			Scenario Outline	E§-D-1
Simulati	on Facility Peach	Bottom	Scenario No. #1 (altered bank) Op Test No.	2008 NF(C
Examine	ers		Operators	CRS (SRO)
	<u> </u>			URC (ATC)
				PRC (BOP)
Scenarie Summa	 The scenario outage. Durin 'A' pump. Foll standby drywe Next, a loss of outboard Growthe half scram 8091 will fail of with OT-110 " initiation, require Following this "Reactor High automatically after the scram Containment (remain) oper pressure decomperform T-112 	begins with a p ng shift turnove lowing the CR all chiller in ser f MCC E224-F up II isolation. n and PCIS iso open, requiring Reactor High uiring entry into , an EHC failu n Pressure". T scram on high m, a leak will d Control" and T n and, due to a reases below 8 2 "Emergency	plant startup in progress at approximately 5% power foller, the crew is directed to swap CRD pumps due to a no D pump swap, the 'B' drywell chiller trips, requiring the or vice in accordance with ON-120 "High Drywell Tempera R-B results in a loss of the 'B' RPS MG set, a half scram The crew will investigate, transfer RPS to/the alternate lation. Following the Tech Spec evaluation, startup leve the crew to manually restore and control RPV water leve evel". This event is further complicated by an inadverte OT-104 "Positive Reactivity Insertion" and manual shu re will cause reactor pressure to rise, requiring entry into the crew will be unable to reduce reactor pressure. The pressure and the crew will be required to insert a manu evelop in the torus, requiring the crew to enter T-103 "S -102 "Primary Containment Control". A turbine bypass failure of the mode switch, will result in MSIVs closing w 50 psig. As torus level continues to drop, the crew will Blowdown".	owing a refueling isy bearing on the crew to place the ature". and PCIS supply and reset el controller LCV- vel in accordance ent RCIC tdown of RCIC. O OT-102 reactor will fail to al scram. Shortly becondary valve (#1) will fail when reactor be required to
Initial Conditio	IC-71, ~5% j ons er See Attache	oower d "Shift Turnov	ver" Sheet	
Event	Malfunction	Event	Event	<u>,</u>
No.	<u>No.</u>	Type*	Description	
1		N URO CRS	Swap CRD pumps	-
2		C PRO CRS	Drywell chiller trip	: ;:
3	1	C URO TS PRO CRS	Loss of MCC E224-R-B resulting in half scram and G isolation / transfer RPS power supplies, reset half scr	roup II outboard ram and isolations
4		I URO CRS	Startup level controller (LCV-8091) failure	
5		I PRO TS CRS	Inadvertent RCIC initiation	
6		C URO CRS	EHC failure causes rising reactor pressure / reactor s switch failure (manual scram works)	scram with mode
7		M ALL	Torus leak into secondary containment (torus room) emergency blowdown / turbine bypass valve fails ope MSIVs to close (due to failed mode switch)	leading to en, causing

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

SHIFT TURNOVER

PLANT CONDITIONS:

- Unit 2 startup IAW GP-2 "Normal Plant Startup" in progress. Procedure complete up to step 6.2.61. Variance steps include:
 - 6.2.44 (Drywell purge still in progress to support drywell inspections)
 - 6.2.60 (awaiting AO-8091 troubleshooting)
- Rod Sequence Sheet is complete up to and including Group 16, rod 42-11.
- Startup ON HOLD due to erratic operation of AO-8091. Troubleshooting equipment being installed. Stay on AO-8091 for RPV level control until equipment is installed, THEN transition to Auto Level Control on the Master Controller.
- Currently in Step 1 of ReMA PB2C18-1.0.

INOPERABLE EQUIPMENT/LCOs:

• The previous shift noticed erratic operation of the Startup Level Control Valve (AO-8091). Troubleshooting is in progress.

SCHEDULED EVOLUTIONS:

 Predictive Maintenance reports a noisy bearing on the 'A' CRD pump motor and has requested a swap to the 'B' CRD pump in order to install instrumentation on the 'A' pump.
 Place 2B CRD pump (Standby pump) in service using SO 3.6.A-2 "Placing the Standby Control Rod Drive Hydraulic System Pump in Service". 2B CRD pump has NOT been drained.

SURVEILLANCES DUE THIS SHIFT:

None

ACTIVE CLEARANCES:

None

GENERAL INFORMATION:

- Reactor level control through AO-8091 using SO 6C.1.A-2 (at step 4.4).
- Startup ON HOLD due to erratic operation of AO-8091. Troubleshooting equipment being installed. Stay on AO-8091 for RPV level control until equipment is installed, THEN transition to Auto Level Control on the Master Controller.
- Containment purge in progress using SO 7B.4.A-2 (at step 4.19).
- Shell warming in progress using SO 1B.1.A-2 (at step 4.9.10).

CRITICAL TASK LIST

- 1. Manually scram the reactor on recognition of failure to automatically scram at 1085 psig reactor pressure, or in any case <u>before</u> reactor pressure exceeds 1100 psig. Recognize failure of the reactor mode switch and shutdown the reactor using the manual scram pushbuttons.
- 2. Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" <u>before</u> Torus level lowers to 10.5 feet.

		Operat	tor Actions				ES-D-2						
Op Test No.:	1	Scenario No.:	1	Event No.:	1	Page:	1 of 13						
Event Descript	tion:	Swap CRD pump	os										
Cause:	Noisy pum	p motor bearing	on the 'A' C	RD pump.									
Effects:	N/A												
<u>Time</u>	PositionApplicant's Actions or BehaviorCRSDirect the URO to swap CRD pumps in accordance with SO 3.6.A-2 "Placing the Standby Control Rod Drive Hydraulic System Pump in Service".												
	URO Swap CRD pumps IAW SO 3.6.A-2 "Placing the Standby Control Ro Drive Hydraulic System Pump in Service":												
		 Contact the start IAW 	ne Equipme SO 3.6.A-2	ent Operator to ve Steps 4.2.1 thro	erify '2B ough 4.2	3' CRD pump re 2.8.	ady for						
		Start the 2	2B CRD pu	mp and monitor	pump a	mps.							
		Direct the	Equipmen	t Operator to slo	wly ope	n HV-2-3-36B.							
		 Shutdown 	the 2A CF	D pump.									
		 Direct the 	Equipmen	t Operator to clo	se HV-2	2-3-36A.							
		 Check CF Hydraulic 	 Check CRD system parameters IAW SO 3.8.A-2 "Control Rod Drive Hydraulic System Routine Inspection." 										
		Inform the	e CRS the p	oump swap is co	mplete.								
	PRO	Monitor plant	parameter	s and assist as d	irected.								

				Operate	or Actions				E3-\J-2			
Op Test No.:		1 S	cen	ario No.:	1	Event No.:	2	Page:	2 of 13			
Event Descrip	otion	: 'E	3' dry	well chiller t	trip							
Cause:	Sp	urious ch	iller ı	motor high te	emperature							
Effects:	1. Alarms											
		 217 D-1 "Drywell Chiller Trouble" 217 J-1 "Drywell Chilled Water Hi-Lo Temp" (approx. 15 minutes after chiller depending on restoration time) 217 J-2 "A Drywell Chiller Discharge Hi Temp" (approx. 5 minutes after trip) 218 ability systematics increases a little dependence of the systematic systematics and the systematic systematics and the systematic systematics and the systemater and the sy										
	2.	2. 'B' chiller outlet temperature increases; chilled water supply and return, drywell fan outlet and return, drywell equipment drain sump outlet, and recirc pump mot temperatures all increase.										
	3.	Drywell	temp	perature and	l pressure ri	ise accordingly.						
Time	Po UF	sition RO/PRO	Applicant's Actions or Behavior Recognize and report alarm 217 D-1 "Drywell Chiller Trouble" and enter the corresponding Alarm Response Card									
			Re	cognize and d enter the d	d report ala correspond	rm 217 J-1 "Dr ing Alarm Resp	u. ywell Chil oonse Ca	lled Water Hi- rd, if it alarms	Lo Temp"			
			Temp" and enter the corresponding Alarm Response Card.									
	CF	RS	En	ter and exe	cute ARC 2	217 D-1" Drywe	ll Chiller	Trouble":				
			•	Direct plac "Placing an chillers are	ing addition n Additional e NOT in ou	nal drywell chill I Drywell Chille Itage operation	ers in ser r in Servi	vice IAW SO ce." <u>NOTE</u> : [44A.6.A-2)rywell			
			•	Direct perf Trouble Ala	orming SO arm."	44A.7.F-2 "Re	sponse to	o a Drywell Cl	niller			
	PF	२०	Pla	ace the cont	rol switch f	or the 'B' drywe	ell chiller i	in "STOP".				
			Sta Dry	art the stanc ywell Chiller	dby drywell r in Service	chiller IAW SO ."	44A.6.A	-2 "Placing ar	n Additional			
			•	Direct an E start by pe	Equipment (erforming st	Operator to ver eps 4.7 throug	ify 2C Dr n 4.9 of S	ywell Chiller i O 44A.6.A-2.	s ready for			
			•	Place the ' control swi	C' chilled w	vater pump in s N".	ervice by	placing the p	ump			
			•	Place the 'switch in "s	C' drywell (START".	chiller in service	e by placi	ing the chiller	control			
			Dis a [spatch an E Drywell Chill	quipment C ler Trouble	Operator to perf Alarm."	form SO 4	44.A.7.F-2 "R	esponse to			

Op Test No.:	1	Scenario No.:	1	Event No.:	3	Page:	3 of 13			
Event Descript	tion:	Loss of electrical p	ower to E2	224-R-B						
Cause:	Overcurre	ent trip of 480 VAC M	MCC circui	t breaker						
Effects:	1. Initial	Alarm: 002 F-1 "E22	24 MCC FI	OR BKR TRIP"						
	2. Loss Tech	of power to multiple Spec required shutc	pieces of I down.	ECCS equipment	t, which will ι	ultimately r	esult in a			
<u>Time</u>	Position	Applicant's Act	tions or B	<u>ehavior</u>						
	PRO	Recognize and enter the corres	Recognize and report alarm 002 F-1 "E224 MCC FDR BKR Trip" and enter the corresponding Alarm Response Card.							
		Direct an Equip breaker trip".	Direct an Equipment Operator to investigate the E224 MCC feeder breaker trip".							
		Direct the Equip placing its local	Direct the Equipment Operator to "green flag" the tripped breaker by placing its local control switch to the "TRIP" position.							
		Identify loads w electrical prints	panels, rev 1 of AO 56	iewing as: E.3-2 for E	sociated 224-R-B.					
	CRS	Enter and exec Trip".	Enter and execute the alarm response card for 002 F-1 "E224 MCC BKR Trip".							
		Review Technic required due to	Review Technical Specifications and determine a 3.0.3 shutdown is required due to 'B' Core Spray and 'B' RHR inoperable.							
		Direct transfer of	of 'B' RPS	bus to the altern	ate supply l	AW SO 60)F.6.A-2.			
		Direct reset of t Scram and ARI	Direct reset of the half scram IAW GP-11.E "Reactor Protection System - Scram and ARI Reset."							
		Direct reset of F and III Outboard	Direct reset of PCIS Group I, II and III isolations IAW GP-8.D "Group I, II and III Outboard Half Isolation."							
	PRO	Transfer 'B' RP	S bus to th	ne alternate supp	bly IAW SO	60F.6.A-2				
		 verity "ALT 	SOURCE	AVAILABLE	int is lit at Pa	anel 2000	17.			

- Verify scram solenoid group 1-4 lights are lit at Panel 20C015.
- Place the "RPS M/G SET ALT FEED TRANS SW" to "ALTERNATE.."

operator Actions

Op Test No.:	1	Scen	ario No.:	1	Event No.:	3	Page:	4 of 13			
Event Description:		Loss	Loss of electrical power to E224-R-Bcontinued								
<u>Time</u>	<u>Position</u> URO	<u>Αp</u> Re and Re • • •	plicant's Ac set the half s d ARI Reset. set half scra Place the S Place the S Verify scrar Panel 20C0 Verify scrar Place the S "OPEN" and "OPEN" and	tions or E scram IAW m IAW GF cram Res cram Res n solenoid 017. m annunci DV Inboard d verify the DV Outbo d verify the	Behavior V GP-11.E "Rea P-11.E. et switch to the et switch to the I group 1-4 light ators are reset/o rd Vent and Dra e valves indicate pard Vent and D e valves indicate	ctor Prot "Group 1 "Group 2 s are lit a clear. iin Valves e open. rain Valve e open.	ection System I & 4 position" 2 & 3 position" at Panel 20C0 s control switc	- Scram 15 <u>and</u> h to itch to			
	PRO	Re (• •	set the PCIS Outboard Ha Verify affec GP-8.D. Direct Equip Floor ventila placed in "C Place contr To" position Place the C "GRP II / III Verify "GRC annunciator	S Group I, alf Isolation ted equipr pment Op- ation fans DFF". fol switche per GP-8 Dutboard Is " position. DUP II / III r is clear.	II and III isolation." ment in "Require erator to verify F are tripped and s for affected ec 3.D. solation Logic R OUTBOARD IS	ons IAW ed Positio Reactor E all fan c quipment ceset Swi SOL. REI	GP-8.D "Grou on" by perform Building and R ontrol switche t in the "Place itch (16A-S33) _AYS NOT RE	p I, II and ing COL efuel s are Switch to the ESET"			

		<u>Op</u>	erator Action	<u>15</u>			ES-D-2
Op Test No.:	1	Scenario No	.: 1	Event No.:	3	Page:	5 of 13
Event Descript	tion:	Loss of electi	rical power to	E224-R-Bconti	nued		
<u>Time</u>	Pro	Applicant Shutdown System SI • Place spring • Close • Close • Close	's Actions of the SBGT S nutdown Folle the operating return to "AL the in-service AO-00476-1 AO-00476-2 the following AO-20469-0 AO-20469-0 PO-20466	Behavior ystem IAW SO 9, owing an Automa 3 SBGT Fan contr JTO". • 'B' SBGT Filter • ventilation damp 02	A.2.A "Sta itic Start." rol switch " Train inlet ers:	ndby Gas Tro to "STOP" an and outlet va	eatment Id let it alves:
	PRO	Restore R Building V • Verify 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	eactor Buildi entilation Sys open the follo AO-20453 AO-20461 AO-20462 AO-20452 AO-20458 AO-20463 AO-20464 AO-20467 AO-20467 AO-20468 an Equipmen	ng Ventilation IA\ stem Startup and owing dampers: nt Operator to sta	<i>N</i> SO 40B Normal C	.1.A-2 "Reac operation." tor Building \	tor /entilation.

