

Facility: <u> MNGP </u>		Scenario No.: <u> 1 </u>		Op-Test No.: <u> W90115 </u>	
Examiners: _____		Operators: _____		_____	
_____		_____		_____	
<p>Initial Conditions: <u>Approximately 90% reactor power, ready to complete Turbine-Generator test 1040-01 quarterly requirements and return to full power after turbine testing. Normal electrical lineup. RCIC is inoperable due to planned maintenance on the turbine stop valve and is scheduled to be returned to service tomorrow.</u></p>					
<p>Turnover: <u>Complete Test 1040-01 and raise reactor power to 100%. Load Dispatcher requests a rate of 5 – 7 MWe / minute.</u></p>					

Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N (BOP)	Complete steps 23-25 of test 1040-01. (Turbine Bypass Valve Exercise and Speed Load Changer Exercise portions of Turbine-Generator testing).		
2	N/A NI14D CH05	R (RO) I (RO) C (RO) (SRO)	Raise power with recirc pumps. APRM #4 Fails Inop Single Control Rod Scram due to failed RPS fuse and recovery T.S. LCO review for APRM		
3	HP01	I (BOP) (SRO)	HPCI inadvertent initiation T.S. LCO entry, shutdown requirement with RCIC inop		
4	HP07 HP08	M (ALL)	HPCI steam line break (ramp) Failure of group 4 isolation (HPCI Isolation Valves fail to close on PCIS automatic action) Unable to manually isolate HPCI		
5	CH22A	M (ALL)	EOP 1300 entry (Secondary Containment Control) EOP 1100 entry (RPV Control) Scram SDV failure to close (RPV – Secondary containment leak) scram will not reset (cannot isolate SDV)		
6	S054-01	C (BOP)	EOP 2002 entry (Emergency RPV Depressurization) 1 ADS SRV fails to manually open (opens 1 non-ADS SRV)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Op-Test No.: W90115Scenario No.: 01Event No.: 01

Page 2 of 13

Event Description: Complete steps 23-25 of Turbine – Generator test 1040-01. This is the portion of the test that is required to be performed quarterly and requires reactor power to be <90%. All required steps (1-22) have been already completed.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs the completion of the test steps 23 and 24.
	BOP	Reviews test steps
	BOP	Verifies reactor power is <90%
	BOP	Verifies Main Condenser vacuum is 24.5" or greater and the Circ Water system is in the normal lineup.
	BOP	<p>Performs step 23</p> <p>Records generator gross load</p> <p>Selects respective valve with BYPASS VALVE TEST pushbutton</p> <p>Time valve opening:</p> <p>Press BYPASS VALVE TEST pushbutton</p> <p>Time the bypass valve travel to the OPEN position by the change in position indication lights</p> <p>Record time to OPEN</p> <p>Record generator gross load</p> <p>Timing valve closing:</p> <p>Release the BYPASS VALVE TEST pushbutton</p> <p>Time the bypass valve travel to the CLOSE position by the change in position indication light</p> <p>Record time to CLOSE</p> <p>Return the BYPASS VALVE TEST SWITCH to the OFF position</p>
	RO	<p>Respond to annunciator 5-B-32 (MAIN STEAM LINE LEAKAGE)</p> <p>This alarm is expected when performing this test and the ARP may not be referred to.</p> <p>The ARP NOTE states that the alarm may initiate due to TBPV opening</p>
	BOP	<p>Performs step 24</p> <p>Slowly operates the SPEED LOAD CHANGER control switch in LOWER direction until a slight decrease in generator load is noted</p> <p>Observes control valve and bypass valve position</p>

Op-Test No.: <u>W90115</u>			Scenario No.: <u>01</u>			Event No.: <u>01</u>			Page 3 of 13		
Event Description: <u>Complete steps 23-25 of Turbine – Generator test 1040-01. This is the portion of the test that is required to be performed quarterly and requires reactor power to be <90%. All required steps (1-22) have been already completed.</u>											
						Verifies the bypass valve OPENS slightly as the control valves CLOSE to reduce load					
						After operating on the speed governor control for a few minutes, restore turbine control to the pressure regulator by operating the SPEED LOAD CHANGER in the RAISE direction					
						WHEN the pressure regulator takes control, THEN raise the SPEED LOAD CHANGER to its high speed stop.					
			RO			Respond to annunciator 5-B-32 (MAIN STEAM LINE LEAKAGE)					
						This alarm is expected when performing this test					
						The ARP NOTE states that the alarm may initiate due to TBPV opening					
			BOP			Notifies SRO that test steps 23 and 24 are completed.					

Op-Test No.: W90115Scenario No.: 01Event No.: 02

Page 4 of 13

Event Description: Raise reactor power with recirculation pumps from ~90% in order to achieve 100% power. At approximately 93.5% power annunciators will be received and a half scram will initiate due to #4 APRM failing INOP. Control Rod 10-43 will fully insert due to a failed fuse on the "A" scram bus. The crew should stop raising power, diagnose the failure, bypass the APRM and reset the half scram. The Nuclear Engineer will be consulted for guidance for the control rod and will be told to withdraw the control rod using continuous withdraw to return it to position 48. The SRO should also refer to Technical Specifications for the APRM and determine that no LCO condition is required.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs reactor power be raised to 100%
	SRO	Refers to C.2 POWER OPERATIONS: Verifies no changes were made to the rod pattern (Nuclear Engineer states no changes) Demands and Reviews 3D Monicore Periodic Log (Nuclear Engineer states all conditions are satisfied to raise reactor power to 98%) Verifies Hydrogen Water Chemistry is in service (Informed that it is) Verifies APRM readings against the NSSS Heat Balance at each of the following intervals: Every 10% power Every 15 minutes
	RO	Raises reactor power with recirc pumps by raising speed on both pumps and monitoring reactor power response
	BOP	Provides peer check
	RO	Acknowledge and report annunciators 5-A-3 (ROD WITHDRAW BLOCK), 5-A-30 (APRM HI HI INOP CHANNEL 4,5,6), 5-B-3 (REACTOR NEUTRON SCRAM TRIP), 5-B-5 (REACTOR AUTO SCRAM CHANNEL B) & 5-A-27 (ROD DRIFT).
	RO	Report Rx power, level, pressure
	RO	Informs SRO that APRM #4 Hi Hi or INOP light is lit and the APRM indicates the same power as the other APRMs
	RO	Informs SRO that control rod 10-43 has fully inserted (may initially diagnose that the blue scram light is lit and that the rod scrammed).
	BOP	Goes to back panel and observes on APRM #4 that the INOP light is lit and reports this to the SRO
	SRO	Directs #4 APRM bypassed when diagnosis is complete per 5-A-30
	SRO	Directs half scram be reset after APRM is bypassed per 5-B-5

Op-Test No.: W90115 Scenario No.: 01 Event No.: 02 Page 5 of 13

Event Description: Raise reactor power with recirculation pumps from ~90% in order to achieve 100% power. At approximately 93.5% power annunciators will be received and a half scram will initiate due to #4 APRM failing INOP. Control Rod 10-43 will fully insert due to a failed fuse on the "A" scram bus. The crew should stop raising power, diagnose the failure, bypass the APRM and reset the half scram. The Nuclear Engineer will be consulted for guidance for the control rod and will be told to withdraw the control rod using continuous withdraw to return it to position 48. The SRO should also refer to Technical Specifications for the APRM and determine that no LCO condition is required.

	RO	Bypasses #4 APRM
	RO	Resets half scram
	SRO	Determines T.S. applicability 3.1.A and verifies requirements of table 3.1.1 are met
	RO	Reviews ARP for rod drift and is sent to C.4-B.01.03.C (Control Rod Drifting): Verifies proper CRD system operating parameters Refers to B.01.03-05.H (CRD Hydraulic System – System Operation) (Which directs actions for B.05.05-05.G Recovery from an Inadvertent Control Rod Insertion) Verifies core thermal power and margins to thermal limits have not been exceeded
	RO	Refers to B.05.05-05.G.1 (RECOVERY FROM AN INADVERTENT CONTROL ROD INSERTION): Determines that only one control rod inadvertently inserted more than three notches into the core and proceeds to step 6. Determines that with reactor power >50%, the Nuclear Engineer must be notified for guidance.
	SRO	Notifies Ops manager, Engineering and Work Control
	SRO	When notified that the fuse was replaced for control rod 10-43 and when provided recovery guidance from the Nuclear Engineer, directs control rod 10-43 be returned to position 48 by continuous notch withdrawal.
	RO	Withdraws the control rod to position 48 using continuous notch withdrawal.

Op-Test No.: W90115Scenario No.: 01Event No.: 03

Page 6 of 13

Event Description: After crew brief or when directed by the lead evaluator, HPCI will inadvertently initiate. The crew is expected to note a change in MWe output and/or HPCI alignment for injection.

Actions to respond to the abnormal event are expected per C.4-G (INADVERTENT ECCS INITIATION). The SRO will determine that a 24 hour LCO is required.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	May report MWe lowering
	RO	Reports annunciator 5-B-24 (REACTOR WATER LEVEL HI/LO) Refer to C.4-B.5.07.A (LOSS OF REACTOR WATER LEVEL CONTROL) Notify Shift Supervision
	RO	Reports RPV water level is rising
	BOP	Reports HPCI initiation
	BOP	Notes D/W pressure <2 psig and RPV water level is >-48inches
	SRO	Directs HPCI shutdown
	BOP	Performs Actions to secure HPCI per C.4-G (INADVERTANT ECCS INITIATION): Depress and hold HPCI remote turbine trip PB Verify HPCI turbine stopped (observe zero speed) Place HPCI Aux Oil Pump in PTL After ~5 seconds, release HPCI remote turbine trip PB
	BOP	Report HPCI shutdown
	BOP	Performs subsequent Operator Actions of C.4-G: Investigate the cause of the initiation and correct WHEN the cause of initiation has been determined, AND the condition is corrected, AND the system reset, THEN return the affected systems to the desired lineup, as required by the current plant conditions.
	RO	Report Rx power, level, pressure
	SRO	Determines T.S. applicability (3.5.A.) Except as specified in section 3.5.A.3, the High Pressure Coolant Injection (HPCI) System and the Automatic Depressurization System (ADS) shall be operable whenever the reactor pressure is greater than 150 psig and irradiated fuel is in the reactor vessel except during reactor vessel hydrostatic tests. If the requirements or conditions of 3.5.A.1, 2 or 3 cannot be met, an orderly shutdown of the reactor shall be initiated and the reactor shall be placed in a condition which the affected

Op-Test No.: W90115 Scenario No.: 01 Event No.: 03 Page 7 of 13

Event Description: After crew brief or when directed by the lead evaluator, HPCI will inadvertently
initiate. The crew is expected to note a change in MWe output and/or HPCI alignment for injection.
Actions to respond to the abnormal event are expected per C.4-G (INADVERTENT ECCS
INITIATION). The SRO will determine that a 24 hour LCO is required.

		equipment is not required to be operable within 24 hours.
	SRO	Determines shutdown required by T.S.
	SRO	Notifies Ops manager, Engineering and Work Control
	SRO	Directs crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115Scenario No.: 01Event No.: 04

Page 8 of 13

Event Description: After the HPCI initiation event, a steam leak in the HPCI system becomes evident when annunciator 3-B-56 (HIGH AREA TEMP STEAM LEAK) alarms. HPCI area temperatures and radiation levels annunciator 4-A-11 REACTOR BUILDING HIGH RADIATION) will be observed to rise. EOP-1300 Secondary Containment Control, will be entered. The automatic group 4 primary containment isolation will not function and HPCI cannot be manually isolated.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Reports annunciator 3-B-56 (HIGH AREA TEMP STEAM LEAK):</p> <p>Monitor area temperatures as indicated by TR-4926 on C-21 and determine affected area(s).</p> <p>Refer to the following procedures:</p> <p>C.4-B.2.4.A (STEAM LEAKS OUTSIDE PRIMARY CONTAINMENT)</p> <p>C.5.1-1300 (SECONDARY CONTAINMENT CONTROL)</p> <p>A.2-101 (CLASSIFICATION OF EMERGENCIES)</p> <p>C.4-B.8.7.A (VENTILATION SYSTEM FAILURE)</p>
	BOP	<p>Reports annunciator 20-A-32 (HPCI ROOM V-AC-8B TROUBLE)</p> <p>Recognize both HPCI room fans are running</p>
	BOP	Reports EOP entry condition
	BOP	<p>Enters C.4-B.02.04.A, Steam Leaks Outside Primary Containment</p> <p>Evacuate personnel from area</p> <p>Isolate leak</p> <p>Monitor indications</p> <p>Scram</p>
	SRO	Directs check of secondary containment temperatures
	BOP	Reports HPCI area temperature is above (or approaching) max safe from TR-4626 (AREA TEMPERATURE MONITOR) on C-20 and (if checked), HPCI radiation levels are rising from SPDS screen 110 or HPCI room ARM on Panel C-20.
	BOP	<p>Reports annunciator 4-A-11 (REACTOR BUILDING HI RADIATION):</p> <p>Check ARM Indicator and Trip Units AND determine affected areas and radiation levels.</p> <p>Evacuate personnel from affected areas</p> <p>Notify Radiation Protection to survey area</p> <p>Consider initiating the EFT High Radiation Mode if there is detection of radiation outside or within the MCR.</p> <p>Refer to C.5 (EMERGENCY OPERATING PROCEDURES), A.2 (EMERGENCY PROCEDURES) and B.05.02 (AREA</p>

Op-Test No.: W90115Scenario No.: 01Event No.: 04

Page 9 of 13

Event Description: After the HPCI initiation event, a steam leak in the HPCI system becomes evident when annunciator 3-B-56 (HIGH AREA TEMP STEAM LEAK) alarms. HPCI area temperatures and radiation levels annunciator 4-A-11 REACTOR BUILDING HIGH RADIATION) will be observed to rise. EOP-1300 Secondary Containment Control, will be entered. The automatic group 4 primary containment isolation will not function and HPCI cannot be manually isolated.

