

INITIAL SUBMITTAL

**TURKEY POINT EXAM
50-250, 251/2000-301**

**NOVEMBER 27 - DECEMBER 1,
DECEMBER 11 - 15, 2000**

INITIAL SUBMITTAL

**INITIAL OUTLINE SUBMITTALS
NRC SUBMITTED/WRITTEN OUTLINES**

Facility: Turkey Point		Date of Examination: _____
Examination Level (circle one): RO / SRO		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations	Prepare On The Spot Change for Procedure GEN 2.1.20 (4.3/4.2)
	Conduct of Operations	Perform 1/M Plot GEN 2.1.7 (3.7/4.4)
A.2	Equipment Control	Propose Clearance Boundary 2.2.13 (3.6/3.8)
A.3	Radiation Control	Calculate Worker Exposure and Apply Administrative Guidelines GEN 2.3.1 (2.6/3.0)
A.4	Emergency Plan	Announce Declaration of Alert GEN 2.4.43 (2.8/3.5)

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A.1	Conduct of Operations	Prepare On The Spot Change for Procedure GEN 2.1.20 (4.3/4.2)
	Conduct of Operations	Perform 1/M Plot GEN 2.1.7 (3.7/4.4)
A.2	Equipment Control	Review Proposed Clearance Boundaries GEN 2.2.13 (3.6/3.8)
A.3	Radiation Control	Calculate Worker Exposure and Apply Administrative Guidelines GEN 2.3.1 (2.6/3.0)
A.4	Emergency Plan	Classify Events and Determine PARs GEN 2.4.41 (2.3/4.1)

Facility: Turkey PointDate of Examination: 12/11/00

Exam Level (circle one): RO / SRO(I) / SRO(U)

Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Sys. 003/JPM #01050004309, Respond to a loss of RHR flow	(M) (A) (S) (L)	4
b. Sys.008/JPM #R0300050, Investigate CCW high radiation	(D) (L) (A) (C)	8
c. Sys. 010/JPM #01041029301, Respond to low pressurizer pressure	(M) (A) (S)	3
d. Sys. 062/JPM #1002002100, Synchronize main generator to line	(D) (S) (L) (A)	6
e. Sys. 001/JPM #1028010300, Perform a dropped rod recovery	(D) (S)	1
f.	(C)	5
g. Sys 015/JPM #1059026300/ Respond to Failure of Power Range N44	(C)(D)	7

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. 056/JPM #N0730041, Respond to loss of condenser vacuum	(D) (A)	4
c. Sys. 075/JPM #4010012300, Investigate Circulating Water Pump High Bearing Temperature	(D)	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

Facility: Turkey Point Scenario No.: 1 Op-Test No.: _____

Examiners: C. Payne Operators: _____
M. Sykes _____
M. Miller _____

Initial Conditions: Mode 1, 75% RTP (IC-16)

Turnover: Power level is at 75% following a unit power reduction for maintenance on the 3B SGFP and lube oil system. All testing was completed and the system returned back to service. Equipment OOS --- "C" Coolant Charging Pump is out of service for motor ground (at this power, both CCP "A" & "B" will be running), I&C has Steam Dump selector switch selected to the Steam Pressure mode due to problem with TC-408H, (Tavg input to Turbine Trip Summator). PRN1 Channel N-41 upper detector failed. The "B" SI Accumulator level is slightly low out of the green band following chemistry sampling. Raise accumulator level back to the middle of the band and then raise power to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1		N/RCO	Raise SI Accumulator 3B to middle of normal band.
2		R/RCO	Increase power from 75% to 100%.
3		I/RCO	VCT level transmitter LT-115 fails high (loss of automatic make-up) [<i>Insert malfunction during a dilution activity after reactivity change is satisfied</i>]
4		C/BOP	Loss of 4D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 ([ICW])
5		C/RCO	Coolant charging pump 3A fails due to bearing failure (ARP A 6/1, ARP A 5/1, 3-OP-47, T.S. 3.1.2.3)
6		I/RCO	Median Tavg fails high (ARP B 4/4, ARP A 9/3, ARP C 8/3, [maybe ARP B 8/1 and/or B 8/2 if operators are slow to put rods in manual], 3-ONOP-028, 3-ONOP-049.1)
7		I/BOP	S/G 3A Narrow Range level [LT-478] fails high (C 6/1, C 5/1, [may get D 7/6 if S/G gets to 10% less than other S/Gs and/or C 1/1 if level gets < 35%])
8		ALL	Dual Unit LOOP
8A		M/C/All	Two adjacent control rods stick full out on reactor trip
8B		M/C/All	EDG 3B trips after charging flow initiated per step 4 of ES-0.1

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

Facility: Turkey Point	Scenario No.: <u>2</u>	Op-Test No.: <u>1</u>
Examiners: <u>C. Payne</u>	Operators: <u> </u>	
<u>M. Sykes</u>	(Position) <u> </u>	
<u>M. Miller</u>	<u> </u>	
Initial Conditions: Mode 1, 75% RTP (IC-16)		
Turnover: Power level is at 75% RTP. Equipment OOS --- Coolant Charging Pump 3C is out of service for motor ground (at this power CCP 3A & 3B will be running), I&C has Steam Dump selector switch selected to the Steam Pressure mode due to problem with TC-408H, Circ Water pump 3B2 is secured to repair breaker 3AB18.		

Event No.	Malf. No.	Event Type*	Event Description
1		N/RCO	Make-up 5000 gal of borated water to RWST. (3-OP-046, section 7.5)
2		C/BOP	Circ water pump 3B1 loss of lube oil indication causing motor bearing high temperature. Must lower reactor power to <60% & secure SJAE suction before securing the pump. (ARP I 2/4, 3-OP-10)
3		R/RCO	Decrease power to 60%
4		C/BOP	Loss of 3D Load Center (3AB14 opens). (Do after event 3 between 65-70% power) (ARP F7/4, Bkr List, T.S. 3.8.3.1)
5		I/RCO	Pressurizer level channel, LT-460, fails low. Restore normal letdown after swap channels. (ARP A 8/3, A 9/4, B 3/1, 3-ONOP-041.6, 3-ONOP-49.1, T.S. 3.2.5, 3.4.3)
6		C/RCO	Master pressure controller, PC-3-444J, fails high. When PORV PCV-455C opens, it fails as is. When block valve MOV-536 is closed, it leaks by. (ARP A 4/1, 7/1, 9/2, 9/5, 3-ONOP-041.5, T.S. 3.3.1, 3.3.2)
7			Primary leak (20 gpm) greater than T.S. (Charging already maximized, pressurizer level will not be a problem)
8			Manual reactor trip before Rx pressure reaches 2000 psig.
9		M/All	SBLOCA with ATWS. (AMSAC failure, must close MSIVs due to no Mn Turb trip indication.) Open RTBs after Emerg Boration flow established and NPO dispatched.
		M/All	Loss of 3D Load Center results in initiating LOOP/LOCA response of "B" sequencer and equipment (load stripping [including 3B & 3C RCPs], loads 3B EDG, and sequencing of SI loads onto the EDG)
		M/All	Perform FRP-S.1.

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

Facility: Turkey Point

Scenario No.: 3Op-Test No.: 1
 Examiners: C. Payne
M. Sykes
M. Miller

 Operators: _____
 (Position) _____

Initial Conditions: Mode 1, 100% RTP (IC-1)

Turnover: Power level is at 100% RTP. The previous shift, CVCS relief valve, RV-203, had failed and Excess Letdown was placed in service to facilitate repairs. Repairs are complete and it is desired to return CVCS to normal letdown. Equipment OOS --- "C" Coolant Charging Pump is out of service for motor ground (at this power CCP "B" will be running), I&C has Steam Dump selector switch selected to the Steam Pressure mode due to problem with TC-408H.

Event No.	Malf. No.	Event Type*	Event Description
1		N/RCO	Place normal letdown in service following repair of RV-203. (3-OP-47, section 7.15 [Secure Excess L/D] then section 7.13 [Place Normal L/D in service])
2		C/RCO	Loop C Pzr spray valve fails open (ARP A 9/2, 3-ONOP-041.5 [step 3 gives manual restoration], T.S. 3.2.5)
3		C/BOP	Loss of TPCW pump due to motor overload (ARP I 5/1, ARP I 5/2, ARP I 5/4, ARP F 6/4, 3-ONOP-008)
4		I/RCO	VCT LT-3-115 fails low (ARP A 4/6, 3-ONOP-046.4, [ARP A 2/5 & A 2/6 come in & out])
5		I/BOP	Steam pressure channel PT-3-1606 fails high (S/G "A" atmospheric steam dump) and ADV sticks open after BOP takes the controller to manual. (Raises Rx power by 2%.) Must decrease MT load to restore reactor power to 100%.
6		C/BOP	Charging pump controller failure as a result of PZR LT-3-459 failing high (ARP A 8/3, ARP A 9/3, 3-ONOP-041.6, 3-ONOP-49.1 [trip bistables ARP G 1/3 {when open protection cabinet}, ARP J 7/4, ARP A8/4])
7		R/RCO	3C S/G tube leak rate increases to 200 gpd. (ARP H 1/4, RM R-3-15 alarms. Crew will enter 3-ONOP-071.2 and perform rapid power decrease)
8		M/All	Faulted (inside containment), ruptured (600 gpm) "C" S/G.
			Perform FRP-P.1 (Red path) and FRP-Z.1 (Orange path)
Preinsert		M/C/All	3A SI Pump shaft shear
Preinsert		M/C/All	Phase B relay CIB1 fails to actuate (3 valves fail to close)

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

Facility: Turkey PointScenario No.: 4

Op-Test No.: _____

Examiners: C. Payne

Operators: _____

M. SykesM. Miller

Initial Conditions: Mode 1, 60% RTP (IC-24)

Turnover: Power level is at 60% following a unit power reduction for maintenance on the 3B SGFP and lube oil system. All testing was completed and the system returned back to service. Equipment OOS --- "C" Coolant Charging Pump is out of service for motor ground (at this power, both CCP "A" & "B" will be running), I&C has Steam Dump selector switch selected to the Steam Pressure mode due to problem with TC-408H, (Tavg input to Turbine Trip Summator), 3D Normal Containment Cooler breaker is racker out for inspection, PRN1 Channel N-41 upper detector failed. The crew will be directed to perform the monthly operability test of RHR pump 3A and then raise power as soon as possible back to 100% to meet load demand.

Event No.	Malfunction No.	Event Type*	Event Description
1		N/RCO	Perform RHR pump 3A monthly operability test, 3-OSP-050.2. During the test, the pump will be declared inoperable due to high pump vibrations.
2		R/RCO	Increase reactor power to 100% (go at least to 65% to enhance next event)
3		C/BOP	3B SGFP fails to trip on lube oil low pressure. Manually trip the pump and the main turbine fails to auto runback to 45% load. BOP will manually reduce load to 45% (by 1 st stage pressure). (ARP D 6/5, ARP D 6/2, 3-ONOP-089.)
4		C/BOP	Respond to 480 volt transformer B ground/high temp alarm. Due to high amps on the Normal Containment Cooler Fan 3B. Crew shifts MCC loads, finds 3B NCC (or it trips on motor O/L), and starts 3D NCC. (ARP F 7/3, Breaker List, P&ID 5610TE1591, ARP I 9/6)
5		I/RCO	PT-3-456 Fails High. (ARP A 8/1, 3-ONOP-049.1, T.S. 3.3.1 & 3.3.2, 3.0.3). Commence Rx S/D in 1 hr.
6		C/RCO	Seal leakage (5.6 gpm), reactor trip
6A		ALL	Trip Immediate Actions, seal failure on 3A RCP
7		M/C/All	SBLOCA/Safety Injection with 3B Sequencer failure (3B RHR pump breaker fails, request replace with spare bkr)
7A		M/C/All	Loss of Emergency Coolant Recirculation (spare 3B RHR pump breaker at step 10, ECA-1.1, then go back to E-1)

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

Facility: Turkey Point	Scenario No.: <u> 5 </u>	Op-Test No.: <u> </u>
Examiners: <u> C. Payne </u> <u> M. Sykes </u> <u> M. Miller </u>		Operators: <u> </u> <u> </u> <u> </u>
Initial Conditions: Mode 1, 35% RTP (IC-26)		
Turnover: Power level is at 35% RTP. Equipment OOS --- Coolant Charging Pump 3C is out of service for motor ground (at this power CCP 3A & 3B will be running), I&C has Steam Dump selector switch selected to the Steam Pressure mode due to problem with TC-408H.		

Event No.	Malf. No.	Event Type*	Event Description
1		R/RCO	Raise reactor power to 60%
2		C/RCO	CVCS relief valve, RV-203, fails open requiring Normal Letdown to be manually isolated. (ARP A 5/6, 3-ONOP-041.5, T.S. 3.2.5)
3		N/RCO	Place Excess Letdown in service (3-ONOP-008)
4		I/RCO	Instrument TE-432C fails low (Loop C Tcold temperature element) (ARP B 4/6, ARP B 5/6, 3-OP-047 or 3-OP-041.2, T.S. 3.3.1, T.S. 3.3.2)
5		I/BOP	PT-475 fails low (S/G 3A MS pressure) which feeds FI-474 (S/G 3A feed flow) and causes a low flow signal. (ARP C 4/1, ARP C 9/3, 3-ONOP-049.1)
6		C/RCO/BOP	Control rod L11 drops (ARP B 6/4, B 7/1, B 9/3, A 7/1 3-ONOP-028.3, [may get ARP B 4/4 if slow response])
7		C/BOP	SGFP 3A bearing high temperature, swap to SGFP 3B. Discharge check valve 20-118 on SGFP 3A sticks open after discharge MOV-3-1420 fails open on motor O/L. (ARP D 5/4, D 5/6)
8		M/All	Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.
			Perform ECA-2.1 until step 17.

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

Facility:		Date of Exam:		Exam Level:									
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	4	2	5				3	5			5	24
	2	1	2	1				2	7			3	16
	3	0	1	0				0	0			2	3
	Tier Totals	5	5	6				5	12			10	43
2. Plant Systems	1	1	2	1	1	1	2	2	4	1		4	19
	2	1	1	2	1	1		2	4	1	2	2	17
	3			1		1			2				4
	Tier Totals	2	3	4	2	3	2	4	10	2	2	6	40
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		17	
				5		6		3		3			
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>													

ES-401		PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1						Form ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000001 Continuous Rod Withdrawal / 1	17						MTC	3.7	1
000003 Dropped Control Rod / 1			08			2.1.32	Explain and apply all system limits & precautions Criteria for inoperable control rods	3.8 4.2	1
000005 Inoperable/Stuck Control Rod / 1			05				Power limits on rod misalignment	4.2	1
000011 Large Break LOCA / 3				17			Safety parameter display system	4.1*	1
W/E04 LOCA Outside Containment / 3					01		Facility conditions & selection of procedures during ONOP & EOP	4.3	1
W/E01 & E02 Rediagnosis & SI Termination / 3						2.4.12	Knowledge of gen operating crew responsibilities during emer ops	3.9	1
000015/17 RCP Malfunctions / 4		10					RCP indicators and controls	2.8	1
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4				3			Desired operating results during abnormal and emer situations	3.8	1
000024 Emergency Boration / 1		03					Controllers and positioners	2.5	1
000026 Loss of Component Cooling Water / 8					04		Norm & upper limits for the temps of components cooled by CCW	2.9*	1
000029 Anticipated Transient w/o Scram / 1	02						Definition of reactivity	2.8	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4						2.4.6	Knowledge symptom based EOP mitigation strategies	4.0	1
CE/A11; W/E08 RCS Overcooling - PTS / 4					1		Conditions and selection of procedures (pressurized therm shock)	4.2	1
000051 Loss of Condenser Vacuum / 4				04			Rod position	2.5*	1
000055 Station Blackout / 6			02		01		Existing valve position on a loss of instrument air system Actions contained in EOP for loss of offsite and onsite power	3.7 4.6	1
000057 Loss of Vital AC Elec. Inst. Bus / 6			01				Actions contained in EOP for loss of vital AC elec instrument bus	4.4	1
000059 Accidental Liquid RadWaste Rel. / 9						2.3.10	Procedures to reduce exces levels of rad & guard against exposure	3.3	1
000062 Loss of Nuclear Service Water / 4					04		Norm & upper limits for the temps of components cooled by SWS	2.9*	1
000067 Plant Fire On-site / 9	02						Fire fighting	3.9	1
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5			01				Guidance contained in EOP for loss of containment integrity	4.2	1
000074 (W/E06&E07) Inad. Core Cooling / 4	05						Definition of saturated liquid	3.2	1
BW/E03 Inadequate Subcooling Margin / 4									
000076 High Reactor Coolant Activity / 9						2.1.1	Conduct of operations requirements	3.8	1
BW/A02&A03 Loss of NNI-X/Y / 7									
K/A Category Totals:	4	2	5	3	5	5	Group Point Total:		24

ES-401		PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2						Form ES-401-3	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1		03					Reactor trip status panel	3.6	1
BW/A01 Plant Runback / 1									
BW/A04 Turbine Trip / 4									
000008 Pressurizer Vapor Space Accident / 3									
000009 Small Break LOCA / 3						2.1.30	Ability to locate and operate components, including local controls	3.4	1
BW/E08; W/E03 LOCA Cooldown - Depress. / 4					1		Facility conditions and selection of appropriate procedures during abnormal and emergency procedures	4.2	1
W/E11 Loss of Emergency Coolant Recirc. / 4					2		Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	4.2	1
000022 Loss of Reactor Coolant Makeup / 2				01			CVCS letdown and charging	3.3	1
000025 Loss of RHR System / 4									
000027 Pressurizer Pressure Control System Malfunction / 3									
000032 Loss of Source Range NI / 7						2.2.23	Ability to track limiting conditions for operation	3.8	1
000033 Loss of Intermediate Range NI / 7			01				Termination of startup following loss of IR instrumentation	3.6	1
000037 Steam Generator Tube Leak / 3					03		MS Lines show increasing Rad levels	3.9	1
000038 Steam Generator Tube Rupture / 3				27			Steam dump valve status lights and indicators	3.9	1
000054 (CE/E06) Loss of Main Feedwater / 4	02						Effects of feedwater introduction on dry S/G	4.2	1
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		1					Components, functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, auto & manual	3.9	1
000058 Loss of DC Power / 6					02		125V dc bus voltage, low/critical low, alarm	3.6	1
000060 Accidental Gaseous Radwaste Rel. / 9					06		Valve lineup for release of radioactive gases	3.8	1
000061 ARM System Alarms / 7					03		setpoints for alert and high alarms	3.3	1
W/E16 High Containment Radiation / 9						2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm	3.6	1
000065 Loss of Instrument Air / 8					05		When to commence shut down if instr air press decreasing	4.1	1
CE/E09 Functional Recovery									
K/A Category Point Totals:	1	2	1	2	7	3	Group Point Total:	16	

ES-401

PWR SRO Examination Outline
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

Form ES-401-3

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000028 Pressurizer Level Malfunction / 2									
000036 (BW/A08) Fuel Handling Accident / 8		02					Radiation monitoring equipment (portable and installed)	3.9	1
000056 Loss of Off-site Power / 6						2.4.21	Parameters and logic used to assess status of safety functions	4.3	1
BW/E13&E14 EOP Rules and Enclosures									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
CE/A16 Excess RCS Leakage / 2									
WE13 Steam Generator Over-pressure / 4						2.3.9	Knowledge of the process for performing a containment purge	3.4	1
WE15 Containment Flooding / 5									
K/A Category Point Totals:		1				2	Group Point Total:		3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
001 Control Rod Drive											2.1.2	Knowledge of operator responsibility during all modes of operation	4.0	1
003 Reactor Coolant Pump							10					RCP standpipe levels	2.7	1
004 Chemical and Volume Control											2.4.34	Knowledge RO tasks performed outside the control room	3.6	1
013 Engineered Safety Features Actuation		01						01				ESFAS/safeguards equipment control Loss of coolant inventory	3.8 4.4	1 1
014 Rod Position Indication				05								Rod hold interlocks	3.3	1
015 Nuclear Instrumentation					14							Neutron flux density, definition and relation to reactor power	3.1	1
017 In-core Temperature Monitor							01					Core exit temperature	3.9	1
022 Containment Cooling		01										Containment cooling fans	3.1	1
025 Ice Condenser														
026 Containment Spray								03				Failure of ESF	4.4	1
056 Condensate														
059 Main Feedwater	04							02				SGWLC Loss of feed water heater	3.2 2.5	1 1
061 Auxiliary/Emergency Feedwater						01						Controllers and positioners	2.8*	1
063 DC Electrical Distribution			02									Components using DC control power	3.7	1
068 Liquid Radwaste						10			02			Radiation monitors Automatic isolation	2.9 3.6	1 1
071 Waste Gas Disposal											2.4.46 2.4.10	Alarms consistent with plant conditions Annunciator response procedures	3.6 3.1	1 1
072 Area Radiation Monitoring								02				Detector failure	3.2	1
K/A Category Point Totals:	1	2	1	1	1	2	2	4	1	0	4	Group Point Total:		19

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
002 Reactor Coolant										06		Overflow level of the RWST	2.7	1
006 Emergency Core Cooling														
010 Pressurizer Pressure Control					01							Determination of condition of fluid in PZR, using steam tables	4.0	1
011 Pressurizer Level Control										01		Charging pump and flow controls	3.2	1
012 Reactor Protection		01										RPS chns, components, and intercon	3.7	1
016 Non-nuclear Instrumentation														
027 Containment Iodine Removal								01				High temp in the filter system	3.3	1
028 Hydrogen Recombiner and Purge Control								02				LOCA cond and related con over H2	3.9	1
029 Containment Purge														
033 Spent Fuel Pool Cooling				05								Adequate SDM (boron concentration)	3.3	1
034 Fuel Handling Equipment											2.4.48	Interpret control room indications	3.8	1
035 Steam Generator			01									RCS	4.6	1
039 Main and Reheat Steam							09					Main steam line radiation monitors	2.7*	1
055 Condenser Air Removal			01									Main condenser	2.7	1
062 AC Electrical Distribution								03				Consequences of improper sequencing when transferring inverters	3.4	1
064 Emergency Diesel Generator											2.1.33	Entry conditions for tech specs	4.0	1
073 Process Radiation Monitoring								02				Detector failure	3.2	1
075 Circulating Water	02											Liquid radwaste discharge	3.1	1
079 Station Air														
086 Fire Protection									01			Starting mechanisms of fire water pump	3.3	1
103 Containment							01					Containment pres, temp, and humidity	4.1*	1
K/A Category Point Totals:	1	1	2	1	1	0	2	4	1	2	2	Group Point Total:		17

ES-401		PWR SRO Examination Outline Plant Systems - Tier 2/Group 3										Form ES-401-3		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal					09							Dilution and boration conciderations	3.4	1
007 Pressurizer Relief/Quench Tank								02				Abnormal pressure in the PRT	3.2	1
008 Component Cooling Water								02				High/low surge tank level	3.5	1
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
076 Service Water														
078 Instrument Air			01									Containment air system	3.4*	1
K/A Category Point Totals:			1		1			2				Group Point Total:		4
Plant-Specific Priorities														
System / Topic	Recommended Replacement for...						Reason						Points	
Plant-Specific Priority Total: (limit 10)														

Facility:		Date of Exam:		Exam Level:	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	2.1.9	Direct personnel activities in control room	2.5/4.0	1	
	2.1.22	Determine mode of operation	2.8/3.3	1	
	2.1.1	Knowledge of conduct of operations	3.7/3.8	1	
	2.1.2	Responsibilities during all modes of operation	3.0/4.0	1	
	2.1.34	Maintain pri & sec chem in limits	2.3/2.9	1	
	2.1.				
	Total				4/5
Equipment Control	2.2.22	Limiting cond for ops & safety limits	3.4/4.1	1	
	2.2.23	Track limiting conditions for ops	2.6/3.8	1	
	2.2.28	New and spent fuel movement procedures	2.6/3.5	1	
	2.2.29	SRO fuel handling responsibilities	1.6/3.8	1	
	2.2.17	Process for managing maintenance @ power	2.3/3.5	1	
	2.2.11	Process for controlling temporary changes	2.5/3.4	1	
	Total				3/4
Radiation Control	2.3.2	Facility ALARA program	2.5/2.9	1	
	2.3.4	Rad exp limits & contamination control	2.5/3.1	1	
	2.3.9	Process for performing containment purge	2.5/3.4	1	
	2.3.				
	2.3.				
	2.3.				
	Total				2/3
Emergency Procedures/ Plan					
	2.4.8	How to use event-based E/A operating proc.	3.0/3.7	1	
	2.4.39	RO's responsibilities in emer plan implement	3.3/3.1	1	
	2.4.40	Responsibilities for E-plan implementation	2.3/4.0	1	
	Total				4/5
Tier 3 Point Total (RO/SRO)				13/17	

Facility:		Date of Exam:		Exam Level:									
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	2	3	5				2	3			1	16
	2	3	2	2				3	4			3	17
	3		1									2	3
	Tier Totals	5	6	7				5	7			6	36
2. Plant Systems	1	2	2	1	2	1	3	2	3	2	2	3	23
	2	1	1	4	3	1		1	2	2	3	2	20
	3			1		2		1	2		1	1	8
	Tier Totals	3	3	6	5	4	3	4	7	4	6	6	51
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		13
					4		3		2		4		
<p>Note: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>6.* The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.</p> <p>7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>													

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1						Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000005 Inoperable/Stuck Control Rod / 1			05				Power limits on rod misalignment	3.4	1
000015/17 RCP Malfunctions / 4		10					RCP indicators and controls	2.8*	1
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4				3			Desired operating results during abnormal and emergency situations	3.5	1
000024 Emergency Boration / 1		03					Controllers and positioners	2.6	1
000026 Loss of Component Cooling Water / 8					04		Norm @ upper limits for the temps of components cooled by CCW	2.5	1
000027 Pressurizer Pressure Control System Malfunction / 3			03				Verification of alternate transmitter and/or plant computer prior to shifting flow chart transmitters	2.9	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4						2.4.6	Knowledge symptom based EOP mitigation strategies	3.1	1
CE/A11; W/E08 RCS Overcooling - PTS / 4		1					Components, and functions of control and safety systems	3.4	1
000051 Loss of Condenser Vacuum / 4				04			Rod position	2.5*	1
000055 Station Blackout / 6			02		01		Actions contained in EOP for loss of offsite and onsite power Existing valve position on a loss of instrument air system	4.3 3.4	1
000057 Loss of Vital AC Elec. Inst. Bus / 6			01				Actions contained in EOP for loss of vital AC instrument bus	4.1	1
000062 Loss of Nuclear Service Water / 4					04		Norm @ upper limits for the temps of components cooled by SWS	2.5	1
000067 Plant Fire On-site / 9	02						Fire fighting	3.1	1
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5			01				Guidance contained in EOP for loss of containment integrity	3.8	1
000074 (W/E06&E07) Inad. Core Cooling / 4	05						Definition of saturated liquid	2.8	1
BW/E03 Inadequate Subcooling Margin / 4									
000076 High Reactor Coolant Activity / 9									
BW/A02&A03 Loss of NNI-X/Y / 7									
K/A Category Totals:	2	3	5	2	3	1	Group Point Total:		16

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2						Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000001 Continuous Rod Withdrawal / 1	17						MTC	3.4*	1
000003 Dropped Control Rod / 1			08				Criteria for inoperable control rods	3.1	1
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1		03					Reactor trip status panel	3.5	1
BW/A01 Plant Runback / 1									
BW/A04 Turbine Trip / 4									
000008 Pressurizer Vapor Space Accident / 3									
000009 Small Break LOCA / 3						2.1.30	Ability to locate and operate components, including local controls	3.9	1
000011 Large Break LOCA / 3				17			Safety parameter display system	3.5*	1
W/E04 LOCA Outside Containment / 3					01		Facility conditions & selection of procedures during ONOP & EOP	3.4	1
BW/E08; W/E03 LOCA Cooldown/Depress. / 4					1		Facility conditions and selection of appropriate procedures	3.4	1
W/E11 Loss of Emergency Coolant Recirc. / 4					2		Adherence to appropriate procedures and operation	3.4	1
W/E01 & E02 Rediagnosis & SI Termination / 3						2.4.12	Knowledge of gen operating crew responsibilities during emer ops	3.4	1
000022 Loss of Reactor Coolant Makeup / 2				01			CVCS letdown and charging	3.4	1
000025 Loss of RHR System / 4									
000029 Anticipated Transient w/o Scram / 1	02						Definition of reactivity	2.6	1
000032 Loss of Source Range NI / 7						2.2.23	Ability to track limiting conditions for operation	2.6	1
000033 Loss of Intermediate Range NI / 7			01				Termination of startup following loss of IR instrumentation	3.2	1
000037 Steam Generator Tube Leak / 3					03		MS Lines show increasing Rad levels	3.4	1
000038 Steam Generator Tube Rupture / 3				27			Steam dump valve status lights and indicators	3.9	1
000054 (CE/E06) Loss of Main Feedwater / 4	02						Effects of feedwater introduction on dry S/G	3.6	1
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		1					Components, and functions of control and safety systems	3.7	1
000058 Loss of DC Power / 6									
000059 Accidental Liquid RadWaste Rel. / 9									
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7									
W/E16 High Containment Radiation / 9									
CE/E09 Functional Recovery									
K/A Category Point Totals:	3	2	2	3	4	3	Group Point Total:		17

ES-401		PWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 3						Form ES-401-4	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
000028 Pressurizer Level Malfunction / 2									
000036 (BW/A08) Fuel Handling Accident / 8		02					Radiation monitoring equipment	3.4	1
000056 Loss of Off-site Power / 6						2.4.21	Parameters and logic used to assess status of safety functions	3.7	1
000065 Loss of Instrument Air / 8									
BW/E13&E14 EOP Rules and Enclosures									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
CE/A16 Excess RCS Leakage / 2									
WE13 Steam Generator Over-pressure / 4						2.3.9	Knowledge of process for performing a containment purge	2.5	1
WE15 Containment Flooding / 5									
K/A Category Point Totals:		1				2	Group Point Total:		3

ES-401

PWR RO Examination Outline
Plant Systems - Tier 2/Group 1

Form ES-401-4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
001 Control Rod Drive								16			2.1.2	Possible causes of mismatched rods Oper responsibility during all modes	3.0* 3.0	1 1
003 Reactor Coolant Pump							10		01			RCP standpipe levels Seal injection flow	2.5 3.3	1 1
004 Chemical and Volume Control											2.4.21	Parameters & logic used to assess SF's	3.7	1
013 Engineered Safety Features Actuation		01	01									ESFAS/safeguards equip control Fuel	3.6* 4.4	1 1
015 Nuclear Instrumentation					14	02						Neutron flux density Discriminator/compensation circuits	2.8 2.6	1 1
017 In-core Temperature Monitor							01					Core exit temperature	3.7	1
022 Containment Cooling		01										Containment cooling fans	3.0*	1
025 Ice Condenser														
056 Condensate	03							04				MFW Loss of condensate pumps	2.6* 2.6	1 1
059 Main Feedwater	04									11		SGWLC Recovery from automatic feedwater isol	3.4 3.1	1 1
061 Auxiliary/Emergency Feedwater				07		01						Turbine trip including overspeed Controllers and positioners	3.1* 2.5	1 1
068 Liquid Radwaste						10			02			Radiation monitors Automatic isolation	2.5 3.6	1 1
071 Waste Gas Disposal				05							2.4.46	Alarms consistent with plant conditions Point of release	3.5 2.7	1 1
072 Area Radiation Monitoring								02		01		Detector failure Alarm & interlock setpoint checks & adj	2.8 3.0*	1 1
K/A Category Point Totals:	2	2	1	2	1	3	2	3	2	2	3	Group Point Total:		23

ES-401		PWR RO Examination Outline Plant Systems - Tier 2/Group 2											Form ES-401-4		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points	
002 Reactor Coolant										06		Overflow level of the RWST	2.9	1	
006 Emergency Core Cooling				14								Cross connection of HPI/LPI/SIP	3.9	1	
010 Pressurizer Pressure Control					01							Determination of fluid condition in PZR	3.5	1	
011 Pressurizer Level Control										01		Charging pump and flow controls	3.5	1	
012 Reactor Protection		01										RPS channels, comp, & intercon	3.3	1	
014 Rod Position Indication				05								Rod hold interlocks	3.1	1	
016 Non-nuclear Instrumentation															
026 Containment Spray								03				Failure of ESF	4.1	1	
029 Containment Purge									01			CPS isolation	3.8	1	
033 Spent Fuel Pool Cooling				05								Adequate SDM	3.1	1	
035 Steam Generator			01							06		RCS S/G isol on stm leak or tube rupture	4.4 4.5	1 1	
039 Main and Reheat Steam							09					Main stm line rad monitors	2.5*	1	
055 Condenser Air Removal			01									Main condenser	2.5	1	
062 AC Electrical Distribution			01									Major system loads	3.5	1	
063 DC Electrical Distribution			02									Components using DC control power	3.5	1	
064 Emergency Diesel Generator											2.1.23	Perform specific sys and integrated plt procedures during all modes	3.9	1	
073 Process Radiation Monitoring								02				Detector failure	2.8	1	
075 Circulating Water	02											Liquid rad waste discharge	2.9	1	
079 Station Air											2.2.27	Knowledge of the refueling process	2.6	1	
086 Fire Protection									01			Starting mechanisms of fire water pump	2.9	1	
K/A Category Point Totals:	1	1	4	3	1	0	1	2	2	3	2	Group Point Total:		20	

ES-401		PWR RO Examination Outline Plant Systems - Tier 2/Group 3											Form ES-401-4	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
005 Residual Heat Removal					09							dilution and boration considerations	3.2	1
007 Pressurizer Relief/Quench Tank								02				Abnormal pressure in the PRT	2.6	1
008 Component Cooling Water								02				Hi/lo surge tank level	3.2	1
027 Containment Iodine Removal					01							Purpose of charcoal filters	3.1*	1
028 Hydrogen Recombiner and Purge Control														
034 Fuel Handling Equipment											2.4.48	Interpret control room indications	3.5	1
041 Steam Dump/Turbine Bypass Control										05		Main stm hdr pressure	3.1	1
045 Main Turbine Generator														
076 Service Water														
078 Instrument Air			01									Containment air system	3.1*	1
103 Containment							01					Containment pres, temp, & humidity	3.7	1
K/A Category Point Totals:			1		2		1	2		1	1	Group Point Total:		8
Plant-Specific Priorities														
System / Topic	Recommended Replacement for...						Reason						Points	
Plant-Specific Priority Total: (limit 10)														

Facility:		Date of Exam:		Exam Level:	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	2.1.9	Direct personnel activities in control room	2.5/4.0	1	
	2.1.22	Determine mode of operation	2.8/3.3	1	
	2.1.27	System purpose and/or function	2.8/2.9	1	
	2.1.32	Explain and apply all sys limits & precautions	3.4/3.8	1	
	Total				4/5
Equipment Control	2.2.22	Limiting cond for ops & safety limits	3.4/4.1	1	
	2.2.23	Track limiting conditions for ops	2.6/3.8	1	
	2.2.28	New and spent fuel movement procedures	2.6/3.5	1	
	Total				3/4
Radiation Control	2.3.2	Facility ALARA program	2.5/2.9	1	
	2.3.4	Rad exp limits & contamination control	2.5/3.1	1	
	Total				2/3
Emergency Procedures/ Plan	2.4.5	Organization of operating procedures network	2.9/3.6	1	
	2.4.6	Symptom based EOP mitigation strategies	3.1/4.0	1	
	2.4.8	How to use event-based E/A operating proc.	3.0/3.7	1	
	2.4.20	Operational implications of EOP warnings, etc	3.3/4.0	1	
	Total				4/5
Tier 3 Point Total (RO/SRO)				13/17	

INITIAL SUBMITTAL

**TURKEY POINT EXAM
50-250, 251/2000-301**

**NOVEMBER 27 - DECEMBER 1,
DECEMBER 11 - 15, 2000**

INITIAL SUBMITTAL JPMS

**ADMINISTRATIVE JPMS/QUESTIONS
SIMULATOR JPMS,
IN-PLANT JPMS, AND
INITIAL ADMIN TOPICS OUTLINE
(ES-301-1),
CONTROL ROOM SYSTEMS &
FACILITY WALK-THROUGH OUTLINE
(ES-301-2)**

Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

Examiner Comments

*Draft RO
Admin*

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: Unit 3 is completing a refueling outage. It is 0100 in the morning. Operators are preparing to execute 3-OP-041.2, "Pressurizer Operation." Because of emergent work involving high levels of contamination and radiography, the NPS desires to enter 3-OP-041.2 without completing all of the prerequisites on a one-time basis. Specifically, the NPS wishes to begin drawing a bubble prior to the completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-455B PACKING LEAKOFF ISOLATION VALVE. There is no reason to believe that these valves are out of their required positions.

