

Facility: Vermont Yankee Scenario No.: 1 Op-Test No: 1Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Initial Conditions: 100%  
\_\_\_\_\_  
\_\_\_\_\_Turnover: Equipment OOS: "B" CRD pump, "A" RHR pumpTS LCO's: 7-day LCO for RHR  
\_\_\_\_\_  
\_\_\_\_\_

Event No.	Malf. No.	Event Type*	Event Description
1		C	Loss of Bus 3
2		N, R	Commence plant shutdown
3		I	Failure of steam flow summer
4		C	Loss of feed
5		M	Leak in primary containment w/ inadequate high pressure make-up

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

# **OPERATOR ACTIONS EVENT NUMBERS 1 AND 2**

## **Crew Task Description:**

Respond to a loss of Bus 3; commence plant shutdown

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CREW	Recognize and respond to a loss of Bus 3.	
	SCRO	Recognize half scram on RPS "A" and concurrent loss of the RPS "A" Bus; inform SCRO	
	ACRO	Verify loss of Bus 3, and inform SCRO: <ul style="list-style-type: none"> <li>• There appears to be a fault on the Bus</li> <li>• The "B" EDG apparently started and tripped</li> </ul>	
	CRO/ ACRO	Request that maintenance/ AO investigate loss of Bus 3	
	ACRO	Acknowledge/respond to Seismic Event annunciator (7-M-7) <ul style="list-style-type: none"> <li>• Identify loss of power LED indication in back of CRP 9-7</li> <li>• Inform SCRO</li> </ul>	
	SCRO	Direct actions for loss of Bus 3 IAW ON 3171 and OT 3122: <ul style="list-style-type: none"> <li>• Notify Chemistry of inoperable equipment and TS compensatory actions</li> <li>• Start/verify operating a minimum of two SW pumps</li> <li>• Reset "A" air compressor at CRP 9-6</li> <li>• Verify/backup Group 3 isolation</li> <li>• Investigate loss of Bus 3, including capability to re-power busses 3 and 8</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO/ ACRO	When directed: <ul style="list-style-type: none"> <li>• Notify Chemistry of inoperable equipment and TS compensatory actions</li> </ul>	
	ACRO	When directed: <ul style="list-style-type: none"> <li>• Start/verify operating a minimum of two SW pumps</li> <li>• Reset "A" air compressor at CRP 9-6</li> <li>• Verify/backup Group 3 isolation</li> </ul>	
	SCRO	When given permission from Maintenance, direct re-energization of Bus 8 from Bus 9	
	ACRO	When directed: <ul style="list-style-type: none"> <li>• Re-energize Bus 8 from Bus 9 IAW OP 2143, Appendix C and Section O</li> <li>• Inform SCRO of 24-hour S/D LCO per 3.5.H.1, EDG and Bus 8/9 inoperability</li> </ul>	
	SCRO	Enter 24-hour S/D LCO per 3.5.H.1 <ul style="list-style-type: none"> <li>• Direct commencement of plant S/D IAW OP 0105</li> </ul> Direct the following actions: <ul style="list-style-type: none"> <li>• Complete steps 5-8 of ON 3171</li> <li>• Restart the "A" RPS MG Set per OP 2134</li> </ul>	
	CRO	When directed, commence reducing power by lowering recirc flow IAW OP 0105	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	ACRO	<p>Assist with plant shutdown as necessary to comply with OP 0105.</p> <p>When directed:</p> <ul style="list-style-type: none"> <li>• Complete steps 5-8 of ON 3171</li> <li>• Restart the "A" RPS MG Set per OP 2134</li> </ul>	
	SS/ SCRO	<p>Consult AP 0156 and make necessary notifications:</p> <ul style="list-style-type: none"> <li>• One-hour non-emergency notification due to TS required S/D per 50.72(b)(1)(i)(A)</li> </ul>	

**OPERATOR ACTIONS  
EVENT NUMBER 3**

**Crew Task Description:**

Respond to high reactor water level (failed steam flow summer).

