
3C (3Y05)	3P06A	-----	-----	
4C (4Y05)	4P06A	-----	-----	
3D (3Y07)	3P09A	-----	-----	
4D (4Y07)	4P09A	-----	-----	

____ 2. Using Table 14, determine which Instrument AC Selector Switch should be used and record: _____

3. Perform the following steps at the appropriate Instrument AC Selector Switch panel in the Cable Spreading Room:

____ a. Verify that the Normal Power Available light is ON.

b. Test the Synch Verification Light as follows:

____ (1) Position the Synch Switch to SYNCH LAMP TEST.

(2) Verify Synch Verification Light comes ON.

INITIALS
CK'D VERIF

7.6.2.3 (Cont'd)

c. Perform a synch check as follows:

—— (1) Position the Synch Switch to SYNCH CHECK PUSH.

NOTE

In the following Steps (1) and (2) the bright light will go OFF, but a slight glow is expected. This is acceptable.

—— (2) Depress and hold the Synch Switch.

—— (3) Verify that the Synch Verification Light stays OFF.

—— d. Place the Instrument AC Selector Switch to the position indicated in Table 14.

NOTE

*Initials should be entered for the applicable inverter. **N/A** should be entered for all others.*

TABLE 14

When Substituting NORMAL INVERTER	For INSERVICE CVT	Place INSTRUMENT AC SELECTOR SWITCH	To SUPPLY Position	INIT	I/V
3A (3Y01)	3Y01A	3P07A	NORMAL		
4A (4Y01)	4Y01A	4P07A	NORMAL		
3B (3Y02)	3Y02A	3P08A	NORMAL		
4B (4Y02)	4Y02A	4P08A	NORMAL		
3C (3Y05)	3Y05A	3P06A	NORMAL		
4C (4Y05)	4Y05A	4P06A	NORMAL		
3D (3Y07)	3Y07A	3P09A	NORMAL		
4D (4Y07)	4Y07A	4P09A	NORMAL		

INITIALS
CK'D VERIF

7.6.2.3 (Cont'd)

—— e. Place the Alternate Source Transfer Switch to the position indicated in Table 15.

NOTE

*Initials should be entered for the applicable inverter. **N/A** should be entered for all others.*

TABLE 15

When Substituting NORMAL INVERTER	For INSERVICE CVT	Place ALTERNATE SOURCE TRANSFER SWITCH	To Position (LOCKED)	INIT	I/V
3A (3Y01)	3Y01A	3Y01B	BACKUP TO NORMAL INVERTER (3Y01) 3A		
4A (4Y01)	4Y01A	4Y01B	BACKUP TO NORMAL INVERTER (4Y01) 4A		
3B (3Y02)	3Y02A	3Y02B	BACKUP TO NORMAL INVERTER (3Y02) 3B		
4B (4Y02)	4Y02A	4Y02B	BACKUP TO NORMAL INVERTER (4Y02) 4B		
3C (3Y05)	3Y05A	3Y05B	BACKUP TO NORMAL INVERTER (3Y05) 3C		
4C (4Y05)	4Y05A	4Y05B	BACKUP TO NORMAL INVERTER (4Y05) 4C		
3D (3Y07)	3Y07A	3Y07B	BACKUP TO NORMAL INVERTER (3Y07) 3D		
4D (4Y07)	4Y07A	4Y07B	BACKUP TO NORMAL INVERTER (4Y07) 4D		

—— —— 4. Place the Sync Reference Selector Switch (SW-2) inside the applicable Normal inverter to the NORMAL (DOWN) position.

5. Verify the following at the Normal Inverter:

—— a. IN SYNC - light ON

—— b. ALTERNATE SOURCE AVAILABLE - light ON

—— c. SYNC REFERENCE NORMAL - light ON

—— d. Static Switch Output load less than 63 amps

INIT

7.6.2.5 (Cont'd)

—— e. Inverter Output Meter Voltage between 119 to 125VAC.

—— f. DC Input voltage 125 to 138V DC

g. Verify the following off-normal lights are OFF:

—— (1) DC VOLTAGE LOW - light OFF

—— (2) LINE #1 TO GROUND - light OFF

—— (3) LINE #2 TO GROUND - light OFF

—— (4) ALTERNATE SOURCE SUPPLYING LOAD - light OFF

—— (5) REVERSE POLARITY - light OFF

—— (6) FAN FAILURE - light OFF

—— (7) LOW AC VOLTAGE - light OFF

—— (8) SYNC REFERENCE EXTERNAL - light OFF

—— (9) OUT OF SYNC - light OFF

—— (10) HIGH TEMPERATURE - light OFF

—— (11) MANUAL BYPASS SW IN ALTERNATE SOURCE TO LOAD POSITION - light OFF

—— 6. IF desirable to de-energize the inverter which has just been removed from service, THEN enter Subsection 6.1 of this procedure.

—— 7. Verify all log entries specified in Subsection 2.2 have been recorded.

—— 8. Complete QA Record Page.

QA RECORD PAGE

(Page 1 of 1)

Procedure Revision Date _____/_____/_____

7.6 Transfer of Bus Load from CVT to Normal Inverter (External Transfer)

Identify the affected Inverter (circle applicable inverter[s]).

3A	AS	4A
3B	BS	4B
3C	CS	4C
3D	DS	4D

Identify the affected CVT (circle applicable CVT[s]).

3Y01A	4Y01A
3Y02A	4Y02A
3Y05A	4Y05A
3Y07A	4Y07A

REMARKS: _____

Date/Time Started _____/_____ Date/Time Completed _____/_____

PERFORMED BY (Print)	INITIALS	VERIFIED BY (Print)	INITIALS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

I have reviewed this procedure and it has been satisfactorily performed. Any deviation(s) or OTSC(s) utilized in the performance of this procedure has (have) been listed in the Remarks Section.

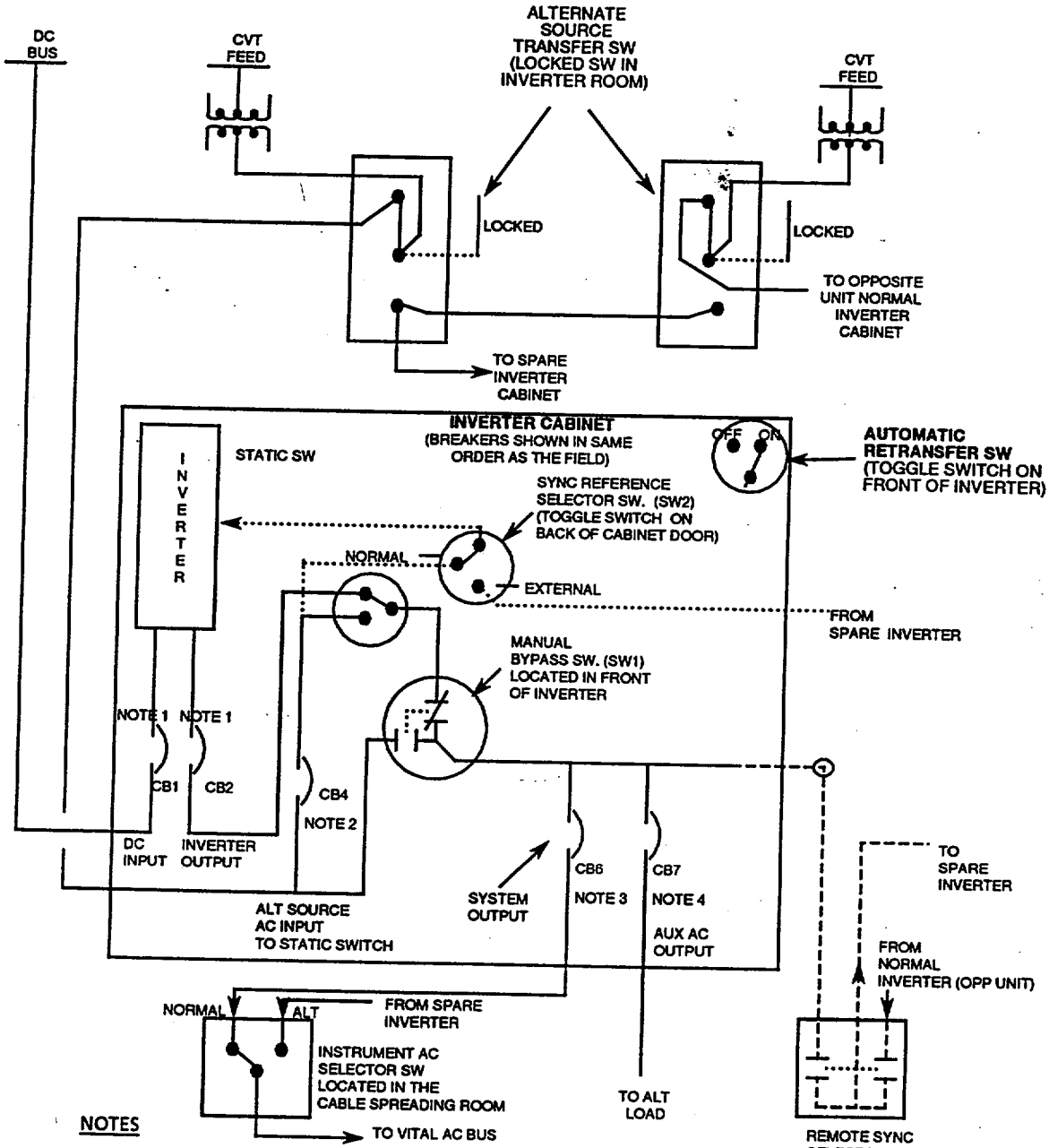
REVIEWED BY: _____ DATE: _____

Nuclear Plant Supervisor or SRO Designee

END OF TEXT

ENCLOSURE 1
(Page 1 of 1)

TYPICAL NORMAL VITAL AC INVERTER SWITCH LOCATION
(In Service)



NOTES

NOTE 1 - OPENING BREAKER WILL RESULT IN LOSS OF THE INVERTER

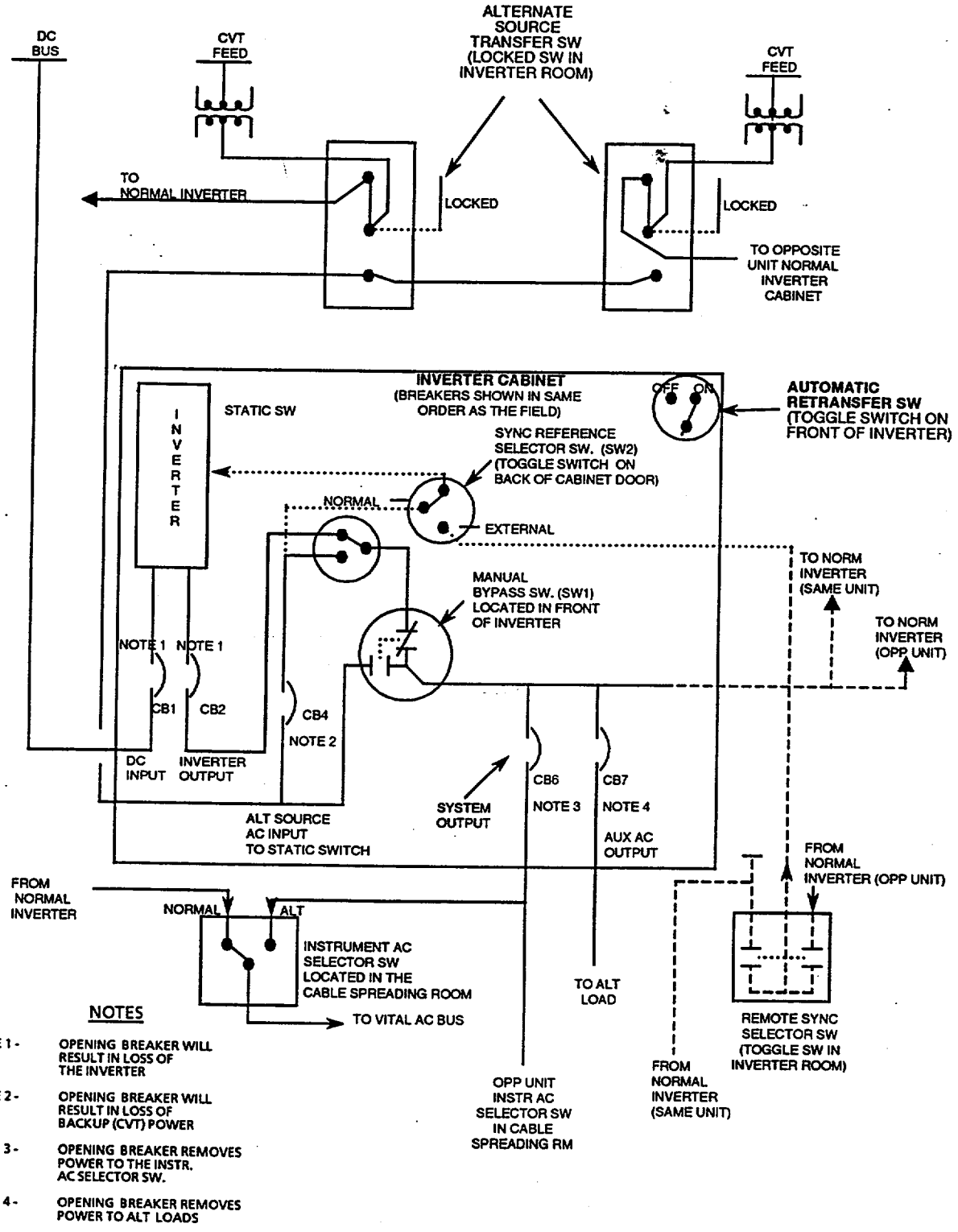
NOTE 2 - OPENING BREAKER WILL RESULT IN LOSS OF BACKUP (CVT) POWER

NOTE 3 - OPENING BREAKER REMOVES POWER TO THE INSTR. AC SELECTOR SW.

NOTE 4 - OPENING BREAKER REMOVES POWER TO ALT LOADS

ENCLOSURE 2
(Page 1 of 1)

TYPICAL SPARE VITAL AC INVERTER SWITCH LOCATION
(In Standby)



NOTES

NOTE 1 - OPENING BREAKER WILL RESULT IN LOSS OF THE INVERTER

NOTE 2 - OPENING BREAKER WILL RESULT IN LOSS OF BACKUP (CVT) POWER

NOTE 3 - OPENING BREAKER REMOVES POWER TO THE INSTR. AC SELECTOR SW.

NOTE 4 - OPENING BREAKER REMOVES POWER TO ALT LOADS

*/2:4/MBS/dt//bc/dt

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 CCW SURGE TANK LEVEL IS DECREASING AND CANNOT BE MAINTAINED.

2. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, DIRECTS PERFORMANCE OF ATTACHMENT 1.

INITIATING CUE:

YOU ARE THE SNPO AND HAVE BEEN DIRECTED TO PERFORM 3-ONOP-030, ATTACHMENT 1, CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS.

JOB CLASSIFICATION: SNPO

JPM TITLE: ALIGN EMERGENCY SERVICE WATER TO THE CHARGING PUMPS

JPM NUMBER: 24030009300 JPM TYPE: NORMAL PATH

JPM REV. DATE: 09/02/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

EMERGENCY COOLING WATER BEING SUPPLIED TO 3C CHARGING PUMP

REQUIRED MATERIALS:

1. 3-ONOP-030, ATTACHMENT 1
2. EMERGENCY COOLING WATER SUPPLY & OUTLET HOSES

REFERENCES:

1. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION

TERMINATING CUES:

EMERGENCY COOLING WATER ESTABLISHED TO 3C CHARGING PUMP.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 CCW SURGE TANK LEVEL IS DECREASING AND CANNOT BE MAINTAINED.

2. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, DIRECTS PERFORMANCE OF ATTACHMENT 1.

INITIATING CUES:

YOU ARE THE SNPO AND HAVE BEEN DIRECTED TO PERFORM 3-ONOP-030, ATTACHMENT 1, CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS.

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIALS.

STANDARDS:

__1. OBTAINED 3-0N0P-030, ATTACHMENT 1.

__2. OBTAINED HOSES.

EVALUATOR'S NOTES:

Note: Hoses are located on a hand cart in the Northwest corner of the Unit 3 Charging Pump room.

(C) **ELEMENT: 2**

CONNECT EMERGENCY COOLING WATER TO CHARGING PUMPS.

STANDARDS:

__1. REVIEWED NOTES PRIOR TO STEP 1.

Cue: If asked if a Loss of Off Site Power has occurred, say "No."

__2. CONNECTED CAM LOCK FITTING END OF EMERGENCY COOLING WATER SUPPLY HOSE TO SERVICE WATER CONNECTION INSIDE CHARGING PUMP ROOM, 3-70-179A.
[Step 1]

CUE: Confirm cam lock fitting "Connected" to 3-70-179A.

__3. CONSULT WITH UNIT RCO TO DETERMINE DESIRED CHARGING PUMP.
[Step 2]

CUE: Tell operator "3C charging pump."

__4. VERIFIED DESIRED CHARGING PUMP STOPPED OR RUNNING AT MAXIMUM SPEED.
[Step 3]

CUE: Confirm 3C charging pump "Stopped."

__5. CONNECTED QUICK DISCONNECT FITTING END OF EMERGENCY COOLING WATER SUPPLY HOSE TO EMERGENCY HOSE CONNECTION ON CHARGING PUMP 3C OIL COOLER, 3-10-299.
[Step 4c]

CUE: Confirm emergency service water supply hose "Connected." to 3-10-299.

__6. REVIEWED NOTE PRIOR TO STEP 5.

__7. CONNECTED QUICK DISCONNECT FITTING END OF EMERGENCY COOLING WATER OUTLET HOSE TO EMERGENCY HOSE CONNECTION TO CHRG PUMP C OIL COOLER, 3-10-298.
[Step 5c]

CUE: Confirm emergency service water supply hose "Connected." to 3-10-298.

__8. REMOVED COVER FROM FLOOR DRAIN TO BE USED.
[Step 6]

CUE: Confirm drain cover "Removed."

__9. ROUTED OPEN END OF EMERGENCY COOLING WATER OUTLET HOSE TO FLOOR DRAIN BEING USED IN CHARGING PUMP ROOM.
[Step 7]

CUE: Confirm drain hose "Routed to selected drain."

EVALUATOR'S NOTES:

NOTE: Standards 1, 4, 6, 8, and 9 are not critical to this element.

(C) **ELEMENT: 3**

INITIATE EMERGENCY COOLING WATER FLOW TO CHARGING PUMPS.

STANDARDS:

__1. CLOSED CCW TO 3C CHARGING PUMP OIL COOLER 3-825E. [Step 8c]

CUE: Confirm 3-825E "Fully clockwise with handwheel down."

__2. CLOSED CCW FROM 3C CHARGING PUMP OIL COOLER 3-825F. [Step 9c]

CUE: Confirm 3-825F "Fully clockwise with handwheel down."

__3. OPENED SERVICE WATER CONNECTION INSIDE CHARGING PUMP ROOM ROOT VALVE, 3-70-179. [Step 10]

CUE: Confirm 3-70-179 "Handle in line with pipe."

__4. OPENED SERVICE WATER CONNECTION INSIDE CHARGING ROOM ROOM ISOLATION VALVE, 3-70-179A. [Step 11]

CUE: Confirm 3-70-179A "Handle in line with pipe."

__5. ESTABLISHED SERVICE WATER TO DESIRED CHARGING PUMP BY OPENING EMERGENCY HOSE CONNECTION TO 3C CHARGING PUMP OIL COOLER VALVE, 3-10-299.
[Step 12c]

CUE: Confirm 3-10-299 "Fully counter clock wise with handwheel up."

__6. ADJUSTED SERVICE WATER FLOW FROM 3C CHARGING PUMP TO PROVIDE MAXIMUM FLOW BY OPENING EMERGENCY HOSE CONNECTION TO 3C CHARGING PUMP OIL COOLER VALVE, 3-10-298.
[Step 13c]

CUE: Confirm "Counter clock wise with maximum flow into the drain."

__7. REVIEWED STEP 14 AND DETERMINED STEP TO NOT BE APPLICABLE.
[Step 14]

__8. NOTIFIED UNIT RCO OF CHARGING PUMP STATUS.
[Step 15]

CUE: Acknowledge notification as RCO.

EVALUATOR'S NOTES:

Standards 7 & 8 are not critical to this element.

( ) **ELEMENT: 4**

MONITOR HYDRAULIC COUPLING TEMPERATURE.

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 16.

__2. MONITORED HYDRAULIC COUPLING OIL OUTLET TEMPERATURE 3C CHARGING PUMP FLUID DRIVE OIL, TI-3-6718. [Step 16]

CUE: Indicate temperature at 170 degrees on gauge.

EVALUATOR'S NOTES:

TERMINATE THE JPM AT THIS POINT.

ATTACHMENT 1
(Page 1 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

NOTES

- *Emergency cooling water SUPPLY hose has a quick disconnect fitting on one end and a cam lock fitting on the other end.*
- *Loss of offsite power in coincidence with a loss of CCW will require the diesel driven service water pump to be in service in order to provide emergency cooling water to the charging pumps.*

1. Connect cam lock fitting end of emergency cooling water supply hose to Servic Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

2. Consult with Unit 3 RCO to determine desired charging pump.

3. Verify desired charging pump is stopped **OR** running at maximum speed.

4. Connect quick disconnect fitting end of emergency cooling water supply hose t emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

NOTE

Emergency cooling water OUTLET hose has a quick disconnect fitting on one end and no fitting on the other end.

5. Connect quick disconnect fitting end of emergency cooling water outlet hose to emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

ATTACHMENT 1
(Page 2 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

6. Remove cover from floor drain to be used in Charging Pump Room.

7. Route open end of emergency cooling water outlet hose to floor drain being used Charging Pump Room.

8. Isolate CCW to hydraulic oil cooler on desired charging pump:

   a. Close CCW to A Charging Pump Oil Cooler Inlet, 3-825A

   OR

   b. Close CCW to B Charging Pump Oil Cooler Inlet, 3-825C

   OR

   c. Close CCW to C Charging Pump Oil Cooler Inlet, 3-825E

9. Isolate CCW from hydraulic oil cooler on desired charging pump:

   a. Close CCW from A Charging Pump Oil Cooler Inlet, 3-825B

   OR

   b. Close CCW from B Charging Pump Oil Cooler Inlet, 3-825D

   OR

   c. Close CCW from C Charging Pump Oil Cooler Inlet, 3-825F

10. Open Service Water Connection Inside Unit 3 Charging Pump Room Roo Valve,3-70-179.

11. Open Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

12. Establish service water to desired Charging Pump:

    a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

    OR

    b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

    OR

    c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

ATTACHMENT 1
(Page 3 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

13. Adjust service water flow from desired charging pump to provide maximum flow.

    a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

14. IF service water flow is not obtained, THEN have the Service Water System place in service using 0-OP-012, SERVICE WATER SYSTEM, using any available pum including the diesel driven SWP D.

15. Notify Unit 3 RCO that emergency cooling water has been established to desire charging pump.

> **CAUTION**
>
> ***Maximum charging pump oil temperature is 220°F.***

16. Monitor oil temperatures on running charging pump.

17. IF hydraulic coupling oil outlet temperature on running charging pump exceed 185°F, THEN perform the following:

    a. Notify Unit 3 RCO that operating charging pump should be stopped.

    b. Consult with Unit 3 RCO to determine if emergency cooling water should b realigned to a different charging pump.

    c. IF Unit 3 RCO determines that emergency cooling water must be realigned t a different charging pump, THEN go to Step 20 of this attachment.

18. IF Unit 3 RCO determines that emergency cooling water to charging pumps is n longer required, THEN go to Step 20 of this attachment.

19. Return to Step 16 of this attachment.

20. Verify charging pump being supplied with emergency cooling water is stopped.

ATTACHMENT 1
(Page 4 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

21. Isolate emergency cooling water flow from previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

22. Isolate emergency cooling water flow to previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

23. Reestablish CCW to hydraulic oil cooler on previously running charging pump:

    a. Open CCW to A Charging Pump Oil Cooler Inlet, 3-825A

    OR

    b. Open CCW to B Charging Pump Oil Cooler Inlet, 3-825C

    OR

    c. Open CCW to C Charging Pump Oil Cooler Inlet, 3-825E

ATTACHMENT 1
(Page 5 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

24. Reestablish CCW from hydraulic oil cooler on previously running charging pump.

    a. Open CCW from A Charging Pump Oil Cooler Inlet, 3-825B

    OR

    b. Open CCW from B Charging Pump Oil Cooler Inlet, 3-825D

    OR

    c. Open CCW from C Charging Pump Oil Cooler Inlet, 3-825F

25. Disconnect emergency cooling water outlet hose from previously running chargin pump.

26. Close Service Water Connection Inside Unit 3 Charging Pump Room Roo Valve,3-70-179.

27. Close Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

28. Disconnect emergency cooling water supply hose from previously running chargin pump.

29. **IF** emergency cooling water must be realigned to a different charging pump, **THEN** return to Step 2.

30. Disconnect emergency cooling water supply hose from Service Water Connectio Inside Unit 3 Charging Pump Room, 3-70-179A.

31. Return emergency cooling water supply and outlet hoses to their designated storag locations.

32 Replace cover on floor drain used for emergency cooling water.

33. Notify Unit 3 RCO that emergency cooling water alignment has been terminated.

FINAL PAGE

Facility: Turkey Point Nuclear Plant **Scenario No.:** 1 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to use off-normal procedures for PZR pressure control channel PT-3-445 failing high followed by an unisolable leaking PZR PORV requiring a load reduction. Evaluate ability of operators to recognize & respond to a turbine first stage impulse pressure channel failing low. Emergency Operating Procedure use will be evaluated following the reactor trip for C S/G main steam line break inside Containment, failure of the main turbine to trip, 3B MSIV fails open, and a loss of all auxiliary and standby feedwater requiring RCS bleed and feed due to loss of secondary heat sink.

Initial Conditions: 100% power, EOL

Turnover: Maintain 100% power steady state operation. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input which is under I&C investigation. LT-3-498 & A AFW pump are both OOS for corrective maintenance. B AFW pump is aligned to train 2 and C AFW pump is aligned to train 1. No surveillance tests are in progress.

Event No.	Malf. No.	Event Type*	Event Description
1	TFH1TU45 = T	I (SRO) I (RO)	PT-3-445 fails high (PORV-3-456 closure required). K/A 027AA2.15 (3.7/4.0)
2	TVHV456 = 0.07 / 30 sec ramp TFH2906F = T conditional on IMH231C	C (SRO) C (RO)	PZR PORV-3-456 develops a leak and MOV-3-535 fails to close. K/A 010A2.03 (4.1/4.2)
3	N/A	N (SRO/BOP) R (RO)	Power reduction to hot standby. K/A 2.1.23 (3.9/4.0)
4	TFS1MAML = T	I (SRO) I (BOP)	PT-3-447 fails low. K/A 016A2.01 (3.0/3.1)
5	TVSBVL15 = 0.2/ 300 sec ramp TFU10005 = T TFSVVX6C = T TFFXOILB = T TAFF07 = 0.0	M (ALL)	3C S/G main steam line break resulting in reactor trip with failure of main turbine trip, 3B MSIV failing open, train 2 (B) AFW pump auto start failure and inability to align steam to a train 1 AFW pump. K/A 040AA1.01 (4.6/4.6), 040AA1.13 (4.2/4.2), 061 A2.04 (3.4/3.8)
6	from event 5	M (ALL)	Loss of secondary heat sink with bleed & feed required. K/A WE05EA1.1 (4.1/4.0)

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

FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 1
DESCRIPTION:	Main Steam Line Break (Inside Containment) / Loss of All Feedwater
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	09/01/99

REVIEWED BY: _____ 9-2-99
Facility Reviewer Date

APPROVED BY: _____
NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. PT-3-445 failure high
   b. Unisolable PZR PORV leak
   c. Power reduction due to PZR leak
   d. PT-3-447 failure low
   e. Main steam line break
   f. Reactor trip with main turbine trip & 3B MSIV failures
   g. Loss of all auxiliary feed
   h. Loss of secondary heat sink with RCS bleed & feed

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 574 degrees F

Turnover: Maintain 100% power steady state operation. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input which is under I&C investigation. LT-3-498 & A AFW pump are both OOS for corrective maintenance. B AFW pump is aligned to train 2 and C AFW pump is aligned to train 1. No surveillance tests are in progress.

Synopsis: Shortly after shift turnover, PT-3-445 fails high causing PZR PORV PCV-3-456 to automatically open. Operators respond per 3-ONOP-041.5 by manually closing the opened PORV. Following stabilization of plant conditions (or completion of 3-ONOP-041.5 at evaluator discretion), that same PORV (PCV-3-456) develops a leak. Operators respond by attempting to close MOV-3-535 which trips on breaker overload leaving the leak unisolated. The crew re-enters 3-ONOP-041.5, evaluates Tech Specs and determines a plant shutdown is needed due to the unisolable PZR steam space leak (rate at Ops management direction). After a 5% power reduction (or as determined by the evaluator), PT-3-447 fails low. The resulting automatic rod insertion requires the operator to take rod control to manual per 3-ONOP-028. Once Technical Specifications have been consulted and the crew briefed on the effects of the failure, a steam break occurs on the 3C steam generator inside containment. The crew responds per 3-EOP-E-0 and addresses a failure of the main turbine to trip and a failure of the B AFW pump to start causing a loss of all auxiliary feed water (A AFW pump OOS, B AFW pump failed, C AFW pump aligned to the faulted steam generator for steam supply). Additionally, 3B MSIV fails to close manually from the console switch or in response to Main Steam Isolation Signal on high Containment pressure. Transition to 3-EOP-FR-H.1 is made in response to low steam generator levels (3B MSIV & turbine trip failures combined) with a loss of all AFW. Steam generator levels are sufficiently low to require RCS bleed and feed initiation. The exercise is concluded upon establishment of adequate RCS heat removal by bleed & feed (3-EOP-FR-H.1 step 24) or at the evaluator's discretion. The event is classified after scenario completion as a site area emergency per 0-EPIP-20101, Enclosure 1, category 5.

Event Summary:

EVENT #	DESCRIPTION
1	PT-3-445 fails high
2	PZR PORV-3-456 leak / MOV-3-535 overload trip
3	Power reduction
4	PT-3-447 fails low
5	3C S/G main steam line break/reactor trip/turbine trip with 3B MSIV, train 2 AFW pump and AFSS-3-007 failures
6	Loss of secondary heat sink (bleed & feed required)

Crew Critical Steps:

EVENT #		DESCRIPTION
5	1.	Manually actuate steam line isolation (buttons or MSIV switches) prior to orange path on subcriticality or integrity or transition to 3-EOP-ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).
6	1.	When required, initiate RCS bleed and feed so that the RCS depressurizes sufficiently for HHSI injection flow to occur.