		RADIATION MONITORING SYSTEM)
	SRO	Enters EOP-1300 (Secondary Containment Control) and directs: Isolate leak Operate area coolers
	BOP	Attempts to isolate HPCI Steam Isolation Valves: Takes the control switch for MO-2034 and MO-2035 to close (HPCI STEAM LINE ISOLATION VALVES) Reports MO-2034 will NOT close Reports MO-2035 cycles closed and back open (may diagnose this is due to the initiation signal)

Op-Test No.: W90115 Scenario No.: 01 Event No.: 05 Page 10 of 13

Event Description: Performs a Reactor Scram per C.4-A (Reactor Scram). The SDV vent valves will fail to close upon the scram, which provides an additional primary to secondary un-isolable leak. The attempt to isolate the leak by resetting the scram will not be successful.

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Enters EOP-1100 (RPV Control) and Directs Reactor Scram</p> <p>Determines un-isolable primary leak into the reactor building</p> <p>Directs scram before temperature, radiation level, or water levels exceed max safe parameter</p>
	RO	<p>Performs immediate scram actions of C.4-A (REACTOR SCRAM):</p> <p>Pushes manual scram PBs</p> <p>Places reactor mode switch in shutdown</p> <p>Reports "reactor scram, mode switch in shutdown, all rods inserted"</p>
	RO	<p>Performs subsequent scram actions C.4-A (REACTOR SCRAM):</p> <p>Control RPV water level</p> <p>Place low power feed controller in auto and set for ~15 inches</p> <p>Close both FRVs</p> <p>Close both FW block valves</p> <p>Insert IRMs and SRMs</p> <p>Select IRMs to recorders</p> <p>Verify SDV vent and drain valves isolate</p>
	BOP	<p>Performs subsequent scram actions C.4-A (REACTOR SCRAM):</p> <p>Announce reactor scram</p> <p>Verify electric plant line-up</p> <p>At 0 MWE, open 8N4 and 8N5 (disconnects)</p> <p>Trip main turbine</p>
	RO	Reports SDV vent valves open
	SRO	Directs SDV vent valve isolation by re-setting scram
	RO	<p>Attempts to re-set scram:</p> <p>Place DISCH VOL ISOL TEST switch to ISO</p> <p>Verify reactor mode switch in shutdown</p> <p>Place DISCH VOL HIGH WTR BYP switch in BYP</p> <p>Reset scram</p>

Op-Test No.: W90115Scenario No.: 01Event No.: 05

Page 11 of 13

Event Description: Performs a Reactor Scram per C.4-A (Reactor Scram). The SDV vent valves will fail to close upon the scram, which provides an additional primary to secondary un-isolable leak. The attempt to isolate the leak by resetting the scram will not be successful.

	RO	Reports scram will not reset (reset switch is overridden)
	SRO	Directs RPV cooldown not to exceed 97°F/hr
	BOP	Initiates RPV cooldown
	SRO	As 2 area radiation levels are approaching max safe conditions, may direct Anticipate Emergency Depressurization per EOP 1100 over-ride
	BOP	If directed to anticipate emergency depressurization, coordinate with the RO and open turbine bypass valves to initiate a reactor cooldown in excess of 97°F/hr

Op-Test No.: W90115Scenario No.: 01Event No.: 06

Page 12 of 13

Event Description: While continuing to monitor secondary containment temperature and radiation levels, when 1 area is above max safe and another is approaching max safe, the SRO may direct the "anticipation of emergency RPV depressurization and direct a cooldown exceed 97 F/hr. When 2 or more areas are above max safe, an emergency RPV depressurization will be performed. One of the 3 ADS SRVs will not open and an addition non-ADS SRV will be opened for a total of 3 SRVs. When the RPV is depressurized and RPV water level is stable, the scenario is complete.

Time	Position	Applicant's Actions or Behavior
	SRO	As 2 area radiation levels are approaching max safe conditions, may direct Anticipate Emergency Depressurization per EOP 1100 override.
	BOP	If directed to anticipate emergency depressurization, coordinate with the RO and open turbine bypass valves to initiate a reactor cooldown in excess of 97°F/hr
	BOP	Reports 2 area radiation levels are above max safe conditions
	SRO	Enters EOP 2002, Emergency RPV Depressurization: Verifies all rods inserted Verifies D/W pressure <2 psig Directs prevention of Core Spray and LPCI Verifies torus level > -5.9 ft Directs opening of 3 ADS SRVs
	SRO	Enters EOP 1200, Primary Containment Control: Directs Torus Cooling
	BOP	Initiates Torus Cooling: Verifies Tours suction valve open Starts RHRSW pump(s) and adjusts flows Open Torus Cooling INBD injection valve 8 seconds Starts RHR pump(s) Open RHR Discharge to Torus Open Torus Cooling INBD injection valve to adjust flow (4000gpm for 1 pump / 8000gpm for 2 pumps) Verify minimum flow valve closed Verify Heat Exchanger dP is at least 20 psid
	BOP	Opens 3 ADS SRVs
	BOP	Reports 1 ADS SRV will not open

Op-Test No.: W90115Scenario No.: 01Event No.: 06

Page 13 of 13

Event Description: While continuing to monitor secondary containment temperature and radiation levels, when 1 area is above max safe and another is approaching max safe, the SRO may direct the "anticipation of emergency RPV depressurization and direct a cooldown exceed 97 F/hr. When 2 or more areas are above max safe, an emergency RPV depressurization will be performed. One of the 3 ADS SRVs will not open and an addition non-ADS SRV will be opened for a total of 3 SRVs. When the RPV is depressurized and RPV water level is stable, the scenario is complete.

	SRO	Directs opening of 1 non-ADS SRV
	BOP	Opens 1 non-ADS SRV
	RO	Maintains RPV water level

Facility: MNGP Scenario No.: 2 Op-Test No.: W90115

Examiners: _____ Operators: _____

Initial Conditions: Approximately 100% reactor power. Normal electrical lineup. HPCI is inoperable due to planned maintenance on the auxiliary oil pump and is scheduled to be returned to service tomorrow. Surveillance test 0143, Drywell – Torus Monthly Vacuum Breaker Check is to be performed.

Turnover: Perform surveillance test 0143.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A PC07A	N (BOP) C (BOP) (SRO)	Perform test 0143, Drywell – Torus Vacuum Bkr Check “B” drywell – torus vacuum bkr fails to fully close T.S. LCO entry for PCIS
2	RR13A	I (RO)	Recirc Scoop Tube Lockout and Subsequent Reset
3	ED05E	C (BOP) C (RO) (SRO)	4160V AC Essential Bus #15 Lockout Loss of and start #12 CRD pump due to the bus lockout T.S. LCO entries due to loss of power
4	AP01A	C (BOP) R (RO)	‘A’ SRV fails open and is closed by pulling fuses Rapid Power Reduction due to open SRV
5	RR1B	M (ALL)	Leak inside Primary Containment / scram (ATWS)
6	PP04 PP06	I (RO)	EOP 1200 (Primary containment Control) and EOP 2007 (Failure to Scram) entry Rods insert when ATWS (ARI) initiation, exit EOP 2007

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

Op-Test No.: W90115 Scenario No.: 02 Event No.: 01 Page 2 of 16

Event Description: Performance of Surveillance test 0143, Torus-Drywell Monthly Vacuum Breaker
Check is to be executed. A marked up copy of the test to provide Shift Manager approval to
commence, reason for performance and prerequisites will be provided. During the performance of the
test for the second vacuum breaker, it will be found to stick in the partially open condition, which will
result in the termination of the test and a T.S. LCO entry.

Time	Position	Applicant's Actions or Behavior
	BOP	Reviews testing requirements and steps to perform
	SRO	Conducts or insures a pre-job brief per OWI01.09 is performed: Obtains an existing pre-job brief from the data base OR Uses the OPERATIONS PRE-JOB BRIEFING GUIDE
	BOP	Performs Step 1 of test: Directs out plant operator to open air isolation valve AI-215 Opens CV-7956 on panel C06
	BOP	Performs Step 2 of test: Selects AO-2382A, Torus-DW Vac Breaker, on valve select switch 16A-S60, Suppression Chamber to Drywell Vac Bkr Vlv Sel Sw (Panel C-04)
	BOP	Performs Step 3 of test: Opens AO-2382A by placing valve operation switch 16A-S61, Suppression Chamber to Drywell Vac Bkr Vlv Op Sw, (Panel C-04) to TEST
	BOP	Performs Step 4 of test: Verify AO-2382A OPENED by observing the following: The green indicating light is OFF and the red indicating light is ON above the valve select switch, 16A-S60 The green indicating light is OFF and the red indicating light is ON on the wall mounted cabinet in the northeast corner of the Reactor Building at elevation 935'.
	BOP	Performs Step 5 of test: Verify the following annunciators are in ALARM: 5-A-41 (CR VAC BKR DW/TORUS) 5-A-42 (LOCAL VAC BKR DW/TORUS)
	OATC/BOP	Reports Annunciator 5-A-41 (CR VAC BKR DW/TORUS) and 5-A-42 (LOCAL VAC BKR DW/TORUS)
	OATC/BOP	Reviews Annunciator Response and determines that the alarm was due to the surveillance test
	BOP	Performs Step 6 of test:

Op-Test No.: <u>W90115</u>	Scenario No.: <u>02</u>	Event No.: <u>01</u>	Page 3 of 16
Event Description: <u>Performance of Surveillance test 0143, Torus-Drywell Monthly Vacuum Breaker</u> <u>Check is to be executed. A marked up copy of the test to provide Shift Manager approval to</u> <u>commence, reason for performance and prerequisites will be provided. During the performance of the</u> <u>test for the second vacuum breaker, it will be found to stick in the partially open condition, which will</u> <u>result in the termination of the test and a T.S. LCO entry.</u>			
		Place valve operation switch 16A-S61 to OFF	
	BOP	Performs Step 7 of test: Verify AO-2382A CLOSED by observing the following: The green indicating light is ON and the red indicating light is OFF above the valve select switch, 16A-S60 The green indicating light is ON and the red indicating light is OFF on the wall mounted cabinet in the northeast corner of the Reactor Building at elevation 935'.	
	BOP	Performs Step 8 of test: Verify the following annunciators are RESET: 5-A-41 (CR VAC BKR DW/TORUS) 5-A-42 (LOCAL VAC BKR DW/TORUS)	
	OATC	Reports the following annunciators reset: 5-A-41 (CR VAC BKR DW/TORUS) 5-A-42 (LOCAL VAC BKR DW/TORUS)	
	BOP	Performs Step 9 of test: Select AO-2382B, Torus-DW Vac Breaker, on valve select switch 16A-S60 (Panel C-04)	
	BOP	Performs Step 10 of test: OPEN AO-2382 by placing valve operation switch 16A-61 (Panel C-04) to TEST.	
	BOP	Performs Step 11 of test: Verify AO-2382B OPENED by observing the following: The green indicating light is OFF and the red indicating light is ON above the valve select switch, 16A-S60 The green indicating light is OFF and the red indicating light is ON on the wall mounted cabinet in the northeast corner of the Reactor Building at elevation 935'.	
	BOP	Reports that BOTH the red and green indicating lights are lit.	
	OATC/BOP	Reports Annunciator 5-A-41 (CR VAC BKR DW/TORUS) and 5-A-42 (LOCAL VAC BKR DW/TORUS)	