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	Recognize and respond to increasing RPV level <ul style="list-style-type: none"> <li>• Inform SCRO</li> <li>• Take master manual control of feedwater and restore RPV level</li> </ul>	
	SCRO	Enter/direct actions IAW OT 3114 <ul style="list-style-type: none"> <li>• Verify control of RPV level regained in manual</li> <li>• Identify cause of malfunction</li> <li>• Transfer FWLC to single element</li> </ul>	
	CRO/ ACRO	Identify cause of FWLC malfunction as failed steam flow summer, inform SCRO	
	SCRO	When failed steam flow summer identified, direct the following: <ul style="list-style-type: none"> <li>• Transfer FWLC to single element</li> <li>• Restore automatic control of level IAW OP 2172</li> </ul>	
	CRO	When directed: <ul style="list-style-type: none"> <li>• Transfer FWLC to single element</li> <li>• Restore automatic control of level IAW OP 2172</li> </ul>	

**OPERATOR ACTIONS  
EVENT NUMBER 4**

**Crew Task Description:**

Respond to a loss of normal feed caused by a loss of power; inadvertent HPCI isolation

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO/ ACRO	Recognize the following and inform the SCRO: <ul style="list-style-type: none"> <li>• Loss of Bus 2</li> <li>• Loss of condensate pumps</li> <li>• Trip of feed pumps</li> <li>• Lowering RPV level</li> <li>• Reactor scram</li> </ul>	
	CRO	When steam flow <0.5 Mlbm/hr per steamline, place mode switch in SHUTDOWN <ul style="list-style-type: none"> <li>• Verify all rods inserted; inform SCRO</li> </ul>	
	SCRO	Enter and direct actions IAW OT 3100 and EOP-1 <ul style="list-style-type: none"> <li>• Restore/maintain RPV level between 127-177 inches using CRD, HPCI, RCIC</li> <li>• Maintain RPV pressure between 800-1000 psig with SRVs</li> <li>• Insert IRMs and SRMs</li> <li>• Confirm turbine trip at &lt;50 MWe</li> </ul>	
	CRO	When directed: <ul style="list-style-type: none"> <li>• Maximize CRD flow</li> <li>• Insert IRMs and SRMs</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	ACRO	When directed: <ul style="list-style-type: none"> <li>• Start HPCI or RCIC and restore/maintain RPV level between 127-177 inches</li> <li>• Confirm turbine trip at &lt;50 MWe</li> <li>• Maintain RPV pressure between 800-1000 psig with SRVs</li> </ul>	
	SCRO	Enter/direct actions IAW ON 3170 and OT 3122: <ul style="list-style-type: none"> <li>• Verify EDG "A" starts and energizes Bus 4</li> <li>• Close or verify closed SW-20 <u>or</u> SW-19A/B</li> <li>• Request Maintenance/E/C to investigate loss of Bus 2</li> <li>• Notify load dispatcher, DCO, and Ops Manager</li> </ul>	
	ACRO	If HPCI started for level control, recognize HPCI isolation; inform SCRO	
	SCRO	Acknowledge HPCI isolation, direct level restored and maintained 127-177 inches using RCIC	
	CRO/ ACRO	When directed: <ul style="list-style-type: none"> <li>• Start RCIC and restore/maintain RPV level 127-177 inches</li> <li>• Verify EDG "A" starts and energizes Bus 4</li> <li>• Close or verify closed SW-20 <u>or</u> SW-19A/B</li> </ul>	
	SCRO	Request Maintenance to investigate loss of HPCI	

