Appendix I	Appendix D Scenario Outline Form ES-D-1				
Facility: F	Facility: PNPS Scenario No.: 1 Op-Test No.: 1				
Examine	rs:		Operators:		
Initial Co	nditions: <u>1</u>	5% Power, reacto	r startup is in progress		
		······			
Turnover	: Reactor i	s in the process o	f being started, currently at step 120 in 2.1.1. The goal		
for this sl	nift is to co	ntinue the reactor	startup. A TBCCW pump is OOS.		
[		T			
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	R(RO)	Power change – pull rods to continue power ascension		
2	1/0	I(RO, SRO)	CRD Flow Controller failure - downscale		
3	RD02	I(RO, SRO)	APRM Fails upscale		
4	CW03	C(ALL)	'B' TBCCW pump trips causing loss of TBCCW		
5	1/0	C(BOP, SRO)	RCIC cooling valve fails to open		
6	PC01	M(ALL)	Recirc leak within makeup capacity		
7	PC23	M(ALL)	Torus leak leading to Emergency Depressurization		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

**Required Operator Actions** 

Op-Test Event D	Op-Test No.:       1       Scenario No.:       1       Page       1       of       1         Event Description:       Power change - pull rods to continue power ascension			
Time	Position	Applicant's Actions or Behavior		
	CRS	Direct the RO to raise Reactor power with control rods		
	905	<ul> <li>Withdraw control rods in accordance with PNPS 2.1.1 and verify:</li> <li>Selected rod PB comes ON.</li> <li>CONTROL ROD POSITION FOUR ROD DISPLAY indicates the control rod position.</li> <li>The associated Full Core Display rod select light comes ON.</li> <li>Simultaneously place the Rod Control switch to NOTCH OUT and the Emergency In Notch Override switch to NOTCH OVERRIDE and observe the following:</li> <li>The IN green light comes ON momentarily.</li> <li>The OUT red light comes ON and the NOTCH OVERRIDE amber light comes ON.</li> <li>CONTROL ROD POSITION FOUR ROD DISPLAY indicates control rod movement.</li> </ul>		
		<ul> <li>Prior to reaching the desired control rod position, simultaneously release both the Rod Control Switch and the Emergency In Notch Override switch and observe the following:</li> <li>&gt; The OUT red light goes OUT.</li> <li>&gt; The SETTLE amber light comes on for ≈ 6 seconds, then goes out.</li> <li>&gt; CONTROL ROD POSITION FOUR ROD DISPLAY indicates the control rod had settled to the desired position.</li> <li>&gt; At position 48, the applicable Full Core Display FULL OUT red light comes ON.</li> <li>Indicate the completion of the movement on the Pull Sheet.</li> </ul>		

Appendix	Appendix D Required Operator Actions Form				
Op-Test Event D	Op-Test No.:       1       Scenario No.:       1       Event No.:       2       Page       1       of       1         Event Description:       CRD Flow Controller Failure - downscale				
Time         Position         Applicant's Actions or Behavior           IF Operator:         Insert CRD Flow Controller Failure upon direction of Chief Examiner. This will be directed after sufficient rod movement has occurred to satisfy the reactivity change.			or will be directed after		
	905	<ul> <li>Determine no rod movement while attempting to withe</li> <li>Identify CRD flow indication low.</li> <li>Identify Flow Controller at C905 failed</li> </ul>	draw rods.		
	CRS Direct entry into PNPS 2.4.11.1, Attachment 4.				
905 > Place CRD FLOW CONTROLLER to MANUAL. and attempt to 50GPM.		attempt to control at			

Appendix	ppendix D Required Operator Actions Form E		
Op-Test Event D	t No.: <u>1</u> Sce Description: <u>'B' A</u>	enario No.: <u>1</u> Event No.: <u>3</u> Page <u>1</u> APRM fails upscale	of1
Time	Position	Applicant's Actions or Behavior	
<b>IF Operator:</b> At the direction of the Chief Examiner, insert 'B' APRM upscale malfunction.			
	905	<ul> <li>Recognize / announce ½ scram. Recognize / announce the following</li> <li>RPS Channel B APRM Hi-Hi-/INOP (C905L-A9).</li> <li>APRM Hi Restricted Region Entry (C905L-C8).</li> <li>Auto Scram Channel B (C905R-A4).</li> <li>Neutron Monitoring Trip (C905R-C3).</li> <li>Refer to the ARPs for the Annunciators in alarm.</li> <li>Determine that 'B' APRM is the source of the alarms.</li> </ul>	g:
	CRS	Send the BOP operator to check the failed APRM on Panel C937.	
	вор	Go to C937 to verify that 'B' APRM has failed high based on meter in the lights in alarm.	dication and
	CRS	Order the RO to place the 'B' APRM in the "BYPASS" position and rescram. Refer to Tech Specs. Table 3.1.1 and Table 3.2.C.1 for the failed AP	eset the RM.
		Recognize / announce that the plant will enter a tracking LCO for the APRM. Direct I&C to troubleshoot APRM 'B' failure.	failed

