

Appendix D Scenario Outline Form ES-D-1

Facility: PNPS Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: 15% Power, reactor startup is in progress

Turnover: Reactor is in the process of being started, currently at step 120 in 2.1.1. The goal for this shift is to continue the reactor startup. 'A' TBCCW pump is OOS.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R(RO) N(SRO, BOP)	Power change – pull rods to continue power ascension
2	NM20	I(RO, SRO)	CRD Flow Control Valve failure
3	RD02	I(RO, SRO)	APRM Fails upscale
4	CW03	C(ALL)	'B' TBCCW pump trips causing loss of TBCCW
5	I/O	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
8	I/O	C(BOP, SRO)	SRV fails to open due to solenoid failure

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

Op-Test No.: 1 Scenario No.: 1 Event 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	<p>Withdraw control rods in accordance with PNPS 2.1.1 and verify:</p> <ul style="list-style-type: none"> ➤ Selected rod PB comes ON. ➤ CONTROL ROD POSITION FOUR ROD DISPLAY indicates the control rod position. ➤ The associated Full Core Display rod select light comes ON. <p>Simultaneously place the Rod Control switch to NOTCH OUT and the Emergency In Notch Override switch to NOTCH OVERRIDE and observe the following:</p> <ul style="list-style-type: none"> ➤ The IN green light comes ON momentarily. ➤ The OUT red light comes ON and the NOTCH OVERRIDE amber light comes ON. ➤ CONTROL ROD POSITION FOUR ROD DISPLAY indicates control rod movement. <p>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:</p> <ul style="list-style-type: none"> ➤ The OUT red light goes OUT. ➤ The SETTLE amber light comes on for \approx 6 seconds, then goes out. ➤ CONTROL ROD POSITION FOUR ROD DISPLAY indicates the control rod had settled to the desired position. ➤ At position 48, the applicable Full Core Display FULL OUT red light comes ON. <p>Indicate the completion of the movement on the Pull Sheet.</p>

Op-Test No.: <u> 1 </u> Scenario No.: <u> 1 </u> Event No.: <u> 2 </u>		Page <u> 1 </u> of <u> 1 </u>
Event Description: <u>CRD Flow Control Failure</u>		
Time	Position	Applicant's Actions or Behavior
IF Operator: Insert CRD FCV Failure upon direction of Chief Examiner. This will be directed after sufficient rod movement has occurred to satisfy the reactivity change.		
	905	<ul style="list-style-type: none"> ➤ Determine no rod movement while attempting to withdraw rods. ➤ Identify CRD flow indication low. ➤ Identify FCV failed closed.
	CRS	Direct entry into PNPS 2.4.11.1, Attachment 4.
	905	<ul style="list-style-type: none"> ➤ Place CRD FLOW CONTROLLER to MANUAL. ➤ Position controller to CLOSED. ➤ Direct standby inlet valve verified locally. ➤ Direct standby flow control outlet valve opened slowly. ➤ Direct in-service flow control valve outlet closed. ➤ Direct selector switch to standby position. ➤ Direct valve 301-29 positioned to standby.
		Raise CRD controller setpoint to 50 GPM: <ul style="list-style-type: none"> ➤ Verify flow increases.
		Check DRIVE WTR and COOLING WTR DIFF PRESS indicators adjust as needed.
		Return flow controller to AUTO.
		Adjust DRIVE WTR PCV as necessary.

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 Page 1 of 1 Event Description: 'B' APRM fails upscale

Time	Position	Applicant's Actions or Behavior
IF Operator: At the direction of the Chief Examiner, insert 'B' APRM upscale malfunction.		
	905	Recognize / announce ½ scram. Recognize / announce the following: <ul style="list-style-type: none"> > RPS Channel B APRM Hi-Hi-/INOP (C905L-A9). > APRM Hi Restricted Region Entry (C905L-C8). > Auto Scram Channel B (C905R-A4). > Neutron Monitoring Trip (C905R-C3). Refer to the ARPs for the Annunciators in alarm. Determine that 'B' APRM is the source of the alarms.
	CRS	Send the BOP operator to check the failed APRM on Panel C937.
	BOP	Go to C937 to verify that 'B' APRM has failed high based on meter indication and the lights in alarm.
	CRS	Order the RO to place the 'B' APRM in the "BYPASS" position and reset the scram.
		Refer to Tech Specs. Table 3.1.1 and Table 3.2.C.1 for the failed APRM.
		Recognize / announce that the plant will enter a tracking LCO for the failed APRM.
		Direct I&C to troubleshoot APRM 'B' failure.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 1 of 2 Event Description: 'B' TBCCW pump trips causing loss of TBCCW