**OPERATOR ACTIONS  
EVENT NUMBER 5**

**Crew Task Description:**

Respond to a leak in primary containment with inadequate high pressure makeup

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO/ ACRO	Recognize rising drywell pressure and inform SCRO	
	SCRO	Enter and direct actions IAW OT 3111 <ul style="list-style-type: none"> <li>Start all available drywell RRUs</li> </ul>	
	ACRO	When directed, start all available drywell RRUs	
	SCRO	When drywell pressure exceeds 2.5 psig, enter and direct actions IAW EOP-3; re-enter EOP-1 <ul style="list-style-type: none"> <li>Restart all available drywell RRUs</li> <li>BEFORE torus pressure reaches 10 psig, spray the torus</li> </ul>	
	ACRO	When directed: <ul style="list-style-type: none"> <li>Restart all available drywell RRUs</li> <li>Spray the torus using only those pumps not required for adequate core cooling</li> </ul>	
	<b>*CREW EOP-3 CCT</b>	<b>When torus pressure exceeds the suppression chamber spray initiation pressure, initiate drywell containment spray while in the safe region of the drywell spray initiation limit</b>  Standard:  Spray the drywell within 5 minutes of exceeding 10 psig torus pressure	



TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SCRO	<p>WHEN torus pressure exceeds 10 psig, direct the following:</p> <ul style="list-style-type: none"> <li>• Secure recirc pumps</li> <li>• Secure drywell RRUs</li> <li>• Spray the drywell</li> </ul>	
	ACRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>• Secure recirc pumps</li> <li>• Secure drywell RRUs</li> <li>• Spray the drywell using only those pumps not required for adequate core cooling</li> </ul>	
	CRO	Recognize when CRD/RCIC can no longer maintain RPV level; inform SCRO	
	SCRO	When RPV level cannot be maintained 127-177 inches, direct RPV level maintained above 6 inches	
	CRO	Recognize when RPV level cannot be restored/maintained above 6 inches; inform SCRO	
	SCRO	<p>WHEN RPV level cannot be restored/maintained above 6 inches, direct the following:</p> <ul style="list-style-type: none"> <li>• Inhibit ADS</li> <li>• Start/line up for injection CS-A and RHR-B pumps</li> </ul>	
	CRO/ ACRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>• Inhibit ADS</li> <li>• Start/line up for injection CS-A and RHR-B pumps</li> </ul> <p>Recognize when RPV level drops below 6 inches; inform SCRO</p>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	<b>*CREW</b> <b>EOP-1</b> <b>CCT</b>	<p><b>With the reactor shutdown and reactor pressure greater than the shutoff head of the low pressure systems, initiate RPV-ED BEFORE RPV levels reaches -22 inches</b></p> <p>Standard:</p> <p>Initiate RPV-ED BEFORE RPV level reaches -22 inches.</p>	
	SCRO	<p>BEFORE RPV level drops below -22 inches, enter EOP-5 and direct emergency depressurization:</p> <ul style="list-style-type: none"> <li>• Open all SRVs</li> </ul>	
	SCRO	When directed, open all SRVs	
	<b>*CREW</b> <b>EOP-1</b> <b>CCT</b>	<p><b>Action is taken to restore RPV water level above -22 inches by operating available low pressure ECCS system(s) when RPV pressure decreases below the shutoff head of the low pressure systems</b></p> <p>Standard:</p> <p>Recover RPV water level to greater than -22 inches within 5 minutes of reactor pressure dropping below 250 psig</p>	
	CRO/ ACRO	When RPV pressure drops below ~350 psig, recognize failure of the RHR and CS injection valves to auto open; inform SCRO	
	SCRO	Direct CRO/ACRO to manually open the RHR and CS injection valves	
	CRO/ ACRO	When directed, manually open the RHR and CS injection valves	
	SCRO	Direct RPV level restored/maintained 127-177 inches	
	CRO/ ACRO	Operate injection pumps as necessary to maintain RPV level 127-177 inches	
	SS/ SCRO	Classify the event IAW AP 3125 as an Alert (A-3-a and A-3-b)	