The NPS has prepared a On The Spot Change (OTSC) to 3-OP-041.2, with edits which allow deferring lineups on the two valves in question until later in the procedure, as opposed to requiring the lineups as a prerequisite to beginning drawing a bubble.

Assigned Task: The NPS has directed you to prepare an OTSC form as the ORIGINATOR.

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: Unit 3 is completing a refueling outage. It is 0100 in the morning. Operators are preparing to execute 3-OP-041.2, "Pressurizer Operation." Because of emergent work involving high levels of contamination and radiography, the NPS desires to enter 3-OP-041.2 without completing all of the prerequisites on a one-time basis. Specifically, the NPS wishes to begin drawing a bubble prior to the completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-455B PACKING LEAKOFF ISOLATION VALVE. There is no reason to believe that these valves are out of their required positions.

The NPS has prepared a On The Spot Change (OTSC) to 3-OP-041.2, with edits which allow deferring lineups on the two valves in question until later in the procedure, as opposed to requiring the lineups as a prerequisite to beginning drawing a bubble.

Assigned Task: The NPS has directed you to prepare an OTSC form as the ORIGINATOR.

Task Standard:

REQUIRED MATERIALS:

Provide applicant with a marked-up copy of 3-OP-041.2, "Pressurizer Operation," as follows:

- On page 9, add an asterisk to step 3.3.2.
- At the bottom of page 9, add an asterisk note which reads "Completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-3-455B PACKING LEAKOFF ISOLATION VALVE, may be deferred until a pressurizer bubble has been drawn. Valve lineups shall be complete prior to completing step 5.1.2.14."

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

- On page 16, add a "CK'D" line and step 13.a as follows:
"____ 13.a Verify that all valve lineups are complete."
- On page 52, add double asterisks to component numbers 3-574 and 3-575.
- At the bottom of page 52, add a double asterisk note that reads "Completion of these valve lineups on these valves shall be completed prior to step 5.1.2.14."

Standard:

- ☐ Obtain 0-ADM-102 **[CRITICAL STEP]**
- ☐ On Form 458:
 - ☐ Applicant asks for OTSC number. EXAMINER PROMPT: Provide number 00-150. **[1% CREDIT]**
 - ☐ Write "Pressurizer Operation" in the Procedure Title line. **[1% CREDIT]**
 - ☐ Write 3-OP-041.2 in the Procedure Number line **[1% CREDIT]**
 - ☐ Write "8/31/99" in the Current Revision Date line **[1% CREDIT]**
 - ☐ Check "Safety Related" **[1% CREDIT]**
 - ☐ Applicant performs OTSC Checklist on Page 4 of 7 of attachment 1 (OTSC Checklist Section 1) to 0-ADM-102. OTSC number should be placed on form **[1% CREDIT]**. All Checklist items should be checked "no" **[8% CREDIT]** and the form should be signed and dated. **[1% CREDIT]**
 - ☐ Applicant performs OTSC Change of Intent Guidelines and Prior Approval Requirements (Section 2, Part A).
 - ☐ Name and OTSC Number added **[1% CREDIT]**
 - ☐ All blocks checked "no" EXCEPT number 10, which is "yes." NOTE - It is possible, but not required, that applicant may check number 7. **[74% CREDIT]**

O:\Turkey Point Examination Bank\Initial Exam 2000-301\Draft operating exam\Draft RO Admin\Turkey Point_Admin_JPM_A1a_ROSRO2wpd

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

- ☐ "Responsible Dept Head" should be checked. **[2% CREDIT]**
- ☐ "PNSC REQUIRED" block should NOT be checked. **[1% CREDIT]**
- ☐ Check "One Time Only" block **[1% CREDIT]**
- ☐ Check "Prior Approval Required." **[CRITICAL STEP]**
- ☐ No source for "Commitment Source" should be checked. **[1% CREDIT]**
- ☐ Under "reason for Request," something like "To allow Pzr bubble to be drawn without completing all prerequisites" should be checked. **[1% CREDIT]**
- ☐ Under "Describe Details of Request," either a description of the change, or something like "see markup" should be added. **[1% CREDIT]**
- ☐ "No" should be checked on "Is request due to a PC/M?" **[1% CREDIT]**
- ☐ "No" should be checked on "Does request affect an As Left valve/breaker alignment?" **[1% CREDIT]**
- ☐ The applicant should sign and date the form, and check "No Basis Document change necessary." **[1% CREDIT]**

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Evaluation Method:	Evaluation Location:
[XX] Performed [] Simulated	[] Simulator [XX] Classroom [] Plant
Overall JPM Evaluation	
[] SAT [] UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

Task Standard:

☐ Examiner Prompts:

Bank Position	Doubling	SR Counts (cps)	IR Power (Amps)
C/64	1	440	1.1E-11
D/56	2	880	1.3E-11
D/116	3	1760	1.9E-11

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

- ☐ Applicant should pull 3-GOP-301 and review as a minimum step 4.27 and 5.15.5, and must obtain Attachment 1, pages 1, 2, and 3 of 3.
- ☐ Inverse Count Rate Data and Plot Sheet should wind up filled out as follows:

Doubling		Count Rate (CPS/Amps)		1/M (Co/Ci)		Actual Rod Height		Predicted Rod Height	
No.	CPS	N-3(1)	N-3(5)	I	II	Bank	Step	I	II
C ₀	220	220	1E-11	1.0	1.0	A	0	D/32	
C ₁	440	440	1.1E-11	.50	.9	C	64	D/230	D/230
C ₂	880	880	1.3E-11	.25	.75	C	152	D/180	D/230
C ₃	1760	1760	1.9E-11	.125	.5263	C	180	D/180	D/230

Plot sheet should be filled out to obtain predicted rod heights.

Correct Calculation of 1/M values, and extrapolation of predicted critical rod heights (within the readability of the plat sheet - ½ of 1 minimum subdivision) are considered **CRITICAL TASKS**.

- ☐ After 3rd doubling, applicant should compare data to precautions in 4.27 and note that the difference between the predicated critical position from the ECC and the predicted position after the 3rd doubling represents a 352 pcm difference (obtained by comparing HZP numbers from the Cycle 18, 150 MWD/MTU for Bank C&D overlap integral worth, Figure 5 of Section 2 of the plant curve book), which, per 4.27.3, requires NPS or designee permission to proceed to criticality. **CRITICAL TASK**
- ☐ Whether or not applicant identifies the need for NPS permission to proceed, terminate the JPM at this point. Collect all Attachment 1 sheets from applicant.

Turkey Point
JPM No. A.1.b
Perform 1/M Plot

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Evaluation Method:	Evaluation Location:
[XX] Performed [] Simulated	[] Simulator [XX] Classroom [] Plant
Overall JPM Evaluation	
[] SAT [] UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

Task Standard:

☐ Examiner Prompts:

Bank Position	Doubling	SR Counts (cps)	IR Power (Amps)
C/64	1	440	1.1E-11
D/56	2	880	1.3E-11
D/116	3	1760	1.9E-11

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**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

- ☐ Applicant should pull 3-GOP-301 and review as a minimum step 4.27 and 5.15.5, and must obtain Attachment 1, pages 1, 2, and 3 of 3.
- ☐ Inverse Count Rate Data and Plot Sheet should wind up filled out as follows:

Doubling		Count Rate (CPS/Amps)		1/M (Co/Ci)		Actual Rod Height		Predicted Rod Height	
No.	CPS	N-3(1)	N-3(5)	I	II	Bank	Step	I	II
C ₀	220	220	1E-11	1.0	1.0	A	0	D/32	
C ₁	440	440	1.1E-11	.50	.9	C	64	D/230	D/230
C ₂	880	880	1.3E-11	.25	.75	C	152	D/180	D/230
C ₃	1760	1760	1.9E-11	.125	.5263	C	180	D/180	D/230

Plot sheet should be filled out to obtain predicted rod heights.

Correct Calculation of 1/M values, and extrapolation of predicted critical rod heights (within the readability of the plat sheet - ½ of 1 minimum subdivision) are considered **CRITICAL TASKS**.

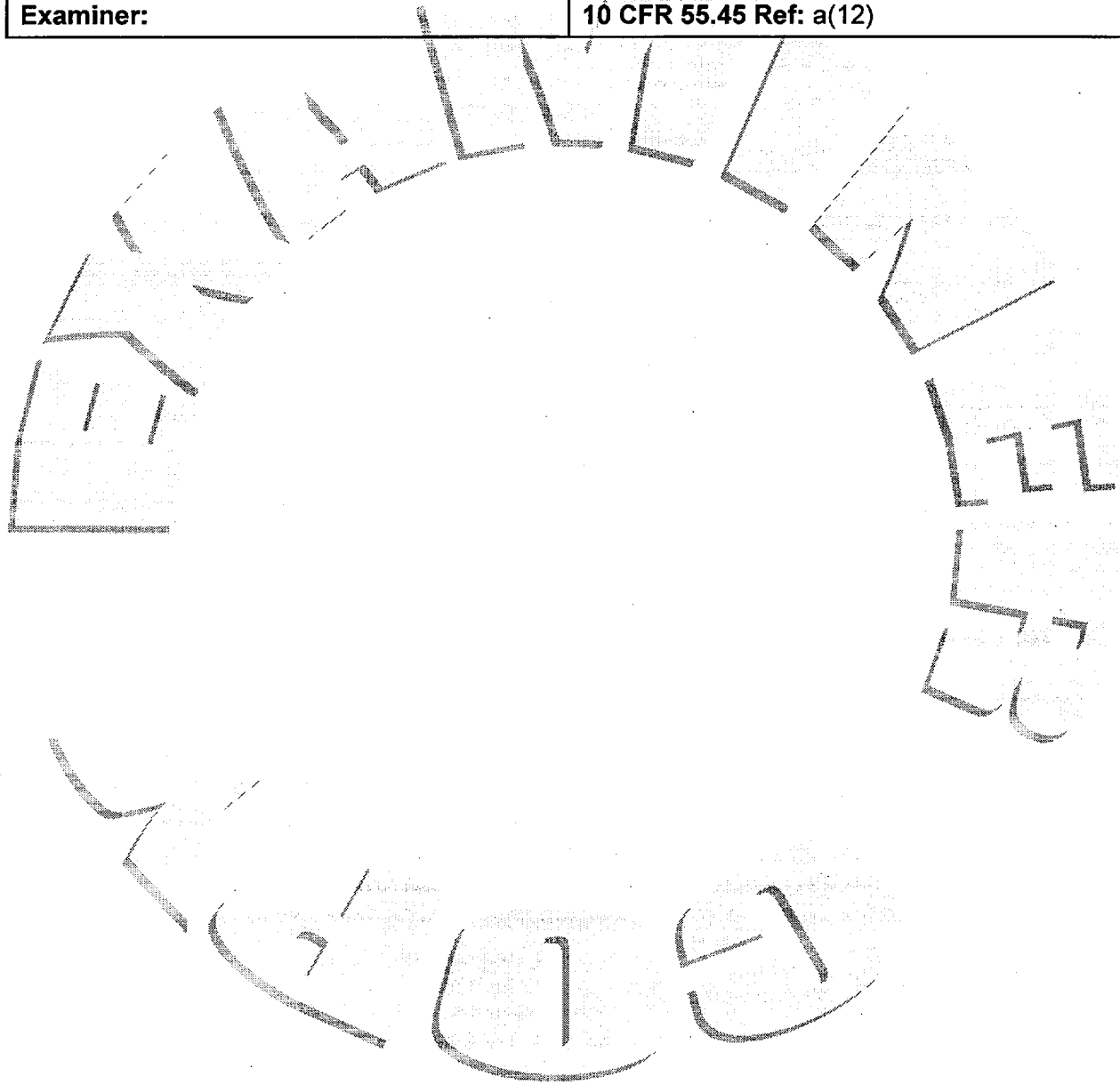
- ☐ After 3rd doubling, applicant should compare data to precautions in 4.27 and note that the difference between the predicated critical position from the ECC and the predicted position after the 3rd doubling represents a 352 pcm difference (obtained by comparing HZP numbers from the Cycle 18, 150 MWD/MTU for Bank C&D overlap integral worth, Figure 5 of Section 2 of the plant curve book), which, per 4.27.3, requires NPS or designee permission to proceed to criticality. **CRITICAL TASK**
- ☐ Whether or not applicant identifies the need for NPS permission to proceed, terminate the JPM at this point. Collect all Attachment 1 sheets from applicant.

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A.2
Propose Clearance Boundary**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)



**Turkey Point
JPM No. A.2
Propose Clearance Boundary**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Initial Conditions: Unit 4 is operating at full power. The NPS has directed that the 4C CCW pump be removed from service and a clearance repaired to allow for the inspection of the hydraulic end of the pump (the hydraulic end will need to be drained).

Assigned Task: The ANPS has directed you to propose the clearance boundary, including placement and restoration configurations and sequences. No computer support is available. Record the proposed clearance boundary on the attached form.

**Turkey Point
JPM No. A.2
Propose Clearance Boundary**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Equipment ID	Equipment Description	Equipment Location	Tag Ser.	Tag Type	Place Seq.	Place Config.	Placement 1 st Verif.	Verif. Date	Placement 2 nd Verif.	Verif. Date	Rest. Seq.	Rest. Config.	Rest. 1 st Verif.	Verif. Date	Rest. 2 nd Verif.	Verif. Date	Notes

**Turkey Point
JPM No. A.2
Propose Clearance Boundary**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Initial Conditions: Unit 4 is operating at full power. The NPS has directed that the 4C CCW pump be removed from service and a clearance repaired to allow for the inspection of the hydraulic end of the pump (the hydraulic end will need to be drained).

Assigned Task: The ANPS has directed you to propose the clearance boundary, including placement and restoration configurations and sequences. No computer support is available. Record the proposed clearance boundary on the attached form.

Task Standard:

The correct clearance boundary is shown on the attached sheet. Grade as follows:

- ☐ The breaker for the pump must appear first in order of actually danger tagged components and be restored last. **[CRITICAL TASK]**
- ☐ Suction and discharge valves must be included. **[CRITICAL TASK]**
- ☐ Each vent/drain valve is worth 20% credit, including the attachment of the drain hose. If reference material is not available to designate equipment IDs, examiners should provide them when asked by the applicants.

**Turkey Point
JPM No. A.2
Propose Clearance Boundary**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Equipment ID	Equipment Description	Equipment Location	Tag Ser.	Tag Type	Place Seq.	Place Config.	Placement 1 st Verif.	Verif. Date	Placement 2 nd Verif.	Verif. Date	Rest. Seq.	Rest. Config.	Rest. 1 st Verif.	Verif. Date	Rest. 2 nd Verif.	Verif. Date	Notes
4P211C-CONTROL SWITCH	4C CCW PUMP CONTROL SWITCH U-4 VPB 4C05	UNIT 4 CONTROL ROOM VERT PANEL B	1	Info tag	1	HANG INFO TAG					8	REMOVE INFO TAG					
4AD04	4.16KV BKR TO CCW PUMP 4C	430_SWITCHGEAR ROOM 4D	2	Danger	2	RACK BREAKER OUT					7	RACK BREAKER IN					
4-701C	ISO VLV TO CCW PUMP C INLET	202_COMPONENT COOLING PUMP ROOM	3	Danger	3	CLOSE					6	OPEN					
4-703C	STOP VLV FOR CCW PUMP C DISCH	202_COMPONENT COOLING PUMP ROOM	4	Danger	4	CLOSE					5	OPEN					
4-702F	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	5	Danger	5	OPEN					4	CLOSE					
4-1013-HOSE	CCW PUMP 4C DISCHARGE DRAIN HOSE	UNIT 4 CCW ROOM	6	No Tag	6	DRAIN LINE INSTALLED					3	REMOVE DRAIN LINE					
4-1013	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	7	Danger	7	OPEN					2	CLOSE					
4-703H	VENT VLV ON CCW PUMP CASING	202_COMPONENT COOLING PUMP ROOM	8	No Tag	8	OPEN					1	CLOSE					

**Turkey Point
JPM No. A.3**

Calculate Worker Exposure and Apply Administrative Guidelines

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

**Turkey Point
JPM No. A.3**

Calculate Worker Exposure and Apply Administrative Guidelines

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)
<p>Initial Conditions: Unit 3 is in a refueling outage. Two contract (non-FPL) workers are to perform a specialized task on a component. The two workers' TEDE exposure histories are as follows for the calendar year: Worker A: 105 mrem non-FPL exposure, 86 mrem PTN exposure Worker B: 800 mrem non-FPL exposure, 300 mrem PTN exposure</p> <p>All radiation surveys have been completed, and the workers are to perform their task in an area with a general field of 240 mrem/hr, and the job is anticipated to take 6 hours.</p> <p>Assigned Task: Determine the expected radiation doses to the workers and determine what, if any, administrative controls should be implemented specifically for this job.</p>	

**Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Continuation/Work Page

**Turkey Point
JPM No. A.3**

Calculate Worker Exposure and Apply Administrative Guidelines

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Initial Conditions: Unit 3 is in a refueling outage. Two contract (non-FPL) workers are to perform a specialized task on a component. The two workers' TEDE exposure histories are as follows for the calendar year:
 Worker A: 105 mrem non-FPL exposure, 86 mrem PTN exposure
 Worker B: 800 mrem non-FPL exposure, 300 mrem PTN exposure

All radiation surveys have been completed, and the workers are to perform their task in an area with a general field of 240 mrem/hr, and the job is anticipated to take 6 hours.

Assigned Task: Determine the expected radiation doses to the workers and determine what, if any, administrative controls should be implemented specifically for this job.

Task Standard:

- The principle reference for this JPM is ADM-600, "Radiation Protection Manual." Note that many of the "requirements" in the manual are actually "should" statements, hence the language in the assigned task.
- ☐ The workers' exposures should be calculated and determined to be the following
[CRITICAL STEP]:

Worker	Job Total (mrem)	PTN Total (mrem)	Annual Total (mrem)
A	1430	1516	1621
B	1430	1730	2530

Cumulative job exposure = 2.860 man-rem

Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Note: annual totals should be calculated to compare against federal limits

- ☐ Both workers' planned exposure should be reviewed by the Health Physics Supervisor (5.7.1.4.b of ADM-600 for TP exposure greater than 1000 mrem) **[60% Credit]**
- ☐ Additional ALARA review (e.g., pre-job briefing) should be performed and documented prior to issuing the RWP. (5.16.1.1.b of ADM-600 for any task where the collective dose is estimated to exceed 0.5 man-rem). **[20% Credit]**
- ☐ The job should be reviewed in a detailed manner and ALARA initiatives should be considered and applied if practical (5.16.1.1.c of ADM-600 for any task where the collective dose is estimated to be between 1 and 5 man-rem. A discussion of the items to be considered in the ALARA review are given in Substep 5.16.1.9). **[20% Credit]**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.43 (2.8/3.5)
Examiner:	10 CFR 55.45 Ref: (a)(11)

Evaluation Method: <input type="checkbox"/> Performed <input checked="" type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input type="checkbox"/> Classroom <input checked="" type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A4
Announce Declaration of Alert**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.43 (2.8/3.5)
Examiner:	10 CFR 55.45 Ref: (a)(11)
Initial Conditions: An Alert has been declared on Unit 3 due to RCS leakage in excess of 50 gpm. No evacuation of site personnel is envisioned.	
Assigned Task: The Emergency Coordinator has directed you to inform site personnel in accordance with the applicable Emergency Plan Implementing Procedure.	

**Turkey Point
JPM No. A4
Announce Declaration of Alert**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.43 (2.8/3.5)
Examiner:	10 CFR 55.45 Ref: (a)(11)
Initial Conditions: An Alert has been declared on Unit 3 due to RCS leakage in excess of 50 gpm. No evacuation of site personnel is envisioned.	
Assigned Task: The Emergency Coordinator has directed you to inform site personnel in accordance with the applicable Emergency Plan Implementing Procedure.	

Task Standard:

Reference: EPIP-20101

- ☐ Locate EPIP-20101 **[40% Credit]**
- ☐ Make the following announcement using PAGE VOLUME BOOST:
"Attention all personnel, attention all personnel: An Alert has been declared on Unit #3 due to (provide a brief description of initiating event). All Emergency Response Organization members report to your designated Emergency response Facility. All other personnel report to your normal work location." (Step 5.4.1.4.a.1) **[20% Credit]**
- ☐ Sound the Emergency Plan Activation Alarm. (Step 5.4.1.4.a.2) **[20% Credit]**
- ☐ Repeat the announcement. (Step 5.4.1.4.a.3) **[20% Credit]**

Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

Examiner Comments

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: Unit 3 is completing a refueling outage. It is 0100 in the morning. Operators are preparing to execute 3-OP-041.2, "Pressurizer Operation." Because of emergent work involving high levels of contamination and radiography, the NPS desires to enter 3-OP-041.2 without completing all of the prerequisites on a one-time basis. Specifically, the NPS wishes to begin drawing a bubble prior to the completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-455B PACKING LEAKOFF ISOLATION VALVE. There is no reason to believe that these valves are out of their required positions.

The NPS has prepared a On The Spot Change (OTSC) to 3-OP-041.2, with edits which allow deferring lineups on the two valves in question until later in the procedure, as opposed to requiring the lineups as a prerequisite to beginning drawing a bubble.

Assigned Task: The NPS has directed you to prepare an OTSC form as the ORIGINATOR.

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: Unit 3 is completing a refueling outage. It is 0100 in the morning. Operators are preparing to execute 3-OP-041.2, "Pressurizer Operation." Because of emergent work involving high levels of contamination and radiography, the NPS desires to enter 3-OP-041.2 without completing all of the prerequisites on a one-time basis. Specifically, the NPS wishes to begin drawing a bubble prior to the completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-455B PACKING LEAKOFF ISOLATION VALVE. There is no reason to believe that these valves are out of their required positions.

The NPS has prepared a On The Spot Change (OTSC) to 3-OP-041.2, with edits which allow deferring lineups on the two valves in question until later in the procedure, as opposed to requiring the lineups as a prerequisite to beginning drawing a bubble.

Assigned Task: The NPS has directed you to prepare an OTSC form as the ORIGINATOR.

Task Standard:

REQUIRED MATERIALS:

Provide applicant with a marked-up copy of 3-OP-041.2, "Pressurizer Operation," as follows:

- On page 9, add an asterisk to step 3.3.2.
- At the bottom of page 9, add an asterisk note which reads "Completion of valve lineups on valves 3-574, PCV-3-455A PACKING LEAKOFF ISOLATION VALVE, and 3-575, PCV-3-455B PACKING LEAKOFF ISOLATION VALVE, may be deferred until a pressurizer bubble has been drawn. Valve lineups shall be complete prior to completing step 5.1.2.14."

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

- On page 16, add a "CK'D" line and step 13.a as follows:
"____ 13.a Verify that all valve lineups are complete."
- On page 52, add double asterisks to component numbers 3-574 and 3-575.
- At the bottom of page 52, add a double asterisk note that reads "Completion of these valve lineups on these valves shall be completed prior to step 5.1.2.14."

Standard:

- ☐ Obtain 0-ADM-102 **[CRITICAL STEP]**
- ☐ On Form 458:
 - ☐ Applicant asks for OTSC number. EXAMINER PROMPT: Provide number 00-150. **[1% CREDIT]**
 - ☐ Write "Pressurizer Operation" in the Procedure Title line. **[1% CREDIT]**
 - ☐ Write 3-OP-041.2 in the Procedure Number line **[1% CREDIT]**
 - ☐ Write "8/31/99" in the Current Revision Date line **[1% CREDIT]**
 - ☐ Check "Safety Related" **[1% CREDIT]**
 - ☐ Applicant performs OTSC Checklist on Page 4 of 7 of attachment 1 (OTSC Checklist Section 1) to 0-ADM-102. OTSC number should be placed on form **[1% CREDIT]**. All Checklist items should be checked "no" **[8% CREDIT]** and the form should be signed and dated. **[1% CREDIT]**
 - ☐ Applicant performs OTSC Change of Intent Guidelines and Prior Approval Requirements (Section 2, Part A).
 - ☐ Name and OTSC Number added **[1% CREDIT]**
 - ☐ All blocks checked "no" EXCEPT number 10, which is "yes." NOTE - It is possible, but not required, that applicant may check number 7. **[74% CREDIT]**

**Turkey Point
JPM No. A.1.a
Prepare On The Spot Change for Procedure**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.20 (4.3/4.2)
Examiner:	10 CFR 55.45 Ref: a(13)

- ☐ "Responsible Dept Head" should be checked. **[2% CREDIT]**
- ☐ "PNSC REQUIRED" block should NOT be checked. **[1% CREDIT]**
- ☐ Check "One Time Only" block **[1% CREDIT]**
- ☐ Check "Prior Approval Required." **[CRITICAL STEP]**
- ☐ No source for "Commitment Source" should be checked. **[1% CREDIT]**
- ☐ Under "reason for Request," something like "To allow Pzr bubble to be drawn without completing all prerequisites" should be checked. **[1% CREDIT]**
- ☐ Under "Describe Details of Request," either a description of the change, or something like "see markup" should be added. **[1% CREDIT]**
- ☐ "No" should be checked on "Is request due to a PC/M?" **[1% CREDIT]**
- ☐ "No" should be checked on "Does request affect an As Left valve/breaker alignment?" **[1% CREDIT]**
- ☐ The applicant should sign and date the form, and check "No Basis Document change necessary." **[1% CREDIT]**

Turkey Point
JPM No. A.1.b
Perform 1/M Plot

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Evaluation Method:	Evaluation Location:
[XX] Performed [] Simulated	[] Simulator [XX] Classroom [] Plant
Overall JPM Evaluation	
[] SAT [] UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

Initial Conditions: A Unit 3 startup is in progress per 3-GOP-301, "Hot Standby to Power Operation," through Step 5.15.3. The RCO is preparing to withdraw control banks to bring the reactor critical. Currently, conditions are as follows:

- The RCS is at NOP and no-load Tavg.
- source range instrument N-31 indicates highest at 220 cps.
- Intermediate range instrument N-35 indicates 1×10^{-11} A.
- The ECC predicts criticality with control bank D at 96 steps.
- Current core burnup for this cycle (cycle 18) is 150 MWD/MTU

Assigned Task: You have been directed to perform a 1/M plot for the approach to criticality per 3-GOP-301, applying all appropriate precautions. I will provide data obtained after each flux doubling.

Task Standard:

☐ Examiner Prompts:

Bank Position	Doubling	SR Counts (cps)	IR Power (Amps)
C/64	1	440	1.1E-11
D/56	2	880	1.3E-11
D/116	3	1760	1.9E-11

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**Turkey Point
JPM No. A.1.b
Perform 1/M Plot**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.1.7 (3.7/4.4)
Examiner:	10 CFR 55.45 Ref: a(13)

- ☐ Applicant should pull 3-GOP-301 and review as a minimum step 4.27 and 5.15.5, and must obtain Attachment 1, pages 1, 2, and 3 of 3.
- ☐ Inverse Count Rate Data and Plot Sheet should wind up filled out as follows:

Doubling		Count Rate (CPS/Amps)		1/M (Co/Ci)		Actual Rod Height		Predicted Rod Height	
No.	CPS	N-3(1)	N-3(5)	I	II	Bank	Step	I	II
C ₀	220	220	1E-11	1.0	1.0	A	0	D/32	
C ₁	440	440	1.1E-11	.50	.9	C	64	D/230	D/230
C ₂	880	880	1.3E-11	.25	.75	C	152	D/180	D/230
C ₃	1760	1760	1.9E-11	.125	.5263	C	180	D/180	D/230

Plot sheet should be filled out to obtain predicted rod heights.

Correct Calculation of 1/M values, and extrapolation of predicted critical rod heights (within the readability of the plot sheet - ½ of 1 minimum subdivision) are considered **CRITICAL TASKS**.

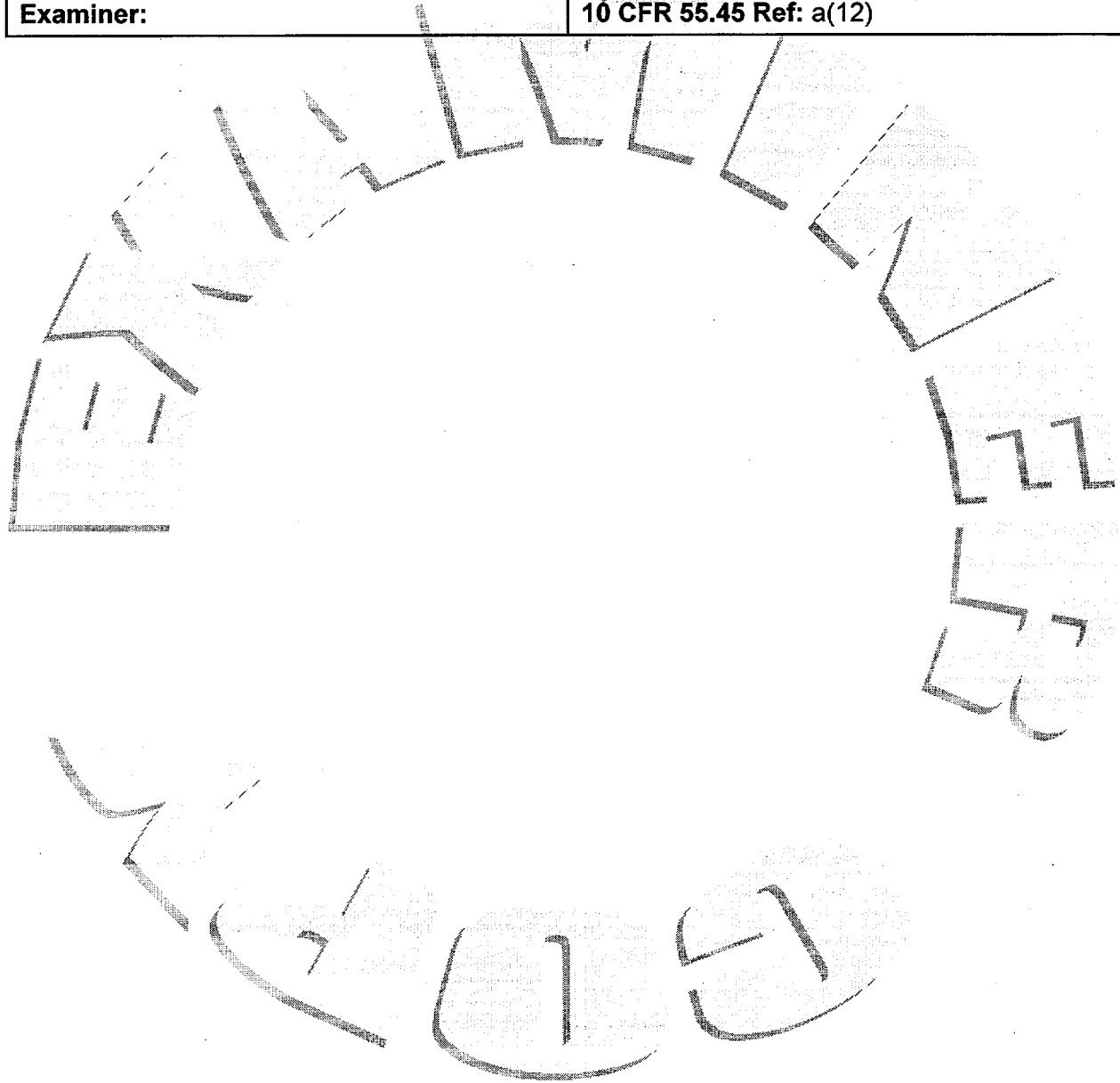
- ☐ After 3rd doubling, applicant should compare data to precautions in 4.27 and note that the difference between the predicated critical position from the ECC and the predicted position after the 3rd doubling represents a 352 pcm difference (obtained by comparing HZP numbers from the Cycle 18, 150 MWD/MTU for Bank C&D overlap integral worth, Figure 5 of Section 2 of the plant curve book), which, per 4.27.3, requires NPS or designee permission to proceed to criticality. **CRITICAL TASK**
- ☐ Whether or not applicant identifies the need for NPS permission to proceed, terminate the JPM at this point. Collect all Attachment 1 sheets from applicant.

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Examiner Comments	

**Turkey Point
JPM No. A2
Review Proposed Clearance Boundaries**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)



**Turkey Point
JPM No. A2
Review Proposed Clearance Boundaries**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Initial Conditions: Unit 4 is at full power. The NPS has directed that the 4C CCW pump be removed from service and a clearance prepared to allow inspection of the hydraulic end of the pump (the hydraulic end will need to be drained). The RCO has prepared a proposed clearance boundary.

Assigned Task: Review the attached proposed boundary for adequacy and accuracy per O-ADM-212.1.