Time	Position	Applicant's Actions or Behavior
	BOP	Attempt to start / restart TBCCW pump(s).
	905	Scram the reactor: <ul style="list-style-type: none"> ➤ Depress both Reactor Scram push buttons. ➤ Place Reactor Mode switch in "SHUTDOWN". ➤ Verify and announce the status of APRM downscalses. ➤ Verify all control rods are fully inserted. ➤ Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM". ➤ Verify or manually trip the turbine. ➤ Verify or manually place Reactor Recirc Pumps at minimum speed. ➤ Verify ALL scram discharge Volume Vent and Drain Valves are closed at panel C905. ➤ Restore and maintain RPV water level between +20 inches and +40 inches using RCIC. ➤ Stabilize RPV pressure between 900 and 1050 with HPCI. ➤ Verify or manually transfer house loads to the Startup Transformer. ➤ Direct tripping ETS. ➤ Direct shutting down EHWC. ➤ Direct starting all available drywell cooling fans on Panel C61. ➤ Open / verify open all available Drywell Cooler Motor Operated Supply Valves on Panel C7. ➤ Direct securing GEZIP. ➤ Notify Radiation Protection that a scram has occurred. ➤ Notify Radwaste that a scram has occurred. ➤ Notify Chemistry to secure oxygen injection to the Condensate Pumps. ➤ Secure the Gland Seal Condenser Drain Tank system by placing the control switch for AO-3367 on Panel C10 to "CLOSE".
	BOP	Trip all feedwater pumps AND all but one Condensate Pump. Place HPCI in Pressure Control Mode: <ul style="list-style-type: none"> ➤ Verify Flow Controller FIC-2340-12 is in AUTO. ➤ Start P-233, Gland Seal Condenser Blower. ➤ Open MO-2301-15, HPCI Test Return Valve. ➤ Jog Open MO-2301-10, HPCI Full Flow Test Valve. ➤ Open MO-2301-3, Turbine Supply Valve and Start P-229, Aux. Oil Pump. ➤ Observe flow increases and stabilizes at 4250 GPM.

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: <ul style="list-style-type: none"> ➤ Momentarily depress the RCIC Injection PB. ➤ Verify MANUAL START light in ENERGIZED. ➤ Verify: <ul style="list-style-type: none"> ➤ MO-1306-61, Turbine Supply OPEN. ➤ MO-1301-49, RCIC Pump Discharge Injection Valve #2 OPEN. ➤ MO-1301-60, Min Flow Valve CLOSES when flow > 100 GPM. ➤ MO-1301-34 & 35 Stm Line Drain valve OPEN. ➤ MO-1301-12 & 13, Condr Drain Valves CLOSED. ➤ MO-1301-62, Cooling water Supply OPEN. ➤ P-222 Vacuum Pump STARTS. ➤ 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.
	CRS	Investigate the cause of the TBCCW Pumps trip and initiate corrective action.
	BOP	<ul style="list-style-type: none"> ➤ Place both Auxiliary Oil pumps in PULL-TO-LOCK. ➤ If turbine lube oil temp reaches 140 degrees F: <ul style="list-style-type: none"> ➤ Break condenser vacuum. ➤ Secure steam seal system. ➤ Prevent start of turbine lift pumps. ➤ Prevent turning gear engagement. ➤ Direct start of temporary air compressor.
	905	Reset Scram: <ul style="list-style-type: none"> ➤ Bypass SDIV Hi LEVEL SCRAM BYPASS signal. ➤ Reset Scram: <ul style="list-style-type: none"> ➤ 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 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.

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.