Op-Test No.: <u>W90115</u>	Scenario No.: <u>02</u>	Event No.: <u>01</u>	Page 4 of 16
Event Description: <u>Performance of Surveillance test 0143, Torus-Drywell Monthly Vacuum Breaker</u>			
<u>Check is to be executed. A marked up copy of the test to provide Shift Manager approval to</u>			
<u>commence, reason for performance and prerequisites will be provided. During the performance of the</u>			
<u>test for the second vacuum breaker, it will be found to stick in the partially open condition, which will</u>			
<u>result in the termination of the test and a T.S. LCO entry.</u>			
	OATC/BOP	Reports that the ARP references Tech Specs 3.7.A.4 and requires notification of the system engineer	
	BOP	Requests the valve position from the Out Plant Operator and reports that BOTH indicating lights are lit.	
	BOP	Performs Step 13 of test: Place valve operation switch 16A-S61 (Panel C-04) to OFF	
	BOP	Reports that BOTH indicating lights remain lit	
	SRO	Directs termination of test	
	SRO	Notifies Ops Mgr, Engineering, and Work Control	
	SRO	<p>Enters T.S. LCO 3.7.A.4 and recognizes 24 hour LCO condition based on:</p> <p>When primary containment integrity is required, all eight drywell-suppression chamber vacuum breakers shall be operable and positioned in the closed position as indicated by the position indication system, except during testing and except as specified in 3.7.A.4.b through 3.7.A.4.d below.</p> <p>Any drywell-suppression chamber vacuum breaker may be nonfully closed as indicated by the position indication and alarm system provided that drywell to suppression chamber differential pressure decay does not exceed that shown on figure 3.7.1</p> <p>Up to two drywell-suppression chamber vacuum breakers may be inoperable provided that:(1) the vacuum breakers are determined to be fully closed and at least one position alarm circuit is operable or (2) the vacuum breaker is secured in the closed position or replaced by a blank flange.</p> <p>Drywell-suppression chamber vacuum breakers may be cycled, one at a time, during containment inerting and deinerting operations to assist in purging air or nitrogen from the suppression chamber vent header</p> <p>If requirements of 3.7.A.4 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours.</p>	
	SRO	Directs initiation of test 0213 as directed to be performed upon failure of test 0143	

Op-Test No.: W90115 Scenario No.: 02 Event No.: 02 Page 5 of 16

Event Description: After the crew has exited the Surveillance procedure, Annunciator 4-C-5 (FLUID DRIVE A SCOOP TUBE LOCK) will alarm. The #11 Recirc Pump scoop tube will be locked. Shortly after the annunciator alarms, a report from the plant will indicate that the out plant operator bumped against the Recirc MG lube oil pressure switch which caused the lockout condition. The crew is expected to reset the scoop tube based on this information.

Time	Position	Applicant's Actions or Behavior
	OATC	Responds to annunciators 4-C-5 / 4-C-10 (FLUID DRIVE A/B SCOOP TUBE LOCK): Reports alarm to SRO Verifies automatic actions If scoop tube lock is to be reset, refer to Ops Manual Section B.01.04-05.H.2.
	SRO	Acknowledges annunciator reports
	SRO	After report of cause for the lock by RP tech, Directs scoop tube be reset
	OATC	Performs Ops Manual Section B.01.04-05.H.2. Actions: Coordinates with the Reactor Building Operator to verify that the Adjustable Speed Drive (ASD) indication displays a steady state value of 0000 and that the ASD RUN pushbutton light is ON (green). Resets the Scoop Tube by depressing P/B 2A S2A
	OATC	Resets Annunciator and reports #11 Recirc Scoop Tube is Reset
	SRO	Acknowledges report
	SRO	May perform crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115Scenario No.: 02Event No.: 03

Page 6 of 16

Event Description: Essential Bus 15 lockout occurs as directed by the Lead Examiner. The BOP will respond to the electric plant alarms, observes 15 bus 0 voltage and lockout alarm and report to SRO. The RO will respond to the loss of the #11 CRD pump and start the #12 CRD pump. The SRO will enter a T.S. LCO recognize the requirement for a normal reactor shutdown.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to numerous annunciators on panel C08: Reports annunciator 8-B-18 (BUS 15 LOCKOUT) Verify Automatic Actions: 4160V Breakers associated with sources or breakers that could backfeed Bus 15 TRIP. (152-501, 152-502, 152-511, 152-308, 152-509) Enter C.4-B.9.6.C (LOSS OF BUS 15)
	BOP	Performs Subsequent Operator Action of C.4-B.09.06.C: Determine if Bus 15 is being powered by 1AR or its respective EDG Shutdown EDGs not required to supply their respective bus IF power was lost to Bus 15, THEN execute C.4-B.09.07.C (ABNORMAL PROCEDURES – LOSS OF POWER TO LC-103 OR ITS MCCS) concurrently. IF Bus 15 is de-energized, THEN perform the following: Place the following control switches in PULL-TO-LOCK: 152-511/CS, 1AR TRANS TO 15 BUS 152-502/CS, 11 STBY DIESEL GEN TO 15 BUS IF an extended loss of Bus 15 is anticipated, THEN consider feeding LC-103 from LC-104 per E.4-07 (RESTORE LC-103 FROM LC-104)
	BOP	Remote Shutdown of Diesel from C-08 with Emergency Start signal Present (Ops Man B0.9.08-05) In the back of Panel C-08, jumper terminals 5 and 6 on the Fast Start relay (95-7 for 11 EDG and/or 95-8 for 12 EDG) of the diesel(s) to be shutdown Place the control switch of the emergency diesel(s) to be shutdown in the "PULL-TO-LOCK" position. Remove the jumper from terminals 5 and 6 on the Fast Start relay 95-7 for 11 EDG and/or 95-8 for 12 EDG
	RO	Reports annunciator 5-B-17 (CHARGING WATER LO PRESS)

Op-Test No.: <u>W90115</u> Scenario No.: <u>02</u> Event No.: <u>03</u> Page 7 of 16		
Event Description: <u>Essential Bus 15 lockout occurs as directed by the Lead Examiner. The BOP will respond to the electric plant alarms, observes 15 bus 0 voltage and lockout alarm and report to SRO. The RO will respond to the loss of the #11 CRD pump and start the #12 CRD pump. The SRO will enter a T.S. LCO recognize the requirement for a normal reactor shutdown.</u>		
	RO	Performs Immediate Operator Actions of C.4-B.01.03.A (LOSS OF CRD PUMP FLOW) Verify a CRD pump is running (starts #12 CRD pump)
	RO	Reports reactor power, pressure and level.
	BOP	Performs Subsequent Operator Actions of C.4-B.09.07.C Monitor system operation and take appropriate actions for the following systems: RBCCW Stator Cooling Drywell Ventilation Service Water Hydrogen Seal Oil IF power to MCC-131 is lost, THEN refer to B.09.02-05.H.3, Less than Full Cooling for Generator Transformer, for permissible transformer loading IF annunciator 8-B-1 (NO. 2R XFMR TROUBLE0 is in ALARM, THEN verify B2145, 2R AUXILIARY XFMR COOLING AUTO TRANSFORMER SWITCH, has transferred to the alternate source (MCC-121) Verify or establish Primary Containment integrity, using the attached tables Verify or establish Secondary Containment integrity, using the attached tables IF power is lost to LC-103, THEN refer to the attached tables to determine items of concern: MCC-131 MCC-132 MCC-133A MCC-134
	BOP	Performs B.09.02-05.H.3: IF there is less than full cooling available for the generator transformer, THEN find the permissible load for any combination of pumps and fans out of service by the following method: Count the total number of fans which are out of service

Op-Test No.: <u>W90115</u>	Scenario No.: <u>02</u>	Event No.: <u>03</u>	Page 8 of 16
<p>Event Description: <u>Essential Bus 15 lockout occurs as directed by the Lead Examiner. The BOP will respond to the electric plant alarms, observes 15 bus 0 voltage and lockout alarm and report to SRO. The RO will respond to the loss of the #11 CRD pump and start the #12 CRD pump. The SRO will enter a T.S. LCO recognize the requirement for a normal reactor shutdown.</u></p>			
		<p>on the coolers which are still in operation (those with pumps running)</p> <p>Multiply the total number of pumps out of service by 3</p> <p>Add a. and b. (above) to obtain equivalent fans out of service</p> <p>Refer to the following table to obtain permissible load.</p> <p>NOTE: Loss of MCC-131 results in loss of 7 pumps and 21 fans</p> <p>Permissible load is determined to be 482 MVA / Equivalent Low Side Current KILOAMPS is 12.66</p> <p>Informs SRO of limits</p>	
	SRO	Directs lowering of reactor power to achieve <482 MVA or 12.66 Kilo Amps	
	SRO	<p>Enters T.S. to determine applicable LCOs:</p> <p>3.7.D.1 Primary Containment Isolation Valves (PCIVs)</p> <p>During reactor power operating conditions, all Primary Containment automatic isolation valves and all primary system instrument line flow check valves shall be operable as specified in 3.7.C.2</p> <p>In the event one or more penetration flow paths with two PCIVs inoperable, reactor operation in the run mode may continue provided that within the subsequent 1 hour restore the valves to operable status, or at least one valve in each line having inoperable valves is deactivated in the isolated condition</p> <p>3.5.A.1 ECCS Systems</p> <p>Except as specified in section 3.5.A.3, both Core Spray subsystems and the Low Pressure Coolant Injections (LPCI) Subsystem (LPCI Mode of RHR System) shall be operable whenever irradiated fuel is in the reactor vessel and the reactor water temperature is greater than 212°F</p> <p>If the requirements or conditions of 3.5.A.1, 2, or 3 cannot be met, an orderly shutdown of the reactor shall be initiated and the reactor shall be placed in a condition in which the affected equipment is not required to be operable within 24 hours</p> <p>3.7.B.1 Standby Gas Treatment System</p>	

Op-Test No.: W90115Scenario No.: 02Event No.: 03

Page 9 of 16

Event Description: Essential Bus 15 lockout occurs as directed by the Lead Examiner. The BOP will respond to the electric plant alarms, observes 15 bus 0 voltage and lockout alarm and report to SRO. The RO will respond to the loss of the #11 CRD pump and start the #12 CRD pump. The SRO will enter a T.S. LCO recognize the requirement for a normal reactor shutdown.

Two separate and independent standby gas treatment system circuits shall be operable at all times when secondary containment integrity is required, except as specified in sections 3.7.B.1

After one of the standby gas treatment system circuits is made or found to be inoperable for any reason, reactor operation and fuel handling is permissible only during the succeeding seven days...

3.4.A.1 Standby Liquid Control System

The standby liquid control system shall be operable at all times when fuel is in the reactor and the reactor is not shut down by control rods, except as specified in 3.4.A.2

From and after the date that a redundant component is made or found to be inoperable, reactor operation is permissible only during the following 7 days provided that the redundant component is operable.