**Turkey Point
JPM No. A2
Review Proposed Clearance Boundaries**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Equipment ID	Equipment Description	Equipment Location	Tag Ser.	Tag Type	Place Seq.	Place Config.	Placement 1 st Verif.	Verif. Date	Placement 2 nd Verif.	Verif. Date	Rest. Seq.	Rest. Config.	Rest. 1 st Verif.	Verif. Date	Rest. 2 nd Verif.	Verif. Date	Notes
4P211C-CONTROL SWITCH	4C CCW PUMP CONTROL SWITCH U-4 VPB 4C05	UNIT 4 CONTROL ROOM VERT PANEL B	1	Info tag	1	HANG INFO TAG					8	REMOVE INFO TAG					
4AD04	4.16KV BKR TO CCW PUMP 4C	430_SWITCHGEAR ROOM 4D	2	Danger	2	BREAKER IN TEST POSITION					7	RACK BREAKER IN					
4-701C	ISO VLV TO CCW PUMP C INLET	202_COMPONENT COOLING PUMP ROOM	3	Danger	3	CLOSE					6	OPEN					
4-703B	STOP VLV FOR CCW PUMP B DISCH	202_COMPONENT COOLING PUMP ROOM	4	Danger	4	CLOSE					5	OPEN					
4-702E	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	5	Danger	5	OPEN					4	CLOSE					
4-1013-ROSE	CCW PUMP 4C DISCHARGE DRAIN HOSE	UNIT 4 CCW ROOM	6	No Tag	6	DRAIN LINE INSTALLED					3	REMOVE DRAIN LINE					
4-1013	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	7	Danger	7	CLOSE					2	OPEN					
4-703H	VENT VLV ON CCW PUMP CASING	202_COMPONENT COOLING PUMP ROOM	8	No Tag	8	OPEN					1	CLOSE					

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**Turkey Point
JPM No. A2
Review Proposed Clearance Boundaries**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Initial Conditions: Unit 4 is at full power. The NPS has directed that the 4C CCW pump be removed from service and a clearance prepared to allow inspection of the hydraulic end of the pump (the hydraulic end will need to be drained). The RCO has prepared a proposed clearance boundary.

Assigned Task: Review the attached proposed boundary for adequacy and accuracy per 0-ADM-212.1.

Task Standard:

Errors are shown on the attached form in **BOLD**

- ☐ Breaker 4AD04 must be RACKED OUT per 0-ADM-212.1, 5.3.2 **[CRITICAL TASK]**
- ☐ 4-703B should be 4-703C, and the equipment description pump designation should, similarly, be C. **[CRITICAL TASK]**
- ☐ 4-702E should be 4-703F. **[20% CREDIT]**
- ☐ 4-1013 should be tagged OPEN and restored to the CLOSE position. **[20% CREDIT]**

**Turkey Point
JPM No. A2
Review Proposed Clearance Boundaries**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: 2.2.13 (3.6/3.8)
Examiner:	10 CFR 55.45 Ref: a(12)

Equipment ID	Equipment Description	Equipment Location	Tag Ser.	Tag Type	Place Seq.	Place Config.	Placement 1 st Verif.	Verif. Date	Placement 2 nd Verif.	Verif. Date	Rest. Seq.	Rest. Config.	Rest. 1 st Verif.	Verif. Date	Rest. 2 nd Verif.	Verif. Date	Notes
4P211C-CONTROL SWITCH	4C CCW PUMP CONTROL SWITCH U-4 VPB 4C05	UNIT 4 CONTROL ROOM VERT PANEL B	1	Info tag	1	HANG INFO TAG					8	REMOVE INFO TAG					
4AD04	4.16KV BKR TO CCW PUMP 4C	430_SWITCHGEAR ROOM 4D	2	Danger	2	BREAKER IN TEST POSITION					7	RACK BREAKER IN					
4-701C	ISO VLV TO CCW PUMP C INLET	202_COMPONENT COOLING PUMP ROOM	3	Danger	3	CLOSE					6	OPEN					
4-703B	STOP VLV FOR CCW PUMP B DISCH	202_COMPONENT COOLING PUMP ROOM	4	Danger	4	CLOSE					5	OPEN					
4-702E	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	5	Danger	5	OPEN					4	CLOSE					
4-1013-HOSE	CCW PUMP 4C DISCHARGE DRAIN HOSE	UNIT 4 CCW ROOM	6	No Tag	6	DRAIN LINE INSTALLED					3	REMOVE DRAIN LINE					
4-1013	CCW PUMP 4C DISCHARGE DRAIN	202_COMPONENT COOLING PUMP ROOM	7	Danger	7	CLOSE					2	OPEN					
4-703H	VENT VLV ON CCW PUMP CASING	202_COMPONENT COOLING PUMP ROOM	8	No Tag	8	OPEN					1	CLOSE					

**Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Evaluation Method:	Evaluation Location:
<input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	<input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation	
<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

**Turkey Point
JPM No. A.3**

Calculate Worker Exposure and Apply Administrative Guidelines

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)
<p>Initial Conditions: Unit 3 is in a refueling outage. Two contract (non-FPL) workers are to perform a specialized task on a component. The two workers' TEDE exposure histories are as follows for the calendar year: Worker A: 105 mrem non-FPL exposure, 86 mrem PTN exposure Worker B: 800 mrem non-FPL exposure, 300 mrem PTN exposure</p> <p>All radiation surveys have been completed, and the workers are to perform their task in an area with a general field of 240 mrem/hr, and the job is anticipated to take 6 hours.</p> <p>Assigned Task: Determine the expected radiation doses to the workers and determine what, if any, administrative controls should be implemented specifically for this job.</p>	

**Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Continuation/Work Page

**Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Initial Conditions: Unit 3 is in a refueling outage. Two contract (non-FPL) workers are to perform a specialized task on a component. The two workers' TEDE exposure histories are as follows for the calendar year:
 Worker A: 105 mrem non-FPL exposure, 86 mrem PTN exposure
 Worker B: 800 mrem non-FPL exposure, 300 mrem PTN exposure

All radiation surveys have been completed, and the workers are to perform their task in an area with a general field of 240 mrem/hr, and the job is anticipated to take 6 hours.

Assigned Task: Determine the expected radiation doses to the workers and determine what, if any, administrative controls should be implemented specifically for this job.

Task Standard:

- The principle reference for this JPM is ADM-600, "Radiation Protection Manual." Note that many of the "requirements" in the manual are actually "should" statements, hence the language in the assigned task.
- ☐ The workers' exposures should be calculated and determined to be the following
[CRITICAL STEP]:

Worker	Job Total (mrem)	PTN Total (mrem)	Annual Total (mrem)
A	1430	1516	1621
B	1430	1730	2530

Cumulative job exposure = 2.860 man-rem

**Turkey Point
JPM No. A.3
Calculate Worker Exposure and Apply Administrative Guidelines**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.3.1 (2.6/3.0)
Examiner:	10 CFR 55.45 Ref: (a)(10)

Note: annual totals should be calculated to compare against federal limits

- ☐ Both workers' planned exposure should be reviewed by the Health Physics Supervisor (5.7.1.4.b of ADM-600 for TP exposure greater than 1000 mrem) **[60% Credit]**
- ☐ Additional ALARA review (e.g., pre-job briefing) should be performed and documented prior to issuing the RWP. (5.16.1.1.b of ADM-600 for any task where the collective dose is estimated to exceed 0.5 man-rem). **[20% Credit]**
- ☐ The job should be reviewed in a detailed manner and ALARA initiatives should be considered and applied if practical (5.16.1.1.c of ADM-600 for any task where the collective dose is estimated to be between 1 and 5 man-rem. A discussion of the items to be considered in the ALARA review are given in Substep 5.16.1.9). **[20% Credit]**

**Turkey Point
JPM No. A4
Classify Events and Determine PARs**

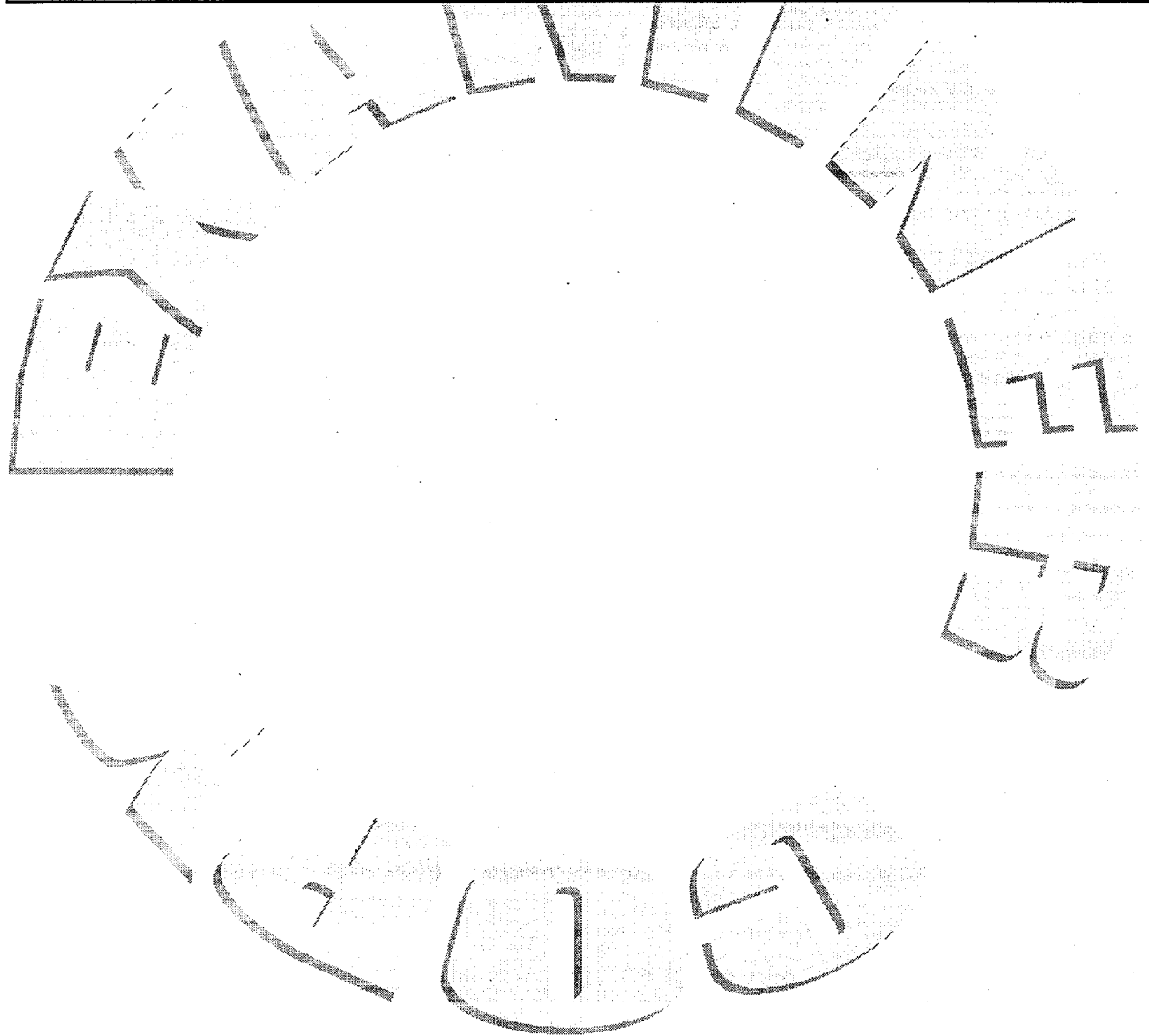
Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.41 (2.3/4.1)
Examiner:	10 CFR 55.45 Ref: (a)11

Evaluation Method: <input checked="" type="checkbox"/> Performed <input type="checkbox"/> Simulated	Evaluation Location: <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Plant
Overall JPM Evaluation <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

Examiner Comments

**Turkey Point
JPM No. A4
Classify Events and Determine PARs**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.41 (2.3/4.1)
Examiner:	10 CFR 55.45 Ref: (a)11



**Turkey Point
JPM No. A4
Classify Events and Determine PARs**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.41 (2.3/4.1)
Examiner:	10 CFR 55.45 Ref: (a)11
Initial Conditions: A large-break loss of coolant accident is in progress. The ECCS is operating in the injection mode. The containment has been leaking and the leakage has been getting progressively worse.	
Assigned Task: You are the Emergency Coordinator. Classify this event, including the development of Protective Action Recommendations, if appropriate.	

**Turkey Point
JPM No. A4
Classify Events and Determine PARs**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.41 (2.3/4.1)
Examiner:	10 CFR 55.45 Ref: (a)11

Initial Conditions: A large-break loss of coolant accident is in progress. The ECCS is operating in the injection mode. The containment has been leaking and the leakage has been getting progressively worse.

Assigned Task: You are the Emergency Coordinator. Classify this event, including the development of Protective Action Recommendations, if appropriate.

Task Standard:

Reference: EPIP-20101

- ☐ Locate EPIP-20101 and classify this event as a General Emergency per Enclosure 1, Page 1, case B. **[20% Credit]**
- ☐ Move to Attachment 3
 - Prompts - If asked,
 - There is no loss of critical safety functions associated with core protection
 - The core is not experiencing high temperatures (TCs<700°F)
 - The control room is secure
 - There is no loss of physical control of the plant
- ☐ Develops initial PARs **[20% Credit]**
 - ☐ Shelter 0-2 miles in all directions
 - ☐ Shelter 2-5 miles downwind (see below met conditions)
 - ☐ No action for 5-10 miles

**Turkey Point
JPM No. A4
Classify Events and Determine PARs**

Applicant:	Evaluation Date:
Application Level: RO/SRO	K/A: GEN 2.4.41 (2.3/4.1)
Examiner:	10 CFR 55.45 Ref: (a)11

- ☐ Transposes information to the bottom of Attachment 3
- ☐ Asks for Offsite Dose Projections
Examiner Prompts (will be necessary, as applicant may try to find Dose Calculation Worksheet):
 - ☐ At 1 mile, Total Dose = 1250 mrem, Thyroid Dose = 5200 mrem
 - ☐ At 2 miles, Total Dose = 780 mrem, Thyroid Dose = 2300 mrem
 - ☐ At 5 miles, Total Dose = 600 mrem, Thyroid Dose = 960 mrem
- ☐ Determines PARs on lower table of Attachment 3 as follows and chooses most conservative PARs for each range (shown in **Bold**) **[40% Credit]**:

Summary	0-2 Miles	2-5 Miles	5-10 Miles
PARs/Plant Conditions	Shelter Complete Radius	Shelter Downwind	None
PARs/Total Dose (TEDE)	Evacuate Complete Radius	Shelter Downwind	Shelter Downwind
PARs/Thyroid	Evacuate Complete Radius	Shelter Downwind	None

- ☐ **Meteorological Data**
Prompt - Wind from 146°.
- ☐ Applicant determines from Attachment 1 that sectors PQR&A are affected by the release. Added sector "A" is added pursuant to the instructions on Attachment 1 for wind directions that are on the boarder of two sectors. **[20% Credit]**
- ☐ Prompt Applicant that Stability class determination is not required.

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

INVESTIGATE CCW HIGH RADIATION

3-ONOP-067

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, state the task to be performed, and will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

THE TASK YOU ARE TO PERFORM IS:

INVESTIGATE CCW HIGH RADIATION

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

YOU ARE THE UNIT 3 REACTOR OPERATOR.

1. UNIT IS COOLING DOWN ON RHR WITH ONE RCP RUNNING
2. A "HIGH RADIATION" ALARM IS LIT ON PRMS CHANNEL R-17A AND/OR R-17B, AND ANNUNCIATOR H-1/4 IS LIT.
3. 3-ONOP-067, RADIOLOGICAL EFFLUENT RELEASE, HAS BEEN OBTAINED AND THE OPERABILITY VERIFICATION FOR THE ALARMING CHANNEL(S) HAS BEEN COMPLETED INDICATING A VALID CONDITION.
4. A CORRESPONDING CCW HEAD TANK LEVEL TREND MAY OR MAY NOT BE EVIDENT.
5. THE NPS HAS BEEN NOTIFIED OF THE PRMS ALARM CONDITION.

INITIATING CUES:

(NOTE: FOR THE PURPOSE OF THIS JPM IDENTIFY THE ALARM CONDITION AS A "HIGH RADIATION" ALARM ON THE AFFECTED CHANNELS.)

PROVIDE THE OPERATOR WITH A COPY OF THE PROCEDURE WHEN GIVING THE INITIATING CUE.

INVESTIGATE CCW HIGH RADIATION

(C) STEP 1: CHECK CCW SYSTEM FOR HIGH ACTIVITY
(STEP 39, 3-ONOP-067)

STANDARD:

1. USING THE PLANT PAGE, NOTIFIED PLANT PERSONNEL OF THE CCW SYSTEM "HIGH RADIATION" ALARM, WARNING PERSONNEL TO REMAIN CLEAR OF CCW SYSTEM PIPING

** Notification has been made (STEP 39.a, 3-ONOP-067).*

2. VERIFIED CLOSED INDICATION FOR CCW HEAD TANK VENT, RCV-3-609

** RCV-3-609 auto closes on RD-3-17A/B alarm (STEP 39.b, 3-ONOP-067).*

3. CHECK IF RCP THERMAL BARRIER FLOW = OR > 130 GPM, OR CHECK POSITION OF MOV-3-626

** This valve auto closes on high CCW flow, valve remains open. RCP Thermal Barrier Flow Annunciators A-1/1 and A-1/3 are NOT lit (NOTE prior to STEP 39, 3-ONOP-067).*

4. NOTIFIED CHEMISTRY TO SAMPLE CCW SYSTEM TO DETERMINE ACTIVITY LEVEL

** Chemistry has been notified (STEP 39.c, 3-ONOP-067).*

EXAMINER'S CUES:

Inform the operator that the required condition has been verified and notifications made when identified by the operator.

COMMENTS:

_____ SAT

_____ UNSAT

INVESTIGATE CCW HIGH RADIATION

(C) STEP 2: CHECK MOST PROBABLE RCS TO CCW LEAK SOURCES

(STEPS 40-44, 3-ONOP-067)

STANDARD:

1. CHECKED FOR NORMAL CCW TEMPERATURES AND FLOWS OUT OF THE RCP THERMAL BARRIERS AS INDICATED BY THE FOLLOWING:

** (STEP 40, 3-ONOP-067)*

A. ANNUN: A 1/1, "RCP THERMAL BARR COOLING WATER HI FLOW - CLEAR

** A-1/1 NOT lit (STEP 40.a, 3-ONOP-067)*

B. ANNUN: A 1/2, "RCP THERMAL BARR COOLING WATER HI TEMP - CLEAR

** A-1/2 NOT lit (STEP 40.b, 3-ONOP-067)*

C. THERMAL BARRIER OUTLET FLOW FOR EACH RCP LESS THAN OR EQUAL TO 28 GPM (SNPO DISPATCHED TO CONTAINMENT TO DETERMINE THIS)

** FI-3-630 for 3A RCP (inside containment); FI-3-633 for 3B RCP (inside containment); FI-3-636 for 3C RCP (inside containment). SNPO must make containment entry using 0-ADM-009. (STEP 40.c, 3-ONOP-067)*

EXAMINER'S CUES:

ACKNOWLEDGE EACH SOURCE CHECKED WHEN IDENTIFIED BY THE OPERATOR.

COMMENTS:

____ SAT

____ UNSAT

INVESTIGATE CCW HIGH RADIATION

(C) STEP 2 (Cont'd): CHECK MOST PROBABLE RCS TO CCW LEAK SOURCES

(STEPS 40-44, 3-ONOP-067)

STANDARD:

2. SNPO DIRECTED TO CHECK THE FOLLOWING HEAT EXCHANGERS CCW OUTLET TEMPERATURES AND FLOWS TO BE NORMAL:

(STEPS 41-44, 3-ONOP-067)

A. NRHX: < 140 DEG F AND < 840 GPM

** Acknowledge source being checked by SNPO when identified by the operator. (STEP 41, 3-ONOP-067)*

B. SEAL WTR HX: < 140 DEG F AND < 200 GPM

** Acknowledge source being checked by SNPO when identified by the operator. (STEP 42, 3-ONOP-067)*

C. SFP HX: < 140 DEG F AND < 2500 GPM

** Acknowledge source being checked by SNPO when identified by the operator. (STEP 43, 3-ONOP-067)*

D. EXCESS LTD HX: < 140 DEG F AND < 238 GPM

** Acknowledge source being checked by SNPO when identified by the operator. (STEP 44, 3-ONOP-067)*

EXAMINER'S CUES:

ACKNOWLEDGE EACH SOURCE CHECKED WHEN IDENTIFIED BY THE OPERATOR.

COMMENTS:

INVESTIGATE CCW HIGH RADIATION	
<p><u>(C) STEP 2 (Cont'd):</u> CHECK MOST PROBABLE RCS TO CCW LEAK SOURCES (STEPS 40-44, 3-ONOP-067)</p> <p>EXAMINER'S CUES:</p> <p><u>LEAK LOCATION CUE:</u></p> <p>1. As the SNPO, tell the operator that the non-regenerative heat exchanger temperature is 180 DEG and flow is greater than 840 GPM << AND >></p> <p>Tell the operator that all other parameters on the sources checked were normal.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

INVESTIGATE CCW HIGH RADIATION

(C) STEP 3: ISOLATE THE IDENTIFIED RCS TO CCW LEAKAGE SOURCE

(STEP 41 RNO, 3-ONOP-067)

STANDARD:

1. SHIFTED FROM NORMAL LETDOWN PATH TO EXCESS LETDOWN PER 3-OP-041.2, PRESSURIZER OPERATION.

(STEP 41 RNO 41.a, 3-ONOP-067)

- CV-3-739 WAS OPENED OR VERIFIED TO BE OPEN
 - CV-3-739 INDICATES OPEN
- FLOW ON FI-3-624 VERIFIED TO BE \leq TO 238 GPM BY THE SNPO
 - FLOW ON FI-3-624 INDICATES ~ 230 GPM
- VERIFIED THE "EXCESS LETDOWN DIVERT VALVE" CONTROL SWITCH, CV-3-389, IS POSITIONED TO THE "VCT" (SWITCH IN NORMAL)
 - CV-3-389 INDICATES POSITIONED TO THE VCT
- OPENED THE EXCESS LETDOWN ISOL VALVE, CV-3-387
 - CV-3-387 INDICATES OPEN
- SLOWLY OPENED, HCV-3-137 TO ALLOW THE EXCESS LETDOWN HEAT EXCHANGER TO WARM UP
 - HCV-3-137 IS COMPLETELY OPEN
- MONITORED TI-3-139 TO ENSURE THE OUTLET TEMPERATURE FROM THE EXCESS LETDOWN HEAT EXCHANGER DOES NOT EXCEED 195 DEG. F.
 - TI-3-139 IS < 195 DEG. F.

2. DIRECTIONS WERE GIVEN TO A SNPO TO PERFORM THE FOLLOWING AT THE NON-REGEN HX

A. CLOSE, *-777, NRHX CCW SUPPLY

B. CLOSE, *-780, NRHX CCW TEMP CONTROL VLV OUTLET

C. CLOSE, *-834, NRHX TEMP CONTROL VLV BYPASS

____ SAT

____ UNSAT

INVESTIGATE CCW HIGH RADIATION

(C) STEP 3 (Cont'd): ISOLATE THE IDENTIFIED RCS TO CCW
LEAKAGE SOURCE
(STEP 41 RNO, 3-ONOP-067)

STANDARD:

2. DIRECTIONS WERE GIVEN TO A SNPO TO PERFORM THE
FOLLOWING AT THE NON-REGEN HX
(STEP 41 RNO 41.b, 3-ONOP-067)

A. CLOSE, 3-777, NRHX CCW SUPPLY
* Acknowledge operator action and confirm alignment of NRHX
valve.

B. CLOSE, 3-780, NRHX CCW TEMP CONTROL VLV OUTLET
* Acknowledge operator action and confirm alignment of NRHX
valve.

C. CLOSE, 3-834, NRHX TEMP CONTROL VLV BYPASS
* Acknowledge operator action and confirm alignment of NRHX
valve.

3. DIRECTIONS WERE GIVEN TO A SNPO TO OPEN, 3-777A, NRHX
SHELL SIDE VENT AT THE NON-REGEN HX
(STEP 41 RNO 41.c, 3-ONOP-067)
* Acknowledge operator action and confirm alignment of NRHX
valve.

4. NOTIFIED THE NPS OF THE STATUS OF THE CCW SYSTEM
WHEN NOTIFIED OF ALIGNMENT COMPLETION BY THE SNPO

EXAMINER'S CUES:

Acknowledge operator actions as identified and confirm alignment of
NRHX valves.

TELL THE OPERATOR THAT THE JPM IS COMPLETED.

COMMENTS:

____ SAT

____ UNSAT

INVESTIGATE CCW HIGH RADIATION

STEP 4: ISOLATE OTHER POTENTIAL SOURCES OF LEAKAGE
INTO CCW SYSTEM
(STEPS 45-50, 3-ONOP-067)

STANDARD:

1. CHECKED IF ANY OF THE FOLLOWING CONDITIONS APPLY:

A. UNIT IS ON RHR

* "A" RHR Pump and HX are in service

B. POST ACCIDENT SAMPLE SYSTEM IN SERVICE

* PASS is not in service.

C. RCS SAMPLE HX IN SERVICE

* RCS Sample HX is in service

D. WASTE GAS COMPRESSORS IN SERVICE

* "B" Waste Gas Compressor is in service.

2. TOOK THE FOLLOWING ACTIONS AS APPLICABLE:

A. SWAPPED RHR PP AND HX, THEN DIRECTED
PERSONNEL TO ISOLATE AND DRAIN BOTH SIDES OF THE
AFFECTED RHR HX

B. AFTER ALL REQUIRED SAMPLES HAVE BEEN
COMPLETED, PASS WAS SHUTDOWN AND DIRECTIONS WERE
GIVEN TO THE SNPO TO CLOSE CCW VALVES

C. DIRECTED SNPO TO ISOLATE CCW TO/FROM SAMPLE
COOLER

D. DIRECTED HTE SNPO TO SWAP WASTE GAS
COMPRESSOR, THEN DEENERGIZE THE AFFECTED
COMPRESSOR AND CLOSE CCW VALVES

3. NOTIFIED THE NPS OF CCW SYSTEM CONDITION

COMMENTS:

____ SAT

____ UNSAT

INVESTIGATE CCW HIGH RADIATION	
<p>STEP 4 (Cont'd): ISOLATE OTHER POTENTIAL SOURCES OF LEAKAGE INTO CCW SYSTEM</p> <p>STANDARD:</p> <p>EXAMINER'S CUES: When each check is identified by the operator, give following responses as applicable:</p> <ul style="list-style-type: none"> A. "A" RHR Pump and HX are in service B. PASS is not in service. C. RCS Sample HX is in service D. "B" Waste Gas Compressor is in service. <p>CUE: Acknowledge operator response and tell the operator that the required actions have been completed.</p> <p>TELL THE OPERATOR THAT THE JPM IS COMPLETED.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

INITIATE CONTAINMENT PURGE

0-OP-053

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, state the task to be performed, and will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. While performing the task, explain each step BEFORE simulating the action. To indicate that you have completed your assigned task return the handout sheet I provide you.

THE TASK YOU ARE TO PERFORM IS:

INITIATE CONTAINMENT PURGE

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 5 AND UNIT 4 IS IN MODE 1
2. ALL APPLICABLE PREREQUISITES OF 0-OP-053 ARE SATISFIED
3. CONTAINMENT PURGE RELEASE PERMIT IS APPROVED

INITIATING CUE(S)

1. NPS DIRECTS THE INITIATION OF A CONTAINMENT PURGE

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.

Before starting the task, a pre-job safety tailboard must be conducted and documented on the most current Hazard Assessment Tailboard Checklist sheet (0-ADM-033), PTN Industrial Safety Program procedure.

Failure to follow the PTN safety and radiological work practices will result in failure of this task.

Begin the task now.

JOB PERFORMANCE MEASURE WORKSHEET-SEQ #48A

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: INITIATE CONTAINMENT PURGE

JPM NUMBER:1053002100 JPM TYPE:

JPM REV. DT.:01/17/95 NORMAL PATH

NUCLEAR SAFETY IMPORTANCE:3.00

COMBINED IMPORTANCE:3.00

TIME VALIDATION:25 MINUTES

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

PERFORM: X SIMULATE: X DISCUSS:

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. ISOLATION VALVES OPEN AND PURGE FANS RUNNING IN
ACCORDANCE WITH 0-OP-053, CONTAINMENT PURGE SYSTEM

REQUIRED MATERIALS:

1. 0-OP-053, CONTAINMENT PURGE SYSTEM
2. APPROVED CONTAINMENT PURGE RELEASE PERMIT
3. RCO LOGBOOK

REFERENCES:

1. 0-OP-053, CONTAINMENT PURGE SYSTEM

TERMINATING CUES:

1. ONE SET OF CONTAINMENT PURGE SYSTEM OPERATING DATA HAS BEEN ENTERED IN ATTACHMENT 3, PART B, FOLLOWING THE START OF THE PURGE

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

READ TO THE TRAINEE

THE TASK YOU ARE TO PERFORM IS:

INITIATE CONTAINMENT PURGE

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 5 AND UNIT 4 IS IN MODE 1
2. ALL APPLICABLE PREREQUISITES OF 0-OP-053 ARE SATISFIED
3. CONTAINMENT PURGE RELEASE PERMIT IS APPROVED

INITIATING CUES:

1. NPS DIRECTS THE INITIATION OF A CONTAINMENT PURGE

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.

Before starting the task, a pre-job safety tailboard must be conducted and documented on the most current Hazard Assessment Tailboard Checklist sheet (0-ADM-033), PTN Industrial Safety Program procedure.

Failure to follow the PTN safety and radiological work practices will result in failure of this task.

Begin the task now.

PAGE: 2

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

EVALUATOR'S NOTES:

1. If the task is to be performed on the simulator OR is to be simulated, obtain a copy of Attachment 5, Containment Purge Release Permit, from 0-NCOP-004, Preparation of Gas Release Permits, and fill in as follows:

- I. CCP No.: 3-95-02
Date: Yesterday's Date
Containment Number: 3
Specific Activity: 3.0 E-5
Tritium Activity: 1.5 E-6
R-14 Background: 450
Expected R-14 cpm: 3K
Special Instructions: Terminate release and re-sample if R-14 exceeds 27K
- II. R-14 Alarm Setpoint: 36K
Total Purge Time in
Modes 1 and 2: 50 hours
- III. Signatures Signed

2. If the task is to be performed in the plant, use an actual Containment Purge Release Permit.

() ELEMENT: 1

OBTAIN MATERIALS

STANDARDS:

1. 0-OP-053, CONTAINMENT PURGE SYSTEM, OBTAINED
2. PROCEDURE VERIFIED AGAINST OTSC INDEX
3. APPROVED CONTAINMENT PURGE RELEASE PERMIT OBTAINED
4. RCO LOGBOOK OBTAINED

EVALUATOR'S NOTES:

1. If task is performed on the simulator or simulated, provide the operator with a procedure and a copy of the evaluator-prepared Containment Purge Release Permit.
2. If task is simulated, tell the operator that all steps and expected results shall be described.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

() ELEMENT: 2

OBTAIN PERMISSION TO PURGE CONTAINMENT

STANDARDS:

1. PERMISSION OBTAINED FROM PLANT GENERAL MANAGER IN MODES 1-3 (N/A ALL OTHER MODES)
2. NUCLEAR PLANT SUPERVISOR VERIFICATION POINT SIGNED

EVALUATOR'S NOTES:

CUE: Tell the operator that NPS Verification Point has been signed by the NPS.

(C) ELEMENT: 3

OBTAIN PRE-START DATA

STANDARDS:

1. PART A OF ATTACHMENT 3 OF 0-OP-053 IS COMPLETED

EVALUATOR'S NOTES:

CUE: If simulated, when the operator has identified the need to complete Part A of Attachment 3 and has described where the information is obtained for each item, tell the operator that Part A is completed.

(C) ELEMENT: 4

RESET R-14 TRIP SETPOINT

STANDARDS:

1. R-14 TRIP SETPOINT SET TO LIMIT PROVIDED ON THE CONTAINMENT PURGE RELEASE PERMIT
2. R-14 TRIP SETPOINT RECORDED ON THE QA RECORD PAGE

EVALUATOR'S NOTES:

CUE: If simulated, tell the operator the R-14 trip setpoint is set to that given on the containment purge permit.

PAGE: 4

6

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

(C) ELEMENT: 5

INSTALL PURGE ISOLATION VALVE FUSES

STANDARDS:

1. FUSES INSTALLED FOR THE PURGE ISOLATION VALVES:
 - POV-*-2600, FUSE XEP
 - POV-*-2601, FUSE XLAG
 - POV-*-2602, FUSE XEQ
 - POV-*-2603, FUSE XLAH

EVALUATOR'S NOTES:

CUE: If simulated, tell operator the fuses are installed.

(C) ELEMENT: 6

OPEN CONTAINMENT PURGE EXHAUST ISOLATION VALVES

STANDARDS:

1. POSITIONED PURGE EXHAUST VALVE CONTROL SWITCHES TO OPEN
2. VERIFIED VALVE POSITION INDICATION RED LIGHT ON, GREEN LIGHT OFF

EVALUATOR'S NOTES:

CUE: If simulated, tell the operator that required indications have been obtained.

PAGE: 5

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

(C) ELEMENT: 7

OPEN CONTAINMENT PURGE SUPPLY ISOLATION VALVES

STANDARDS:

1. VERIFIED CONTAINMENT DOORS/HATCHES CLOSED TO ATMOSPHERE
2. VERIFIED ON OPPOSITE UNIT THAT PURGE SUPPLY VALVES
CLOSED OR DOORS/HATCHES CLOSED TO ATMOSPHERE
3. POSITIONED PURGE SUPPLY VALVE CONTROL SWITCHES TO OPEN
4. VERIFIED VALVE POSITION INDICATION RED LIGHTS ARE ON,
GREEN LIGHTS ARE OFF

EVALUATOR'S NOTES:

CUE: If simulated, after the operator has identified the need to verify both containments are closed; tell the operator both containments are closed as required.

CUE: If simulated, after the operator has identified the need to open the purge valves, tell the operator that the required indications have been obtained.

(C) ELEMENT: 8

START CONTAINMENT PURGE EXHAUST FAN

STANDARDS:

1. POSITIONED CONTROL SWITCH TO START
2. VERIFIED FAN STARTS (LIGHT INDICATION)

EVALUATOR'S NOTES:

CUE: If simulated, tell the operator that required indication has been obtained.

PAGE: 6

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

(C) ELEMENT: 9

START CONTAINMENT PURGE SUPPLY FANS

STANDARDS:

1. VERIFIED CONTAINMENT PURGE SUPPLY VALVES OPENED
2. POSITIONED CONTROL SWITCH TO START
3. VERIFIED FAN STARTS (LIGHT INDICATION)

EVALUATOR'S NOTES:

CUE: If simulated, after the operator has verified that the purge valves were opened in the previous step and has identified the need to start the supply fan; tell the operator that required indication has been obtained.

(C) ELEMENT: 10

VERIFY THE ALIGNMENT

STANDARDS:

1. VERIFIED PURGE SUPPLY FAN IS ON (IF FAN WAS STARTED)
2. VERIFIED PURGE EXHAUST FAN IS ON
3. VERIFIED SUPPLY DAMPER IS OPEN (IF FAN WAS STARTED)
4. VERIFIED PURGE EXHAUST DAMPER IS OPEN
5. VERIFIED PURGE EXHAUST VALVES ARE OPEN
6. VERIFIED PURGE SUPPLY VALVES ARE OPEN (IF FAN WAS STARTED)

EVALUATOR'S NOTES:

CUE: If simulated, tell the operator that required indications have been obtained.

PAGE: 7

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1053002100/SEQ #48A

() ELEMENT: 11

TAKE READINGS

STANDARDS:

1. READINGS TAKEN AT SPECIFIED TIME INTERVAL
2. PART B OF ATTACHMENT 3 FILLED OUT FOR SPECIFIED TIME INTERVAL

EVALUATOR'S NOTES:

CUE: If simulated, tell the operator to discuss required readings.