Op-Test No.: 1 Scenario 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 conditions Report 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	Maximize Drywell Cooling: <ul style="list-style-type: none"> ➤ Maximize RBCCW: <ul style="list-style-type: none"> ➤ Start / verify 2 RBCCW pumps running in each loop. ➤ Start / verify 2 SSW pumps running in each loop. ➤ Fully open MO-3800 for loop A and/or MO-3806 for loop B RBCCW HX. ➤ Lower RBCCW loop temp controller setpoint to less than 50 degrees, and/or close MO-4084 OR MO-4083, RBCCW HX bypass valve.. ➤ Start additional RBCCW pumps as needed. ➤ Fully open all drywell cooler RBCCW valves by rotating all pots on C7 to the fully clockwise position.
	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	Start torus spray using A or B RHR: <ul style="list-style-type: none"> ➤ Start / verify one RHR pump running. ➤ Open/ verify MO-1001 18A, Min Flow Valve for selected loop. ➤ Place LPCI OVERRIDE switch to MANUAL OVERRIDE. ➤ Open MO-1001-34A (B), Torus Cooling/Spray Block Vlv in the RHR loop with the operating pump. ➤ Throttle open MO-1001-37A (B) , Torus Spray Valve, in the RHR loop with the operating pump. ➤ Slowly open MO-1001-36A (B), Torus Cooling Valve and increase flow to 4500 – 4800 GPM.. ➤ Close MO-1001-18A (B), Pump Min Flow.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 Page 2 of 2 Event Description: Leak in Drywell

Time	Position	Applicant's Actions or Behavior
	CRS	When drywell pressure exceeds 16 psig: <ul style="list-style-type: none"> ➤ Verifies drywell temperature and pressure within safe region of the DSIL. ➤ Verifies torus water level below 180 inches. ➤ Verifies recirc pumps shutdown. ➤ Directs that drywell sprays be placed in service using A/B RHR loops. Direct that drywell spray be secured before drywell pressure goes below 0.0 psig.
	BOP	Place drywell sprays in service using A/B RHR loops: (CRITICAL TASK) <ul style="list-style-type: none"> ➤ If running, trip recirc pumps. ➤ Start / verify one RHR pump running in each loop. ➤ Open / Verify MO-1001-18A, Min Flow Valve. ➤ Place LPCI OVERRIDE to MANUAL OVERRIDE position. ➤ Fully open: <ul style="list-style-type: none"> ➤ MO-1001-23A, RHR Loop A Upper Drywell Spray Valve #2 AND MO-1001-26A, RHR Loop A Upper Drywell Spray Valve #1. ➤ MO-1001-23B, RHR Loop B Upper Drywell Spray Valve #2 AND MO-1001-26A, RHR Loop B Upper Drywell Spray Valve #1. ➤ Open / verify MO-1001-34A (B), Torus Cooling/Spray Block valve.
	CRS	Determine that water level can be maintained above +12 inches.

Op-Test No.: <u> 1 </u> Scenario No.: <u> 1 </u> Event No.: <u> 7 </u>			Page <u> 1 </u> of <u> 1 </u>
Event Description: <u>Torus Leak Leading to Emergency Depressurization</u>			
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. Order HPCI Aux. Oil Pump be placed in PULL-TO-LOCK.	
	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.	

Op-Test No.: 1 Scenario No.: 1 Event No.: 8Page 1 of 1Event Description: 'D' 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) <ul style="list-style-type: none"> ➤ 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. IF OPERATOR: 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. Alternate methods of depressurizing the RPV that may be pursued include: <ul style="list-style-type: none"> ➤ RCIC Steam Line: <ul style="list-style-type: none"> ➤ If RCIC is operating then raise RCIC flow to 400 GPM. Open Full Flow Test valve if necessary. ➤ 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. ➤ RPV Head Vent: <ul style="list-style-type: none"> ➤ If RPV pressure is above 100 psig, ask OSS for permission to use the head vent. ➤ Stop and prevent pumping from drywell sumps ➤ Open head vents to drywell sumps ➤ Have Chemistry monitor drywell atmosphere for increased particulate levels. Note: Steps that dump steam to the main condenser should not be pursued.
Terminate the scenario when all 4 SRVs are open and water level has stabilized between +20 and +40 inches. EAL is Site Area Emergency, 3.3.2.3.		