3.9.A.1 Auxiliary Electrical Systems

The reactor shall not be made critical unless all the following requirements are satisfied:

At least two (2) NSP transmission lines, associated switchgear, and at least two offsite power sources are fully operational and energized to carry power to the plant 4160V AC buses as follows:

2R and 1R transformers, or

1R and 1AR transformers, or

2R and 1AR transformers (source from 10 transformer)

Both diesel generators are operable and capable of feeding their designated 4160 volt buses

4160V Buses #15 and #16 are energized

480V Load Centers #103 and #104 are energized

When the mode switch is in Run, the availability of electric power shall be as specified in 3.9.A, except as

Op-Test No.: W90115 Scenario No.: 02 Event No.: 03 Page 10 of 16

Event Description: Essential Bus 15 lockout occurs as directed by the Lead Examiner. The BOP will respond to the electric plant alarms, observes 15 bus 0 voltage and lockout alarm and report to SRO. The RO will respond to the loss of the #11 CRD pump and start the #12 CRD pump. The SRO will enter a T.S. LCO recognize the requirement for a normal reactor shutdown.

		specified in 3.9.B or the reactor shall be placed in the cold shutdown condition within 24 hours.
	SRO	Notifies Ops Mgr, Engineering, and Work Control
	SRO	May perform crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115 Scenario No.: 02 Event No.: 04 Page 11 of 16

Event Description: After the crew has stabilized conditions from 15 Bus lockout, the 'A' SRV will open. The immediate actions to close the SRV will be unsuccessful, but when RPV power is lowered and fuses are removed per C.4-B.03.03.A (STUCK OPEN RELIEF VALVE) the SRV will close. The crew man elect to initiate a manual scram as a conservative action.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Responds to annunciator 3-A-9 (AUTO BLOWDOWN RELIEF VLV LEAKING):</p> <p>Reports alarm to SRO</p> <p>Refers to C.4-B.03.03.B (RELIEF VALVE LEAKING)</p>
	OATC	<p>Responds to annunciator 5-A-46 (SRV OPEN):</p> <p>Reports alarm to SRO</p> <p>Check amber indicating light on Panel C03 to determine which valve is open.</p> <p>Refer to C.4 (ABNORMAL PROCEDURES)</p> <p>Verify proper instrumentation response as required by Technical specification Table 4.14.1, Note 4, per Procedure 0408a (SRV POSITION INDICATION RESPONSE CHECK).</p>
	SRO	Acknowledges annunciator reports
	BOP	<p>Performs Immediate Operator Actions of C.4.B.03.03:</p> <p>Place the handswitch for the affected SRV to the OPEN position and then return it to the normal position (Operator cycles 'A' SRV control switch)</p> <p>IF SRV D, G, or H open, THEN perform the following:</p> <p>Place their respective switches (2E-S4E, 2E-S4G, 2E-S4H on C-03) in CLOSE.</p> <p>Place DIV II Lo-Lo SET LOGIC switch (HS-S3B) on Control Room Panel C-253D in BYPASS. (not required for 'A' SRV)</p> <p>Notify Shift Supervision</p>
	SRO	Acknowledges annunciator reports
	RO	<p>Performs Subsequent Operator Actions:</p> <p>Monitor and control Reactor pressure</p> <p>If SRV remains open, THEN execute C-4-F (RAPID POWER REDUCTION) concurrently to reduce Reactor power.</p>
	SRO	Directs lowering of reactor power per C.4-F
	RO	<p>Performs Immediate Operator Actions of C.4-F:</p> <p>Reduce recirculation flow as necessary</p>

Op-Test No.: <u>W90115</u>	Scenario No.: <u>02</u>	Event No.: <u>04</u>	Page 12 of 16
<p>Event Description: <u>After the crew has stabilized conditions from 15 Bus lockout, the 'A' SRV will open. The immediate actions to close the SRV will be unsuccessful, but when RPV power is lowered and fuses are removed per C.4-B.03.03.A (STUCK OPEN RELIEF VALVE) the SRV will close. The crew man elect to initiate a manual scram as a conservative action.</u></p>			
		<p>IF core flow is <32 Mlbm/hr, THEN execute C.4-B.05.01.02.A (CONTROL OF NEUTRON FLUX OSCILLATIONS) concurrently</p> <p>IF condition require initiation of a manual scram, THEN execute C.4-K (IMMEDIATE REACTOR SHUTDOWN)</p> <p>Notify Shift Supervision</p>	
	RO	<p>Performs Subsequent Operator Actions of C.4-F:</p> <p>Determine if the reactor is operating in the allowed region of the power flow map:</p> <p style="padding-left: 40px;">IF an unanalyzed or unallowed region of the power-flow map is entered, THEN immediately exit by inserting control rods or changing recirculation flow.</p> <p>If time allows and conditions have stabilized for at least 5 minutes, demand an Official 3D-Monicores calculation and check thermal limits. If thermal limit Action Limits are reached, perform the appropriate actions per OPS Manual C.2-05.B.1. (this cannot be demanded from the simulator)</p> <p>IF power must be reduced further, THEN insert control rods to position 04 or deeper using RWM Rapid Power Reduction Menu</p>	
	BOP	<p>Performs Subsequent Operator Actions of C.4-B.03.03.A:</p> <p>IF SRVs A, B, C or D are open by an electrical signal RED LIGHT ON), THEN, remove the respective four (4) fuses listed below for the affected SRV(s):</p> <p>Directs the Reactor Building Operator to remove the following fuses located in the Cable Spreading Room Panel C-32:</p> <p style="text-align: center;">2E-F3A, 2E-F4A, 2EF7A, 2EF8A</p>	
	BOP	<p>Two minutes after the direction, the Reactor Building Operator reports that the fuses are pulled and the BOP observes that the 'A' SRV indicates closed.</p>	
	SRO	<p>Acknowledges report and directs reactor power reduction to be stopped.</p>	
	SRO	<p>Reviews T.S. and determines 1 ADS valve inoperable and enters a 14 day LCO per 3.5.A.3.h.</p>	
	SRO	<p>Notifies Ops Mgr, Engineering, and Work Control</p>	
	SRO	<p>May perform crew brief (Past, Present, Plan, Poll)</p>	

Op-Test No.: W90115 Scenario No.: 02 Event No.: 05 Page 13 of 16

Event Description: A leak develops in the Drywell. The BOP will observe and report Drywell leakage, temperature, and pressure rising. SRO directs reactor scram.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Reports annunciator 4-B-35 (DRYWELL – TORUS HI PRESS)</p> <p>Check Drywell and Torus pressure indicated by PR-2994 on C04</p> <p>Check the following indications to determine if a primary system leak in the Drywell exists:</p> <ul style="list-style-type: none"> Drywell Particulate level indicated by RR-7993 on C02 Drywell Equipment and Floor Drain Sump levels indicated by LR-7409 on C04 Drywell Equipment and Floor drain Sump Pump flows indicated by FR-2544 on C04 Drywell and Torus air temperature (TR 23-15 on C21) Drywell radiation level indicated by RI-7860A on C257 and RI-7860B on C258 <p>IF primary system leakage is indicated, THEN refer to C.4 (ABNORMAL OPERATING PROCEDURES) AND A.2 (EMERGENCY PROCEDURES)</p>
	BOP	<p>Performs Subsequent Operator Actions of C.4-B.04.04.F:</p> <p>Monitor Drywell pressure and temperature</p> <p>IF Drywell pressure or temperature is rising, THEN determine status of operating Drywell coolers, AND place the standby Drywell cooler in service</p> <p>IF the UNIDENTIFIED LEAK RATE has increased, THEN perform the following:</p> <ul style="list-style-type: none"> Monitor RBCCW surge Tank level and discharge pressure Monitor Recirc Pump Seal pressure <p>If the change in unidentified leak rate has increased by more than 0.5 gpm within any 24 hour period, THEN notify the Operations Manager, AND Manager System Engineering</p> <p>Refer to Tech Spec 3.6.D</p>
	BOP	Reports Drywell temperature and pressure approaching EOP entry conditions
	SRO	Directs reactor scram per C.4-K

Op-Test No.: W90115 Scenario No.: 02 Event No.: 06 Page 14 of 16

Event Description: When the SRO directs a reactor scram, the RO will insert a manual reactor scram, and observe and report all rods NOT fully inserted and reactor power >3%. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) AND 2007 (FAILURE TO SCRAM) are entered due to drywell conditions and failure to scram. The initiation of the ATWS (ARI) system will be successful and all control rods will insert. EOP 2007 will be exited and EOP 1100 will be re-entered. Drywell cooling, Torus spray and Drywell sprays will be initiated. When plant conditions are stable with Drywell Sprays secured, the scenario is complete.

Time	Position	Applicant's Actions or Behavior
	RO	Performs Immediate Operator Actions of C.4-K (IMMEDIATE REACTOR SHUTDOWN) Initiate a MANUAL REACTOR SCRAM by depressing REACTOR SCRAM A and B pushbuttons (5A-S3A AND 5A-S3B), then enter C.4-A (REACTOR SCRAM)
	RO	Performs Immediate Operator Actions of C.4-A: Places reactor mode switch in shutdown Determine if all control rods are inserted to or beyond position 04 Reports reactor scram, mode switch in shutdown, all rods NOT inserted, reactor power is >3% (or may provide indicated power level)
	BOP	Reports EOP entry conditions based upon drywell pressure and/or temperature
	SRO	Enters EOPs 1100, 1200, 2007
	SRO	Directs: ADS inhibited MSIV low low water level isolation bypassed Prevention of Core Spray Reactivity control per hard card
	BOP	Performs actions: Inhibits ADS by placing both ADS inhibit switches in bypass Bypasses MSIV isolation by placing all 4 key lock switches on back panel to bypass Prevents injection from Core Spray: Place CS INJECTION BYPASS switch to BYPASS Close CS INJECTION OUTBOARD valves Close CS INJECTION INBOARD valves

Op-Test No.: W90115Scenario No.: 02Event No.: 06

Page 15 of 16

Event Description: When the SRO directs a reactor scram, the RO will insert a manual reactor scram, and observe and report all rods NOT fully inserted and reactor power >3%. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) AND 2007 (FAILURE TO SCRAM) are entered due to drywell conditions and failure to scram. The initiation of the ATWS (ARI) system will be successful and all control rods will insert. EOP 2007 will be exited and EOP 1100 will be re-entered. Drywell cooling, Torus spray and Drywell sprays will be initiated. When plant conditions are stable with Drywell Sprays secured, the scenario is complete.

	RO	Performs Reactivity Hard Card actions: Verifies mode switch in shutdown Runs recirc pumps back to minimum speed Trips both recirc pumps Activates ATWS Inserts control rods per C.5-3101
	RO	Reports all control rods fully inserted
	SRO	Exits EOP 2007 and re-enters EOP 1100
	SRO	Directs drywell cooling initiated per C.5-3503
	BOP	Initiates drywell cooling: Place fan switches in off Bypass ECCS fan trip Starts fans (only 2 & 4 are available) Report drywell cooling in service
	SRO	Directs Torus Spray initiation per C.5-3502
	BOP	Initiates torus sprays: Place CNTMNT 2/3 height C/S to bypass Place CNTMNT Spray/Cooling LPCI initiation C/S to bypass Open MO-2006 Open MO-2010 Throttle open MO-2008 Line up RHRSW Report torus spray in service
	SRO	Observes drywell temperature and pressure continuing to rise and directs drywell sprays per C.5-3502
	BOP	Initiates drywell sprays: Place CNTMNT 2/3 height C/S to bypass

Op-Test No.: W90115Scenario No.: 02Event No.: 06

Page 16 of 16

Event Description: When the SRO directs a reactor scram, the RO will insert a manual reactor scram, and observe and report all rods NOT fully inserted and reactor power >3%. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) AND 2007 (FAILURE TO SCRAM) are entered due to drywell conditions and failure to scram. The initiation of the ATWS (ARI) system will be successful and all control rods will insert. EOP 2007 will be exited and EOP 1100 will be re-entered. Drywell cooling, Torus spray and Drywell sprays will be initiated. When plant conditions are stable with Drywell Sprays secured, the scenario is complete.

		Place CNTMNT Spray/Cooling LPCI initiation C/S to bypass Open MO-2021 Open MO-2023 Verify closed MO-2009 Verify closed MO-2012 & MO-2013
	SRO	Directs securing torus and/or drywell sprays when containment pressure lowers to 2 psig
	BOP	Continues to monitor drywell temperature and pressure and controls sprays as directed and manually secures Drywell Spray before Drywell pressure goes below 0 psig.
	SRO	May perform crew brief (Past, Present, Plan, Poll)

Facility: MNGP Scenario No.: 3 Op-Test No.: W90115

Examiners: _____ Operators: _____

Initial Conditions: Approximately 100% reactor power. Normal electrical lineup. HPCI is inoperable due to planned maintenance on the aux oil pump and is scheduled to be returned to service tomorrow. Surveillance test 0225-14-IA-1, Reactor Water Cleanup Valve Operability and Position Indication Tests is to be performed.