() ELEMENT: 12

CONTINUE PURGE UNTIL NOTIFIED BY NPS TO STOP

STANDARDS:

1. FREQUENTLY MONITORED R-11, R-12, AND R-14

EVALUATOR'S NOTES:

CUE: Tell the operator that the task is complete.

EVALUATOR:

If any elements were NOT performed to standard, the evaluator should review those elements with the student while emphasizing procedural verbatim compliance requirements. The review should be documented in the comments section of the verification sign-off sheet.

VERIFICATION OF SATISFACTORY COMPLETION-JPM SEQ #48A

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

RESPOND TO FAILURE OF POWER RANGE N-43

3-ONOP-059.8

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, state the task to be performed, and will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. While performing the task, explain each step BEFORE simulating the action. To indicate that you have completed your assigned task return the handout sheet I provide you.

THE TASK YOU ARE TO PERFORM IS:

RESPOND TO LOSS OF POWER RANGE INSTRUMENTATION CHANNEL

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

INITIAL CONDITIONS:

1. UNIT IS AT 100% POWER
2. ROD CONTROL SYSTEM SELECTED TO AUTOMATIC ROD CONTROL
3. NO PROTECTIVE ACTION BISTABLES ARE IN THE TRIPPED POSITION

INITIATING CUE(S)

RECEIVED ANNUNCIATOR ALARMS INDICATING NIS POWER RANGE CHANNEL FAILURE - ANNUNCIATOR B 6/4 NIS POWER RANGE CHANNEL DEVIATION

JOB PERFORMANCE MEASURE WORKSHEET-SEQ #74A

JOB CLASSIFICATION: RCO

JPM TITLE: RESPOND TO LOSS OF POWER RANGE INSTRUMENTATION
CHANNEL

JPM NUMBER: 1059026300 JPM TYPE:

JPM REV. DT.: 12/19/96 NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 2.50

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

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

PERFORM: _____ SIMULATE: X DISCUSS: X

INSTRUCTOR'S INFORMATION

TASK STANDARDS:

1. PLANT CONDITIONS STABILIZED
2. FAILED CHANNEL REMOVED FROM SERVICE

REQUIRED MATERIALS:

3/4-ONOP-059.8

REFERENCES:

1. 3-ONOP-059.8, POWER RANGE NIS MALFUNCTION
2. 4-ONOP-059.8, POWER RANGE NIS MALFUNCTION

TERMINATING CUES:

FAILED CHANNEL IS REMOVED FROM SERVICE

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1059026300/SEQ #74A

READ TO THE TRAINEE

THE TASK YOU ARE TO PERFORM IS:

RESPOND TO LOSS OF POWER RANGE INSTRUMENTATION CHANNEL

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

INITIAL CONDITIONS:

1. UNIT IS AT 100% POWER
2. ROD CONTROL SYSTEM SELECTED TO AUTOMATIC ROD CONTROL
3. NO PROTECTIVE ACTION BISTABLES ARE IN THE TRIPPED POSITION

INITIATING CUES:

RECEIVED ANNUNCIATOR ALARMS INDICATING NIS POWER RANGE CHANNEL FAILURE - ANNUNCIATOR B 6/4 NIS POWER RANGE CHANNEL DEVIATION

JOB PERFORMANCE MEASURE WORKSHEET-JPM #1059026300/SEQ #74A

(C) ELEMENT: 1

EVALUATE SYSTEM STATUS

STANDARDS:

1. FAILED CHANNEL IDENTIFIED
2. ROD CONTROL SELECTOR SWITCH POSITIONED/VERIFIED IN MANUAL (IF N-44 FAILURE)

EVALUATOR'S NOTES:

CUE: Tell operator that the lower detector on N-44 has failed low.

NOTE: Element 1 is an immediate action.

() ELEMENT: 2

OBTAIN REQUIRED OFF-NORMAL OPERATING PROCEDURE

STANDARDS:

3/4-ONOP-059.8 OBTAINED

EVALUATOR'S NOTES:

NOTE: When student identifies procedure it is permissible to provide a copy.

(C) ELEMENT: 3

REMOVE FAILED CHANNEL FROM SERVICE

STANDARDS:

1. "DROPPED ROD MODE SWITCH" FOR THE FAILED CHANNEL PLACED IN THE BYPASS POSITION
2. "ROD STOP BYPASS SWITCH" FOR THE FAILED CHANNEL PLACED IN THE BYPASS POSITION
3. "UPPER SECTION COMPARATOR DEFEAT SWITCH" POSITIONED TO THE FAILED CHANNEL POSITION
4. "LOWER SECTION COMPARATOR DEFEAT SWITCH" POSITIONED TO FAILED CHANNEL POSITION
5. "POWER MISMATCH BYPASS SWITCH" POSITIONED TO THE BYPASS POSITION FOR THE FAILED CHANNEL
6. "COMPARATOR CHANNEL DEFEAT SWITCH" POSITIONED TO THE FAILED CHANNEL
7. INSTRUMENT POWER FUSES REMOVED FROM THE AFFECTED CHANNELS 'B' DRAWER WITHIN SIX HOURS

EVALUATOR'S NOTES:

CUE: Confirm each switch positions as operator proceeds.

() ELEMENT: 4

NOTIFY I&C

STANDARDS:

I&C DEPARTMENT NOTIFIED OF FAILURE

EVALUATOR'S NOTES:

CUE: Acknowledge notification as I&C representative.

() ELEMENT: 5

PERFORM QPTR

STANDARDS:

1. PERFORMED IF POWER >75%
2. PERFORMED AT LEAST ONCE PER 8 HOURS

EVALUATOR'S NOTES:

CUE: Tell operator that QPTR will be performed by reactor engineering.

() ELEMENT: 6

COMPLETE THE ADMINISTRATIVE REQUIREMENTS

STANDARDS:

LOG ENTRIES MADE

EVALUATOR'S NOTES:

CUE: Inform operator that JPM has been completed.

EVALUATOR:

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

PERFORM A DROPPED ROD RECOVERY

3-ONOP-028.3

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, and state the task to be performed, the simulator will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 Reactor Operator.

1. A DROPPED ROD HAS OCCURRED ON THE UNIT WHILE AT 100% POWER
2. LOAD HAS BEEN REDUCED TO 70% POWER IAW TECHNICAL SPECIFICATION 3.1.3.1.c.3.a
3. THE REASON FOR THE DROPPED ROD HAS BEEN IDENTIFIED AND CORRECTED/REPAIRED
4. THE NPS HAS AUTHORIZED RETRIEVAL OF THE AFFECTED CONTROL ROD
5. THE ROD MOTION CONTROL SELECTOR SWITCH IS IN THE MANUAL POSITION

INITIATING CUES:

DIRECTED BY NPS TO PERFORM DROPPED ROD RECOVERY ATTACHMENT OF 3-ONOP-028.3

PERFORM A DROPPED ROD RECOVERY	
<p><u>STEP 1:</u> OBTAIN 3-ONOP-028.3 DROPPED ROD RECOVERY ATTACHMENT</p> <p><u>STANDARD:</u></p> <p>6. 3-ONOP-028.3 ATTACHMENT OBTAINED</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 2:</u> POSITION ROD MOTION CONTROL SELECTOR SWITCH TO THE RCC BANK WITH THE DROPPED RCC</p> <p><u>STANDARD:</u></p> <p>1. THE ROD MOTION CONTROL SELECTOR SWITCH WAS POSITIONED TO THE APPLICABLE ROD BANK</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 3:</u> ALIGN RCC LIFT COIL DISCONNECT SWITCHES FOR THE AFFECTED ROD BANK</p> <p><u>STANDARD:</u></p> <p>1. THE APPROPRIATE KEY FOR THE LIFT COIL DISCONNECT BOX WAS OBTAINED</p> <p>2. THE LIFT COIL DISCONNECT SWITCHES WERE PLACED TO THE "DISCONNECT" POSITION ON ALL AFFECTED BANK RCCs, EXCEPT FOR THE DROPPED RCC</p> <p>3. COIL DISCONNECT SWITCH VERIFIED OR PLACED TO THE "CONNECT" POSITION FOR THE DROPPED RCC</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

PERFORM A DROPPED ROD RECOVERY	
<p><u>STEP 4:</u> RECORD APPLICABLE PRE-RETRIEVAL RCC INFORMATION</p> <p><u>STANDARD:</u></p> <p>4. THE FOLLOWING INFORMATION ASSOCIATED WITH THE RCC IN THE RCO LOG BOOK WAS RECORDED:</p> <p>A. BANK</p> <p>B. GROUP</p> <p>C. POSITION (STEPS) AS INDICATED BY RCC GROUP DEMAND STEP COUNTER</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 5:</u> RESET APPLICABLE GROUP DEMAND STEP COUNTER AND PULSE ANALOG CONVERTER</p> <p><u>STANDARD:</u></p> <p>1. THE ASSOCIATED GROUP DEMAND COUNTER WAS MANUALLY SET TO ZERO</p> <p>2. THE PULSE ANALOG CONVERTER WAS RESET AS FOLLOWS:</p> <p>A. THE BANK POSITION DISPLAY SWITCH PLACED TO THE DROPPED RCC BANK</p> <p>B. THE AUTOMATIC/MANUAL SWITCH POSITIONED AND HELD TO "MANUAL"</p> <p>C. THE DOWN SWITCH PULSED TO OBTAIN A READING OF ZERO</p> <p>D. THE AUTOMATIC/MANUAL SWITCH WAS RELEASED TO THE "AUTOMATIC" POSITION</p> <p>E. THE BANK POSITION DISPLAY SWITCH WAS PLACED TO "OFF"</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

PERFORM A DROPPED ROD RECOVERY**(C) STEP 6: WITHDRAW THE DROPPED ROD****STANDARD:**

3. THE AFFECTED ROD WAS WITHDRAWN AT THE RATE DETERMINED BY THE REACTOR SUPERVISOR
4. BORATION WAS INITIATED AS NECESSARY TO MAINTAIN TAVG WITHIN 3 DEG F OF TREF
5. UNIT LOAD WAS ADJUSTED AS REQUIRED TO MAINTAIN REQUIRED POWER LEVEL (70%)
6. AFFECTED ROD WAS CONTINUED TO BE WITHDRAWN UNTIL IT WAS AT THE POSITION RECORDED FOR ITS BANK

COMMENTS:

NOTE: For the purpose of this JPM, inform the operator that the retrieval rate is to be the maximum rate the rod can be withdrawn, while maintaining system parameters within limits.

____ SAT

____ UNSAT

PERFORM A DROPPED ROD RECOVERY**(C) STEP 7:** RESTORE ROD CONTROL SYSTEM TO NORMAL**STANDARD:**

1. THE LIFT COIL DISCONNECT SWITCHES FOR THE AFFECTED CONTROL ROD BANK RETURNED TO THE "CONNECT" POSITION
2. THE ROD CONTROL ALARM RESET WAS DEPRESSED
3. THE FOLLOWING CONDITIONS WERE VERIFIED:
 - A. ANNUNCIATOR B-9/4, "ROD MOTION CONTROL SYSTEM URGENT FAILURE" IS CLEAR
 - B. THE RCC POWER CABINET "URGENT FAILURE" LIGHT IS OFF
4. IF APPLICABLE, RESET "DROPPED ROD ROD STOP" LIGHT ON AFFECTED NIS POWER RANGE DRAWERS BY PLACING THE DROPPED ROD MODE SWITCH TO THE RESET POSITION, THEN RETURNING IT TO NORMAL
5. THE ROD CONTROL SELECTOR SWITCH WAS PLACED TO (MANUAL OR AUTOMATIC) POSITION

COMMENTS:

____ SAT

____ UNSAT

PERFORM A DROPPED ROD RECOVERY	
<p>STEP 8: ENSURE FLUX DISTRIBUTION IS NORMAL</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. 3-OSP-059.10 WAS OBTAINED 2. "DETERMINATION OF QUADRANT POWER TILT RATIO" SURVEILLANCE WAS PERFORMED 3. THE REACTOR ENGINEERING SUPERVISOR VERIFIED THAT NO SIGNIFICANT AXIAL POWER SHAPE DIFFERENCE EXIST 4. AXIAL FLUX INDICATORS WERE VERIFIED TO INDICATE LESS THAN 3 PERCENT DIFFERENCE BETWEEN ANY TWO CHANNELS <p><u>COMMENTS:</u></p> <p>After the operator has identified the need to perform 3-OSP-059.10, verification of axial power shape difference, and axial flux difference less than 3%, inform the operator that the JPM is completed.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

Respond to Loss of RHR Flow

IAW 3-ONOP-050

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, and state the task to be performed, the simulator will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 Reactor Operator.

1. RCS IN MODE4 (RCS TEMP APPROX. 310 DEGREES F AND RCS PRESSURE APPROX. 350 PSIG).
2. UNIT ON RHR COOLING WITH 3A RHR PUMP IN OPERATION AND 3B RHR PUMP IN STANDBY.
3. STANDBY SG FEED PUMP IS SUPPLYING THE SG'S
4. NO REQUIRED EQUIPMENT IS LISTED IN THE EOOS LOG

INITIATING CUES:

RESPOND TO PLANT CONDITIONS

RESPOND TO LOSS OF RHR

STEP 1: ACKNOWLEDGES ANNUNCIATOR, H 6/2 - "RHR HX HI/LO FLOW" AND VERIFIES ALARM BY CHECKING THE FOLLOWING:

** Annunciator comes in due to the operating RHR pump, 3A, shaft shear.*

_____ SAT

_____ UNSAT

STANDARD:

1. RHR flow indication on FI-3-605

** Flow will be dropping off to no flow value.*

2. Demand positions of HCV-3-758 and FCV-3-605

** Demand position unchanged from initial value.*

3. Position indicating lights for MOV-3-750/751 and MOV-3-744A/B for intermediate indication.

** MOV-3-750/751 RHR inlet from RCS remain open*

** MOV-3-744A/B RHR discharge to RCS cold legs remain open*

4. RHR pump motor ammeter for oscillating amps

** RHR pump amps may drop slightly due to less power being drawn by the pump with the shaft shear.*

COMMENTS:

NOTE: Operator may obtain the ARP for annunciator H6/2 prior to obtaining / performing immediate actions of procedure 3-ONOP-050.

RESPOND TO LOSS OF RHR	
<p>STEP 2: DIRECT SNPO TO LOCALLY MONITOR PUMPS [STEP 1 OF 3-ONOP-050]</p> <p><i>* Immediate action step for 3-ONOP-050, LOSS OF RHR.</i></p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. SNPO DIRECTED TO STAND BY THE RHR PUMPS <i>* SNPO will be directed to monitor the pump locally and to stay near the RHR pump until normal RHR flow is restored.</i> 2. COMMUNICATIONS WERE ESTABLISHED <p><u>COMMENTS:</u></p> <p>PERFORMED WITHOUT REFERENCE TO PROCEDURE</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 3: DIRECT STA TO MONITOR HEATUP RATE [STEP 2 OF 3-ONOP-050]</p> <p><i>Immediate action step for 3-ONOP-050, LOSS OF RHR.</i></p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. STA DIRECTED TO MONITOR HEATUP RATE <i>* Plot core exit temperature every minute for 5 minutes to calculate HUR. * Determines time to saturation and reports to the RCO * This step repeated every 15 minutes until cooling is restored.</i> <p><u>COMMENTS:</u></p> <p>PERFORMED WITHOUT REFERENCE TO PROCEDURE</p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p><u>STEP 4:</u> CHECK MOV-750/751 OPEN [STEP 3 OF 3-ONOP-050]</p> <ul style="list-style-type: none"> Immediate action step for 3-ONOP-050, LOSS OF RHR. <p><u>STANDARD:</u></p> <p>1. MOV-750/751 VERIFIED OPEN</p> <p>* MOV-3-750/751 are the RHR inlet from RCS and will remain open, this may have already been done if the ARP was obtained in step 1.</p> <p><u>COMMENTS:</u></p> <p>PERFORMED WITHOUT REFERENCE TO PROCEDURE</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 5:</u> OBTAIN 3-ONOP-050</p> <p><u>STANDARD:</u></p> <p>1. PROCEDURE OBTAINED</p> <p>2. STEPS 1 THROUGH 3 HAVE BEEN VERIFIED</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p><u>STEP 6:</u> VERIFY MOV-744A/744B OPEN [STEP 4 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. MOV-744A/744B VERIFIED OPEN</p> <p> * MOV-3-744A/B are the RHR discharge to RCS cold legs and they remain open.</p> <p><u>COMMENTS:</u></p> <p>This may have already been done if the ARP was obtained in step 1.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>(C) STEP 7:</u> CHECK RHR PUMPS RUNNING [STEP 5 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. AT LEAST ONE RHR PUMP VERIFIED TO BE OPERATIONAL</p> <p> * RHR pump 3A may still be running as indicated by the red light with low amps, at this point the applicant should secure the operating RHR pump.</p> <p> * If the applicant secured the pump already, the green light indication and zero amps will be indicated for both RHR pumps.</p> <p> * At this step in the procedure, the required condition is to have NO RHR pumps running and the applicant transitions to the RNO column of step 5 of 3-ONOP-050.</p> <p><u>COMMENTS:</u></p> <p>NOTE: If the applicant had not previously stopped the 3A RHR pump, it is a critical standard that the pump be stopped at this time. If the pump was stopped earlier, this element is not critical.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p><u>(C) STEP 8: CLOSE HCV-758</u> [STEP 5,RNO a, OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. HCV-758 CLOSED</p> <p><i>* HCV-758 is the combined RHR Heat exchanger Outlet Flow valve. This valve must be manually closed by adjusting its potentiometer until the controller demand is zero.</i></p> <p><u>COMMENTS:</u></p> <p>NOTE: Have booth operator report back as the SNPO to notify the RCO that the 3A RHR pump has a sheared shaft.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 9: CLOSE FCV-605</u> [STEP 5,RNO b, OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. FCV-605 CLOSED</p> <p><i>* FCV-605 is the combined RHR Heat Exchanger Bypass Flow valve.</i></p> <p><i>* This valve must be manually closed by adjusting its potentiometer until the controller demand is zero OR by placing its controller in manual and forcing closed with the down arrow pushbutton.</i></p> <p><u>COMMENTS:</u></p> <p>NOTE: [STEP 5,RNO c, OF 3-ONOP-050, Verify MOV-750 and MOV-751 are open, has previously been verified open. There is no change in their condition.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR

(C) STEP 10: START AN RHR PUMP

[STEP 5, RNO d & e, OF 3-ONOP-050]

____ SAT

STANDARD:

1. RESTART OF PREVIOUSLY OPERATING PUMP WAS NOT ATTEMPTED

____ UNSAT

** The applicant should not attempt to start the 3A RHR pump.*

2. STANDBY RHR PUMP STARTED

** The standby RHR pump 3B will start.*

COMMENTS:

NOTE: The Previously operating pump will not start.

NOTE: Standard 1 is not critical to this element.

RESPOND TO LOSS OF RHR

(C) STEP 11: RETURN FCV-605 TO AUTO AT THE DESIRED FLOW
[STEP 5,RNO g, OF 3-ONOP-050]

____ SAT

STANDARD:

1. FCV-605 RETURNED TO AUTOMATIC OPERATION AT THE DESIRED FLOW

____ UNSAT

** Minimum acceptable flow is 3000 GPM to clear annunciator H 6/2.*

** Desired flow is between 3500 and 3700 GPM.*

** If FCV-605 potentiometer setting was not changed in step 9, depressing the AUTO pushbutton on FC-605 will automatically return flow to the pre-event value.*

** If FCV-605 potentiometer setting was changed in step 9, the applicant will have to adjust the potentiometer setting to obtain the desired flow.*

COMMENTS:

NOTE: Desired flow, as determined by 3-OP-050, is between 3500 and 3700 gpm.

(C) STEP 12: OPEN HCV-758 AS NECESSARY TO CONTROL RCS TEMPERATURE
[STEP 5,RNO h, OF 3-ONOP-050]

____ SAT

STANDARD:

1. HCV-758 ADJUSTED TO CONTROL RCS TEMPERATURE

____ UNSAT

COMMENTS:

NOTE: This step is only critical if RCS temperatures are increasing. If necessary, the applicant will adjust the HCV-758 potentiometer while monitoring RCS loop temperature to stabilize RCS temperature.

RESPOND TO LOSS OF RHR

STEP 13: VERIFY RHR PUMP NOT CAVITATING.
 [STEP 6 OF 3-ONOP-050]

** There will be no evidence of cavitation.*

STANDARD:

1. RUNNING RHR PUMP AMPS - STABLE
2. RHR FLOW - STABLE
3. RHR PUMP NOISE LEVEL - NORMAL

COMMENTS:

BOOTH OPERATOR-AS SNPO:

CUE: Report back that the operating pump sounds normal.

NOTE: At this point when the booth operator reports the RHR pump operating fine, valve FCV-605 will slowly start to shut while in auto. The valve will close to a position that will allow a maximum of 2800 GPM, this is below the low flow annunciator H-6/2 setpoint (3000 GPM).

_____ SAT

_____ UNSAT

RESPOND TO LOSS OF RHR	
<p><u>(C) STEP 14: VERIFY AUTOMATIC RHR FLOW CONTROL OPERATION</u> [STEP 7 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. FCV-605 NOT MAINTAINING DESIRED FLOW IN AUTOMATIC</p> <p><i>* Due to the failure of the auto control function of FCV-605, the applicant will transition to RNO column of step 7 of 3-ONOP-050.</i></p> <p>2. APPLICANT GOES TO STEP 8</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 15: MANUALLY CONTROL FCV-605 THEN GOTO STEP 10 OF 3-ONOP-050.</u> [STEP 8 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>3. FCV-605 TAKEN TO MANUAL</p> <p><i>* Applicant will take the FCV-605 controller to manual and manually adjust the signal to control flow between 3500 and 3700 GPM.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p>STEP 16: NOTIFIES APPROPRIATE PERSONNEL TO CORRECT FAILURE OF RHR FLOW CONTROL [STEP 10 OF 3-ONOP-050]</p> <p>STANDARD:</p> <p>4. NOTIFIES APPROPRIATE PERSONNEL</p> <p><i>* Applicant will contact I&C to report the problem with FCV-605.</i></p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 17: VERIFY RHR PUMP NOT CAVITATING. AND GO TO STEP 14 OF 3-ONOP-050. [STEP 11 OF 3-ONOP-050]</p> <p><i>* There will be no evidence of cavitation.</i></p> <p>STANDARD:</p> <p>1. RUNNING RHR PUMP AMPS - STABLE</p> <p>2. RHR FLOW - STABLE</p> <p>3. RHR PUMP NOISE LEVEL - NORMAL</p> <p>4. APPLICANT GOES TO STEP 14 OF 3-ONOP-050</p> <p>COMMENTS:</p> <p>BOOTH OPERATOR-AS SNPO: CUE: Report back that the operating pump sounds normal.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p><u>(C) STEP 18: ESTABLISH RHR FLOW.</u> [STEP 14 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. APPLICANT TRANSITIONS TO STEP 15 OF 3-ONOP-050.</p> <p><i>* Step 14.a states to check RHR pumps - ALL STOPPED. This transitions the applicant to the RNO which directs the applicant to step 15 of 3-ONOP-050.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 19: INCREASE RHR FLOW.</u> [STEP 15 OF 3-ONOP-050]</p> <p><u>STANDARD:</u></p> <p>1. ADJUST FCV-605 TO GET RHR FLOW ABOVE 3000 GPM</p> <p><i>* Applicant will verify the FCV-605 controller is manually adjust so that the signal is controlling flow between 3500 and 3700 GPM, again verify no pump cavitation, and go to step 18 on 3-ONOP-050</i></p> <p>2. VERIFY RHR PUMP NOT CAVITATING</p> <p>3. GOTO STEP 18 OF 3-ONOP-050</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF RHR	
<p><u>STEP 20:</u> MAINTAIN STABLE PLANT CONDITIONS <i>[STEP 18 OF 3-ONOP-050]</i></p> <p><u>STANDARD:</u></p> <p>4. RCS TEMPERATURE VERIFIED TO BE STABLE OR DECREASING</p> <p>5. Tavg MAINTAINED AT DESIRED TEMPERATURE</p> <p><u>COMMENTS:</u></p> <p>Tell applicant that the JPM is completed.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

RESPOND TO LOW PRESSURIZER PRESSURE

3-ONOP-041.5

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, and state the task to be performed, the simulator will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 Reactor Operator.

UNIT 3 is performing a startup per 3-GOP-301, HOT STANDBY TO POWER OPERATION, and is currently in MODE 1 at 30% reactor power waiting for the Chemistry Lab to verify the Steam Generators are within the limits specified by 0-ADM-208, SECONDARY PLANT CHEMISTRY CONTROL AND LIMITS.

INITIATING CUES:

RESPOND TO PLANT CONDITIONS

RESPOND TO LOW PRESSURIZER PRESSURE

INITIATING CUES: OBSERVATION OF ANY OF THE FOLLOWING SYMPTOMS:

- Annunciator A-9/2: PZR CONTROL HI/LO PRESS
- Annunciator A-9/5: PZR PRESSURE CONTROLLER HI OUTPUT
- INDICATED PRESSURIZER PRESSURE < 2235 psig
- PI-444 NOT IN AGREEMENT WITH OTHER RCS PRESSURE INSTRUMENTATION

____ SAT

____ UNSAT

TASK STANDARDS:

1. ACTIONS TO STABILIZE PZR PRESSURE PERFORMED FOR THE FAILED PRESSURE TRANSMITTER (PT-444) PER 3-ONOP-041.5.
2. WHEN PRESSURE REDUCTION CAN NOT BE CONTROLLED, REQUIRED ACTIONS OF 3-ONOP-041.5 SHALL BE PERFORMED.

COMMENTS:

1. TERMINATING CUE IS RCO IMMEDIATE ACTION STEPS OF E-O COMPLETE

RESPOND TO LOW PRESSURIZER PRESSURE

STEP 1: CHECK PZR PRESSURE CONTROL INSTRUMENT
LOOP NOT FAILED
(IMMEDIATE ACTION STEP 1 OF 3-ONOP-041.5.)

STANDARD:

1. COMPARE PT-3-444 WITH ADJACENT PRESSURE CHANNELS AND KNOWN PLANT PARAMETERS AND DETERMINE THAT PT-3-444 HAS FAILED HIGH.

** Applicant is now in the RNO for step 1 of 3-ONOP-041.5*

EXAMINER'S CUES:

COMMENTS:

APPLICANT SHOULD PERFORM THIS FROM MEMORY

____ SAT

____ UNSAT

RESPOND TO LOW PRESSURIZER PRESSURE

**(C) STEP 2: TAKE REQUIRED ACTIONS TO STABILIZE
PRESSURE TRANSIENT**

(IMMEDIATE ACTION STEP 1 OF 3-ONOP-041.5.)

STANDARD:

1. CLOSED PCV-3-455C OR MOV-3-536

** Step 1.a RNO a(1). PORV PCV-3-455C opened due to the failed controller and can be shut by taking manual control of PC-3-444B or the block valve MOV-3-536 can be shut.*

2. TOOK MANUAL CONTROL OF PC-3-444J AND DROVE
CONTROLLER DEMAND DOWN

** Step 1.a RNO a(2). PC-3-444J is the Main Pressurizer Pressure Control. When the applicant drives down the controller PC-444H will follow it to close spray valve PCV-455B. PC-444G will not follow and stays at 100% output therefore, spray valve PCV-455A will remain open.*

EXAMINER'S CUES:

COMMENTS:

Spray valve PCV-3-455A sticks open and Pressurizer heaters do not energize although they indicate energized.

APPLICANT SHOULD PERFORM THIS FROM MEMORY

____ SAT

____ UNSAT

RESPOND TO LOW PRESSURIZER PRESSURE	
<p>(C) STEP 3: TAKE MANUAL CONTROL OF SPRAY VALVE (IMMEDIATE ACTION STEP 1 OF 3-ONOP-041.5.)</p> <p><u>STANDARD:</u></p> <p>1. RECOGNIZED PZR SPRAY VALVE CONTROLLER (PC-444G) DID NOT RESPOND AND TAKES MANUAL CONTROL OF THE PZR SPRAY VALVE (PCV-455A) AND ATTEMPTED TO CLOSE</p> <p><i>* Step 1.a RNO a(3). Spray valve PCV-455A will not close.</i></p> <p>EXAMINER'S CUES:</p> <p><u>COMMENTS:</u></p> <p>APPLICANT SHOULD PERFORM THIS FROM MEMORY</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 4: CHECK BOTH PORVS CLOSED (IMMEDIATE ACTION STEP 2 OF 3-ONOP-041.5.)</p> <p><u>STANDARD:</u></p> <p>1. OBSERVED GREEN LIGHT INDICATION FOR PORV PCV-3-455C AND PORV PCV-3-456 ON THE CONSOLE</p> <p><i>Both PORVs will display green light indication. PORV PCV-3-455C will indicate shut provided the applicant has driven down the PC-3-444J Main Pressurizer Pressure Control or took manual control of the PORV and shut it.</i></p> <p>EXAMINER'S CUES:</p> <p><u>COMMENTS:</u></p> <p>APPLICANT SHOULD PERFORM THIS FROM MEMORY</p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOW PRESSURIZER PRESSURE	
<p>STEP 5: CHECK PZR SPRAY VALVES CLOSED (IMMEDIATE ACTION STEP 3 OF 3-ONOP-041.5.)</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> OBSERVED PRESSURIZER PRESSURE IS STILL DECREASING DUE TO PRESSURIZER SPRAY VALVE PCV-3-455A OPEN PLACED PRESSURIZER SPRAY VALVE PCV-3-455A CONTROLLER IN MANUAL AND ATTEMPTED TO CLOSE VERIFIED PRESSURIZER SPRAY VALVE PCV-455B AND AUX SPRAY VALVE CV-3-311 CLOSED <p>EXAMINER'S CUES:</p> <p>The applicant may have already attempted to close spray valves while performing step 1 RNO. It does not matter if the action to close PCV-3-455A is done during step 1 or step 3.</p> <p><u>COMMENTS:</u></p> <p>APPLICANT SHOULD PERFORM THIS FROM MEMORY</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: OBTAIN PROCEDURE</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> OBTAIN COPY OF 3-ONOP-041.5, PRESSURIZER PRESSURE CONTROL MALFUNCTION <p>EXAMINER'S CUES:</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOW PRESSURIZER PRESSURE

STEP 7: CHECK PRESSURIZER SAFETY VALVES CLOSED
(STEP 4 OF 3-ONOP-041.5.)

STANDARD:

1. CHECKED PRESSURIZER PORV/SAFETY ACOUSTIC MONITOR LEDS NOT LIT

** Step 4.a of 3-ONOP-041.5. Lights will be off.*

2. CHECKED PRESSURIZER SAFETY LINE TEMPERATURES AT OR NEAR NORMAL

** Step 4.b of 3-ONOP-41.5. PZR safety line temperature will be near normal.*

EXAMINER'S CUES:

COMMENTS:

____ SAT

____ UNSAT

RESPOND TO LOW PRESSURIZER PRESSURE

STEP 8: EVALUATE PRESSURIZER PRESSURE
(STEPS 5 & 6 OF 3-ONOP-041.5.)

STANDARD:

1. DETERMINE IF PRESSURIZER PRESSURE WAS ABOVE, BELOW OR AT NORMAL PRESSURE AND IF IT WAS INCREASING OR DECREASING OR STABLE

** PZR pressure will be decreasing.*

2. BASED ON DECREASING PRESSURIZER PRESSURE, TRANSITION TO STEP 10 OF 3-ONOP-041.5

** Step 6 RNO is to go to step 10.*

3. AT STEP 10, RECONFIRM PRESSURIZER PRESSURE WAS DECREASING.

EXAMINER'S CUES:

COMMENTS:

____ SAT

____ UNSAT

RESPOND TO LOW PRESSURIZER PRESSURE

(C) STEP 9: MAINTAIN PRESSURIZER PRESSURE GREATER THAN 2000 PSIG
(STEP 11 OF 3-ONOP-041.5.)

_____ SAT

STANDARD:

1. CHECK PRESSURIZER PRESSURE GREATER THAN 2000 PSIG AND MAINTAIN PRESSURIZER PRESSURE ABOVE 2000 PSIG

_____ UNSAT

** Pressurizer pressure will be decreasing out of control going below 2000 psig. Step 11 RNO a, states to "Restore pressure to greater than 2000 psig".*

EXAMINER'S CUES:

COMMENTS:

Step 11 RNO b. states that if pressure can NOT be maintained greater than 2000 psig then:

- 1) Continue efforts to restore pressure and
- 2) Trip the reactor and turbine and go to E-0.

Applicant should not continue in 3-ONOP-041.5 and end up securing C RCP per step 19.c.

RESPOND TO LOW PRESSURIZER PRESSURE	
<p><u>(C) STEP 10: REACTOR IS TRIPPED AND E-0 ENTERED</u> (STEP 11 RNO b. OF 3-ONOP-041.5.)</p> <p><u>STANDARD:</u></p> <p>1. REACTOR AND TURBINE TRIPPED AND TRANSITION TO E-0, REACTOR TRIP OR SAFETY INJECTION.</p> <p><i>* Applicant should recognize the pressure is not recoverable prior to going below 2000 psig.</i></p> <p>EXAMINER'S CUES:</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 11: E-0 IMMEDIATE ACTIONS</u> (STEPS 1-4 OF 3-EOP-E-0)</p> <p><u>STANDARD:</u></p> <p>1. VERIFY REACTOR TRIPPED</p> <p>2. VERIFY TURBINE TRIPPED</p> <p>3. VERIFY POWER TO EMERGENCY 4KV BUSES</p> <p>4. CHECK IF SI IS ACTUATED</p> <p>EXAMINER'S CUES:</p> <p><u>COMMENTS:</u></p> <p>TELL APPLICANT THAT THE JPM IS COMPLETE</p>	<p>____ SAT</p> <p>____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)

3-GOP-301

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, and state the task to be performed, the simulator will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 Reactor Operator.