Facility: Vermont Yankee Scenario No.: 2 Op-Test No: 1Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Initial Conditions: 100%  
\_\_\_\_\_  
\_\_\_\_\_Turnover: Equipment OOS: "A" SBT  
TS LCOs: 7-day LCO for SBT  
\_\_\_\_\_  
\_\_\_\_\_

Event No.	Malf. No.	Event Type*	Event Description
1		I	Failure of MSL rad monitor (upscale) with failure of auto 1/2 scram
2		C	Failure of EPR
3		C	MT high vibrations
4		R, N	Power reduction
5		M	Turbine trip w/ATWS, failure of fast transfer and failure of EDG to start

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

**OPERATOR ACTIONS  
EVENT NUMBER 1**

**Crew Task Description:**

Respond to MSL rad monitor failed upscale; failure of auto half-scam (VY staff assist)

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	Acknowledge and respond to Mn Stm Line Rad Hi annunciator (5-K-6) and ½ scam on RPS "A"; inform SCRO	(VY staff assist with failure to half-scam)
	ACRO	Acknowledge MSL monitor alarm (3-f-1); inform SCRO <ul style="list-style-type: none"> <li>• Direct SCRO to refer to Tech Specs 3.1 and 3.2</li> <li>• Identify "C" MSL monitor in reading upscale; inform SCRO</li> </ul>	
	SCRO	Call I&C to investigate MSL monitor failure.	
	SS/SE SCRO	Consult Tech Specs 3.1.A, 3.2B, Table 3.1.1 and Table 3.2.2 <ul style="list-style-type: none"> <li>• Identify that TS requirements are met due to trip system being in the trip condition</li> </ul>	
	SCRO	Identify that with the trip system in the trip condition, TS requirements are met for the MSL Rad Monitor failure	

**OPERATOR ACTIONS  
EVENT NUMBER 2**

**Crew Task Description:**

Respond to pressure regulator oscillations and subsequent pressure regulator failure.

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	Recognize reactor power/pressure oscillations; inform SCRO <ul style="list-style-type: none"><li>Identify oscillations associated with EPR; inform SCRO</li></ul>	
	SCRO	Enter/direct actions IAW OT 3115 and 3116: <ul style="list-style-type: none"><li>Verify MPR takes control and lower MPR setpoint</li><li>When MPR is in control, place EPR in CUTOUT</li><li>Restore RPV pressure to pre-transient level</li></ul>	
	CRO/ ACRO	When directed, coordinate between CRP 9-5 and CRP 9-7 to: <ul style="list-style-type: none"><li>Verify MPR takes control and lower MPR setpoint</li><li>When MPR is in control, place EPR in CUTOUT</li><li>Restore RPV pressure to pre-transient level</li></ul>	

**OPERATOR ACTIONS  
EVENT NUMBER 3**

**Crew Task Description:**

Respond to increasing MT high vibrations; power reduction. (VY staff assist)

TIME	POS.	EXPECTED ACTIONS	COMMENTS

# **OPERATOR ACTIONS** **EVENT NUMBERS 4 AND 5**

## **Crew Task Description:**

Respond to a turbine trip with failure to scram, failure of fast transfer and failure of EDG to start; respond to high D/W pressure and temperature due to safety valve lift