**Required Operator Actions** 

Op-Test Event D	Op-Test No.:       1       Scenario No.:       1       Event No.:       4       Page       1       of       2         Event Description:       'B' TBCCW pump trips causing loss of TBCCW </th			
Time	Position	Applicant's Actions or Behavior		
	BOP	Attempt to start / restart TBCCW pump(s).		
	905	<ul> <li>Scram the reactor:</li> <li>Depress both Reactor Scram push buttons.</li> <li>Place Reactor Mode switch in "SHUTDOWN".</li> <li>Verify and announce the status of APRM downscales.</li> <li>Verify all control rods are fully inserted.</li> <li>Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM".</li> <li>Verify or manually trip the turbine.</li> <li>Verify or manually place Reactor Recirc Pumps at minimum speed.</li> <li>Verify ALL scram discharge Volume Vent and Drain Valves are closed at panel C905.</li> <li>Restore and maintain RPV water level between +20 inches and +40 inches using RCIC.</li> <li>Stabilize RPV pressure between 900 and 1050 with HPCI.</li> <li>Verify or manually transfer house loads to the Startup Transformer.</li> <li>Direct shutting down EHWC.</li> <li>Direct starting all available drywell cooling fans on Panel C61.</li> <li>Open / verify open all available Drywell Cooler Motor Operated Supply Valves on Panel C7.</li> <li>Direct securing GEZIP.</li> <li>Notify Radiation Protection that a scram has occurred.</li> <li>Notify Radwaste that a scram has occurred.</li> <li>Notify Radwaste that a scram has occurred.</li> <li>Secure the Gland Seal Condenser Drain Tank system by placing the control switch for AO-3367 on Panel C10 to "CLOSE".</li> </ul>		
	BOP	<ul> <li>Trip all feedwater pumps AND all but one Condensate Pump.</li> <li>Place HPCI in Pressure Control Mode: <ul> <li>Verify Flow Controller FIC-2340-12 is in AUTO.</li> <li>Start P-233, Gland Seal Condenser Blower.</li> <li>Open MO-2301-15, HPCI Test Return Valve.</li> <li>Jog Open MO-2301-10, HPCI Full Flow Test Valve.</li> <li>Open MO-2301-3, Turbine Supply Valve and Start P-229, Aux. Oil Pump.</li> <li>Observe flow increases and stabilizes at 4250 GPM.</li> </ul> </li> </ul>		

Required Operator Actions

Form ES-D-2

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 2 of 2 Event Description: 'B' TBCCW pump trips causing loss of TBCCW Time Position Applicant's Actions or Behavior BOP Use RCIC in Injection Mode for level control: Momentarily depress the RCIC Injection PB. Verify MANUAL START light in ENERGIZED. ≻ Verify: MO-1306-61, Turbine Supply OPEN. ≻ MO-1301-49, RCIC Pump Discharge Injection Valve #2 OPEN.  $\triangleright$ ≻ MO-1301-60, Min Flow Valve CLOSES when flow > 100 GPM. ≻ MO-1301-34 & 35 Stm Line Drain valve OPEN.  $\triangleright$ MO-1301-12 & 13, Condr Drain Valves CLOSED. MO-1301-62, Cooling water Supply OPEN.  $\mathbf{\Sigma}$ P-222 Vacuum Pump STARTS.  $\triangleright$ P-221 Cond pump STARTS. ≻ RCIC flow stabilizes at 400 GPM. ≻ Verify the MANUAL START lamp is OUT (about 30 seconds after initiation). > Closely monitor Reactor Level. When the main turbine trips, then close the MSIVs AND trip the remaining condensate pump. Investigate the cause of the TBCCW Pumps trip and initiate corrective action. CRS Place both Auxiliary Oil pumps in PULL-TO-LOCK. BOP ≻ If turbine lube oil temp reaches 140 degrees F:  $\triangleright$ Break condenser vacuum.  $\triangleright$ Secure steam seal system. Prevent start of turbine lift pumps. Prevent turning gear engagement. Direct start of temporary air compressor. ۶ 905 Reset Scram: > Bypass SDIV Hi LEVEL SCRAM BYPASS signal. > Reset Scram: Momentarily Actuate Scram Reset Selector switch. > Verify all group scram lights on C905 are ON. > Wait approx. 1 minute, verify SPVAH PRESSURE LO alarm does not clear. Place AIR DUMP SYSTEM TEST switch to ISOLATE. When SPVAH PRESSURE LO alarm clears, return AIR DUMP SYSTEM  $\triangleright$ TEST switch to NORMAL. If necessary, reset the control rod drift lights on full core display by ≻ momentarily placing ROD DRIFT RESET/TEST in RESET position. > Place SDIV HI LEVEL SCRAM BYPASS switch to NORMAL.

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Required Operator Actions

Form ES-D-2

Op-Test Event D	Op-Test No.:       1       Scenario No.:       1       Event No.:       5       Page       1       of       1         Event Description:       RCIC Cooling Valve Fails to Open				
Time	Position	Applicant's Actions or Behavior			
	BOP	Determine that the MO-1301-62 valve failed to automatically open.			
	CRS	Direct MO-1301-62 valve be manually opened.			
	BOP	Manually rotate control switch for MO-1301-62 valve in the counter-clockwise direction. Notes that the MO-1301-62 opens.			