Operator Actions												
Op Test No.:	1	Scenario No.:	1	Event No.:	4	Page:	6 of 13					
Event Descript	tion:	Startup level cor	ntroller (L	CV-8091) failure								
Cause:	Control s	signal failure										
Effects:	1. Alarr • 2 2. LCV	 Alarm: 210 H-2 "Reactor Hi-Lo Water Level" LCV-8091 fails open, causing RPV water level to rise. 										
<u>Time</u>	<u>Positior</u> URO	 Applicant's A Recognize a enter the corr Control RPV Recognize Attempt to not respond Perform a Transformation Control RPV 	Actions of nd report respondir water lev the and rep to take manu- educe fee elow RPV lose MO- sing the C ransfer to stablished	Pr Behavior alarm 210 H-2 "Read and Alarm Response rel below +35 inch bort LCV-8091 has anual control of LC nual control of C nual control of 'C' read al control of 'C' read al control of 'C' read bump speed to read of pump speed to read pressure, OR 8090 "C RFP Byp C RFP discharge verse Master Level Correct edwater Pump St d Through AO-809	eactor Hi- e Cards. es. s failed op CV-8091; to contro eactor fee reduce pu ass" and valve, OR ntrol using artup Wit 91".	Lo Water Lev ben. determine val l the transient d pump M/A s imp discharge batch feed the g SO 6C.1.A-2 h Vessel Leve	ve does station; pressure e RPV 2 "'C' el Control					
	CRS	Enter and ex lowers. Enter and ex Direct mainta	Enter and execute OT-100 "Reactor Low Level" when RPV level initially lowers. Enter and execute OT-110 "Reactor High Level" when RPV level rises. Direct maintaining RPV water level below +35 inches.									

	Operator Actions										
Op Test No.:		1 S	cenar	io No.:	1	Event No.:	5	Page:	7 of 13		
Event Descript	tion:	In	adver	tent RCIC i	nitiation						
Cause:	Initia	ation rela	ay con	tacts short	closed						
Effects:	 Alarms: 227 E-3 "RCIC Relays Not Reset" RCIC injection into the RPV; reactor water level and reactor power increase 										
<u>Tìme</u>	Pos PR(sition C	Appl Reco Using and/o	Applicant's Actions or Behavior Recognize and report RCIC initiation. Using at least two independent indications, verify mis-operation of RCIC and/or adequate core cooling is assured.							
	URO Control feed pump speed / discharge pressure as necessary to m RPV water level below +35 inches (N/A if transferred to Auto Mas Level Control in previous event).							maintain aster			
	CR	S	(May • L F • C S Ente • C Refe • \ • C Refe • C Refe	r) enter and Jsing at lea RCIC and/o Direct RCIC Shutdown." r and exec Direct main r to Tech S /erify HPCI Declare RC Determine I uest trouble	d execute ast two ind or adequat Shutdown ute OT-11 taining RF Spec 3.3.5 I operabilit ClC inopera RCIC mus eshooting/t	OT-104 "Positive ependent indicat e core cooling is n in accordance 0 "Reactor High V water level be .2 (RCIC Instrum ty immediately. able within 1 hou t be restored to o echnical assistan	e Reactivity ions, verify assured. with SO 13.3 Level." low +35 incl entation), 3.3 r. operable wit ace through t	Insertion." mis-operat 2.A-2 "RCI hes. 5.1 and 3.5 hin 14 day he Shift Ma	tion of C System 5.3: s. anager.		

Op Test No.:	1	Scenario No.:	1	Event No.:	5	Page:	8 of 13						
Event Description:		Inadvertent RCIC	advertent RCIC initiationcontinued										
<u>Time</u>	PRO	Applicant's Ac Perform SO 13 Trip the RC Attempt clo Close MO- Verify the f AO-2-1 AO-2-1 MO-2-2 Close MO- Close MO- Place MO- Shutdown	<u>ctions or l</u> 3.2.A-2 "R CIC turbin 5.2.13-131 following: 3-034 "Dr 13-035 "Dr 13-132 "C 2-13-030 2-23-024 4487 "Trip "Vac Pum	Behavior CIC System Shu by depressing O-2-13-021 "To "Supply". ain Isol to Mn Cr ain Isol to Mn Cr ooling Water" clo "Full Flow Test". "Cond Tank Retr o Throttle VIv" to p" after it has ru	atdown": the "Trip" Feed Lina ndr" open ndr" open oses. urn". "Close". n for 10-1	pushbutton. e". Is. Is.							

Op Test No.: 1 Scenario No.: 1 Event No.: 6 Page: 9 of 13 **Event Description:** Rising reactor pressure due to EHC regulator failure / reactor scram / mode switch failure Cause: Pressure setpoint failure results in rising reactor pressure. Effects: 1. Alarms 210 G-2 "Reactor Hi Press" 2. Reactor pressure rises, requiring a reactor scram. Time Position **Applicant's Actions or Behavior** URO Recognize and report alarm 210 G-2 "Reactor Hi Press" and enter corresponding Alarm Response Card. Recognize failure of the EHC pressure regulator, causing rising reactor pressure. CRS Enter and execute OT-102 "Reactor High Pressure". СТ Direct insertion of a manual scram before reactor pressure reaches the automatic scram setpoint (~ 1085 psig). Ensure compliance with Tech Spec 3.4.10. URO Insert a manual scram before reactor pressure reaches the automatic scram setpoint (~ 1085 psig). Perform applicable scram actions: Place the mode switch to "SHUTDOWN". Recognize mode switch failure / failure to automatically scram; СТ • depress both manual scram pushbuttons. Verify / report control rods are inserting. • Verify / report APRMs are downscale. Restore and maintain RPV level by controlling 'C' feed pump speed / • discharge pressure.

• Verify all control rods are inserted.

Op Test No.:	1 5	Scenario No.:	1	Event No.:	6	Page:	10 of 13		
Event Description:		HC regulator failure / reactor scram / mode switch failurecontinued							
<u>Time</u>	<u>Position</u> PRO	 Applicant's Ac Perform applica Verify scran Verify recirco Monitor inst Report to the drywell press 	tions or B able scram n discharg c pumps ar trument air ne CRS ins ssure.	ehavior actions: e volume vents e at 30% spee header pressu strument air hea	and drain d. are and dry ader pressi	s are closed well pressur ure is greate	e. r than		
	CRS	NOTE: the CR mode switch fa following the so Enter and exect Direct RPV using feedw Direct instru- bypass (GF Direct RPV	 <u>NOTE</u>: the CRS should initially enter T-101 "RPV Control" due to the mode switch failure (ATWS). T-101 can then be immediately exited following the scram. Enter and execute T-100 "Scram": Direct RPV level restored and maintained between +5 and +35 inches using feedwater. Direct instrument nitrogen restored by performing instrument nitrogen bypass (GP-8E). Direct RPV pressure stabilized below 1050 psig. 						
	URO/PRO	 Bypass and res Place AO-2 Place AO-2 Place Dryw "BYPASS" Place Dryw "BYPASS" 	store dryw 2969A cont 2969B cont vell Instrum position. vell Instrum position.	ell instrument n trol switch to "C trol switch to "C nent Nitrogen B nent Nitrogen B	itrogen IA\ LOSE". LOSE". ypass Swit	N GP-8E. tch 16A-S10 tch 16A-S99	0 in the in the		

Op Test No.:		1 5	Scenario No.:	1	Event No.:	7	Page:	11 of 13					
Event Descrip	otion	ı: 1 2	 Torus leak #1 turbine by 	pass valv	ve fails open								
Cause:	1.	Rupture	e in Torus shell										
	2.	A groun	id on the servo r	notor									
Effects:	1.	Torus le approxi	Torus level will lower and will eventually equalize with the torus room at approximately 7 feet.										
	2.	Alarms:	Alarms:										
		 224 C-5 "Torus Room Flood" 226 A-4 "Torus Level Out Of Normal Range" 											
	3.	Followii failure,	ng the scram rea MSIVs will close	actor pres e when re	sure will continue actor pressure dec	to lower. creases b	Due to the m elow 850 psig	ode switch					
Time	Po	osition	Applicant's A	Actions o	r Behavior								
	PRO		Recognize and report alarm 226 A-4 "Torus Level Out Of Normal Range" and enter corresponding Alarm Response Card.										
			Direct an Equ	uipment C	Operator to determ	nine the s	ource of the I	eak.					
	CI	RS	Enter and ex	ecute T-1	02 "Primary Cont	ainment	Control".						
			 Direct torus level restored using T-233 "CST Makeup to the Torus Vi HPCI Minimum Flow Line". 										
			 Direct tor Torus". 	us level r	estored using T-2	31 "HPS'	W Injection In	to the					
			Enter and ex	ecute ON	I-110 "Loss of Prir	nary Cor	itainment".						
	PI	RO	Perform T-23	3 "CST I	Aakeup to the Tor	us Via H	PCI Minimum	Flow Line".					
			 Verify HP 	CI suctio	n MO-2-23-017 O	PEN.							
			OPEN H	CI minin	num flow MO-2-23	3-025.							

	Operator Actions								
Op Test No.:	1 So	enario No.:	1	Event No.:	7	Page:	12 of 13		
Event Descript	ion: 1. 2. Position	Torus leakc #1 turbine byp	continued pass valve ctions or B	fails opencor Sehavior	ntinued				
	PRO	 Perform T-231 Verify 2B a Verify 2B a Verify 2B a Verify 2B a Verify MO- valves CLC Verify MO- oPEN MO OPEN MO OPEN MO Start a HP Throttle Mo Start a sec Throttle Mo operation. 	directed. arge". R Hx HPSW ss-tie CLOS /RHR cross flow. flow.	outlet ED. -tie valves. pump					
	PRO	Recognize an corresponding	d report ala g Alarm Re	arm 224 C-5 "To sponse Card.	orus Room	n Flood" and	l enter		
	CRS	Enter and exe Direct an evac Evacuation" (i	ecute T-103 cuation of t make requ	3 "Secondary Co he torus room i est to Shift Man	ontainmer n accorda ager).	it Control". nce with GF	2-15 "Local		
	CRS	Direct RPV de	epressuriza	ation using SRV	/s IAW T-1	02 T/L-6.			
	URO/PRO	Depressurize	the RPV u	sing SRVs, as o	directed.				
	URO/PRO	Recognize ar Recognize ar	nd report th nd report th	at torus level is at torus level is	approach approach	ing 12.5 fee ing 10.5 fee	t. t.		

				Operate	or Actions				ES-D-2	
Op Test N	lo.:	1 \$	Scena	ario No.:	1	Event No.:	7	Page:	13 of 13	
Event Des	script	ion: 1 2	1. Tc 2. #1	orus leako turbine by	continued bass valve	fails openco	ontinued			
<u>Time</u>	CTPosition CRSApplicant's Actions or Behavior When torus level cannot be maintained above 10.5 feet, direct an emergency blowdown. Enter and execute T-112 "Emergency Blowdown".•Verify torus level is above 7 feet.•Verify reactor pressure is 50 psig above torus pressure.•Direct 5 ADS SRVs opened.									
	ст	PRO	Pei Rei	rform an en port 5 ADS	nergency b SRVs are	lowdown by og open.	pening 5 Al	DS SRVs.		
		CRS	Wh dire	nen torus lev ect all opera	vel drops b ating RHR	elow 10.5 feet pumps secure	, if any RH d.	R pumps are	running,	
		URO/PRO	Se	cure all ope	erating RHF	R pumps, as di	rected.			
		URO/PRO	Re	cognize and	d report tha	at torus level is	approachi	ing 9.5 feet.		
		CRS	Dir (ar	ect RPV lev nd/or conde	vel maintai nsate, dep	ned between + ending on read	-5 and +35 ctor pressu	inches using ire).	HPCI	
		URO	Ma cor	iintain RPV ndensate, a	level betw s directed.	een +5 and +3	5 inches u	sing HPCI ar	nd/or	

TERMINATION CRITERIA:

The scenario may be terminated when the RPV is depressurized and HPSW is injecting into the torus.