Turnover: Perform surveillance test 0225-14-IA-1.

Event No.	Malf. No.	Event Type*	Event Description
1	CH07B	C (RO)	CRD FCV fails closed
2	N/A DS165-02	N (BOP) C (BOP) (SRO)	Perform test 0225-14-IA-1 (shuts down RWCU) MO-2398 closure outside required range T.S. LCO entry due to test failure
3	FW20A	C (RO)	'A' FW REG valve lock up and subsequent reset
4	B54	(SRO)	Loss of power to Alternate S/D panel, T.S. LCO
5	FW15A FW16A	C (BOP) R (RO)	RFP bearing high temp / vibration RFP Remove from service Rapid Power Reduction to 50%
6	TU03D TU03E TC07B TC07D	C (BOP) M (ALL)	Main turbine vibrations with failure to auto trip Turbine Bypass Valves Failure to Open Scram due to turbine vibrations(ATWS)
7	PP04 PP06		ATWS, EOP 1100, 1200, & 2007 entry Level Power control and SBLC injection required

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

Op-Test No.: W90115Scenario No.: 03Event No.: 01

Page 2 of 12

Event Description: The RO may recognize CRD flow indications lowering or after about 2 minutes respond to annunciator 5-B-41 (CRD HI TEMPERATURE) and diagnose a failure of the in service CRD FCV. Actions to swap the in service CRD FCV will be initiated per B.01.03.

Time	Position	Applicant's Actions or Behavior
	RO	<p>Responds to annunciator 5-B-41 (CRD HI TEMPERATURE):</p> <p>Directs the Reactor Building Operator to determine the high temperature CRD by monitoring TR-3-244 at Panel C-59</p> <p>Refers to B.01.03 (CRD HYDRAULIC SYSTEM SYSTEM OPERATION)</p> <p>Notify Shift Supervision and System Engineer</p>
	SRO	Acknowledges report, direct swap to the B FCV
	RO	<p>Performs actions to swap FCV per B.01.03:</p> <p>If, CRD Flow Control Valve B, CV-3-19B, is in standby, and CRD Flow Control Valve, CV-3-19A, is in service, Then perform the following:</p> <p>Open valve CRD-18-2, Flow Control Valve CV-3-19B Outlet Isolation. (Out Plant Action)</p> <p>Open valve CRD-16-2, Flow Control Valve CV-3-19B Inlet Isolation. (Out Plant Action)</p> <p>Place CRD Flow Controller, FC-3-301, to manual</p> <p>Close CV-3-19A with CRD Flow Controller</p> <p>At Panel C-05, place the CRD Flow Control Valve Selector Switch to the B flow control valve position</p> <p>Slowly open CV-3-19B while monitoring system pressures with CRD flow controller to obtain desired flow. If recirc pump seal injection is in service, desired flow is 54 to 56 gpm minus 0.4 gpm for each isolated HCU.</p> <p>Place CRD Flow Control in auto</p> <p>Close valve CRD-18-1, Flow Control Valve CV-3-19A Outlet Isolation. (Out Plant Action)</p> <p>Close valve CRD-16-1, Flow Control Valve CV-3-19A Inlet Isolation. (Out Plant Action)</p>
	RO	Reports CRD FCV "B" in service
	SRO	Acknowledges Report
	SRO	Notifies Ops Mgr, Engineering, and Work Control

Op-Test No.: W90115Scenario No.: 03Event No.: 02

Page 3 of 12

Event Description: Performance of Surveillance test 0255-14-IA-1, Reactor Water Cleanup Valve Operability and Position Indication Tests is to be executed. A marked up copy of the test to provide Shift Manager approval to commence, reason for performance and prerequisites will be provided. The test requires the RWCU system be removed from service via normal procedure B.02.02-05. During the performance of the test MO-2398 stroke time will exceed the allowed time, which will result in the termination of the test and a T.S. LCO entry.

Time	Position	Applicant's Actions or Behavior
	BOP	Reviews testing requirements and steps to perform
	SRO	Conducts or insures a pre-job brief per OWI-01.09 is performed: Obtains an existing pre-job brief from the data base OR Uses the OPERATIONS PRE-JOB BRIEFING GUIDE
	BOP	Performs Step 1 of test 0225-14-IA-1: IF the Reactor Water Cleanup system is in operation, THEN place both filter-demineralizer units in HOLD, AND STOP both cleanup recirculation pumps using Ops Man B.02.02-05 (REACTOR WATER CLEANUP – SYSTEM OPERATION) Direct Reactor Building Operator to remove RWCU Filter/Demineralizers A and B and place in HOLD Stops #11 and #12 RWCU pumps
	BOP	Responds to annunciator 4-B-21 (CLEAN UP FILTER DEMIN FAILURE) Check RWCU Filter Demin Panel C-82 to determine alarm received Alarm received due to testing event, expected
	BOP	Performs Step 3 of test: CLOSE valve MO-2397, RWCU Inlet Inboard Isol, and record closing time. OPEN Valve MO-2397 and record opening time.
	BOP	Performs Step 5 of test: CLOSE valve MO-2398, RWCU Inlet Outboard Isol, and record closing time Observes and reports to SRO that closing time was >22 seconds and exceeded LST time
	SRO	Acknowledges report, directs test to be stopped and declares MO-2398 inoperable and review T.S. 3.7.D.1 During reactor power operating conditions, all Primary Containment automatic isolation valves and all primary system instrument line flow check valves shall be operable except as specified in 3.7.D.2 3.7.D.2.a: In the event one or more penetration flow paths with one PCIV inoperable, reactor operation in the run mode may continue provided that within the subsequent 4 hours (8 hours for MSIVs and 72 hours for EFCVs) restore the valve to operable status, or at least one valve in each line having an inoperable valve is deactivated in the isolated condition...
	SRO	Notifies Ops Mgr, Engineering, and Work Control

Op-Test No.: W90115Scenario No.: 03Event No.: 03

Page 4 of 12

Event Description: The A Feed Regulating Valve will lock up. Annunciator 5-B-40 (FW CONTROL VALVE LOCKED) will alarm. With the plant at steady state conditions, RPV water level will not be impacted and the B RFV will maintain RPV water level stable. The RO should enter and use procedure C.4-B.05.07.A to reset the lock out condition and then return the FW REG valve to automatic control.

Time	Position	Applicant's Actions or Behavior
	RO	<p>Responds to annunciator 5-B-40 (FW CONTROL VALVE LOCKED):</p> <ul style="list-style-type: none"> Reports alarm to SRO Monitor Reactor water level IF Reactor water level is NOT being maintained by the Reactor Water Level Control System, THEN refer to C.4-B.05.07.A (ABNORMAL PROCEDURE – LOSS OF REACTOR WATER LEVEL CONTROL) IF Reactor water level is being controlled manually, THEN one Operator shall be assigned to monitor and control Reactor water level. IF amber RESET lights for CV-6-12A (6A-S3A) and CV-6-12B (6A-S3B) are not illuminated, AND Annunciator B-5-32 (MAIN STEAM LEAKAGE) is also in ALARM, THEN refer to C.4-B09.13.E (ABNORMAL PROCEDURE – LOSS OF Y-30)
	RO	<p>Performs Immediate Operator Actions of C.4-B.05.07.A:</p> <ul style="list-style-type: none"> Control Reactor level in MANUAL using any unlocked FW REG valve M/A station. Notifies SRO
	RO	<p>Performs Subsequent Operator Actions of C.4-B.05.07.A:</p> <ul style="list-style-type: none"> IF both FW REG valves are locked up, THEN reset one valve as follows: (only one FW REG valve is locked) IF level control cannot be restored from the Control room, THEN dispatch an operator to take local manual control of the locked FW REG valve IF additional actions are required to control Reactor level, THEN use any or all of the following: <ul style="list-style-type: none"> FW LOW flow valve RWCU reject Recirc pump speed adjustment Throttling of FW Block valves MO-1133 and MO-1134 IF one of the FW REG valves is locked up, AND an attempt has NOT been made to reset the lockup, THEN perform the following to reset it: <ul style="list-style-type: none"> Verify M/A station in MANUAL Verify M/A station output meter is at the black memory pointer Verify no major air leakage at the valve Depress the reset pushbutton for the affected FW REG valve IF a FW REG valve is still locked up, THEN take local manual control per B.05.07-05 (REACTOR LEVEL CONTROL – SYSTEM OPERATION)

Op-Test No.: <u>W90115</u>	Scenario No.: <u>03</u>	Event No.: <u>03</u>	Page 5 of 12
<p>Event Description: <u>The A Feed Regulating Valve will lock up. Annunciator 5-B-40 (FW CONTROL VALVE LOCKED) will alarm. With the plant at steady state conditions, RPV water level will not be impacted and the B RFV will maintain RPV water level stable. The RO should enter and use procedure C.4-B.05.07.A to reset the lock out condition and then return the FW REG valve to automatic control.</u></p>			
		<p>Control Reactor level between 30 and 40 inches Notify the System Engineer to investigate the cause and correct if possible WHEN the cause has been corrected, THEN restore Reactor Level Control to automatic per B.05.07-05</p>	
	RO	Reports alarm 5-B-40 reset	
	RO	Reports FW REG valve lock up reset	
	SRO	Directs FW REG valve be returned to automatic	
	RO	<p>Performs action of B.05.07.A to return the FW REG valve to automatic: IF one Feedwater Control MAN/AUTO Station is in MANUAL and the other is in AUTO and automatic control of both Feedwater Regulating valves is possible and desired, THEN perform the following: Maintain Reactor Water Level between +30 and +40 inches If the Vessel Level Master Controller, 6-83, is in MANUAL, place it in AUTO by performing the following: Adjust setpoint dial on Vessel Level Master station, 6-83, to place the deviation meter needle in the green band, THEN place the Vessel Level Master station, 6-83, in AUTO Slowly adjust the Feedwater Control MAN/AUTO station that is in MANUAL until the station's output on the horizontal scale approximately matches the demand signal on the stations' vertical scale Place the Feedwater Control MAN/AUTO Station in AUTO Verify automatic control properly maintains desired level</p>	
	RO	Reports that the A FW REG valve is in automatic control	
	SRO	Notifies Ops Mgr, Engineering, and Work Control	
	SRO	May conduct crew brief (Past, Present, Plan, Poll)	

Op-Test No.: W90115Scenario No.: 03Event No.: 04

Page 6 of 12

Event Description: Annunciator 5-B-54, ASDS TRANSFER SW ACTVD OR PWR FAIL alarms due to a trip of supply breaker Circuit 14 on Y-80. The RO will send the outplant operator to investigate and the SRO will enter Technical Specifications to determine the LCO.