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO/ ACRO	Recognize and respond to turbine trip; inform SCRO	
	ACRO	Recognize and respond to reactor scram <ul style="list-style-type: none"> <li>Recognize all rods NOT inserted; inform SCRO</li> </ul>	
	ACRO	Recognize the following electrical malfunctions; inform SCRO <ul style="list-style-type: none"> <li>Failure of fast transfer on Bus 2</li> <li>Failure of EDG "A" to auto start</li> </ul>	
	CRO/ ACRO	Recognize Group I isolation; inform SCRO	
	SCRO	Direct ACRO to re-energize busses 2 and 4	
	ACRO	When directed, re-energize busses 2 and 4	
	SCRO	Enter/direct actions IAW OT 3100, EOP-1, and EOP-2 <ul style="list-style-type: none"> <li>Place mode switch in SHUTDOWN</li> <li>Verify EOP-1 Table A automatic actions</li> <li>Inhibit ADS</li> <li>Initiate ARI/RPT</li> <li>Open SRVs to stabilize pressure 800-1000 psig</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	<b>*CREW</b> <b>EOP-2</b> <b>CCT</b>	<p><b>With a reactor scram required, and reactor not shutdown, INHIBITS ADS to prevent an uncontrolled RPV depressurization to prevent causing a significant power excursion.</b></p> <p>Standard:</p> <p>Inhibit ADS prior to automatic initiation.</p>	
	CRO	<p>Place mode switch in SHUTDOWN</p> <p>When directed:</p> <ul style="list-style-type: none"> <li>• Initiate ARI/RPT</li> </ul>	
	ACRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>• Inhibit ADS</li> <li>• Open SRVs to stabilize pressure 800-1000 psig</li> <li>• Verify EOP-1 Table A automatic actions</li> </ul>	
	<b>*CREW</b> <b>EOP-2</b> <b>CCT</b>	<p><b>During an ATWS with conditions met to perform power/level control TERMINATE AND PREVENT INJECTION, with exception of boron, CRD, and RCIC into the RPV until conditions are met to re-establish injection.</b></p> <p>Standard:</p> <p>Terminate and prevent injection IAW OE 3107 Appendix GG such that the heat capacity temperature limit curve is not exceeded and within 10 minutes of average Torus temperature exceeding 100 deg. F.</p>	
	SCRO	<p>Direct Power/Level Control IAW EOP-2</p> <ul style="list-style-type: none"> <li>• Terminate and prevent RPV injection per Appendix GG; reduce RPV level to 90 inches</li> </ul>	
	CRO/ ACRO	When directed, terminate and prevent RPV injection	



TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	Inform SS/SCRO when: <ul style="list-style-type: none"> <li>RPV level reaches 90 inches</li> <li>Power drops below 2%</li> </ul>	
	*CREW EOP-2 CCT	<b>When conditions are met to re-establish injection, use available injection systems to MAINTAIN RPV water level above -22"</b>  Standard:  Maintain RPV level greater than -22" and less than the point at which a visible power excursion takes place.	
	SCRO	Direct CRO to maintain RPV level between -22 inches and the level to which it was lowered, using feed and condensate	
	CRO	When directed, use feed and condensate to maintain RPV level between -22 inches and the level to which it was lowered	
	*CREW EOP-2 CCT	<b>With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting control rods, to prevent exceeding the primary containment design limits.</b>  Standard:  Take actions to reduce power by injecting SLC and/or inserting control rods IAW OE 3107 Appendix E, F, G, H, I, or BB within 10 minutes of the scram failure. Only one method needs to be used. The method may result in successful control rod insertion or SLC injection.	E- Individually scram each rod  F- Initiation of manual scram G- Manually drive rods H- Vent the over-piston volume I- Local firing of Squib Valve BB- Increase CRD cooling water pressure

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SCRO	Direct actions to achieve shutdown conditions IAW EOP-2 <ul style="list-style-type: none"> <li>• Reset ARI/RPT</li> <li>• Inject SLC prior to torus temperature reaching 110 deg F</li> <li>• Insert control rods per appendices (E, F, G, H, or BB)</li> </ul>	
	CRO	When directed: <ul style="list-style-type: none"> <li>• Reset ARI/RPT</li> <li>• Insert control rods per designated appendices (E, F, G, H, or BB)</li> <li>• Inject SLC</li> </ul> Recognize failure of squib valves to fire; inform SCRO	
	SCRO	Direct local firing of squib valve IAW Appendix I	
	ACRO	When directed, direct AO to locally fire squib valve IAW Appendix I	
	CRO	Recognize when SLC injecting; inform SCRO	
	CREW	Recognize high drywell pressure and temperature	
	SCRO	Enter/direct actions IAW EOP-3: <ul style="list-style-type: none"> <li>• Restart all available drywell RRUs</li> <li>• Initiate torus cooling</li> <li>• Before torus pressure reaches 10 psig, spray the torus</li> </ul>	
	ACRO	When directed: <ul style="list-style-type: none"> <li>• Restart all available drywell RRUs</li> <li>• Initiate torus cooling</li> <li>• Spray the torus</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SS/ SE/ SCRO	<p>Consult AP 3125 and determine a Site Area Emergency EAL has been reached IAW AP 3125, Appendix A, Category S-7-c.</p> <p>Initiate a one-hour emergency report IAW AP 0156 (50.72(a)(1)(i)), 50.72(b)(1)(ii), 50.72(b)(1)(iv), and four-hour non-emergency report IAW 50.72(b)(2)(ii)</p>	