		<u> </u>			<u>Scenario</u>	Outline		ES D-1
Simulat	ion Facil	ity <u>Pea</u>	ach Botton	<u>n</u>	Scenario No.	#2 (altered bank)	Op Test No.	2008 NR C
Examin	ers					Operators		CRS (SRO)
							· · · · · · · · · · · · · · · · · · ·	URO (ATC)
	<u> </u>							PRO (BOP)
Scenari Summa	o Th ry Th at be sea OT "Fa	e scena e crew v en an R rip of the required vice. F -114 "Ir ast Powe erators f	rio begins will perforr PS failure e in-servic d to respo ollowing the nadvertent er Reduction	with the n ST-O-0 e will requ e TBCCV nd IAW 0 nis, the 'A Opening ion". The es for the	reactor at appro 001-200-2 "Turb tire the crew to V pump with a f DN-118 "Loss o V SRV will inad of a Relief Val crew will be su valve.	oximately 76% powe ine Stop Valve Closu make a Tech Spec d ailure of the standby f TBCCW" and place vertently open, requir ve". Power will be re accessful in closing th	r with power asce are and EOC-RPT eclaration. This v pump to auto-sta the standby TBC ring the crew to ta duced in accorda he 'A' SRV by dire	nsion on held. Functional Test" vill be followed by rt. The crew will CW pump in ke actions IAW nce with GP-9-2 cting plant
	A s ac hyu Co ord Th pre cre op Sc Sc	mall ste ions in a draulic A ntrol". A ler to su e crew v essure. ew will p ening of ram Or ram" to	eam leak i accordanc ATWS will A failure o uccessfully will also be After diag erform T- f another \$ Individual terminate	nside the ce with O occur, re f the Star lower re required nosing th 112 "Eme SRV. The SRV. The Scram T the ATW	e primary contain T-101 "High Dry equiring the crew hdby Liquid Cor eactor power. d to enter T-102 he inability to sp ergency Blowdo e crew will need fest Switches" a /S.	nment will occur next well Pressure". Who v to enter T-101 "RP" atrol pump will require "Primary Containment ray the containment wn". One ADS SRV I to implement T-216 nd T-220 "Driving Co	The crew will be en the reactor is s V Control" and T- e the crew to start ent Control" due to due to an instrum will fail to open, n "Control Rod Inse ontrol Rods During	e required to take crammed, a 117 "Level/Power the other pump in high drywell ent failure, the equiring the ertion By Manual g Failure To
Initial Conditio Turnove	l(ons er S	-72, 76 ee Attac	% power ched "Shif	t Turnove	er" Sheet			
Event No.	Malfu	inction	E	vent ype*		Ev Desc	/ent ription	
1			N TS	PRO CRS	Perform the m functional test	nain turbine stop valv performance	e functional test /	RPS failure during
2			С	URO CRS	TBCCW pumj	o trip w/ failure of sta	ndby pump to aut	o-start
3			C TS	PRO CRS	SRV inadverte SRV closes w	ently opens, requiring hen control power fu	torus cooling to l ses are removed	oe maximiz∈d /
4			R	URO CRS	Fast power re	duction due to SRV	opening	
5			м	ALL	Steam leak in instrument fai	the primary containr ure prevents using c	nent / hydraulic A ontainment spray	TWS / pressure s
6			С	URO CRS	Standby liquid alternate pum	l control pump trips r p	equiring manual s	tart of the
7			I	PRO CRS	ADS SRV fails additional SR	s to open during eme / to be opened	rgency blowdown	requiring an

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

SHIFT TURNOVER

PLANT CONDITIONS:

- Approximately 76% power.
- A load drop had been performed for control rod sequence exchange.
- GP-5 "Power Operation" is at step 5.1.2.
- Power ascension is on hold. Power ascension ReMA and rod sequence sheets are being evaluated by Reactor Engineer.

INOPERABLE EQUIPMENT/LCOs:

• The "A" loop of RHR is out of service due to work on RHR valve MO-2-10-154A "Outboard Discharge". Three hours into LCO 3.5.1, with expected return to service in 1 day.

SCHEDULED EVOLUTIONS:

- Perform ST-O-001-200-2 "Turbine Stop Valve Closure and EOC-RPT Functional". It is already completed through step 6.2.1.34.
- A routine Diesel Fuel Oil delivery is expected this shift.

SURVEILLANCES DUE THIS SHIFT:

• Perform ST-O-001-200-2 "Turbine Stop Valve Closure and EOC-RPT Functional". It is already completed through step 6.2.1.34.

ACTIVE CLEARANCES:

• RHR Loop 'A'

GENERAL INFORMATION:

- Complete the Turbine Stop Valve functional test, beginning at step 6.3.1.
- An extra RO is available to perform ST-O-001-200-2, steps 6.3.7.2 though 4 and 6.3.8.1 through 3 <u>ONLY</u>.

CRITICAL TASK LIST

- 1. <u>Before</u> torus temperature exceeds the limits of the Heat Capacity Temperature Limit (HCTL) curve, lower reactor power by performing T-240 "Terminating and Preventing Injection" to lower RPV level until:
 - a. Reactor power is below 4%, <u>OR</u>
 - b. RPV level reaches –172 inches, OR
 - c. All SRVs remain closed and drywell pressure is below 2 psig.
- Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when drywell bulk average temperature cannot be restored and maintained below 281 degrees F.
- 3. Initiate a reactor shutdown by inserting control rods in accordance with T-216 "Control Rod Insertion by Manual Scram or Individual Scram Test Switches" and/or T-220 "Driving Control Rods During Failure to Scram" and/or shutdown the reactor by initiating Standby Liquid Control <u>before</u> torus temperature exceeds the limits of the Heat Capacity Temperature Limit (HCTL) curve.

		Operato	or Action	<u>15</u>			ES-D-2
Op Test No.:	1	Scenario No.:	2	Event No.:	1	Page:	1 of 14
Event Descrip	tion:	Perform the turbin	ne stop va	alve functional test	:		
Cause:	N/A						
Effects:	N/A						
<u>Time</u>	<u>Position</u> CRS	Applicant's Ac Direct the PRO and EOC-RPT	tions or to perfor Function	r <mark>Behavior</mark> rm ST-O-001-200 [,] al."	-2 "Turbin	e Stop Valve	Closure
	PRO	 Perform ST-O-Functional": Review ST Inform the conducted covered du At Panel 20 1. Verify a 2. Verify A At Panel 20 TEST". Verify the li At Panel 20 <u>#18</u>). Verify alarr At Panel 20 1. Verify alarr At Panel 20 20 1. Verify alarr At Panel 20 1. Verify alarr At Panel 20 1. Verify T less that 2. After 2 13. Verify T to full o When the F 	-001-200 Unit Rea and wha uring turn 0C015 an 0C015 an all RPS '/ A1 and B 0C008B, 0C008B, 0C008B, 1SV-1 po an 10% of to 3 seco rSV-1 va pen. RPS rela	-2 "Turbine Stop ' actor Operator tha it indications can over and/or a CR and 20C017: A' and 'B' scram s 1 TURB STOP V/ place the CV/SV all four TSV test k place the EOC-RF 3 SYSTEM I EOC depress and hold open and then fas onds at full close, lve position indicator y failure is reported of test selector sw	Valve Clo t the test be expect S briefing olenoid g ALVE NO test selec buttons ar T test sw C-RPT LC d TSV-1 to oves smo t closes. release the ator move	is going to be ted (this may j). roup 1-4 light RMAL lights ctor switch to re ON. ritch in "TEST OGIC PWR F/ est pushbutto pothly at low s he test pushb s smoothly fr	C-RPT be s are lit. are lit. "SV " (<u>Key</u> AIL/TEST. n. speed to outton. om closed al test.
	URO	 Verify the second second	he lights backup E baramete	on all four TSV te HC pump to "STC	est button DP", then ted	s are off. back to "AUT	O".
	0110						

Op Test No.:	1	Scenario No.:	2	Event No.:	1	Page:	2 of 14
Event Descript	tion:	RPS failure during	turbine	e stop valve functior	nal test		
Cause:	Turbine st	op valve position sv	vitch ir	nput to RPS logic fai	ls		
Effects:	RPS instru	umentation failure; a	applica	tion of Tech Specs			
Time	Position	Applicant's Act	tions o	or Behavior			
		<u>NOTE</u> : the "Ex Simulator Opera information fron Specs:	tra RC ator in n ST-C	" at Panels 20C018 the booth, will prov 0-001-200-2, allowin	5 and 20 ide the ng the C	C017, role pla crew with the f RS to apply Te	yed by the ollowing ech
		• Step 6.3.7.2	? – aux	iliary scram relay 5	A-K10A	. <u>did de-energi</u>	ze.
		• Step 6.3.7.3	8 – aux	iliary scram relay 5	A-K10B	did not de-en	ergize.
		• Step 6.3.7.4	– indi	icating light 5A-DS2	26B <u>is li</u>	<u>t</u> .	
	PRO	Stop the function	onal te	st when the RPS fa	ilure is r	eported.	
		Perform system page).	i resto	ration IAW ST-O-00)1-200-2	2, step 6.7 (see	e previous
	CRS	Direct stopping failure is reported	the fu ed.	nctional test and sy	stem re	storation when	the RPS
		Review Tech S	pec 3.	3.1.1.A (RPS Funct	ion 8 or	n Table 3.3.1.1	-1):
		 Determine r hours. 	need to	place associated	rip syst	em in TRIP wit	hin 12
		Review Tech S	pec 3.	3.4.2.A:			
		 Determine I placed in tri 	EOC-F p, with	RPT instrumentatior in 72 hours.	n must b	e restored, or (channel

Op Test No.:	1	;	Scenario No.:	2	Event No.:	2	Page:	3 of 14
Event Descrip	tion:	-	TBCCW pump failu	ıre / trip v	with failure of the	standby	pump to auto-s	start
Cause:	Over Failu	rload o ure of F	f 2A TBCCW pump PS-2131 to actuate	o due to e on low	excessive motor TBCCW System	bearing ı pressu	friction re	
Effects:	1. / 2. l	Alarm: Loss of	217 C-5 "TURB BL cooling to TBCCW	.DG CO0 V loads	DLING WATER S	SUPPLY	' LO PRESS"	
<u>Time</u>	<u>Pos</u> URC	ition)	Applicant's Act Recognize annu SUPPLY LO PR Alarm Response Place 2A TBCC Recognize failur	tions or Inciator RESS" and Card. W pump re of 2B	Behavior 217 C-5 "TURB I nd report trip of 2 control switch to TBCCW pump to	BLDG C A TBC o "OFF" o auto s	COOLING WAT CW pump. Res tart after 20 sec	ER spond IAW conds.
	CRS	5	Enter ON-118 "I Direct starting th Direct follow-up Pump In Service Direct troublesh	Loss of ⁻ ne 2B TE use of S e". nooting.	ГВССW". 3ССW pump. 5О 34.6.А-2 "Pla	cing Sta	andby TBCCW	System
	URC	C	Place 2B TBCC Verify placing st "Placing Standb	W pump tandby T by TBCC	o control switch to BCCW pump in W System Pump	o "RUN' service o In Ser	". IAW SO 34.6.4 vice".	\-2
	PRO	C	Monitor plant pa	arametei	rs/assist as nece	ssary.		

Op Test No.:	1	Se	cenario No.:	2	Event No.:	3	Page:	4 of 14			
Event Descript	tion:	SI	RV 'A' inadverte	ntly ope	ins						
Cause:	Mecha	anical f	ailure of relief va	alve pilo	ot						
Effects:	1. Al • • 2. Lo	arms: 210 [227] oss of C ontainm	D-2 "Safety Relie 3-4 "Blowdown f Generator Load, nent.	ef Valve Relief V steam ⁻	e Open" alves Hi Temp" flow/feed flow mis	smatch, he	at input to the	primary			
<u>Time</u>	<u>Positi</u> URO/	tion <u>Applicant's Actions or Behavior</u> /PRO Recognize, report, and take actions IAW ARC 210 D-2 "Safety Relief Valve Open" and ARC 227 B-4 "Blowdown Relief Valves Hi Temp".									
	 CRS Enter/direct actions IAW OT-114 "Inadvertent Opening of a R Lead crew in confirming an SRV is open. Direct the 'B' loop of RHR placed in torus cooling. Direct attempts to close the 'A' SRV. 										
	URO/	PRO	Confirm the 'A' SRV is open IAW OT-114.								
	PRO		Cycle the 'A' S Monitor torus t Place the 'B' lo Torus Cooling OPEN MO OPEN MO START B(I OPEN MO VERIFY 1 ⁻¹ START rer OPEN MO START rer VERIFY >2 Direct Equ 10-70B.	RV cor empera oop of F During -2-10-0 -2-32-8 D) HPS D) RHR -2-10-0 1,500 to maining -2-32-8 maining 20,000 ipment	atrol switch when ature. RHR in torus cool a Plant Event" w 39B 9B(D) W pump 34B 12,200 gpm RH 14PSW pump in 9D(B) RHR pump in B gpm RHR loop fl Operator to CLC	directed. ling IAW R /hen direct B RHR loo RHR loop ow DSE stayful	RC 10.1-2 "RI ed. op	-IR System			

Op Test No.:	1	Scenario No.:	2	Event No.:	3	Page:	5 of 14	
Event Descrip	tion:	SRV 'A' inadverte	ently ope	nscontinued				
<u>Time</u>	Position	Applicant's A	ctions o	r Behavior				
	URO	Perform a Fas	t Power	Reduction IAW G	P - 9-2 wh	en directed (E	vent 4)	
	URO/PRO	D Coordinate rer status during a	Coordinate removal of fuses by Equipment Operator and monitor v status during attempts to close the 'A' SRV.					
		Report to the (CRS wh	en the 'A' SRV ha	s closed.			
	CRS	Declare the 'A 3.5.1.F.	' SRV in	operable and veri	fy complia	ance with Tec	h Spec	
		 Determine RHR also 	'A' SRV out of se	/ must be restored ervice.	within 72	2 hours with 'A	V loop of	

		Operato	or Actions	2			ES-D-2				
Op Test No.:	1	Scenario No.:	2	Event No.:	4	Page:	6 of 14				
Event Descript	tion:	Perform a fast pov	ver reduct	tion							
Cause:	Directed f	rom OT-114 "Inadv	ertent Op	ening of a Relief	Valve"						
Effects:	N/A										
<u>Time</u>	<u>Position</u> CRS	Applicant's Ac Direct a Fast P	tions or ower Rec	Behavior luction IAW GP	-9-2.						
	URO	Reduce recircu Reduction."	Reduce recirculation flow to 61.5 Mlbs/hr IAW GP-9-2 "Fast Power Reduction."								
	CRS	When recircula pressure setpo	ition flow int lowere	has been lowere ed until PAM pre	ed IAW G essure is 9	P-9-2, direct E 900 psig.	HC				
	URO	Lower EHC pre directed.	essure se	tpoint until PAM	pressure	e is 900 psig, a	I S				
	PRO	Maintain the m (when it alarms Notify the Pow	ain genei s). er Systen	ator auto-manu n Director of the	al voltage required	e regulator bala power change	anced				

Op Test No.:	1 S	cenario No.:	2	Event No.:	5	Page:	7 of 14					
Event Descrip	tion: S	team leak in the	primary o	containment / AT	NS							
Cause:	Steam leak	at SRV 'A' moun	ting boss	; steam cutting at	break inc	reases size of	f leak.					
Effects:	 Initial Ala 210 225 Drywell to a high automate escalate 	 Initial Alarms: 210 F-2 "Drywell Hi-Lo Press" 225 A-4 "Drywell Hi-Lo Press" Drywell pressures and temperatures will rise at an increasing rate, eventually leading to a high drywell pressure alarm and scram if not scrammed manually. ECCS automatic start signals and PCIS isolation signals will be received. Conditions will escalate, requiring containment sprays. 										
<u>Time</u>	<u>Position</u> URO/PRO	<u>Applicant's Ac</u> Recognize and Pressure" entry	c tions or l report ri y conditio	Behavior sing drywell pres	ssure, OT-	-101 "High Dr	ywell					
	CRS	 Enter/direct fol If drywell p 4 "Manual 3 Direct plact Direct isola 	low-up a ressure o Scram". ing additi ation of pe	ictions IAW OT-101: cannot be maintained below 1.2 psig, direct a GP- ional drywell cooling in service as necessary. iotential leak sources.								
	URO	 Take scram ac Runback re Place the r Verify rods Report an a condition). 	ctions wh ecirc to m mode swi are inse ATWS is	en directed: hinimum. tch to "SHUTDO rting. in progress with	WN". reactor p	ower > 4% (T	-101 entry					
	PRO	 Take scram ac Transfer 13 Verify Grou Verify HW0 Investigate 	ctions wh 3 KV hou up II & III C isolated sources	en directed: se loads. isolations and S d. of drywell leaka	GTS initia ge.	ition.						

