

Facility:	PILGRIM	Scenario No.:	2	Op Test No.:	2007 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> <li>Power is 2.5% with a startup in progress.</li> <li>2.2.96, Attachment 15, preset checks are done on all feed pumps.</li> <li>Two Condensate pumps in service. Running additional second condensate pump to wear it in.</li> <li>Override – mode switch in RUN (mode switch failure)</li> </ul>				
Turnover:	<p>Startup in progress from a refuel outage IAW PNPS 2.1.1. At 5% power, transfer RMS to run and resume pulling control rods.</p> <p>“B” secondary condensate pump is being run to wear it in.</p>				
Critical Task:	Initiates ARI.				
	Emergency Depressurization.				
	Enter 5.3.24 and supplement emergency depressurization.				
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	R – RO N – CRS	Pull rods to continue power ascension. Transfer RMS to run.		
2	NM21E	I – RO	APRM “E” fails downscale. (TS)		
3	RD02	C – RO	In service CRD flow control valve fails closed. (AOP)		
4	RD0 22 - 23	C – RO	Control rod 22 – 31 drifts outward. (TS) (AOP)		
5	N/A	N – BOP	RFP ‘A’ intermittent TBCCW leak, place RFP ‘B’ in service.		
6		I – BOP	RWCU Pump ‘A’ RBCCW Temp High, pump fails to auto trip.		
7	PC02 RM07	M – ALL	RWCU leak leading to scram. (EOP)		
8	RP14A	I – RO	Manual scram failure. ARI required.		
9	RM07	M – ALL	RWCU leak leads to Emergency Depressurization. (EOP - C)		
10	RH04B	C – BOP	SRV “B” fails to open.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

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Scenario Event Description

NRC Scenario 2

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**Pilgrim 2007 NRC Scenario #2**

The crew will take the watch with a reactor startup in progress. They will withdraw control rods, continuing the startup until 5% power is obtained and the reactor mode switch is placed in run.

After the mode switch is in run, APRM E will fail downscale. The APRM will be bypassed, and after Tech Specs have been referenced, the startup will continue.

When the startup continues, the crew will discover that the in-service CRD Flow Control Valve has failed closed requiring action to remove the failed FCV from service and place the standby CRD Flow Control Valve in service.

After place the standby CRD Flow Control Valve in service the startup will continue until control rod 22-31 drifts outward. The crew will take actions in accordance with PNPS 2.4.11, Control Rod Positioning Malfunctions and address Tech Specs for the inoperable control rod. The startup will be halted.

While waiting for troubleshooting and reactor maneuvering plans, an intermittent TBCCW leak will develop on RFP A requiring the crew to place RFP B in service and secure RFP A in accordance with PNPS 2.2.96, Condensate and Feedwater.

After RFP B in service, an RBCCW high temperature condition will develop on the "A" RWCU Pump. RWCU pump "A" will fail to automatically trip and the crew will take action in accordance with the ARP to manually stop the pump.

When RWCU Pump "A" is stopped, a leak will develop on the RBCCW pump and temperatures will rise in the RWCU pump room requiring entry into EOP-4. RWCU area temperatures will continue to rise until a manual scram is required, and the crew will enter and execute EOP-1. When manual scram is attempted, the scram push buttons and reactor mode switch will fail to initiate rod movement; however, all control rods will insert when the ARI pushbuttons are depressed (**Critical Task**).

Following control rod insertion, RWCU area temperatures will continue to rise until conditions are degraded in two of the areas specified in EOP-4 and Emergency Depressurization is required (**Critical Task**). The crew will execute EOP-17; however, one SRV will fail to open requiring the crew to utilize Alternate RPV Depressurization Systems (SRV Remote SD Panel) to augment emergency depressurization (**Critical Task**).

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Event Description: Pull Rods to Continue Power Ascension and Transfer RMS to RUN

Time	Position	Applicant's Actions or Behavior
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	CRS	Brief/Direct power increase IAW PNPS 2.1.1 and 2.1.14
	RO	<ul style="list-style-type: none"> <li>Withdraws control rods in a safe and controlled manner.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Regularly checks APRM channel indications.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Plots power to flow.</li> </ul>
	BOP	Serves as peer checker/second verifier during control rod movement.
	RO	Monitors RPV power, pressure and level.
	CRS/RO	Verify the following are clear:
		<ul style="list-style-type: none"> <li>APRM downscale alarm.</li> </ul>
		<ul style="list-style-type: none"> <li>All APRM downscale indicators.</li> </ul>
		<ul style="list-style-type: none"> <li>Low main steam line pressure alarm.</li> </ul>
	CRS	Direct transfer of RMS to run.
	RO	Transfer RMS to run.
	CRS	Log time and date RMS to run.
	CRS	Notify chemistry RMS to run.
	CRS	Brief/direct power increase continue:
	RO	<ul style="list-style-type: none"> <li>Withdraws control rods in a safe and controlled manner.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Regularly checks APRM channel indications.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Plots power to flow.</li> </ul>

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Event Description: Pull Rods to Continue Power Ascension and Transfer RMS to RUN

Time	Position	Applicant's Actions or Behavior
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<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>5</u>	of	<u>16</u>
Event Description:	APRM E Fails Downscale								
Time	Position	Applicant's Actions or Behavior							

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce APRM downscale alarm.
	RO	Stops raising power with control rods.
	RO	Refer to ARP C905L, D8.
	RO	At Panel C905, check APRM power level and status lights, recognize/report failure of APRM E downscale.
	CRS	Send the BOP operator to check the failed APRM on Panel C937.
	BOP	Go to C937 to verify that 'E' APRM has failed low based on meter indication the lights in alarm.
	CRS	Direct APRM E bypassed.
	RO	At Panel C905, bypass APRM E.
	CRS	Refer to Tech Specs. Table 3.1.1 and Table 3.2.C.1 for the failed APRM.
	CRS	Recognize / announce that the plant will enter a tracking LCO for the failed APRM.
	CRS	Direct I&C to troubleshoot APRM 'E' failure.
	CRS	Direct power increase continue IAW PNPS 2.1.1

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Event Description:	APRM E Fails Downscale								
Time	Position	Applicant's Actions or Behavior							

	RO	<ul style="list-style-type: none"><li>Withdraws control rods in a safe and controlled manner.</li></ul>
	RO	<ul style="list-style-type: none"><li>Regularly checks APRM channel indication.</li></ul>
<b>When directed by Lead Examiner, proceed to next event</b>		