Facility: Vermont Yankee Scenario No.: 3 Op-Test No: 1Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Initial Conditions: 70% power; returning to 100% following turbine BPV testing.  
\_\_\_\_\_  
\_\_\_\_\_Turnover: Equipment 00S: B RWCU pump; B CRD pump; A RUPS Applicable LCO: 7-day due to A RUPS.  
\_\_\_\_\_  
\_\_\_\_\_

Event No.	Malf. No.	Event Type*	Event Description
1		N, R	Power increase using recirc flow
2		C	A RWCU pump trip
3		I	B recirc loop controller failure
4		M	Fuel failure with leak in RWCU system and failure of RWCU isolation (PCIS)

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

**OPERATOR ACTION  
EVENT NUMBERS 1 A1**

*power ↑ actions  
(for recirc flow)*

**Crew Task Description:**

Power increase using recirc flow; respond to a trip of A RWCU pump, and ensure appropriate Tech Spec requirements are met.

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO/ ACRO	Acknowledge and respond to RWCU Pump A/B Trip (4-J-1) and RWCU Clg Water Temp Hi (4-J-4) annunciators; inform SCRO <ul style="list-style-type: none"> <li>• Request AO to check temperature and verify hold pumps started</li> <li>• Monitor drywell/torus dp</li> <li>• Prompt SCRO to consult TS 4.6.B.3.b</li> <li>• Request Maintenance investigate pump trip</li> </ul>	
	SCRO	Enter and verify actions IAW OP 2112 for RWCU Pump trip (Section K) <ul style="list-style-type: none"> <li>• Direct contact of Maintenance to investigate pump trip</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SS/ SCRO	Consult TS 4.6.B.3.b <ul style="list-style-type: none"> <li>Determine requirements to monitor for conductivity every four hours</li> <li>Direct chemistry information of increased monitoring requirements</li> </ul>	
	CRO/ ACRO	When directed, inform chemistry of four-hour monitoring requirements.	

**OPERATOR ACTIONS  
EVENT NUMBER 3**

**Crew Task Description:**

Respond to positive reactivity addition caused by failure of the "B" recirc loop controller.