Op Test No.:	1	Scenario No.:	2	Event No.:	5	Page:	8 of 14
Event Descript	tion:	Steam leak in the	primary	containment / ATV	VS…cor	ntinued	
<u>Time</u>	<u>Position</u> URO/PRC	Applicant's Ac Recognize dry Recognize and condition. Verify and take initiation, Diese	tions c well pre report e action el Gene	or Behavior essure/temperature 2 psig in the Drywe for 2 psig automat rator auto start, Gr	are cor ell as a ic initiati oup II/II	ntinuing to rise. T-101 AND T-1 ions and isolations I isolations).	02 entry ons (HPCI
	CRS	 Enter/direct ac Verify URC Direct dryw Direct RPV Direct actions f 	tions fo)/PRO s /ell instr / pressu for the /	r T-101 "RPV Cont scram actions. rument nitrogen res ure stabilized below ATWS condition (se	rol": stored. / 1050 p ee next	sig. page).	
	PRO	Bypass and resolution Stabilize RPV	store dı pressur	rywell instrument n e below 1050 psig	itrogen.		
	CRS	 Enter/direct ac Monitor print Direct man GP-8B. Direct restor Bypass". Direct Torut 	tions fo mary co ual isol pration us spray	r T-102 "Primary C ontainment conditio ation of RBCCW a of Drywell cooling I /s with the 'B' loop	ontainm ons. nd Dryw AW T-2 of RHR	nent Control": rell Chilled Wat 23 "Drywell Co IAW T-204.	er using oler Fan

Op Test N	lo.:	1	Scena	ario No.:	2	Event No.:	5	Page:	9 of 14		
Event Des	script	ion:	Antici	pated trans	sient withou	ut scram (hydrau	llic)				
Cause:		Scram co	ndition	tion with power above 4% or unknown due to RPS failure							
Effects:		Requires level/powe	the cre er	w to take a	actions to to	erminate the AT\	NS, as we	II as control RI	ъЛ		
<u>Time</u>	ст ст	<u>Position</u> CRS	<u>Ap</u> Dir • • •	plicant's <i>A</i> ect T-101, Initiation of Trip recirco T-216 "Re T-220 "Dr Enter T-1 SLC inject	Actions or RC/Q ATV of ARI c pumps at eset Scran rive Rods" 17 "Level/ ction	<u>Behavior</u> WS actions: t least 10 second n, Drain SDV, In Power Control"	ds apart sert Rods	" 			
	ст ст	URO	Per • • •	form T-10 Initiate AF Trip Recir Initiate SL Direct an (install jur defeat AF Per T-216 o Rese "Disa o Depr	1, RC/Q a RI; report t c pumps a C by start Equipmen mpers in C Initiation (on the 2 of ARI by p arm".	ctions: he scram air hea at least 10 secor ing either SLC p it Operator to pe able Spreading Logic and bypa 0C05A panel) lacing ARI A & B & B ARI reset pu	ader is dej nds apart. pump (see rform T-2 Room and iss all RPS 3 manual j ushbuttons	pressurized. Event #6). 16 steps 4.1 a d Main Contro 5 Auto Scram pushbutton co s.	nd 4.2 I Room to signals). Illars in		
	ст		•	 Place "Grou Oper drain Perform 1 	e the Scran up 2&3" po n Scram D s. Γ-220 "Driv	m Reset switch sositions. ischarge Volume ving Control Rod	5A-S9 to t e inboard a ls During f	he "Group 1&₄ and outboard ⁼ ailure To Scr	4" and vents and am".		

Op Test No.:	1	Scenario No.:	2	Event No.:	5	Page:	10 of 14
Event Descript	tion:	Anticipated transie	ent witho	out scramcontinu	led		
<u>Time</u> CT	Position CRS	Applicant's Ac Direct T-117 ac Inhibit ADS T-221 "Mai T-240 "Ter	ctions o ctions: 5. n Steam minatior	<u>r Behavior</u> n Isolation Valve E n And Prevention (Bypass". Of Injectio	on Into The RI	PV".
СТ	PRO	 Perform T-117 Inhibit ADS Direct Equil Perform T-sources exinches and Place Press Close Verify 	actions ipment (240: ter cept RC within t HPCI Au "Emerge reactor closed I	Dperator to perform minate and preven CIC, SLC and CRE he specific RPV le ux Oil Pump in the ency Stop" for all u feed pump discha MO-8090 "C RFP	m T-221. nt injectic); control evel band e "Pull-to- reactor fe rge valve Discharg	n from all inje RPV level be directed by th Lock" position ed pumps. s MO-2149A, e Bypass".	ction low –60 ne CRS n. B, C.

Op Test No.:		1 S	cenario No.:	2	Event No.:	5	Page:	11 of 14
Event Descript	ion:	P	ressure instrumen	t failure pr	events using cor	ntainment sp	rays	
Cause:	Dry	well pres	sure input to spra	y logic per	nissive not funct	ioning		
Effects:	1.	Alarm 22 received	25 B-3 "System II I	Drywell Pre	essure Permit Co	ontainment S	Spray" is <u>N</u>	<u>T0</u>
	2.	Prevents	s containment spra	ау				
Time	Pos	siti <u>on</u>	Applicant's Act	ions or Be	havior			
	PR	0	Recognize the a Permit Containn	ibsence of nent Spray	alarm 225 B-3 ' ".	'System II D	rywell Pre	essure
			While attempting MO-38B open to	g to initiate o obtain 10	e torus sprays, re 000 gpm.	ecognize the	e inability	to throttle
			Report inability t	to spray th	e containment.			
	CR	S	Recognize the in than 281 degree	nability to es F.	maintain drywell	bulk averaç	ge temper	ature less

			<u>Operator</u>	r Actions				ES-D-2			
Op Test No	.:	1	Scenario No.:	2	Event No.:	6	Page:	12 of 14			
Event Desc	ripti	on:	Standby liquid control pump trips								
Cause:	;	SLC Pum	p first placed into se	ervice trips	on overcurrent						
Effects:	;	Standby SLC Pump must be placed into service manually to mitigate ATWS									
<u>Time</u> C	:T	Position URO	Applicant's Act Recognize the S has tripped. Place the stand the 20C05A par	Applicant's Actions or Behavior Recognize the Standby Liquid Control (SLC) pump placed into service has tripped. Place the standby SLC pump in service using keylock control switch on the 20C05A panel.							
c	т	CRS	If not already pe	erformed,	direct placing the	e standby S	LC pump	in service.			

Op Test No.: 1 Scenario No.: 2 Event No.: 7 Page: 13 of 14 **Event Description:** 'C' SRV fails to open Cause: Valve is stuck on its main seat Effects: Crew must open another SRV Time Applicant's Actions or Behavior Position CRS Direct the PRO to terminate and prevent RPV injection IAW T-240 except for RCIC, SLC and CRD. Verify torus level is above 7 feet. Verify RPV pressure is 50 psig or more above torus pressure. Direct the PRO to open all ADS SRVs with the exception of SRV 'A', and СТ another non-ADS SRV, for a total of five SRVs. Perform T-240 when directed. PRO СТ Place required SRV control switches to the "OPEN" position; recognize and report the 'C' SRV fails to open. СТ CRS Direct the PRO to open another SRV so that a total of 5 SRVs are open. СТ PRO Open an additional SRV; report 5 SRVs are open. CRS When RPV pressure drops below 270 psig, direct the PRO to slowly raise RPV injection rate to restore and maintain RPV level above -195 inches. Re-enter T-102 on high torus temperature. URO Observe control rods inserting into the core and report when all rods are fully inserted. CRS Exit T-117, and enter T-101 at step RC/L-1. Direct RPV level restored and maintained between +5 and +35 inches.

Operator Actions									
Op Test No.:	1	Scenario No.:	2	Event No.:	7	Page:	14 of 14		
Event Descrip	tion:	'C' SRV fails to o	penco	ntinued					
Time	Position	Applicant's A	ctions o	er Behavior					

TERMINATION CRITERIA:

The scenario may be terminated when:

• 5 SRVS are open,

and

• The RPV is depressurized,

<u>and</u>

• RPV level is under control,

<u>and</u>

 The crew begins draining the Scram Discharge Volume per T-216 "Control Rod Insertion By Manual Scram Or Individual Scram Test Switch" in order to attempt another scram to insert control rods, <u>and/or</u> control rods are being inserted in accordance with T-220 "Driving Control Rods During Failure To Scram".

			Scenario Outline	<u> </u>
Simulati	on Facility Peach	Bottom	Scenario No. #3 (modified bank) Op Test No. 2	008 NRC
Examine	ers		Operators	_ CRS (SRO)
				_ URO (ATC)
		<u> </u>		_ PRO (BOP)
Scenario Summa	 The scenario commence the Water pump is system operation cooling water power to an interpower with the system runbar When conditing condensate requiring entry insertion (AR and must be will remove the available low maintained a "Emergency ATWS). Low 	begins with the he HPCI function will trip on overce ating procedure. leak, requiring n-service RPS M When this is cor ack. Power must ons have stabili pumps from ser ty into T-101 "RI I) to shutdown to manually isolate he final source of pressure ECCS bove -195 inche Blowdown", after the pressure ECCS	e reactor at 95% power. Immediately after shift turnover the mal and in-service test. While the test is in progress, the re- current, requiring the crew to place the standby pump in s . The crew will then receive a report from the field of a HF HPCI to be shutdown and declared inoperable. Next, a lo MG set output breaker will occur, requiring application of to implete, the 'A' Condensate pump will trip without the expense st be manually reduced using recirc flow to prevent a low- lized, #2 Auxiliary Bus will trip on overcurrent, removing the rvice. An RPS failure will prevent the automatic and manu RPV Control", T-117 "Level/Power Control", and the use of the reactor. The scram discharge volume will fail to comp ted. RCIC will trip when either started manually or automation of high pressure feed. As level deteriorates, the crew sho S pumps and when the crew determines level cannot be re es, the reactor will be depressurized in accordance with T- er terminating and preventing injection per T-240 (due to the S will be available to recover reactor level.	ne crew will unning Service ervice using the PCI system oss of DC he appropriate ected Recirc level scram. e remaining ual scrams, Alternate Rod letely isolate trically, which uld start estored and -112 he six-rod
Initial Conditio Turnove	IC-73, 95% ons er See Attache	power ed "Shift Turnov	ver" Sheet	
Event No.	Malfunction No.	Event Type*	Event Description	
1		N PRO CRS	Perform HPCI surveillance testing	
2		C URO CRS	Service Water pump trip, requiring manual start of stand	dby pump
3		C PRO TS CRS	HPCI cooling water leak requires HPCI shutdown	
4		TS CRS	Loss of DC power to RPS MG set output breaker	
5		R URO CRS	Condensate pump trip with recirc runback failure / powe	er reduction
6		M ALL	Loss of #2 auxiliary bus / loss of condensate & feedwat on over-speed during startup and cannot be reset	er / RCIC trips
7		C URO CRS	RPS failure requires ARI initiation to scram the reactor control rods) requires terminating and preventing injecti emergency depressurization	/ ATWS (six on befor∉
8		I PRO CRS	Two in-series scram discharge volume (SDV) vent valv automatically isolate	es fail to

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

SHIFT TURNOVER

PLANT CONDITIONS:

- Unit 2 is steady at 95% power.
- GP-5 "Power Operations" is in progress, complete through step 5.3.29.

INOPERABLE EQUIPMENT/LCOs:

• None

SCHEDULED EVOLUTIONS:

- Raise power to 100% once Reactor Engineers revise ReMA guidance for returning to full power.
- Complete ST-O-023-301-2 "HPCI Pump, Valve, Flow And Unit Cooler Functional And In-Service Test" that was started last shift. Complete through step 6.4.6; next step is 6.4.7.
- Step 6.5.11 is N/A (more than one start has been performed in CST-to-CST mode).

SURVEILLANCES DUE THIS SHIFT:

• ST-O-023-301-2 "HPCI Pump, Valve, Flow And Unit Cooler Functional And In-Service Test"

ACTIVE CLEARANCES:

None

GENERAL INFORMATION:

 In accordance with GP-5 "Power Operations" power was lowered to 90% under the Reactor Engineers guidance to perform a rod pattern adjustment. Rod manipulations are complete and power has been raised to 95%. The Reactor Engineers are running predictors and will revise ReMA guidance for returning to full power.

CRITICAL TASK LIST

- 1. Recognize failure of the Reactor Protection System to shutdown the reactor and initiate Alternate Rod Insertion (ARI) in accordance with T-101 "RPV Control" and RRC 3B.1-2 "Alternate Rod Insertion During A Plant Event".
- 2. Manually isolate the Scram Discharge Volume (SDV) vent valves.
- 3. Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when RPV water level cannot be restored and maintained above -195 inches.