Time	Position	Applicant's Actions or Behavior
	RO	Responds to annunciator 5-B-54 (ASDS TRANSFER SW ACTVD OR PWR FAIL): Reports alarm to SRO Determines cause of alarm If power failure is cause, then dispatch operator to the EFT building, and direct operator to verify the following power supplies are available: Y-80 Circuit 14 D-100 Circuit 14 C-292 fuses
	SRO	Notifies the following per the ARP: Shift Supervision System Engineer Plant Electrician
	SRO	Refers to Technical Specifications 3.13.A: 3.13.A.1: The system controls on the ASDS panel shall be operable whenever that system/component is required to be operable... 3.13.A.2: If system controls required to be operable by Specification 3.13.A.1 are made or found to be inoperable, restore operability within 7 days, or perform one of the following; Provide equivalent shutdown capability and within 60 days restore the inoperable system controls to operable; or Establish a continuous fire watch in the cable spreading room and the back-panel area of the control room and within 60 days restore the inoperable system controls to operable; or Verify the operability of the fire detectors in the cable spreading room and the back panel area of the control room and establish a hourly fire watch patrol and within 60 days restore the inoperable system controls to operable; or Place the reactor in a condition where the systems for which the system controls at the ASDS are inoperable are not required to be operable within 24 hours.
	SRO	May conduct crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115Scenario No.: 03Event No.: 05

Page 7 of 12

Event Description: The #11 Reactor Feed Pump (RFP) will degrade. Alarms 6-A-26 (RFP BEARING HIGH TEMP) and 6-A-1 (RFP HIGH VIBRATION) will provide warning to the crew. The initial RFP vibration report will be 4.8 mils, which requires power reduction and RFP trip. Reactor power will be lowered rapidly to <50%, the RFP will be tripped. C.4-F (RAPID POWER REDUCTION) and C.4-B.05.01.02.A (NEUTRON FLUX OSCILLATIONS) will be entered.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Responds to annunciator 6-A-26 (RFP BEARING HIGH TEMP):</p> <ul style="list-style-type: none"> Reports alarm to SRO Monitors TR-1712 (Panel C-20) and determine affected bearing(s) Dispatch T.B. operator to the Turbine Building Monitor affected Reactor Feed Pump vibration (Panels C-297A and C-297B) Verify adequate Reactor Feed Pump lube oil flow and lube oil cooling. Refer to B.6.5-05 (CONDENSATE AND REACTOR FEEDWATER – SYTEM OPERATION) and perform concurrently with this procedure Notify System Engineer
	BOP	<p>Responds to annunciator 6-A-1 (RFT FEED PUMP P-2A HIGH VIBRATION):</p> <ul style="list-style-type: none"> Reports alarm to SRO Dispatch an Operator to investigate IF the Operator reports that the vibration level is in the ALERT range (2.5 to 4.5 Mils), THEN notify the Shift Supervision and System Engineer IF the Operator reports that the vibration level is in the DANGER range (>4.5 Mils), THEN perform the following: <ul style="list-style-type: none"> Reduce Rx power per C.4-F (RAPID POWER REDUCTION WHEN Rx Power is \leq 50%, THEN TRIP 11 RFP Notify System Engineer
	SRO	Directs Rapid Power Reduction per C.4-F to 50%, then trip #11 RFP
	RO	<p>Performs Immediate Operator Actions of C.4-F:</p> <ul style="list-style-type: none"> Reduce recirculation flow as necessary IF core flow is <32 Mlbm/hr, THEN execute C.4-B.05.01.02.A (CONTROL OF NEUTRON FLUX OSCILLATIONS) concurrently IF condition require initiation of a manual scram, THEN execute C.4-K (IMMEDIATE REACTOR SHUTDOWN) Notify Shift Supervision
	RO	<p>Performs Subsequent Operator Actions of C.4-F:</p> <ul style="list-style-type: none"> Determine if the reactor is operating in the allowed region of the power flow map: IF an unanalyzed or unallowed region of the power-flow map is entered, THEN immediately exit by inserting control rods or changing recirculation flow. If time allows and conditions have stabilized for at least 5

Op-Test No.: <u>W90115</u>		Scenario No.: <u>03</u>	Event No.: <u>05</u>	Page 8 of 12
<p>Event Description: <u>The #11 Reactor Feed Pump (RFP) will degrade. Alarms 6-A-26 (RFP BEARING HIGH TEMP) and 6-A-1 (RFP HIGH VIBRATION) will provide warning to the crew. The initial RFP vibration report will be 4.8 mils, which requires power reduction and RFP trip. Reactor power will be lowered rapidly to <50%, the RFP will be tripped. C.4-F (RAPID POWER REDUCTION) and C.4-B.05.01.02.A (NEUTRON FLUX OSCILLATIONS) will be entered.</u></p>				
		<p>minutes, demand an Official 3D-Monicores calculation and check thermal limits. If thermal limit Action Limits are reached, perform the appropriate actions per OPS Manual C.2-05.B.1. (this cannot be demanded from the simulator)</p> <p>IF power must be reduced further, THEN insert control rods to position 04 or deeper using RWM Rapid Power Reduction Menu</p>		
	BOP	At $\leq 50\%$ power, trips #11 RFP		
	RO	<p>Performs Immediate Operator Actions of C.4-B05.01.02.A:</p> <p>IF core flow is ≤ 32 Mlbm/hr, THEN determine if the stability BUFFER or EXCLUSION regions have been entered</p> <p>IF neutron flux oscillations are observed for any reason while operating in the stability BUFFER or EXCLUSION regions, THEN initiate a MANUAL REACTOR SCRAM</p> <p>Notify Shift Supervision</p>		
	RO	<p>Performs Subsequent Operator Actions of C.4-B.01.02.A:</p> <p>IF the stability EXCLUSION region is entered, OR the stability BUFFER region has been entered in an uncontrolled fashion, THEN immediately perform either of the following until the Reactor is operating outside of the stability BUFFER region:</p> <p style="padding-left: 40px;">Increase Recirculation flow, OR</p> <p style="padding-left: 40px;">Insert control rods using C.4-F (RAPID POWER REDUCTION)</p> <p>IF Reactor power is oscillating in response to pressure control perturbations, THEN refer to B.05.09-05 (MAIN STEAM PRESSURE CONTROL – SYSTEM OPERATION)</p> <p>IF an unanalyzed or unallowed region on the Power-Flow map is entered that is not part of the stability EXCLUSION or BUFFER regions, THEN immediately exit by inserting control rods or changing recirculation flow</p>		
	SRO	Notifies Ops Mgr, Engineering, and Work Control		
	SRO	May conduct crew brief (Past, Present, Plan, Poll)		

Op-Test No.: W90115 Scenario No.: 03 Event No.: 06 Page 9 of 12

Event Description: The rapid power change results in main turbine bearing vibrations. Annunciator 7-B-33 (TURB VIBRATION HIGH) will alarm. Vibrations will continue to rise requiring the crew to scram and initiate a turbine trip.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to annunciator 7-B-33 (TURB VIBRATION HIGH): Reports alarm to SRO Monitors Turbine vibration as indicated on VR-1716 (Panel C-07) IF Turbine vibration remains at 10 Mils, THEN refer to C.3 (SHUTDOWN PROCEDURES), AND remove the Turbine-Generator from service IF Turbine vibration is rising, THEN refer to C.4-F (RAPID POWER REDUCTION), AND remove the Turbine-Generator from service, WHEN reactor power has been reduced to 15% power IF Turbine vibration approaches 15 Mils, THEN perform the following: Reduce recirculation flow to minimum Initiate a manual Reactor scram Manually trip the Turbine-Generator Notify Shift supervision and System Engineer
	BOP	Reports turbine vibrations rising on 3 bearings and approaching 15 Mils
	SRO	Direct Reactor Scram per C.4-K and Turbine-Generator trip

Op-Test No.: W90115Scenario No.: 03Event No.: 07

Page 10 of 12

Event Description: An ATWS condition will exist when a reactor scram is initiated. The main turbine will automatically trip (if not manually tripped) on high vibrations. The turbine bypass valves will fail to open resulting in significant energy addition to the torus and reactor power / level swings. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) and 2007 (FAILURE TO SCRAM) will be entered. Alternate control rod insertion actions will allow individual rods to be inserted and level/power control will be utilized to control reactor power. The automatic RCIC flow controller fails downscale requiring manual operation to raise RPV water level after SBLC has been initiated and hot shutdown boron weight has been achieved. The scenario is terminated when RPV water level is returned to +9 - +48 inches.

Time	Position	Applicant's Actions or Behavior
	RO	Performs Immediate Operator Actions of C.4-K (IMMEDIATE REACTOR SHUTDOWN) Initiate a MANUAL REACTOR SCRAM by depressing REACTOR SCRAM A and B pushbuttons (5A-S3A AND 5A-S3B), then enter C.4-A (REACTOR SCRAM)
	RO	Performs Immediate Operator Actions of C.4-A: Places reactor mode switch in shutdown Determine if all control rods are inserted to or beyond position 04 Reports reactor scram, mode switch in shutdown, all rods NOT inserted, reactor power is >3% (or may provide indicated power level)
	BOP	Reports turbine trip, failure of TBPVs to open
	BOP	Reports EOP entry conditions based upon torus temperature
	SRO	Enters EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) and , 2007 (FAILURE TO SCRAM)
	SRO	Directs: ADS inhibited MSIV low low water level isolation bypassed Prevention of Core Spray Reactivity control per hard card
	BOP	Performs actions: Inhibits ADS by placing both ADS inhibit switches in bypass Bypasses MSIV isolation by placing all 4 key lock switches on back panel to bypass Prevents injection from Core Spray: Place CS INJECTION BYPASS switch to BYPASS Close CS INJECTION OUTBOARD valves Close CS INJECTION INBOARD valves
	RO	Performs Reactivity Hard Card actions: Verifies mode switch in shutdown Runs recirc pumps back to minimum speed Trips both recirc pumps Activates ATWS Takes actions per C.5-3101 De-energize scram logic by taking RPS system

Op-Test No.: <u>W90115</u>	Scenario No.: <u>03</u>	Event No.: <u>07</u>	Page 11 of 12
<p>Event Description: <u>An ATWS condition will exist when a reactor scram is initiated. The main turbine will automatically trip (if not manually tripped) on high vibrations. The turbine bypass valves will fail to open resulting in significant energy addition to the torus and reactor power / level swings. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) and 2007 (FAILURE TO SCRAM) will be entered. Alternate control rod insertion actions will allow individual rods to be inserted and level/power control will be utilized to control reactor power. The automatic RCIC flow controller fails downscale requiring manual operation to raise RPV water level after SBLC has been initiated and hot shutdown boron weight has been achieved. The scenario is terminated when RPV water level is returned to +9 - +48 inches.</u></p>			
		<p>subchannel test switches to TEST Increase cooling water differential pressure and use RMCS to insert control rods</p>	
	SRO	Directs SBLC injection	
	RO	<p>Initiates SBLC: Turns C/S to either system 1 or system 2 Verifies RWCU trips and the following valves closed MO-2397 MO-2398 MO-2399 Selected pump running light on Discharge pressure slightly higher than reactor pressure SBLC tank level lowering</p>	
	SRO	<p>Observes the following: RPV water level above -126 inches SRVs open Torus temperature above 110°F</p>	
	SRO	<p>Directs prevent RPV injection from: Condensate & Feedwater HPCI LPCI</p>	
	BOP	<p>Prevents RPV injection: Condensate & Feedwater Verify closed A main feed reg valve Verify closed B main feed reg valve Verify closed low flow feed reg valve HPCI If not running, place aux oil pump in PTL If running: Trip and hold P/B Verify stopped Place aux oil pump in PTL Wait 5 seconds, release P/B Verify HO-7 remains closed LPCI Open knife switches to bypass LPCI 5 min seal in Close LPCI INJ OTBD valves Reports systems are prevented to SRO</p>	
	SRO	Directs the following parameters monitored and reported:	

Op-Test No.: W90115Scenario No.: 03Event No.: 07

Page 12 of 12

Event Description: An ATWS condition will exist when a reactor scram is initiated. The main turbine will automatically trip (if not manually tripped) on high vibrations. The turbine bypass valves will fail to open resulting in significant energy addition to the torus and reactor power / level swings. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL) and 2007 (FAILURE TO SCRAM) will be entered. Alternate control rod insertion actions will allow individual rods to be inserted and level/power control will be utilized to control reactor power. The automatic RCIC flow controller fails downscale requiring manual operation to raise RPV water level after SBLC has been initiated and hot shutdown boron weight has been achieved. The scenario is terminated when RPV water level is returned to +9 - +48 inches.

		RPV water level reaches -126 inches Reactor power <3% SRVs remain closed
	RO	Reports reactor power (or RPV water level) is <3%, continues control rod insertion
	SRO	Directs RPV water level be maintained between the current level and -149 inches
	BOP	Recognizes RCIC running at minimum speed, reports to SRO, takes manual control
	SRO	Directs torus cooling
	BOP	Initiates torus cooling: Verifies RHR pumps running Opens MO-2007, MO-2009, Close MO-2003 Opens MO-2006, MO-2008, Close MO-2002
	RO	Reports SBLC tank level is at hot shutdown boron weight (1040 gal)
	SRO	Directs RPV water level be restored and maintained to +9 - +48 inches
	BOP	Slowly injects to RPV by: Raising RCIC flow rate and/or Injecting from feed and condensate

Facility: MNGP Scenario No.: 4 Op-Test No.: W90115

Examiners: _____ Operators: _____

Initial Conditions: Approximately 20% reactor power with a startup in progress. Current step in procedure C.1 is VIII.A.3. The initial next task to support the startup is to transfer control to the A main FW REG valve from the Low flow FW REG valve. Normal electrical lineup. HPCI is inoperable due to maintenance on the aux oil pump and is scheduled to be returned to service tomorrow.