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - EOL
   b. Reactor power and power history - 100% steady state
   c. Turbine status - online
   d. Boron concentration - 51 ppm
   e. Temperature - 574 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Equilibrium for 100% power.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.7.1.2 Action 3 (30 days); A AFW pump bearing failure
   j. Clearances in effect - A AFW pump
   k. Significant problems/abnormalities - Condenser steam dumps in steam pressure (manual) control due to Tavg input problem. I&C investigating. C AFW pump aligned to train 1. LT-3-498 OOS; LT-3-496 selected for 3C S/G level control.
   l. Evolutions/maintenance for the coming shift - Maintain 100% power steady state operation.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 5 on RHR
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Pressure transmitter PT-3-445 fails high opening PORV PCV-3-456 and decreasing pressure. The problem is diagnosed and the PORV / block valve closed stopping the pressure decrease. The plant is stabilized and PT-3-445 is declared OOS.

INDICATIONS:
1. PT-3-445 failed high
2. PORV PCV-3-456 opens automatically
3. RCS pressure decreases
4. Annunciator A-4/1, PORV/SAFETY OPEN

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by ANPS
RCO		1. Recognizes & reports PZR press control problem
		2. Verifies PZR press control loop not failed - NO
		a. Checks PT-3-444 not failed.
		b. Recognizes PT-3-445 failed high.
		c. Closes PZR PORV PCV-3-456 and/or block valve MOV-3-535
		3. Verifies PZR PORVs closed
		4. Verifies PZR spray valves closed
		5. Verifies PZR safety valves closed
		6. Checks PZR pressure stable/increasing
		7. Checks PZR pressure above normal - NO
		8. Checks PZR pressure low/decreasing
		9. Maintains PZR pressure greater than 2000 psig

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 1 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		10. Verifies PZR heaters operable
		11. Checks if PZR PORV is leaking - NO
		12. Checks if leaking PZR safety is reducing pressure - NO
		13. Determines if RCS leak is reducing pressure - NO
		14. Checks if PZR pressure decreasing - NO
		15. Checks RCS pressure stable
		16. Checks if auto pressure control can be established
		17. Establishes auto pressure control
		18. Keeps ANPS informed of plant status
ANPS		1. Coordinates/directs performance of 3-ONOP-041.5
		2. Reviews Technical Specifications
		3. Ensures I&C notified
		4. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: A pressurizer PORV begins to leak reducing RCS pressure. 3-ONOP-041.5 is entered, but the associated block MOV trips on overload before the leak is isolated. Tech Specs are referenced and the decision made to shut down.

INDICATIONS:
1. Annunciator A-9/2, PZR CONTROL HI/LO PRESS
2. Annunciator A-4/1, PORV/SAFETY OPEN
3. Annunciator A-7/2, PZR PORV HI TEMP
4. RCS/PZR pressure decreasing
5. PZR PORV acoustic monitor flow indicators lit

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Verifies PZR PORV leak using acoustic monitors
		2. Informs ANPS of plant status
RCO		**1. Recognizes PZR PORV leaking and notifies ANPS**
		2. Performs 3-ONOP-041.5 actions at ANPS direction:
		a. Checks PT-3-444/445 not failed (445 failed but previously addressed)
		b. Checks PZR PORVs/safeties/spray vlvs closed
		c. Identifies leaking PZR PORV, attempts to manually close block valve and **reports loss of block valve position indication to ANPS**
		d. Determines PZR press < normal / decreasing
		e. Maintains PZR press > 2000 psig with PZR heaters ON – finds PZR press low but stable
		f. Determines PORV is leaking and not isolated
		g. Determines PZR safeties are not leaking
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Directs PZR safety leak response per 3-ONOP-041.5**
		a. Directs MOV-3-535 closure & response to ensuing overload trip including direction to locally reclose MOV-3-535 breaker (will not reclose)
		b. Ensures all PZR htrs on to keep pressure > 2000 psig
		c. Directs STA to perform RCS leak rate
		d. Concludes PZR pressure low/stable and > 2000 psig due to unisolable leaking PZR PORV
		2. Reviews T.S. 3.4.4 & 3.2.5 and determines action for leaking PORV can not be met requiring s/d to HSD (also DNB T.S. requires press >2200 psig in 2 hrs or power < 5% in following 4 hours)
		3. Informs NPS of plant status & requests electrical maintenance support with block MOV bkr

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: With reactor power initially at 100% power, a power reduction to Hot Standby is commenced in response to an unisolable PZR PORV leak.

INDICATIONS: 1. NPS/Ops Management direction

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Reduces turbine load IAW 3-ONOP-100 or 3-GOP-103
		a. Maintains Tref within 3°F of Tavg if rods in manual (1°F if rods in auto)
		b. Monitors gland seal steam pressure & directs local operation of supply/spillover as req'd
		2. Performs secondary plant s/d generator-load-dependent activities IAW 3-ONOP-100 or 3-GOP-103
		3. Performs activities as directed by ANPS
		a. Inhibits MIMS if in service
		b. Notifies Chemistry of need to sample RCS if reactor power reduced > 15%
		4. Keeps ANPS informed of plant status
RCO		1. Reduces rx power IAW 3-ONOP-100 or 3-GOP-103
		a. Calculates ρ change req'd to reduce power and borates at rate directed by ANPS
		b. Energizes PZR backup heaters
		c. Coordinates w/BOP to keep Tref w/i 3°F of Tavg w/rods in manual (1°F w/rods in auto)
		d. Observes AFD limitations
		e. Starts additional charging pump
		2. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 3 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Coordinates power reduction activities of RCO & BOP
		2. Performs other activities IAW 3-ONOP-100 or 3-GOP-103
		a. Evaluates Xe changes and directs boration rate changes as necessary
		3. Notifies System Dispatcher of load reduction
		4. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: First stage pressure transmitter PT-3-447 fails low. The crew recognizes the failure, selects PT-3-446 for control, and regains control of S/G level. The channel is declared OOS and compensatory actions taken per 3-ONOP-049.1.

INDICATIONS:

1. Failure low of PI-3-447 (VPA)
2. Control rods insert (if in auto rod control)
3. S/G levels decrease
4. Annunciators C-7/1(2)(3), SG A(B)(C) STEAMLINE HI FLOW
5. Annunciator C-8/3, STEAM DUMP ARMED/ACTUATED
6. Annunciator B-4/4, TAVG/TAVG-TREF DEVIATION

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes failure of PT-3-447 and responds as directed by ANPS
		a. Compares to other turb 1st stage impulse PT's
		b. Verifies no off-normal conditions on related indications
		2. Notifies ANPS of failure
		3. Takes manual control of S/G level if necessary
RCO		1. **Selects manual rod control (if in auto) in response to inward rod movement** (may refer to 3-ONOP-028)
		2. Selects PT-3-446 as controlling channel
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Directs stabilization of plant conditions. May suspend load reduction to perform actions of 3-ONOP-049.1 or may continue load reduction and trip bistables later.
		2. Directs compensatory action per 3-ONOP-049.1
		a. Verifies related instrument status
		b. Determines which bistables to trip and effects on plant of tripping bistables. Provides this info to RCO/BOP for guidance.
		c. Directs bypass of inputs to AMSAC
		3. Notifies NPS of plant status
		4. Ensures Tech. Spec. 3.3.1/2 requirements met
		5. Ensures I&C notification of PT-3-447 failure and directs initiation of PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 5

BRIEF DESCRIPTION: In response to a 3C S/G steam break inside Containment, reactor trip and SI occur. Operators perform actions of 3-EOP-E-0. The auto & manual turbine trip fails. When MSIVs are closed/verified closed, 3B MSIV fails open. No AFW flow exists (no pumps available: A OOS, B start fail, C aligned to faulted S/G). Transition to FR-H.1 is made.

INDICATIONS:

1. Reactor trip & SI directed or actuates
2. Turbine stop valves & 3B MSIV remain open
3. GCBs do not open
4. 3B & C S/G Pressures dropping
5. Containment temperature & pressure rising
6. No AFW flow & AFW pump speeds at/near zero

CREW CRITICAL STEPS:

1. **Manually actuate steam line isolation (buttons or MSIV switches) prior to orange path on subcriticality or integrity or transition to 3-EOP-ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. **Performs IOAs in response to reactor trip with turbine trip failure per 3-EOP-E-0:**
		a. Verifies all turb. stop valves closed - NO
		1) Manually trips turb/verifies trip - NO
		2) Closes MSIVs/byp vlvs - 3B fails open
		b. Verifies MSR purge steam & steam stop MOVs closed with timing cam @ zero
		c. Verifies open Mid/East GCBs - NO
		1) Manually opens Mid/East GCBs (may also open exciter field breaker)
		2. Performs other 3-EOP-E-0 immediate actions:
		a. Verifies power to 3A/B/D 4kV buses and 3A/B/C/D/H 480V load centers.

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		**3. Performs 3-EOP-E-0 prompt actions at ANPS direction:**
		a. Verifies feedwater isolation
		b. Verifies AFW pumps running - NO
		1) Manually open valves to start 2 AFW pumps
		2) **Determines NO AFW pumps available (A OOS, B start fail & C steam supply from faulted S/G).** Dispatches local operators to check B AFW pump.
		c. Verifies proper ICW operation
		d. Checks if main steamlines should be isolated (already isolated in IOAs)- 3B MSIV still open
		e. Verifies all EDGs running
		4. Performs subsequent actions of 3-EOP-E-0 as directed by ANPS
		a. Directs SNPO to place PAHMS in service
		b. Verifies proper AFW alignment and flow - NO
		1) Checks S/G NR level >6%[32%] - NO
		2) Verifies AFW flow > 390 gpm - NO
		3) Manually starts pumps / directs ANPO/NPO valve realignment as directed by ANPS to get AFW > 390 gpm - NO
		5. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs IOAs in response to rx trip per 3-EOP-E-0
		a. Verifies reactor tripped
		b. Checks if SI actuated/required - YES
		1) If not auto actuated, manually actuates SI & phase A as req'd by SI setpoint, PZR level or RCS subcooling
		c. Recognizes loss of subcooling and trips RCPs (if applicable)
		2. Performs prompt actions of 3-EOP-E-0
		a. Verifies containment isolation phase A
		b. Verifies SI pumps running
		c. Verifies proper CCW system operation
		d. Verifies containment cooling and containment/control room vent isolation
		e. Verifies containment spray & phase B isolation actuated if hi-hi CNMT pressure
		f. Trips all RCPs as required by phase B
		g. Verifies SI valve amber lights bright
		3. Recognizes loss of subcooling and trips RCPs per 3-EOP-E-0 (if applicable)
		4. Performs subsequent actions of 3-EOP-E-0 as directed by ANPS
		a. Resets & realigns SI then verifies SI flow
		5. Notifies ANPS of safety injection and cause
		6. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. **Directs response to reactor trip and failure of auto/manual turbine trip per 3-EOP-E-0**
		a. Verification of reactor trip
		b. Response to auto/manual turb. trip failure
		1) ensures closure of 3A & 3C MSIVs
		2) notes 3B MSIV failure to close and directs NLO investigation into problem
		3) ensures mid/east GCBs opened (may direct exciter field breaker opening)
		c. Determination of electric plant status
		d. Manual SI/phase A
		e. Monitors foldout page including direction to RCO to stop all RCPs if subcooling lost
		f. Directs trip of RCPs if phase B actuates
		g. Verifies at least 2 AFW pumps running - NO
		1) Directs local check of trn 2 (B) AFWP
		2) Directs local opening of 3-10-007 to align trn 2 stm to trn 1 (C) AFWP
		h. Response to loss of AFW flow & determination that no AFW pumps available.
		1) Evaluates field operator reports to determine no AFW pumps available
		2) Directs transition to 3-EOP-FR-H.1
		2. Informs NPS of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 6

BRIEF DESCRIPTION: Feedwater flow (both main & AFW) has been completely lost following a 3C S/G main steam break in Containment. Plant conditions require entry into 3-EOP-FR-H.1. RCPs are stopped and feed and bleed is initiated (3C S/G faulted/dry & 3B S/G inventory lost thru failed MSIV to turbine which failed to trip).

INDICATIONS:

1. All steam generators less than 6[32]% level
2. Less than 390 gpm AFW flow
3. Wide range S/G levels decreasing (<22% on 3B & 3C S/Gs)

CREW CRITICAL STEPS:

1. **When required, initiate RCS bleed and feed so that the RCS depressurizes sufficiently for HHSI injection flow to occur.**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Performs actions of 3-EOP-FR-H.1 for RCS bleed & feed when secondary heat sink lost as directed by ANPS
		a. Resets CIS ΦA
		b. Verifies E-0 immediate and prompt actions
		c. Directs PAHMS placed in service per 3-OP-094
		d. Checks charging pumps aligned to offsite power
		e. Attempts to restore secondary heat sink
		f. Aligns equipment for hot standby conditions
		g. Checks if EDGs shold be stopped
		h. Checks for adequate secondary heat sink

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs actions of 3-EOP-FR-H.1 to restore feed flow as directed by ANPS
		a. Checks if secondary heat sink is required
		b. Stops all RCPs (should be stopped already)
		2. Performs actions of 3-EOP-FR-H.1 for RCS feed & bleed when secondary heat sink lost as directed by ANPS
		a. Actuates manual SI and CIS ΦA
		b. Verifies RCPs all stopped
		c. Verifies RCS feed path
		d. **Establishes RCS bleed path - PORVs/block valves open** (leaking PORV will open & failed block MOV never closed, so both PORV flow paths available)
		e. Verifies instrument air to containment
		f. Verifies adequate RCS bleed path
ANPS		**1. Directs performance of 3-EOP-FR-H.1 including RCS bleed and feed**
		2. Informs NPS of status of plant
		3. Classifies the event as a SITE AREA EMERGENCY per 0-EPIP-20101

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-6 or static IC-1 (includes steps C & D below).

B. Load scenario 35.

C. Following switch check, unfreeze the simulator.

D. Perform the following
   1. Realign C AFW pump to train 1 & isolate A AFW pump (parameter controller composite trigger A AFW P).
   2. Place the condenser steam dump control selector switch to MANUAL.
   3. Take LT-3-498 out of service as follows:
      a. Select LT-3-496 for 3C S/G level control.
      b. Fail LT-3-498 (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->STEAM GENERATOR->L-495->LT-498-> TRANSMITTER LOSS OF POWER->set TFF1MACP=T).
   4. Enter the following failures:
      a. Turbine trip failure (parameter controller direct trigger TFU10005=T).
      b. B AFW pump loss of governor oil (touch SYS MAT-> FEEDWATER->AUX F/W STEAM->IDA->GOV-B OIL LOSS FAILURE->set TFFXOILB=T).
      c. 3B MSIV failure to close (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->POV2605-> VALVE FAIL AS IS->set TFSVVX6C=T).
   5. Freeze simulator.

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags - A AFWP.

H. Information tags - Steam Dump Control Mode Selector Switch to MANUAL. Move train 1 label from A AFWP tachometer to C AFWP tachometer beneath ann. panel X. 3C SG level control level input to LT-3-496. Place a brown dot on LT-3-498.

I. Select 3A QSPDS to page 211 (SAT) and 3B QSPDS to page 212 (RVL). Set ERDADS on VPA to TAVE/TREF (TAV) and at the RCO desk to ENVRN (ED3).

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

B. **PT-3-445 Fails High (event 1).**

1. **Initiation:** Shortly after turnover, enter the MOV-3-535 overload trip conditional (touch PRESURIZER LEVEL->MOV535-> THERMAL OVERLOAD-> set TFH2906F=T conditional on IMH231C) then actuate PT-3-445 failure high (parameter controller direct trigger TFH1TU45=T).