1. UNIT IN MODE 2
2. ALL PREREQUISITES ARE COMPLETE
3. TURBINE SPEED AT 1800 RPM
4. TURBINE TRIP TEST HAS BEEN COMPLETED WITHIN SURVEILLANCE INTERVAL
5. STEP 5.52.2 OF 3-GOP-301 IS COMPLETE
6. AUTHORIZATION FROM THE NPS TO DO A MANUAL SYNC

INITIATING CUES:

DIRECTED TO SYNCHRONIZE THE MAIN GENERATOR TO THE LINE MANUALLY IAW
3-GOP-301

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)	
<p><u>STEP 1:</u> VERIFY OPERATION OF MAIN EXCITER DC REGULATOR (STEP 5.52.3 OF 3-GOP-301)</p> <p><u>STANDARD:</u></p> <p>1. VERIFIED MAIN EXCITER DC REGULATOR CONTROL IS IN FULL LOWER POSITION (4-8%)</p> <p> <i>* The DC regulator control will be in the full lower position.</i></p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>(C) STEP 2:</u> CLOSE EXCITER FIELD BREAKER * (STEP 5.52.4 OF 3-GOP-301)</p> <p><u>STANDARD:</u></p> <p>1. CLOSED EXCITER FIELD BREAKER</p> <p>2. VERIFIED EXCITER FIELD AMMETER AT 60-70 AMPS</p> <p><u>COMMENTS:</u></p> <p>NOTE: Standard 2 not critical</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> VERIFIED GENERATOR VOLTAGE READINGS * (STEP 5.52.5 OF 3-GOP-301)</p> <p><u>STANDARD:</u></p> <p>1. GENERATOR VOLTAGE READINGS ARE 13-17 KV</p> <p> <i>* Generator voltage readings will be in the range of 13KV to 17KV.</i></p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)

(C) STEP 4: INCREASE GENERATOR VOLTAGE
(STEP 5.52.6 OF 3-GOP-301)

STANDARD:

1. INCREASED GENERATOR VOLTAGE WITH DC REGULATOR
2. VERIFIED EXCITER FIELD AMMETER RESPONSE
3. VERIFIED GENERATOR VOLTMETERS INDICATE EQUAL VALUES
4. CONTINUED RAISING VOLTAGE TO BETWEEN 21.5 AND 22.5 KV
5. VERIFIED EXCITER FIELD AMPS 100-120

COMMENTS:

NOTE: Standards 2,3 and 5 are not critical

____ SAT

____ UNSAT

(C) STEP5: PLACED VOLTAGE REGULATOR CONTROL SWITCH
IN TEST
(STEP 5.52.8 OF 3-GOP-301)

STANDARD:

1. PLACED VOLTAGE REGULATOR CONTROL SWITCH IN TEST

COMMENTS:

____ SAT

____ UNSAT

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)	
<p><u>(C) STEP 6:</u> ESTABLISH AUTOMATIC VOLTAGE CONTROL * (STEP 5.52.9 OF 3-GOP-301)</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. SLOWLY ADJUSTED AC REGULATOR CONTROL TO NULL VOLTAGE REGULATOR 2. PLACED VOLTAGE REGULATOR CONTROL SWITCH IN ON POSITION <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 7:</u> OBTAIN REQUIRED MATERIALS</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. A SYNCHRONIZATION PLUG WAS OBTAINED <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)	
<p><u>(C) STEP 8:</u> PLACE THE GENERATOR SYNCHRONIZATION SWITCH FOR THE EAST GENERATOR GCB IN MANUAL</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. THE SYNCHRONIZING PLUG WAS INSERTED IN THE GENERATOR SYNCHRONIZING EAST BUS CONTROL SWITCH 2. THE GENERATOR SYNCHRONIZING EAST BUS CONTROL SWITCH WAS POSITIONED TO MANUAL 3. THE "INADVERTENT PROTECTION SCHEME ARMED" AMBER LIGHT ABOVE THE SYNCHROSCOPE WAS VERIFIED LIT <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 9:</u> VERIFY CORRECT TURBINE SPEED ESTABLISHED FOR MANUAL SYNCHRONIZATION</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. TURBINE SPEED, (SYNCHROSCOPE MOVING SLOWLY IN THE CLOCKWISE [FAST] DIRECTION) VERIFIED EXAMINER'S CUES: <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)

(C) STEP 10: PERFORM MANUAL SYNCHRONIZATION

STANDARD:

1. THE GENERATOR GCB EAST BREAKER CLOSED BETWEEN 5 MINUTES BEFORE 12 O'CLOCK AND 12 O'CLOCK ON THE SYNCHROSCOPE
2. THE EAST BUS BREAKER WAS VERIFIED TO INDICATE CLOSED (RED ON; GREEN OFF)
3. THE SYNCHROSCOPE SWITCH WAS PLACED IN THE OFF POSITION
4. THE SYNCHROSCOPE PLUG WAS REMOVED FROM THE PANEL
5. GENERATOR AMPS VERIFIED WITHIN 2 PERCENT (ALL 3 PHASES)
6. THE INADVERTENT PROTECTION SCHEME "ARMED" AMBER LIGHT ABOVE THE SYNCHROSCOPE IS VERIFIED OFF
7. UNIT LOAD WAS VERIFIED/INCREASED TO APPROXIMATELY 40 MWE

_____ SAT

_____ UNSAT

COMMENTS:

Standards 4, 5, 6 & 7 are not critical to performing element 4.

SYNCHRONIZE MAIN GENERATOR TO LINE (MANUAL SYNC)

STEP 11: COMPLETE THE ADMINISTRATIVE REQUIREMENTS

STANDARD:

_____ SAT

1. THE ANPS/NPS WAS NOTIFIED THAT THE GENERATOR IS SYNCHRONIZED TO THE EAST BUS

 UNSAT

COMMENTS:

Inform applicant that JPM is complete.

[illegible]

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

CIRCULATING WATER PUMP HIGH BEARING TEMPERATURE

DIRECTIONS TO APPLICANT:

I will describe the general conditions for the task you will perform and provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 ANPO.

1. CIRCULATING WATER SYSTEM IN-SERVICE
2. ALL 4 CIRCULATING WATER PUMPS FOR THE UNIT ARE RUNNING

INITIATING CUES:

DIRECTED BY THE RCO TO INVESTIGATE THE "CIRC WATER PUMP MOTOR BEARING HIGH TEMP" ALARM

CUE: Tell the operator that the affected pump is 3B1Circulating Water Pump.

CUE: Tell the operator that since the JPM is being simulated, that the instructor will provide needed information when applicable to allow continuation/completion of the task.

CIRCULATING WATER PUMP HIGH BEARING TEMPERATURE	
<p><u>(C) STEP 1:</u> VERIFY 3B1 CIRCULATING WATER PUMP BEARING HIGH TEMPERATURE ANNUNCIATOR ALARM TO BE VALID</p> <p><u>STANDARD:</u></p> <p>3. AT 3B1 CIRCULATING WATER PUMP, CHECKED ALL THREE (3) TEMPERATURE INDICATORS FOR INDICATION OF BEARING TEMPERATURE \neq 96 DEG C OR 205 DEG F</p> <p><i>* When the operator has identified the need to check each of the temperature indicators, tell the operator that the lower motor bearing indicates 209 deg. F. or 97 deg. C. and appears to be slowly increasing. The other two (2) indicators are reading right at 205 deg. F. (96 deg. C.) and are also slowly increasing.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 2:</u> EVALUATE OPERATING CONDITIONS ON THE AFFECTED CIRCULATING WATER PUMP</p> <p><u>STANDARD:</u></p> <p>1. CHECKED BEARING OIL LEVEL INDICATION</p> <p><i>* The pump motor lower bearing oil level was low Out-of-sightglass and indicating below normal on the other sightglasses</i></p> <p>2. OBSERVED PUMP FOR ELEVATED PUMP/MOTOR VIBRATION/NOISE</p> <p><i>* The pump exhibited no abnormal noises and the pump exhibited no abnormal vibration</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

CIRCULATING WATER PUMP HIGH BEARING TEMPERATURE	
<p><u>(C) STEP 3:</u> NOTIFY RCO OF AFFECTED CIRCULATING WATER PUMP "AS FOUND" CONDITION</p> <p><u>STANDARD:</u></p> <p>1. THE RCO WAS NOTIFIED OF THE FOLLOWING "AS FOUND" CONDITIONS FOR 3B1 CIRCULATING WATER PUMP:</p> <p>A. VALID ALARM ALL THREE BEARINGS</p> <p>B. HIGHEST AT 209 DEG F (97 DEG C) LOWER BEARING</p> <p>C. BEARING TEMPS SLOWLY INCREASING</p> <p>D. NO OIL LEVEL SEEN IN THE LOWER OIL SIGHTGLASS AND THE OTHER TWO BEARING INDICATE LOWER THAN NORMAL LEVELS</p> <p><u>COMMENTS:</u></p> <p>NOTE: The operator's report may not be as detailed as indicated in the standards; however, the operator should tell the RCO that the alarm is valid and is due to low oil level.</p> <p>CUE: INFORM OPERATOR THAT RCO INTENDS TO SHUTDOWN THE PUMP.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

CIRCULATING WATER PUMP HIGH BEARING TEMPERATURE	
<p><u>STEP 4:</u> PERFORM CIRCULATING WATER PUMP SHUTDOWN INSPECTION</p> <p><u>STANDARD:</u></p> <p>1. VERIFIED THAT 3B1 CIRCULATING WATER PUMP DISCHARGE MOV-1414 CLOSES COMPLETELY</p> <p> * <i>Confirm that the discharge MOV has closed</i></p> <p>2. VERIFIED THAT 3B1 CIRCULATING WATER PUMP SHAFT STOPS AND DOESN'T ROTATE BACKWARDS</p> <p> * <i>The pump shaft has stopped, and is not rotating backwards.</i></p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> COMPLETE ADMINISTRATIVE REQUIREMENTS</p> <p><u>STANDARD:</u></p> <p>1. INITIATED A PWO TO THE ELECTRICAL DEPT. TO ADD OIL TO THE 3B1 CIRCULATING WATER PUMP</p> <p>2. LOGGED ANY PWO'S WRITTEN AND THE ACTIONS TAKEN TO CORRECT THE ALARM CONDITION IN THE ANPO LOG BOOK</p> <p><u>COMMENTS:</u></p> <p>INFORM OPERATOR THAT JPM HAS BEEN COMPLETED.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

RESPOND TO LOSS OF CONDENSER VACUUM

3-ONOP-014

DIRECTIONS TO APPLICANT:

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 explain the initial conditions, and state the task to be performed, the simulator will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the Unit 3 NPO.

1. UNIT 3 IS OPERATING IN MODE 1 AT 100% POWER
2. THE WEST SJAE BANK IS IN SERVICE

INITIATING CUES:

RCO NOTIFIES THE NPO OF DECREASING CONDENSER VACUUM ON UNIT 3

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 1:</u> PLACE HOGGING JET IN SERVICE</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 3. ELEMENT PERFORMED WITHOUT REFERENCE 4. STEAM SUPPLY TO HOGGING JET VALVE, 3-30-043, OPENED 5. STEAM SUPPLY TO HOGGING JET VALVE, 3-30-044, SLOWLY OPENED 6. 250 TO 260 PSIG HOGGING JET SUPPLY PRESSURE ESTABLISHED 7. CONDENSER AIR REMOVAL TO HOGGING JET VALVE, 3-30-010, OPENED 8. RCO NOTIFIED THAT THE SJAE HOGGING JET WAS IN SERVICE <p><u>COMMENTS:</u></p> <p>NOTE: Standard #6 is not critical to element.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> OBTAIN THE PROCEDURE</p> <p><u>STANDARD:</u></p> <ol style="list-style-type: none"> 1. CORRECT PROCEDURE OBTAINED 2. PROCEDURE CHECKED AGAINST OTSC INDEX <p><u>COMMENTS:</u></p> <p>Note: After the Operator has identified the applicable procedure, provide the procedure</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

RESPOND TO LOSS OF CONDENSER VACUUM

(C) STEP 3: PLACE STANDBY SJAE IN SERVICE

STANDARD:

1. EAST SECONDARY JET STEAM STOP ISOLATION VALVE, 3-30-036, OPENED
2. EAST SECONDARY JET AIR REMOVAL ISOLATION VALVE, 3-30-042, OPENED
3. EAST PRIMARY JET STEAM SUPPLY ISOLATION VALVE, 3-30-009, OPENED
4. VACUUM IS VERIFIED BEING DRAWN ON THE SJAE
5. EAST PRIMARY JET AIR REMOVAL ISOLATION VALVE, 3-30-008, OPENED
6. CONDENSER VACUUM IS VERIFIED BEING MAINTAINED BY THE SJAEs

COMMENTS:

NOTE: The Operator may identify the need to verify with Control Room that the Circulating Water Pumps are operating properly. If so, acknowledge his/her action. This JPM only deals with the physical actions performed by the NPO to identify/correct source of leak.

____ SAT

____ UNSAT

RESPOND TO LOSS OF CONDENSER VACUUM

STEP 4: VERIFY STEAM IS BEING SUPPLIED AND
REGULATED AT 260 TO 275 PSIG TO BOTH SETS OF
SJAES

STANDARD:

1. PRESSURE INDICATION INSPECTED

** Inform the Operator that the pressure is 180 psig*

COMMENTS:

After student informs control room that steam pressure is below specifications, as the NPS, tell the Operator to bypass the SJAE Pressure Regulator CV-3-3700 by opening 3-30-026, throttling open

_____ SAT

_____ UNSAT

RESPOND TO LOSS OF CONDENSER VACUUM

(C) STEP 5: BYPASS THE SJAE PRESSURE REGULATOR

STANDARD:

1. SJAE MAIN STEAM SUPPLY, CV-3-3700 BYPASS VALVE, 3-30-026, OPENED
2. SJAE MAIN STEAM SUPPLY, CV-3-3700, BYPASS THROTTLE VALVE, 3-30-027, THROTTLED TO MAINTAIN 260 TO 275 PSIG (PI-1569)
3. SJAE MAIN STEAM SUPPLY, CV-3-3700, OUTLET ISOLATION VALVE, 3-30-028, CLOSED

When Operator has bypassed CV-3-3700, as the NPS, direct closure of 3-30-028 to isolate CV-3-3700.
4. PRESSURE VERIFIED BEING MAINTAINED BETWEEN 260 AND 275 PSIG (PI-1569)

Acknowledge Operator's actions and inform operator that pressure is reading 265 psig
5. CONDENSER VACUUM VERIFIED REMAINING CONSTANT

Vacuum is remaining constant.

COMMENTS:

_____ SAT

_____ UNSAT

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 6:</u> VERIFY SJAE LOOP SEAL IS FULL OF WATER</p> <p><u>STANDARD:</u></p> <p>1. SJAE LOOP SEAL VERIFIED FULL OF WATER</p> <p><i>Confirm loop seal full of water when identified by the Operator.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 7:</u> VERIFY SGFP SEAL WATER COLLECTION TANK DRAIN TO CONDENSER, CV-3-2210, IS OPERATING PROPERLY</p> <p><u>STANDARD:</u></p> <p>1. SGFP SEAL WATER COLLECTION TANK DRAIN TO CONDENSER VENT VERIFIED TO BE OPERATING PROPERLY</p> <p><i>Confirm normal operation of CV-3-2210.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 8:</u> CHECK TURBINE SEAL AREA SLOP DRAIN FOR AIR IN-LEAKAGE</p> <p><u>STANDARD:</u></p> <p>1. TURBINE SEAL AREA SLOP DRAIN VERIFIED TO HAVE NO AIR IN-LEAKAGE</p> <p><i>confirm that there is no evidence of air in-leakage in slop drain.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 9:</u> VERIFY CONDENSER WATERBOXES ARE PRIMED</p> <p><u>STANDARD:</u></p> <p>1. CONDENSER WATERBOXES VERIFIED TO BE PRIMED</p> <p><i>Confirm condenser waterboxes are primed.</i></p> <p><u>COMMENTS:</u></p> <p>NOTE: The Operator may identify a need to verify with the Control Room that someone is inspecting intake for evidence of stoppage. If so, acknowledge his/her action. This JPM is designed for only the actions performed by the NPO to identify/stop source of leak.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 10:</u> VERIFY TURBINE STEAM SEAL REGULATOR MAINTAINING GREATER THAN OR EQUAL TO 3 PSIG</p> <p><u>STANDARD:</u></p> <p>1. TURBINE STEAM SEAL REGULATOR VERIFIED TO BE MAINTAINING GREATER THAN OR EQUAL TO 3 PSIG</p> <p><i>Confirm turbine gland seal steam is > 3 psig.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 11:</u> VERIFY NORTH AND SOUTH TURBINE EXPANSION JOINT BOOT SEAL FILLED WITH WATER</p> <p><u>STANDARD:</u></p> <p>1. BOOT SEAL WATER SUPPLY VERIFIED TO BE VALVED IN AND WATER OVERFLOW OBSERVED</p> <p><i>Confirm indication of seal water overflow</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 12:</u> CHECK CONDENSATE PUMP SEAL LEAKOFF FOR POSITIVE SEAL WATER PRESSURE</p> <p><u>STANDARD:</u></p> <p>1. EACH CONDENSATE PUMP WAS CHECKED TO VERIFY SEAL LEAKOFF FLOW</p> <p><i>Confirm positive seal water pressure.</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>(C) STEP 13:</u> SHUT DOWN SJAE HOGGING JET</p> <p><u>STANDARD:</u></p> <p>1. CONDENSER VACUUM VERIFIED GREATER THAN 26 INCHES HG</p> <p><i>Inform student that condenser vacuum reads 27 inches hg.</i></p> <p>2. CONDENSER AIR REMOVAL TO HOGGING JET VALVE, 3-30-010, CLOSED</p> <p>3. STEAM SUPPLY TO HOGGING JET STOP VALVES, 3-30-044 & 3-30-043, CLOSED</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

RESPOND TO LOSS OF CONDENSER VACUUM	
<p><u>(C) STEP 14:</u> VERIFY CONDENSER AIR IN-LEAKAGE IS LESS THAN 20 INCHES OF WATER (21.1.scfm)</p> <p><u>STANDARD:</u></p> <p>1. CONDENSER AIR IN-LEAKAGE IS VERIFIED TO BE LESS THAN 20 INCHES OF WATER (21.1 scfm)</p> <p><i>Confirm that measured air in-leakage is less than 20 inches of water</i></p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 15:</u> COMPLETE ADMINISTRATIVE REQUIREMENTS</p> <p><u>STANDARD:</u></p> <p>1. RCO NOTIFIED OF STATUS</p> <p>2. ACTIVITY LOGGED</p> <p><u>COMMENTS:</u></p> <p>When the Operator identifies the need to report status, acknowledge, then tell the Operator to leave both sets of SJAEs in service.</p> <p>Tell the Operator that the JPM is completed</p>	<p>____ SAT</p> <p>____ UNSAT</p>

Developed for the Turkey Point, December 2000, Initial Examination
Examination Report #



U.S. Nuclear Regulatory Commission

Region II

Title:

REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST DURING A LOSS
OF ALL AC POWER WITH SI REQUIRED ON UNIT 3

3-EOP-ECA-0.2

DIRECTIONS TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. 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? I will provide the initiating cues. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provide you.

INITIAL CONDITIONS:

You are the SNPO.

1. ONLY ONE (1) HHSI PUMPS 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 CUES:

1. PERFORM 3-EOP-ECA-0.2, ATTACHMENT 1, TO ALIGN UNIT 4 HHSI PUMP SUCTION TO UNIT 3 RWST.
2. NOTIFY THE UNIT 4 RCO WHEN LOCAL VALVE MANIPULATIONS OF ATTACHMENT 1 ARE COMPLETE.

REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST

(C) STEP 1: LOCALLY OPEN THE HHSI CROSS-TIE VALVES

STANDARD:

3. HIGH-HEAD SI PUMP SUCTION HEADER SECTIONALIZING VALVE 870A HAS BEEN "OPENED" LOCALLY
4. SI PUMP SUCTION CROSS-CONNECT VALVE 870B HAS BEEN "OPENED" LOCALLY
5. HIGH-HEAD SI PUMP MINI FLOW RECIRC CROSS-CONNECT VALVES (892A AND 892B) HAVE BEEN "UNLOCKED" AND "OPENED" LOCALLY

COMMENTS:

____ SAT

____ UNSAT

REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST

(C) STEP 2: CLOSE 4-864C

STANDARD:

1. RWST OUTLET 4-864C IS UNLOCKED AND CLOSED AS DIRECTED

COMMENTS:

____ SAT

____ UNSAT

REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST

(C) STEP 3: NOTIFY RCO

STANDARD:

_____SAT

- ## 1. RCO NOTIFIED OF ALIGNMENT COMPLETION

COMMENTS:

_____ UNSAT

Tell the operator that the JPM is complete.

INITIAL SUBMITTAL

**TURKEY POINT EXAM
50-250, 251/2000-301**

**NOVEMBER 27 - DECEMBER 1,
DECEMBER 11 - 15, 2000**

INITIAL SUBMITTAL

**OPERATING TEST
SIMULATOR SCENARIOS**

Scenario # __1__

Initial Conditions: Reactor is at 75% power (IC-16). "C" Coolant Charging Pump is out of service for motor ground (at this power, both CCP A & B will be running).

1. RO Normal - Raise "B" accumulator level to middle of normal band. (3-OP-064, section 7.1)
2. RO Reactivity - Raise reactor power to 100%.
3. RO Instrument - VCT level transmitter LT-115 fails high (loss of automatic make-up and no auto swap to RWST on VCT lo-lo level [4%]) (ARP A 4/6, 3-ONOP-046.4)
4. BOP Component - Loss of 4D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 [ICW])
5. RO Component - Charging pump "A" fails due to bearing failure (ARP A 6/1, ARP A 5/1, 3-OP-47, T.S. 3.1.2.3)
6. RO Instrument - Median Tavg fails high (ARP B 4/4, ARP A 9/3, ARP C 8/3, [maybe ARP B 8/1 and/or B 8/2 if operators are slow to put rods in manual], 3-ONOP-028, 3-ONOP-049.1)
7. BOP Instrument - Steam Generator Narrow Range level [LT-478] fails high (C 6/1, C 5/1, [may get D 7/6 if S/G gets to 10% less than other S/Gs and/or C 1/1 if level gets < 35%])

MAJOR TRANSIENT

Dual Unit LOOP

Enter E-0

2 control rods fail to insert

Transfer to ES-0.1

Step 1 AFW Flow must be controlled at 270 gpm

EDG B trips - won't start no matter what

Step 5 B The remaining charging pump(s) do not start

SI is established via 3-ONOP-047.1 Loss of All Charging Flow in Modes 1-4

Stay in procedure until step 24

Draft
Sim
Scenarios

Initial Conditions:

1. Initial condition Mode 1 at 75% RTP.

Turnover:

1. Power level is at 75%.
2. Accumulator '3B' level is slightly low out of the green band at ~ 6530 gal and pressure is at 610 psig. Annunciators H-2/3, ACCUM B HI/LO PRESS, and H-2/4, ACCUM B HI/LO LEVEL, are lit. The Accumulator needs to be filled to a level of ~ 6700 gal and pressure restored.
3. Power increase to 100% is desired.

Equipment OOS ---

1. 3C Coolant Charging Pump is out of service for motor ground and the breaker is racked out.
2. The Steam Dump selector switch is in manual (Steam Pressure mode) control due to a problem with TC-408H, (Tavg input to Turbine Trip Summator).
3. PRN1 channel N-41 upper detector failed.

Synopsis:

Op-Test No.: _____ Scenario No.: 1 Event No.: 1Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
	RCO	1. Step 7.1.1.1 - Verifies initial conditions of section 3.0 are satisfied.
	RCO	2. Step 7.1.1.2 - Verifies level in Accumulator '3B' needs to be increased.
	RCO	3. Step 7.1.1.3 - Verifies RCS temperature > 380 F
	RCO	4. Step 7.1.1.4 - Verifies or has breaker 30737 (MOV-3-869) placed in 'ON'.
	RCO	5. Step 7.1.1.5 - Verifies '3B' Accumulator pressure is at least 150 psig.
	RCO	6. Reads Cautions of Section 7.1.2 <ul style="list-style-type: none"> • If water addition during normal plant operations is required to make up for a 50 gallon loss within 4 hours, the System Engineer or JPN should be notified for evaluation. • Operations of the safety Injection pump on minimum flow for more than 5 minutes may result in severe pump damage. Coordination to establish flowpath to accumulators as soon as possible is essential. • In Modes 1, 2, or 3 with the RCS pressure greater than 1000 psig, Technical Specifications require accumulator levels to be in the range of 6520 to 6820 gallon, however, to account for possible instrument inaccuracies, the required range has been administratively established at 6552 to 6788 gallons. • Technical Specifications require accumulator pressure to be maintained in the range of 600 to 700 psig. • Accumulator pressure will increase while filling. The Accumulator 700 psig relief may lift if the accumulator is filled excessively. • In Modes 1, 2, or 3 with the RCS pressure greater than 1000 psig, no more than one accumulator makeup valve shall be opened at the same time.
	RCO	7. Reads Section 7.1.2 NOTE

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

Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> If required to add a large volume (greater than 1000 gallons) to the Accumulators, 3-883R must be fully opened. Filling with 3-883R throttled two turns open will allow 85 gpm flow, extended HHSI Pump operation at this flow rate may cause pump damage.
	RCO	8. Step 7.1.2.1 - Record initial level on QA Record Page.
	RCO	9. Step 7.1.2.2 - Open the Accum Makeup Valve for '3B' Accumulator, CV-3-851B
	RCO	10. Step 7.1.2.3 - Start or verify running a Safety Injection Pump AND document on QA Record Page.
	RCO	11. Reads Step 7.1.2.4 NOTE <ul style="list-style-type: none"> A second operator should be utilized to operate MOV-3-869 to allow sufficient time to perform the self-checking process.
	RCO	12. Step 7.1.2.4 - Establish flow to the accumulator as follows: <ol style="list-style-type: none"> Open the Loop 3A and 3B Hot Leg SI Isol, MOV-3-869
	RCO	13. Step 7.1.2.5 - WHEN accumulator level has increased to between 6560 and 6780 gallons, THEN close MOV-3-869.
	RCO	14. Step 7.1.2.6 - IF filling another accumulator is NOT required, THEN stop the Safety Injection Pump AND verify the control switch is in the mid position.
	RCO	15. Step 7.1.2.7 - Close the Accum Makeup Valve CV-3-851B
	RCO	16. Reads Step 7.1.2.11CAUTION <ul style="list-style-type: none"> Chemistry sample results are required within 6 hours, by Technical Specification 4.5.1.1.b, after each solution volume change.

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

Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
	RCO	17. Step 7.1.2.10 - Document affect accumulator on QA Record Page.

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

Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
	RCO	18. Step 7.1.2.13 - Complete QA Record Page for this section.

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

Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
	BOP	1. Perform peer checks as required.
	BOP	2. Record values on the QA Record Page if requested.

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

Event Description: **Fill the '3B' Accumulator using 3-OP-064 section 7.1.**

Time	Position	Applicant's Actions or Behavior
	NPS	1. Step 7.1.2.11 - Notify the Chemistry Department to sample the filled accumulator to ensure Technical Specification boron requirements are met.

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

Event Description: Increase Reactor power from 75% per 3-GOP-301

Time	Position	Applicant's Actions or Behavior
	ANPS	1. Directs power increase per 3-GOP-301, Hot Standby to Power Operation.
	ANPS	2. Specifies ramp rate for power increase. (3-GOP-301 Precaution 4.35)
	ANPS	3. Directs RCO to increase power using dilution per 0-OP-046. (3-GOP-301 Step 5.70)
	ANPS	4. Directs RCO to increase power using the control rods (if required) while maintaining axial flux within limits. (3-GOP-301 Step 5.70)
	ANPS	5. Directs BOP to increase turbine load as required to maintain Tavg matched with Tref. (3-GOP-301 Step 5.70)
	ANPS	6. Maintains command and control of the evolution.
	ANPS	7. Notifies the Chemistry Department must sample the RCS. (0-OP-046 Step 5.3.2.12)

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

Event Description: Increase Reactor power from 75% per 3-GOP-301

Time	Position	Applicant's Actions or Behavior
	RCO	1. Performs 0-OP-046, CVCS - Boron Concentration Control, as directed by the ANPS.
	RCO	2. Verifies initial conditions for starting the dilution. (0-OP-046 Step 5.3.1.1)
	RCO	3. Reads Cautions of Section 5.3.2 <ul style="list-style-type: none">• Error margins exist for the Boric Acid and Primary Water flow transmitters, with Primary Water being the greatest. Extreme care needs to be exercised to ensure that an excessive reduction in RCS boron concentration does not occur due to this fact.• When less than 1% power, an independent Verification of Boron Reduction change calculation should be performed to ensure SDM requirements are not challenged.
	RCO	4. Reads NOTES of Step 5.3.2.1: <ul style="list-style-type: none">• VCT level is 14.15 gallons/% level indication.• Attachment 5 of this procedure may be used to assist in calculating dilution requirements for power or temperature changes.
	RCO	5. Determine the approximate quantity of primary water required to change reactivity by the desired amount. (May be by the day to day activities OR using the plant curve book) (0-OP-046 Step 5.3.2.1.a)
	RCO	6. Set the Primary Water Totalizer to determined amount of water. (0-OP-046 Step 5.3.2.1.c)
	RCO	7. Adjust the setpoint on the Primary Water Controller, FCV-3-114A to the desired flow rate.(0-OP-046 Step 5.3.2.2)

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

Event Description: Increase Reactor power from 75% per 3-GOP-301

Time	Position	Applicant's Actions or Behavior
	RCO	8. Reads NOTES of Step 5.3.2.3: <ul style="list-style-type: none"> • <u>DILUTE</u> is the preferred switch position, since impact to the RCP seals is minimized due to preheating of water in the VCT, and to ensure RCS hydrogen concentration is maintained. • ALT DILUTE is recommended only when rapid load change or rod movement requires compensation.
	RCO	9. Place the Reactor Makeup Selector Switch in the DILUTE position. (0-OP-046 Step 5.3.2.3)
	RCO	10. Turn the RCS Makeup Control Switch to the START position AND perform the following: <ul style="list-style-type: none"> a. IF the Reactor Makeup Selector Switch is in the Dilute position AND FCV-3-114B, Blender to VCT valve closes due to flow deviation, THEN place FCV-3-114B switch to OPEN. (0-OP-046 Step 5.3.2.4 & 5.3.2.4.a)
	RCO	11. Verify expected primary water flow rate by observing Chart Recorder FR-3-113 AND ensure that it is consistent with the flow rate determined in Substep 5.3.2.2 (step7 above). (0-OP-046 Step 5.3.2.5)
	RCO	12. If necessary to manually stop the dilution places the RCS Makeup Control Switch in the STOP position.(0-OP-046 Step 5.3.2.6)

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

Event Description: Increase Reactor power from 75% per 3-GOP-301

Time	Position	Applicant's Actions or Behavior
	RCO	<p>13. When the dilution has stopped verifies the following switches are in auto and the valves are closed:</p> <ul style="list-style-type: none"> a. Boric Acid to Blender, FCV-3-113 b. Primary Water to Blender, FCV-3-114A c. Blender to Charging Pump Suction, FCV-3-113B d. Blender to VCT, FCV-3-114B <p>(0-OP-046 Steps 5.3.2.7 & 5.3.2.7.a - d)</p>
	RCO	<p>14. Places the Reactor Makeup Selector Switch to AUTO. (0-OP-046 Step 5.3.2.8)</p>
	RCO	<p>15. Turns the RCS Makeup Control Switch to START. (0-OP-046 Step 5.3.2.9)</p>
	RCO	<p>16. Reads CAUTION: (0-OP-046 Step 5.3.2.10)</p> <ul style="list-style-type: none"> • If sample results differ significantly from expected values the NPS shall be notified. Further dilution of the RCS is permissible, however, care should be taken to ensure excessive reduction in RCS boron concentration does not occur.
	RCO	<p>17. Notifies the ANPS that the Chemistry Department must sample the RCS. (0-OP-046 Step 5.3.2.12)</p>
	RCO	<p>18. Withdraws control rods (if required) while maintaining rods within required limits.</p>
	RCO	<p>19. Reports status to the ANPS.</p>

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

Event Description: Increase Reactor power from 75% per 3-GOP-301

Time	Position	Applicant's Actions or Behavior
	BOP	1. Increase turbine load as directed by the ANPS, maintaining Tavg matched with Tref (3-GOP-301 step 5.70).
	BOP	2. Reports status to ANPS.

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

Event Description: VCT level transmitter LT-115 fails high (loss of automatic make-up)
[Insert malfunction during a dilution activity after reactivity change is satisfied]
 Respond to Annunciator A-4/6 'VCT HI/LO LEVEL'

Time	Position	Applicant's Actions or Behavior
	RCO	<ol style="list-style-type: none"> 1. Check VCT level, LI-3-115, indication (ARP step 1.a) 2. Place LC-3-112A in manual, and adjust setpoint to just get 0% demand, then read pot setting (ARP step 1.b) 3. Verifies that LT-3-115 has failed high (cross check of LC-3-112A on ERDADS CVCS display), then take LCV-3-115A control switch to VCT position) (ARP step 2.b) 4. Takes action using 3-ONOP-046.4, Malfunction of Boron Concentration Control System. (ARP step 2.e)
	RCO	<ol style="list-style-type: none"> 1. Verify all actions of 3-ONOP-046.4 steps 1 - 2.c complete. 2. Perform manual makeup as necessary using 0-OP-046, CVCS - BORON CONCENTRATION CONTROL. (3-ONOP-046.4 step 2.d). 3. Reports equipment failure to I & C (3-ONOP-046.4 step 2.e).
	RCO	<ol style="list-style-type: none"> 1. Inform ANPS of plant status.

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

Event Description: VCT level transmitter LT-115 fails high (loss of automatic make-up)

[Insert malfunction during a dilution activity after reactivity change is satisfied]

Respond to Annunciator A-4/6 'VCT HI/LO LEVEL'

Time	Position	Applicant's Actions or Behavior
	ANPS	<ol style="list-style-type: none">1. May dispatch an operator to check level on LI-3-112 (ARP step 2.a)2. Verifies that LT-3-115 has failed high from the ERDADS CVCS display (ARP step 2.a)3. Refer to Tech Spec 3.1.2.1 and 3.1.2.2 (ARP step 2.f)
	ANPS	<ol style="list-style-type: none">1. Ensures that equipment failure is reported to I & C (3-ONOP-046.4 step 2.e).
	ANPS	<ol style="list-style-type: none">1. Maintains command and control of evolution.

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

Event Description: VCT level transmitter LT-115 fails high (loss of automatic make-up)

[Insert malfunction during a dilution activity after reactivity change is satisfied]

Respond to Annunciator A-4/6 'VCT HI/LO LEVEL'

Time	Position	Applicant's Actions or Behavior
	BOP	1. Assists RCO as directed by the ANPS

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page ____ of ____

Event Description: Loss of 3D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump and Annunciator I-4/4 'ICW HEADER A/B LO PRESS. (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 ([ICW])

Time	Position	Applicant's Actions or Behavior
	BOP	1. Checks ICW header pressure indicators, PI-3-1619 and/or -1620 less than or equal to 11 psig. (ARP I-4/4 step 1.a)
	BOP	1. Starts 3A ICW pump per 3-OP-019 step 5.2.2.5 (ARP I-4/4 step 1.a) 2. Verifies the pump motor amps decreases to less than 49 amps (3-OP-019 step 5.2.2.6) 3. Verifies the discharge pressure of the pump started is between 11 and 35 psig (3-OP-019 step 5.2.2.7)
	BOP	1. Recognize loss of 3D 4KV bus and goes to 3-ONOP-004.5, LOSS OF 3D 4KV BUS

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page of

Event Description: Loss of 3D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump and Annunciator I-4/4 'ICW HEADER A/B LO PRESS. (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 ([ICW])

Time	Position	Applicant's Actions or Behavior
	BOP	<ol style="list-style-type: none"> 1. Checks 3D 4KV Bus Lockout Relay - RESET (3-ONOP-004.5 step 1) 2. Checks 3A and 3B 4KV Buses energized (3-ONOP-004.5 step 2) 3. Disconnects Loads from 3D 4KV Bus (3-ONOP-004.5 step 3) 4. Consults with ANPS to determine source or power for 3D 4KV Bus, Desired source is 3A 4KV Bus. (3-ONOP-004.5 step 4) 5. Reenergizes 3d 4KV Bus from 3A 4KV Bus (3-ONOP-004.5 step 5) <ol style="list-style-type: none"> 1. Open feeder bkr to 3D 4KV Bus, 3AB19 2. Open supply bkr from 3D 4KV Bus, 3AD06 3. Close supply bkr from 3A 4KV Bus, 3AD01 4. Close feeder bkr 3D 4KV Bus, 3AA17 6. Verifies 3D 4KV Bus is aligned to an energized bus (3-ONOP-004.5 step 8) 7. Restart required components supplied by 3D 4KV Bus as directed by the ANPS (3-ONOP-004.5 step 10)

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page ____ of ____

Event Description: Loss of 3D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump and Annunciator I-4/4 'ICW HEADER A/B LO PRESS. (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 ([ICW])

Time	Position	Applicant's Actions or Behavior
	ANPS	1. Recognize loss of 3D 4KV bus and goes to 3-ONOP-004.5, LOSS OF 3D 4KV BUS
	ANPS	1. Determines desired power source for reenergizing 3D 4KV Bus (3-ONOP-004.5 step 4.c) 2. Identifies required components supplied by 3D 4KV Bus to be restarted (3-ONOP-004.5 step 10)
	ANPS	1. Refer to Tech Spec 3.7.2 and 3.7.3
	ANPS	1. Maintains command and control of evolution.