Appendix D Scenario Outline Form ES-D-1

Facility: PNPS 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	RP09	C(SRO)	Trip of RPS MG Set
2	N/A	N(RO, BOP)	Place RPS bus on backup
3	RM02	I(BOP, RO)	Main Steam Line Rad Monitor fails downscale
4	HP01	C(BOP, SRO)	Inadvertent initiation of HPCI
5	RR21	I(RO, SRO)	'A' Recirc Pump runs back, requires locking scoop tube
6	MT03	C(ALL)	Turbine bearing high vibration
7	RD26 / RP16	M(ALL)	Failure to scram upon tripping of turbine
8	LP02	C(RO, SRO)	SBLC Squib valve fails to fire
9	R/F	I(BOP, SRO)	RWCU fails to isolate

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

Op-Test No.: <u> 1 </u> Scenario No.: <u> 2 </u> Event No.: <u> 1 </u>		Page <u> 1 </u> of <u> 1 </u>
Event Description: <u>Trip of RPS MG Set</u>		
Time	Position	Applicant's Actions or Behavior
IF OPERATOR: When directed by the Chief Examiner, insert the 'A' RPS MG Set Trip and RM-1705-2A fails downscale malfunctions.		
	RO	<ul style="list-style-type: none"> ➤ Recognize / announce various annunciators associated with the loss of "A" RPS bus. ➤ Use the collection of annunciators to diagnose a trip of the RPS 'A' MG Set. ➤ Recognize / announce loss of A' RPS bus. ➤ Recognize / announce annunciator "RPS MG Set A Trip" is in alarm. ➤ Refer to ARP C905R-C1. ➤ Verify ½ scram RPS Channel 'A'.
	CRS	<ul style="list-style-type: none"> ➤ Directs that action be taken per ARP C905R-C1. ➤ Refers to Tech Specs 3.1 and Table 3.1.1. ➤ Direct troubleshooting/repair of RPS MG Set 'A'. ➤ Direct placing RPS 'A' on the backup power supply.

Op-Test No.: 1 Scenario No.: 2 Event No.: 2 Page 1 of 1 Event Description: Place RPS bus on backup

Time	Position	Applicant's Actions or Behavior
	905/BOP	<ul style="list-style-type: none"> ➤ Directs TB operator to transfer 'A' RPS Bus to the standby transformer per 2.2.79. ➤ When 'A' RPS Bus is on the standby transformer: <ul style="list-style-type: none"> ➤ Reset the ½ scram when SDIV LEVEL HI alarm clears. ➤ Verify Group Scram lights on C905 are illuminated. ➤ Reset the Main Steam Line and Air Ejector Offgas Rad monitors. ➤ Reset the Refuel Fir Vent EXH CH A and B Rad Monitors and Carbon Bed Vault Rad Monitor. ➤ Direct resetting of ATS alarms ➤ Reset flow comparator alarms. ➤ Reset all APRM FCTR and PBDS trips that have occurred due to power transfer. ➤ Reset all APRMs A, C, and E Hi <u>AND</u> Hi-Hi lights on C937.
	905	If necessary, reset RBM A and B downscale alarms by deselecting and reselecting a control rod on the Rod Select Matrix.

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Page 1 of 1 Event Description: Main Steam Line Rad Monitor fails downscale

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> ➤ Recognize / announce annunciator "Main Stm Line Rad Dnsc" did not clear when power was restored to 'A' RPS bus. ➤ Refer to ARP C904LC-C6. ➤ Checks recorder 40-RR-1705-11 on Panel C902 and Log Rad Monitors 1705-2A, B, C, and D on C910. ➤ Recognize / report that RM-1705-2A has failed downscale.
	CRS	<ul style="list-style-type: none"> ➤ Directs the Turbine Building operator to check Breakers 5A and 5B on Panel C511. ➤ Call I&C to investigate the cause of the downscale condition. ➤ Direct I&C to check fuses 17A-F13 and 17A-F11 on Panel C910. ➤ Refer to Tech Specs 3.8.2 and determine / announce 24 hour LCO based on 3.8.2A: <ol style="list-style-type: none"> 1. Restore channel to Operable status within 24 hours <u>OR</u> 2. Place channel or associated trip system in trip within 24 hours. ➤ The CRS may refer to 2.2.155, "Process Radiation Monitoring System".
		<p>IF OPERATOR: If asked as I&C to troubleshoot the MSL Rad Monitor report that the problem is a failed power supply and that it will take about 6 hours to repair.</p>

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Page 1 of 1 Event Description: HPCI Inadvertent Start