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Event Description: In Service CRD Flow Control Valve Fails CLOSED

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> <li>Determines no rod movement while attempting to withdraw rods.</li> </ul>
		<ul style="list-style-type: none"> <li>Identifies CRD flow indication low.</li> </ul>
		<ul style="list-style-type: none"> <li>Identifies FCV failed closed.</li> </ul>
	CRS	Directs entry into PNPS 2.4.11.1, Attachment 5. (page 19)
	RO	<ul style="list-style-type: none"> <li>Places CRD FLOW CONTROLLER to MANUAL.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Positions controller to CLOSED.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Directs standby inlet valve verified locally.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Directs standby flow control outlet valve opened slowly.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Directs in-service flow control valve outlet closed.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Directs selector switch to standby position.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>Directs valve 301-29 positioned to standby.</li> </ul>
	RO	Raise CRD controller setpoint to 50 gpm.
		<ul style="list-style-type: none"> <li>Verify flow increases.</li> </ul>
	RO	Check DRIVE WTR and COOLING WTR DIFF PRESS indicators adjust as needed.
	RO	Return flow controller to AUTO.
	RO	Adjust DRIVE WTR PCV as necessary.
<b>When directed by Lead Examiner, proceed to next event</b>		

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Event Description: Control Rod 22-31 Drifts Outward

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> <li>• Checks full core display.</li> </ul>
		<ul style="list-style-type: none"> <li>• Acknowledges/announces selected rod is drifting.</li> </ul>
		<ul style="list-style-type: none"> <li>• Acknowledge Alarm refers to ARP C905L, A3.</li> </ul>
	RO	Verifies rod selected, identifies affected rod drifting out.
	CRS	Directs entry into PNPS 2.4.11.
	CRS	Determines power cannot be reduced further by Recirc flow.
	CRS	Directs RO to ensure cooling water D/P normal.
	RO	Inserts affected rod to <b>00</b> position.
	RO	Identifies rod remains at <b>00</b> position.
	CRS	Contacts Reactor engineering to modify Rod Sequence sheet and power maneuvering guidance.
	CRS	Notifies I&C to develop troubleshooting guide IAW PNPS 3.M.1-34.
	CRS	Refers to Tech Spec 3.3.H for verifying BPWS.
	CRS	Initiates condition report to document rod drift.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>2</u>	Event #	<u>5</u>	Page	<u>9</u>	of	<u>16</u>
Event Description:	RFP "A" Intermittent TBCCW Leak, Place RFP "B" In Service								
Time	Position	Applicant's Actions or Behavior							

	BOP	Acknowledge alarms/report intermittent TBCCW alarms A RFP.
	BOP	Direct NLO investigate TBCCW status at A RFP.
	BOP	Acknowledge/report intermittent TBCCW leak A RFP.
<b>Examiner note</b>		Crew may elect to scram due to TBCCW leak. This action is permissible by procedure. If that occurs, the next event will occur after the scram.
	CRS	Direct B RFP to be placed in service per PNPS 2.2.96, Attachment 17.
	BOP	Place RFP B in service IAW PNPS 2.2.96, Attachment 17.
		<ul style="list-style-type: none"> <li>• Verify RFP suction pressure &gt; 250 psig.</li> <li>• Place FV-3436, RFP B Recirc Vlv C/S to open.</li> <li>• Verify RFP Trip Sys Enable switch is off.</li> <li>• Start RFP B.</li> </ul>
	RO	Verify reactor water level stable.
	BOP	Place FV-3436, RFP B Recirc Valve C/S to auto:
		<ul style="list-style-type: none"> <li>• Verify RFP B suction pressure &gt; 200 psig at PI-3429</li> <li>• Verify RFP B discharge pressure at PI-3448.</li> <li>• Verify RFP B motor current &lt; 650 amps.</li> <li>• Verify Aux Oil Pump shutdown light on at C-1.</li> </ul>
	CRS	Direct A RFP to be removed from service per PNPS 2.2.96, Attachment 16

Op Test No.:	<u>2007</u>	Scenario #	<u>2</u>	Event #	<u>5</u>	Page	<u>10</u>	of	<u>16</u>
Event Description: RFP "A" Intermittent TBCCW Leak, Place RFP "B" In Service									
Time	Position	Applicant's Actions or Behavior							

	BOP	Remove RFP A from service IAW PNPS 2.2.96, Attachment 16:
		<ul style="list-style-type: none"> <li>• Verify RFP Trip Sys Enable switch is off.</li> </ul>
		<ul style="list-style-type: none"> <li>• Stop RFP A.</li> </ul>
		<ul style="list-style-type: none"> <li>• Acknowledge and reset expected alarms.</li> </ul>
	RO	Verify reactor water level stable
	BOP	<ul style="list-style-type: none"> <li>• Verify RFP B motor current &lt; 650 amps.</li> </ul>
		<ul style="list-style-type: none"> <li>• Verify Aux Oil Pump running light ON at C-1 for RFP C.</li> </ul>
		<ul style="list-style-type: none"> <li>• Verify FV-3436, RFP C Recirc Valve CLOSES.</li> </ul>
		<ul style="list-style-type: none"> <li>• Verify FV-3436, RFP B Recirc Valve OPEN.</li> </ul>
<b>When directed by Lead Examiner, proceed to next event</b>		

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Event Description: RWCU Pump "A" RBCCW Temp HIGH, Pump Fails to AUTO TRIP

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>Acknowledge/report RWCU pump RBCCW Temp Hi alarm.</li> <li>Refer to ARP-C904RC, A2.</li> </ul>
	CRS	Direct actions per ARP-C904RC, A2.
	BOP	Determine/report failure of RWCU pump A to trip.
	BOP	Stop RWCU pump A .
	BOP	At panel C1, check RBCCW loop B temp on TR-3835.
	BOP	At panel C904, check water to RWCU temps on TI-1290-21.
<b>When directed by Lead Examiner, proceed to next event</b>		

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Event Description: RWCU Leak Leading to SCRAM; Manual Scram Failure, ARI Required