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Required Operator Actions

Op-Test Event D	Op-Test No.:         1         Event No.:         6         Page         1         of         2           Event Description:         Leak in Drywell			
Time	Position Applicant's Actions or Behavior			
	BOP/905	Recognize / announce rising drywell parameters. and EOP-03 entry conditionsReport to the CRS when out of current RPV level/pressure band.		
	CRS	Enter EOP-03 Establish new pressure bands as the reactor depressurizes.		
		When drywell temperature cannot be maintained < 150 degrees F, directs that drywell cooling be maximized.		
	905/BOP	<ul> <li>Maximize Drywell Cooling:</li> <li>Maximize RBCCW:</li> <li>Start / verify 2 RBCCW pumps running in each loop.</li> <li>Start / verify 2 SSW pumps running in each loop.</li> <li>Fully open MO-3800 for loop A and/or MO-3806 for loop B RBCCW HX.</li> <li>Lower RBCCW loop temp controller setpoint to less than 50 degrees, and/or close MO-4084 OR MO-4083, RBCCW HX bypass valve</li> <li>Start additional RBCCW pumps as needed.</li> <li>Fully open all drywell cooler RBCCW valves by rotating all pots on C7 to the fully clockwise position.</li> </ul>		
	CRS	Before drywell pressure reaches 16 psig, direct that torus spray be placed in service using A or B RHR. Directs that torus spray be secured before torus pressure goes below 0.0 psig.		
	BOP	<ul> <li>Start torus spray using A or B RHR:</li> <li>Start / verify one RHR pump running.</li> <li>Open/ verify MO-1001 18A, Min Flow Valve for selected loop.</li> <li>Place LPCI OVERRIDE switch to MANUAL OVERRIDE.</li> <li>Open MO-1001-34A (B), Torus Cooling/Spray Block VIv in the RHR loop with the operating pump.</li> <li>Throttle open MO-1001-37A (B), Torus Spray Valve, in the RHR loop with the operating pump.</li> <li>Slowly open MO-1001-36A (B), Torus Cooling Valve and increase flow to 4500 – 4800 GPM</li> <li>Close MO-1001-18A (B), Pump Min Flow.</li> </ul>		

Appendix	D Required Operator Actions Form ES-D		
Op-Test No.:       1       Scenario No.:       1       Event No.:       6       Page       2         Event Description:       Leak in Drywell			
Time	Position	Applicant's Actions or Behav	/ior
	CRS	<ul> <li>When drywell pressure exceeds 16 psig:</li> <li>&gt; Verifies drywell temperature and pressure within safe region of the D</li> <li>&gt; Verifies torus water level below 180 inches.</li> <li>&gt; Verifies recirc pumps shutdown.</li> <li>&gt; Directs that drywell sprays be placed in service using A/B RHR loops</li> <li>Direct that drywell spray be secured before drywell pressure goes below 0.0 pressure devices and pressure devices a</li></ul>	
	BOP	<ul> <li>BOP</li> <li>Place drywell sprays in service using A/B RHR loops: (CRITICAL TASK)</li> <li>&gt; If running, trip recirc pumps.</li> <li>&gt; Start / verify one RHR pump running in each loop.</li> <li>&gt; Open / Verify MO-1001-18A, Min Flow Valve.</li> <li>&gt; Place LPCI OVERRIDE to MANUAL OVERRIDE position.</li> <li>&gt; Fully open:</li> <li>&gt; MO-1001-23A, RHR Loop A Upper Drywell Spray Valve #2 AND I 1001-26A, RHR Loop A Upper Drywell Spray Valve #1.</li> <li>&gt; MO-1001-23B, RHR Loop B Upper Drywell Spray Valve #2 AND I 1001-26A, RHR Loop B Upper Drywell Spray Valve #1.</li> <li>&gt; Open / verify MO-1001-34A (B), Torus Cooling/Spray Block valve.</li> </ul>	
	CRS	Determine that water level can be maintained above +12	? inches.

Appendix	ndix D Required Operator Actions Form ES		
Op-Test No.:       1       Scenario No.:       1       Event No.:       7       Page       1       1         Event Description:       Torus Leak Leading to Emergency Depressurization			
Time	Position	Applicant's Actions or Behavior	
	BOP/905	Determine that torus level is lowering and report to CRS.	
	CRS	Re-enter EOP-03.	
		Direct initiation of makeup to the torus.	
		Determine that torus level cannot be maintained above 95 inches. Aux. Oil Pump be placed in PULL-TO-LOCK.	Order HPCI
	BOP	Places HPCI Aux. Oil Pump in PULL-TO-LOCK.	
	CRS	Determine that torus level cannot be maintained above 90 inches.	
		Briefs Emergency Depressurization and enters EOP-17.	

**Required Operator Actions** 

Op-Test Event D	No.: <u>1</u> Sco escription: <u>'D'</u>	enario No.: <u>1</u> Event No.: <u>8</u> Page <u>1</u> of <u>1</u> SRV Fails to Open Due to Solenoid Failure
Time	Position	Applicant's Actions or Behavior
	CRS	Verify torus level above 50 inches.
		Direct opening all 4 SRVs
	BOP	Take the control switch for all 4 SRVs to the open position and takes action to verify that all 4 SRVs have opened: (CRITICAL TASK)         ➤ Checks the acoustic monitor on C171.         ➤ Checks the C921 panel for rising tailpipe temperatures
		Recognize and announce that 'D' SRV has not opened.
	CRS	Direct entering PNPS 5.3.24, Alternate Methods for Venting and Depressurizing the RPV under Emergency Conditions.
	BOP	Enter 5.3.24.
	905/BOP	Call Reactor Building operator to open 'D' SRV from the Alt. Shutdown panel.
		<b>IF OPERATOR:</b> When asked to open 'D' SRV from the ASP, wait approx. 3 minutes and then execute the step for opening the 'D' SRV from the ASP.
		<ul> <li>Alternate methods of depressurizing the RPV that my be pursued include:</li> <li>&gt; RCIC Steam Line:</li> <li>&gt; If RCIC is operating then raise RCIC flow to 400 GPM. Open Full Flow Test valve if necessary.</li> <li>&gt; IF RCIC is not operating and is not isolated or tripped, then start RCIC in test mode IAW 2.2.22.5. Bypass Auto-closure of valves if necessary IAW 5.3.21.</li> <li>&gt; RPV Head Vent</li> </ul>
		<ul> <li>&gt; If RPV pressure is above 100 psig, ask OSS for permission to use the head vent.</li> <li>&gt; Stop and prevent pumping from drywell sumps</li> <li>&gt; Open head vents to drywell sumps</li> <li>&gt; Have Chemistry monitor drywell atmosphere for increased particulate levels.</li> <li>Note: Steps that dump steam to the main condenser should not be pursued.</li> </ul>