Time	Position	Applicant's Actions or Behavior
IF OPERATOR: When directed by the Chief Examiner insert the HPCI Inadvertent start malfunction		
	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) on two independent instruments.
	BOP	<ul style="list-style-type: none"> ➤ Depress and hold the HPCI Turbine Trip pushbutton. ➤ After the turbine has come to a complete stop, place the Aux Oil Pump (P-229) control switch to the PULL-TO-LOCK position. ➤ Releases the Turbine Trip PB.
	905/CRS	Assess operating conditions by plotting power verses core flow on the Pilgrim Power/Flow Map, then perform action required IAW 2.1.14, Section 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.

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Page 1 of 1 Event Description: 'A' 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. IF OPERATOR: If asked as the CR Annex/3 rd SRO if PBDS is operable, report that PBDS is operable.
	905	Monitor PBDS recorders for any indications of power oscillations.
	CRS	<ul style="list-style-type: none"> ➤ Refer to Tech Specs Section 3.6.F.1. ➤ 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. ➤ 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.
	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.

Op-Test No.: <u> 1 </u> Scenario No.: <u> 2 </u> Event No.: <u> 6 </u>		Page <u> 1 </u> of <u> 1 </u>
Event Description: <u> Turbine Bearing High Vibrations </u>		
Time	Position	Applicant's Actions or Behavior
IF OPERATOR: When directed by the Chief Examiner, insert the Turbine Bearing malfunction for #4 bearing.		
	BOP	<ul style="list-style-type: none"> ➤ Recognize / announce "Turbine Vibration Hi" alarm. ➤ Refer top ARP C2L-A3. ➤ Checks Vibration & Eccentricity recorder (VR-3000 on Panel C2).
	BOP/CRS	Enters and executes steps of 2.4.46, "Turbine Bearing Malfunction".
	CRS	<ul style="list-style-type: none"> ➤ Recognize / announce step 4.0 [1], which establishes vibration limits. ➤ Direct the crew to make note of time at which turbine bearing vibration reaches 10 mils. ➤ Attempt to reduce vibration levels by directing the RO to reduce Reactor power.
	905	Varies power by varying A/B Recirc. Pump speed in order to reduce main turbine vibrations.
	BOP	Places Vibration & Eccentricity recorder to FAST speed.
	CRS	<ul style="list-style-type: none"> ➤ As turbine vibrations continue to rise toward 12 mils, establish a limit above which the reactor will be scrammed. ➤ When limit is exceeded, direct a reactor scram.
	905	<p>Scram the reactor:</p> <ul style="list-style-type: none"> ➤ Depress both Reactor Scram push buttons. ➤ Place Reactor Mode switch in "SHUTDOWN". ➤ Verify and announce the status of APRM downscapes. ➤ Verify all control rods are fully inserted. ➤ Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM". ➤ Verify or manually trip the turbine. ➤ Verify or manually place Recirc. Pumps at minimum speed. <p>IF OPERATOR: Ramp down turbine vibrations conditional on the Turbine trip.</p>
	CRS	Establish RPV level and pressure bands (RPV level +20 to +40 inches, RPV pressure 900 – 1050 psig).

Op-Test No.: 1 Scenario No.: 2 Event No.: 7 Page 1 of 3 Event Description: ATWS – Failure to Scram upon Tripping of Main Turbine

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 style="list-style-type: none"> ➤ Place mode switch in SHUTDOWN. ➤ Initiate both channels of ARI. ➤ Recognize the turbine has tripped. ➤ Recognize reactor power is above 3%. ➤ Trips / verifies tripped both Recirc. Pumps.
	CRS	<ul style="list-style-type: none"> ➤ Verify mode switch in SHUTDOWN. ➤ Verify both channels of ARI initiated. ➤ Verify the turbine has tripped. ➤ Verify reactor power is above 3%. ➤ Verify both Recirc. Pumps tripped. ➤ Order new RPV level and pressure bands (Level –20 to +10 inches; Pressure 1000 to 1050 psig). ➤ Order 905 operator to enter PNPS 5.3.23, "Alternate Rod Insertion."
	905	<ul style="list-style-type: none"> ➤ Enter PNPS 5.3.23, "Alternate Rod Insertions". ➤ Determine that there is a hydraulic lock and goes to Section 3.3 and performs it concurrently with the "General Actions" section of the procedure. ➤ Maintain RPV level in given band.
	BOP	Maintain pressure in given band.
	CRS	Orders BOP operator to inhibit ADS.
	BOP	Takes ADS Inhibit switch to INHIBIT position. (CRITICAL TASK)
	905	<p>Perform actions of 5.3.23:</p> <ul style="list-style-type: none"> ➤ Notify Reactor Engineering of the ATWS. ➤ Verify CRD pump running. ➤ Call RB operator to close 301-25 (CRD 25 valve). ➤ Call I&C to perform Attachments 1 & 2 of 5.3.23. ➤ Bypass Rod Worth Minimizer. ➤ Increase drive pressure 50 psi above its present value by throttling closed MO-302-8. ➤ Using EMERG IN switch, inserts all steps of the RPR array first then inserts remaining rods in any order.