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> <li>Acknowledge/report Steam Leakage Area Temp Hi alarm.</li> <li>Refer to ARP-C904L, A6.</li> </ul>
	CRS	Direct actions per ARP-C904L, A6.
	BOP	Read temperature of alarming module at panel C921.
	CREW	Check/monitor RWCU area temps for EOP-4 entry conditions.
	CRS	Direct RWCU manual isolation.
	BOP	Attempt RWCU manual isolation. Report failure to isolate.
	CREW	Recognize/report EOP-4 entry conditions.
	CRS	Before any area temperature exceeds Max Normal Value, enter EOP-04.
	CRS	Direct RWCU isolated from 1201-2 and 1201-5 valve motor breakers.
	CRS	Direct RP to take EOP-04 surveys.
	CRS	Direct NLO to start all area coolers.
	CRS	Dispatch Maintenance or NLO's to attempt to isolate RWCU 1201-2 and 1201-5 locally.
	CRS	<ul style="list-style-type: none"> <li>Recognize a primary system is discharging into secondary containment</li> </ul>

Op Test No.:	<u>2007</u>	Scenario #	<u>2</u>	Event #	<u>7 &amp; 8</u>	Page	<u>13</u>	of	<u>16</u>
Event Description: RWCU Leak Leading to SCRAM; Manual Scram Failure, ARI Required									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> <li>Before any area temperature exceeds Max Safe Value, enter EOP-01.</li> </ul>
		<ul style="list-style-type: none"> <li>Directs a manual scram be inserted.</li> </ul>
Examiner Note		May be in EOP-1 sooner due to scram from TBCCW leak
	RO	<ul style="list-style-type: none"> <li>Depress both manual scram pushbuttons</li> <li>Place mode switch in shutdown and enter PNPS 2.1.6.</li> </ul>
	RO	Recognize/report failure to scram.
EXAMINER NOTE		Override – mode switch in RUN (mode switch failure)
	CRS	Enters EOP-01 and immediately transitions to EOP-02 based on all controls rods not at or beyond position 02.
		Performs the following actions:
		<ul style="list-style-type: none"> <li>Verifies mode switch in "SHUTDOWN".</li> </ul>
CRITICAL TASK		<ul style="list-style-type: none"> <li>Accomplishes reactor scram with either channel of ARI.</li> <li>Recognizes all control rods inserted fully and informs CRS</li> </ul>
	CRS	Exits EOP-02 and re-enters EOP-01 based on all controls rods inserted to or beyond position 02.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify reactor recirc pumps at minimum speed.

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Event Description:		RWCU Leak Leading to SCRAM; Manual Scram Failure, ARI Required							
Time	Position	Applicant's Actions or Behavior							

	RO	Verify trip of the turbine.
	CRS	Direct verification of:
		• Isolations
		• ECCS initiations.
		• Emergency Diesel Generator initiations.
	CRS	Direct reactor water level +20 - +40.
	CRS	Direct reactor pressure 900 to 1050 psig with bypass valves.
	CRS	Direct a cooldown at <100°F.
	BOP	Commence cooldown at <100°F.
	CRS	Determine that Reactor Building Ventilation cannot be restored as a primary system is discharging into secondary containment (EOP-04 override).

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Event Description: RWCU Leak Leads to Emergency Depressurization; SRV "B" Fails to OPEN

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize and report when any area temperature exceeds Max Safe Value.
	CRS	Direct the reactor be rapidly depressurized to the main condenser via the Main Turbine Bypass Valves, disregarding the cooldown rate.
	BOP	Rapidly depressurize the reactor to the main condenser via the Main Turbine Bypass Valves, disregarding the cooldown rate
	BOP	Due to GROUP 1 Isolation – MSIVs close and depressurization will continue with SRVs.
	CREW	Recognize and report when two or more area temperature exceeds Max Safe Value.
	CRS	Exit EOP-01 Pressure leg . Enter and direct the activities of EOP-17:
		<ul style="list-style-type: none"> <li>• Determines steam cooling is not required.</li> <li>• Verifies Torus water level is &gt; 50 inches.</li> <li>• Directs that all 4 SRVs opened.</li> </ul>
	CRITICAL TASK BOP	Attempts to opens all 4 SRVs. <u>ONLY 3 OPEN</u> – "B" does not open
	CRITICAL TASK BOP	Enter 5.3.24 to supplement depressurization. ORDERS that 4 <sup>th</sup> SRV is opened from field.
	BOP	Verify (Acoustic Monitor or Tailpipe Temperature) that all 4 SRV's are open.
	CRS	Remain in EOP-17 and EOP-01 level control leg.

Op Test No.:	<u>2007</u>	Scenario #	<u>2</u>	Event #	<u>9 &amp; 10</u>	Page	<u>16</u>	of	<u>16</u>
Event Description:	RWCU Leak Leads to Emergency Depressurization; SRV "B" Fails to OPEN								
Time	Position	Applicant's Actions or Behavior							

		The scenario will be terminated at the direction of the Chief Examiner after the Emergency Depressurization is complete.
		Expected EAL is 4.2.1.3

Facility:	PILGRIM	Scenario No.:	3	Op Test No.:	2007 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> <li>• Power is ~55%.</li> <li>• Defeat Group V Isolation</li> <li>• HPCI OOS for Aux Oil Pump Replacement – 14 Day LCO.</li> <li>• RBCCW Pump A (P-202A) OOC, Tracking LCO.</li> <li>• LPRM 36-13-B is bypassed.</li> </ul>				
Turnover:	<p>Insert control rods to lower reactor power to 50% for emergency backwash. The first two steps of the RPR array have been inserted.</p> <p>Seawater Pump "B" amps are elevated. Remove Seawater Pump "B" from service and perform emergency backwash. Engineering is standing by in the screen house to determine when to secure the backwash.</p>				
Critical Task:	<p>Inject SLC.</p> <p>Prevent all injection into the vessel except from SBLC and CRD.</p> <p>Insert all control rods via manual scram.</p>				
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	R – RO	Insert control rods to lower reactor power to 50%		
2	N/A	N – BOP	Remove Seawater pump "B" from service for emergency backwash.		
3	RR11A	C – RO	'A' RRP pump motor vibration high.		
4	RR04B	I - RO	'B' Recirc Loop flow unit failure (TS)		
5	RD05A	C – RO	'A' CRD Pump Trip. (AOP)		
6	RR13A RR13B	C – RO	'A' RRP Inner Seal Failure. A RRP Outer Seal Failure. (AOP) (TS)		
7	TC06	C – BOP	RCIC Steam Leak, failure to auto isolate. (TS)		
8	TC01	M – ALL	Main Turbine Trip, ATWS. (EOP)		
9		C – RO	First squib valve fails to open when fired.		
10		C – RO	RWCU MO80 fails to isolate automatically.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

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## Scenario Event Description

### NRC Scenario 3

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#### Pilgrim 2007 NRC Scenario #3

After taking the watch, control rods will be manually inserted to lower power to 50% prior to the crew removing Seawater pump "B" from service for emergency backwash of the inlet water boxes.