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page ____ of ____

Event Description: Loss of 3D 4KV bus (bkr 3AD06 opens) which results in loss of power to 3C ICW Pump and Annunciator I-4/4 'ICW HEADER A/B LO PRESS. (ARP I 4/4, 3-ONOP-004.5, T.S. 3.7.2 [CCW], T.S. 3.7.3 ([ICW])

Time	Position	Applicant's Actions or Behavior
	RCO	1. Assists BOP as directed by the ANPS

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

Event Description: Coolant charging pump 3A fails due to bearing failure (ARP A 6/1, ARP A 5/1, 3-OP-47, T.S. 3.1.2.3)

Time	Position	Applicant's Actions or Behavior
	RCO	<ol style="list-style-type: none">1. Responds to Annunciator A-6/1, CHARGING PUMP A MOTOR OVERLOAD. 1. Verifies alarm by checking if 3A charging pump has tripped. (ARP A-6/1 step 1)
	RCO	<ol style="list-style-type: none">1. Responds to Annunciator A-5/1, CHARGING PUMP A TRIP. 1. Verifies alarm by checking charging pump is tripped and reduced charging flow (ARP A-5/1 step 1) 2. Verifies adequate suction source, VCT level > 4% and flow path (ARP A-5/1 step 2.a) 3. Takes 3A pump switch to STOP. (ARP A-5/1 step 2.c) 4. Refers to 3-ONOP-047.1, LOSS OF CHARGING FLOW IN MODES 1 THROUGH 4 (ARP A-5/1 step 2.e)
	RCO	<ol style="list-style-type: none">1. Isolate the 60 GPM letdown orifice (3-ONOP-047.1 Immediate action step 4.2)

	ANPS	1. Dispatch an operator to determine cause of Charging Pump failure. (3-ONOP-047.1 step 5.1)
	ANPS	1. Refers to Tech Spec 3.1.2.1; 3.1.2.2; and 3.1.2.3
	ANPS	1. Maintains command and control of evolution.

	BOP	1. Assists RCO as directed by the ANPS
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Op-Test No.: _____ Scenario No.: 1 Event No.: 6

Event Description: Median Tavg fails high (ARP B 4/4, ARP A 9/3, ARP C 8/3, [maybe ARP B 8/1 and/or B 8/2 if operators are slow to put rods in manual], 3-ONOP-028, 3-ONOP-049.1

Time	Position	Applicant's Actions or Behavior
	RCO	1. Determine that median Tavg has failed high by instrument checks (ARP B-4/4 step 1)
	RCO	2. Takes manual control of rods to prevent continued insertion (ARP B-4/4 step 3.a and ARP B-8/1 step 2.a Immediate action step 4.3.1 of 3-ONOP-028, Reactor Control System Malfunction)
	RCO	3. Takes manual control of the Master Charging Pump Controller or individual Charging Pump Controller (ARP A-9/3 step 2.a and Immediate action step 4.2 of 3-ONOP-041.6, Pressurizer Level Control Malfunction)
	RCO	1. Adjust rods to maintain Tavg equal to Tref (3-ONOP-028 step 5.4.1) 2. Notify I&C department to investigate failure (3-ONOP-028 step 5.4.2) 3. Operates rods in manual until problem is corrected. (3-ONOP-028 step 5.4.3)
	ANPS	1. Notify I&C department to investigate failure (3-ONOP-028 step 5.4.2)
	ANPS	1. Refers to Tech Spec 3.3.1, 3.1.1.4, 3.2.1.1, and 3.2.5
	ANPS	1. Maintains command and control of evolution.
	BOP	1. Assists RCO as directed by the ANPS

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

Event Description: S/G 3A Narrow Range level [LT-478] fails high (C 6/1, C 5/1, [may get D 7/6 if S/G gets to 10% less than other S/Gs and/or C 1/1 if level gets < 35%])

Time	Position	Applicant's Actions or Behavior
	BOP	Carries out the actions of 3-ARP-097.CR for ANN. C-6/1 1. Identifies LI-3-476 failed high by comparison to programmed level and determines alarm not valid 2. Manually controls 3A S/G Feed Reg Valve returning 3A S/G level to program 3. When directed by ANPS, verifies LT-3-478 operable and selects it for 3A S/G level control 4. When directed by ANPS, verifies 3A S/G level near program & returns 3A S/G Feed Reg Valve to auto 5. Informs ANPS of plant status

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

Event Description:

Time	Applicant's Actions or Behavior

RCO
RCO
RCO
BOP
BOP
BOP

NPS
NPS
NPS
NPS

Position
RCO

Scenario # 2

event 1 RO Normal -	Make-up 5000 gals to the RWST
event 2 BOP Component -	Circ Wtr Pump 3B1 loss of Lube Oil indication causing high motor bearing temperature.
event 3 RO Reactivity -	Decrease power to < 60%
event 4 BOP Component -	Loss of 3D Load Center (3AB14 opens) [Do <u>after</u> reactivity change between 65-70%]
RO Instrument -	LT-460 fails low. Should restore normal L/D.
RO Component -	PCV-444J fails high. PORV PCV-455C opens and fails, block valve MOV-536 closes. Allow RCS pressure to return to 2235.

MAJOR TRANSIENT SBLOCA and ATWS

RO Component -	MOV-3-536 leaks by at 20 gpm. Rx pressure decreases, PZR level holds. Manual Rx trip before 2000 psig.
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AMSAC fails

Op-Test No.: 1 Scenario No.: 2 Event No.: 1 Page 1 of 18Event Description: Make-up 5000 gal of borated water to RWST. (3-OP-046, section 7.5)

Time	Position	Applicant's Actions or Behavior
	ANPS	Direct RCO to initiate a borated make-up of 5000 gallons to the RWST per 3-OP-046, section 7.5.
	RCO	<p>Obtain and review copy of 3-OP-046, section 7.5.</p> <ol style="list-style-type: none"> 1. Verify initial conditions are met. 2. Determine approx. boric acid and primary water flows and volumes needed to achieve desire blend concentration. 3. Verify closed the following valves: FCV-113B, FCV-114B, MOV-350, manual valve 3-356. 4. Place control switches for FCV-113B and FCV-114B in the CLOSE position. 5. Verify MOV-350 is closed. 6. Unlock and open manual valve 3-365A and open valve 3-365B to M/U to the RWST. 7. Place Rx M/U selector switch to BORATE. 8. Place controllers for FCV-113A and FCV-114A in MANUAL. 9. Place control switch for FCV-113A to AUTO. 10. Set Boric Acid Totalizer and Primary Water Totalizer to volumes determined above. 11. Place a Boric Acid Pump in AUTO. 12. Turn RCS M/U control switch to START. 13. Place control switch for FCV-114A to OPEN. 14. Adjust flow controllers for FCV-113A and FCV-114A to flows determined above. 15. Verify proper flow by observing RWST level increase and BAST and PWST tank levels decrease. 16. Add 5000 gallons to borated water to the RWST.

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

Event Description: Circ water pump 3B1 loss of lube oil indication causing motor bearing high temperature. Must lower reactor power to <60% & secure SJAE suction before securing the pump.

Time	Position	Applicant's Actions or Behavior
	ANPS	<p>Directs BOP to review and perform 3-ARP-097.CR for annunciator "I 2/4".</p> <p>Reviews and directs actions per 3-OP-010:.</p> <p>Notes need to reduce power to < 60% and secure SJAE (due to CWP 3B2 not available) in order to stop the pump <u>and</u> not lose Mn Condenser vacuum.</p> <p>Directs RCO and BOP to reduce power to 59% or less. (See next event for power change details.)</p> <p>Directs BOP to secure CWP 3B1 after power is below 60%.</p>
	BOP	<p>Acknowledges alarm "I 2/4".</p> <p>Perform actions of 3-ARP-097.CR for annunciator "I 2/4".</p> <ol style="list-style-type: none"> Notes there are no MCR actions to perform due to all indications are local. Calls NPO to check out Circ Water Pump 3B1. <ul style="list-style-type: none"> TS-3-4114, TS-3-4115, or TS-3-4115 equal to or greater than 96°C. Bearing oil level. Pump/motor vibration/noise. Notes that If elevated temp. continues or increases, then stop CWP 3B1 per 3-OP-010. <p>When NPO reports that pump oil level is <u>not</u> visible in the sight glass, recommends to ANPS to stop the pump.</p> <p>Prepares for load decrease per ANPS direction. (See next event for power change details.)</p>

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Op-Test No.: 1 Scenario No.: 2 Event No.: 3Page 5 of Event Description: Decrease reactor power to 60%.

Time	Position	Applicant's Actions or Behavior
	ANPS	<p>Conducts crew brief.</p> <p>Directs power reduction IAW 3-GOP-103 using boration and/or control rods.</p> <p>Notifies load dispatcher of load decrease.</p>
	BOP	Inhibits MIMS alarms.
	RCO	<p>Calculates the boration required to reduce power from 75% to 60% per 0-OP-046, Att. 5.</p> <p>Reduces Rx power by initiating boration per 0-OP-046 and/or control rod insertion per ANPS direction.</p> <p>Energizes PZR backup heaters if boration is initiated.</p>
	BOP	Reduces turbine load.
	RCO/BOP	Maintains Tref within 3°F of Tavg.
	RCO	Monitors and maintains Axial Flux within limits of 0-OP-059.9.
	RCO/BOP	Terminate load reduction at power level specified by ANPS
	ANPS	Notifies Chemistry to sample RCS IAW T.S. table 4.4-4.

Op-Test No.: 1 Scenario No.: 2 Event No.: 4Page 6 of Event Description: Loss of 3D Load Center (3AB14 opens). (Do after event 3 between 65-70% power).

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes and reports annunciator "F 7/4" (480V XFMR A/B/C/D LO VOLTAGE).
	Crew	Determines based on annunciator received, loss of MCR lighting and breaker 3AB14 indication that a loss of 3D Load Center has occurred.
	ANPS	Directs BOP to perform actions of 3-ARP-097.CR for annunciator "F 7/4".
	RCO	Monitors plant parameters and assists BOP as directed by ANPS.
	BOP	<p>Reviews and performs actions of 3-ARP-097.CR for annunciator "F 7/4".</p> <ol style="list-style-type: none"> 1. Verify alarm by checking load center voltmeters (VPA). 2. Checks voltmeters on load centers, 4160V bus (console) and 240kV bus (VPA). 3. Identifies breaker 3AB14 tripped open. 4. Sends NPO to check out 3AB14. 5. Determines 3D load center cannot be restored based on NPO report. (Burnt insulation smell but no fire.) 6. Informs ANPS of need to notify Elec. Dept, Load Dispatcher, and Prot. & Control Dept. 7. Informs ANPS to refer to T.S. 3.8.3.1 for additional actions.

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[illegible]

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Page 8 of Event Description: Pressurizer level channel, LT-3-460, fails low. Restore normal letdown after swap channels.

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Recognizes and reports failure of LT-3-460.</p> <ul style="list-style-type: none"> - Annunciator A-8/4, PZR LO-LO LEVEL ALERT - LT-3-460 fails low - Letdown isolates - PZR heaters deenergize <p>Responds as directed by the ANPS.</p> <ol style="list-style-type: none"> 1. Compares level to other PZR LTs. 2. Verifies no off-normal conditions on LT-3-459/461. 3. Performs immediate actions of 3-ONOP-041.6: <ol style="list-style-type: none"> a. Checks pressurizer level indicators and selects channel I/III for PZR level control. b. Checks pressurizer level following program per 3-ONOP-041.6, Enclosure 1 or place LC-3-459F/individual charging pump controllers in manual. 4. Performs subsequent actions of 3-ONOP-041.6 as directed by ANPS: <ol style="list-style-type: none"> a. Ensures LR-3-459 selected to channel I or III. b. Restores letdown. c. Restores normal pressurizer heater control. d. Maintains pressurizer level on program per 3-ONOP-041.6, Enclosure 1.
	ANPS	<p>Directs compensatory action IAW 3-ONOP-041.6 and 049.1:</p> <ol style="list-style-type: none"> 1. Verifies RCO determination of PZR LT status. 2. Determines which bistables to trip (BS-3-460A1/2 in rack 11) and effects on plant of tripping bistables. Provides this info for RCO/BOP guidance. 3. Notifies NPS of LT-3-460 status. 4. Verifies correct indication received for each bistable tripped. 5. Ensures I&C is notified of LT-3-460 failure and PWO initiated.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 Page 10 of Event Description: Master pressure controller, PC-3-444J, fails high. When PORV PCV-455C opens, it fails as is. When block valve MOV-536 is closed, it leaks by.

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Recognizes and reports RCS and PZR pressure decreasing.</p> <ul style="list-style-type: none"> - No PZR pressure channels indicate failed or abnormal - PORV PCV-455C indicates open with no high pressure condition <p>Responds as directed by the ANPS. Performs immediate actions of 3-ONOP-041.5:</p> <ol style="list-style-type: none"> 1. Compares PZR pressure transmitters PT-3-444 and PT-3-445. 2. Verifies no off-normal conditions. 3. Checks both PORVs closed. 4. Identifies PORV PCV-455C open. 5. Verifies PZR pressure is < 2335 psig. 6. Manually attempts to close PORV PCV-455C. 7. Identifies PORV will not close, closes block valve MOV-536. 8. Checks PZR spray valves closed. <ol style="list-style-type: none"> a. Place PCV-3-455A in MANUAL and CLOSE. b. Place PCV-3-455B in MANUAL and CLOSE. c. Verify CV-3-311 (Aux Spray) is CLOSED. <p>Evaluates PZR pressure control equipment and identifies master pressure controller PC-3-444 has failed high.</p> <p>Performs subsequent actions of 3-ONOP-041.5 as directed by ANPS:</p> <ol style="list-style-type: none"> 1. Check PZR safety valves closed. 2. Check PZR pressure stable or increasing. 3. Identifies PZR pressure slowly decreasing. 4. Check pressure > 2000 psig. Initiates efforts to maintain pressure above 2000 psig. 5. Checks PZR heaters ON. 6. Determines PZR heaters can control pressure. Pressure decrease has stopped. (If not, initiates Rx trip before automatic trip occurs on low PZR pressure.) 7. Checks if PORV is leaking and identifies noise indicated on acoustic monitor and elevated temperatures. 8. CONTINUE WITH ONOP-041.5 HERE!!!!

Scenario No.: 2 Event No.: 6

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Event Description: Master pressure controller, PC-3-444J, fails high. When PORV PCV-455C opens, it fails as is. When block valve MOV-536 is closed, it leaks by.

[illegible]

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Event Description: Primary leak (20 gpm) greater than T.S. (Charging already maximized, pressurizer level will not be a problem)

[illegible]

Event Description: Manual reactor trip before Rx pressure reaches 2000 psig.

[illegible]

Scenario No.: 2 Event No.: 8

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Event Description: Manual reactor trip before Rx pressure reaches 2000 psig.

[illegible]

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Event Description: SBLOCA with ATWS. (AMSAC failure, must close MSIVs due to no Mn Turb trip indication.) Open RTBs after Emerg Boration flow established and NPO dispatched. Loss of 3D Load Center results in initiating LOOP/LOCA response of "B" sequencer and equipment (load stripping [including 3B & 3C RCPs], loads 3B EDG, and sequencing of SI loads onto the EDG). Perform FRP-S.1.

[illegible]

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Event Description: SBLOCA with ATWS. (AMSAC failure, must close MSIVs due to no Mn Turb trip indication.) Open RTBs after Emerg Boration flow established and NPO dispatched. Loss of 3D Load Center results in initiating LOOP/LOCA response of "B" sequencer and equipment (load stripping [including 3B & 3C RCPs], loads 3B EDG, and sequencing of S1 loads onto the EDG). Perform FRP-S.1.

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Scenario # __3__

RO Normal	Place normal letdown in service following failure of RV-209. Excess L/D was placed in service and RV-209 repairs are complete. (3-OP-47, section 7.15 [Secure Excess L/D] then section 7.13 [Place Normal L/D in service])
RO Component	Loop C Pzr spray valve fails open ONOP 41.5 (manual restoration)
BOP Component	Loss of TPCW pump due to motor overload ANN I 5/1 (ONOP -008)
RO Instrument	LT-3-115 fails low (VCT level instrument)
BOP Instrument	Stm pressure Channel PT-3-1606 fails high (control PORV on S/G A)
RO Component	Charging pump controller failure from LT-3-469 PL failure
RO reactivity	Chemistry reports latest sample of "C" S/G shows leak rate has increased to 200 gpd. Crew will enter 3-ONOP-071.2 and perform rapid power decrease)

MAJOR TRANSIENT Ruptured Steam Generator with Loss of AFW and SSGFPs (98 NRC #3)
ses-083-1

Initial conditions:

100% power, Known tube leak in S/G C (20 gpd). Chemistry samples are being taken every two hours. The current sample, just completed indicates no significant change in leak rate. The leak will get worse throughout the scenario, A AFW tagged out for corrective maintenance.

Event Description: Secure excess L/D, place normal L/D in service following repair of
RV-3-203.

[illegible]

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 4 of 18

Event Description: LT-3-115 fails low (VCT level instrument).

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Responds to annunciator alarm A-4/6, VCT HI / LO LEVEL.</p> <p>Recognizes unexplained Auto Makeup to the VCT.</p> <p>Observes level indication on LT-3-115 is ZERO. (ARP Step 1.a)</p> <p>Adjusts LC-3-112A pot to just get 0% demand, then reads pot setting. (ARP Step 1.b)</p> <p>Concludes that LT-3-115 has failed low. Refers to 3-ONOP-046.4, "Malfunction of Boron Concentration Control System". (ARP Step 2.e)</p>
	RCO	<p>Verifies 3-ONOP-046.4, Step 1 was completed by performing the steps of the ARP.</p> <p>Verifies that LT-3-115 has failed low per Step 3 of 3-ONOP-046.4:</p> <ul style="list-style-type: none"> - LI-3-112 is stable or increasing - LI-3-115 is abnormally low - Performs manual makeup as necessary
	ANPS	<p>Checks CVCS display on ERDADS for LI-3-112 level indication and observes normal VCT level. (ARP Step 2.a)</p> <p>May dispatch an operator to check local level on LI-3-112. (ARP Step 2.a)</p> <p>Reports the LI-3-115 failure to I&C.</p> <p>Maintains command and control of the evolution.</p>
	BOP	Assists the RCO as directed by the ANPS.

Op-Test No.: 1 Scenario No.: 3 Event No.: 5 Page 5 of 18

Event Description: Steam pressure Channel PT-3-1606 fails high (S/G "A" atmospheric steam dump) and ADV sticks open after BOP takes the controller to manual. (Raises Rx power by 2%.) Must decrease MT load to restore reactor power to 100%. After power decrease, local isolation of ADV will be allowed.

Time	Position	Applicant's Actions or Behavior
	RCO	Observes Tavg decrease and Reactor power increase. May drive rods in manually to maintain power below 100%.
	BOP	Observes 3A S/G Atmospheric Dump valve is full open. Takes manual control of the 3A S/G Atmospheric Dump valve and drives valve demand to zero to close the valve. (The Atmospheric Dump valve sticks open.) Dispatches an operator to close the manual isolation valve for the 3A S/G Atmospheric Dump valve. Observes that the Steam Pressure Channel PT-3-1606 has failed high.
	BOP	Reduces Main Turbine load to maintain reactor power less than 100%.
	BOP	Receives confirmation from the field operator that the manual isolation valve for the 3A S/G Atmospheric Dump valve has been closed.
	ANPS	Concludes from the indications given that the Steam Pressure Channel PT-3-1606 has failed high.
	ANPS	Notifies I&C of the Steam Pressure Channel PT-3-1606 failure.
	ANPS	Maintains command and control of the evolution.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 6 of 18

Event Description: Charging pump controller failure as a result of LT-3-459 failing high.

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Responds to the following annunciator alarms:</p> <ul style="list-style-type: none"> – A-8/3, PZR PROTECTION HI LEVEL – A-9/3, PZR CONTROL HI/LO LEVEL
	RCO	<p>Takes Immediate Actions of 3-ONOP-041.6, "Pressurizer Level Control Malfunction".</p> <ul style="list-style-type: none"> – Checks pressurizer level indicators LI-3-459A, LI-3-460 and LI-3-461 and determines that LT-3-459 has failed high (ONOP-041.6, Step 4.1) – Places the CHANNEL SELECT PRESSURIZER LEVEL CONTROL switch in a position that does NOT include the defective channel. (Channel III II position) (ONOP-041.6, Step 4.1.1)
	RCO	<p>Observes that Master Charging Pump controller response has failed, pressurizer level not following programmed level.</p> <ul style="list-style-type: none"> – Places the MASTER CHARGING PUMP CONTROLLER in MANUAL to maintain programmed level (ONOP-041.6, Step 4.2) (This fails.) – Places the individual CHARGING PUMP CONTROLLER in MANUAL for 3A charging pump and maintains programmed level.
	RCO	Reviews 3-ONOP-049.1 for bistables to be tripped for the failed channel.
	RCO	Observes correct indications received for each bistable placed in trip.
	BOP	Assists the RCO as directed by the ANPS.
	BOP	<p>Trips bistables IAW 3-ONOP-049.1:</p> <ul style="list-style-type: none"> ▶ BS-3-459A-1 and BS-3-459A-2

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 Page 7 of 18

Event Description: Charging pump controller failure as a result of LT-3-459 failing high.

[illegible]

Op-Test No.: 1 Scenario No.: 3 Event No.: 7 Page 8 of 18

Event Description: 3C S/G tube leak rate begins and increases to 200 gpd. Crew will enter 3-ONOP-071.2 and perform a rapid power decrease.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Responds to annunciator alarm H-1/4, PRMS HI RADIATION.</p> <p>Checks the PRMS channels and determines alarm is on R-15.</p> <p>Recognizes that R-15 is indicative of a S/G tube leak.</p>
	BOP/RCO	<p>Recommends entering 3-ONOP-071.2, "Steam Generator Tube Leakage."</p>
	ANPS	<p>Recognizes that R-15 is indicative of a S/G tube leak and enters 3-ONOP-071.2, "Steam Generator Tube Leakage."</p> <p>Directs the actions of ONOP-071.2 and monitors the Foldout Page.</p>
	BOP	<p>Verifies High Alarm ON for PRMS channel R-15 and may observe that R-19 has elevated reading but not alarming. (ONOP-071.2, Step 1)</p>
	BOP	<p>Checks the R-15 alarm is valid as follows: (ONOP-071.2, Step 2)</p> <ul style="list-style-type: none"> - checks R-15 readout \geq alarm setpoint - checks channel operability <ul style="list-style-type: none"> - depresses and holds the FAIL/TEST pushbutton on the R-15 channel - checks the readout equal to 288K or 289K - releases the FAIL/TEST pushbutton - observes the CAUTION prior to Step 6 and goes to Step 6 of ONOP-071.2
	ANPS	<p>Directs that plant parameters be monitored. (ONOP-071.2, Step 6)</p>
	RCO	<p>Monitors PZR level and maintains it stable or increasing by:</p> <ul style="list-style-type: none"> - increasing charging rate - reducing letdown flow
	BOP	<p>Checks the R-19 HI alarm is clear.</p>
	ANPS	<p>Requests the STA report to the control room.</p>

Op-Test No.: 1 Scenario No.: 3 Event No.: 7 Page 9 of 18

Event Description: 3C S/G tube leak rate begins and increases to 200 gpd. Crew will enter 3-ONOP-071.2 and perform a rapid power decrease.

Time	Position	Applicant's Actions or Behavior
	ANPS	<p>Directs the STA to approximate the tube leakage using the following (May perform this if the STA does not get to the control room) (ONOP-071.2, Step 7):</p> <ul style="list-style-type: none"> - 3-OSP-041.1, "RCS Leak Rate Calculation" - SJAE SPING ACTIVITY VS SG TUBE LEAKAGE curve in the plant curve book ($2.3E-4 \mu\text{Ci/cc}$) - R-15 ACTIVITY VS SG TUBE LEAKAGE curve in the plant curve book ($9.38E3$ counts)
	BOP	<p>Attempts to identify the leaking S/G (ONOP-071.2, Step 8)</p> <p>Observes increasing radiation levels on R-15, R-19, SPING and DAM1.</p>
	ANPS	<p>Monitors the Primary to Secondary leak rate to perform the required actions (ONOP-071.2, Step 9):</p> <ul style="list-style-type: none"> - checks Primary to Secondary leak rate Greater than Tech Spec limits <p>Performs Attachment 1 of ONOP-071.2 to determine the Shutdown rate. (ONOP-071.2, Step 9 RNO)</p>
	ANPS	<p>Determines if operation may continue (ONOP-071.2, Step 1 of Attachment 1):</p> <ul style="list-style-type: none"> - determines that Tube leakage in any S/G has NOT increased at a rate Less Than 60 gpd in 1 hour - returns to Step 10 of ONOP-071.2 AND must place the unit in MODE 3 within one hour (ONOP-071.2, Step 1.a, RNO a of Attachment 1)
	ANPS	<p>Determines that a load reduction is required by attachment 1 and conducts a shift brief. (ONOP-071.2, Step 10)</p>
	ANPS	<p>Notifies the Load Dispatcher that a load reduction is commencing. (ONOP-071.2, Step 11)</p>
	ANPS	<p>Makes required notifications. (ONOP-071.2, Step 12)</p>

Op-Test No.: 1 Scenario No.: 3 Event No.: 7 Page 10 of 18

Event Description: 3C S/G tube leak rate begins and increases to 200 gpd. Crew will enter 3-ONOP-071.2 and perform a rapid power decrease.

Time	Position	Applicant's Actions or Behavior
	ANPS	Determines the rate of load reduction and informs the RCO and BOP to commence the load reduction.
	RCO	Maintains the Control Rods above insertion limits. (ONOP-071.2, Step 13.a)
	RCO/BOP	Maintains Tavg within $\pm 3F$ of Tref. (ONOP-071.2, Step 13.a)
	RCO	Establishes the desired boration rate and determines the approximate amount of boric acid per Step 13.b of ONOP-071.2 to be 170 gallons per 10% power change. (ONOP-071.2, Step 13.b)
	BOP	Reduces turbine load at the rate specified by the ANPS.
	RCO/BOP	Monitors proper plant response to the load reduction.
	ANPS	Maintains command and control of the evolution.
	Crew	Notifies that the S/G tube leak rate has gone to 600 gpm and is beyond the capacity of the charging pumps.
	ANPS	Per the foldout page of ONOP-071.2, Step 1.b, the reactor must be tripped.
	ANPS	Directs the Reactor and Turbine be tripped and the actions of E-0 be taken by the BOP and RCO. Directs the RCO manually initiate SI and Phase A.
	RCO	Manually Trips the reactor and initiates Immediate Action of E-0.
	BOP	Manually Trips the Main Turbine and initiates Immediate Actions of E-0.

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	ANPS	Directs the response to reactor trip per 3-EOP-E-0, "Reactor Trip or Safety Injection." Monitors E-0 Foldout Page items.
	RCO	Performs Immediate Actions in response to reactor trip per E-0: Verifies Reactor trip (E-0, Step 1): <ul style="list-style-type: none"> ▶ checks all rod bottom lights ON ▶ checks RTBs and Bypass breakers OPEN ▶ checks all RPI's indicate zero ▶ checks neutron flux decreasing
	ANPS	Obtains verification of reactor trip.
	BOP	Performs Immediate Actions in response to reactor trip per E-0: Verifies Turbine trip (E-0, Step 2): <ul style="list-style-type: none"> ▶ checks all turbine stop valves are closed ▶ checks all MSR steam valves are closed ▶ checks Mid and East GCBs open after 30 second delay Verifies Power to Emergency 4 KV Buses (E-0, Step 3) <ul style="list-style-type: none"> ▶ checks both "A" and "B" 4KV buses are energized ▶ checks the "D" 4KV bus is aligned to an energized 4KV bus ▶ checks Load Centers 3A, 3B, 3C, 3D & 3H are energized.
	ANPS	Determines electric plant status.
	RCO	Checks if SI is actuated/required (E-0, Step 4): <ul style="list-style-type: none"> ▶ checks SI actuation setpoints -OR- ▶ checks RCS subcooling based on exit TCs <30F -OR- ▶ PZR level can not be maintained >12% ▶ informs ANPS of plant status
	RCO	Recognizes that SI is required due to decreasing PZR level and manually initiates SI and containment isolation Phase A (if SI has not occurred automatically). (E-0, Step 4 RNO b)

Op-Test No.: 1 Scenario No.: 3 Event No.: 8 Page 12 of 18

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	ANPS	Directs manual SI/Phase A initiation, if required.
	BOP	Verifies feed water isolation. (E-0, Step 5)
	RCO	Verifies containment isolation Phase A. (E-0, Step 6)
	BOP	Verifies AFW pumps running. (E-0, Step 7)
	RCO	Verifies SI pumps running (E-0, Step 8):
	RCO	Verifies proper CCW system operation. (E-0, Step 9)
	BOP	Verifies proper ICW operation. (E-0, Step 10)
	RCO	Verifies containment cooling. (E-0, Step 11):
	RCO	Verifies containment <u>and</u> control room ventilation isolation. (E-0, Step 12)
	BOP	Verifies that Main Steamlines do not require isolation. (E-0, Step 13)
	RCO	Monitors containment pressure and verifies containment spray is required since containment pressure has gone above 20 psig (E-0, Step 14 and Step 14.a, RNO a): <ul style="list-style-type: none"> - if containment spray has not initiated then manually initiate containment spray - verifies containment isolation Phase B has actuated - checks the containment isolation phase B valve lights and determines that not all valves have closed - manually closes the valves that did not close - stops the RCPs
	RCO	Verifies SI valve amber lights are ALL BRIGHT (E-0, Step 15)
	BOP	Verifies EDG's are running. (E-0, Step 16)

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	RCO	Resets SI. (E-0, Step 17)
	RCO	<p>Realigns SI system (E-0, Step 18 and Step 18.a, RNO a):</p> <ul style="list-style-type: none"> ▶ observes that Unit 3 high-head SI pumps, only one running. Observes zero amps on 3A SI pump and secures 3A SI pump. ▶ stops one Unit 4 high-head SI pumps and places it in standby. ▶ directs Unit 4 RCO to align Unit 4 high-head SI pump suction to Unit 3 RWST using E-0 Attachment 1
	BOP	Directs SNPO to place Containment Post Accident Hydrogen Monitoring System in service. (E-0, Step 19)
	RCO	<p>Verifies SI flow (E-0, Step 20):</p> <ul style="list-style-type: none"> ▶ observes RCS pressure is < 1600 psig ▶ observes high-head SI pump flow ▶ observes RCS pressure is NOT < 250psig [650 psig] ▶ transitions to Step 21 of E-0 from Step 20 RNO c
	BOP	Verifies proper AFW valve alignment. (E-0, Step 21)
	BOP	<p>Verifies proper AFW flow (E-0, Step 22):</p> <ul style="list-style-type: none"> ▶ observes narrow range level in all S/G's <6% [32%] and verifies total AFW flow is > 345 gpm (E-0, Step 22.a, RNO a.1) ▶ controls feed flow to maintain S/G narrow range levels between 6% [32%] and 50% (E-0, Step 22.b)
	RCO	<p>Checks RCP seal cooling (E-0, Step 23 and Step 23 RNO):</p> <ul style="list-style-type: none"> – observes Annunciator A-1/3, RCP THERMAL BARR COOLING WATER LO FLOW, is alarming – verifies RCPs are tripped – verifies SI is reset – starts one charging pump at minimum speed for seal injection – adjusts charging flow to Regen Heat Exchanger to maintain seal injection flow

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	RCO BOP	Observes RCS cold leg temperature is NOT stable -OR- trending to 547°F (E-0, Step 24 and Step 24, RNO) <ul style="list-style-type: none"> ▸ observes temperature is decreasing and performs the following: <ul style="list-style-type: none"> - stops dumping steam - limits total feed flow to 345 gpm until narrow range level greater than 6% [32%] in at least one S/G
	RCO	Checks RCP cooling (E-0, Step 25 and Step 25.a, RNO a): <ul style="list-style-type: none"> ▸ no RCPs are running, goes to Step 26 of E-0
	RCO	Checks Letdown, PZR PORVs, and Spray Valves closed. (E-0, Step 26)
	BOP	Checks if S/Gs are NOT faulted (E-0, Step 27): <ul style="list-style-type: none"> - checks pressure in all S/G and observes that 3C S/G pressure is decreasing in an uncontrolled manner and informs the ANPS
	ANPS	With the information that pressure in 3C S/G is decreasing in an uncontrolled manner, transitions to 3-EOP-E-0, Step 27.a, RNO a.
	ANPS	Monitors the Critical Safety Functions using 3-EOP-F-0, "Critical Safety Function Status Trees" (E-0, Step 27, RNO a.1): <ul style="list-style-type: none"> - observes a RED status on the INTEGRITY tree and transitions to 3-EOP-FR-P-1, "Response to Imminent Pressurized Thermal Shock Condition"
	RCO	Checks RCS pressure greater than 250 psig [650 psig] (FR-P.1, Step 1)
	BOP	Observes RCS cold leg temperatures decreasing and tries to stop the cooldown (FR-P.1, Step 2 and Step 2, RNO) <ul style="list-style-type: none"> - verifies S/G steam dump to atmosphere valves closed - verifies steam dump to condenser valves closed - controls feed flow to non-faulted S/G to stop RCS cooldown. Maintains total feed flow greater than 345 gpm until narrow range level greater than 6% [32%] in at least one non-faulted S/G.