Op-Test No.: 1 Scenario No.: 2 Event No.: 7Page 2 of 3Event Description: ATWS – 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	Determine that power is above 3% with level above –25 inches: <ul style="list-style-type: none"> ➤ Orders stop and prevent all injection into the vessel except from SBLC, RCIC and CRD. ➤ Orders MSIV low RPV level isolation bypassed.
	905	Close / verify closed the feedwater regulator valves and Startup Feed Reg. valve. (CRITICAL TASK)
	BOP	<ul style="list-style-type: none"> ➤ Place control switches for the RHR and Core Spray pumps in the PULL-TO-LOCK (PTL) position. ➤ Trip / verify stopped the HPCI turbine and places the Aux Oil Pump control switch in the PTL position. (CRITICAL TASK)
	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	Reset the scram: <ul style="list-style-type: none"> ➤ Reset and verify reset the scram using RPS reset switch. ➤ Place the Air Dump System Test switch to ISOLATE position. ➤ Wait for/verify the SPVAH Pressure Lo alarm clears. ➤ Place the Air Dump System Test switch to NORMAL position. ➤ Verify either SDIV Level Hi <u>OR</u> SDIV East Not Drained and SDIV West Not Drained alarms are clear. ➤ Initiate a manual scram. ➤ Verifies all rods are in.

Op-Test No.: <u> 1 </u> Scenario No.: <u> 2 </u> Event No.: <u> 7 </u>		Page <u> 3 </u> of <u> 3 </u>
Event Description: <u>ATWS – Failure to Scram upon Tripping of Main Turbine</u>		
Time	Position	Applicant's Actions or Behavior
	CRS	<ul style="list-style-type: none"> ➤ When all rods are in, transition to EOP-01. ➤ Order RPV water level restored and maintained between +20 and +40 inches. ➤ Initiates a cooldown at less than 100 degrees F per hour.
	BOP	<ul style="list-style-type: none"> ➤ Restore and maintain RPV level +20 to +40 inches. ➤ Initiate a cooldown at less than 100 degrees F per hour.
Terminate the scenario when level has been restored to between +20 and +40 inches and a cooldown has been initiated. EAL is Site Area Emergency, 2.3.1.3		

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 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 style="list-style-type: none"> ➤ Take SBLC keylock switch to the "SYS A" or "SYS B" position. ➤ Recognize / announce that the Squib valve did not fire. ➤ Take the SBLC keylock switch to the other position ➤ Verify SBLC is injecting by: observation of: <ul style="list-style-type: none"> ➤ Lowering tank level. ➤ RWCU isolates. ➤ Selected pump motor running indication is ON ➤ Power starts to lower. ➤ Pump discharge pressure slightly above reactor pressure. ➤ Squib Valve Continuity Alarm (C905R-A9) is ON. ➤ Squib Valve Continuity Light for the selected system is OFF.

Op-Test No.: <u> 1 </u> Scenario No.: <u> 2 </u> Event No.: <u> 9 </u>		Page <u> 1 </u> of <u> 1 </u>
Event Description: <u>RWCU Fails to Isolate</u>		
Time	Position	Applicant's Actions or Behavior
	BOP	Recognize / announce that RWCU did not isolate when SBLC injection is initiated.
	CRS	<ul style="list-style-type: none"> ➤ Enter and execute PNPS 2.4.27, "RWCU System Malfunctions". ➤ Order that RWCU be isolated manually.
	BOP	Manually isolate RWCU: <ul style="list-style-type: none"> ➤ Trip the running RWCU pump. ➤ Close MO-1201-2. ➤ Close MO-1201-5. ➤ Close MO-1201-80.