Turnover: Continue reactor startup.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (RO)	Transfer to A FW REG valve from Low Flow Valve
2	CH02	R (RO) C (RO)	Continue power rise with control rods Withdrawal of CRD with High Drive Pressure
3	PP01A	I (RO) (SRO)	RPS EPA bkr failure Xfer RPS to Alt power supply T.S. LCO for EPA bkr failure
4	SW01A	C (BOP)	Respond to RBCCW pump trip
5	MC01A/B MC02A/B	C (BOP) SRO	High F.W. conductivity, scram, start RCIC, shutdown Condensate & Feedwater, close MSIVs, and shutdown Circ water T.S. LCO due to RPV conductivity
6	RR01B	M(ALL)	EOP 1100, 1200 entry Feed water block valve fail to open Low flow FRV fail closed Break on recirc line (ramp). Drywell temperature / pressure rise, Place torus and drywell sprays in service
7	RC03	C (BOP)	RCIC flow controller failure in auto, take manual control, subsequent RCIC trip Initiate 2 CRD pump and SBLC injection Emergency RPV Depressurization due to low RPV water level

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

Op-Test No.: W90115Scenario No.: 04Event No.: 01

Page 2 of 18

Event Description: A reactor startup is in progress with initial conditions being ~20% power. Current step of C.1 (STARTUP) is VIII.A.3. The initial task will be to transfer control to the A main FW Reg valve from the Low Flow FW Reg valve and continue to raise reactor power by withdrawing control rods.

Time	Position	Applicant's Actions or Behavior
	SRO	Conducts shift brief
	SRO	Directs one FW REG valve be place in service.
	RO	BEFORE feed flow exceeds the capacity of CV-6-13, Low Flow FW Reg valve (about 20%), THEN transfer control to one of the Main FW Reg valves per B.05.07-05 (REACTOR LEVEL CONTROL – SYSTEM OPERATION)
	RO	Refers to B.05.07-05 (Transfer of Level Control From FW LOW FLOW REG CV-6-13, to A MAIN FW REG VALVE CV-6-12A, and verifies prerequisite conditions: CV-6-13 Manual Loading Station Low Flow Valve (6-85) controlling level in AUTO A Main FW Reg Vlv, CV-6-12A is not LOCKED (CV-6-12A/B Lock Reset PB 6A-S3A (Panel C-05) is OFF
	RO	Continues with Operator Actions of procedure B.05.07-05: Verify the following initial conditions: MO-1133, Hp Fw Line A Block Valve is CLOSED CV-12A Feedwater Control M/A Station (6-84A) is in MANUAL CV-6-12A controller (6-84A) output reading ZERO (horizontal scale) CV-6-12A controller (6-84A) bias control reading ZERO, OR slightly negative CV-6-12B controller (6-84B) is in MANUAL CV-6-12B controller (6-84B) output reading ZERO (horizontal scale) CV-6-12B controller (6-84B) bias control reading ZERO, OR slightly negative Vessel Level (Feedwater) Master Control (6-83) is in MANUAL Master Control (6.83) output reading is ZERO (horizontal scale) OPEN MO-1133

Op-Test No.: W90115Scenario No.: 04Event No.: 01

Page 3 of 18

Event Description: A reactor startup is in progress with initial conditions being ~20% power. Current step of C.1 (STARTUP) is VIII.A.3. The initial task will be to transfer control to the A main FW Reg valve from the Low Flow FW Reg valve and continue to raise reactor power by withdrawing control rods.

		<p>Place CV-6-12A controller (6-84A) in AUTO</p> <p>Slowly OPEN CV-6-12A from Master Control (6-83)</p> <p>Monitor Reactor Level as flow is transferred from CV-6-13 to CV-6-12A</p> <p>Continue to OPEN CV-6-12A until Low Flow Valve controller (6-85) indicates CV-6-13 is approximately 5% open</p> <p>Transfer feedwater control to automatic by performing the following:</p> <p style="padding-left: 40px;">Verify 1/3 Element Control PB (6A-S2) is on Single Element control</p> <p style="padding-left: 40px;">Verify vessel level is between +30 and +40 inches</p> <p style="padding-left: 40px;">Adjust the setpoint of the Master Control (6-83) to ZERO the deviation meter (in green band), THEN switch the Master Control (6-83) to AUTO</p> <p style="padding-left: 40px;">Transfer Low Flow Valve controller (6-85) to MANUAL, THEN, slowly CLOSE CV-6-13</p> <p style="padding-left: 40px;">IF level was not at the desired level at the time of transfer, THEN gradually adjust setpoint of the Master Control (C-83) as desired between +30 and +40 inches</p> <p style="padding-left: 40px;">Verify automatic level control is functioning properly to maintain desired level</p> <p style="padding-left: 40px;">Adjust the setpoint of Low Flow Valve controller (6-85) 4 to 5 inches below the Master Level Control Setpoint</p>
	RO	Reports that the A FW REG valve is in service.
	SRO	Acknowledges report
	SRO	Directs reactor power be raised with control rods
	RO	Continues power increase by withdrawing control rods to ~30%

Op-Test No.: W90115 Scenario No.: 04 Event No.: 02 Page 4 of 18

Event Description: After the FRV has been placed in service, the crew will continue to raise reactor power by withdrawing control rods. The second control rod will not be able to be withdrawn with normal drive pressure and Operations Procedure B.01.03-05.H.4 (WITHDRAWAL OF A CRD UNDER HIGH DRIVE PRESSURE) will be used to withdraw the control rod.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs reactor power be raised with control rods
	OATC	Continues power increase by withdrawing control rods to ~30%
	OATC	Reports that the selected control rod will not withdraw under normal drive pressure and enters B.01.03-05.H.4 (WITHDRAWAL OF A CRD UNDER HIGH DRIVE PRESSURE)
	SRO	Acknowledges report
	OATC	Performs the actions from B.01.03-05.H.4: Raises drive water pressure to approximately 30 psid higher than initial value by throttling closed on MO 3-20, Drive Pressure to CRD and observing psid indication on DPI 3-303, Drive Water DIFF Press. Attempts to withdraw the control rod Reports that the control rod successfully withdraws Returns drive water psid to the previous pressure
	SRO	Acknowledges report.
	OATC	Continues power increase by withdrawing control rods to ~30%

Op-Test No.: W90115 Scenario No.: 04 Event No.: 03 Page 5 of 18

Event Description: After the control rod has been repositioned, the A RPS bus will be lost resulting in a half scram. Investigation will reveal a faulty EPA breaker downstream of the A RPS MG set. The SRO will review T.S. 3.1.C and then direct RPS bus A be powered from the alternate supply. The RO will reset the half scram.

Time	Position	Applicant's Actions or Behavior
	RO	Responds / reports numerous annunciators on panel C05
	BOP	Responds / reports numerous annunciators on panel C05
	ALL	Determines a loss of A RPS bus power
	BOP	Directs Reactor Building Operator to investigate Receives report that and EPA breaker indicates tripped and has an acrid smell Relays report to SRO
	SRO	Consults T.S. 3.1.C Except as specified below, both channels of the power monitoring system for the MG set or alternate source supplying each reactor protection system bus shall be operable with the following setpoints:... With one RPS electric power monitoring channels for the MG set or alternate source supplying each reactor protection system bus inoperable, restore the inoperable channel to Operable status within 72 hour or remove the associated RPS MG set or alternate power supply from service.
	SRO	Directs RPS bus A be powered from alternate power supply
	BOP	Coordinates with Reactor Building Operator to power RPS bus B from alternate supply per B.09.12
	SRO	Directs RPS half scram be reset
	RO	Resets half scram Turns Scram Logic Reset Switch on Panel C05: To the Grp 1 & 4 position AND To the Grp 2 & 3 position Resets annunciators
	SRO	Directs Secondary Containment Isolation be reset and SBGT be returned to STBY condition.
	SRO	May perform crew brief (Past, Present Plan, Poll)

Op-Test No.: W90115Scenario No.: 04Event No.: 04

Page 6 of 18

Event Description: This event begins with a trip of the running RBCCW pump with a subsequent failure of the standby pump to start on low pressure. The BOP operator should manually start the standby pump, observe system pressure restored, and report status to the SRO. RWCU will trip on high temperature and will be restarted.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to annunciator 6-B-32 (RBCCW LOW DISCH PRESS): Reports alarm to SRO Reports failure of standby pump to start Check system pressure If system pressure is less than 30 psig, Then refer to C.4-B.02.05.A (LOSS OF RBCCW FLOW)
	BOP	Performs actions of C.4-B.02.05.A (LOSS OF RBCCW FLOW): Verify a RBCCW pump is running Notify SRO that standby pump was started and is running and system pressure is returned to normal May dispatch operator to check status of RBCCW pumps
	BOP	Responds to RW CU pump trip on high temp due to RBCCW event (this is dependent upon the RBCCW flow/pressure and operator response time for restarting a pump), by reporting RWCU pump trip.
	SRO	Direct restoration of RWCU
	BOP	Restore RWCU per B.02.02-05: Verifies MO-2399, 2404 and 2405 closed Verifies F/D are precoated and in hold Verifies RWCU pumps not running Places switch 12A-S7 on Panel C-04 in Bypass Opens MO-2400 RWCU F/D bypass Throttles open MO-2399 Throttles open MO-3501 Starts RWCU pump Directs F/D placed in service Close MO-2400 Fully open MO-2399
	SRO	Acknowledges report and notifies Operations Manager, System Engineering

Op-Test No.: W90115

Scenario No.: 04

Event No.: 04

Page 7 of 18

Event Description: This event begins with a trip of the running RBCCW pump with a subsequent failure of the standby pump to start on low pressure. The BOP operator should manually start the standby pump, observe system pressure restored, and report status to the SRO. RWCU will trip on high temperature and will be restarted.

	SRO	May conduct crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115Scenario No.: 04Event No.: 05

Page 8 of 18

Event Description: This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Responds to annunciator 6-A-35 (COND DEMIN SYSTEM TROUBLE):</p> <p>Reports alarm to SRO</p> <p>Dispatch Turbine Building Operator to C-80 panel to investigate alarm</p> <p>Relays Turbine Building Operator report to SRO</p>
	BOP	<p>Responds to annunciator 4-B-1 (CLEAN UP HI CONDUCTIVITY)</p> <p>Reports alarm to SRO</p> <p>Notify the Shift Chemist to investigate high conductivity condition</p> <p>IF HWC has tripped and is determined to be the cause of the high conductivity condition, no further actions are required</p> <p>IF high conductivity condition is due to reactor shutdown, THEN no further actions are required</p> <p>Check Reactor Water conductivity recorded at CR-12-144 on C-04</p> <p>Check condensate demin and feedwater conductivities on process computer</p> <p>IF the source of high conductivity is the Reactor Water Cleanup F/D effluent, THEN, immediately remove the RWCU system from service in accordance with Ops Man Section B.02.02-05.F, Shutdown Procedures</p> <p>Backwash and precoat RWCU filter/demins if necessary in accordance with B.02.02-05 (REACTOR WATER CLEANUP – SYSTEM OPERATION)</p> <p>IF a main condenser tube leak is indicated, THEN refer to C.4-B.06.03.B (ABNORMAL PROCEDURES – CONDENSER TUBE LEAKAGE)</p> <p>Consider raising RWCU filter/demin flow to a maximum flow of 85 gpm each</p> <p>Notify Shift Supervision and System Engineer</p>
	SRO	Directs entry to C.4-B.06.03.B (CONDENSER TUBE LEAKAGE)
	BOP	Performs Subsequent Operator Actions of C.4-B.06.03.B:

Op-Test No.: W90115Scenario No.: 04Event No.: 05

Page 9 of 18

Event Description: This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.