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Minimizes cooldown from the faulted S/G, 3C (FR-P.1, Step 3)</p> <ul style="list-style-type: none"> - verifies RCS cold leg is decreasing - verifies the 3C S/G main steamline and bypass valve are closed - verifies SI reset - repositions AFW steam supply cross-connect valves to provide steam from intact S/Gs to all AFW pumps. Maintains steam flow to AFW pumps while repositioning cross-connect valves - AFSS-3-006 - AFSS-3-007 - dispatches an operator to perform the following: <ul style="list-style-type: none"> - opens AFW pump steam supply MOV breakers on 3C S/G - closes AFW pump steam supply MOV on 3C S/G - controls feed flow at 25 gpm to the non-faulted S/Gs - isolates feedwater to 3C S/G
	RCO	<p>Checks PRZ PORV block valves (FR-P.1, Step 4)</p> <ul style="list-style-type: none"> - power to block valves available - at least one block valve open
	RCO	<p>Checks PZR PORVs should be closed. (FR-P.1, Step 5)</p> <ul style="list-style-type: none"> - checks Overpressure Mitigation system and observes it is not in service (FR-P.1, Step 5.a, RNO a) and goes to Step 5.d. - checks PZR pressure < 2335 psig (FR-P.1, Step 5.d) - checks PZR PORVs closed (FR-P.1, Step 5.e)
	RCO	<p>Checks the High-head SI pumps are running. (FR-P.1, Step 6)</p>
	ANPS	<p>Checks if SI should be terminated (FR-P.1, Step 7):</p> <ul style="list-style-type: none"> - observes RCS subcooling is NOT > 80F [260F] (FR-P.1, Step 7, RNO) and goes to FR-P.1, Step 27
	RCO	<p>Checks if an RCP should be started (FR-P.1, Step 27):</p> <ul style="list-style-type: none"> - verifies all RCPs are stopped - observes RCS subcooling is not > 30F [210F] and goes to FR-P.1, Step 32 (FR-P.1, Step 27 RNO)

Op-Test No.: 1 Scenario No.: 3 Event No.: 8 Page 16 of 18

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	ANPS	<p>Determines if RCS temperature soak is required (FR-P.1, Step 32)</p> <ul style="list-style-type: none"> – verifies that the RCS cooldown rate has been greater than 100F in any 60 minute period – records start time of the soak – notifies crew that can not cooldown the RCS until temperature has been stable for 1 hour – notifies the crew that can not increase RCS pressure during the 1 hour soak – notifies the crew that procedure actions can be performed that will not affect the soak – notifies the crew that RCS cooldown is permitted after the 1 hour soak has been completed
	RCO	Maintains RCS pressure and cold leg temperatures within the limits of FR-P.1 FIGURE 1 limits. (FR-P.1, Step 32)
	BOP	Maintains cooldown rate in RCS cold legs less than 50F in any 60 minute period during subsequent recovery actions. (FR-P.1, Step 32)
	ANPS	Returns to Procedure and step in effect (FR-P.1, Step 33), 3-EOP-E-0, Step 27, RNO a.1.
	ANPS	<p>Monitors the Critical Safety Functions using 3-EOP-F-0, "Critical Safety Function Status Trees." (E-0, Step 27, RNO a.1)</p> <ul style="list-style-type: none"> – observes an ORANGE path on the CONTAINMENT tree and transitions to 3-EOP-FR-Z-1, "Response to High Containment Pressure."
	RCO	<p>Checks the status of the RCPs (FR-Z.1, Step 1):</p> <ul style="list-style-type: none"> – verifies all RCPs OFF – verifies all normal containment coolers OFF
	RCO	Verifies containment isolation Phase A. (FR-Z.1, Step 2)
	RCO	Verifies containment isolation Phase B. (FR-Z.1, Step 3)

Op-Test No.: 1 Scenario No.: 3 Event No.: 8 Page 17 of 18

Event Description: 3C S/G faulted (inside containment) & ruptured (600 gpm). Perform FR-P.1 (Red path) and FR-Z.1 (Orange path). 3A SI Pump shaft shears and Phase B relay CIB1 fails to actuate (3 valves fail to close).

Time	Position	Applicant's Actions or Behavior
	BOP	Verifies containment and control room ventilation isolation. (FR-Z.1, Step 4)
	BOP	Checks cold leg recirculation capability available. (FR-Z.1, Step 5)
	RCO	Verifies adequate containment spray pump suction during injection phase (FR-Z.1, Step 6): <ul style="list-style-type: none"> - RWST level > 155k gallons - RWST outlet isolation valves OPEN <ul style="list-style-type: none"> - MOV-3-864A - MOV-3-864B
	ANPS	Goes to FR-Z.1, Step 8. (FR-Z.1, Step 6)
	RCO	Verifies proper containment spray pump alignment (FR-Z.1, Step 8): <ul style="list-style-type: none"> - dispatches an operator to locally verify containment spray pump suction and discharge isolation valves OPEN - verifies containment spray pumps at least one running - checks if second containment spray pump should be running <ul style="list-style-type: none"> - RWST > 155k gallons - Containment pressure > 14 psig - verifies second containment spray pump running - verifies containment spray isolation valves on running containment spray pumps OPEN <ul style="list-style-type: none"> - MOV-3-880A for CSP A - MOV-3-880B for CSP B
	RCO	Verifies proper CCW system operation. (FR-Z.1, Step 9)
	RCO	Verifies containment cooling. (FR-Z.1, Step 10)
	BOP	Verifies main steamline isolation and bypass valves CLOSED. (FR-Z.1, Step 11)
	BOP	Checks if feed flow should be isolated to any S/G. (FR-Z.1, Step 12)

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Initial Conditions: Mode 1, 60% RTP

Turnover:

Power level is at 60% RTP following a unit power reduction for maintenance on the 3B SGFP and lube oil system. All testing was completed and the system was returned back to service. Equipment OOS --- PRN1 Channel N-41 upper detector failed.

Synopsis:

Following shift turnover the RCO is to complete **procedure 3-OSP-050.2, "Residual Heat Removal Pump 3A Test in Standby Alignment."** This will require close coordination to keep the scenario moving. Pump performance data will be needed so feedback can be given to control room operators in a timely manner. Field support from I/C, a technical rep, an operator stationed at the pump, and a stop watch will be required. Simulator operators will need to role play to ensure all local manipulations and data is completed. The RCO will stroke open valve MOV-749A for time. Then after several local valve manipulations, the RCO will start RHR pump 3A. **After the RHR pump is started and run for several minutes, control room operators will be informed by the local operators that the pump is making loud noises and vibration increasing.** The RCO should immediately shutdown the pump and put it in P-T-L. Most likely, the crew will also request that the pump breaker be racked out. **This makes the system inoperable and T.S. 3.5.2 will be applied.** The pump will not be returned during the scenario. The crew will then initiate a load increase the return the unit to 100% power. The annunciator for 3B SGFP lube oil level trip will actuate. **The 3B SGFP fails to trip on low oil pressure and the main turbine fails to automatically runback.** Feedback from the field should report that oil pressure is < 2.4 psig. The operators can either trip the SGFP and expect to see the turbine runback or manually run the turbine back and then trip the SGFP. In any case reactor power should be reduced to about 45%. **The annunciator for 3A RCP standpipe high level will actuate due to small leakage of the #2 seal.** Actions will be taken to reseal the seal and the annunciator will be cleared. **Pressurizer pressure protection channel PT-3-456 will fail high.** Operators enter 3-ONOP-49.1 but cannot take the channel out of service without causing a reactor trip. Technical Specifications requires a unit shutdown. **Operators should begin a unit shutdown. The annunciator for 480V transformer B ground / high temperature will actuate.** Feedback from the field will be high temperature. Operators should evaluate the problem, determine what loads should be removed to correct the problem. **After the operators have removed some equipment, the auxiliary building ventilation fan V8B will trip.** Operators should start the standby auxiliary building fan. The field report to the control room will be that the transformer temperature is returning to normal. **A gradual seal failure on RCP 3A will occur.** At 6 gpm a manual reactor is tripped is initiated per 3-ONOP-041.1, followed by a turbine trip. **When the RCP is tripped the seal package fails resulting in a small LOCA.** 3-EOP-E-0 is entered in response to plant conditions. **A safety injection actuates, but the train B sequencer fails to operate and associated loads must be manually started.** The 3B RHR pump will not start following a manual attempt. Remote valve operation binding prevents PAHMs valve lineup. Transition is made to 3-EOP-E-1 and then to 3-EOP-ECA-1.1 for RWST makeup inventory conservation. Upon completion of 3-EOP-ECA-1.1 step 10, the 3B RHR pump is restored. **When Transition from 3-EOP-ECA- 1.1 back to 3-EOP-E-1 is completed the scenario is terminated.**

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

Event Description: **Perform AFW pp "A" operability IST. ((Will need documents to support pump performance data --to supply feedback from field operators. Will need stopwatch, I/C available, Tech dept rep available, and operator at the pump. SG 3C aligned to supply steam to AFW.**

NOTE: After "A" AFW pump turbine is secured, report to the control room that the governor oil level is below the mid-level mark. At this time the operators should declared the system inoperable. The system will not be returned to service during the scenario.

Time	Position	Applicant's Actions or Behavior
	RCO	1. Obtain and review current revision of 3-OSP-075.1, ensure personnel, stopwatch, and technical support etc. are available for the test.
	RCO	2. Review procedure prerequisites <ul style="list-style-type: none">- ensure AFW aligned for normal operation per 3-OP-075- personnel who use procedure will review and understand responsibilities- ensure technical rep is available to review test results- ensure NPS has authorized performance of test- ensure I/C rep is available for test- ensure all instruments and control devices are in service, no outstanding PWOs, clearances, or Temp alts that affect operability
	RCO	3. Review procedure Precautions/Limitations
	RCO	4. Step 7.1.1 Perform and initial procedure steps. Obtain permission form NPS to perform the test
	RCO	5. Step 7.1.2 Verify AFW pump "A" supply to LO cooler AFWU-002, is locked open
	RCO	6. Step 7.1.3 Verify AFW pump oil sump level and clarity (appx 3/4 full with governor oil at top of sightglass Review note prior to step 7.1.4 NOTE: If governor oil level is visible in the sightglass, Mechanical maintenance shall be notified to fill governor with oil to the mark (+/- 1/8 ") with the turbine idling and a PWO generated. When turbine is secured, level below the mid-level mark constitutes

		inoperability
	RCO	7. Step 7.1.4 Review step then N/A steps 7.1.5 and 7.1.21.1 Verify step 21.1 will be N/A
	RCO	8. Step 7.1.6 Verify drain line valve 10-578 is throttled off its closed seat
	RCO	9. Step 7.1.7 Direct Valve in and vent suction pressure gauge PI-3675 a. open PI-3675 root valve 20-180 b. open PI-3675 instrument isol valve 20-475 c. open PI-3675 Isol valve 20-474 d. remove cap from PI vent valve e. open PI vent valve and vent line—close valve f. replace cap
	RCO	10. Step 7.1.8 Record AFW suction pressure _____
	RCO	11. Step 7.1.9 Verify turb casing drain 10-328 throttled off its closed seat
	RCO	12. Step 7.1.10 Push the mechanical trip button for the T and T valve, MOV-6459A and verify that - MOV-6459A is closed - control room mechanical trip light ON - Local test panel trip light ON
	RCO	13. Step 7.1.11 Reset the T and T valve, MOV-6459A Step 7.1.12 Verify roller is on North side of roller plate
	RCO	14. Step 7.1.13 Open the T and T valve MOV-6459A and verify control room light is ON
	RCO	15. Step 7.1.14 N/A??
	RCO	16. Step 7.1.15 Verify feed flow controllers set for 130 gpm and in Auto, HIC-3-1401A (SG -- A) HIC-3-1457A (SG -- B) HIC-3-1458A (SG -- C)
	RCO	17. Step 7.1.16 Record Reactor power on Attachment 1 _____
	RCO	18. Review NOTE prior to step 7.1.17 - when opening steam supply MOV, operator shall start the stopwatch to record time needed to reach required flow of 390 gpm

		- an operator shall be stationed to observe steam supply operation
	RCO	19. Review Caution Prior to step 7.1.17 and clear personnel from mezzanine deck area above the AFW pumps and the Unit 3 steam platform prior to starting the AFW pump
	RCO	20. Step 7.1.17 Simultaneously start the stopwatch and open MOV-3-1405
	RCO	21. Step 7.1.18 Record pump start time on Attachment 1_____
	RCO	22. Step 7.1.19 Verify open light for steam supply valve MOV-3-1405
	RCO	23. Step 7.1.20 Record time for AFW pump to reach 390 gpm on Attachment 1_____ (Acceptance Criteria within 95 seconds)
	RCO	24. Step 7.1.21 Verify lube oil cooler discharge pressure is greater than or equal to 15 psig (if less than 15 must manually trip) turbine (Verify N/A from step 7.1.4)
	RCO	25. Step 7.1.22 Allow FCV to operate for about 5 minutes and Verify flow is being maintained at or above 130 gpm to each SG with flow oscillations (+/-) 10 gpm (no acceptance criteria)
	RCO	26. Step 7.1.23 Place flow controllers in MANUAL and stabilize flow to each SG between 125 and 135 gpm. HIC-3-1401A SG -- A HIC-3-1457A SG -- B HIC-3-1458A SG -- C (acceptance criteria – local indications within 3% or 9 gpm of corresponding control room indication)
	RCO	27. Step 7.1.24 Verify pump speed is between 5880 and 5920 rpm (local tachometer) adjust speed locally if needed
	RCO	28. Step 7.1.25 Have Technical personnel perform IST procedure 0-O-075.11 (simulator operators to provide quickly)
	RCO	29. Step 7.1.26 Record pump test data on Section II of Attachment 1

	RCO	30. Note prior to Step 7.1.27, station an operator to observe operation of AFW FCVs.
	RCO	<p>31. Step 7.1.27 Verify operability of the AFW FCVs by performing the following and record the results on Attachment 1. Verify controllers are in MANUAL</p> <p>HIC-3-1401A SG -- A HIC-3-1457A SG -- B HIC-3-1458A SG -- C</p> <p>- cycle each valve one at a time fully open then closed with its HIC - Adjust each of the Flow Controllers to maintain feed between 50 and 60 gpm</p> <p>- Locally verify the following valves are 80 to 90 % full open CV-3-2831 CV-3-2832 CV-3-2833</p> <p>(Acceptance criteria 80-90%)</p>
	RCO	32. Caution before step 7.1.28, during AFW shutdown flow should be reduced slowly in order to prevent an electronic overspeed trip
	RCO	<p>33. Step 7.1.28 Verify that AFW pump has run at least 15 minutes then</p> <p>-slowly reduce flow to 0, turb speed to 3600 -close or verify closed MOV-3-1404 or 1405, SG 3C steam supply valve to AFW</p> <p>(have simulator operators give shorter time requirement)</p>
	RCO	34. Step 7.1.29 Record time that AFW pump A was stopped and total run time on Attachment 1
	RCO	35. Step 7.1.30 Locally verify CV-3-2831, CV-3-2832, and CV-3-2833 closed
	RCO	36. Step 7.1.31 Verify MOV 3-1405 closed light is ON
	RCO	37. Step 7.1.32 Verify MOV-3-1404 closed light is ON
	RCO	38. Step 7.1.33 Verify locally that pump is not rotating and exercise the pump governor knob to LOWEST setting
	RCO	39. Step 7.1.34 Open or verify open T and T valve MOV-6459A
	RCO	40. Step 7.1.35 Ensure pump is not rotating and rotate governor knob to MAXIMUM speed setting

	RCO	41. Step 7.1.36 Verify closed pump suction root valve 20-180
	RCO	42. Step 7.1.37 adjust controllers for 130 gpm and place in AUTO <ul style="list-style-type: none"> - HIC-3-1401 A (SG -- A) HIC-3-1457A (SG -- B) HIC-3-1458A (SG -- C) -Request BOP to perform independent system restoration- complete Attachment 2 - Inform plant operator to verify temperatures on pump discharge piping upstream of FCV is less than 120 Deg F 10 to 30 minutes after testing AFW pumps A, B, C - Notify NPS test is complete
	RCO	42. Inform crew, when notified by plant operator, that turbine governor oil level is low.
	RCO	43. Take actions as directed by NPS when AFW pump declared inoperable (verify actions to be taken)
	BOP	1. Monitor plant equipment
	BOP	2. Assist in surveillance test as directed
	BOP	3. Communicate with inplant and test support personnel as directed
	BOP	4. Conduct independent system restoration verification by performing Attachment 2 procedure <ul style="list-style-type: none"> - Verify MOV-6459A "A" AFW T & T valve OPEN - Verify HIC-3-1401A, SG "A" feed flow controller AUTO at 130 gpm - Verify HIC-3-1457A, SD "B" feed flow controller AUTO at 130 gpm - Verify HIC-3-1458A, SG "C" feed flow controller AUTO at 130 gpm - MOV-3-1405, SG 3C steam supply to AFW pumps CLOSED - MOV-3-1404, SG 3B steam supply to AFW pumps

		<p>CLOSED</p> <ul style="list-style-type: none"> - Governor Knob AFW "A" MAX SPEED - valve 10-578, drain line isolation valve THROTTLED - direct plant operator to verify the following valves CLOSED <ul style="list-style-type: none"> - CV-3-2816 - CV-3-2817 - CV-3-2818 - CV-3-2831 - CV-3-2832 - CV-3-2833
	NPS	1. Ensure correct procedure revision and use in accordance with administrative procedures 0-ADM-200 and 201, Conduct of Operations and Procedure usage
	NPS	2. Ensure test support personnel are available and staged to support operations
	NPS	3. Direct technical personnel performance of 3-OSP-075.1 (IST)
	NPS	4. Maintain command and control of evolution
	NPS	5. Ensure RCO and BOP monitors control room systems, indications and parameters during the evolution
	NPS	6. Review and verify pump acceptance criteria is satisfactory
	NPS	<p>7. Acknowledge low oil condition--Review procedure or determine that AFW "A" is inoperable</p> <p>Assess TS and determine applicable action (Verify TS section and action) 3.7.1.2, action 3, Verify 4 hours verify operability of two independent AFW trains ?</p>
	NPS	8. Direct RCO/BOP take actions to disable AFW pump (verify actions)
	NPS	9. Contact maintenance personnel to investigate loss of oil problem
	NPS	10. Direct CRO log entry for inoperable AFW
	NPS	11. Inform NPS and site management of unit condition

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

Event Description: Annunciator D6/5, SGFP "B" Lube Oil Lo Pressure Trip actuates.
The SGFP fails to trip. Also, the turbine automatic runback fails. Operator should manually trip the SGFP and manually run the turbine back.

Time	Position	Applicant's Actions or Behavior
	BOP	1. Observe alarms (verify other alarms actuated) D6/5 SGFP B LUBE OIL LO PRESSURE TRIP
	BOP	2. Observe and respond to plant indications for failure of SGFP to trip (verify plant indications and expected operator actions) (VERIFY TIMELINESS OF OPERATOR ACTIONS TO TRIP THE SGFP) Idle SGFP may automatically start Possible automatic start of AFW
	BOP Critical	3. NOTE: Operator can either trip the 3B SGFP and observe that an automatic runback failed to occur or manually runback the turbine to 60% , block SGFP runback and trip the SGFP
	BOP	4. Direct plant operator to locally check condition of 3B SGFP
	BOP	5. For turbine runback verify automatic actions occurred 1. Main turbine control valves and reheat intercept valves modulate closed Electrical output reduction 2. Steam dump valves arm and open to relieve excess steam 3. Automatic rod insertion control adjust core reactivity to match Tavg with Tref 4. FW control valves open or close in program response to steam/feed flow mismatch 5. Pressurizer level control and pressurizer pressure controller vary charging pumps speed and heater spray actuation to maintain the programmed level/pressure 6. Verify the following conditions SG level and pressure stabilized Steam dumps close Tavg match Tref

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

Event Description: Annunciator D6/5, SGFP "B" Lube Oil Lo Pressure Trip actuates. The SGFP fails to trip. Also, the turbine automatic runback fails. Operator should manually trip the SGFP and manually run the turbine back.

Pressurizer levels and pressures stabilized

	BOP/RCO	7. Mark control room charts with date, time, and cause of incident
	BOP	8. Document in operator log
	BOP	9. If directed, notify Chemistry of >15% power change to sample RCS per TS Table 4.4-4, Item 6.B
	RCO	1. Monitor plant parameters
		2. Assist BOP as directed
		3. Verify other actions that may be taken
	BOP/RCO	1. If directed, notify power system coordination and Duty Call Supervisor per 0-ADM-115, Notification of Plant Events 2. If directed, notify the STA to initiate reports per 0-ADM-512, Operational In-House Events
	NPS	1. Maintain command and control during the event
	NPS	2. Direct operators to take actions as dictated by plant response and indications Direct plant operator to check conditions of SGFP locally
	NPS	3. Direct operators to take actions per 3-ONOP-089, Turbine Runback

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

Event Description: Annunciator D6/5, SGFP "B" Lube Oil Lo Pressure Trip actuates.
The SGFP fails to trip. Also, the turbine automatic runback fails. Operator should manually trip the SGFP and manually run the turbine back.

	NPS	4. Either notify or direct operators to notify Chemistry of >15% power change STA Duty Call Supervisor I&C/Maintenance to investigate turbine runback failure and the failure of the SGFP to trip on Lo lube oil pressure any other actions???

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

Event Description: Excessive RCP seal #2 leakage on 3A. The seal degrades causing a high standpipe alarm and decreased #1 seal leakoff flow. The crew references 3-ONOP-041.1 and reseats the #2 seal. **The #2 seal will be reseated when procedure steps are completed.**

Symptoms: Decreased #1 seal leakoff flow FR-3-154A, Alarm G 2/1 Standpipe Hi Level

Time	Position	Applicant's Actions or Behavior
	RCO	1. Observe and respond to Annunciator G 2/1, RCP A Standpipe Hi Level. Announce problem to crew.
	RCO	2. Verify alarm by checking the following RCP temperature recorder TR-320 RCP seal leakoff flows Position of makeup valves CV-3-519A and 522A Identifies 3A RCP reduced #1 seal leakoff flow
	RCO	3. Verify standpipe makeup valves are closed CV-3-519A CV-3-522A
	RCO	4. Monitor RCP parameters and go to 3-ONOP-41.1, Reactor Coolant Pump Off-Normal
	RCO	5. Perform steps of 3-ONOP-041.1 as directed Monitors for abnormal RCP parameters --Verify proper seal injection flow --Maintain #1 seal leakoff flow within limits of Figure 1. (Procedure states figure 1 but Should be Enclosure 1) --Verify thermal barriers intact --Verify proper cooling --Verify VCT temperatures TR-3-116 , <130 --Procedure step 6 Check RCP standpipe level alarms -OFF RNO and TRANSITION to STEP 37

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

Event Description: Excessive RCP seal #2 leakage on 3A. The seal degrades causing a high standpipe alarm and decreased #1 seal leakoff flow. The crew references 3-ONOP-041.1 and reseats the #2 seal. **The #2 seal will be reseated when procedure steps are completed.**

Symptoms: Decreased #1 seal leakoff flow FR-3-154A, Alarm G 2/1 Standpipe Hi Level

	RCO	6. Directs SNPO to monitor RCDT at Waste Disposal/Boron Recovery panel—verify RCDT capable of handling increased leakage
	RCO	7. Check the following valves closed CV-3-303A CV-3-303B CV-3-303C
	RCO	8. Increase VCT pressure PI-3-117 to 40 appx. psig
	RCO/BOP	9. Check for adequate CCW flow to NRHX and seal water return HX per 3-OP-030
	RCO	10. Manually make up to VCT to cool down the VCT if needed
	RCO	11. Inform NPS of status and unit conditions
	BOP	1. Monitor plant parameters as needed
	BOP	2. Assist RCO as directed
	NPS	1. Maintain command and control of evolution
	NPS	2. Directs operators to take actions as dictated by plant response and indications
	NPS	3. Directs response to 3A RCP #2 seal degradation per 3-ONOP-041.1

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

Event Description: Excessive RCP seal #2 leakage on 3A. The seal degrades causing a high standpipe alarm and decreased #1 seal leakoff flow. The crew references 3-ONOP-041.1 and reseats the #2 seal. **The #2 seal will be reseated when procedure steps are completed.**

Symptoms: Decreased #1 seal leakoff flow FR-3-154A, Alarm G 2/1 Standpipe Hi Level

	NPS	4. Review foldout page upon entry into 3-ONOP-41.1
	NPS	5. Directs RCO in performance of step 1 of ONOP Upon receiving a NO response for step 6, Transition to step 37
	NPS	6. Directs crew to perform steps 37--- of ONOP to reseal seal and verify Number 2 seal intact
	NPS	7. Direct STA to monitor RCS leak rate using 3-OSP-041.1
	NPS	8. Directs RCO to increase VC pressure to 40 psig to attempt to reseal the #2 seal.
	NPS	9. Directs crew to monitor parameters to verify seal is reseated
	NPS	10. Direct verification of seal condition-Exit procedure at step13, and Inform plant management of unit condition
	NPS	11. Review TS 3/4.4.6 (Other required actions???) Verify time of operation with RCP Standpipe Hi Level Alarm was less than 8 hours

Op-Test No.: _____ Scenario No.: 4 Event No.: 4 Page of

Event Description: PT-3-456 fails High. Actions are carried out per 3-ONOP-049.1, Deviation or Failure of Safety Related or Reactor Protection Channels, with the exception of tripping bistables which would cause a reactor trip given the pre-existing PRNI failure.

Indications: Annunciator A 8/1, PRZ HI PRESSURE
PI-3-456 Fails High

Time	Position	Applicant's Actions or Behavior
	RCO	1. Recognize and respond to annunciator A 8/1, PZR Protection Hi Pressure.
	RCO	2. Verify the alarm by Checking PI-3-455, 456, 457 Check BS 3-455A, 456A, 457A
	RCO	3. Recognize failure of PT-3-456 compares to other PZR PT't verify no off-normal conditions on PT-455 notifies NPS of failure
	RCO	4. When directed ---Coordinate with BOP to initiate a unit shutdown per 3-GOP-103 per TS action statement for inability to trip bistables
	BOP	1. Monitor plant parameters Assist RCO as directed
	BOP Critical	2. Refer to NOTE prior to procedure step 5.9, NOT trip bistables if cause ESF or TRIP, Refer to TS 3/4.3 Trip bistables IAW 3-ONOP-49.1, Attachment 4 (page 37 of 53???) BS-3-456A, B, C, D in rack 12 Recognize trip potential and NOT trip BS-3-422 in rack 11 due to RPS actuation

	BOP	3. Coordinate with RCO to shutdown the unit when directed
	NPS	1. Direct operators take actions in accordance with ARP
	NPS	2. Verifies RCO determination of PZR PT status
	NPS CRITICAL	3. Directs BOP to trip bistables using ONOP-49.1 Attachment 4 , page 37 of 53, except for BS-3-422C-1, BS-3-422C-2 in rack 11
	NPS	3. Ensures I/C notified of PT-3-456 failure
	NPS CRITICAL	4.Refer to TS 3/4.3 and determine required action is to shutdown due to inability to trip bistables
	NPS	5. Inform plant management of unit condition inform load dispatcher of planned unit shutdown
	NPS	6. Supervises 3-GOP-103 actions to initiate unit shutdown
	NPS	7. Maintain command and control of evolution

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

Event Description: Initiate unit shutdown due to TS action. PRNI channel 41 upper detector failed and PT 3-456 failure. Cannot place PT-456 bistables in trip conditions without causing RPS action. **The amount of power decrease determined by examiner before next event to occur.**

Time	Position	Applicant's Actions or Behavior
	RCO	1. Coordinate with BOP to initiate actions for unit shutdown, when directed
	RCO	2. Perform actions of 3-GOP-103 under direction of NPS review procedure precautions/limitations
	RCO	3. Perform reactivity calculation per 0-OP-046, CVCS Boron Concentration Control, if directed
	RCO	4. Set totalizer per 0-OP-046 for calculated amount
	RCO	5. Adjust FCV-3-113A per 0-OP-046 to desired amount
	RCO	6. Place reactor makeup selector switch to BORATE position per 0-OP-046
	RCO	7. Turn RCS makeup switch to START per 0-OP-046
	RCO	8. Verify expected boron flow rate per 0-OP-046
	RCO	9. Stops boration manually if required
	RCO	10. Verifies control switches in AUTO and valves closed after boration stops
	RCO	11. Place reactor makeup selector switch in AUTO per 0-OP-046
	RCO	12. Turn RCS makeup control switch to Start per 0-OP-046
	RCO	13. Repeat steps above as required
	RCO	14. Insert control rods if required while maintaining rods within limits of 0-OP-059, GOP-103 step 5.5.1.1? Verify receipt of P-8 light when power < 45%

	RCO	15. Report unit status to NPS
	BOP	<p>1. Inhibit MIMS, if directed</p> <p>--perform turnover with RCO --place alarm inhibit switches on MIMS 133C modules in INHIBIT --Turn the power switch on Rascal Recorder to off, if directed by NPS -- If directed, turn power down MIMS by placing power switch to module 141 to OFF</p>
	BOP	2. Maintain plant power stable during RCO reactivity calculation
	BOP	<p>3. Reduct turbine load as directed by NPS ----maintain Tavg within 1 Deg F or 3 Deg F (rods in auto / manual) in accordance with 3-GOP-103</p> <p>Do not exceed the turbine unload rate specified in Section IV of Plant Curve Book</p> <p>Secondary equipment may be removed from service at about 450 MWE, stop 1 heater drain pump etc.</p>
	BOP	4. Reports status of unit to NPS/RCO
	NPS	<p>1. Direct power reduction per 3-GOP-103</p> <p>Review (or direct) EPIP-20101, Duties of Emergency Coordinator due to shutdown</p> <p>0_ADM-115, Notifications of Plant Events</p> <p>Notify Duty Call Supervisor of unit shutdown</p> <p>Review or direct use of Attachment 2 of procedure, Problem Identification Checklist</p>
	NPS	2. Specify ramp rate for power reduction
	NPS	3. Directs RCO/BOP to inhibit MIMS
	NPS	4. Directs RCO to initiate power decrease using Boration per 0-OP-046
	NPS	5. Directs RCO to reduce power using control rods while maintaining axial flux within limits of 0-OP-059.9 and GOP-103 limits
	NPS	6. Maintain command and control during the evolution

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

Event Description: 480 Volt transformer B will alarm for ground/high temperature. **The problem should be XFMR Hi Temp.** The transformer feeds 3B 480 volt load center which in turn feeds 3B 480 Volt MCC. 3B 480 Volt MCC is part vital and non-vital equipment. **After some loads are removed per the ARP, Aux building ventilation fan V8B will trip on motor overload and not be restored during the scenario. After some loads are removed and the Aux bldg fan trips, inform the crew that the temperature has returned to normal and clear the alarm.** Operators should start or direct that the V8A fan from 4D MCC be started.

Time	Position	Applicant's Actions or Behavior
	BOP	1. Observe and respond to ARP F7/3, 480V XFMR A/B/C/D GROUND/HI TEMP
	BOP	2. Inform crew and NPS of alarmed condition
	BOP	3. Verify alarm by checking Voltmeter on VPA
	BOP	4. Dispatch operator to check local temperature and ground indication at each 480 V XFMR
	BOP	5. When informed of High Temperature condition on "B" XFMR, inform the crew and NPS
	BOP	6. When directed, use alternate equipment on other load centers to reduce duty on affected transformer. SWAP the following loads per applicable procedure --- --- --- --- <u>Verify loads that can be swapped and applicable procedure</u>
	BOP	7. Recognize and respond to ARP X 4/3, AUX/RADWASTE BUILDING EXHAUST FAN TRIPPED Inform the crew of tripped condition
	BOP	8. Verify alarm by checking the Auxiliary building exhaust fan green lights on
	BOP Critical	9. Start standby Aux building exhaust fan ---Verify system operating parameters are satisfactory
	BOP	10. Dispatch plant operator to investigate the cause of the exhaust fan trip
	BOP	If directed, notify electrical maintenance

	RCO	1. Monitor plant parameters
	RCO	2. If directed, verify reading on voltmeters
	RCO	3. If directed, send plant operator to check local XFMR temp and ground detectors
	RCO	4. If directed, assist in swapping loads to reduce duty on XFMR
	RCO	5. Assist BOP as needed
	NPS	1. Direct BOP use of ARP for F 7/3
	NPS	2. Direct RCO monitor plant parameters
	NPS	3. When informed of high temperature on B XFMR, direct BOP /RCO swap loads to reduce load on XFMR Identify the following loads to be swapped -- -- -- --
	NPS	4. Direct BOP/RCO use applicable procedures to swap loads
	NPS	5. Direct or Notify Electrical maintenance of XFMR "B" temperature problem
	NPS	6. Refer to TS 3.8.3.1 and conclude VERIFY TS ACTIONS
	NPS	7. Direct operators take actions in accordance with ARP ARP X 4/3, AUX/RADWASTE BUILDING EXHAUST FAN TRIPPED
	NPS	8. Direct operators start the standby Aux building exhaust fan
	NPS	9. Notify electrical maintenance of Aux building exhaust fan motor overload problem
	NPS	10. Maintain command and control of evolutions

Op-Test No.: _____ Scenario No.: 4 Event No.: 7

Event Description: The #1 seal on 3A RCP fails gradually and eventually results in a complete failure (small LOCA). At 6 gpm, the reactor is tripped, the affected RCP is tripped and CV-3-303 A, #1 seal leak off isolation valve is closed. A transition is made to 3-EOP-E-0. **Shortly after the reactor and turbine is tripped (about step 4 or 5 of E-0) the leak size should be increased.**

Time	Position	Applicant's Actions or Behavior
	RCO	1. Recognize that the RCP #1 seal leak-off is greater than 6 gpm. FR-3-154A
	RCO	2. Reports failed seal to CREW and NPS
	RCO	3. Performs actions in IAW 3-ONOP-041.1, Reactor Coolant Pump Off Normal, when directed Trip reactor Trip 3A RCP Close CV-3-303 A #1 seal leak-off valve for 3A RCP Inform NPS when leakage is greater than charging pump capacity
	RCO	4. Monitor RCDT level for indication of #2 seal failure
	BOP	1. Assist RCO as directed by NPS
	BOP	2. Trip turbine when reactor trip ordered
	BOP	3. Inform crew of plant status
	NPS	1. Direct operator actions IAW ONOP-041.1 review foldout page
	NPS	2. Recognize RCP 3A #1 seal greater than 6 gpm and orders a reactor trip
	NPS	3. Direct trip of 3A RCP and that valve CV-3-303A be closed (seal leak-off)
	NPS	4. Maintain Command and Control (Event is SAE classification-- Per 0-EPIP-20101)

Op-Test No.: _____ Scenario No.: 4 Event No.: 7A

Event Description: In response to plant conditions, a manual reactor / turbine trip occurred. Operators perform immediate actions of 3-EOP-E-0.