## Appendix D Scenario Outline Form ES-D-1

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

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

Initial Conditions: 100% Power, 'A' EDG tagged out for bearing replacement.

\_\_\_\_

Turnover: Continue operating the plant at 100%, Currently in day 5 of a 14 day extended (due to verifying SBODG operable) LCO for 'A' EDG OOS.

Event No.	Malf. No.	Event Type*	Event Description
1	HP01	C(BOP, SRO)	Inadvertent initiation of HPCI
2	RR21	I(RO, SRO)	'A' Recirc Pump runs back, requires locking scoop tube
3	RP09	C(SRO)	Trip of RPS MG Set
4	N/A	N(RO, BOP)	Place RPS bus on backup
5	MT03	C(ALL)	Turbine bearing high vibration
6	RD26 / RP16	M(ALL)	Failure to scram upon tripping of turbine
7	LP02	C(RO, SRO)	SBLC Squib valve fails to fire
8	R/F	I(BOP, SRO)	RWCU fails to isolate

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

Appendix	D	Required Operator Actions	Form ES-D-	
Op-Test Event D	No.: <u>1</u> Sce escription: <u>HP(</u>	enario No.: 2 Event No.: 1 Pag	ge1_of1_	
Time	Position	Applicant's Actions or Behavior		
IF OPERA	TOR: When direc	ted by the Chief Examiner insert the HPCI Inadvertent start malfe	unction	
	ALL	Recognize that HPCI has started.		
	CRS	Enters PNPS 2.4.35, "Inadvertent Initiation of Core Standby Cooling Systems		
	BOP/CRS	Inadvertent initiation is verified (Drywell < 2.2 psig & RPV level > -46 inches) or two independent instruments.		
	BOP	<ul> <li>Depress and hold the HPCI Turbine Trip pushbutton.</li> <li>After the turbine has come to a complete stop, place the A (P-229) control switch to the PULL-TO-LOCK position.</li> <li>Releases the Turbine Trip PB.</li> </ul>	Aux Oil Pump	
	905/CRS	Assess operating conditions by plotting power verses core flow Power/Flow Map, then perform action required IAW 2.1.14, Se	v on the Pilgrim ection 7.10.	
	905	Monitor PBDS recorders for any indication of power oscillations.		
	BOP/CRS	Check Process Rad Monitors for indications of fuel damage.		
	905/CRS	Verify that peak power and pressure did not exceed any limits		
	CRS	Investigate cause of inadvertent initiation by calling I&C.		

**Required Operator Actions** 

Form ES-D-2

1

Op-Test Event D	No.: <u>1</u> Sc escription: <u>'A'</u>	enario No.: 2 Event No.: 2 Page 1 of 1 Recirc #1 Speed Limiter Failure (TS Implications)
Time	Position	Applicant's Actions or Behavior
	905	Recognize / announce annunciators "MG A SPEED LIMITER ON" and "MG A SPEED DEVIATION HI" at Panel C904RC and refers to the ARPs.
	905/CRS	Enter PNPS 2.4.20, "Reactor Recirculation System Speed of Flow Control System Malfunction".
	905	Initiates a scoop tube lockup by depressing the Manual Scoop Tube Positioner Lockup PB and refers to PNPS 2.4.19, "Recirculation Pump MG Set Scoop Tube Lockup".
	905/CRS	Assess the operating conditions by plotting power versus core flow on the Pilgrim Power/Flow Map and performs the required actions IAW 2.1.14, Sections 7.10 & 7.11. <b>IF OPERATOR:</b> If asked as the CR Annex/3 <sup>rd</sup> SRO if PBDS is operable, report that PBDS is operable.
	905	Monitor PBDS recorders for any indications of power oscillations.
	CRS	<ul> <li>Refer to Tech Specs Section 3.6.F.1.</li> <li>Recognize / announce that the percent mismatch is outside the Tech Spec limit. If the mismatch is not corrected within 30 minutes, an orderly shutdown must be initiated and the reactor in "Cold Shutdown" within 24 hours unless the speed mismatch is brought within limits.</li> <li>Attempt to bring the mismatch to within limits by either raising the 'A' Recirc. pump speed locally at the scoop tube positioner or lowering the speed of the 'B' Recirc. Pump using the speed controller at C904. The correct action is dependent on the plant's position on the Power/Flow Map.</li> </ul>
	905	Either coordinate with the licensed operator in the field to bring the mismatch to within limits using the 'A' Recirc. Pump scoop tube positioner or lower the speed of the 'B' Recirc. Pump using the speed controller at C904.
	CRS	Call I&C to investigate the 'A' Recirc. Pump speed controller failure.