PANEL LOCATION MCR	PANEL NUMBER C905R	ALARM WINDOW C1
DEVICE: 1) overvoltage relay (59-A1, 59-A2) 2) underfrequency relay (81-A1, 81-A2) SETPOINT: 1) 132V AC (increasing) 2) 57 Hz (decreasing)		RPS MG SET A TRIP
OPERATOR ACTIONS: 1. <u>Confirm Alarm</u> a) Check pwr available status light (Panel C916) 2. <u>Verify Automatic Actions</u> a) Half-Scram (RPS Channel A) 3. <u>Perform Corrective Actions</u> a) IF transformer available, THEN transfer RPS Bus A to Standby Transformer (Panel C511) AND reset half-Scram b) Ensure Tech Spec 3.1 and Table 3.1.1 satisfied c) Determine the cause of the breaker trip and inspect equipment powered from this source for electrical faults d) Do not reset the breaker until the cause of the trip is known and is either isolated or corrected		
POSSIBLE CAUSES: 1. Overvoltage 2. Underfrequency		
REFERENCES: 1. MCR Board C3 Annunciators (E119) 2. Reactor Protection System (E21, E14) 3. PNPS 2.2.79 (Reactor Protection System)		
		ARP - C905R - C1 Rev. 13

Appendix D Scenario Outline Form ES-D-1

Facility: PNPS Scenario No.: 3 (Spare) Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: 100% Power, 'A' RBCCW pump OOS

Turnover: Continue operating at 100% power, 'A' RBCCW is tagged out for breaker maintenance which is scheduled to be completed by the end of the shift.

Event No.	Malf. No.	Event Type*	Event Description
1	CW05/I/O	C(BOP, SRO)	'B' RBCCW 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)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

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 style="list-style-type: none"> ➤ Acknowledge / announce trip of 'B' RBCCW pump. ➤ Starts 'C' RBCCW pump.
	CRS	<ul style="list-style-type: none"> ➤ Direct entry into PNPS 2.4.42, Section 4.4. ➤ Direct Maintenance investigate cause of pump trip.
	BOP	Monitor / verify RBCCW system for proper response.
	CRS	<ul style="list-style-type: none"> ➤ Refer to Tech Spec 3.5.B to initiate active LCO for inoperable containment cooling loop. ➤ Determine EAL not exceeded.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 Page 1 of 1 Event Description: 'B' FWLC Level Instrument Fails Downscale

Time	Position	Applicant's Actions or Behavior
	905	Recognize / announce annunciators: <ul style="list-style-type: none"> ➤ REACTOR WTR LEVEL LO ➤ RX FEED PUMP HI WTR LEVEL CHAN DNSCL
	905/BOP	Refer to ARPC905R D7 and D8
	905	<ul style="list-style-type: none"> ➤ Check FWLC range level indication and Narrow Range Level indication on C905/ ➤ Determine that channel 'B' of the FWLC range has failed downscale and is currently selected. ➤ Select channel 'A' on the REACTOR LEVEL SELECTOR switch on C905. (CRITICAL TASK) ➤ Acknowledge and announce that REACTOR WTR LEVEL LO alarm has cleared.
	CRS	<ul style="list-style-type: none"> ➤ Direct entry into PNPS 2.4.49. ➤ Direct I&C to investigate and correct cause of alarm. ➤ Refer to Tech Specs. Table 3.2.F. ➤ Enter 30 day active LCO failure of one FWLC level instrument. ➤ Determine the RFPs will not trip on Hi Reactor Level.

Op-Test No.: 1 Scenario No.: 3 Event No.: 3 Page 1 of 1 Event Description: 'B' Feed Pump Trips

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 style="list-style-type: none"> ➤ Acknowledge / announce lowering reactor water level. ➤ Verify or manually runback Recirc. Pumps to 44% speed. ➤ Restore Reactor water level to normal band. ➤ If necessary, open the Startup Feed Regulating Valve.