	Operato	or Actions				ES-D-2
1	Scenario No.:	3	Event No.:	1	Page:	1 of 12
tion:	HPCI surveillance	testing IAV	V ST-O-023-301	1-2		
N/A						
N/A						
Position CRS PRO	Applicant's Ac Direct PRO to p Unit Cooler Fui Perform ST-O-	tions or B perform ST nctional an 023-301-2	<u>ehavior</u> ⁻ -O-023-301-2 " d In-service Tes beginning at sto	HPCI Pump st" beginning ep 6.4.7:	o, Valve, Fl g at step 6	ow and .4.7.
	 Start 20K00 record data Open MO-2 after approx Verify MO-2 Equipment Verify MO-2 Open MO-2 Open MO-2 Perform the start: O Perform the start: Perform the start: O Perform the start: O Perform the start: Perform the start: O Perform the start: Perform the start: O Perform the start: Perform the start: O Perform the start: O Perform the start: O O O O Perform the start: O O Perform the start: O Perform the start: Perform the start: O<td>02 "HPCI V a on Data S 2-23-021 "H ximately 4 2-23-017 "H Operator t 2-23-031 "I 2-23-024 "H e following Open MO- Start 20P0 Start 20P0 Start stopv np start, thr Once obtai 2-23-025 "I juired system</td><td>Vac Pump"; requisited 2. HPCI Full Flow Teconds. HPCI Cond Tan o record local d HPCI Flush to T HPCI Cond Tan actions simultar 2-23-014 "HPCI 26 "HPCI Aux O vatch. Tottle MO-2-23-0 ned, stop the st HPCI Minimum em parameters of vill occur once H parameter data</td><th>Jest Equipm Test" and sta k Suction" of ata. Forus" closed k Return". neously to ir I Supply". Dil Pump". Dil Pump". Dil Pump". D21 to obtair opwatch. Flow Valve" on Data She IPCI operati a on Data Sh</th><td>ent Opera op valve m open; direc d. hitiate a HF h desired f is closed. eets 3 and on is stabl heets 3 and</td><td>tor to novement t PCI quick low and 4. le and the d 4.</td>	02 "HPCI V a on Data S 2-23-021 "H ximately 4 2-23-017 "H Operator t 2-23-031 "I 2-23-024 "H e following Open MO- Start 20P0 Start 20P0 Start stopv np start, thr Once obtai 2-23-025 "I juired system	Vac Pump"; requisited 2. HPCI Full Flow Teconds. HPCI Cond Tan o record local d HPCI Flush to T HPCI Cond Tan actions simultar 2-23-014 "HPCI 26 "HPCI Aux O vatch. Tottle MO-2-23-0 ned, stop the st HPCI Minimum em parameters of vill occur once H parameter data	Jest Equipm Test" and sta k Suction" of ata. Forus" closed k Return". neously to ir I Supply". Dil Pump". Dil Pump". Dil Pump". D21 to obtair opwatch. Flow Valve" on Data She IPCI operati a on Data Sh	ent Opera op valve m open; direc d. hitiate a HF h desired f is closed. eets 3 and on is stabl heets 3 and	tor to novement t PCI quick low and 4. le and the d 4.
	1 N/A N/A Position CRS	1 Scenario No.: tion: HPCI surveillance N/A N/A Position CRS Applicant's Action Direct PRO to Function Unit Cooler Function PRO Perform ST-O- • Start 20K00 record data • Open MO-2 after approx • Verify MO-2 Equipment • Verify MO-2 Equipment • Verify MO-2 Equipment • NOTE: • NOTE: • NOTE: • NOTE:	Operator Actions 1 Scenario No.: 3 tion: HPCI surveillance testing IAV N/A N/A Position CRS Applicant's Actions or B Direct PRO to perform ST Unit Cooler Functional an PRO Perform ST-O-023-301-2 • Start 20K002 "HPCI V record data on Data S • Open MO-2-23-021 "H after approximately 4 • Verify MO-2-23-017 "H Equipment Operator t • Verify MO-2-23-017 "H Equipment Operator t • Open MO-2-23-024 "H • Open MO-2-23-025 "I • Open MO-2-23-025 "I • Open MO-2-23-025 "I • During pump start, thr pressure. Once obtai • Verify MO-2-23-025 "I • Record required syster NOTE: the next events w PRO is recording system	Operator Actions 1 Scenario No.: 3 Event No.: tion: HPCI surveillance testing IAW ST-0-023-301 N/A N/A N/A Position Applicant's Actions or Behavior CRS Direct PRO to perform ST-0-023-301-2 "Unit Cooler Functional and In-service Text PRO Perform ST-0-023-301-2 beginning at strend to cooler Functional and In-service Text PRO Perform ST-0-023-301-2 beginning at strend to cooler functional and In-service Text PRO Perform ST-0-023-301-2 beginning at strend to cooler functional and In-service Text PRO Perform ST-0-023-301-2 beginning at strend to cooler functional and In-service Text PRO Perform ST-0-023-301-2 beginning at strend to cooler functional and In-service Text Start 20K002 "HPCI Vac Pump"; requirecord data on Data Sheet 2. Open MO-2-23-021 "HPCI Full Flow to after approximately 4 seconds. Verify MO-2-23-031 "HPCI Flush to T Open MO-2-23-031 "HPCI Flush to T Open MO-2-23-024 "HPCI Cond Taxt Open MO-2-23-024 "HPCI Cond Taxt Perform the following actions simulta start: Open MO-2-23-024 "HPCI Aux O Start 20P026 "HPCI Aux O Start stopwatch. During pump start, throttle MO-2-23-02 "HPCI Flush to T Verify MO-2-23-025 "H	Operator Actions 1 Scenario No.: 3 Event No.: 1 tion: HPCI surveillance testing IAW ST-O-023-301-2 N/A N/A N/A N/A Position Applicant's Actions or Behavior CRS Direct PRO to perform ST-O-023-301-2 "HPCI Pump Unit Cooler Functional and In-service Test" beginning PRO Perform ST-O-023-301-2 beginning at step 6.4.7: • Start 20K002 "HPCI Vac Pump"; request Equipm record data on Data Sheet 2. • Open MO-2-23-021 "HPCI Full Flow Test" and st after approximately 4 seconds. • Verify MO-2-23-017 "HPCI Cond Tank Suction" of Equipment Operator to record local data. • Verify MO-2-23-024 "HPCI Cond Tank Return". • Perform the following actions simultaneously to in start: • Open MO-2-23-024 "HPCI Aux Oil Pump". • Start 20P026 "HPCI Aux Oil Pump". • Start 20P026 "HPCI Aux Oil Pump". • Start stopwatch. • During pump start, throttle MO-2-23-021 to obtain pressure. Once obtained, stop the stopwatch. • Verify MO-2-23-025 "HPCI Minimum Flow Valve" • Record required system parameters on Data She	Operator Actions 1 Scenario No.: 3 Event No.: 1 Page: tion: HPCI surveillance testing IAW ST-O-023-301-2 N/A N/A N/A N/A N/A Position Applicant's Actions or Behavior CRS Direct PRO to perform ST-O-023-301-2 "HPCI Pump, Valve, FI Unit Cooler Functional and In-service Test" beginning at step 6 PRO Perform ST-O-023-301-2 beginning at step 6.4.7: • Start 20K002 "HPCI Vac Pump"; request Equipment Operar record data on Data Sheet 2. • Open MO-2-23-021 "HPCI Flow Test" and stop valve m after approximately 4 seconds. • Verify MO-2-23-021 "HPCI Flow Test" and stop valve m after approximately 4 seconds. • Verify MO-2-23-021 "HPCI Flow Tast" closed. • Verify MO-2-23-021 "HPCI Flows to Torus" closed. • Open MO-2-23-024 "HPCI Cond Tank Return". • Perform the following actions simultaneously to initiate a Histart: • Open MO-2-23-024 "HPCI Aux Oil Pump". • Start 20P026 "HPCI Aux Oil Pump". • Start stopwatch. • During pump start, throttle MO-2-23-021 to obtain desired f pressure. Once obtained, stop the stopwatch. • Verify MO-2-23-025 "HPCI Minimum Flow Valve" is closed. • Record required system pa

Op Test No.: 1 Scenario No.: 3 Event No.: 2 Page: 2 of 12 **Event Description:** 'B' Service Water pump trips on overcurrent Cause: Motor winding failure Effects: 1. Alarms: • 216 H-1 "'B' Service Water Pump Trip" 216 H-2 "'B' Service Water Pump OVLD" 216 F-1 "Service Water Header Lo Press" (instructor override) 2. Loss of 'B' Service Water pump, requiring manual start of 'C' Service Water pump. Time Position **Applicant's Actions or Behavior** URO/PRO Recognize and report the following alarms and enter corresponding Alarm Response Cards: 216 H-1 "'B' Service Water Pump Trip" • 216 H-2 "'B' Service Water Pump OVLD" • 216 F-1 "Service Water Header Lo Press" ٠ Recognize and report trip of the 2B Service Water pump. Green flag the 2B Service Water pump control switch. Dispatch an Equipment Operator to investigate the pump and breaker. Enter and direct actions of Alarm Response Cards 216 F-1, 216 H-1 and CRS 216 H-2. Direct placing the 2C Service Water pump in service IAW SO 30.1.A-2 "Unit 2 Service Water System Normal Operations". PRO Place the 2C Service Water pump in service IAW SO 30.1.A-2 as follows: Direct an Equipment Operator to prepare the 2C Service Water pump for start IAW SO 30.1.A-2, steps 4.2.3 and 4.2.4. Start the 2C Service Water pump by placing the pump control switch in "Run". Verify Service Water pump discharge pressure is 65-95 psig (both in the Control Room and locally).

CRS Request troubleshooting/technical assistance through the Shift Manager.

				Operato	r Actions				ES-D-2
Op Test No.:		1 S	cena	ario No.:	3	Event No.:	3	Page:	3 of 12
Event Descript	tion	: н	IPCI	cooling water	r leak				
Cause:	Co	oling wat	er pij	pe rupture at	the inlet to	the lube oil cool	er		
Effects:	1.	Alarm: 2	221 E	8-3 "HPCI Tur	b Oil Coole	er Disch Oil Tem	p High"		
	2.	Rising H shutdow	łPCI /n.	lube oil temp	erature an	d cooling water s	system leak,	requiring H	IPCI
Time	<u>Po</u> :	sition	Ар	plicant's Act	tions or Be	ehavior			
	PR	0	Re Ter	cognize and mp High" and	report alar I enter cor	m 221 B-3 "HP(responding Alar	CI Turb Oil C m Response	cooler Disc e Card.	h Oil
	CR	S	Ent	ter and direct	t actions of	Alarm Respons	se Card 221	B-3.	
			<u>NO</u>	<u>TE</u> : CRS ma	ay direct tri	pping HPCI and	following up	with SO 23	3.2.A-2
			Dire	ect HPCI Sys	tem shutde	own IAW SO 23.	2.A-2 "HPCI	System SI	hutdown".
	PR	0	Shi as	utdown the H follows:	IPCI Syste	m IAW SO 23.2	.A-2 "HPCI S	System Sh	iutdown"
			•	Verify the A	ux Oil Pum	p control switch	is in "Start"		
			٠	Verify the Va	acuum Pu	mp control switc	h is in "Start	,,,	
			٠	Depress and	d hold the	HPCI System "F	Remote Trip"	' pushbutto	on.
			٠	Verify the Au RPM).	ux Oil Purr	np starts as turbi	ne slows do	wn (1200 ·	- 1500
			•	Close MO-2	-23-014 "S	Supply".			
			٠	Close MO-2	-23-019 "T	o Feed Line".			
			•	When MO-2 pushbutton.	2-23-014 is	fully closed, rel	ease the "Re	emote Trip))
			٠	Close MO-2	-23-021 "F	full Flow Test".			
			٠	Close MO-2	-23-024 "0	Cond Tank Retu	r n ".		
			•	After verifyir Pump contro	ng the HP0 ol switch ir	CI turbine shaft i 1 "Stop".	s stopped, p	lace the A	ux Oil
			<u>NC</u> sta	<u>)TE</u> : the crev rtup.	w should p	lace the AOP in	"Pull-to-Loc	k" to preve	ent HPCI

Op Test No.:	1	Scenario No.:	3	Event No.:	3	Page:	4 of 12
Event Descript	tion:	HPCI cooling wate	er leak	continued			
<u>Time</u>	Position CRS PRO	Applicant's Ac Direct closing M cooling water la Reference Tec inoperable: • RCIC must <u>AND</u> • HPCI Syste <u>OR</u> • The plant n dome press Close MO-2-23 <u>NOTE</u> : the cre	etions o MO-2-23 eak. h Spec. be verif em must em must sure mu 3-017 "H ew may	<u>r Behavior</u> 3-017 "HPCI Cond 3.5.1 Condition C fied operable imme t be restored to op in MODE 3 within 1st be <150 psig wi 1PCI Cond Tank S direct an Equipme	Tank Su and det ediately erable s 12 hours thin 36 h uction", a nt Opera	uction" to stop ermine that wi by administrat tatus within 14 s and reactor s nours. as directed. ator to open th	the ith HPCI ive means I days steam
	CRS	for MO-2-23-0 [°] Request troubl	17 at M(leshootii	CC 2DB-R-B. ng/technical assist	ance thr	ough the Shift	Manager.