2. **Response:** Respond as NPS/NWE/I&C. As NPS/NWE, state that a work request will be generated and I&C will be notified. As I&C, reply that a planner will intiate a work package for troubleshooting & repair. In the event that an attempt is made to close MOV-3-535, it will trip on overload now rather than in event 2. See event 2 for the response to MOV-3-535 failure.

C. **PZR PORV-3-456 Leak / MOV-3-535 Overload Trip (event 2).**

1. **Initiation:** After completion of 3-ONOP-041.5, actuate the PZR PORV-3-456 leak (touch PRESSURIZER LEVEL->PORV456->LEAK BY -> set TVHV456=0.07/30 sec ramp). The leak is sized at 25-30 gpm to slowly reduce pressure to < 2200 psig.

2. **Response:** With the leaking PORV identified, the RCO should attempt (if not done in event 1) to close the associated block MOV which will trip on overload as it starts to close. When asked as NPO/NWE to check out the MOV-3-535 breaker on 3B MCC, wait 1-3 minutes and report a burnt insulation smell in the area around the breaker. If directed to attempt to close the breaker, delay action until after pressure < 2200 psig and reduce PORV-3-456 leakage to 15 gpm by setting TVHV456=0.038/60 sec ramp. (This leak rate will keep the acoustic monitor LEDs lit while allowing all PZR heaters to keep up with the effects of the leak without returning pressure to normal.) Then tell the crew that the switch won't stay in the ON position and the burnt insulation smell just got stronger. Respond as electrical maintenance when directed to investigate the breaker and respond after 5-7 minutes that the breaker internals appear burnt. Also state that the 3B MCC will have to be deenergized and a Containment entry performed to allow a complete damage evaluation and subsequent repair of the MOV and its breaker. Acknowledge load dispatcher/plant management notifications of the required load reduction.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

D. **Power Reduction (event 3).**

1. **Initiation:** In response to event 2, the Operations Manager directs that an ONOP-100 shutdown be performed due to the inability to restore normal PZR pressure from the PORV leak.

2. **Response:** PZR PORV leak response and initiation of load reduction is covered in event 2. Acknowledge notification as Chemistry of the need to sample the RCS in response to a 15% power change. Respond as field operator in response to notification of stopping secondary pumps and if requested to manually control gland seal steam pressure.

E. **PT-3-447 Fails Low (event 4).**

1. **Initiation:** After a 5% power reduction (or at lead examiner direction) ensure that rod control is in AUTO, then actuate PT-3-447 failure (parameter controller direct trigger TFSMAML=T).

2. **Response:** Respond as NPS, NWE or I&C to notification of PT-3-447 failure. As NPS/NWE state that a PWO will be generated and I&C will be notified. As I&C, reply that a planner will intiate a work package for troubleshooting & repair. Respond as NPO/NWE when directed to bypass AMSAC power 2 inputs by acknowledging the order, waiting 3-5 minutes, then bypassing the requested inputs (touch SYS MAT ->REACTOR->EAGLE21/AMSAC->AMSAC->PROCESSOR A&B NORMAL/BYPASS switches->set TCL4P2BA=T & TCL4P2BB=T->SYSTEM RESET). Report completion to the crew.

F. **3C S/G Main Steam Line Break / Reactor Trip / Turbine Trip with 3B MSIV, Train 2 AFW Pump & AFSS-3-007 Failures (event 5)**

1. **Initiation:** Following the PT-3-447 failure crew brief, actuate the 3C S/G steam break in Containment (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->CONT LIQ & VENT PROCESS leak node for C steam line->LEAK INTO CONTAINMENT ->set TVSBVL15=0.2 on 300 sec ramp). Turbine trip, 3B MSIV & B AFW pump failures and A AFW pump OOS are entered during setup.

2. **Response:** When dispatched as field operator to check the B AFW pump, wait 3 minutes and tell crew that there is an oil leak on the governor and with oil spilled on the West end of the pump/pedestal. When asked to align train 2 steam to the C AFW pump, wait 2-4 minutes and state that the stem snapped on valve AFSS-3-007 and that the valve is stuck shut.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

F. **3C S/G Main Steam Line Break / Reactor Trip / Turbine Trip & 3B MSIV Failures (event 5 cont'd)**

2. **Response (cont'd):** If asked as maintenance about the status of the A AFW pump, state that pump end is disassembled with the impeller removed and bearings being replaced - ETR 3 days. Respond as maintenance if asked to investigate the B AFW pump governor oil leak and the AFSS-3-007 valve stem failure. Neither of these problems will be fixed during the scenario. Respond as SNPO to place PAHMs in service per 3-OP-094 (parameter controller trigger composite "PAHM"). After approximately 15 minutes inform the crew that PAHM is aligned. Respond as NPO to place unloaded EDGs in standby per 3-OP-023.

G. **Loss of Secondary Heat Sink (bleed & feed required) (event 6).**

1. **Initiation:** A result of event 5 and the scenario setup, this event entered by procedural transition from 3-EOP-E-0 to 3-EOP-FR-H.1 (adverse containment with loss of all AFW). The 3B MSIV & turbine trip failures combine to reduce wide range level to < 22% in this (as well as the faulted 3C S/G) requiring performance of feed & bleed per 3-EOP-FR-H.1 step 2 CAUTION.

2. **Response:** Consistent with event 5.

III. TERMINATION CRITERIA:

A. Upon establishment of RCS bleed & feed (step 24 of 3-EOP-FR-H.1), <u>OR</u>

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TFS1MAML	T	-	-	-	PT-3-447 (turb 1st stg imp press ch IV) fails low
N	TFH1TU45	T	-	-	-	PT-3-445 (PZR press control channel) fails high
N	TFU10005	T	-	-	-	Turbine trip fails - auto & manual
Y	"PAHM"	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	0:30	-	Opens PAHM-002A
-	TAC2V02B	1.0	-	1:30	-	Opens PAHM-002B
-	TAAAV21	1.0	-	-	-	Opens HV-1
-	TAAAV22	1.0	-	-	-	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005
Y	"A AFW P"	-	-	-	-	**Removes A AFW pump from service & aligns C AFW pump to train 1**
-	TFFXCGVA	T	-	-	-	Fails A AFW pump governor closed
-	TFFXCTTA	T	-	-	-	Fails A AFW pump T&T valve (MOV6459A) closed
-	TAFK142	0.0	-	-	-	Closes 3-142 (A AFW pump dischg to train 1)
-	TAFK342	1.0	-	-	-	Opens 3-342 (C AFW pump dischg to train 1)
-	TAFK003	0.0	-	-	-	Closes AFPD-003 (C AFW pump dischg to train 2)
-	TAFF01C	0.0	-	-	-	Closes AFSS-001 (C AFW pump train 2 stm supply)
-	TAFF3082	0.0	-	-	-	Closes 3-082A (A AFW pump train 1 stm supply)
-	TAFF3086	1.0	-	-	-	Opens 3-086A (C AFW pump train 1 stm supply)
-	TAFF4082	0.0	-	-	-	Closes 4-082A (A AFW pump U4 train 1 stm supply)
-	TAFF4086	1.0	-	-	-	Opens 4-086A (C AFW pump U4 train 1 stm supply)

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-103	Power Operation to Hot Standby
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-028	Reactor Control System Malfunction
3-ONOP-041.5	Pressurizer Pressure Control Malfunction
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
3-ONOP-100	Fast Load Reduction
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-FR-H.1	Response to Loss of Secondary Heat Sink
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book

EVALUATION SCENARIO CONTENT SUMMARY

1. Total Number of Malfunctions: 7

2. Malfunctions Occurring During EOP Performance: 2

   1. Turbine trip failure
   2. 3B MSIV failure

3. Abnormal Events: 3

   1. PT-3-445 fails high
   2. PORV-3-456 leak & MOV-3-535 failure to close
   3. PT-3-447 fails low

4. Major Transients: 2

   1. 3C S/G Steam Break in Containment
   2. Loss of secondary heat sink (B AFW start failure)

5. EOPs Used: 1

6. EOP Contingencies Entered: 1

7. Simulator Run Time: 90 minutes

8. EOP Run Time: 45 minutes

9. Crew Critical Tasks: 2

Facility: Turkey Point Nuclear Plant **Scenario No.:** 3 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to reduce load from 100% power per normal plant procedure. Evaluate ability of operators to recognize & respond to failure of PT-3-145 low causing PCV-3-145 to fail closed, failure of the controlling 3B S/G feed flow channel high and a sequential failure of both main feed pumps with a failure of the associated automatic turbine runback. Emergency Operating Procedure use will be evaluated for a failure of the reactor to automatically trip followed by a S/G tube rupture with complications during RCS depressurization.

Initial Conditions: 100% power, BOL

Turnover: Power reduction from 100% power is required to comply with T.S. 3.7.1.1 due to 3C S/G RV-3-1412 being declared OOS following review of testing documentation from the recent refueling outage. 3B EDG is OOS for corrective maintenance on the governor. FT-3-476 is OOS for calibration. Shift orders are to reduce power from 100% to 50% to comply with Technical Specifications for RV-3-1412 OOS.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (SRO/BOP) R (RO)	Reduce power from 100%. K/A 2.1.23 (3.9/4.0)
2	TFB1L5 = T TFB1PCH5=T	I (SRO) I (RO)	Letdown PT-3-145 fails low causing PCV-3-145 to fail closed. K/A 004A2.07 (3.4/3.7)
3	TFF1M86H=T	I (SRO) I (BOP)	FT-3-486 (controlling 3B S/G feed flow channel) fails high resulting in need for manual control of associated FRV. K/A 035A2.04 (3.6/3.8)
4	TVFABP1A= 1.0 2 min ramp TFFVP1B=T TFV1LRRD=T	C (ALL)	Sequential loss of both main feed pumps with a failure of automatic turbine runback. K/A 054AA2.02 (4.1/4.4)
5	TFL2XASE=T TFL2XBSE=T TFL4AF=T	M (ALL)	Loss of main feed with failure of reactor to automatically trip. K/A 029EA1.14 (4.2/3.9)
6	TVHHSGC= 0.35 30sec ramp	M (ALL)	Steam Generator Tube Rupture. K/A 038 EA2.02 (4.5/4.8)
7	TFHV55CO=T & TFH244GH=T or TFHV456O=T / TFHV55AO=T	C (SRO) C (RO)	Normal spray valve / PZR PORV sticks open during RCS depressurization. K/A 038EA1.04 (4.3/4.1)

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

FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 3
DESCRIPTION:	Loss of Main Feedwater / Steam Generator Tube Rupture
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	09/01/99

REVIEWED BY: Bretton 9-2-99

Facility Reviewer Date

APPROVED BY: _____

NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. Power reduction from 100%
   b. PT-3-145 failure low (loss of letdown)
   c. FT-3-486 failure high (manual FRV control)
   d. Loss of main feed / automatic runback failure
   e. Reactor trip failure
   f. Steam generator tube rupture
   g. RCS cooldown & loss of depressurization control

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 574 degrees F

Turnover: Power reduction from 100% to 50% power is required due to 3C S/G safety valve RV-3-1412 declared OOS (per T.S. 3.7.1.1) due to errors found during review of testing documentation from the recent refueling outage. 3B EDG is OOS for corrective governor maintenance. FT-3-476 is OOS for calibration. No surveillance tests are in progress.

Synopsis: After a 5% power reduction (or at lead examiner direction) PT-3-145 fails low causing letdown PCV-3-145 to automatically close. Operators respond per 3-ARP-097.CR for annunciators A-5/5 & 6. After discovering PCV-3-145 is failed closed, the crew locally controls letdown pressure using bypass valve 3-309C. Following restoration of CVCS letdown, FT-3-486 fails high. The crew must take manual control of 3B S/G feed flow. Once the plant is stabilized, 3B S/G level control returned to automatic, Technical Specifications consulted and the crew briefed on the effects of the failure, a sequential loss of both SGFPs occurs. The first SGFP trips on bearing wear, but the automatic turbine runback fails. The crew responds per 3-ONOP-089 and manually runs the turbine back. Then the second SGFP experiences a shaft shear and main feed flow is lost. The crew responds per 3-EOP-E-0 and addresses a failure of the reactor to automatically trip. Transition to 3-EOP-FR-S.1 is made in response to the failure of reactor trip breakers to open either automatically or manually. Since AMSAC does not actuate, the reactor trips when the MG set input & output breakers are locally opened. In response to the trip, a tube ruptures on the 3C S/G. After finishing 3-EOP-FR-S.1 (during which an SI occurs due to the SGTR), the crew transitions to 3-EOP-E-0 and then to 3-EOP-E-3. Once the RCS depressurization has begun using a normal spray/PZR PORV, the opened valve sticks open. This requires tripping the running RCP for normal spray or closure of the PORV block valve if a PZR PORV was used to avoid entry into 3-EOP-ECA-3.1. The exercise is concluded upon establishment of increasing RCS pressure (3-EOP-E-3 step 26) or at the evaluator's discretion. The event is classified after scenario completion as an alert per 0-EPIP-20101, Enclosure 1, category 2.

Event summary:

EVENT #	DESCRIPTION
1	Power reduction from 100%
2	PT-3-145 fails low (PCV-3-145 fails closed)
3	FT-3-486 fails high (manual FRV control)
4	Sequential loss of both feed pumps / automatic runback failure
5	Loss of main feed / reactor fails to trip
6	Steam generator tube rupture
7	RCS cooldown & loss of depressurization control

Crew Critical Steps:

EVENT #		DESCRIPTION
5	1.	Insert negative reactivity into the core by one of the following methods prior to completing 3-EOP-FR-S.1 step 4: de-energizing CRDM MG sets, inserting RCCAs, or establishing emergency boration flow.
7	1.	Isolate feedwater flow into and steam flow out of a ruptured S/G prior to transitioning to 3-EOP-ECA-3.1.
	2.	Perform 3-EOP-E-3 cooldown and maintain temperature to meet following criteria: temperature is not too high to maintain required subcooling nor causes a severe challenge to subcriticality CSF.

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - BOL
   b. Reactor power and power history - 100% steady state
   c. Turbine status - online
   d. Boron concentration - 1298 ppm
   e. Temperature - 574 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Equilibrium for 100% power.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.3.1 Action 6 (bistables tripped); FT-3-476 OOS for cal
      - 3.7.1.1 Action b (4 hrs); RV-3-1412 OOS (3C S/G safety)
      - 3.8.1.1 Action b (72 hrs); 3B EDG OOS (governor)
   j. Clearances in effect - 3B EDG
   k. Significant problems/abnormalities - Power reduction required for RV-3-1412 OOS.
   l. Evolutions/maintenance for the coming shift - Reduce power from 100% down to 50% this shift.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 1; 100% power
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: With reactor power initially at 100% power, a power reduction to comply with Tech Specs for an inoperable S/G safety valve.

INDICATIONS: 1. Shift turnover

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Reduces turbine load IAW 3-GOP-103
		a. Maintains Tref within 3°F of Tavg if rods in manual (1°F if rods in auto)
		b. Monitors gland seal stm press & directs local supply/spillover control as needed
		2. Performs secondary plant shutdown generator-load-dependent activities IAW 3-GOP-103
		3. Performs activities as directed by ANPS
		a. Inhibits MIMS if in service
		b. Notifies Chemistry of need to sample RCS if reactor power reduced > 15%
		4. Keeps ANPS informed of plant status
RCO		1. Reduces reactor power IAW 3-GOP-103
		a. Calculates rx change needed for downpower
		b. Borates at rate directed by ANPS (0-OP-046)
		c. Energizes PZR backup heaters
		d. Coordinates w/BOP to keep Tref < 3°F from Tavg w/rods in manual (1°F if rods in auto)
		e. Observes AFD limitations
		f. Starts additional charging pump
		2. Keeps ANPS informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 1 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Coordinates power reduction activities of RCO & BOP
		2. Performs other activities IAW 3-GOP-103
		a. Evaluates Xe changes and directs boration rate changes as necessary
		3. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: PT-3-145 fails low, causing PCV-3-145 to fail closed. Operators note the lifting of the letdown relief, and unsuccessfully attempt to take manual control of PCV-3-145 to open the valve. It must be bypassed locally to restore letdown.