After backwash is in progress, the crew will respond to a Recirc Pump Motor Vibration High alarm. Recirc Pump speed will be lowered as directed by the ARP. When Recirc pump speed has been reduced a small amount, the Recirc Pump Motor Vibration Monitor will reset.

After the Recirc Pump Motor Vibration High alarm is reset, the "B" Recirc Flow Unit will fail. The crew will take actions in accordance with the ARP and a Tech Spec LCO will be entered.

After Tech Specs have been evaluated, the A CRD Pump will trip. The crew will take actions per PNPS 2.4.4, Loss of CRD Pumps, including immediate action to verify reactor pressure is greater than 950 psig. When directed, the RO will place the standby CRD Pump in service.

When the standby CRD Pump is in service, the 'A' Recirc Pump inner and outer seals will fail in sequence. Initially, the inner seal will fail requiring action to monitor seal status and drywell conditions per the ARP as well as entry into PNPS 2.4.22. After a brief period of time, the outer seal will fail. When the crew determines a catastrophic seal failure has occurred, the 'A' Recirc Pump will be tripped and isolated. After the 'A' Recirc Pump is tripped, the crew will estimate total core flow, plot the location on Power/Flow Map, and take actions in accordance with PNPS 2.4.17, Recirc Pump Trip.

When conditions have stabilized, a steam leak will develop in the RCIC steam line, and RCIC will fail to isolate automatically. The crew is expected to take action to isolate RCIC manually. When RCIC is isolated (and with HPCI already inoperable), the CRS will evaluate Tech Specs and enter a 24 hour LCO.

After Tech Specs have been addressed, the main turbine will trip and an ATWS will result due to hydraulic lock of the scram discharge volume. The CRS is expected to enter and direct actions per EOP-02, including SLC initiation. When the SLC Actuate switch is placed in the SYS 'A' or SYS 'B' position, the selected SLC pump will start; however, the associated squib valve will fail to open as indicated by high SLC pump discharge pressure and zero indicated flow. The reactor operator is expected to select the alternate train and inject SLC (**Critical Task**). Additionally, the RWCU return isolation valve (MO80) will fail to auto isolate, requiring manual operator action to isolate the RWCU system. Injection will be prevented from all systems except boron and CRD (**Critical Task**), and ATWS actions will continue per EOP-02 until all rods have been fully inserted (**Critical Task**); EOP-01 has been entered, and reactor level is in the normal band.

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Event Description: Insert Control Rods to Lower Power to 50%

Time	Position	Applicant's Actions or Behavior
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	CRS	Directs control rod insertion using the RPR array IAW PNPS 2.1.14 Section 7.9 to lower power to 50%.
	RO	Inserts control rods IAW PNPS 2.1.14 Section 7.9
	RO	Closely monitors power, level, and pressure on C905.
	RO	Track location on power to flow map.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>4</u>	of	<u>13</u>
Event Description:	Remove Seawater Pump "B" from Service and Backwashing Inlet Water Boxes through Pump B								
Time	Position	Applicant's Actions or Behavior							

Examiner Note		EN-OP-115 describes limitations of 2 handed control board operations.
	CRS	Direct/brief removing seawater pump B from service and backwashing 1-1 and 1-3 inlet water boxes through pump B
	BOP	Remove Seawater pump "B" from service for backwash
		<ul style="list-style-type: none"> <li>RECORD Circulating Water Pump amps.</li> </ul>
		<ul style="list-style-type: none"> <li>VERIFY Outlet Crossover Valves MO-3866 and MO-3876 OPEN.</li> </ul>
		<ul style="list-style-type: none"> <li>Close Water Box Outlet Valves MO-3883 and MO-3881.</li> </ul>
		<ul style="list-style-type: none"> <li>Close Water Box Inlet Valves MO-3872 and MO-3870.</li> </ul>
		<ul style="list-style-type: none"> <li>When the first Water Box Inlet Valve white light (12 to 18% OPEN position) comes on stop Seawater Pump B, P-105B</li> </ul>
	BOP	Backwash 1-1 and 1-3 inlet water boxes through pump B
		<ul style="list-style-type: none"> <li>Open Water Box Inlet Valves MO-3872 and MO-3870.</li> </ul>
		<ul style="list-style-type: none"> <li>Close Water Box Outlet Valves MO-3882 and MO-3880.</li> </ul>
		<ul style="list-style-type: none"> <li>Verify vapor valves to the steam jet air ejectors AO-3710 and AO-3704 are open.</li> </ul>
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>3</u>	Event #	<u>3</u>	Page	<u>5</u>	of	<u>13</u>
Event Description:	"A" RRP Pump Motor Vibration HIGH								
Time	Position	Applicant's Actions or Behavior							

	RO	Recognize/announce RRP Pump Motor Vibration High alarm and refer to ARP C904RC, B6.
	CRS	Directs action taken IAW ARP C904RC, B6.
	RO	At panel C904, attempt to reset vibration monitor by depressing vibration monitor reset button.
	RO	Lower Recirc Pump A speed. (May raise speed to clear vibration alarm - permitted by Alarm Response)
	RO	Monitor power, pressure and level.
	RO	Reset vibration monitor.
	RO	Plot position on power to flow map.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>3</u>	Event #	<u>4</u>	Page	<u>6</u>	of	<u>13</u>
Event Description: "B" RR Loop FT Failure									
Time	Position	Applicant's Actions or Behavior							

	RO	Acknowledges/announces 'B' Recirc Flow Converter Failure alarm (refers to ARP).
	CRS	Determines 'B' Recirc Flow Converter has failed.
	CRS	Refers to Tech Spec Tables 3.1.1
	CRS	Initiates LCO for Table 3.1.1 condition C
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.: 2007 Scenario # 3 Event # 5 Page 7 of 13

Event Description: "A" CRD Pump Trip

Time	Position	Applicant's Actions or Behavior
	RO	Acknowledges/announces trip of 'A' CRD pump. Refer to ARP C905R, A6.
	CRS	Directs entry into PNPS 2.4.4.
	RO	Checks power, pressure, level. Performs immediate actions of PNPS 2.4.4:
		<ul style="list-style-type: none"> <li>• Notes pressure greater than 950 psig.</li> <li>• No inoperable accumulator alarms.</li> </ul>
	CRS	Directs RO to start standby CRD pump IAW with PNPS 2.4.4.
	RO	<ul style="list-style-type: none"> <li>• Transfers FCV to manual and closes.</li> <li>• Starts 'B' CRD pump.</li> <li>• Verifies pump amp and discharge pressure stabilize.</li> <li>• Balances deviation meter.</li> <li>• Transfers CRD controller to AUTO.</li> </ul>
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6</u>	Page	<u>8</u>	of	<u>13</u>
Event Description:	'A' RRP Inner Seal Failure. A RRP Outer Seal Failure								
Time	Position	Applicant's Actions or Behavior							