Op Test No.:	1 S	cenario No.:	3	Event No.:	4	Page:	5 of 12
Event Descrip	tion: Lo	oss of DC power	to the 'B' R	PS MG set outp	ut breaker		
Cause:	Loss of DC	power from 2DD2	25, circuit 1	9, to breaker BC	757		
Effects:	 Alarm: 2 Loss of t 	08 E-2 "RPS 'B' I	M -G Set Tr one of the t	ouble or in Test" wo 'B' RPS MG	set output br	eakers	
<u>Time</u>	<u>Position</u> URO	Applicant's Ac Recognize and Test" and enter Recognize that	tions or Be report alar correspon RPS 'B' is	ehavior m 208 E-2 "RPS ding alarm resp NOT tripped.	S 'B' M-G Se onse card.	et Trouble	or in
	CRS	 Enter and exec Recognize t Direct an Education control power 	ute ARC 2 that 2BC75 quipment C er at 2BD2	08 E-2: 57 breaker is <u>no</u> 0perator dispato 5, circuit 17, <u>an</u>	tripped sind hed to verify d 2DD25, ci	ce RPS dic the status rcuit 19.	d not trip. s of DC
	PRO	Use the alarm r as directed.	response c	ard to assist in t	roubleshoot	ing the an	nunciator,
	URO	Monitor plant p	arameters/	assist as directe	ed or reques	ted.	
	CRS	Reference Tech determination: • With DC po RPS MG se from service	h Spec 3.3 ower and th et output br e within 72	.8.2 Condition A erefore trip cap eakers, the 'B' f hours.	to make the ability lost fo RPS MG set	e following r one of th must be r	e two 'B' emoved

		oporat		2			
Op Test No.:	1 :	Scenario No.:	3	Event No.:	5	Page:	6 of 12
Event Descrip	otion: "	A' Condensate p reduction	ump trip w	ith automatic Re	circ runba	ck failure / po	ver
Cause:	'A' Conden	sate pump trips o	on overcur	rent / relay failure	e in the Re	circ runback l	ogic
Effects:	1. Alarms	:					
	203203	E-1 "A Condens E-2 "A Condens	sate Pump sate Pump	o Overload" o BKR Trip"			
	2. Recirc manua	automatic runbac I recirc flow reduc	k fails to c tion to co	occur, resulting ir ntrol RPV level.	lowering	RPV level and	ł requiring
<u>Time</u>	Position	Applicant's A	ctions or	Behavior			
	URO	Recognize and	d report tr	ip of the 'A' Con	densate p	ump.	
		Recognize and automatically.	d report th	ne 45% Recirc p	ump runba	ack failed to o	ccur
		Recognize the capability, req	e RPV wat uiring pow	er level drop is over to be lowered	caused by d with Rec	a lack of mal	keup
		Recognize an	d annound	ce entry into the	OT-100 "F	Reactor Low I	∟evel":
		Reduce po controllers	ower by lo to a spee	wering the 'A' <u>ar</u> ed demand of 45	<u>nd</u> 'B' Rec %.	irc pump spe	ed
		 This must level swell 	be perform and a hig	med in a controll h level trip of the	ed manne e Reactor	er that does no Feed pumps.	ot result in
		Monitor for Th	ermal Hyd	draulic Instabilitie	es (THI).		
	CRS	Enter and dire	ect actions	IAW OT-100 "R	leactor Lo	w Level".	
		 Direct the 45% spee 	URO to lo d.	ower power by lo	wering Re	ecirc flow mar	ually to
		 (May) referring limited to Feedwate 	r to GP-5 <80% tota r pumps.	"Power Operation I feedwater flow	ons" to del with 2 Co	ermine powe ndensate and	r must be I 3 Reactor
		Enter and dire in Core Flow".	ect actions	IAW OT-112 "L	Inexpected	d/Unexplaine	d Change
		Determine	position	on the PBAPS P	ower Flow	v Operation N	lap.
		Direct mor	nitoring fo	r Thermal Hydra	ulic Instat	oility (THI).	
	PRO	Investigate the applicable ala	e cause of rm respor	f the 'A' Conden ise cards.	sate pump	o trip using the	Э
		Direct an Equ Green flag the	ipment Op e 'A' Cond	perator to investi ensate pump co	gate the b ntrol swite	reaker and p h.	ump.

Op Test No.:		1	Scenario	o No.:	3	Event No.:	6	Page:	7 of 12	
Event Descrip	otion	:	Loss of # over-spe	#2 Auxilia ed during	ary Bus / g startup	loss of Condensat and cannot be res	te and Fee set	edwater / RCI	C trips on	
Cause:	Fa thr	ilure ir ottle v	n the bus w alve failure	vork resul	lts in an c	overcurrent condit	ion and a	bus lockout /	RCIC trip	
Effects:	1.	Alarr	ns:							
		 219 A-2 "2 Aux Bus Overcurrent Relays" 219 B-2 "2 Aus Bus Lo Voltage" 								
	2.	#2 A	uxiliary Bu	s breake	rs trip, de	-energizing the bu	us and its	loads		
	3.	The i rema	mmediate	impact o densate p	of loss of a	#2 Auxiliary Bus is ausing RPV water	the resul level to d	tant loss of th rop rapidly.	е	
	4.	RCI0 last s	C will attem source of h	ipt to stai igh-press	rt and the sure injec	n will trip when it i tion to the RPV.	reaches 5	00 RPM, rem	oving the	
<u>Time</u>	Pr PF	osition RO	Appli Reco	cant's A gnize an	ctions o d report t	<u>r Behavior</u> he loss of #2 Aux	kiliary Bus	i.		
	UF	२०	Recos Attem Switc	Recognize and report Reactor water level is dropping rapidly. Attempt to manually scram the Reactor by placing the Mode Selector Switch in "Shutdown".						
			Attem	Attempt to scram 'B' RPS by depressing the manual scram pushbut						
	CF	RS	Enter Reco	Enter and execute T-100 "Scram". Recognize a failure to scram condition exists						
			<u>NOTE</u> go dir	E∷ the Cl ectly to [−]	RS will e: T-101.	xit T-100 and ente	er T-101 "	RPV Control	", or may	
	PF	२०	Perfo	rm applic	cable scr	am actions:				
			• Tr	ransfer 1	3 KV hou	use loads (#1 bus	only).			
			• Tr	rip main t	turbine a	t approximately 5	0 MWe.			
			• Ve	erify mai	n genera	tor lockout.				
			• V	erify Gro	up II & III	isolations and S	GTS initia	ition.		
			• Ve	erify SD\	√ vent an	d drain valves ar	e closed (see Event #8	<u>B</u>).	
			• Ve	erify HW	'C isolate	d.				
			• Ve	erify reci	rc pumps	are tripped.				
			• M in	onitor in: strument	strument t air heac	air header press ler pressure is gro	ure and d eater thar	rywell pressu a drywell pres	re; report sure.	

Recognize and report RCIC has tripped and is NOT injecting.

Op Test No.:	1	Scenario No.:	3	Event No.:	7	Page:	8 of 12			
Event Descrip	tion:	RPS failure require rods) requires term blowdown	es ARI ir ninating	nitiation to scram and preventing in	the reacto jection be	r / ATWS (six o fore emergenc	control y			
Cause:	RPS 'B' a the full ou	automatic and manua ut position	al chanr	nel failure / six cor	ntrol rods a	are mechanica	lly stuck in			
Effects:	1. Full F	Reactor scram does	not occu	ur; manual ARI ini	tiation is r	equired.				
	2. Reac no hię	 Reactor level drop is greater because more time is spent under power conditions with no high-pressure injection. 								
<u>Time</u>	<u>Position</u> URO	Applicant's Act Recognize and Report entry int	tions of report a to T-101	<u>r Behavior</u> an RPS scram ha "RPV Control" fe	is failed to or the AT\	o occur. NS condition.				
	CRS	Enter and exec	ute T-1	01 "RPV Control"						
СТ		 Direct initiat 	tion of A	Iternate Rod Inse	ertion (AR	1).				
		Direct instru	iment ni	trogen bypassed	and resto	red IAW GP-8E	Ξ.			
		Direct RPV	pressur	e stabilized below	1050 psig	g .				
	URO	Initiate ARI IAW Event":	RRC (3B.1-2 "Alternate	Rod Inse	rtion During a	Plant			
СТ		Rotate the "	'A" <u>and</u>	"B" ARI pushbutt	on collars	to "Armed".				
СТ		 Depress the 	e "A" <u>an</u>	<u>d</u> "B" ARI pushbu	uttons.					
		 Verify the formation 	ollowing	ARI solenoid val	ves open	:				
		∘ SV- 2	2-03-14	1A						
		• SV-2	2-03-14	2A						
		• SV-2	2-03-14	1B						
		o SV-2	2-03-14	2B	lania damu					
		verity and r	eport tr	when control rad	er is depr	essurizing.				
					s begin to					
			and roa	ort six control roc		t uno. T incert on the	scram			
			anu rep ddition⊴	al entry condition	for T-101	based on Rea	actor level			
		below -48 inche	es.							

Op Test No.:	1	Scenario	o No.:	3	Event N	o.: 7	Pag	e: 9 of	12
Event Descript	tion:	RPS failu rods) rec blowdow	ure require quires term ncontinu	es ARI i hinating ued	initiation to sc and preventi	ram the re ng injectio	actor / ATWS n before emerg	(six contro jency)I
<u>Time</u>	Prosition PRO	Applie Bypas • Pl • Pl • Pl <u>NOTE</u>	cant's Act ss and res ace both i ace both i ace both i <u>a</u> : this acti	tions o tore dr nstrum keylock nstrum ivity ma	ywell instrum ent nitrogen switches in ent nitrogen ay be coordin	ent nitroge valve cont "Bypass". valve cont nated betw	en IAW GP-8E rol switches to rol switches to een the URO	, as direc) "Close".) "Open". and the P	ted. RO.
	CRS	Enter • In • T- • In Ve	and direct hibit ADS. 221 "Main ject with C essel".	t actior a Stean CRD us	ns of T-117 "L n Isolation Va sing T-246 "M	.evel/Powe alve Bypas aximizing	er Control": ss". CRD Flow to 1	he React	or
	URO	Maxin Maxin IA Di St Sf "S Di di Di va Di se Ve Cl Pl pu Di A.	nize CRD irect an Ec W T-246, irect an Ec artup IAW tart the sta Start". irect an Ec scharge ve irect an Ec alve IAW T irect an Ec ervice IAW erify MO-2 lose Recir lace the C ump amps irect an Ec 13.	flow us quipme step 4 quipme (T-246 andby (quipme alve IA quipme (T-246, s quipme (T-246 2-03-02 c pump RD flow d, open quipme	sing T-246 as ent Operator t .3. ent Operator t , step 4.4. CRD pump by ent Operator t W T-246, step ent Operator t step 4.7. ent Operator t 5, step 4.8. 20 "Drive Wtr p seal purge w controller in the flow cont ent Operator t	s follows: o bypass f to check th y placing th to slowly o p 4.6. to fully ope to place th Press" is f valves MC n "Man" an trol valve.	the CRD pump he standby CR he pump contr pen the stand en the drive wa cully open. 0-2-2A-8029A hd, while moni V-2-3-56 IAW	o suction f D pump fo ol switch o by CRD p ater filter in e water fil and 8029 toring CRI toring CRI	ilter or to ump nlet lter in B. D

Scenario No.: 3 Event No.: Page: 10 of 12 **Op Test No.:** 1 7 **Event Description:** RPS failure requires ARI initiation to scram the reactor / ATWS (six control rods) requires terminating and preventing injection before emergency blowdown...continued **Applicant's Actions or Behavior** Position Time PRO Perform T-117 actions: Inhibit ADS by placing keys in both "ADS Auto Inhibit" keylock • switches and placing them in the "INHIBIT" position. Direct Equipment Operator to perform T-221. • CRS Request outside assistance (through Shift Manager) in recovering RCIC for injection. Per T-101, direct manual insertion of control rods using T-220 "Driving Control Rods During a Scram". URO Attempt insertion of the control rods IAW T-220: Bypass the Rod Worth Minimizer. • Attempt to insert control rods using the "Emergency In/Notch Override" switch. Report to the CRS unable to insert the control rods. CRS Determine that RPV water level cannot be restored and maintained above -195 inches. Direct terminating and preventing injection IAW T-240 (ATT. 1, Fig. 3). When directed, perform T-240 to terminate and prevent injection into the URO/PRO RPV: Verify HPCI is not injecting. Verify Condensate / Feedwater is not injecting. Prevent injection from Core Spray by placing all Core Spray pump control switches in "STOP" (if running). Prevent injection from RHR/LPCI by placing all RHR/LPCI pump control switches in "STOP" (if running). Contact the floor operator and direct isolation of Stayfull from RHR and Core Spray. NOTE: this step should be directed but actual isolation does not need to be completed prior to the blowdown.

		<u>Operate</u>	or Actic	ons			ES-D-2
Op Test No.:	1	Scenario No.:	3	Event No.:	7	Page:	11 of 12
Event Descript	ion:	RPS failure requir rods) requires terr blowdowncontir	res ARI minating nued	initiation to scram th and preventing inju	ne reacto ection be	or / ATWS (six fore emergen	control cy
<u>Time</u>	Position	Applicant's Ac	ctions of	or Behavior			
СТ	0110	Direct all five A	ADS SR	Vs opened			
		When Reactor injection with F -195 and +35 i	pressu RHR an Inches.	re lowers below 27 d/or Core Spray to	0 psig, c control l	direct slowly ra RPV water lev	aising RPV vel between
СТ	PRO	When directed Blowdown.	l, open .	ALL five ADS SRV	s to perf	orm an Emerç	jency
		When directed control RPV w	l, slowly ater lev	raise RPV injectio el in the band spec	n with R cified by	HR and/or Co the CRS.	ore Spray to

Op Test No.:	1	Scenario No.:	3	Event No.:	8	Page:	12 of 12
Event Descrip	otion:	Two in-series scra isolate	am disch	narge volume (SDV)	vent v	alves fail to aut	omatically
Cause:	RPS failur off two SD	e in conjunction wi V vent valves (con	th an ai nmon ai	r header malfunctior ir supply).	n, whicł	n prevents air fr	rom venting
Effects:	A failure o This requi	f the SDV vent valving the SDV vent valving the second second second second second second second second second s	ves is e on of the	ffectively a primary t SDV vent valves.	o seco	ndary containm	ient leak.
<u>Time</u>	<u>Position</u>	Applicant's Ac	ctions o	or Behavior			
	PRO	Recognize and 035B) to auton	d report natically	failure of two SDV isolate.	vent va	lves (AO-032E	3 and AO-
		Upon recogniz	ing failu	ire to isolate, the Pl	RO sho	ould:	
ст		 Manually is switches control 	solate th	ne valves by moving clockwise to the "Cl	the Sl bse" po	DV isolation ha	and-
		 Verify all verify al	ent and	drain valves are clo	osed.		
		Inform the	CRS as	conditions permit.			
	CRS	Acknowledge	SDV ve	nt valve isolation fa	ilure.		
СТ		Direct manual	isolatio	n of the SDV vent v	alves,	if not already is	solated.

TERMINATION CRITERIA:

The scenario may be terminated when the RPV has been depressurized and reactor level has been recovered and controlled.