Appendix D Required Operator Actions Form ES						
Op-Test No.:         1         Scenario No.:         2         Event No.:         3         Page         1         of         1           Event Description:         Trip of RPS MG Set						
Time	Position	Applicant's Actions or Behav	ior			
IF OPERA downscale	ATOR: When direct e malfunctions. RO	<ul> <li>ed by the Chief Examiner, insert the 'A' RPS MG Set Trip a</li> <li>Recognize / announce various annunciators associate RPS bus.</li> <li>Use the collection of annunciators to diagnose a trip of Recognize / announce loss of A' RPS bus.</li> <li>Recognize / announce annunciator "RPS MG Set A Tr</li> </ul>	nd RM-1705-2A fails ad with the loss of "A" f the RPS 'A' MG Set. ip" is in alarm.			
	<ul> <li>Refer to ARP C905R-C1.</li> <li>Verify ½ scram RPS Channel 'A'.</li> </ul>					
	CRS	<ul> <li>Directs that action be taken per ARP C905R-C1.</li> <li>Refers to Tech Specs 3.1 and Table 3.1.1.</li> <li>Direct troubleshooting/repair of RPS MG Set 'A'.</li> <li>Direct placing RPS 'A' on the backup power supply.</li> </ul>				

Required Operator Actions

Op-Test Event D	Op-Test No.:       1       Scenario No.:       2       Event No.:       4       Page       1       of       1         Event Description:       Place RPS bus on backup				
Time	Position	Applicant's Actions or Behavior			
	905/BOP	<ul> <li>Directs TB operator to transfer 'A' RPS Bus to the standby transformer per 2.2.79.</li> <li>When 'A' RPS Bus is on the standby transformer: <ul> <li>Reset the ½ scram when SDIV LEVEL HI alarm clears.</li> <li>Verify Group Scram lights on C905 are illuminated.</li> <li>Reset the Main Steam Line and Air Ejector Offgas Rad monitors.</li> <li>Reset the Refuel FIr Vent EXH CH A and B Rad Monitors and Carbon Bed Vault Rad Monitor.</li> <li>Direct resetting of ATS alarms</li> <li>Reset flow comparator alarms.</li> <li>Reset all APRM FCTR and PBDS trips that have occurred due to power transfer.</li> <li>Reset all APRMs A, C, and E Hi AND Hi-Hi lights on C937.</li> </ul> </li> </ul>			
	905	If necessary, reset RBM A and B downscale alarms by deselecting and reselecting a control rod on the Rod Select Matrix.			

Appendix	D	Required Operator Actions Form ES
Op-Test Event D	No.: <u>1</u> Sce	enario No.: <u>2</u> Event No.: <u>5</u> Page <u>1</u> of <u>1</u> bine Bearing High Vibrations
Time IF OPERA	Position TOR: When direc	Applicant's Actions or Behavior ted by the Chief Examiner, insert the Turbine Bearing malfunction for #4 bearing.
	BOP	<ul> <li>Recognize / announce "Turbine Vibration Hi" alarm.</li> <li>Refer top ARP C2L-A3.</li> <li>Checks Vibration &amp; Eccentricity recorder (VR-3000 on Panel C2).</li> </ul>
	BOP/CRS	Enters and executes steps of 2.4.46, "Turbine Bearing Malfunction".
	CRS	<ul> <li>Recognize / announce step 4.0 [1], which establishes vibration limits.</li> <li>Direct the crew to make note of time at which turbine bearing vibration reaches 10 mils.</li> <li>Attempt to reduce vibration levels by directing the RO to reduce Reactor power.</li> </ul>
	905	Varies power by varying A/B Recirc. Pump speed in order to reduce main turbir vibrations.
	BOP	Places Vibration & Eccentricity recorder to FAST speed.
	CRS	<ul> <li>As turbine vibrations continue to rise toward 12 mils, establish a limit above which the reactor will be scrammed.</li> <li>When limit is exceeded, direct a reactor scram.</li> </ul>
	905	<ul> <li>Scram the reactor:</li> <li>Depress both Reactor Scram push buttons.</li> <li>Place Reactor Mode switch in "SHUTDOWN".</li> <li>Verify and announce the status of APRM downscales.</li> <li>Verify all control rods are fully inserted.</li> <li>Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM".</li> <li>Verify or manually trip the turbine.</li> <li>Verify or manually place Recirc. Pumps at minimum speed.</li> </ul>
	CRS	Establish RPV level and pressure bands (RPV level +20 to +40 inches, RPV pressure 900 – 1050 psig.