Time	Position	Applicant's Actions or Behavior
	RCO	1. Verifies reactor tripped (immediate actions) rod bottom lights on reactor trip and bypass breakers open rod position indicators at 0 neutron flux decreasing
	RCO	2. Checks to see if SI is actuated or required. Manually actuates SI and Phase A if required by PRZ level or RCS subcooling
	RCO	3. Recognizes loss of subcooling and trips the RCPs if applicable (foldout page)
	RCO	4. Monitors plant conditions and informs NPS of unit status
	BOP	1. Performs immediate actions of 3-EOP-E-0 verify turbine tripped all turbine stop valves closed MSR main steam supply stop MOV's reheater timing valves MSR purge steam valves Mid and East GCBs open
	BOP	2. verify 4KV busses 3A, 3B, both energized
	BOP	3. Verify D 4KV bus aligned and energized
	BOP	4. Verify load centers 3A, 3B, 3C, 3D, and 3H are energized
	BOP	Inform crew of plant status
	NPS	1. Direct operator actions to reactor trip IAW 3-EOP-E-0
	NPS	2. Obtains verification of reactor trip indications
	NPS	3. Obtain verification of turbine trip indications
	NPS	4. Determine if SI/Phase A is required Transition to 3-EOP-ES-0.1 if SI / Phase A not required

	NPS Critical	5. Direct manual SI /Phase A when required (Step 4 RNO)
	NPS	6. Monitors foldout page items including direction to RCO to stop all RCPs when subcooling is lost
	NPS	7. Maintain command and control of evolutions
		8. Inform plant management of problem

Op-Test No.: _____ Scenario No.: 4 Event No.: 8

Event Description: The 3A RCP seal completely fails resulting in a SBLOCA. A safety Injection signal occurs automatically or has been initiated manually. Train A sequencer fails to start associated loads and the equipment must be manually started.

Time	Position	Applicant's Actions or Behavior
	RCO	1. Verify containment isolation Phase A, white lights all bright
	RCO	2. Verify at least 2 high head SI pumps running
	RCO	3. Verify Both RHR pumps running (RNO attempt to manually start the 3A RHR and note pump does not start-report to crew NPS)
	RCO Critical	4. Verify proper CCW operation. Verify only two CCW pumps running (Manually start the 3A CCW pump)
	RCO	5. Verify 3 CCW heat exchangers in service
	RCO	6. Verify CCW headers tied together
	RCO	7. Verify MOV-3-626, open (RCP thermal barrier CCW valve)
	RCO Critical	8. Verify containment cooling-only two running. (NO- Manually start one emergency containment cooler)
	RCO Critical	9. Verify 2 ECFs running (NO-manually start 3A or 3B ECF)
	RCO	10. Verify containment and control room ventilation isolation Unit 3 containment purge exhaust and supply fans off Control room is on proper emergency recirculation alignment
	RCO	11. Monitor containment pressure (PR-3-6306A and B to verify containment pressure remained less than 20 psig)
	RCO	12. Verify containment spray not required
	RCO	13. Verify SI valve amber lights bright
	RCO	14. Recognize loss of subcooling and trip RCP if applicable
	RCO	15. Perform subsequent steps of 3-EOP-E-0 as directed by NPS

Op-Test No.: _____ Scenario No.: 4 Event No.: 8

Event Description: The 3A RCP seal completely fails resulting in a SBLOCA. A safety Injection signal occurs automatically or has been initiated manually. Train A sequencer fails to start associated loads and the equipment must be manually started.

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> - Reset SI - Realigns SI-manually start 3B HHSI pump and stop unit 4 HHSI pumps - Verify SI flow - Checks RCP seal cooling - Check RCP cooling - Check letdown/PORVs/spray valves closed -Perform LOCA diagnostics
	RCO	16. Informs NPS of safety injection and cause
	RCO	17. Inform NPS of unit/equipment status
	BOP	1. Verify Feedwater Isolation <ul style="list-style-type: none"> -place main feedwater pump switches in STOP -Verify feedwater control and bypass valves are CLOSED -verify feedwater isolation valves MOVs CLOSED -Verify standby feedwater pumps OFF
	BOP	2. Verify at least 2 AFW pumps running
	BOP	3. Verify proper ICW system operation -two pumps running
	BOP	4. Verify ICW to CCW Heat Exchangers is isolated (POV-3-4882 and 4883 are closed)
	BOP	5. Verify intake cooling water headers are tied together
	BOP	6. Check if MSIVs or Bypass valves are open If yes check to see if MSIV actuation signal have actuated. If yes, verify MSIVs and bypass are closed
	BOP	7. Verify all EDG are running

Op-Test No.: _____ Scenario No.: 4 Event No.: 8

Event Description: The 3A RCP seal completely fails resulting in a SBLOCA. A safety Injection signal occurs automatically or has been initiated manually. Train A sequencer fails to start associated loads and the equipment must be manually started.

Time	Position	Applicant's Actions or Behavior
	BOP	8. Perform subsequent actions of 3-EOP-E-0 Directs PAHMS be placed in service Verifies proper AFW alignment and flow Checks RCS cold leg temperatures stable Performs MSLB and SGTR diagnostics
	BOP	9. Inform NPS of unit and equipment status
	NPS	1. Coordinates and directs performance of 3-EOP-E-0
	NPS Critical	2. Directs steps 5-16 of EOP (Recognize failure of sequencer) and directs actions including manual start of 3B RHR pump Other Train B ECCS equipment after failure of sequencer is recognized
	NPS Possible Critical	3. Monitors foldout page directs RCO stop all RCP if subcooling is lost
	NPS	4. Direct Subsequent procedure steps be performed
	NPS	5. Transitions to appropriate plant procedure (3-EOP-E-1 or FRP)
	NPS	6. Maintain command and control of evolution

Op-Test No.: _____ Scenario No.: 4 Event No.: 8A

Event Description: A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps

required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1 Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
	RCO	1. Perform subsequent actions of 3-EOP-E-0 as directed by NPS
	RCO	2. Reset SI
	RCO	3. Verify 2 Unit 3 HHSI pumps are running and stop Unit 4 HHSI pump
	RCO	4. Direct PAHMS be placed in service
	RCO	5. Verify HHSI flow if RCS is < 1600 psig [2000]
	RCO	6. Verify RHR pump flow if RCS pressure is <250 psig [650]
	RCO	7. Verify annunciators A 1/1, A 1/2 and A 1/3 are off. If any on, trip RCPs if CCW is lost, verify EDG capacity, and start one charging pump at minimum speed.
	RCO	8. Check RCS cold leg temperatures to be stable at 547 or trending to 547. Reports status to NPS
	RCO Critical	9. If any RCPs are running, check RCS subcooling and if necessary trip RCPs after checking HHSI pump status.
	RCO	10. Establish proper CCW system alignment 3 CCW Heat exchangers only 2 CCW pumps running
	RCO	11. If RCP running, re-establish RCP cooling by verifying SI and Phase A reset, open MOV 1417 and 1418 restart normal containment coolers
	RCO	12. Verify excess letdown valves, pressurizer PORVs and spray valves CLOSED
	RCO	13. Identifies presence of abnormal containment radiation containment pressure containment sump level (E-0 Step 29)
	RCO	14. Inform NPS of unit /plant conditions

	BOP	1. Perform subsequent steps of 3-EOP-E-0
	BOP	2. Verify proper AFW emergency alignment
	BOP	3. Verify proper AFW flow SG narrow level at least one >6% [32] If none > 6% verify total AFW flow to intact SG at least 390 gpm
	BOP	4. Control SFW flow to maintain SG level between 6% [32] and 50%
	BOP	5. If RSC cold leg temperatures are < 547 and are trending down, stop dumping steam and if necessary close the MSIVs/bypass
	BOP	6. If RCS temperatures are > 547 and are trending up, commence dumping steam
	BOP	7. Recognize loss of subcooling and trip RCP if applicable
	BOP	8. Check for faulted SG-report condition to NPS
	BOP	9. Check for ruptured SG-report condition to NPS
	BOP	10. Inform NPS of unit / plant conditions
	NPS	1. Coordinate actions / directions for steps 17-29 of EOP-E-0
	NPS	2. Transition to 3-EOP-E-1 when abnormal containment conditions are identified by RCO (E-0 step 29)
	NPS	3. Maintain command and control of evolution

Op-Test No.: _____ Scenario No.: 4 Event No.: 8B

Event Description: Perform actions IAW 3-EOP-E-1.

A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1 Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
	RCO	1. Acknowledge transition to and perform actions of 3-EOP-E-1 as directed by NPS
	RCO	2. Monitor RCS subcooling and SI pump status. Recognize loss of subcooling and trip RCP if applicable
	RCO	3. Check status of PRZ PORVs and block valves. Verify power is available to block valves and that they are open
	RCO	4. Verify that SI is reset
	RCO	5. Receives board turnover form BOP and monitors control boards while BOP resets Phase A and Phase B lockout relays
	RCO	6. Verify CV-2803 is open and instrument air pressure (PI-1444) is > 95 psig
	RCO	7. Check any charging pump running. If NO determine if CCW flow to RCP thermal barrier is lost If CCW is lost, direct valves 297 A, B, C be closed and start one charging pump
	RCO	8. Verify 1 charging pump running place RCS makeup control switch in STOP and establish maximum charging flow
	RCO	9. Verify charging pump suction automatically transfers to RWST

Op-Test No.: _____ Scenario No.: 4 Event No.: 8B

Event Description: Perform actions IAW 3-EOP-E-1.

A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1 Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
	RCO	10. Verify that SI termination criteria is not met and reports to NPS
	RCO	11. Checks any Containment Spray pumps running If YES check termination criteria If YES stop pumps and close isolation valves
	RCO	12. Verify RCS pressure > 250 psig [650] and that RHR pump stop criteria NOT met
	RCO	13. Check RCS pressure to be stable or decreasing and report to NPS.
	RCO	14. Verify that at least 1 RHR pump is available for recirculation NO --Informs NPS of plant status
	RCO	15. Acknowledge transition to 3-EOP-ECA-1.1
	RCO	16. Performs steps of ECA-1.1 as directed RHR pump suction isolated from RWST CNMT recirc -- RHR 1 RHR pump available--RNO manual local operation for equipment
	RCO	17. Align make up to RWST
	RCO	18. Coordinate with BOP to establish RCS cooldown by 100 Deg/hr--monitor RCS parameters
	RCO	19. Verify 2 ECCs running
	RCO	20. Check computer room chiller running
	RCO	21. Check RWST > 60 K gal--stop all pumps taking suction from

Op-Test No.: _____ Scenario No.: 4 Event No.: 8B

Event Description: Perform actions IAW 3-EOP-E-1.

A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1 Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
		RWST if not
	RCO	22. Determine containment spray requirements and operates minimum number of pumps (check this)
	RCO	23. Verify SI reset
	RCO Critical	24. Start 1 RH R pump when made available for use
	RCO	25. Inform NPS of unit / plant conditions
	BOP	1. Acknowledges transition to and perform actions of 3-EOP-E-1 as directed
	BOP	2. Checks SG pressures to monitor for faulted SG
	BOP	3. Maintain SG levels between 15 and 50% narrow range level
	BOP	4. Checks secondary radiation levels Direct chemistry to sample SG Obtain DAM-1 readings monitor MSL levels Verify rad levels near normal values
	BOP	5. Perform turnover with RCO and leave area to reset Phase A and Phase B relays
	BOP	6. Verify charging pumps power supplies aligned to offsite power
	BOP	7. Verify SI termination criteria is not met and reports to crew

Op-Test No.: _____ Scenario No.: 4 Event No.: 8B

Event Description: Perform actions IAW 3-EOP-E-1.

A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1 Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
	BOP	8. Checks SG pressures to be stable or increasing and reports status to NPS
	BOP	9. Verifies 3A and 3B 4KV busses are energized by offsite power and stops unloaded EDG using 3-OP-023
	BOP	10. If directed evaluate plant / unit status and report to NPS
	BOP	11. Acknowledge transition to ECA 1.1
	BOP	12. Perform actions of ECA 1.1 as directed by NPS
	BOP	13. Maintain intact SG levels
	BOP	14. Coordinates with RCO to establish unit cooldown 100Deg/hr by dumping steam
	BOP	15. Assist RCO as needed Inform NPS of unit status / conditions
	NPS	1. Transition to 3-EOP-E-1
	NPS	2. Direct operator actions IAW 3-EOP-E-1
	NPS	3. Directs tripping of RCP if subcooling is lost
	NPS	4. Transition to 3-EOP-ECA-1.1 due to loss of cold leg recirculation capability
	NPS	5. Direct actions per ECA 1.1
	NPS	6. Direct alignment of makeup to the RWST and minimize outflow
	NPS	7. When informed available, direct start of 1 RHR pump to restore

Op-Test No.: _____ Scenario No.: __4__ Event No.: __8B__

Event Description: Perform actions IAW 3-EOP-E-1.

A small break LOCA has occurred. 3-EOP-E-0 diagnostic steps required transition to 3-EOP-E-1 which is entered and actions completed. Since neither RHR pump is operating, cold leg recirculation capability cannot be verified and transition is made to 3-EOP-ECA-1.1. Containment radiation levels will be abnormal, containment sump level indications abnormal, HHSI actuated and injecting, and both RHR pumps out of service.

Time	Position	Applicant's Actions or Behavior
		emergency coolant recirculation capability
	NPS	8. Transition out of ECA 1.1 back to EOP-E-1 after 1 RHR is started
	NPS	5. Transition to appropriate FRP if required by red/orange path CSFST
	NPS	6. Maintain command and control of evolutions
	NPS	7. Classify the event as SAE (RCS leak greater than charging) IAW 0-EPIP-20101

Scenario # 5a

Initial conditions: 35% power. IC-26.

RO Normal -

RO Instrument - Pressurizer spray valve controller fails (pressure fails high so spray valve opens)

RO Reactivity - Increase reactor power per GOP

BOP Component - SGFP bearing high temperature on operating feed pump causes feed pumps to be swapped

BOP Instrument - Main steam line low pressure (PT-474 fails low) C-8/1
Verify alarm by checking PI-474<614 psig and status lights lit PC-474A
Go to ONOP-049.1 and place the bistable in bypass.

RO Component - CVCS relief RV-311 fails open (A-5/4)

RO Component - Control rod drop. Low worth one, an annoyance,

Major Transient

Major steam line break downstream of MSIV's

Initial Conditions:

1. Initial condition Mode 1 at 35% RTP.

Turnover:

1. Power level is at 35%.
2. Power increase to 100% is desired.

Equipment OOS ---

1. Charging Pump 3C is out of service for motor ground and the breaker is racked out.
2. I&C has Steam Dump selector switch selected to MANUAL (Steam Pressure) mode due to problem with TC-408H, (Tavg input to Turbine Trip Summator).

Synopsis:

Op-Test No.: 1 Scenario No.: 5 Event No.: 1 Page 2 of 22 Event Description: Raise reactor power to 100%

Time	Position	Applicant's Actions or Behavior
	ANPS	<p>Conducts crew brief.</p> <p>Directs power increase IAW 3-GOP-301 using dilution and/or control rods.</p> <p>Notifies load dispatcher of load increase.</p>
	ANPS	Specifies ramp rate for power increase. (3-GOP-301, Precaution 4.35)
	ANPS	Directs RCO to increase power using dilution per 0-OP-046. (3-GOP-301, Step 5.70)
	ANPS	Directs RCO to increase power using the control rods (if required) while maintaining axial flux within limits. (3-GOP-301 Step 5.70)
	ANPS	Directs BOP to increase turbine load as required to maintain Tavg matched with Tref. (3-GOP-301 Step 5.70)
	ANPS	Maintains command and control of the evolution.
	ANPS	Notifies the Chemistry Department must sample the RCS. (0-OP-046, Step 5.3.2.12)
	RCO	Performs 0-OP-046, CVCS - "Boron Concentration Control," as directed by the ANPS.
	RCO	Step 5.3.1.1 - Verifies initial conditions for starting the dilution.

Op-Test No.: 1 Scenario No.: 5 Event No.: 1Page 3 of 22Event Description: Raise reactor power to 100%

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Reads Cautions before Step 5.3.2.1:</p> <ul style="list-style-type: none">• Error margins exist for the Boric Acid and Primary Water flow transmitters, with Primary Water being the greatest. Extreme care needs to be exercised to ensure that an excessive reduction in RCS boron concentration does not occur due to this fact.• When less than 1% power, an independent Verification of Boron Reduction change calculation should be performed to ensure SDM requirements are not challenged.
	RCO	<p>Reads NOTES before Step 5.3.2.1:</p> <ul style="list-style-type: none">• VCT level is 14.15 gallons/% level indication.• Attachment 5 of this procedure may be used to assist in calculating dilution requirements for power or temperature changes.
	RCO	<p>Step 5.3.2.1.a - Determine the approximate quantity of primary water required to change reactivity by the desired amount. (May be by the day to day activities OR using the plant curve book)</p> <p>Step 5.3.2.1.b - N/A's this step since are > 1% power.</p>
	RCO	<p>Step 5.3.2.1.c - Set the Primary Water Totalizer to determined amount of water.</p>
	RCO	<p>Step 5.3.2.2 - Adjust the setpoint on the Primary Water Controller, FCV-3-114A to the desired flow rate.</p>

Op-Test No.: 1 Scenario No.: 5 Event No.: 1 Page 4 of 22 Event Description: Raise reactor power to 100%

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Reads NOTES before Step 5.3.2.3:</p> <ul style="list-style-type: none">● <u>DILUTE</u> is the <u>preferred</u> switch position, since impact to the RCP seals is minimized due to preheating of water in the VCT, and to ensure RCS hydrogen concentration is maintained.● ALT DILUTE is recommended only when rapid load change or rod movement requires compensation.
	RCO	Step 5.3.2.3 - Place the Reactor Makeup Selector Switch in the DILUTE position.
	RCO	<p>Step 5.3.2.4 - Turn the RCS Makeup Control Switch to the START position AND perform the following:</p> <p>IF the Reactor Makeup Selector Switch is in the Dilute position AND FCV-3-114B, Blender to VCT valve closes due to flow deviation, THEN place FCV-3-114B switch to OPEN.</p> <ul style="list-style-type: none">○ This step is N/A'd.
	RCO	Step 5.3.2.5 - Verify expected primary water flow rate by observing Chart Recorder FR-3-113 AND ensure that it is consistent with the flow rate determined in Substep 5.3.2.2.
	RCO	Step 5.3.2.6 - If necessary to manually stop the dilution places the RCS Makeup Control Switch in the STOP position.

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[illegible]

Op-Test No.: 1 Scenario No.: 5 Event No.: 2Page 6 of 22Event Description: CVCS relief valve, RV-3-203, fails open requiring Normal Letdown to be manually isolated.

Time	Position	Applicant's Actions or Behavior
	RCO	Responds to annunciator A 5/6 'CVCS LP LTDN LINE RELIEF HI TEMP' Step 1.a - Verifies temperature is > 150F on TI-3-141
	RCO	Step 2.a - Verifies CV-3-204 OPEN
	RCO	Step 2.b - Attempts to reseal RV-3-203 as follows: <ul style="list-style-type: none"> - Closes all letdown orifices (may secure a Charging Pump) - Checks PCV-3-145 operates properly - Checks TI-3-141 NOT increasing - Opens the required number of orifices while controlling PCV-3-145 (Most likely will open the 45 GPM orifice)
	RCO	Step 2.c - Determines that RV-3-203 did NOT reseal by TI-3-141 temperature increasing
	RCO	Step 2.d - Performs the following to isolate the RV-3-203 relief valve: <ul style="list-style-type: none"> - Closes all letdown orifices - Closes LCV-3-460 - Minimizes charging flow
	RCO	Step 2.d - Establishes Excess Letdown (See next event for details)
	BOP	Reads actions of ARP "A 5/6".
	BOP	Assists RCO as directed by the ANPS.
	ANPS	Manitains command and control of the evolution.

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[illegible]

Op-Test No.: 1 Scenario No.: 5 Event No.: 3 Page 8 of 22

Event Description: Place Excess Letdown in service

Time	Position	Applicant's Actions or Behavior
	RCO	Places excess letdown in service per 3-OP-047 or 3-OP-041.2.
	RCO	Verifies excess letdown heat exchanger outlet valve, CV-3-739, is OPEN.
	RCO	Verifies ≤ 238 gpm CCW flow. Verifies excess letdown divert to WDS valve, CV-3-389, is aligned to the VCT.
	RCO	Opens excess letdown isolation valve, CV-3-387.
	RCO	Slowly opens excess letdown flow controller, HCV-3-137, allowing the heat exchanger to warmup.
	RCO	IF VCT divert to hold-up tank, LCV-3-115A, reaches 100% divert position (RED light ON, GREEN light OFF), THEN align excess letdown divert to WDS, CV-3-389, to the RCDT (switch to DIVERT).
	ANPS	Maintains command and control of the evolution.
	BOP	Assists the RCO as directed.

Op-Test No.: 1 Scenario No.: 5 Event No.: 4Page 9 of 22Event Description: Instrument TE-432C fails low (Loop C Tcold temperature element)

Time	Position	Applicant's Actions or Behavior
	RCO	Responds to the following annunciator alarms: <ul style="list-style-type: none">- B 4/6 'TAVG DEVIATION'- B 5/6 'ΔT DEVIATION'- J 9/5 'RTD CHANNEL III FAILURE'
	RCO	Recognizes RCS 'C' loop Tc RTD failed low and responds as directed by ANPS: <ul style="list-style-type: none">- Contact I&C to check loop 'C' temperature data point in EAGLE 21- Compares to other RCS TI's- Verifies no off-normal conditions on 'A' and/or 'B' loop RCS temperature indications
	RCO	Notifies ANPS of failure.
	ANPS	Directs compensatory actions IAW 3-ONOP-049.1: <ul style="list-style-type: none">- Verifies RCO determination of RCS RTD's status- Determines which bistables to trip and effects on plant. Provides this information to RCO/BOP for guidance
	ANPS	After I&C checks and reports the EAGLE 21 and identifies loop C Tc failed low, can take time to evaluate alarms and restore normal MCR indications.
	ANPS	Determines T.S. required action to trip bistables.
	ANPS	Directs the BOP/RCO to trip bistables specified in 3-ONOP-049.1.
	ANPS	Observes correct indications received for each bistable placed in trip.
	ANPS	Maintains command and control of the evolution.

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Event Description: PT-475 fails low (S/G 3A MS pressure) which feeds FI-474 (S/G 3A steam flow) and causes a low steam flow signal.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to the following annunciators: <ul style="list-style-type: none"> - C 4/1 'FEED>STEAM' - C 5/1 'SG A STEAM>FEED' - C 9/3 'MAIN STEAMLINE HI DP'
	BOP	Recognizes that PT-475 (SG 3A MS PRESSURE) has failed low.
	BOP	Takes manual control of 3A SG FRV to control level and returns level to program.
	BOP	Selects operable channel and returns FRV control to AUTO per ANPS direction.
	BOP	Informs ANPS of plant status.
	ANPS	Verifies response to PT-475 failure consistent with ARP's.
	ANPS	Directs compensatory actions IAW 3-ONOP-049.1: <ul style="list-style-type: none"> - has BOP select operable channel - has BOP return FRV control to AUTO - determines which bistables to trip and effects on plant provides information to RCO/BOP for guidance
	ANPS	Determines T.S. required action to trip bistables.
	ANPS	Directs the BOP/RCO to trip bistables specified in 3-ONOP-049.1.
	ANPS	Observes correct indications received for each bistable placed in trip.
	ANPS	Maintains command and control of the evolution.

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Op-Test No.: 1 Scenario No.: 5 Event No.: 6Page 13 of 22Event Description: Control rod L11 drops

Time	Position	Applicant's Actions or Behavior
	RCO	Verifies number of rods dropped and reports to the ANPS.
	RCO	Establishes steady state primary: <ul style="list-style-type: none"> – coordinates with the BOP to maintain tavg within 3F of Tref by adjusting turbine load control – does not increase power using rods until after dropped recovery – verifies PZR level and pressure returns to program
	RCO	Informs ANPS of plant status.
	BOP	Assists RCO as directed by ANPS.
	BOP	Establishes steady state secondary: <ul style="list-style-type: none"> – coordinates with RCO to maintain Tavg within 3F of Tref by adjusting turbine load – verifies Steam Generator levels return to program
	BOP	Informs ANPS of plant status.
	ANPS	Directs response per 3-ONOP-028.3: <ul style="list-style-type: none"> – declares the dropped rod inoperable – determines the most limiting T.S. condition – evaluates AFD using ERDADS and directs crew to respond per 3-ONOP-059.4 if outside T.S. limits – directs QPTR calculation per 3-OSP-059.10 and directs crew to respond per 3-OSP-059.9 if outside T.S. limits – notifies I&C and Reactor Engineering of dropped rod – verifies shutdown margin is adequate within 1 hour
	ANPS	Maintains command and control of the evolution.

Event Description: SGFP 3A bearing high temperature, swap to SGFP 3B. Discharge check valve 20-118 on SGFP 3A sticks open after discharge MOV-3-1420 fails to close due to motor O/L.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to annunciator D 5/4 'SGFP A MOTOR BRG HI TEMP'.
	BOP	Start 3B SGFP (idle pump) and secure 3A SGFP.
	BOP	Recognize steam flow>feed flow. Recognize gradual reduction in steam generator level for A/B/C steam generators (Due to feed flow bypassing the S/G through idle SGFP "A" discharge check valve (stuck open)).
	BOP	Attempts to close MOV-3-1420 to stop feedwater loss through the 3A SGFP. MOV-3-1420 fails to close. <ul style="list-style-type: none"> identifies annunciator D 5/6 "SGFP "A" DISCHARGE MOV MOTOR OVERLOAD". Recognizes that S/G levels are approaching trip setpoints and can not be recovered, recommends tripping reactor.
	BOP	Implements Immediate Actions of E-0. (See Event #8 for details)
	ANPS	Recognize that S/G levels can not be recovered.
	ANPS	Directs reactor trip and implementation of E-0. (See Event #8 for details)
	ANPS	Maintains command and control of the evolution.

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Event Description: SGFP 3A bearing high temperature, swap to SGFP 3B. Discharge check valve 20-118 on SGFP 3A sticks open after discharge MOV-3-1420 fails to close due to motor O/L.

[illegible]

Op-Test No.: 1 Scenario No.: 5 Event No.: 8Page 16 of 22Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	ANPS	Directs the response to reactor trip per 3-EOP-E-0, "Reactor Trip or Safety Injection." Monitors E-0, Fold Out Page Items.
	RCO	Performs Immediate Actions in response to reactor trip per E-0: ▶ Verifies Reactor trip (E-0 step 1)
	ANPS	Obtains verification of reactor trip.
	BOP	Performs Immediate Actions in response to reactor trip per E-0: ▶ verifies Turbine trip (E-0 step 2) ▶ verifies power to Emergency 4 KV Buses (E-0 step 3)
	ANPS	Determines electric plant status.
	RCO	Checks if SI is actuated/req'd (NO annunciators on) (E-0 step 4): ▶ Checks SI actuation setpoints -OR- ▶ Checks RCS subcooling based on exit TCs <30F -OR- ▶ PZR level can not be maintained >12% ▶ Informs ANPS of plant status
	RCO	Recognizes that SI is required due to decreasing PZR level and manually initiates SI and containment isolation phase A. (If SI has not occurred automatically) (E-0 step 4 RNO b)
	ANPS	Directs manual SI/Phase A initiation if required.
	BOP	Performs prompt actions of E-0: ▶ Verifies feed water isolation (E-0 step 5) ▶ Verifies AFW pumps running (E-0 step 7) ▶ Verifies proper ICW operation (E-0 step 10)

Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	RCO	Performs prompt actions of E-0: <ul style="list-style-type: none"> ▶ Verifies containment isolation phase A (E-0 step 6) ▶ Verifies SI pumps running (E-0 step 8) ▶ Verifies proper CCW system operation (E-0 step 9) ▶ Verifies containment cooling (E-0 step 11) ▶ Verifies containment AND control room ventilation isolation (E-0 step 12)
	BOP	Checks if Main Steamlines should be isolated (E-0 step 13): <ul style="list-style-type: none"> ▶ NO main steamline isolation signal has actuated (E-0 step 13 RNO b) May recognize that main steamline isolation will be/is required and that the MSIV's are open and will attempt to manually close (MSIV's will not close). (E-0 step 13 RNO c)
	RCO	Monitors containment pressure to verify containment spray is not required. (E-0 step 14)
	RCO	Verifies SI valve amber lights are ALL BRIGHT. (E-0 step 15)
	BOP	Verifies EDG's are running. (E-0 step 16)
	RCO	Resets SI. (E-0 step 17)
	RCO	Realign SI system (E-0 step 18): <ul style="list-style-type: none"> ▶ verifies unit 3 high-head SI pumps - 2 running ▶ stops both unit 4 high-head SI pumps AND places in standby
	BOP	Directs SNPO to place Containment Post Accident Hydrogen Monitoring System in service. (E-0 step 19)

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Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	RCO	<p>Verifies SI flow (E-0 step 20):</p> <ul style="list-style-type: none"> ▸ observes RCS pressure is < 1600 psig ▸ observes high-head SI pump flow ▸ observes that RCS pressure is NOT <250 psig <p>Transitions to step 21 of E-0 from step 20 RNO c.</p>
	BOP	Verifies proper AFW valve alignment. (E-0 step 21)
	BOP	<p>Verifies proper AFW flow. (E-0 step 22)</p> <ul style="list-style-type: none"> ▸ observes narrow range level in all S/G's <6% and verifies total AFW flow is > 345 gpm (E-0 step 22.a RNOa.1) ▸ controls feed flow to maintain S/G narrow range levels between 6% and 50% (E-0 step 22.b)
	RCO	Checks RCP seal cooling. (E-0 step 23)
	BOP	<p>Observes RCS cold leg temperature is NOT stable -OR- trending to 547F (E-0 step 24):</p> <ul style="list-style-type: none"> ▸ verifies temperature is decreasing due to excessive steam flow and attempts to close main steamline isolation and bypass valves (attempts fail) (E-0 step 24 RNO a.3)
	RCO/BOP	<p>Checks RCP cooling. (E-0 step 25)</p> <p>Reestablishes RCP cooling: (E-0 step 25.c)</p> <ul style="list-style-type: none"> ▸ verifies SI reset ▸ resets containment isolation phase A ▸ open sCCW to Normal Containment Cooler Valves <ul style="list-style-type: none"> – MOV-3-1417 – MOV-3-1418 ▸ reset and start normal containment coolers
	RCO	Checks Letdown, PZR PORVs, and Spray Valves closed. (E-0 step 26)

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Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	BOP	Checks if S/Gs are faulted (E-0 step 27): <ul style="list-style-type: none"> ▸ observes pressure in all S/Gs are decreasing in an uncontrolled manner and informs ANPS.
	ANPS	With the information that pressure in all S/Gs is decreasing in an uncontrolled manner and that the MSIVs will not shut, transitions to 3-EOP-E-2, "Faulted Steam Generator Isolation," Step 1 per 3-EOP-E-0 step 27.a, RNO a.2.
	ANPS	Directs the response to S/Gs pressure decreasing per E-2: <ul style="list-style-type: none"> – monitors 3-EOP-E-2 Fold Out Page Items
	BOP	Re-verifies the Main Steamline Isolation and Bypass Valves on the faulted S/Gs are not closed and that manual attempts will not work. (E-2 step 1)
	BOP	Checks if any S/G is not faulted (E-2 step 2): <ul style="list-style-type: none"> ▸ observes pressure in all S/Gs decreasing in an uncontrolled manner and informs the ANPS (E-2 step 2.a)
	ANPS	Transitions to 3-EOP-ECA-2.1, "Uncontrolled Depressurization of All Steam Generators," Step 1. (E-2 step 2 RNO a)
	ANPS	Directs the response to all S/Gs being faulted per ECA-2.1. <ul style="list-style-type: none"> – monitors 3-EOP-ECA-2.1 Fold Out Page Items
	BOP	Checks secondary pressure boundary (ECA-2.1 step 1.a): <ul style="list-style-type: none"> ▸ attempts to close the MSIVs by pulling/having pulled the fuses for one train of solenoids for each MSIV (behind console) (ECA-2.1 step 1.a RNO) ▸ dispatches an operator to locally close MSIVs or block valves one loop at a time (ECA-2.1 step 1.a RNO)
	ANPS	Provides direction to manually attempt main steamline isolation.

Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	BOP	Continues check of secondary press. boundary (ECA-2.1 step 1): <ul style="list-style-type: none"> ▶ feedwater control and bypass valves closed ▶ feedwater isolation valves closed <ul style="list-style-type: none"> – MOV-3-1407 – MOV-3-1408 – MOV-3-1409 ▶ S/G steam dump to atmosphere valves closed ▶ S/G blowdown isolation valves closed ▶ S/G sample valves closed
	BOP	Isolates steam supply to AFW pumps (ECA-2.1 step 2): <ul style="list-style-type: none"> ▶ establishes an alternate source of feedwater (step 2.a) <ul style="list-style-type: none"> – resets feed isolation and starts the standby S/G feedwater system ▶ dispatches an operator to perform the following: (step 2.b) <ul style="list-style-type: none"> – opens AFW pump steam supply MOV breakers on all S/Gs – closes AFW pump steam supply MOVs on all S/Gs
	BOP/RCO	Controls feed flow to minimize RCS cooldown (ECA-2.1 step 3): <ul style="list-style-type: none"> ▶ observes cooldown rate in RCS cold legs >100F (step 3.a) <ul style="list-style-type: none"> – decreases feed flow to 25 gpm to each S/G (go to step 3.c of ECA-2.1) (step 3.a RNO a) ▶ observes RCS hot leg temperatures decreasing (step 3.c)
	ANPS	Directs control of feed flow to control RCS cooldown.
	RCO	Checks if RCPs should be stopped (ECA-2.1 step 4): <ul style="list-style-type: none"> ▶ verifies RCS subcooling is NOT <25F (goes to step 5 of ECA-2.1) (step 4.c RNO c)
	BOP	Checks CST level above 10%. (ECA-2.1 step 5)
	RCO	Checks PZR PORVs and block valves closed. (ECA-2.1 step 6)

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Event Description: Major steam line break downstream of MSIVs. All MSIVs fail open causing all S/G to be faulted.

Time	Position	Applicant's Actions or Behavior
	BOP	Checks secondary radiation (ECA-2.1 step 7): <ul style="list-style-type: none">▸ directs Chemistry to take S/G activity samples▸ direct Chemistry to take DAM1 monitor readings▸ directs HP to take RAD readings on steamlines
	RCO	Checks if RHR pumps should be stopped (ECA-2.1 step 8): <ul style="list-style-type: none">▸ observes RHR pumps are running, RCS pressure is above 250 psig and stable/increasing.▸ verifies SI reset▸ stops the RHR pumps and places in standby
	RCO	Checks if containment spray pumps should be stopped (ECA-2.1 step 9): <ul style="list-style-type: none">▸ verifies none running (go to step 10 of ECA-2.1) (ECA-2.1 step 9.a RNO a)
	RCO	Verifies RWST level is >155k gallons. (ECA-2.1 step 10)
	RCO	Verifies that SI is reset. (ECA-2.1 step 11)
	RCO/BOP	Resets containment isol. Phase A and Phase B. (ECA-2.1 step 12)
	RCO	Verifies instrument air to containment (ECA-2.1 step 13): <ul style="list-style-type: none">▸ verifies CV-3-2803 open▸ verifies instrumnet air pressure >95 psig
	RCO	Checks if accumulators should be isolated (ECA-2.1 step 14): <ul style="list-style-type: none">▸ verifies NO RCS hot leg temperatures <340F (go to step 15 of ECA-2.1) (ECA-2.1 step 14.a RNO a)
	BOP	Checks power to charging pumps from offsite. (ECA-2.1 step 15)