INDICATIONS:

1. Annunciator A-5/5, CVCS HP LTDN LINE HI FLOW/ PRESS
2. Annunciator A-5/6, CVCS LP LTDN LINE RELIEF HI TEMP
3. PI-3-145 reading high
4. TE-3-141, RV-3-203 tailpipe temperature high (RV-3-203 relief flow to PRT)

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by the ANPS
RCO		1. Notes failure closed of PCV-3-145
		2. Attempts to manually open PCV-3-145
		3. Directs operator to investigate PCV-3-145 locally
		4. Closes all letdown orifices
		5. Directs operator to open 3-309C (PCV-3-145 bypass) to restore letdown flowpath
		6. Verifies TI-3-141 not increasing
		7. Directs operator to locally close 3-309A to isolate PCV-3-145
		8. Re-opens letdown orifices while throttling 3-309C to restore letdown flow if directed by ANPS
		9. Verifies TI-3-141 decreasing and FI-3-150 stable

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		1. Directs recovery of letdown per 3-ARP-097.CR
		a. Annunciators A-5/5 & A-5/6
		2. Notifies other support groups (I&C, Maintenance, etc.) of PCV-3-145 failure
		3. Maintains NPS informed regarding plant status

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: A SG feedwater FT-3-486 (the controlling channel) fails high. The 3B S/G FRV requires manual action to maintain stable plant conditions. The channel is called OOS and compensatory actions initiated per 3-ONOP-049.1.

INDICATIONS:

1. Annunciator C-4/2, SG B FEED > STEAM
2. Annunciator C-5/2, SG B STEAM > FEED
3. Annunciator C-6/2, SG B LEVEL DEVIATION
4. FI-3-486 fails high

POSITION TIME EXPECTED ACTIONS

BOP

1. Recognizes failure of FT-3-486 and responds as directed by ANPS
   a. Compares to other SG FT's
   b. Verifies no off-normal conditions on other SG PT's/FT's
2. Notifies ANPS of failure
3. **Takes manual control of FCV-3-488 to restore balanced steam/feed flow and stabilize SG level**

RCO

NONE

ANPS

1. Directs stabilization of plant conditions
2. Directs compensatory action per 3-ONOP-049.1
   a. Verifies SG FT/PT status determination
   b. Determines which bistables to trip and effects on plant of tripping bistables. Provides this info to RCO/BOP for guidance.
3. Notifies NPS of plant status
4. Ensures Tech Spec requirements are met
5. Notifies I&C of FT-3-486 failure and directs initiation of PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: 3A S/G Feed Pump trips/is tripped on bearing failure but the auto turbine runback fails. The operators respond by manually running back the turbine. During the runback, a shaft shear occurs on the 3B S/G Feed Pump. A loss of all feed flow occurs requiring a reactor trip.

INDICATIONS:

1. Annunciator D-6/1, SGFP A/B MOTOR OVERLOAD TRIP
2. Annunciator D-5/4, SGFP A MOTOR BRG HI TEMP
3. Auto runback fails to occur (MW ↑ initially)
4. Annunciators C-5/1(2)(3), SG A(B)(C) STEAM > FEED
5. Annunciators C-6/1(2)(3), SG A(B)(C) LEVEL DEVIATION
6. Annunciators C-1/1(2)(3), SG A(B)(C) NARROW RANGE LO/LO-LO LEVEL
7. Annunciators C-1/4(5)(6), SG A(B)(C) LO-LO LEVEL TRIP
8. Annunciators C-5/4(5)(6), SG A(B)(C) LO LEVEL W/ STEAM>FEED TRIP
9. Annunciators D-5(6)/2, SGFP A(B) LO FLOW
10. Low current indicated on the 3B SGFP ammeter
11. Reduced feed flow after 3A SGFP trip. Zero feed flow indicated after 3B SGFP shaft shear.

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Informs ANPS of 3A SGFP trip & auto turbine runback failure
		2. Verifies 3-ONOP-089 automatic actions including manually running back the turbine
		3. Notes loss of feedwater flow & 3B SGFP lo amps
		4. Recommends reactor trip @ SG level = 15% or on loss of second SGFP
RCO		1. Assists BOP as directed by ANPS
		2. Verifies 3-ONOP-089 automatic actions
		3. Verifies primary parameters stable
		4. Trips reactor @ SG lvl=15% or at ANPS direction

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Coordinates and directs response per 3-ARP-097.CR and 3-ONOP-089 including direction to manually run back the turbine.**
		2. Notifies System and Duty Call Supervisor of situation
		3. Informs NPS of status of plant
		4. Directs troubleshooting effort on SGFPs & automatic turbine runback circuit as time permits
		5. When advised of loss of 3B SGFP or SG level @ 15%, directs reactor trip.

EXPECTED OPERATOR ACTIONS

EVENT: 5

BRIEF DESCRIPTION: Normal feed is lost but automatic and manual reactor trips fail and actions are taken IAW FR-S.1. AMSAC fails to actuate and the reactor must be locally tripped by breaker operation. A S/G tube rupture has occurred or is occurring.

INDICATIONS:
1. Loss of normal feedwater
2. S/G levels/feed flows decrease rapidly
3. Reactor trip directed or actuates
4. RTBs fail to open & breaker indication goes out

CREW CRITICAL STEPS:
1. **Insert negative reactivity into the core by one of the following methods prior to completing 3-EOP-FR-S.1 step 4: de-energizing CRDM MG sets, inserting RCCAs, or establishing emergency boration flow.**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes loss of normal feedwater
		2. **Responds to reactor trip fail per 3-EOP-FR-S.1**
		a. Verifies turbine trip
		b. Checks AFW pumps-all running
		c. **Assists RCO w/control rod insertion & direction to NPO for local RTB/MG set trip**
		d. Checks if turb/gen trips have occurred
		e. Checks S/G levels
		f. Checks for uncontrolled RCS cooldown
		g. Verifies 3-EOP-E-0 IOAs if auto SI & reactor subcritical
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Attempts manual reactor trip
		2. Responds to reactor trip fail per 3-EOP-FR-S.1
		a. Verifies reactor trip - NO - inserts control rods (BOP assists as necessary)
		b. Initiates emerg boration (if SI actuated, must reset SI for emerg boration flow)
		c. Verifies RCS pressure < 2335 psig
		d. Verifies Containment ventilation isolated
		e. Checks if reactor trip has occurred - NO
		g. Verifies dilution paths isolated
		h. Verifies CETC<1200°F & reactor subcritical
		i. Performs BOP actions during E-0 IOA verification
		3. Informs ANPS of plant status
		a. Identifies/reports AMSAC failure.
ANPS		1. Directs response to loss of normal FW/ATWS
		2. Directs response to ATWS per 3-EOP-FR-S.1
		a. Ensures no RCP trip until reactor subcrit. (even if CNMT phase B isolation)
		b. Ensures NPO notified to perform local reactor trip actions

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS (cont'd)		**3. Returns to procedure and step in effect (3-EOP-E-0) or transitions to FRP if appropriate**
		4. Classifies event as an ALERT (unless higher category event exists) per 0-EPIP-20101
		5. Informs NPS of plant status
		a. Reports AMSAC failure to NPS and/or NWE/I&C.

EXPECTED OPERATOR ACTIONS

EVENT: 6

BRIEF DESCRIPTION: In response to a loss of main feed, a reactor trip has occurred. Additionally, a 3C S/G tube rupture occurs concurrent with the reactor trip requiring an SI. Operators perform actions of 3-EOP-E-0.

INDICATIONS:
1. Reactor trip/SI directed or actuates
2. Rod bottom lights on
2. RTBs and bypass breakers open
4. Safety injection annunciator(s)
5. Safeguards equipment automatically starts

CREW CRITICAL STEPS: SEE EVENT 7

POSITION TIME EXPECTED ACTIONS

BOP

1. Responds to reactor trip per 3-EOP-E-0

a. Verifies turbine trip

b. Verifies power to 3A/B/D 4kV buses

c. Recognizes uncontrolled level increase in ruptured steam generator and isolates feed to it if level > 6%

d. Verifies feedwater isolation

e. Verifies AFW pumps running

f. Verifies proper ICW operation

g. Checks if main steamlines should be isolated

h. Verifies all EDGs running

i. Directs SNPO to place PAHMS in service

j. Verifies proper AFW alignment and flow

k. Checks RCS cold leg temperatures stable

l. Performs MSLB & SGTR diagnostics

2. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 6 (cont'd)

POSITION	**TIME**	**EXPECTED ACTIONS**
RCO		**1. Responds to reactor trip per 3-EOP-E-0**
		a. Verifies reactor tripped
		b. Checks if SI actuated/required (auto SI)
		c. Recognizes loss of subcooling and trips RCPs (if applicable)
		d. Verifies containment isolation phase A
		e. Verifies SI pumps running
		f. Verifies proper CCW system operation
		g. Verifies containment cooling
		h. Verifies containment and control room ventilation isolation
		i. Verifies containment spray not required
		j. Verifies SI valve amber lights bright
		k. Resets & realigns SI
		l. Verifies SI flow
		m. Checks RCP seal cooling
		n. Checks RCP cooling
		o. Checks letdown/PORVs/spray valves closed
		2. Notifies ANPS of safety injection and cause
		3. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS		**1. Directs response to reactor trip per 3-EOP-E-0**
		a. Directs immediate actions
		b. Monitors foldout page items
		1) Direction to RCO to stop all RCPs if subcooling lost
		2) Direction to BOP to isolate feed flow to ruptured S/G if level > 6%
		c. Directs prompt actions
		d. Directs subsequent actions
		2. Transitions to appropriate plant procedure (3-EOP-E-3 or appropriate FRP)
		3. Informs NPS of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 7

BRIEF DESCRIPTION: An SGTR has occurred. The ruptured S/G atm steam dump is set to 1060 psig, the S/G verified isolated, and the RCS cooled down & depressurized. The depressurization method in use fails open requiring operator action.

INDICATIONS:
1. Local steam line and/or DAM-1 readings abnormal
2. Uncontrolled level increase in ruptured S/G

CREW CRITICAL STEPS:
1. **Isolate feedwater flow into and steam flow out of a ruptured S/G prior to transitioning to 3-EOP-ECA-3.1.**
2. **Perform 3-EOP-E-3 cooldown and maintain temperature to meet following criteria: temperature is not too high to maintain required subcooling nor causes a severe challenge to subcriticality CSF.**

POSITION	TIME	EXPECTED ACTIONS
BOP		**1. Performs actions of 3-EOP-E-3**
		a. Identifies ruptured S/G (3C)
		b. Controls ruptured S/G atm steam dump. Verifies closed if S/G press < 1060 psig.
		c. Isolates feed if ruptured S/G level >6%.
		d. Isolates AFWSS from ruptured S/G. Realigns for two trains of AFW if needed.
		e. Isolates misc flowpaths from ruptured S/G
		f. Closes ruptured S/G MSIV & bypass
		g. Checks if S/Gs are not faulted
		h. Maintains intact S/G levels 15-50%
		i. Resets ctmt isol phase A & B
		j. Verifies offsite power to all 4kV buses
		k. Verifies ruptured S/G isolated from intact S/Gs

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		1. Checks ruptured S/G pressure > 390 psig
		m. Performs RCS cooldown
		1. Determines req'd CET temp for cooldown
		2. Dumps steam at max rate until RCS < req'd CET temp, then stops cooldown
		n. Checks rupt S/G press stable or increasing
		3. Informs ANPS of plant status
RCO		**1. Performs actions of 3-EOP-E-3**
		a. Checks if RCPs should be stopped
		b. Verifies S/G B/D sample isol. valves closed
		c. Checks PORVs and block valves
		d. Verifies SI reset
		e. Verifies instrument air to containment
		f. Checks if RHR pumps should be stopped
		g. Establishes max charging flow
		h. Checks RCS subcooling > 50°F [230°F]
		i. Depressurizes RCS to minimize break flow and refill PZR
		1. Observes RCS subcooling/PZR lvl limits
		2. Manually closes normal spray/PORV when RCS < ruptured S/G pressure ✱ NO
		3. Manually trips RCP/closes PORV block MOV
		j. Checks RCS pressure increasing

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		2. Informs ANPS of plant status
		3. Recognizes loss of subcooling and trips RCPs per 3-EOP-E-3 (if applicable)
ANPS		**1. Directs response to ruptured S/G per 3-EOP-E-3**
		a. Monitors foldout page items including direction to RCO to stop all RCPs if subcooling lost
		b. Identifies & isolates ruptured S/G
		c. Cools & depressurizes RCS to minimize break flow
		d. Directs tripping RCP in response to normal spray valve failing open or closure of PORV block valve in response to PORV failing open
		2. Informs NPS of plant status

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-11 or static IC-2 (includes steps C & D).

B. Load scenario 49.

C. Following switch check, unfreeze the simulator.

D. Perform the following
   1. Take 3B EDG OOS as follows: SYS MAT->STANDBY POWER & SYNC->EMERGENCY DIESEL LOGIC & PROT->3AB20->BREAKER POSITION->set TAQ5B20P=3->EMERGENCY DIESEL GENERATOR 3B->SELECTOR SWITCH 3B->set TAQ5LRSB=0
   2. Take FT-3-476 OOS per 3-ONOP-049.1 as follows:
      a. In rack 24, trip bistables BS-3-478-A1/A2/D.
      b. Ensure 3A S/G level control inputs do not have FT-3-476 selected.
      c. Fail FT-3-476 low (touch SYS MAT->FEEDWATER-> MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES ->F-SG1->FT-476->FAIL LOW->set TFF1M76L=T).
   3. Enter the following failures:
      a. Reactor trip & AMSAC failure (touch SYS MAT-> REACTOR->ROD CONTROL ROD POSITION->ROD SPEED TO LOGIC CABINET->RXB->BREAKER FAILS AS IS->set TFL2XBSE=T->RXA->BREAKER FAILS AS IS->set TFL2XASE=T->SYS MAT->REACTOR->EAGLE 21/AMSAC-> AMSAC->FAIL TO ACTUATE->set TFL4AF=T).
      b. Turbine runback failure (touch SYS MAT->REACTOR ->TURBINE RUNBACKS->SGFP RUNBACK INHIBIT->SGFP BKR GOV & 2L RUNBACK INHIBIT->set TFU1LRRD=T)
   4. Freeze simulator.

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags-Rack 24 (FT-3-476) and 3B EDG.

H. Information tags-3A SG level control feed flow input to FT-3-477. Place brown dot on FT-3-476.

I. Select 3A QSPDS to page 211 (SAT) and 3B QSPDS to page 212 (RVL). Set ERDADS on VPA to TAVE/TREF (TAV) and at the RCO desk to ENVRN (ED3).

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

B. **Power reduction from 100% (event 1).**

1. **Initiation:** Crew should begin in response to shift turnover. If slow to begin, call as Operations Supervisor and prompt commencement of load reduction to 50% in one hour.

2. **Response:** Acknowledge load dispatcher/plant management notifications of the required load reduction. Respond as field operator in response to notification of starting/stopping plant equipment and, if asked, to manually control gland seal steam.