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Required Operator Actions

Op-Test	No.: <u>1</u> Sc	enario No.: 2 Event No.: 6 Page 1 of 3				
Event D	Event Description: ATWS – Failure to Scram upon Tripping of Main Turbine					
	<u></u>					
Time	Position	Applicant's Actions or Behavior				
	CRS	Enter EOP-01 and immediately transition to EOP-02 based on all control rods not at or beyond position 02.				
	905	<ul> <li>Place mode switch in SHUTDOWN.</li> <li>Initiate both channels of ARI.</li> <li>Recognize the turbine has tripped.</li> <li>Recognize reactor power is above 3%.</li> <li>Trips / verifies tripped both Recirc. Pumps.</li> </ul>				
	CRS	<ul> <li>Verify mode switch in SHUTDOWN.</li> <li>Verify both channels of ARI initiated.</li> <li>Verify the turbine has tripped.</li> <li>Verify reactor power is above 3%.</li> <li>Verify both Recirc. Pumps tripped.</li> <li>Order new RPV level and pressure bands (Level –20 to +10 inches; Pressure 1000 to 1050 psig).</li> <li>Order 905 operator to enter PNPS 5.3.23, "Alternate Rod Insertion."</li> </ul>				
	905	<ul> <li>Enter PNPS 5.3.23, "Alternate Rod Insertions".</li> <li>Determine that there is a hydraulic lock and go to Section 3.3 and perform it concurrently with the "General Actions" section of the procedure.</li> <li>Maintain RPV level in given band.</li> </ul>				
	BOP	Maintain pressure in given band.				
	CRS	Order BOP operator to inhibit ADS.				
	BOP	Take ADS Inhibit switch to INHIBIT position. (CRITICAL TASK)				
	905	<ul> <li>Perform actions of 5.3.23:</li> <li>Notify Reactor Engineering of the ATWS.</li> <li>Verify CRD pump running.</li> <li>Call RB operator to close 301-25 (CRD 25 valve).</li> <li>Call I&amp;C to perform Attachments 1 &amp; 2 of 5.3.23.</li> <li>Bypass Rod Worth Minimizer.</li> <li>Increase drive pressure 50 psi above its present value by throttling closed MO-302-8.</li> <li>Using EMERG IN switch, inserts all steps of the RPR array first then inserts remaining rods in any order.</li> </ul>				

**Required Operator Actions** 

Op-Test Event D	No.: <u>1</u> Sce escription: <u>ATV</u>	enario No.: 2 Event No.: 6 Page 2 of 3 VS – Failure to Scram upon Tripping of Main Turbine
Time	Position	Applicant's Actions or Behavior
	CRS	Determine Reactor power is above 3% and order SBLC Injection.
	905	Attempts to inject with SBLC.
	CRS	<ul> <li>Determine that power is above 3% with level above -25 inches:</li> <li>Orders stop and prevent all injection into the vessel except from SBLC, RCIC and CRD.</li> <li>Orders MSIV low RPV level isolation bypassed.</li> </ul>
	905	Close / verify closed the feedwater regulator valves and Startup Feed Reg. valve. (CRITICAL TASK)
	BOP	<ul> <li>Place control switches for the RHR and Core Spray pumps in the PULL-TO-LOCK (PTL) position.</li> <li>Trip / verify stopped the HPCI turbine and places the Aux Oil Pump control switch in the PTL position. (CRITICAL TASK)</li> </ul>
	CRS	Ask crew to report when level drops below –25 inches.
	905/BOP	Report when RPV level reaches –25 inches.
	CRS	Establish level band between –25 and –150 inches.
	905/BOP	Maintains level between –25 and –150 inches and TAF using Outside Shroud Injection Systems, Table E. (CRITICAL TASK) IF OPERATOR: When water level has stabilized, and SBLC and RWCU malfunctions have been inserted and dealt with, call as I&C and report that Attachments 1& 2 of 5.3.23 are complete (RPS and ATWS/ARI are bypassed)
	905	<ul> <li>Reset the scram:</li> <li>Reset and verify reset the scram using RPS reset switch.</li> <li>Place the Air Dump System Test switch to ISOLATE position.</li> <li>Wait for/verify the SPVAH Pressure Lo alarm clears.</li> <li>Place the Air Dump System Test switch to NORMAL position.</li> <li>Verify either SDIV Level Hi <u>OR</u> SDIV East Not Drained and SDIV West Not Drained alarms are clear.</li> <li>Initiate a manual scram.</li> <li>Verifies all rods are in.</li> </ul>

**Required Operator Actions** 

Op-Test Event D	No.: <u>1</u> Sce escription: <u>ATV</u>	enario No.: <u>2</u> Event No.: <u>6</u> Page <u>3</u> of <u>3</u> VS – Failure to Scram upon Tripping of Main Turbine
Time	Position	Applicant's Actions or Behavior
	CRS	<ul> <li>When all rods are in, transition to EOP-01.</li> <li>Order RPV water level restored and maintained between +20 and +40 inches.</li> <li>Initiates a cooldown at less than 100 degrees F per hour.</li> </ul>
	BOP	<ul> <li>Restore and maintain RPV level +20 to +40 inches.</li> <li>Initiate a cooldown at less than 100 degrees F per hour.</li> </ul>
Terminate	the scenario whe EAL is Site Area E	n level has been restored to between +20 and +40 inches and a cooldown has been mergency. 2.3.1.3

Form ES-D-2

Op-Test Event D	Op-Test No.:       1       Scenario No.:       2       Event No.:       7       Page 1 of 1         Event Description:       SBLC Squib Valve Fails to Fire				
Time	Position	Applicant's Actions or Behavior			
	CRS	Direct that SBLC be injected.			
	905	<ul> <li>Take SBLC keylock switch to the "SYS A" or "SYS B" position.</li> <li>Recognize / announce that the Squib valve did not fire.</li> <li>Take the SBLC keylock switch to the other position</li> <li>Verify SBLC is injecting by: observation of:         <ul> <li>Lowering tank level.</li> <li>RWCU isolates.</li> <li>Selected pump motor running indication is ON</li> <li>Power starts to lower.</li> <li>Pump discharge pressure slightly above reactor pressure.</li> <li>Squib Valve Continuity Alarm (C905R-A9) is ON.</li> </ul> </li> </ul>			

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**Required Operator Actions** 

Form ES-D-2

Op-Tesi Event E	Op-Test No.:       1       Scenario No.:       2       Event No.:       8       Page       1       of       1         Event Description:       RWCU Fails to Isolate				
Time	Position	Applicant's Actions or Behavior			
	BOP	Recognize / announce that RWCU did not isolate when SBLC injection is initiated.			
	CRS	<ul> <li>Enter and execute PNPS 2.4.27, "RWCU System Malfunctions".</li> <li>Order that RWCU be isolated manually.</li> </ul>			
	BOP	Manually isolate RWCU: > Trip the running RWCU pump. > Close MO-1201-2. > Close MO-1201-5. > Close MO-1201-80.			