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	Recognize power/recirc flow increasing; inform SCRO  <ul style="list-style-type: none"> <li>Identify the loop "B" controller ramping upward; inform SCRO</li> </ul>	
	SCRO	Enter/direct actions IAW OT 3110  <ul style="list-style-type: none"> <li>Transfer controller to MANUAL</li> <li>Notify DCO, Ops Mgr, and RE</li> <li>Request I&amp;C investigate</li> </ul>	
	CRO	When directed, take manual control of the loop "B" controller  <ul style="list-style-type: none"> <li>Recognize no response; inform SCRO</li> </ul>	
	ACRO	When directed:  <ul style="list-style-type: none"> <li>Notify DCO, Ops Mgr, and RE</li> <li>Request I&amp;C investigate</li> </ul>	
	SCRO	Direct trip of the "B" recirc pump; enter and direct actions IAW OT 3118  <ul style="list-style-type: none"> <li>Close recirc pump "B" discharge valve</li> <li>Verify outside the EXCLUSION REGION of Figure 2.4.1</li> <li>Adjust recirc pump "A" speed to 70% speed</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	CRO	When directed: <ul style="list-style-type: none"> <li>• Close recirc pump "B" discharge valve</li> <li>• Adjust recirc pump "A" speed to 70%</li> <li>• Verify outside the EXCLUSION REGION of Figure 2.4.1</li> <li>• Identify operation in BUFFER REGION; inform SCRO</li> </ul>	
	SCRO	Enter/direct actions IAW OT 3117 <ul style="list-style-type: none"> <li>• Monitor LPRM stability on ERFIS</li> <li>• Initiate SOLOMON</li> <li>• Insert control rods to exit the BUFFER REGION</li> </ul>	
	CRO	When directed: <ul style="list-style-type: none"> <li>• Monitor LPRM stability on ERFIS</li> <li>• Initiate SOLOMON</li> <li>• Insert control rods to exit the BUFFER REGION</li> </ul>	