C. **PT-3-145 fails low (PCV-3-145 fails closed) (event 2).**

1. **Initiation:** After a 5% power change or at lead evaluator discretion, actuate the PT-3-145 failure (touch SYS MAT-> CHEMICAL VOLUME CONTROL SYSTEM->CVCS LETDOWN->P-145-> TRANSMITTER FAIL LOW->arm TFB1L5=T->RECALL->P-145->CONTROLLER FAIL HIGH->arm TFB1PCH5=T). Pressing MAST FAIL will cause PCV-3-145 to close and PC-145 to fail high.

2. **Response:** When asked as SNPO to investigate the PCV-3-145 failure, acknowledge the order, wait 2-4 minutes, then report the valve closed with no obvious malfunctions. If asked as I&C/Mechanical to investigate PT-3-145/PCV-3-145, say that a tech will be reassigned from a lower priority project and troubleshooting will begin as soon as possible thereafter. Provide no further progress towards fixing this failure.
When asked as SNPO to bypass PCV-3-145 using 3-309C, control valve position open/closed at crew direction using SYS MAT-> CHEMICAL VOLUME CONTROL SYSTEM->CVCS LETDOWN->PCV145->LEAK BY-> set TVBVLK06 as directed by the crew (0.1 per turn ordered). When asked to isolate PCV-3-145 using 3-309A, wait 2-4 minutes, then report completion to the crew.

D. **FT-3-486 fails high (manual FRV control) (event 3).**

1. **Initiation:** As soon as letdown is restored and CVCS parameters stabilized, actuate FT-3-486 failure low by touching SYS MAT->FEEDWATER->MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES->F-SG2->FT486->FAIL HIGH->set TFF1M86H=T. This failure requires manual operation of FCV-3-488 to restore 3B S/G level to program.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

D. **FT-3-486 fails high (manual FRV control) (event 3 cont'd).**

2. **Response:** Respond as NPS, NWE or I&C to notification of FT-3-486 failure. As NPS/NWE state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will intiate a work package for troubleshooting & repair.

E. **Sequential loss of both feed pumps / automatic runback failure (event 4).**

1. **Initiation:** Once the secondary plant is stabilized with FCV-3-478 manually controlling feed to 3A S/G, actuate the bearing failure on the 3A SGFP by touching SYS MAT->FEEDWATER-> MAIN FEEDWATER MENU->SGFP'S->3P1A->BEARING WEAR->set TVFABP1A=1.0/2:00 ramp. The automatic runback failure was entered during scenario setup. With the manual runback in progress actuate the shaft shear on 3B SGFP by touching 3P1B-> SHEARED SHAFT->set TFFVP1B=T.

2. **Response:** Respond as NPO/NWE if requested to investigate the SGFPs. After 2-4 minutes, report the 3A SGFP outboard pump bearing has failed and the shaft appears to be seized. For 3B SGFP report the shaft broke between the pump and the motor. As I&C or Mechanical maintenance, acknowledge any requests for assistance with assurance that these failures will be investigated immediately. Acknowledge any reports to the NPS/ system dispatcher that Unit 3 is going off line.

F. **Loss of main feed / reactor fails to trip (event 5)**

1. **Initiation:** The loss of main feed is from event 4 and the reactor trip & AMSAC failures are part of the initial setup.

2. **Response:** When dispatched as field operator to locally open the RTBs/bypass RTBs/MG set breakers, wait until emergency boration has been established then touch SYS MAT->REACTOR->ROD CONTROL ROD POSITION->ROD SPEED TO LOGIC CABINET->3A->LOCAL CLOSE/TRIP(MECHANICAL)->set TCE6DQ7C=F->3B->LOCAL CLOSE/TRIP (MECHANICAL)->set TCE6DQ8C=F and insert the 3C S/G tube rupture using parameter controller direct trigger TVHHSGC=0.35 on a 30 sec ramp. Respond as SNPO when asked to verify dilution paths isolated. Wait 3-5 minutes and report dilution paths isolated.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

G. **Steam Generator tube rupture (event 6)**

1. **Initiation:** See event 5.

2. **Response:** Respond as SNPO to place PAHMs in service per 3-OP-094 (parameter controller trigger composite "PAHM"). After 15-18 minutes report that PAHM is aligned. Respond as NPO to place unloaded EDGs in standby per 3-OP-023.
Respond if asked as Chemistry for S/G activity samples and as HP for main steam line & SJAE surveys. After 8-10 minutes, as HP report activity near unit 3 SJAE, 3C main steam line radiation above background and parts of the turbine deck posted as contaminated. Request the crew warn plant personnel accordingly. Report as Chemistry that a quick check of the sample from 3C S/G shows activity.

H. **PZR PORV fails open during RCS depressurization (event 7).**

1. **Initiation:** The 3C SGTR is initiated in event 5 followed by transition to 3-EOP-E-3 in event 6. Arm the PZR spray valve PCV-3-455A failure open (touch SYS MAT-> REACTOR COOLANT SYSTEM->PRESSURIZER->PCV455A->FAIL OPEN->arm TFHV55AO=T->P444->PC444G->CONTROLLER FAIL HIGH->arm TFH244GH =T). Following RCS c/d, depressurization begins. If a PORV is opened, fail it that way by touching SYS MAT->REACTOR COOLANT SYSTEM->PRESSURIZER->PORV455C(456)->FAIL OPEN->set TFHV55CO (TFHV456O)=T. If an RCP is still running and normal spray valves are used, then fail PCV-3-455A (C loop) open by pressing MAST FAIL (also fails the associated controller to 100%).

2. **Response:** Wait 3-5 minutes after direction as NPO/NWE to align 3B S/G to train 1 AFSS then touch parameter controller composite trigger ✱ 006/007✱ . Wait 3-5 minutes after direction as NPO/NWE to deenergize and locally close MOV-3-1405 then touch parameter controller composite trigger ✱ 1405ISO✱ . This may be done immediately if MOV-3-1405 is closed from the console. Wait 3-5 minutes after direction as NPO/NWE to align auxiliary steam supply to unit 4, then touch parameter controller composite trigger ✱ AUX STM✱ .
HP & Chemistry reports, when requested, should be consistent with event 6 and should support identification of the 3C SGTR.

III. TERMINATION CRITERIA:

A. Upon establishment of increasing RCS pressure (step 26 of 3-EOP-E-3), **OR**

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TVHHSGC	0.35	-	-	0:30	3C S/G tube rupture (350 gpm)
Y	"006/007"	-	-	-	-	**Swaps positions of AFSS-3-006 & 007 to align 3B S/G to train 1 AFW steam supply**
-	TAFF07	1.0	-	0:15	-	Opens AFSS-3-007
-	TAFF06	0.0	-	0:30	-	Closes AFSS-3-006
Y	"1405 ISO"	-	-	-	-	**Deenergizes & closes MOV-3-1405 (3C S/G AFWSS)**
-	TFFXC05	T	-	-	-	Fails MOV-3-1405 closed
-	TCF5MA27	F	FXV1405 EQ 0	-	-	Opens breaker 3D01-27 when MOV-3-1405 reaches the closed position
Y	"PAHM"	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	1:00	0:30	Opens PAHM-002A
-	TAC2V02B	1.0	-	-	-	Opens PAHM-002B
-	TAAAV21	1.0	-	2:00	0:30	Opens HV-1
-	TAAAV22	1.0	-	3:00	0:30	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005
Y	"AUX STM"	-	-	-	-	**Realigns Aux Steam supply to Unit 4**
-	TAFF02	1.0	-	-	0:30	Opens SLWU-3-001
-	TAFF007	0.0	-	1:00	0:30	Closes 3-10-007

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-103	Power Operation to Hot Standby
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
3-ONOP-089	Turbine Runback
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-E-3	Steam Generator Tube Rupture
3-EOP-FR-S.1	Response to Nuclear Power Generation / ATWS
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book

EVALUATION SCENARIO CONTENT SUMMARY

1.	Total Number of Malfunctions:	8
2.	Malfunctions Occurring During EOP Performance:	2
	1. Reactor trip/AMSAC failure 2. PORV/normal spray valve fails open	
3.	Abnormal Events:	4
	1. PT-3-145 fails low 2. FT-3-486 fails high 3. 3A SGFP bearing failure 4. Automatic turbine runback failure	
4.	Major Transients:	2
	1. Loss of main feed (3B SGFP shaft shear) 2. 3C S/G tube rupture	
5.	EOPs Used:	2
6.	EOP Contingencies Entered:	1
7.	Simulator Run Time:	90 minutes
8.	EOP Run Time:	45 minutes
9.	Crew Critical Tasks:	3

Facility: Turkey Point Nuclear Plant **Scenario No.:** 4 **Op-Test No.:** PTN Group XVIII

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Objectives: To evaluate the applicants' ability to raise load from 60% power per normal plant procedure. Evaluate ability of operators to recognize & respond to failure of the controlling 3A S/G steam flow channel low. Evaluate use of off-normal procedures for rod control Tref failing low and an RCP thermal barrier leak (with CCW return MOV malfunction) developing into an RCP high vibration problem requiring a reactor trip. Emergency Operating Procedure use will be evaluated for a large break LOCA followed by loss of offsite power. Finally, a failure of the running RHR pump occurs resulting in a loss of emergency coolant recirculation capability and RWST outflow is reduced.

Initial Conditions: 60% power, BOL

Turnover: Return to 100% power from 60% power is in progress to meet system peak demand following 3A SGFP breaker repair. The pump has been returned to service. The previous crew has just stabilized power for shift turnover. 3B EDG is OOS for corrective maintenance on the governor. FT-3-476 is OOS for calibration. Shift orders are to raise power from 60% to 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (SRO/BOP) R (RO)	Raise power from 60%. K/A 2.1.23 (3.9/4.0)
2	TFS1MWEL=T	I (SRO) I (BOP)	3A S/G controlling steam flow channel (FT-3-474) fails low. K/A 035A2.04 (3.6/3.8)
3	TFL1T8FP=T	I (SRO) I (RO)	Tref (TM-3-408F) fails low. K/A 001A1.02 (3.1/3.4)
4	TVKALTBB=0.3 TFKV626A=T then =F conditional on IMK1938C TAHUVBSB=21.0/ 3:00 ramp & TAHUVBMB=6.0/ 3:00 ramp	C (ALL)	RCP thermal barrier failure with failure of MOV-3-626 to automatically close on high flow. Reactor/RCP trip is required on high RCP vibration. K/A 026AA2.01 (2.9/3.5), 015/017AA1.06 (3.1/2.9) & AA1.23 (3.1/3.2)
5	TVHHCLB=2.0 / 0:05 delay / 0:30 ramp	M (ALL)	Large break LOCA. K/A 011EA2.01 (4.2/4.7)
6	TFP1S3GC=T	M (ALL)	Loss of offsite power. K/A 056AA1.05 (3.8/3.9)
7	TVMRPBRA=1.0/ 2:00 ramp	C (SRO) C(RO)	3A RHR pump trip (loss of emergency coolant recirculation). K/A WE11EA1.1 (3.9/4.0)

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

FLORIDA POWER AND LIGHT

TURKEY POINT NUCLEAR POWER PLANT

GROUP XVIII RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO EXERCISE GUIDE

PROGRAM:	RO/SRO Initial License Training
EXERCISE GUIDE:	XVIII NRC 4
DESCRIPTION:	Large Break Loss of Coolant Accident / Loss of Offsite Power
LENGTH:	90 minutes
AUTHOR:	G. M. Blinde
REVISION DATE:	09/01/99

REVIEWED BY: _____ 9-2-99
Facility Reviewer Date

APPROVED BY: _____
NRC Chief Examiner Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
   a. Power increase from 60%
   b. FT-3-474 failure low (controlling channel)
   c. TM-3-408F failure low
   d. RCP themal barrier failure / MOV-3-626 auto close failure
   e. Large break LOCA
   f. Loss of offsite power
   g. 3A RHR pump trip (loss of emergency coolant recirculation)

2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
   a. Identify abnormalities while assessing actual system response with respect to predicted system response.
   b. Investigate the cause and effect of abnormalities in system performance.
   c. Implement applicable procedures.
   d. Perform immediate actions from memory.

3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.

4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
   a. Plant and control room communication.
   b. Plant/Control Board monitoring.
   c. Plant/Control Board manipulation.
   d. Operational problem solving.
   e. Use of OPs/ONOPs and Technical Specifications.
   f. Use of EOPs IAW EOP Rules of Usage.
   g. Annunciator recognition and response.
   h. Written communications/logs.
   i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Assistant Nuclear Plant Supervisor (ANPS), conduct plant operations IAW approved plant procedures:

   a. Team performance management.
   b. Problem solving.
   c. Decision analysis.
   d. Action planning.
   e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 561 degrees F

Turnover: Power increase from 60% to 100% power is in progress following main feed pump breaker repair. The system dispatcher has asked that this power increase be expedited to deal with an expected high peak demand towards the end of dayshift. 3B EDG is OOS for corrective governor maintenance. FT-3-476 is OOS for calibration. No surveillance tests are in progress.

Synopsis: After a 5% power increase (or at lead examiner direction) the controlling steam flow channel on 3A S/G (FT-3-474) fails low causing FCV-3-478 to automatically close. Operator action is required to manually control 3A S/G level and select the other steam flow channel for level control input. The crew responds per 3-ONOP-049.1. Once the plant is stabilized, Technical Specifications are consulted and the crew briefed on the effects of the failure. Next, TM-3-408F fails low generating erroneous Tref input to rod control. If rods are in AUTO, inward rod movement occurs and operators respond per 3-ONOP-028 taking rod control to manual. Following plant stabilization, the 3B RCP thermal barrier HX experiences a large leak and MOV-3-626 fails to automatically close on high flow. The operators respond per 3-ONOP-067 and 3-ONOP-041.1. 3-ARP-097.CR may also be used as time permits prior to ONOP entry. After thermal barrier return isolation, 3B RCP shaft vibration begins to increase enough to eventually require a reactor & 3B RCP trip per 3-ONOP-041.1. When 3B RCP is tripped, the leak becomes a large break loss of coolant accident on the B RCS loop. The crew responds per 3-EOP-E-0. After SI reset, a loss of offsite power occurs. Since the 3B EDG is OOS, only the 3A 4kV bus re-energizes on the EDG. Train A safeguards loads must be manually restarted. The crew transitions to 3-EOP-FR-P.1 momentarily and then to 3-EOP-E-1. Then, the 3A RHR pump trips causing a loss of all LHSI. If RWST level gets <155,000 gallons, transition is made to 3-EOP-ES-1.3. With no RHR pumps running whether in 3-EOP-E-1 or in 3-EOP-ES-1.3 transition is made to 3-EOP-ECA-1.1. The exercise is concluded upon reduction of SI flow to minimum (3-EOP-ECA-1.1 step 17), stopping all SI flow (3-EOP-ECA-1.1 step 30) or at the evaluator's discretion. The event is classified after scenario completion as a General Emergency per 0-EPIP-20101, Enclosure 1, category 1.