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## Appendix D Scenario Outline Form ES-D-1

Facility: F	PNPS	Sc	enario No.: 3 (Spare) Op-Test No.: 1					
Evaminers: Operators:								
Initial Co	nditions: <u>1</u>	00% Power, 'A' R	BCCW pump OOS					
Turnover	: Continue	operating at 1009	% power, 'A' RBCCW is tagged out for breaker					
maintena	ance which	is scheduled to b	e completed by the end of the shift.					
		1	E					
Event	Malf.	Event Type*	Event					
NO.								
1	I/O	C(BOP, SRO)	B' RBCCVV pump trip, stby pump does not pick up					
2	FW24	I(RO, SRO)	'B' FWLC Instrument fails downscale					
3	FW01	C(ALL)	'B' RFP trip					
4	MC01	C(ALL)	Condenser air in-leakage causes scram					
5	ED08	C(ALL)	A1 Lockout upon scram, loss of all high pressure feed					
6	RC06	M(ALL)	Unisolable steam leak from RCIC					
7	R/F	C(BOP, SRO)	Failure of Group 5 Isolation					
' (N)orma	al, (R)ead	ctivity, (I)nstrum	ent, (C)omponent, (M)ajor					

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Appendix	ppendix D Required Operator Actions Form ES-E				
Op-Test No.:       1       Scenario No.:       3       Event No.:       1       Page       1       of       1         Event Description:       'B' RBCCW Pump Trips					
Time	Position	Applicant's Actions or Behavior			
	BOP	<ul> <li>Acknowledge / announce trip of 'B' RBCCW pump.</li> <li>Starts 'C" RBCCW pump.</li> </ul>			
	CRS	<ul> <li>Direct entry into PNPS 2.4.42, Section 4.4.</li> <li>Direct Maintenance investigate cause of pump trip.</li> </ul>			
	BOP	Monitor / verify RBCCW system for proper response.			
	CRS	<ul> <li>Refer to Tech Spec 3.5.B to initiate active LCO for inoperable cooling loop.</li> <li>Determine EAL not exceeded.</li> </ul>	e containment		

Appendix	D	Required Operator Actions Form ES-
Op-Test Event Do	No.: <u>1</u> Sce escription: <u>'B' F</u>	enario No.: <u>3</u> Event No.: <u>2</u> Page <u>1</u> of <u>1</u> WLC Level Instrument Fails Downscale
Time	Position	Applicant's Actions or Behavior
	905	Recognize / announce annunciators: > REACTOR WTR LEVEL LO > RX FEED PUMP HI WTR LEVEL CHAN DNSCL
	905/BOP	Refer to ARPC905R D7 and D8
	905	<ul> <li>Check FWLC range level indication and Narrow Range Level indication on C905/</li> <li>Determine that channel 'B' of the FWLC range has failed downscale and is currently selected.</li> <li>Select channel 'A' on the REACTOR LEVEL SELECTOR switch on C905. (CRITICAL TASK)</li> <li>Acknowledge and announce that REACTOR WTR LEVEL LO alarm has cleared.</li> </ul>
	CRS	<ul> <li>Direct entry into PNPS 2.4.49.</li> <li>Direct I&amp;C to investigate and correct cause of alarm.</li> <li>Refer to Tech Specs. Table 3.2.F.</li> <li>Enter 30 day active LCO failure of one FWLC level instrument.</li> <li>Determine the RFPs will not trip on Hi Reactor Level.</li> </ul>

Appendix	D	Required Operator Actions	Form ES-D-2
Op-Test Event D	No.: <u>1</u> Sco Description: <u>'B' I</u>	enario No.: <u>3</u> Event No.: <u>3</u> Page_ Feed Pump Trips	_1_of1_
Time	Position	Applicant's Actions or Behavior	
	BOP	Acknowledge / announce trip of 'B' Feed pump	
	CRS	Direct entry into PNPS 2.4.49.	
	905	<ul> <li>Acknowledge / announce lowering reactor water level.</li> <li>Verify or manually runback Recirc. Pumps to 44% speed.</li> <li>Restore Reactor water level to normal band.</li> <li>If necessary, open the Startup Feed Regulating Valve.</li> </ul>	

**Required Operator Actions** 

Op-Test No.:       1       Scenario No.:       3       Event No.:       4       Page       1       of       2         Event Description:       Condenser Air In-Leakage			
Time	Position	Applicant's Actions or Behavior	
	ALL	Recognize / announce indication of lowering vacuum.	
	CRS	Direct entry to PNPS, 2.4.36, "Decreasing Condenser Vacuum".	
	вор	<ul> <li>Check main condenser vacuum.</li> <li>Check hand operated valve 40-HO-128 from LP service air (air purge line) is fully closed.</li> </ul>	
	905	Reduce power IAW PNPS 2.1.14, Sections 7.10 & 7.11 to stop vacuum decrease.	
	BOP	<ul> <li>Verify open the condenser vapor valves for all in-service condenser water, boxes (AO-3710, AO-3704, AO-3703, &amp; AO-3711).</li> <li>Check that Turbine steam seal header pressure is approximately 3-4 psig.</li> </ul>	
	CRS	When main condenser vacuum approaches 22" Hg with no indication of recovering, direct manual scram of reactor and PNPS 2.1.6 entry.	