	RO	Acknowledges/announces Recirc pump A seal staging flow high alarm. Refers to ARP C904RC, D6.
	CRS	Directs action taken IAW ARP C904RC, D6.
	RO	At Panel C904, checks RRP A seal cavity pressures on PI-262-17A and PI-262-18A. Determines/reports inner seal has failed.
	CRS	References PNPS 2.4.22, Failure of Recirc Pump Seal.
	RO	Acknowledges/announces Recirc pump A seal leakage high alarm. Refers to ARP C904RC, C6.
	CRS	Directs action taken IAW ARP C904RC, C6.
	RO	At Panel C904, checks RRP A seal cavity pressures on PI-262-17A and PI-262-18A. Determines/reports outer seal has failed.
	CRS	Directs entry into PNPS 2.4.22, Failure of Recirc Pump Seal:
		<ul style="list-style-type: none"> <li>• Determines a catastrophic seal failure has occurred.</li> <li>• Directs 'A' RRP tripped and isolated.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>• Stops RRP 'A'.</li> <li>• Closes Seal Water Block Valve AO-5150A</li> <li>• Closes Pump Suction Valve MO-202-4A.</li> <li>• When MO-202-4A indicates closed, closes Pump Discharge Valve MO-202-5A.</li> <li>• Closes Recirc Pump Purge Block Valve F-008A.</li> </ul>
	CREW	Monitors drywell leakage, drywell temperature, and drywell pressure.

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6</u>	Page	<u>9</u>	of	<u>13</u>
Event Description:	'A' RRP Inner Seal Failure. A RRP Outer Seal Failure								
Time	Position	Applicant's Actions or Behavior							

	RO	Monitors the idle recirculation loop suction temperature in accordance with Attachment 6 of PNPS 2.2.84.
	CRS	Directs entry into PNPS 2.4.17, Recirc Pump Trip.
	RO/CRS	Estimate total core flow and plot location on Power/Flow Map.
	CRS	Restores compliance with Tech Spec 3.6.F within 24 hours
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>3</u>	Event #	<u>7</u>	Page	<u>10</u>	of	<u>13</u>
Event Description:	RCIC Steam Leak, Failure to Auto Isolate								
Time	Position	Applicant's Actions or Behavior							

	BOP	<ul style="list-style-type: none"> <li>Acknowledge/report Steam Leakage Area Temp Hi alarm.</li> <li>Refer to ARP-C904L, A6.</li> </ul>
	CRS	Direct actions per ARP-C904L, A6.
	BOP	Read temperature of alarming module at panel C921.
	CREW	Check/monitor RCIC area temps for EOP-4 entry conditions.
	BOP/CRS	Determine RCIC steam leak/failure to auto isolate.
	CRS	Direct RCIC manual isolation.
	BOP	Manually isolate RCIC. Close RCIC Inboard and Outboard Isolation Valves MO-1301-16 and MO-1301-17.
	CRS	Reference Tech Specs 3.5.C.3 and 3.5.D.3 – 24 hour LCO for RCIC and HPCI inoperable.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.: 2007 Scenario # 3 Event # 8, 9, & 10 Page 11 of 13

Event Description: Main Turbine Trip, ATWS; First Squib Valve Fails to Open When Fired; RWCU MO80 Fails to Isolate Automatically

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/report failure to scram.
	CRS	Enters EOP-01 and immediately transitions to EOP-02 based on all controls rods not at or beyond position 02.
	CRS	Verifies the immediate actions required by EOP-02: <ul style="list-style-type: none"> <li>• Verifies mode switch in "SHUTDOWN".</li> <li>• Verifies both channels of ARI initiated.</li> <li>• Verifies the turbine has tripped.</li> <li>• Recognizes reactor power is above 3%.</li> <li>• Verifies both Recirc. pumps are tripped.</li> </ul>
	RO	Performs the following actions: <ul style="list-style-type: none"> <li>• Verifies mode switch in "SHUTDOWN".</li> <li>• Initiates both channels of ARI.</li> <li>• Recognizes the turbine has tripped.</li> <li>• Recognizes reactor power is above 3%.</li> <li>• Trips/verifies tripped both Recirc. Pumps.</li> </ul>
	CRS	When RPV level is determined to be greater than - 25 inches enters the 'Q' Leg of EOP-02 and performs the following steps: <ul style="list-style-type: none"> <li>• Orders stop and prevent all injection into the vessel except from SBLC and CRD.</li> </ul>
	RO/BOP	Stops and Prevents injection IAW PNPS 5.3.35.1, AT. 35.
<b>CRITICAL TASK</b>	RO	Closes/verifies closed the feedwater heater downstream block valves and Startup Feed Reg. Valve.

Op Test No.:	<u>2007</u>	Scenario #	<u>3</u>	Event #	<u>8, 9, &amp; 10</u>	Page	<u>12</u>	of	<u>13</u>
Event Description:	Main Turbine Trip, ATWS; First Squib Valve Fails to Open When Fired; RWCU MO80 Fails to Isolate Automatically								
Time	Position	Applicant's Actions or Behavior							

CRITICAL TASK	BOP	Places the control switches for the RHR and Core Spray pumps in the PTL position.
	RO	Start one SBLC system by placing the SLC ACTUATE switch to SYS 'A' or SYS 'B' position on Panel C905.
	RO	Recognize/report that after starting the first SBLC train that the pump starts but the squib valve fails to open.
	CRS	Direct using other train of SBLC.
CRITICAL TASK	RO	Start the opposite SBLC train with the SLC ACTUATE switch.
	RO	Recognize/report that the A SBLC pump is running & injecting. Verifies Boron.
	RO	Recognizes/reports failure of RWCU MO80 to auto isolate.
	CRS	Direct RWCU manual isolation as required by EOP-02 or Operations Policy Statement.
	RO	Manually close RWCU MO80.
	RO	Enters PNPS 5.3 23, "Alternate Rod Insertion". Determines that there is an hydraulic lock and goes to Section 3.3 of the procedure and performs it concurrently with the "General Actions" section of the procedure.
	RO	When requested, I&C defeats RPS and ARI interlocks IAW PNPS 5.3.23 ATT.1 and 2.