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".
	BOP	<ul style="list-style-type: none"> ➤ Check main condenser vacuum. ➤ Check hand operated valve 40-HO-128 from LP service air (air purge line) is fully closed.
	905	Reduce power IAW PNPS 2.1.14, Sections 7.10 & 7.11 to stop vacuum decrease.
	BOP	<ul style="list-style-type: none"> ➤ Verify open the condenser vapor valves for all in-service condenser water, boxes (AO-3710, AO-3704, AO-3703, & AO-3711). ➤ Check that Turbine steam seal header pressure is approximately 3-4 psig.
	CRS	When main condenser vacuum approaches 22" Hg with no indication of recovering, direct manual scram of reactor and PNPS 2.1.6 entry.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 2 of 2 Event Description: Condenser Air In-Leakage

Time	Position	Applicant's Actions or Behavior
	905	<ul style="list-style-type: none"> ➤ Manually Scram the reactor prior to the turbine trip. ➤ Enter 2.1.6, Reactor Scram" and perform concurrently. <ul style="list-style-type: none"> ➤ Depress both Reactor Scram push buttons. ➤ Place Reactor Mode switch in "SHUTDOWN". ➤ Verify and announce the status of APRM downscapes. ➤ Verify all control rods are fully inserted. ➤ Insert IRM and SRM detectors, select 2 SRMs for recording and place selector switch for APRM/IRM to "IRM". ➤ Verify or manually trip the turbine. ➤ Verify or manually place Reactor Recirc Pumps at minimum speed. ➤ Verify ALL scram discharge Volume Vent and Drain Valves are closed at panel C905. ➤ Restore and maintain RPV water level between +20 inches and +40 inches using RCIC. ➤ Stabilize RPV pressure between 900 and 1050 with HPCI. ➤ Verify or manually transfer house loads to the Startup Transformer. ➤ Direct tripping ETS. ➤ Direct shutting down EHWC. ➤ Direct starting all available drywell cooling fans on Panel C61. ➤ Open / verify open all available Drywell Cooler Motor Operated Supply Valves on Panel C7. ➤ Direct securing GEZIP. ➤ Notify Radiation Protection that a scram has occurred. ➤ Notify Radwaste that a scram has occurred. ➤ Notify Chemistry to secure oxygen injection to the Condensate Pumps. ➤ Secure the Gland Seal Condenser Drain Tank system by placing the control switch for AO-3367 on Panel C10 to "CLOSE".

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
	BOP	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 SBTG.

Op-Test No.: <u> 1 </u> Scenario No.: <u> 3 </u> Event No.: <u> 6 </u>		Page <u> 1 </u> of <u> 1 </u>
Event Description: <u> Unisolable Steam Leak from RCIC </u>		
Time	Position	Applicant's Actions or Behavior
	BOP	Check / report area temperature alarms in RCIC quad.
	CRS	<ul style="list-style-type: none"> ➤ Direct isolation of RCIC when report of steam leak is received. ➤ Before any area temperature exceeds Max Normal Value, enter EOP-04. ➤ Direct RP to take EOP-04 radiation surveys. ➤ Direct starting of all area coolers. ➤ Direct operators to check Reactor Building quads for leakage. ➤ Verify Refuel Floor Radiation below 16 mR/hr. ➤ Determine that a Primary System is discharging into secondary containment. ➤ Before any secondary containment temperature reaches Max Safe, reenter EOP-01. ➤ Direct Reactor water level maintained in +20 to +40 inch band. ➤ Direct cooldown at less than 100 degrees F per hour.
		<p>When 2 area temperatures exceed Max Safe, exit EOP-01 Pressure Control Leg and enter EOP-17:</p> <ul style="list-style-type: none"> ➤ Verify torus level above +50 inches. ➤ Direct opening all 4 SRVs.
	BOP	<ul style="list-style-type: none"> ➤ Open all SRVs. (CRITICAL TASK) ➤ Verify (using Acoustic Monitor or Tailpipe Temperature indication) that all SRVs are open.
	CRS	Exit EOP-17 and reenter EOP-01 Pressure Control Leg.

Op-Test No.: 1 Scenario No.: 3 Event No.: 7 Page 1 of 1 Event Description: Failure 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 scenario at the discretion of the Chief Examiner after the Emergency Depressurization is complete.
EAL is Site Area Emergency, 4.2.1.3