Required Operator Actions

Form ES-D-2

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 2 of 2			
Event D	escription: <u>Con</u>	denser Air In-Leakage	
Time	Position	Applicant's Actions or Behavior	
	905	<ul> <li>Manually Scram the reactor prior to the turbine trip.</li> <li>Enter 2.1.6, Reactor Scram" and perform concurrently.</li> <li>Depress both Reactor Scram push buttons.</li> <li>Place Reactor Mode switch in "SHUTDOWN".</li> <li>Verify and announce the status of APRM downscales.</li> <li>Verify all control rods are fully inserted.</li> <li>Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM".</li> <li>Verify or manually trip the turbine.</li> <li>Verify or manually place Reactor Recirc Pumps at minimum speed.</li> <li>Verify and minimum scharge Volume Vent and Drain Valves are closed at panel C905.</li> <li>Restore and maintain RPV water level between +20 inches and +40 inches using RCIC.</li> <li>Stabilize RPV pressure between 900 and 1050 with HPCI.</li> <li>Verify or manually transfer house loads to the Startup Transformer.</li> <li>Direct starting all available drywell cooling fans on Panel C61.</li> <li>Open / verify open all available Drywell Cooler Motor Operated Supply Valves on Panel C7.</li> <li>Direct securing GEZIP.</li> <li>Notify Radiation Protection that a scram has occurred.</li> <li>Notify Radiation Protection that a scram has occurred.</li> <li>Notify Chemistry to secure oxygen injection to the Condensate Pumps.</li> <li>Secure the Gland Seal Condenser Drain Tank system by placing the</li> </ul>	

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Required Operator Actions

Op-Test No.:       1       Scenario No.:       3       Event No.:       5       Page       1       of       1         Event Description:       Lockout of A-1 Upon Reactor Scram			
Time	Position	Applicant's Actions or Behavior	
	POD		
	BUP	Recognize Lockout of A-1.	
		Recognize Loss of All High Pressure Feed.	
	905/BOP	Recognize entry condition for EOP-01 at +12 inches reactor water level.	
	CRS	Direct alternate level control using HPCI or RCIC.	
	BOP	Starts HPCI or RCIC for level control to maintain level +20 to +40 inches.	
	CRS	Direct initiating a cooldown of less then 100 degrees F per hour.	
	BOP	Initiate a cooldown using HPCI or SRVs.	
	CRS	Verify Group 2 isolation , RBIS and Start of SBGT.	

Required Operator Actions

Op-Test No.:       1       Scenario No.:       3       Event No.:       6       Page       1       of       1         Event Description:       Unisolable Steam Leak from RCIC			
Time	Position	Applicant's Actions or Behavior	
	BOP	Check / report area temperature alarms in RCIC quad.	
	CRS	<ul> <li>Direct isolation of RCIC when report of steam leak is received.</li> <li>Before any area temperature exceeds Max Normal Value, enter EOP-04.</li> <li>Direct RP to take EOP-04 radiation surveys.</li> <li>Direct starting of all area coolers.</li> <li>Direct operators to check Reactor Building quads for leakage.</li> <li>Verify Refuel Floor Radiation below 16 mR/hr.</li> <li>Determine that a Primary System is discharging into secondary containment.</li> <li>Before any secondary containment temperature reaches Max Safe, reenter EOP-01.</li> <li>Direct Reactor water level maintained in +20 to +40 inch band.</li> <li>Direct cooldown at less than 100 degrees F per hour.</li> <li>When 2 area temperatures exceed Max Safe, exit EOP-01 Pressure Control Leg and enter EOP-17:</li> <li>Verify torus level above +50 inches.</li> <li>Direct opening all 4 SRVs.</li> </ul>	
	BOP	<ul> <li>Open all SRVs. (CRITICAL TASK)</li> <li>Verify (using Acoustic Monitor or Tailpipe Temperature indication) that all SRVs are open.</li> </ul>	
	CRS	Exit EOP-17 and reenter EOP-01 Pressure Control Leg.	

Appendix	D	Required Operator Actions Form ES-D	<u>)-2</u>
Op-Test Event D	No.: <u>1</u> Sco Description: <u>Fail</u>	enario No.: <u>3</u> Event No.: <u>7</u> Page <u>1</u> of <u>1</u> ure of Group 5 Isolation	
Time	Position	Applicant's Actions or Behavior	
	ALL	Recognize failure to RCIC to isolate.	
	CRS	Direct manual isolation of RCIC.	
	BOP	Attempt to manually close MO-13401-16 and MO-1301-17.	
	CRS	Dispatch Maintenance or NLOs to attempt to close MO-1301-16 and MO- 1301-17.	
Terminate EAL is Site	scenario at the di e Area Emergency	scretion of the Chief Examiner after the Emergency Depressurization is complete.	