Event summary:

EVENT #	DESCRIPTION
1	Power increase from 60%
2	FT-3-474 fails low (3A S/G FRV closes)
3	TM-3-408F fails low
4	3B RCP TBHX failure / MOV-3-626 auto close failure
5	Large break loss of coolant accident
6	Loss of offsite power (loss of 3B 4kV bus)
7	3A RHR pump trip (loss of emergency coolant recirc)

Crew Critical Steps:

EVENT #	DESCRIPTION
6	1. Ensure one train of safeguards is actuated and running prior to transitioning from from 3-EOP-E-0
7	1. Stop SI and RHR pumps upon reaching 60,000 gallons in the RWST 2. Make up to the RWST and minimize RWST outflow per 3-EOP-ECA-1.1

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RCO, ANPS, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
   a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
   b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
   c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
   d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
   e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
   f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.
2. **The following are initial conditions for this exam** (in shift turnover package, but may be covered verbally if needed):
   a. Time in core life - BOL
   b. Reactor power and power history - 100%→60% 4 hr ago
   c. Turbine status - online
   d. Boron concentration - 1390 ppm
   e. Temperature - 561 degrees F
   f. Pressure - 2235 psig
   g. Xenon - Increasing following 100%→60% downpower 4 hr ago.
   h. Core cooling - forced
   i. Tech. Spec. LCO(s) in effect
      - 3.3.1 Action 6 (bistables tripped); FT-3-476 OOS for cal
      - 3.8.1.1 Action b (72 hrs); 3B EDG OOS (governor)
   j. Clearances in effect - 3B EDG
   k. Significant problems/abnormalities - None
   l. Evolutions/maintenance for the coming shift - Return to 100% power this shift. Expedite to meet system peak.
   m. Units 1 and 2 status - unit 1 online; unit 2 s/d
   n. Unit 4 status - mode 1; 100% power
3. **Ensure students understand examination schedule** and that a break will be necessary between scenarios to allow simulator initial condition setup. **Cover exam security rules** to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.
4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Unit is at reduced power (60%) and is directed to return to 100% power.

INDICATIONS:
1. Notification by System
2. Shift turnover

POSITION	TIME	EXPECTED ACTIONS
BOP		1. At 400-435 MW, starts the 2nd SGFP per 3-OP-074
		2. At 450 MW, starts the 2nd HDP per 3-OP-081 and verifies adequate heater drain flow
		3. Maintains Tref/Tavg approx equal during uppower
		4. Keeps ANPS informed of plant status
RCO		1. Prior to exceeding 70% power, consults with Reactor Engineering concerning MTC
		2. Maintains Tref/Tavg approx equal during uppower
		3. Prior to 90% power, verifies all rods within 12 steps of group step counter
		4. At steady state power with Tavg within 1□F of Tref, places rods in AUTO
		5. Verifies Gamma-Metric wide range power meter within 1.5% of PRNIs when rx power 98.5-100%
		6. Keeps ANPS informed of plant status
ANPS		1. Coordinates and directs uppower evolution
		2. Verifies MTC limits are met prior to exceeding 70% power
		3. Keeps NPS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: 3A S/G controlling steam flow FT-3-474 fails low. The 3A S/G FRV requires manual operation. The channel is called OOS and compensatory actions are initiated per 3-ONOP-049.1.

INDICATIONS:

1. Annunciator C-4/1, SG A FEED > STEAM
2. Annunciator C-5/1, SG A STEAM > FEED
3. FI-3-474 off scale low
4. FCV-3-478 closing in AUTO
5. Decreasing level in 3A S/G

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Recognizes failure of FT-3-474 and responds as directed by ANPS a. Compares to other SG FT's and verifies no off-normal conditions on other SG FT's 2. Notifies ANPS of failure 3. **Takes manual control of FCV-3-478, restores steam/feed flow balance and stabilizes SG level** 4. Selects alternate SG steam FT channel for control and returns FCV-3-478 to automatic
RCO		NONE
ANPS		1. Directs stabilization of plant conditions 2. Directs compensatory action per 3-ONOP-049.1 a. Verifies BOP determination of SG FT status b. Determines which b/s to trip and effects on plant of tripping b/s. Provides this info to RCO/BOP for guidance. 3. Notifies NPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS (cont'd)		4. Ensures Tech Spec requirements are met
		5. Notifies I&C of FT-3-474 failure and directs initiation of PWO

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: TM-3-408F loses power. Rod control Tref fails low. Rods step in if in AUTO. The crew responds per 3-ARP-097.CR using 3-ONOP-028 as needed.

INDICATIONS:
1. Annunciator B-4/4, Tavg-Tref DEVIATION
2. Tavg input on Tavg-Tref recorder failed low
3. Control rods stepping in if in AUTO

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Assists RCO as directed by ANPS.
RCO		1. Responds to TM-3-408F failure per 3-ARP-097.CR: a. Checks Tavg-Tref recorder (TR-3-408) and VPA Tavg & Pimp indication b. Places/verifies rods in MANUAL 2. **Responds to TM-3-408F failure per 3-ONOP-028** (if directed): **a. Places rods in MANUAL & adjusts rods to maintain Tavg = Tref** b. Verifies rod insertion limits not exceeded c. Checks for failure of TM-3-408F d. Initiates caution tag for rod control selector switch 3. Informs ANPS of plant status
ANPS		1. Directs response per 3-ARP-097.CR and uses 3-ONOP-028 as needed 2. Informs NPS/I&C of TM-3-408F failure 3. Directs PWO initiation

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: 3B RCP thermal barrier HX (TBHX) fails. PRMS R-3-17A/B alarms. MOV-3-626 fails to auto close on high flow requiring manual closure. 3-ONOP-067 & 041.1 are entered (as is 3-ARP-097.CR if time permits). After MOV-3-626 closure, shaft vibration increases requiring a reactor trip.

INDICATIONS:

1. PRMS R-3-17A and B alarm
2. CCW surge tank level increases
3. Annunciator H-1/4, PRMS HI RADIATION, actuates
4. Annunciator A-1/1, RCP THERMAL BARR COOLING WATER HI FLOW, alarms (MOV-3-626 fails)
5. Annunciator A-1/2, RCP THERMAL BARR COOLING WATER HI TEMP, alarms
6. Annunciator F-1/1, RCP MOTOR/SHAFT HI VIB

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Performs actions as directed per 3-ONOP-067:
		a. Checks R-3-17A/B alarm valid
		2. Performs actions as directed per 3-ONOP-041.1:
		a. In response to affected RCP TBHX ΔP low, verifies seal injection 6-13 gpm
		b. Recognizes/reports shaft high vibration condition (annunciator F-1/1)

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Recognizes RCP TBHX failure & informs ANPS
		2. Performs actions as directed by 3-ARP-097.CR:
		a. In response to annunciator A-1/1:
		1) Verifies/manually closes MOV-3-626
		2) Checks R-3-17A/B for increasing activity
		3) Contacts Chemistry for CCW activity sample
		b. In response to annunciator A-1/2:
		1) Checks CCW header flow & HX outlet temp.
		2) Checks R-3-17A/B increasing activity - YES - verifies seal injection & closes MOV-3-626
		3) Checks for #1 seal leakoff high flow
		4) Monitors thermal barrier ΔP, RCP temps
		c. Notifies ANPS to go to 3-ONOP-067 & 041.1
		3. Performs actions as directed per 3-ONOP-067:
		a. Verifies CCWST vent closed (RCV-3-609)
		b. Requests CCW activity sample from Chemistry

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**4. Performs actions as directed per 3-ONOP-041.1:**
		a. Monitors #1 seal leakoff, lower pump guide bearing, seal return & CCW supply temps.
		b. **If MOV-3-626 not yet closed** (3B RCP thermal barrier ΔP = 0 inches):
		1) Verifies proper seal injection flow
		2) Maintains thermal barrier cooling
		3) Checks #1 seal leakoff <Encl 1 limits
		4) Checks A-1/1, 1/2, 1/3 OFF - NO
		5) Checks CNMT ϕB isolation not actuated & RCP seal return temp < 235°F
		6) Checks R-17A/B normal - NO
		7) Manually closes MOV-3-626.
		c. Verifies shaft high vibration condition
		d. Trips reactor & affected RCP when directed
ANPS		**1. Directs mitigative actions IAW 3-ARP-097.CR, 3-ONOP-067 & 041.1**
		a. Directs MOV-3-626 closure
		b. Directs reactor trip followed by 3B RCP trip due to high shaft vibration (foldout)
		2. Informs NPS of plant status
		3. Directs announcement to stand clear of CCW piping

EXPECTED OPERATOR ACTIONS

EVENT: 5 & 6

BRIEF DESCRIPTION: In response to plant conditions, a reactor trip & SI has occurred. Operators perform actions of 3-EOP-E-0. Just before transition to 3-EOP-E-1, a loss of offsite power occurs requiring manual restart of train A ESF loads (SI reset & 3B EDG OOS). Transition is then made to 3-EOP-E-1.

INDICATIONS:

1. Reactor trip directed or actuates
2. Rod bottom lights on and RTBs/BYBs open
3. SI alarms & ESF equipment auto starts
4. Switchyard deenergizes & only train A safety electrical distribution reenergizes (3B EDG OOS)

CREW CRITICAL STEPS:

1. **Ensure one train of safeguards is actuated and running prior to transitioning from from 3-EOP-E-0**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Responds to reactor trip per 3-EOP-E-0
		a. Verifies turbine trip
		b. Verifies power to 3A/B/D 4kV buses
		c. Verifies feedwater isolation
		d. Verifies AFW pumps running
		e. Verifies proper ICW operation
		f. Checks if main stm lines should be isolated
		g. Verifies EDGs all running
		h. Directs SNPO to place PAHMS in service
		i. Verifies proper AFW alignment and flow
		j. Checks RCS cold leg temperatures stable
		k. Performs MSLB & SGTR diagnostics

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
BOP (cont'd)		**2. Performs 3-EOP-E-0 foldout steps as directed including restoring ESF equipment to required configuration (train A only) after LOOP.**
		a. If directed by the ANPS, restores power to the 3D 4kV bus from 3A 4kV bus using either 3-ONOP-004.5 or guidance from 3-EOP-E-0 step 3 RNO. (Allows 3C CCWP & ICWP start.)
		3. Informs ANPS of plant status
RCO		**1. Responds to reactor trip per 3-EOP-E-0**
		a. Verifies reactor tripped & SI/ΦA
		b. Verifies containment isolation phase A
		c. Verifies SI pumps running & proper CCW system operation
		d. Verifies CNMT cooling & CNMT/CR vent isolation
		e. Verifies Cntmt spray not required - NO
		1) Verifies containment spray actuation & ϕB containment isolation
		2) Stops all RCPs (if still running)
		f. Verifies SI valve amber lights bright
		g. Resets/realigns SI & verifies SI flow
		h. Checks cooling of RCPs & RCP seals
		i. Checks letdown/PORVs/spray valves closed
		j. Performs LOCA diagnostics

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**2. Performs 3-EOP-E-0 foldout page steps as directed:**
		a. Recognizes loss of subcooling/ϕB actuation and trips RCPs per 3-EOP-E-0 (if needed)
		b. Starts train A ESF loads as directed by the ANPS following loss of offsite power.
		3. Notifies ANPS of safety injection and cause
ANPS		**1. Directs response to reactor trip per 3-EOP-E-0**
		a. Obtains verification of reactor trip
		b. Determines electric plant status
		c. Directs manual SI/phase A if required
		d. Monitors foldout page items:
		1) Direction to RCO to stop all RCPs if required by subcooling/ϕB actuation
		2) Following loss of offsite power, directs start of train A ESF loads.
		e. Directs prompt and subsequent actions
		f. May reenergize 3D 4kV bus from 3A 4kV bus by directing BOP per guidance of 3-EOP-E-0 step 3 RNO or by directing use of 3-ONOP-004.5 (Allows use of 3C CCWP & ICWP)
		2. Transitions to appropriate plant procedure (3-EOP-E-1 or appropriate FRP)
		3. Informs NPS as to status of plant

EXPECTED OPERATOR ACTIONS

EVENT: 7

BRIEF DESCRIPTION: With a large break LOCA/LOOP, only train A ESF is running (3B EDG OOS). From 3-EOP-E-0, 3-EOP-FR-P.1 is briefly entered followed by transition to either 3-EOP-FR-Z.1 if needed or 3-EOP-E-1 after which 3A RHRP trips. From 3-EOP-E-1, if RWST level < 155 kgal, 3-EOP-ES-1.3 is entered. With no RHR pumps, 3-EOP-ECA-1.1 is entered.

INDICATIONS:

1. Cntmt radiation & sump lvl indications abnormal
2. Safety injection actuated and injecting
3. RWST level dropping (<155kgal for EOP-ES-1.3)
4. RCS cold leg temperature (<290°F for EOP-FR-P.1)
5. Annunciator H-6/3, RHR PP A/B MOTOR OVERLOAD
6. Annunciator H-6/4, RHR PP A/B TRIP

CREW CRITICAL STEPS:

1. **Stop SI pumps upon reaching 60,000 gallons in the RWST**
2. **Make up to the RWST and minimize RWST outflow per 3-EOP-ECA-1.1**

POSITION	TIME	EXPECTED ACTIONS
BOP		1. Performs actions of 3-EOP-E-1 as directed: a. Checks S/G fault, S/G levels & sec. rad. b. Resets cntmt isol ϕA/B & verifies IA press. c. Checks chg pump power from offsite - NO - power available for only two chg pumps d. Checks for presence of MSLB (SG pressures) e. Checks if EDGs should be stopped - NO
		2. Assists RCO with EOPs as directed.
		3. Maintains intact S/G levels 15-50% per 3-EOP-ECA-1.1 as directed
		4. Informs ANPS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO		1. Performs actions of 3-EOP-FR-P.1 as directed:
		a. Checks RCS press > 650psig - NO - RHR flow > 1000gpm
		2. Performs actions of 3-EOP-E-1 as directed:
		a. Checks PORVs and block valves
		b. Verifies SI-reset
		c. Checks for max chg flow (2 pumps)
		d. Checks if SI should be terminated - NO
		e. Checks if cntmt spray should be stopped
		f. Checks if RHR pumps should be stopped - NO
		g. Verifies cold leg recirc capability - NO
		h. Identifies RWST lvl <155kgal & informs ANPS
		3. Performs actions of 3-EOP-ES-1.3 as directed:
		a. Verifies SI reset
		b. Takes 3B CSP to PTL; MOV-3-880B deenergized
		a. Checks 3A HHSIP running, takes RHRPs to PTL
		b. Verifies RHR aligned for injection
		c. Stops chg pumps if VCT m/u not available
		d. Establishes hot leg recirc capability
		e. Closes U3 HHSIP recirc to RWST valves
		f. Stops U4 HHSIPs & isolates from U3 HHSI

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		**3. Performs actions of 3-EOP-ES-1.3 as directed (cont'd):**
		g. Verifies cold leg recirc valves energized
		h. Verifies RHR alt dischg isolated
		i. Realigns RHR suction from RWST to CNMT sump
		j. Verifies CNMT recirc sump level
		k. Verifies adequate CCW for RHR cooling
		l. Starts one RHR pump - NO
		4. Performs actions of 3-EOP-ECA-1.1 as directed:
		a. Checks CL recirc capability available - NO
		b. Aligns makeup to the RWST
		c. Verifies only two ECCs running & at least one computer room chiller running
		d. If RWST level < 60kgal, then stops running HHSI, charging and containment spray pumps
		e. Reduces containment cooling as directed
		g. Verifies SI reset
		h. Establishes one HHSI pump running
		i. Verifies no RWST -> Sump backflow
		j. Checks RCS subcooling (approx. zero)
		k. Establishes minimum SI as directed

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
RCO (cont'd)		4. Performs actions of 3-EOP-FR-Z.1 as directed: a. **Verifies RCPs stopped with all NCCs OFF/ISOLATED** b. **Verifies CNMT ΦA/B VPB valve white lights all bright** c. **Verifies CNMT/CR ventilation isolated** d. **Checks CL recirculation capability - NO** 5. Informs ANPS of plant status
ANPS		1. Determines 3-EOP-FR-P.1 n/a for LBLOCA 2. **Directs response to LBLOCA per 3-EOP-E-1:** a. Directs max charging aligned (2 pumps) b. **Transitions to appropriate procedure or FRP if required by red/orange path CSFST:** 1) **3-EOP-FR-Z.1 if CNMT pressure > 20 psig** 2) **3-EOP-ES-1.3 if RWST level < 155 kgal** 3) **3-EOP-ECA-1.1 for loss of both RHRPs** 3. **If applicable, directs response to LBLOCA per 3-EOP-ES-1.3 but determines no RHR pumps operable and transition required to 3-EOP-ECA-1.1**