**OPERATOR ACTIONS  
EVENT NUMBER 4**

**Crew Task Description:**

Fuel failure with leak in RWCU system and failure of RWCU (PCIS) to isolate

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	ACRO	<p>Acknowledge and respond to Rx Bldg Rad Hi annunciator (3-E-3); inform SCRO</p> <ul style="list-style-type: none"> <li>Identify alarming channel on CRP 9-11 ARM #6, RB 280' elevation by elevator; inform SCRO</li> <li>Prompt SCRO to enter ON 3153</li> </ul>	
	SCRO	<p>Enter/direct actions IAW ON 3153:</p> <ul style="list-style-type: none"> <li>Direct RP to obtain area dose rates and air samples</li> <li>Refer to EOP-4</li> <li>Place Control Room HVAC recirc mode switch to EMER (CRP 9-25)</li> </ul>	
	SCRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>Direct RP to obtain area dose rates and air samples</li> <li>Place control room HVAC recirc mode switch to EMER (CRP 9-25)</li> </ul>	
	CRO	<p>Acknowledge/respond to Rx Bldg/Refuel floor CH A/B Rad High annunciators (5-H-1/5-J-1); inform SCRO</p>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SCRO	<p>Enter/direct actions IAW ON 3108 (loss of primary containment integrity)</p> <ul style="list-style-type: none"> <li>• Direct commencement of an orderly shutdown IAW OP 0105</li> </ul> <p>Direct evacuation of the reactor building</p>	
	CRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>• Commence orderly shutdown of IAW OP 0105</li> </ul>	
	CRO/ ACRO	Recognize a RWCU isolation failure and/or when directed, attempt to shut CU-15 and CU-18; inform SCRO that valves will not shut	
	SCRO	<p>Enter/direct actions IAW ON 3158 (reactor building high area temperature/water level)</p> <ul style="list-style-type: none"> <li>• Attempt to isolate leaking system</li> <li>• Direct AO/Maintenance to attempt to isolate valves</li> </ul> <p>When Rx Bldg vent exhaust radiation exceeds 14 mR/hr., enter/direct actions IAW EOP-4</p> <ul style="list-style-type: none"> <li>• Monitor RB area temperatures, rad levels, and water levels</li> </ul>	
	ACRO	When requested, direct AO/Maintenance to attempt to isolate valves	
	CREW	Recognize rising MSL rad levels; enter/take actions per OT 3112	
	SCRO	<p>Enter/direct actions IAW OT 3112</p> <ul style="list-style-type: none"> <li>• Reduce power at &lt;10% per min. using recirc flow, to 27.5 - 29 Mlbm/hr.</li> <li>• Place the SD iodine filter in service</li> <li>• Direct Chemistry to sample for I-131</li> </ul>	
	CRO	When directed, reduce power at <10% per min recirc flow, to 27.5 - 29 Mlbm/hr.	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	ACRO	<p>When directed:</p> <ul style="list-style-type: none"> <li>Place the SD iodine filter in service</li> <li>Direct Chemistry to sample for I-131</li> </ul>	
	*CREW EOP-4 CCT	<p><b>With the reactor at power, and a primary system discharging into the Secondary Containment, manually scram the reactor before any area exceeds the maximum safe operation levels</b></p> <p>Standard:</p> <p>Manually scram the reactor BEFORE any area temperature exceeds max safe or before ARM 1, 2, 3, 4, 6, 7, 8, 10, or 11 exceed 1,000 mR/hr.</p>	
	SCRO	<p>Recognize area rads approaching max safe levels; direct manual scram</p> <p>Enter/direct actions IAW OT 3100 and EOP-1</p> <ul style="list-style-type: none"> <li>Insert manual scram</li> <li>When steam flow &lt;0.5 Mlbm/stream line, place mode switch in SHUTDOWN</li> <li>Restore/maintain RPV level 127-177 inches</li> <li>Stabilize RPV pressure below 1055 psig with BPVs</li> </ul>	
	CRO	<p>When directed, insert manual scram.</p> <p>Insert manual scram</p> <ul style="list-style-type: none"> <li>Verify all rods inserted; inform SCRO</li> <li>When steam flow &lt;0.5 Mlbm/stream line, place mode switch in SHUTDOWN</li> <li>Restore/maintain RPV level 127-177 inches</li> </ul>	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	SCRO	Direct actions IAW ARS 5-H-1/5-J-1; <ul style="list-style-type: none"> <li>• Confirm indications on CRP 9-10</li> <li>• Verify HVAC isolates and SBGT starts (Group III isolation)</li> <li>• Evacuate reactor building</li> <li>• Request local surveys</li> </ul>	
	ACRO	When directed: <ul style="list-style-type: none"> <li>• Confirm indications on CRP 9-10</li> <li>• Verify HVAC isolates and SBGT starts (Group III isolation)</li> </ul> Recognize failure of SB-09, 10, 11, 12 to isolate; attempt to shut valves; inform SCRO	
	<b>*CREW</b> <b>EOP-3</b> <b>CCT-1</b>	<b>When PCIS Group 1, 3, 5, or 6 fails to isolate, initiate PCIS Group manually.</b>  Standard:  Initiate actions to manually isolate valves SB-09, 10, 11, 12 within 10 minutes of receiving the 5-H-1/5-J-1 annunciators	
	SCRO	When informed of isolation valve failures, direct AO/Maintenance to effect repairs/isolations	
	CRO/ ACRO	When requested: <ul style="list-style-type: none"> <li>• Direct AO/Maintenance to effect repairs/isolations</li> <li>• Acknowledge/respond to steam leak det panel Temp Hi annunciator (4-H-1)</li> </ul>	
	ACRO	Identify rising RB temperatures in the RWCU area; inform SCRO	

TIME	POS.	EXPECTED ACTIONS	COMMENTS
	ACRO	<ul style="list-style-type: none"> <li>Stabilize RPV pressure below 1055 psig with BPVs</li> <li>Confirm/initiate turbine trip at &lt;50 Mwe</li> </ul>	
	SCRO	Direct RPV cooldown using BPVs at <100 deg. F/hr.	
	ACRO	When directed, cooldown using BPVs	
	CREW	Recognize Group I isolation due to MSL high radiation	
	SCRO	Direct the following areas: <ul style="list-style-type: none"> <li>Backup Group I isolation</li> <li>Resume cooldown using SRVs</li> <li>Place RHR in torus cooling</li> </ul>	
	ACRO	When directed: <ul style="list-style-type: none"> <li>Backup Group I isolation</li> <li>Resume cooldown using SRVs</li> <li>Place RHR in torus cooling</li> </ul>	
	SS/ SCRO	Consult AP 3125 and classify the event as an Alert IAW Appendix A (A-1-b, A-2-a)	