Op Test No.: 2007 Scenario # 3 Event # 8, 9, & 10 Page 13 of 13

Event Description: Main Turbine Trip, ATWS; First Squib Valve Fails to Open When Fired; RWCU MO80 Fails to Isolate Automatically

Time	Position	Applicant's Actions or Behavior
	CRS	Asks the crew to report any of the following plant conditions:
		<ul style="list-style-type: none"> <li>Rx power &lt;3% (APRM downscalers are in).</li> <li>RPV water level reaches -125 inches TAF.</li> </ul>
CRITICAL TASK	RO	Performs the following actions to reset and scram the reactor:
		<ul style="list-style-type: none"> <li>Resets and verifies reset the scram using the RPS reset switch.</li> <li>Places the Air Dump System Test Switch to "ISOLATE".</li> <li>Waits for/verifies the "SPVAH Pressure Lo" alarm clears.</li> <li>Places the Air Dump System Test Switch to "NORMAL".</li> <li>Verifies either SDIV Level Hi or SDIV East Not Drained and SDIV West Not Drained alarms are clear.</li> <li>Initiates a manual scram.</li> <li>Verifies and announces all rods in.</li> </ul>
	CRS	When all rods are in transitions to EOP-01. Orders RPV water level be restored and maintained between +20 and +40 inches. Initiates a cooldown using HPCI or SRVs at less than 100° per hour.
	BOP	Restores and maintains RPV level +20 to +40. Initiates a cooldown at less than 100° per hour.
	BOP	The scenario will be terminated at the direction of the Chief Examiner when level has been restored to between +20 and +40 and a cooldown has been initiated.
		Expected EAL is 2.3.1.3. (SAE)

Facility:	PILGRIM	Scenario No.:	4	Op Test No.:	2007 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> <li>• Power is 100%.</li> <li>• HPCI OOS for Aux Oil Pump Replacement – 14 Day LCO.</li> <li>• RBCCW Pump A (P-202A) OOC, Tracking LCO.</li> <li>• LPRM 36-13-B is bypassed.</li> </ul>				
Turnover:	<ul style="list-style-type: none"> <li>• Shift TBCCW Pumps in preparation for vibration checks on B Pump.</li> <li>• Lower power to 90% for control rod pattern adjustment.</li> </ul>				
Critical Task:	Spray Drywell.				
	Emergency Depressurization.				
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N – BOP	Shift TBCCW Pumps in preparation for vibration checks on B Pump.		
2	N/A	R – RO	Reduce power with Recirc.		
3	NM17 36-45-B	I – ALL	LPRM 36-45-B fails upscale. (TS) (AOP)		
4	TC06	I BOP	EPR Pressure Oscillations. (TS) (AOP)		
5	RR20A	I – RO	"B" Recirc Flow Controller fails upscale. (TS) (AOP)		
6	MS14D	M – ALL	"D" SRV fails open. Manual reactor scam. (AOP) (EOP)		
7	RH04B	C – BOP	PASS H2/O2 Sample valves fail to Isolate.		
8		C – BOP	RBCCW to "A" RHR HX inlet valve fails shut.		
9	PC22	M – ALL	"D" SRV tail pipe fails leading to Emergency Depressurization. (EOP - C)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

**Pilgrim 2007 NRC Scenario #4**

After taking the watch, as directed in the shift turnover, the crew will shift TBCCW pumps. After the TBCCW pumps have been swapped, the crew will proceed with a planned power reduction using Recirc flow.

While the planned power reduction is underway, LPRM 36-45-B will fail upscale, and the CRS will enter and direct actions per PNPS 2.4.38, LPRM Failure. The crew will bypass the failed LPRM and verify that APRM AGAFs and thermal limits are in spec. The crew will also determine that the affected APRM has less than 2 LPRM inputs in a level, making the affected APRM inoperable per TS 3.1, Table 3.1.

After the power reduction is complete, the EPR will begin to oscillate, and the CRS will direct actions per PNPS 2.4.37, Turbine Control System Malfunctions. The crew will take control with the MPR, and the EPR power control switch will be placed to off, stabilizing reactor pressure and power. With the EPR removed from service, the plant will enter an administrative LCO requiring both pressure regulators be restored within 2 hours or the plant be < 25% CTP within 4 hours.

After the administrative LCO has been addressed, the 'B' Recirc flow controller will fail upscale resulting in an increase in core flow and reactor power. When the flow controller failure has been diagnosed, the crew will initiate a scoop lockup per PNPS 2.4.20, Reactor Recirculation System Speed or Flow Control System Malfunction. The crew will then take actions per PNPS 2.4.19, Recirculation Pump MG Set Scoop Tube Lockup, including an evaluation of Recirc pump speeds against the Tech Spec 3.6.F limits. The CRS should also identify and brief the crew on the need to trip the 'B' Recirc pump in the event of a reactor SCRAM.

When the required actions have been directed for the Scoop Tube Lockup, the 'D' SRV will indicate open and Torus temperature will rise. The CRS will enter and direct actions per PNPS 2.4.29, Stuck Open Safety Relief Valve; however, the 'D' SRV will fail to close, requiring a manual reactor scram. Following the scram, the RO should trip the 'B' Recirc pump. The CRS will enter and direct EOP-01, and the BOP operator should identify a failure of PASS H2/O2 Sample valves to isolate, requiring operator action to close the valves. With the SRV still open, Torus cooling will be initiated. The RBCCW inlet to the A RHR HX inlet valve will fail shut requiring additional operator action to lineup RBCCW. When Torus temperature rises to 80°F, EOP-03 will be entered.

After Torus cooling has been placed in service, the 'D' SRV tail pipe will fail, resulting in rising Torus and Drywell pressure, and EOP-03 and EOP-01 will be re-entered on high drywell pressure. Torus and drywell spray (**Critical Task**) will be initiated as Torus bottom pressure continues to rise; however, with the broken SRV tail pipe continuing to degrade, Torus bottom pressure will rise, and emergency depressurization (**EOP Contingency**) (**Critical Task**) will be required prior to exceeding the limits of the Pressure Suppression Pressure curve.