ES-D-2

1

			S	cenario	Outline		ES-D-1				
Simulat	ion Facility P	each Bottom	Scena	rio No.	#4 (altered bank)	Op Test No.	2008 NRC				
Examin	ers				Operators		CRS (SRO)				
							URO (ATC)				
	- <u></u>	······································					PRO (BOP)				
				SP/	ARE Scenario						
Scenari Summa	o The scer ry lower rea a conder bus will r automati establish electrica	nario begins w actor power us nsate pump. F not fast transfe cally close on cooling manu l failure.	ith the reactor ing reactor re following the of the other to the bus. An ially. The cre	r at 82% circulation condens startup f utomatic w will be	power and a plant on flow and once be ate pump shutdown feed, causing the E cooling to the dies required to make a	shutdown in progre elow 80% power, th n, the 2SU-E feeder -1 diesel to start an el will not occur, rec a Tech Spec declar	ess. The crew will be crew will secure r will trip. The E12 bd its breaker to quiring the crew to ation for the				
	This will carry out establish occur ne paramet controlle diesel ge generato Followin accordau "Primary used to o	 This will be followed by a trip of the B fectic pump due to a failed KPT breaker. The crew should carry out the actions of OT-112 "Unexplained/Unexpected Change in Core Flow", which includes establishing single loop operation and consulting Technical Specifications. A loss of offsite power will occur next, requiring entry into SE-11 "Loss of Off-Site Power". The crew should stabilize plant parameters using T-100 "Scram" and should recognize and respond to a failure of the HPCI flow controller to operate in automatic. The E-4 diesel generator will fail to automatically start, and the E-3 diesel generator will not start at all. The crew will be required to manually start the E-4 diesel generator using the quick-start pushbutton in order to spray the Drywell later in the scenario. Following this event, a steam leak will develop in the drywell, requiring the crew to take actions in accordance with OT-101 "High Drywell Pressure", and execute T-101 "RPV Control" and T-102 "Primary Containment Control". The high drywell pressure condition will prevent HPCI from being used to control reactor pressure, resulting in further challenge to the primary containment. 									
Initial Conditi Turnov	IC-74, 8 ons er See Att	32% power ached "Shift T	urnover" She	et							
Event	Malfunctio	n Eve	nt			Event					
No.	No.	Тур	e*		De	scription					
1		R	URO Lowe CRS	r reactor	power with reactor	recirculation flow					
2		N	PRO Secu CRS	ire a con	densate pump						
3		C TS	PRO Loss CRS E1 E	of 2SU-I DG auto	E startup feed with starts with failure c	failure of the E12 b f ESW cooling to d	us to fast transfer / iesel auxiliaries				
4		C TS	URO Recir CRS	rc RPT b	reaker trip / single l	oop operation					
5		М	ALL Loss	of off-sit	e power / steam lea	ak in the drywell					
6		С	PRO E-4 d CRS	liesel gei	nerator fails to auto	start					
7		I	URO HPC CRS	I flow coi	ntroller fails in auto	matic					

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

SHIFT TURNOVER

PLANT CONDITIONS:

• Unit 2 at 82% power with a shutdown in progress IAW GP-3 "Normal Plant Shutdown"

INOPERABLE EQUIPMENT/LCOs:

• Breaker E-232 blocked for PM.

SCHEDULED EVOLUTIONS:

- Continue with plant shutdown IAW GP-3 "Normal Plant Shutdown"
- Reduce reactor power to 80%; remove the 'C' condensate pump from service due to excessive bearing oil leakage
- ReMA PB2C17-58.0 in effect at step 1 reduce to 80% power with recirc flow

SURVEILLANCES DUE THIS SHIFT:

• None

ACTIVE CLEARANCES:

• Breaker E-232

GENERAL INFORMATION:

• GP-3 is complete through step 6.10

CRITICAL TASK LIST

- 1. Restore diesel generator cooling <u>prior</u> to diesel generator failure.
- 2. Re-energize the E-42 bus from the respective diesel generator in order to spray the drywell <u>before</u> drywell temperature exceeds 281 degrees F.
- 3. Spray the drywell in accordance with T-204 "Initiation of Containment Sprays Using RHR" when conditions permit, but <u>before</u> drywell temperature exceeds 281 degrees F.

		<u>Operate</u>	or Actior	<u>15</u>			ES-D-2	:
Op Test No.:	1	Scenario No.:	4	Event No.:	1	Page:	1 of 13	
Event Descript	tion:	Lower reactor pov	wer with r	eactor recirculation	on flow			
Cause:	N/A							
Effects:	N/A							
<u>Time</u>	<u>Position</u> CRS	Applicant's A Direct URO to to reduce reac	ctions or continue tor power	Behavior power reduction t to $\leq 80\%$) IAW G	:o ~70 ML 3P-3.	.B/HR (or as n	ecessary	
	URO	Reduce recirc MLB/HR (or as	ulation pu s necessa	ump speeds to re ary to reduce rea	duce tota	al core flow to er to ≤ 80%).	~70	
		 Verify both variable. 	Moore C	Controllers are se	t to moni	tor the 'V' (%	output)	
		 Slowly red pumps. 	uce Moo	re controller dem	and signa	als for 'A' and	'B' recirc	
		 Observe re making ad 	ecirc syst ditional s	em response for peed changes.	approxin	nately 30 seco	nds before	;
	PRO	Monitor plant e	equipmer	nt during power re	eduction.			

Op Test No.: 1 Scenario No.: **Event No.:** 2 of 13 4 2 Page: **Event Description:** Secure a condensate pump Cause: N/A Effects: N/A Time Position **Applicant's Actions or Behavior** CRS When reactor power drops to approximately 80%, direct the PRO to shutdown the 'C' condensate pump in accordance with SO 5.2.A-2 "Condensate System Condensate Pump Shutdown". PRO Review SO 5.2.A-2 and ensure prerequisites are met. Secure the 'C' condensate pump, as directed: Close discharge valve MO-2098 C. • Stop the selected pump by turning the control switch to "STOP" • (within 2 minutes of closing the discharge valve). Direct an Equipment Operator to close the Seal Water Supply Valve • for the 'C' condensate pump. URO Monitor reactor parameters during condensate pump shutdown.

Scenario No.: **Op Test No.:** 1 4 Event No.: 3 Page: 3 of 13 **Event Description:** Loss of 2SU-E startup feed with failure of the E12 bus to fast transfer / E1 EDG auto starts with failure of ESW cooling to diesel generators. Cause: Various Effects: 1. Alarms: various 2. Momentary loss of the E12 bus; auto start of the E1 EDG without cooling, requiring the crew to manually start ESW to provide diesel generator cooling. Time Position **Applicant's Actions or Behavior** PRO Recognize and report alarm 006 J-1 "2SU-E Bkr Trip" and enter the corresponding Alarm Response Card. Dispatch an Equipment Operator to investigate the loss of 2SU-E. Red flag all closed breakers and green flag all tripped breakers. Refer to SO 54.7.A "4KV Fast Transfer Load Shedding and Sequential. Loading on Bus Undervoltage". Make a list of affected control room systems/loads (MOV's, etc.). CRS Enter and direct actions of ARC 006 J-1 "2SU-E Bkr Trip". Enter and direct actions of ARC 001 D-1 "E12 Bus Undervoltage". Direct SO 54.7.E "4KV Diesel Generator Auto Start and Loading". Direct reset of Group II/III isolations IAW GP8.C. PRO Recognize and report alarm 001 D-1 "E12 Bus Undervoltage" and enter the corresponding Alarm Response Card. Verify the E-1 diesel output breaker auto closed. Verify the E-12 bus is re-energized. Inform the CRS the E-12 bus has been restored. Recognize failure of ESW cooling to automatically start; place the 'A' or СТ 'B' ESW pump in service by placing the pump control switch to "START". Direct an Equipment Operator to perform running inspection of the E-1

diesel generator.

Op Test No.:	1	Scenario No.:	4	Event No.:	3	Page:	4 of 13
Event Descript	tion:	Loss of 2SU-E star	tup feed	d and associated fa	ailureso	continued	
<u>Time</u>	Position CRS	Applicant's Act Recognize entry Determine the f • Perform SR • Restore the Recognize entry the only source Determine the f • Restore the within 8 hou	tions or y into To following 3.8.1.1 offsite y into To of powe following electric urs.	Behavior ech Spec 3.8.1.A. g are required to n (ST-O-054-950-2 circuit to OPERAE ech Spec 3.8.7.C er to the bus). g are required to n cal power distributi	neet the l) within 7 BLE within for E12 b neet the l on subsy	LCO: 1 hour. n 7 days. bus inoperabil LCO: ystem to OPE	ity (EDG is RABLE
	CRS	May enter OT-1 limit is exceede <u>NOTE</u> : the next IAW OT-104.	I04 "Pos d. t event s	sitive Reactivity In should be inserted	sertion" i I before t	f the feedwate	er delta-⊤ ces power

.

			<u>Operato</u>	r Actions				ES-D-2	
Op Test No.:	1	l So	enario No.:	4	Event No.:	4	Page:	5 of 1 3	
Event Descript	ion:	Re	ecirc RPT breake	er trip ('A' r	ecirc pump)				
Cause:	Failu	ure of bre	eaker control logi	ic					
Effects:	1. /	Alarms:							
	 214 A-3 "A Recirc Pump RPT Trip" 214 B-4 "A Recirc Pump Low Diff Press" 214 C-2 "A Recirc Gen Lockout Trip" 214 C-3 "A Recirc Drive Motor Trip" 								
	2.	Trip of th	e 'A' recirc pump	o, causing	reduction in core	flow and rea	ctor power		
<u>Time</u>	<u>Pos</u> URC	ition C	Applicant's Ac Recognize and OT-112 "Unexp Enter the corres Recirc Pump R 3 "A Recirc Driv	tions or B report trip bected/Une sponding / PT Trip", 2 ve Motor T	ehavior of the 'A' reacto explained Chang Alarm Response 214 C-2 "A Recir rip" (as time per	r recirc pum e in Core Fle Cards for al c Gen Locko mits).	p and entr ow". larms 214 out Trip" ar	y into A-3 "A าd 214 C-	
	CRS	8	Enter / execute Direct insertion Determine curr Direct monitorin Direct closing '/ MO-43A), then Direct performin	OT-112 " of ALL GF ent operat ng for THI. A' recirc pu re-openin ng SO 2A.	Unexpected/Une P-9-2 control rod ing point on Pow ump discharge v g valve after 5 m 2.A-2 "Recircula	xplained Ch s. /er-Flow Ope alve MO-053 inutes. tion System	ange in Co eration Ma 3A (or suct Shutdowr	ore Flow". p. tion valve n".	
	UR	C	Insert ALL GP- Monitor for THI Close 'A' recirc 43A); re-open a Perform SO 2A	9-2 contro pump dis after 5 min 2.A-2 "Re	l rods. charge valve MC utes. circulation Syster)-053A (or si n Shutdown'	uction valv " (as time p	ve MO- permits).	
	CR	8	Perform AO 2A Refer to Tech S single loop. <u>NOTE</u> : since O transitioning to questions after	A.1-2 "Reci Spec 3.4.1 DT-112 an single loo the scena	rculation System and determine r d Tech Spec 3.4 p, these actions irio is complete.	n Single Loop requirements .1 allow up t may be asse	p Operatio s for opera to 12 hours essed as f	m". Iting in s for ollow-นอ	

		<u>Operate</u>	or Actio	<u>ns</u>			ES-D-2
Op Test No.:	1	Scenario No.:	4	Event No.:	5	Page:	6 of 13
Event Descrip	otion:	Loss of off-site po	wer				
Cause:	Loss of th	e grid					
Effects:	Reactor s diesels wl	crams, emergency hen available	diesels	receive start signa	l, emerge	ncy buses tra	nsfer to the
Time	<u>Position</u> PRO	Applicant's A Recognize and	ctions c d report	o <mark>r Behavior</mark> the loss of off-site	power.		
	URO	 Perform scram Verify cont Place the n Verify APF Report to t are insertin available). Verify all c Recognize and Enter and exe Direct the using RCI0 Direct the SRVs and Direct placing 	n actions trol rods mode sv RMs are the CRS ng, and ontrol ro d report cute T-1 URO to C and/or URO to /or HPC torus co	are inserting. vitch in "Shutdown downscale (when that the mode switch the APRMs are do ods are fully inserted the event is an en 00: maintain RPV leve HPCI. stabilize RPV press i in CST-to-CST m poling in service.	" power is itch is in ' wnscale ed. try condit el betwee ssure bele node.	available). 'Shutdown", o (when power ion for T-100 n +5 to +35 ii ow 1050 psig	control rods is "Scram" nches using
	PRO	Recognize an #6 for details).	d report	the E-3 and E-4 d	iesels fai	led to start (se	ee Event
	CRS	Recognize an "Loss of Off-S Enter and exe	d report ite Powe	the loss of off-site er". -11.	power as	s an entry into	o SE-11

Op Test No.: 1 Scenario No.: 4 Event No.: 5 Page: 7 of 13 **Event Description:** Loss of off-site power...continued Time **Applicant's Actions or Behavior** Position PRO Perform scram actions: Verify main turbine trip and generator lockout. • Verify Group I, II, and III isolations and verify SGTS initiation, as • applicable. Verify scram discharge volume vents and drains are closed. • Verify Hydrogen Water Chemistry is isolated. • • Verify recirc pumps are tripped. Monitor Instrument Air header pressure and drywell pressure. • URO Maintain RPV level +5 to +35 inches using RCIC. Place RCIC in service IAW RRC 13.1-2 (auto starts at -48 inches): Arm and depress RCIC Manual Initiation Pushbutton. • Verify MO-131, MO-021, MO-132 open. • • Verify AO-034 and AO-035 close. • Verify vacuum pump starts. • Verify RCIC system flow rate is 600 gpm. Place RCIC Manual Initiation Pushbutton in DISARM. URO/PRO Place torus cooling in service IAW RRC 10.1-2: Open MO-039A(B). • Open MO-089A(B). Verify associated diesel load is \leq 1400 KW. • • Start RHR pump. Open MO-034A(B) while verifying diesel loading. • Verify flow is 11,500-12,200 gpm for one RHR pump in service. • Verify associated diesel load is \leq 2300 KW. • Start HPSW pump in each loop to be used for torus cooling. • Start additional RHR and HPSW pumps as necessary/directed • (verifying diesel generator load as indicated above). Verify flow is \geq 20,000 gpm for two RHR pumps in service. • Direct Equipment Operator to close stay full injection valve(s) for the • RHR loop(s) in service.