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

POSITION	TIME	EXPECTED ACTIONS
ANPS (cont'd)		**4. Directs response to LBLOCA per 3-EOP-ECA-1.1:**
		a. Directs addition of makeup to the RWST
		b. Determines RCS cooldown not applicable
		c. If RWST level > 60 kgal:
		1) Reduces containment spray to minimum
		2) Verifies no backflow from RWST to sump & determines RCP could not be started
		3) Determines minimum SI flow (figure 1) & directs NLO action accordingly
		d. If RWST level < 60 kgal, stops all HHSI pumps, cnmt spray pumps & charging pumps
		5. Classifies event as a GENERAL EMERGENCY (RCS leak > charging w/containment pressure > 20 psig) per 0-EPIP-20101
		6. Informs NPS of status of unit

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

A. Reset to IC-24 or static IC-3 (includes steps C & D below except for setting TFKV626A=F conditional on IMK1938C).

B. Load scenario 65.

C. Following switch check, unfreeze the simulator.

D. Perform the following
   1. Take 3B EDG OOS (parameter controller direct triggers TAQ5B20P=3 & TAQ5LRSB=0)
   2. Take FT-3-476 OOS per 3-ONOP-049.1 as follows:
      a. In rack 24, trip bistables BS-3-478-A1/A2/D.
      b. Select FT-3-477 for 3A S/G level control
      c. Fail FT-3-476 low (touch SYS MAT->FEEDWATER-> MAIN FEEDWATER MENU->FEEDWATER REGULATOR VALVES ->F-SG1->FT-476->FAIL LOW->set TFF1M76L=T).
   3. Enter the following failures:
      a. MOV-626 auto close failure (touch SYS MAT-> COMMON SERVICES->COMPONENT COOLING->CCW TO RCP.. ->FCV626->FAIL AS IS->set TFKV626A=T and set conditional TFKV626A=F/IMK1938C).
   4. Freeze simulator.

E. Delete all conditional events from Parameter Controller Event Summary **except** those indicated on the Parameter Controller Event Summary pages in this exercise guide. Direct events may deleted at instructor discretion.

F. Place turnover sheet on RCO desk.

G. Clearance information tags-Rack 24 (FT-3-476) and 3B EDG.

H. Information tags-3A SG level control feed flow input to FT-3-477. Place brown dot on FT-3-476.

I. Select 3A QSPDS to page 211 (SAT) and 3B QSPDS to page 212 (RVL). Set ERDADS on VPA to TAVE/TREF (TAV) and at the RCO desk to ENVRN (ED3).

II. CONDUCTING THE EXAMINATION:

A. Unfreeze the simulator and begin the exam.

B. **Power increase from 60% (event 1).**

1. **Initiation:** Crew should begin in response to shift turnover. If slow to begin, call as System Dispatcher and prompt commencement of load increase.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

B. **Power increase from 60% (event 1 cont'd).**

2. **Response:** Acknowledge load dispatcher/plant management notifications of the load increase. Respond as field operator in response to notification of starting/stopping plant equipment and as Reactor Engineering concerning MTC (reply that MTC is within limits and that power may increase above 70%).

C. **FT-3-474 fails low (3A S/G FRV closes) (event 2).**

1. **Initiation:** After a 5% power change or at lead evaluator discretion, fail FT-3-474 (touch SYS MAT->STEAM GENERATOR & MAIN STEAM->MAIN STEAM->F-474->FT474-> TRANSMITTER FAIL LOW-> set TFS1MWEL=T). This will close FCV-3-478. Manual control must be taken to stabilize 3A S/G level until FT-3-475 can be selected and 3A S/G level control returned to AUTO.

2. **Response:** As NPS/NWE state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will intiate a work package for troubleshooting & repair.

D. **TM-3-408F fails low (event 3).**

1. **Initiation:** Following event 2 crew brief, with 3A S/G level stabilized and rod control in AUTO (or at lead examiner discretion), actuate TM-3-408F (rod control Tref) failure low by touching SYS MAT->REACTOR->ROD CONTROL ROD POSITION->TM408F ->T REF PROGRAM POWER LOSS->set TFL1T8FP=T. This fails the rod control unit Tref input thus requiring manual rod control.

2. **Response:** Respond as NPS/NWE/I&C to notification of TM-3-408F failure. As NPS/NWE state that a work request will be generated and I&C will be notified. As I&C, reply that a planner will intiate a work package for troubleshooting/repair.

E. **3B RCP TBHX failure / MOV-3-626 auto close failure (event 4).**

1. **Initiation:** Once the plant is stabilized with manual rod control, actuate the 3B RCP TBHX leak by touching SYS MAT->COMMON SERVICES->COMPONENT COOLING-> CCW TO RCP...->LVTBB->VALVE PORT AREA->set TVKALTBB=0.3. The MOV-3-626 failure was entered in the scenario setup. When MOV-3-626 is closed, begin ramping 3B RCP shaft vibration up to the reactor trip setpoint (touch SYS MAT->REACTOR COOLANT SYSTEM-> REACTOR COOLANT PUMPS->RCP B->IDA->RCP VIBRATION S->set TAHUVBSB=21.0/3:00 ramp-> IDA->RCP VIBRATION M->set TAHUVBMB=6.0/3:00 ramp).

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

E. 3B RCP TBHX failure / MOV-3-626 auto close failure (event 4 cont'd).

2. **Response:** Acknowledge direction to SNPO/NWE regarding MOV-3-626 operation or verification of RCP seal injection flows. If directed, these flows may be adjusted using SYS MAT-> REACTOR COOLANT SYSTEM->REACTOR COOLANT PUMPS->CV297A(B)(C)-> VALVE PORT AREA->set TAHN97A(B)(C)=value as directed by crew.
Acknowledge notification to NPS/system dispatcher of U3 trip (3-ONOP-041.1 directs reactor/3B RCP trip on high vibration).
Acknowledge direction as Chemistry to sample CCW for activity (RCS inleakage). After 10-15 minutes, report CCW activity with counting in progress.
As HP, direction may be received to survey CCW piping for increased radiation levels. After 8-10 minutes, report radiation above background exists on CCW piping. Request PA announcements be made for personnel to stand clear of CCW piping (if not made already).

F. Large break loss of coolant accident (event 5)

1. **Initiation:** When the 3B RCP is tripped in response to event 4, actuate the large break LOCA using parameter controller direct trigger TVHHCLB=2.0/5 sec delay/30 sec ramp..

2. **Response:** Respond as HP if directed to survey the main steam lines and outside containment. After 10-15 minutes, report elevated general area radiation in all areas near containment. When requested as SNPO to place PAHMs in service, report alignment completion after 10-15 minute delay (parameter controller trigger composite "PAHM").

G. Loss of offsite power (loss of 3B 4kV bus) (event 6)

1. **Initiation:** Just before the diagnostic steps (27-29) in 3-EOP-E-0, actuate a ground on the unit 3 startup transformer using parameter controller direct trigger TFP1S3GC=T.

2. **Response:** After losing U3 S/U xfmr, the crew may request U4 RCO realignment of U4 HHSIP suctions to U3 RWST. After 8-10 minutes, carry this out using parameter controller trigger composite "SIALIGN". If asked as U4 RCO, state that U4 is at 100% power. If asked as NPO/NWE to investigate U3 S/U xfmr, after 2-4 minutes report actuation of the ground (64) relay. If asked to reset the relay, state that it will not reset.
If directed to perform Att. 2 of 3-ONOP-004.3, verify the 3AC16 & 3AC01 local blue power available lights ON. Then, 4-6 minutes later, report that breaker 3AC13 is misaligned in its cubicle and can not be fully racked in. Respond as Electrical Maintenance if asked to troubleshoot, but do not repair it.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

H. 3A RHR pump trip (loss of emergency coolant recirc) (event 7).

1. **Initiation:** Immediately after transition from 3-EOP-FR-P.1 to either 3-EOP-FR-Z.1 or back to 3-EOP-E-1, actuate increasing bearing wear on 3A RHR pump using SYS MAT->SAFETY SYSTEM->RHR PROCESS->P3A->RHR PP 3A->BEARING WEAR->set TVMRPBRA=1.0/1:00 ramp. This will cause the pump to trip on overcurrent.

2. **Response:** When directed as SNPO to check out the 3A RHR pump, wait 1-3 minutes and report as follows:
   - If the pump is still running, state that the pump is much noisier than usual and getting worse.
   - If the pump has tripped, state that top of the motor casing is very hot with burnt insulation smell in the room. The pump shaft will not rotate (seized) by hand.

If asked as mechanical maintenance about 3B EDG, state that the governor is disassembled and awaiting parts arriving tomorrow.
Respond as HP as in event 5. Surveys may now include areas around containment. Acknowledge requests as Chemistry to take periodic S/G activity samples (no activity), locally check DAM-1 monitor (provide value from ERDADS) and align PASS.
LCV-3-115C is deenergized requiring local closure to allow charging pump suction from the RWST per 3-EOP-E-1 step 10 (touch SYS MAT->CHEMICAL VOLUME CONTROL SYSTEM->CVCS CHARGING ->MOV115C->LOCAL CLOSE/TRIP(MECH)->set TCB162MC=F->MOV115C-> FAIL CLOSE->set TFBVC62=T).
If directed as NPO/SNPO to close in cold leg recirc breakers (3-EOP-E-1 step 17 or 3-EOP-ES-1.3 step 10), after a 1-3 minute delay, actuate parameter controller trigger composite "CLRECBKR". Since only train A has power available, local operation of train B valves outside containment (MOV-3-862B/863B/864B only) can be accomplished, if directed, using the RHR PROCESS & SI PROCESS system mimics and taking each valve to FAIL OPEN with a 3-5 minute delay per valve.
After transition to 3-EOP-ECA-1.1 (from FR-Z.1 step 5, E-1 step 17 or ES-1.3 step 16), respond as SNPO when directed to manipulate 3-356/365A/365B. Touch SYS MAT->CHEMICAL VOLUME CONTROL SYSTEM->CVCS MAKEUP->365B->VALVE PORT AREA->set TABM365B=1.0 (356 already closed & 365A not simulated) allowing 3-5 minutes before reporting completion. Also respond as SNPO when directed to throttle valve 3-888B for minimum SI flow from 3A HHSIP. Touch SYS MAT->SAFETY SYSTEM->SAFETY INJECTION PROC-> 888B->VALVE PORT AREA->TAMH888B=0.05 (300 gpm) initially with additional throttling (=0.025 for 200 gpm) as directed. Allow 2-4 minutes before reporting the initial valve repositioning.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

III. TERMINATION CRITERIA:

A. Upon reduction of SI flow to minimum or trip of all pumps with RWST suction (step 17 or 30 of 3-EOP-ECA-1.1), **OR**

B. At the discretion of the evaluator.

PARAMETER CONTROLLER FILE:

COM-POS-ITE	CDB LABEL	VALUE	CONDITIONAL	TIME DELAY	RAMP	DESCRIPTION
N	TVHHCLB	2.0	-	0:05	0:30	Actuates LBLOCA on B RCS loop.
N	TAQ5LRSB	0	-	-	-	Takes 3B EDG LOCAL/NORMAL switch to OFF
N	TAQ5B20P	3	-	-	-	Racks out 3B EDG output breaker 3AB20
N	TFP1S3GC	T	-	-	-	Trips ground (64) relay on U3 startup xfmr
Y	"CLRECBKR"	-	-	-	-	**Closes cold leg recirc breakers (E-1 step 17 or ES-1.3 step 10)**
-	TCM2D06M	T	-	-	-	Closes bkr 30621 (MOV-3-866B)
-	TCM2D04M	T	-	0:15	-	Closes bkr 30605 (MOV-3-864B)
-	TCM1D03M	T	-	0:30	-	Closes bkr 30615 (MOV-3-750)
-	TCM1D10M	T	-	0:45	-	Closes bkr 30616 (MOV-3-862B)
-	TCM1D12M	T	-	1:00	-	Closes bkr 30626 (MOV-3-863B)
-	TCM1D09M	T	-		-	Closes bkr 30720 (MOV-3-862A)
-	TCM1D11M	T	-	0:15	-	Closes bkr 30726 (MOV-3-863A)
-	TCM1D04M	T	-	0:30	-	Closes bkr 30731 (MOV-3-751)
-	TCM2D05M	T	-	0:45	-	Closes bkr 30732 (MOV-3-866A)
-	TCM2D03M	T	-	1:00	-	Closes bkr 30712 (MOV-3-864A)
Y	"SIALIGN"	-	-	-	-	**Aligns U4 HHSI pumps suction to U3 RWST**
-	TAMH1V46	1.0	-	0:02	-	Opens valve 3-892A
-	TAMH1V41	1.0	-	0:45	-	Opens valve 3-870A
-	TAMH1V37	0.0	-	1:20	-	Closes valve 4-864C
-	TAMH4856	0.0	-	2:20	-	Closes valves 4-856A&B
Y	"PAHM"	-	-	-	-	**Places H2 Monitor in Service**
-	TAC2V02A	1.0	-	0:30	-	Opens PAHM-002A
-	TAC2V02B	1.0	-	1:30	-	Opens PAHM-002B
-	TAAAV21	1.0	-	-	-	Opens HV-1
-	TAAAV22	1.0	-	-	-	Opens HV-3
-	TACA005	0.0	-	-	-	Closes MPAS-005

EVALUATION SCENARIO REFERENCES

Reference List:

PROCEDURE #	PROCEDURE TITLE
3-GOP-301	Hot Standby to Power Operation
3-OP-094	Containment Post-Accident Monitoring
3-ARP-097.CR	Control Room Annunciator Response
3-ONOP-028	Reactor Control System Malfunction
3-ONOP-041.1	Reactor Coolant Pump Off-Normal
3-ONOP-049.1	Deviation or Failure of Safety Related or Reactor Protection Channels
3-ONOP-067	Radioactive Effluent Release
3-EOP-E-0	Reactor Trip or Safety Injection
3-EOP-E-1	Loss of Reactor or Secondary Coolant
3-EOP-ES-1.3	Transfer to Cold leg Recirculation
3-EOP-ECA-1.1	Loss of Emergency Coolant Recirculation
3-EOP-FR-P.1	Response to Imminent Pressurized Thermal Shock Condition
3-EOP-FR-Z.1	Response to High Containment Pressure
0-EPIP-20101	Duties of the Emergency Coordinator
	PTN Technical Specifications
	Plant Curve Book

EVALUATION SCENARIO CONTENT SUMMARY

1.	Total Number of Malfunctions:	7
2.	Malfunctions Occurring During EOP Performance:	1
	1. 3A RHR pump trip / loss of emergency coolant recirc	
3.	Abnormal Events:	4
	1. FT-3-474 fails low 2. TM-3-408 fails low 3. RCP thermal barrier failure 4. MOV-3-626 auto close failure	
4.	Major Transients:	2
	1. Large break loss of coolant accident 2. Loss of offsite power	
5.	EOPs Used:	2
6.	EOP Contingencies Entered:	1
7.	Simulator Run Time:	90 minutes
8.	EOP Run Time:	45 minutes
9.	Crew Critical Tasks:	3