Op Test No.: 2007 Scenario # 4 Event # 1 Page 3 of 15

Event Description: Shift TBCCW Pumps for Maintenance Vibration Test

Time	Position	Applicant's Actions or Behavior
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	CRS	Direct Starting 'B' TBCCW pump and securing 'A' TBCCW pump IAW PNPS 2.2.31 section 7.6.
	BOP	At Panel C1, verify TBCCW system pressure of approximately 50 to 60 psig on PI-4162.
	BOP	Start 'B' TBCCW pump. Verify proper indications, TBCCW system pressure between 50 and 60 psig.
	BOP	Stop 'A' TBCCW pump. Monitor/verify proper system response.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>2</u>	Page	<u>4</u>	of	<u>15</u>
Event Description:	Reduce Power With Recirc								
Time	Position	Applicant's Actions or Behavior							

	CRS	Brief/Direct power decrease IAW PNPS 2.1.14 section 7.5 .
	CRS	Inform I&C standby to adjust AGAFs to less than or equal to 0.975.
	RO	At Panel 904, use the Recirc. Pump speed controllers to lower core flow.
	BOP	Verify SPEED LOAD CHANGER position 100 percent.
	RO	Plot position on power to flow map.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>3</u>	Page	<u>5</u>	of	<u>15</u>
Event Description:		LPRM 36-45-B Fails Upscale							
Time	Position	Applicant's Actions or Behavior							

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce LPRM Hi alarm.
	RO	Stops reducing power with recirc.
	RO	Refer to ARP C905L, F8.
	CRS	Directs action taken IAW ARP C905L, F8.
	RO	Check amber HI status lights on full core display.
	CRS	Send the BOP operator to check the failed LPRM on Panel C937.
	CRS	Enter and direct PNPS 2.4.38, LPRM Failure. <ul style="list-style-type: none"> <li>Verify failed LPRM.</li> <li>Direct LPRM 36-45-B bypassed on Panel C937.</li> <li>Notify Reactor Engineering.</li> </ul>
	RO	Verify failed LPRM by demanding "Instrument Readings / Status Raw LPRM Readings Log" 3D Monicore, F10 key.
	BOP/RO	Bypass failed LPRM on Panel C937 in accordance with PNPS 2.2.66: Attachment 4. <ul style="list-style-type: none"> <li>Record the LPRM to be bypassed.</li> <li>Bypass the APRM channel in which the LPRM inputs.</li> <li>Verify APRM channel bypass light ON at C905 and C937.</li> <li>At Panel C937, bypass LPRM 36-45-B by placing the thumb switch (S-1) to the "BY" position.</li> <li>Determine number of LPRM inputs to affected APRM.</li> </ul>

Op Test No.: 2007 Scenario # 4 Event # 3 Page 6 of 15

Event Description: LPRM 36-45-B Fails Upscale

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Demand a 3D Monicore Core Power and Flow Log.</li> </ul>
		<ul style="list-style-type: none"> <li>• Demand an official monitoring case.</li> </ul>
		<ul style="list-style-type: none"> <li>• Ensure APRM AGAFs and thermal limits are within acceptable limits.</li> </ul>
	RO	Select the control rods around the bypassed LPRM <b>AND VERIFY</b> that the RBM HI/INOP <b>AND</b> the Rod Withdrawal Block lights are NOT lit.
	CRS	Determines effected APRM has less than 2 LPRM inputs per level.
	CRS	References TS 3.1, Table 3.1.1 and declares effected APRM inoperable.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>4</u>	Page	<u>7</u>	of	<u>15</u>
Event Description:		EPR Pressure Oscillations							
Time	Position	Applicant's Actions or Behavior							

	RO/BOP	Recognize/announce EPR failure.
	CRS	Enter and direct PNPS 2.4.37, Turbine Control System Malfunctions.
	RO	Monitors reactor pressure and power.
	BOP	Attempt to take control of Reactor pressure with the MPR by holding the MPR set point control switch in the lower position.
	BOP	When MPR takes control, place the EPR power control switch to the off position.
	CRS	Enter administrative LCO to restore both pressure regulating devices within 2 hours or be < 25% CTP within 4 hours.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.: 2007 Scenario # 4 Event # 5 Page 8 of 15

Event Description: "B" Recirc Flow controller Fails Upscale

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize/announce increasing reactor power.
	CRS	Refer to PNPS 2.4.13.
	RO/CRS	Determine the cause of the unexplained rapid increase: <ul style="list-style-type: none"> <li>Reactor Recirculation System Speed or Flow Control System Malfunction, PNPS 2.4.20.</li> </ul>
	CRS/RO	Refer to PNPS 2.4.20.
	CRS	Direct initiating scoop lockup of 'B' Recirc pump.
	RO	Initiates 'B' Recirc pump scoop tube lockup.
	CRS	Direct entry into PNPS 2.4.19.
	CRS	Direct assessment of power to flow conditions.
	RO	Plot power and flow on power to flow map.
	RO	Monitor PBDS recorders for oscillations.
	RO	Ensures loop flows balanced IAW PNPS 2.2.84. (Within 10% above 80% power.)
	CRS	Notify I&C to investigate and repair.
	CRS	Request licensed operator standby for manual operation of scoop tube positioner.
	CRS	Verify pump speeds within Tech Spec limits 3.6.F.

Op Test No.: 2007 Scenario # 4 Event # 5 Page 9 of 15

Event Description: "B" Recirc Flow controller Fails Upscale

Time	Position	Applicant's Actions or Behavior
	CRS	Determines that if pump speeds cannot be brought within limits within 30 minutes shutdown will be required.
	CRS	Identifies need to trip Recirc pump in event of SCRAM.
<b>When directed by Lead Examiner, proceed to next event</b>		

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>6,7, &amp; 8</u>	Page	<u>10</u>	of	<u>15</u>
Event Description:	"D" SRV Fails Open, Manual Reactor scram; PASS H2/O2 Sample Valve Fails to Isolate (CV91); RBCCW to "A" RHR HX inlet Valve Fails Shut								
Time	Position	Applicant's Actions or Behavior							

Time	Position	Applicant's Actions or Behavior
	ALL	Identify/announce 'D' SRV open.
	BOP	Reference ARP C903L, B2.
	CRS	Direct entry into PNPS 2.4.29.
	CRS	Direct monitoring of Torus bulk temperature and note time.
	CRS	Direct BOP to attempt cycling of 'D' SRV switch.
	BOP	Cycles 'D' SRV switch identifies 'D' SRV remains open.
	RO	As time permits, attempt to lower power either by reducing "A" Recirc Pump Speed or Tripping the "B" Recirc Pump IAW PNPS 2.1.14 NOTE: Administrative limit of 10% loop to loop flow difference )
	CRS	Briefs requirement for manual reactor scram if 'D' SRV remains open.
	CRS	When it has been determined that the safety relief valve cannot be closed, direct a manual reactor scram.
	RO	<ul style="list-style-type: none"> <li>• Depress both manual scram pushbuttons.</li> <li>• Place mode switch in shutdown and enter PNPS 2.1.6.</li> </ul>
	RO	Verify and announce the status of APRM downscapes.
	RO	Verify all control rods are fully inserted.