		<u>Ope</u>	rator Actio	ns			ES-D-2
Op Test No.:	1	Scenario No.	: 4	Event No.:	5	Page:	8 of 13
Event Descrip	tion:	Loss of off-site	e power…cc	ontinued			
<u>Time</u>	<u>Position</u> URO	Applicant's Stabilize RI to CST mod Open M Verify c Start Va Start Va Simulta "Steam Verify H	S Actions o PV pressure de for press 10-2-23-24 losed MO-2 acuum Pum OPEN MO neously ST Supply". IPCI systen	<u>r Behavior</u> e below 1050 psig sure control IAW F "Cond Tank Retu 2-23-19 "To Feed p. D-2-23-21 "Full Flo ART Aux Oil Pur n flow rate is 5000	g using SF RRC 23.1 Irn". Line". bw Test" f np AND C 0 gpm (se	RVs and/or HF -2 Section D: or 3 to 4 seco OPEN MO-2-23 ee Event #7).	²CI in CST nds. 3-14
	CRS	Direct resto Backup T-261 " Tank in	oration of ins Instrument Placing the Service".	strument nitrogen Nitrogen to ADS Backup Instrume	using eit using SC ent Nitroge	her:) 16A.7.A-2, o en Supply Froi	r m the CAD
	URO	 Restore dry If direct 16A.7.4 Plac and Veri Veri If direct Supply Veri Disp step 	well instrur ed to use B -2: ce SV-8130 then in "AL fy open SV fy PI-8142 ed to perfor From the C fy closed A patch an Eq o 4.2 (manu	ment nitrogen as o ackup Instrument B control switch o JTO/OPEN". -8130B. "Backup N2" on th m T-261 "Placing AD Tank in Servi O-2969B on pane uipment Operato al valving).	directed. t Nitrogen on panel 2 he 20C00 g the Back ce": el 20C003 r to the Ca	to ADS using 20C003-03 to 3-03 panel is kup Instrumen 3-03. AD Building p	⊧SO *RESET ≥ 85 psig. t Nitrogen erform

		<u>Operate</u>	or Action	<u>15</u>			ES-D-2
Op Test No.:	1	Scenario No.:	4	Event No.:	5	Page:	9 of 13
Event Descript	tion:	Steam leak in the	primary	containment			
Cause:	Unknown						
Effects:	Various						
<u>Time</u>	<u>Position</u> URO/PRO	Applicant's Ac Recognize and Recognize and Pressure".	c tions or d report t d report t	<u>• Behavior</u> he rise in drywell he condition as ar	pressure. n entry in	to OT-101 "H	igh Drywell
	CRS	Enter and exec • Direct max	cute OT- imizing c	101: Irywell cooling, as	necessa	ıry.	
	URO/PRO	Recognize and T-101 "RPV C	d report o ontrol" ai	drywell pressure > nd T-102 "Primary	2 psig a / Contain	s an entry coi ment Control'	n dition for ".
СТ	CRS	Enter and exer Enter and exer For PC/P: Direct GP- Direct toru: Sprays Usi For DW/T: Direct dryw Fan Bypas Before dry pressure a Spray Initia drywell spr Using RHF For PC/G:	cute T-1(cute T-1(8B "Man s sprays ing RHR' vell coolin s". well temp ation Lim rays initia R".	01. 02: ual Isol of RBCCV initiated IAW T-20 ". ng maximized by perature reaches erature plot within it Curve, direct (ve ated IAW T-204 "In in service	V and DV 04 "Initiat performir 281 degra the safe erify) dryv nitiation c	VCW". ion of Contair ng T-223 "DW ees F, and wl region of the well fans shut f Containmer	nment / Cooler hen drywell Drywell down and ht Sprays

1	Scenario No.:	4	Event No.:	5	Page:	10 of 13
tion:	Steam leak in the	e primary	containmentcor	tinued		
<u>Position</u> URO/PR	Applicant's A Monitor T-102 pressure, toru CRS, as appr Perform GP-8 actions are re paths due to F	Actions o 2 parame 1s pressu opriate. 3B "Manu quired, h RBCCW	<u>r Behavior</u> ters (torus temper re, drywell temper al Isolation of RB0 owever the Opera system pressure/f	ature, tor ature) an CCW and tor may r low oscill	us level, dryw d provide trei l DWCW" (no nodify systen ations).	rell nds to the isolation n flow
URO/PR	 Spray the toru Sprays using Verify Sys annunciat Place key Momentar Open or v Open or v Open or v Verify load Start B(D) Start B(D) Close or v Throttle of 2-10-136E 	us in acco RHR": ors (224 lock swite rerify ope rerify ope d on EDG RHR Pu HPSW I verify clos pen MO-: 3.	ordance with T-20 ord 2 Drywell Press D-3, 225 B-3) are ch 10A-S18B in "M switch 10A-S17B n MO-2-10-39B "T n MO-2-10-89B(D Supplying selector mp. Pump. Sed MO-2-10-34B 2-10-38B "Torus S	4 "Initiatio ure Perm lit. MANUAL in "MANI orus Hea) HPSW ed pumps "Full Flow Spray" to	on of Containn hits Containm OVERRIDE". UAL". ader". Hx Outlet". s is below 140 w Test". obtain 1,000 g	ment ent Spray)0 KW. gpm on FI-
URO/PF	 Naximize dry Verify ope Place all I 20C012. Momentai "BYPASS Direct Equ switches t Operate I pressure. 	well cooli eration or Drywell C rily place " and let uipment (to "SLOW Drywell C	ing by performing a safe side of Figu cooler Fan control DW Cooler Fans it spring return to Operator to place V" at their respecti ooler Fans to redu	T-223 "D re 1 "DW switches control sw "NORMA Drywell C ve MCC i uce Drywe	W Cooler Far CW Saturatio to "OFF" at p witch 43-S-J1 L" at panel 20 Cooler Fan sp n the Reactor ell temperatur	n Bypass". In Curve". Janel 65 in 0C05A. eed control r Building. re and
	1 tion: Position URO/PR	1 Scenario No.: tion: Steam leak in the Position URO/PRO Applicant's A Monitor T-102 pressure, toru CRS, as appr Perform GP-8 actions are re paths due to B URO/PRO Spray the toru Sprays using URO/PRO Spray the toru Sprays using Verify Sys annunciat Place key Momentar Open or v Open or v Start B(D) Start B(D) Start B(D) Start B(D) Olose or v Verify load Start B(D) Open or v Open or v Verify load Start B(D) Close or v Place all fi 20C012. Momentar "BYPASS Direct Equipy Operate D Operate D	1 Scenario No.: 4 tion: Steam leak in the primary Position Applicant's Actions o URO/PRO Monitor T-102 parame pressure, torus pressu CRS, as appropriate. Perform GP-8B "Manuactions are required, h paths due to RBCCW URO/PRO Spray the torus in according the torus in according the torus in according the torus of	1 Scenario No.: 4 Event No.: tion: Steam leak in the primary containmentcor Position Applicant's Actions or Behavior URO/PRO Monitor T-102 parameters (torus temper pressure, torus pressure, drywell temper CRS, as appropriate. Perform GP-8B "Manual Isolation of RBC actions are required, however the Opera paths due to RBCCW system pressure/f URO/PRO Spray the torus in accordance with T-20. Sprays using RHR": Verify System 1 and 2 Drywell Press annunciators (224 D-3, 225 B-3) are Place keylock switch 10A-S17B Open or verify open MO-2-10-39B "T Open or verify open MO-2-10-39B (D Verify load on EDG supplying selector Start B(D) RHR Pump. Start B(D) HPSW Pump. Close or verify closed MO-2-10-34B Throttle open MO-2-10-38B "Torus S 2-10-136B. URO/PRO Maximize drywell cooling by performing Verify operation on safe side of Figu Place all Drywell Cooler Fans control 200C12. Momentarily place DW Cooler Fans "BYPASS" and let it spring return to Direct Equipment Operator to place switches to "SLOW" at their respecti Operate Drywell Cooler Fans to reduct pressure.	1 Scenario No.: 4 Event No.: 5 tion: Steam leak in the primary containmentcontinued Position Applicant's Actions or Behavior URO/PRO Monitor T-102 parameters (torus temperature, tor pressure, torus pressure, drywell temperature) an CRS, as appropriate. Perform GP-8B "Manual Isolation of RBCCW and actions are required, however the Operator may repaths due to RBCCW system pressure/flow oscill URO/PRO Spray the torus in accordance with T-204 "Initiation Sprays using RHR": • Verify System 1 and 2 Drywell Pressure Permannunciators (224 D-3, 225 B-3) are lit. • Place keylock switch 10A-S18B in "MANUAL • Momentarily place switch 10A-S17B in "MANU • Open or verify open MO-2-10-39B "Torus Heat • Open or verify open MO-2-10-39B "Torus Heat • Open or verify open MO-2-10-34B "Full Flow • Verify load on EDG supplying selected pumps • Start B(D) RHR Pump. • Start B(D) HPSW Pump. • Close or verify closed MO-2-10-34B "Full Flow • Throttle open MO-2-10-34B "Full Flow • Verify operation on safe side of Figure 1 "DW •	 Scenario No.: 4 Event No.: 5 Page: Steam leak in the primary containmentcontinued Position Applicant's Actions or Behavior URO/PRO Monitor T-102 parameters (torus temperature, torus level, dryw, pressure, torus pressure, drywell temperature) and provide tree CRS, as appropriate. Perform GP-8B "Manual Isolation of RBCCW and DWCW" (no actions are required, however the Operator may modify system paths due to RBCCW system pressure/flow oscillations). URO/PRO Spray the torus in accordance with T-204 "Initiation of Containt Sprays using RHR": Verify System 1 and 2 Drywell Pressure Permits Containmannuciators (224 D-3, 225 B-3) are lit. Place keylock switch 10A-S18B in "MANUAL OVERRIDE". Momentarily place switch 10A-S17B in "MANUAL". Open or verify open MO-2-10-39B "Torus Header". Open or verify open MO-2-10-39B "Torus Header". Verify load on EDG supplying selected pumps is below 140 Start B(D) RHR Pump. Start B(D) HPSW Pump. Close or verify closed MO-2-10-34B "Full Flow Test". Throttle open MO-2-10-38B "Torus Spray" to obtain 1,000 g 2-10-136B. URO/PRO Maximize drywell cooling by performing T-223 "DW Cooler Far Verify operation on safe side of Figure 1 "DWCW Saturatio Place all Drywell Cooler Fan control switch 43-S-J1 "BYPASS" and let it spring return to "NORMAL" at panel 20 Direct Equipment Operator to place Drywell Cooler Fan so the Reactor . Operate Drywell Cooler Fans to reduce Drywell temperatura pressure.

Op Test No.:	1 5	Scenario No.:	4	Event No.:	5	Page: 11 o	of 13
Event Descrip	tion:	Steam leak in the p	orimary	/ containmentcont	inued		
<u>Time</u>	<u>Position</u> URO/PRO	Applicant's Act When directed, switches in "OF	tions d shutdo F".	or Behavior own the drywell coo	ler fans	s by placing all fan co	ontrol
СТ СТ СТ	URO/PRO	Spray the drywe Sprays Using R Verify Recir Verify all Dr Open MO-2 Open MO-2 Close or ver Monitor con Adjust spray maintain dry	ell in a RHR". c Pum ywell c -10-31 c-10-26 rify clo tainme y flow ywell p	ccordance with T-20 ps are tripped. coolers are OFF. B "DW Spray Inboa B "DW Spray Outbo sed MO-2-10-34B " ent pressure. rate by throttling MO pressure > 2 psig.)4 "Initi ord". Dard". Full Flo D-2-10-	ation of Containmen w Test". 26B as necessary to	o t
	URO/PRO	Place CAD in s	ervice	when directed.			i

Operator Actions							ES-D-2	
Op Test No.:	1	Scenario No.:	4	Event No.:	6	Page:	12 of 13	
Event Description:		E-3 diesel generator start failure						
		E-4 diesel genera	ator auto s	start failure				
Cause:	Various							
Effects:	E-3 diesel generator cannot be started.							
	E-4 diesel	generator fails to	start auto	matically but can	be manu	ally started.		
Time	<u>Position</u>	Applicant's A	<u>ctions or</u>	Behavior				
	PRO Recognize the E-3 diesel generator failed to start. Attempt a quick start of the E-3 diesel by depressing the QUICK STAR pushbutton.							
		Dispatch an Equipment Operator to the E-3 diesel generator.						
		Perform SE-11, Attachment B "Responding to a Diesel Generator Trip or Failure to Start".						
		PRO	O Recognize the E-4 diesel generator failed to start.					
СТ		Attempt a quick start of the E-4 diesel by depressing the QUICK START pushbutton.						
		Recognize E-4 diesel starts and loads its busses.						
		Verify ESW pu	ump is su	pplying cooling w	cooling water to the diesel generators.			
		Direct an Equi and E-4 diese	ipment O I generat	perator to perforr ors.	n running	inspection o	f the E-2	
	CRS	Direct the E-3	diesel qu	iick started, if not	done.			
СТ		Direct the E-4	diesel qu	lick started, if not	done.			

Operator Actions Op Test No.: 1 Scenario No.: 4 7 Event No.: Page: **Event Description:** HPCI flow controller fails in automatic Cause: Instrument failure Effects: When HPCI is initiated, it will not reach sufficient speed to inject water into the reactor due to the flow controller failure. Operator action will be required in order to inject and/or control RPV pressure with HPCI.

ES-D-2

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Time Position **Applicant's Actions or Behavior** URO Recognize HPCI is not injecting after system startup. Respond to the failure by taking manual control of the HPCI flow controller and raising turbine speed. Manually control HPCI turbine speed as necessary to establish and control HPCI injection/RPV level. Report the HPCI flow control failure and current status of HPCI to CRS.

TERMINATION CRITERIA:

The scenario may be terminated when all Primary Containment parameters, RPV pressure and level, are stable and under control.