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>6,7, &amp; 8</u>	Page	<u>11</u>	of	<u>15</u>
Event Description:	"D" SRV Fails Open, Manual Reactor scram; PASS H2/O2 Sample Valve Fails to Isolate (CV91); RBCCW to "A" RHR HX inlet Valve Fails Shut								
Time	Position	Applicant's Actions or Behavior							

	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify reactor recirc pump 'A' at minimum speed.
	RO	Trip Recirc pump 'B' (scoop tube lockup).
	RO	Verify trip of the turbine.
	BOP/RO	Report EOP-01 entry conditions.
	CRS	Enters EOP-1. Direct verification of:
		<ul style="list-style-type: none"> <li>• Isolations.</li> <li>• ECCS initiations.</li> <li>• Emergency Diesel Generator initiations.</li> </ul>
	CRS	Direct reactor water level +20 - +40 inches.
	RO	<p>Immediate Actions of 2.1.6 - step [5]</p> <p>Close Feed Reg Valves and FW HP Block Valves.</p> <p>Secure Feed Pumps and Condensate as required to maintain level in band.</p> <p>Reactor will be fed thru Startup Reg Vlv.</p>
	CRS	Direct reactor pressure 900 to 1050 psig with bypass valves and open SRV.
	BOP	Identifies/reports PASS H2/O2 Sample valve CV91 failed to Isolate.

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>6,7, &amp; 8</u>	Page	<u>12</u>	of	<u>15</u>
Event Description:	"D" SRV Fails Open, Manual Reactor scram; PASS H2/O2 Sample Valve Fails to Isolate (CV91); RBCCW to "A" RHR HX inlet Valve Fails Shut								
Time	Position	Applicant's Actions or Behavior							

	CRS	Directs PASS H2/O2 Sample valve CV91 manually closed.
	BOP	Manually closes PASS H2/O2 Sample valve CV91.
	CRS	Recognize/announce EOP-03 entry conditions.
	CRS	When Torus temperature cannot be maintained < 80°F, directs that Torus cooling be maximized.
	BOP	Maximizes Torus cooling.
	BOP	Identify RBCCW to A RHR HX inlet valve failed shut.
	BOP	Places 2 loops of Torus cooling in service.

Op Test No.: 2007 Scenario # 4 Event # 9 Page 13 of 15

Event Description: "D" SRV Tail Pipe Fails Leading to emergency Depressurization

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize/report rising Torus and Drywell Pressure.
	CRS	Recognize/announce EOP-03 re-entry.
	CRS	Recognize/announce EOP-01 re-entry.
	RO/BOP	Continues to maintain reactor level in band directed by CRS (approx. 20 to 40 inches)
	RO/BOP	Report to the CRS when out of current RPV level/pressure band.
	CRS	Establish new pressure bands as the reactor depressurizes due to the leak.
	CRS	When Drywell temperature cannot be maintained < 150°F, directs that Drywell cooling be maximized.
	RO/BOP	<ul style="list-style-type: none"> <li>Maximizes RBCCW on the 'B' loop of RBCCW.</li> <li>Maximizes Drywell cooling.</li> </ul>
	CRS	<u>Before</u> torus bottom pressure reaches 16 psig, directs that Torus spray be placed in service using 'A' or 'B' RHR. Directs that Torus Spray secured if Drywell pressure goes below 2.2 psig.
	BOP	Starts Torus Spray using 'A' or 'B' RHR.
	CRS	<u>When</u> Torus Bottom pressure exceeds 16 psig: <ul style="list-style-type: none"> <li>Verifies Drywell temperature and pressure within DSIL (Fig. 5).</li> </ul>

Op Test No.:	<u>2007</u>	Scenario #	<u>4</u>	Event #	<u>9</u>	Page	<u>14</u>	of	<u>15</u>
Event Description: "D" SRV Tail Pipe Fails Leading to emergency Depressurization									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> <li>Verifies torus water level below 180 inches.</li> </ul>
		<ul style="list-style-type: none"> <li>Verifies Recirc pumps shutdown.</li> </ul>
		<ul style="list-style-type: none"> <li>Directs that Drywell sprays be placed in service using A/B RHR loops.</li> </ul>
		<ul style="list-style-type: none"> <li>Directs that Drywell spray secured if Drywell pressure goes below 2.2 psig.</li> </ul>
<b>CRITICAL TASK</b>	BOP	Initiates Drywell Sprays as directed.
<b>EXAMINER NOTE</b>		One of the drywell spray valves will fail and only one loop of drywell spray will be available.
	CREW	Recognize Containment pressure approaching limits of PSP.
	CRS	If available, Direct the reactor be rapidly depressurized to the main condenser via the Main Turbine Bypass Valves, disregarding the cooldown rate.
	BOP	If directed, Rapidly depressurize the reactor to the main condenser via the Main Turbine Bypass Valves, disregarding the cooldown rate
	CRS	Before exceeding the limits of the PSP curve, directs Exit EOP-01 Pressure leg. Enter and direct the activities of EOP-17:
		<ul style="list-style-type: none"> <li>Determines steam cooling is not required.</li> </ul>
		<ul style="list-style-type: none"> <li>Verifies Torus water level is &gt; 50 inches.</li> </ul>
		<ul style="list-style-type: none"> <li>Directs that all 4 SRVs opened.</li> </ul>
		<ul style="list-style-type: none"> <li>If determined D SRV tail pipe has failed, directs remaining SRVs opened and 5.3.24 to supplement depressurization.</li> </ul>
<b>CRITICAL TASK</b>	BOP	Opens all 4 SRVs.

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Event Description: "D" SRV Tail Pipe Fails Leading to emergency Depressurization

Time	Position	Applicant's Actions or Behavior
	BOP	Verify (Acoustic Monitor or Tailpipe Temperature) that all SRV's are open.
	CRS	Remain in EOP-17 and EOP-01 level control leg.
		The scenario will be terminated at the direction of the Chief Examiner after the Emergency Depressurization is complete.
		Expected EAL is 3.4.1.3. (SAE)