		<p>Monitor condensate demineralizer conductivities</p> <p>Notify chemistry to initiate Reactor water sampling or monitor in-line instruments to determine ongoing conductivity and chloride changes</p> <p>Operate RWCU at maximum filter flow</p> <p>Directs Reactor Building Operator to raise RWCU filter/demin flows to 85 gpm on each filter/demin</p> <p>Monitor the following to determine the severity of the tube leakage:</p> <p>Condensate demineralizer inlet conductivity (SPDS FORMAT 603)</p> <p>Condensate demineralizer effluent conductivity (SPDS FORMAT 603)</p> <p>Hotwell level (including reject valve operation) (SPDS FORMAT 601)</p> <p>Reactor water conductivity on CR-12-144, Panel C-04</p> <p>IF tube leakage is such that Reactor water chemistry Tech Spec limits will eventually be reached, THEN enter C.3 (SHUTDOWN)</p>
	SRO	<p>Refers to Tech Specs 3.6.C.3</p> <p>Except as specified in 3.6.C.2.b above, the reactor coolant water shall not exceed the following limits with steaming rates greater than or equal to 100,000 lbs. per hour Conductivity 5umho/cm, Chloride ion 0.5 ppm</p> <p>If Specifications 3.6.C.1 through 3.6.C.3 are not met, an orderly shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours</p>
	BOP	<p>Performs Subsequent Operator Actions of C.4-B.06.03.B:</p> <p>IF a valid Condensate Demineralizer Influent Conductivity reading of greater than or equal to (\geq) 1.0 umho/cm is received, AND Condensate Demineralizer Conductivity shows an increasing trend, THEN perform the following:</p> <p>Reduce recirculation flow to a minimum</p> <p>Manually scram the Reactor and execute C.4-A (REACTOR SCRAM) concurrently with this procedure</p>

Op-Test No.: <u>W90115</u> Scenario No.: <u>04</u> Event No.: <u>05</u> Page 10 of 18		
Event Description: <u>This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.</u>		
	SRO	Directs reactor shutdown per C.4-B.06.03.B
	RO	Shuts down the reactor by performing the following: Reduce recirculation speed at minimum Insert a manual scram
	RO	Performs Immediate Operator Actions of C.4-A: Places reactor mode switch in shutdown Determine if all control rods are inserted to or beyond position 04 Reports reactor scram, mode switch in shutdown, all rods inserted
	RO	Performs Subsequent Operator Actions of C.4-A PART A: Verify C.4-A PART B is performed concurrently Control Reactor water level between +9" and +48" by performing the following: WHEN Reactor water level starts to increase, THEN perform the following as required: Place CV-6-13, Manual Loading Station Low Flow Valve in Auto with a level controller setpoint of 15" to 20" CLOSE both Main FW Reg Valves via their respective Feedwater Control M/A Station CLOSE MO-1133, HP FW Line A Block Valve, and MO-1134 HP FW Line B Block Valve WHEN Reactor water level reaches +15" to 20", THEN verify CV-6-13, Manual Loading Station Low Flow Valve, is CLOSED Monitor Reactor power Insert SRM and IRM detectors Switch recorders to IRM and continue to monitor power by ranging down the IRMs to maintain indication on scale Verify the Scram Discharge Volume vent and drain valves close

Op-Test No.: W90115Scenario No.: 04Event No.: 05

Page 11 of 18

Event Description: This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.

Verify that the Recirc pumps have runback to minimum speed or have tripped by performing the following:

IF the Recirc scoop tube is locked, THEN reset the scoop tube lock to allow the runback

IF the Recirc pump speed cannot be reduced to minimum speed, THEN trip the pump

IF any Recirc pumps have tripped, THEN perform the following:

CLOSE discharge valve for the tripped pump, AND after 5 minutes, give the discharge valve a 3 second OPEN signal.

Refer to B.01.04-05 (REACTOR RECIRCULATION SYSTEM – SYSTEM OPERATION) for methods of controlling temperature stratification

IF plant fed from 1R, THEN verify 115KV Voltage \geq 116.0KV (SUB101)

Restart the tripped recirc pumps

IF the Reactor scram can be RESET, THEN perform the following:

Place the DISCH VOL ISOL TEST switch (Panel C-05) in ISOL

Verify the REACTOR MODE switch in SHUTDOWN or REFUEL

Place the DISCH VOL HIGH WTR BYP switch in BYPASS

RESET the scram using the SCRAM RESET switch

Evacuate personnel from the Reactor Building 896' Floor and Equipment Drain Tank Room

WHEN all scram valves are CLOSED (blue scram lights OFF), THEN place the DISCH VOL ISOL TEST switch in NORM

Verify the SDV vent and drain valves OPEN

Verify the CRD scram accumulators recharge

WHEN Annunciator 5-B-30 (DISCH VOLUME TANK NOT DRAINED) is RESET, THEN, verify the DISCH

Op-Test No.: W90115Scenario No.: 04Event No.: 05

Page 12 of 18

Event Description: This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.

VOL HIGH WTR BYP switch in NORM		
		<p>Performs Subsequent Operator Actions of C.4-A PART B:</p> <p>Verify C.4-A PART A is performed concurrently</p> <p>Announce over the plant paging system that a Reactor scram has occurred</p> <p>IF opening 8N4 will result in a loss of power to 2R, based on known pre-scrum 345KV ring bus status, THEN perform a closed bus transfer from 2R to 1R as follows:</p> <p style="padding-left: 40px;">Place 152-302/CS 1R RES XRMR SEC TO 13 BUS ACB 152-302 to CLOSE (Panel C-08)</p> <p style="padding-left: 40px;">Place 152-301/CS 2R XFMR SEC TO 13 BUS ACB 152-301 to TRIP (Panel C-08)</p> <p style="padding-left: 40px;">Place 152-402/CS 1R RES XFMR SEC TO 14 BUS ACB 152-402 to CLOSE (Panel C-08)</p> <p style="padding-left: 40px;">Place 152-401/CS 2R XFMR SEC TO 14 BUS ACB 152-401 to TRIP (Panel C-08).</p> <p style="padding-left: 40px;">Place 152-102/CS 1R RES XFMR SEC TO 11 BUS ACB 152-102 to CLOSE (Panel C-08).</p> <p style="padding-left: 40px;">Place 152-101/CS 2R XFMR SEC TO 11 BUS ACB 152-101 to TRIP (Panel C-08).</p> <p style="padding-left: 40px;">Place 152-202/CS 1R RES XFMR SEC TO 12 BUS ACB 152-202 to CLOSE (Panel C-08).</p> <p style="padding-left: 40px;">Place 152-201/CS 2R XFMR SEC TO 12 BUS ACB 152-201 to TRIP (Panel C-08).</p> <p style="padding-left: 40px;">OPEN knife switch 16/C31 (Panel C-31).</p> <p><u>WHEN</u> Generator power is approximately 0 MWe, <u>THEN</u> OPEN 8N4 and 8N5.</p> <p>TRIP the Turbine using TURBINE EMERGENCY TRIP switch on C-07.</p> <p>IF the Turbine has tripped automatically or by operator action in the above step, THEN perform the following:</p> <p style="padding-left: 40px;">Verify that the Turbine-Generator field breaker is OPEN via light indication at C-08 or mechanical flag indication on the field breaker</p>
	BOP	

Op-Test No.: W90115Scenario No.: 04Event No.: 05

Page 13 of 18

Event Description: This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.

		<p>STOP the amplidyne by placing the REGULATOR TRANSFER switch to the OFF position</p> <p>START the Turbine auxiliary oil pump</p> <p>Verify Turbine exhaust hood sprays are in service</p> <p>IF Gland Seal steam is not available, THEN OPEN the Main Condenser vacuum breakers</p> <p>Verify the Main Steam pressure control system or LOW-LOW Set is controlling Reactor pressure</p> <p>Place the POST SCRAM switch on C-25 to ON, AND verify all available Drywell Recirculation Fans are operating in accordance with Ops Manual B.05.16-01 (DRYWELL ATMOSPHERE COOLING – FUNCTION AND GENERAL DESCRIPTION OF SYSTEM) Table 1.</p>
	BOP	<p>Performs Subsequent Operator Actions of C.4-B.06.03.B:</p> <p>IF a valid Condensate Demineralizer Influent Conductivity reading of greater than or equal to (\geq) 5.0 umho/cm is received, AND Condensate Demineralizer Effluent Conductivity shows an increasing trend, THEN perform the following:</p> <p>Manually initiate RCIC to maintain RPV water level</p>
	BOP	<p>Initiates RCIC per B.02.03-05 or may use Hard Card:</p> <p>At any time while performing this procedure, IF conditions permit, THEN place RHR in Torus Cooling for cooling/mixing the Torus water, per Ops Man Section B.03.04-05</p> <p>Verifies flow controller in AUTO and set to 80%</p> <p>OPEN MO-2096, RCIC Cooling Water Supply valve</p> <p>Place P-211 (RCIC Barometric Condenser Vacuum Pump) Handswitch, 13A-S15, in the START position</p> <p>OPEN CV-2104, RCIC Pump Minimum Flow Valve</p> <p>OPEN the following:</p> <p>MO-2107, RCIC Pump Disch Inbd valve</p> <p>MO-2106, RCIC Pump Disch Otbd valve</p> <p>OPEN MO-2078, RCIC Turbine Steam Supply valve</p> <p>Verify the following valves are closed:</p>

Op-Test No.: <u>W90115</u> Scenario No.: <u>04</u> Event No.: <u>05</u> Page 14 of 18		
Event Description: <u>This event begins with indications of high conductivity in the condensate and feedwater system that escalates to the extent that the crew will take actions per C.4-06.03.B and initiate a reactor scram and isolate the reactor from the problem by starting RCIC for level control and then securing condensate, feedwater, circ water and closing the MSIVs.</u>		
		<p>CV-2848 and CV-2849, RCIC Cond Pump Discharge to CRW</p> <p>CV-2082A and CV-2082B, RCIC Steam Line Drain to Main Condenser</p> <p>Verify SI-7321, RCIC Turbine Speed Indicator is increasing, indicating that unit is rolling</p> <p>Verify AO-13-22, RCIC Injection Testable Ckv, is open</p> <p>Verify RCIC pump flow is maintained at desired level</p>
	BOP	<p>Performs Subsequent Operator Actions of C.4-B.06.03.B:</p> <p>Secures Condensate and Feedwater by performing the following:</p> <ul style="list-style-type: none"> Close FRVs Stop both FW pumps Stop Recombiner condensate pumps Stop Condensate pumps <p>Secures Steam to the condenser by performing the following:</p> <ul style="list-style-type: none"> Close MSIVs Verify MSL Drain valves, MO-2373 and MO-2374 are closed <p>Isolate the circulating water flow to the condenser by performing the following:</p> <ul style="list-style-type: none"> Stop the circulating water pumps Verify the condenser outlet valves close <p>Close the condenser inlet valves, MO-1156 and MO-1157, using the local control switches</p>
	SRO	May conduct crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115Scenario No.: 04Event No.: 06

Page 15 of 18

Event Description: After the reactor has been isolated, a small primary system leak will develop in the drywell. When directed to re-establish condensate and feedwater, the feed water block valves will not open from the control room and the low flow feed reg valve will not function. SBLC injection and a second CRD pump will be started to inject water into the RPV.

Time	Position	Applicant's Actions or Behavior
	BOP	Reports RPV water level below +9 inches
	SRO	Enters EOP 1100 Directs RPV injections with Condensate and FW Directs RPV injection with SBLC Directs RPV injection with 2 CRD pumps Directs ADS inhibited
	BOP	Reports Drywell temperature and pressure rising / EOP 1200 entry condition
	RO	Starts Condensate and Feed water pumps and attempts to open FW block valves. Reports failure of block valves to open.
	SRO	Enters EOP 1200 (Primary Containment Control) Directs Drywell cooling initiated Directs Torus Sprays initiated
	RO	Places 2 nd CRD pump in service: Starts 2 nd pump Directs Reactor Building Operator to perform the following: Verify close MO-168 Open CRD-30 and CRD-8 Close CRD 7-1 and CRD 7-2
	RO	Initiates SBLC for RPV level control: Starts 1 SBLC pump Verifies injection
	BOP	Initiates drywell cooling: Place fan switches in off Bypass ECCS fan trip Starts fans (only 2 & 4 are available) Report drywell cooling in service
	BOP	Initiates torus sprays: Place CNTMNT 2/3 height C/S to bypass

Op-Test No.: W90115 Scenario No.: 04 Event No.: 06 Page 16 of 18

Event Description: After the reactor has been isolated, a small primary system leak will develop in the drywell. When directed to re-establish condensate and feedwater, the feed water block valves will not open from the control room and the low flow feed reg valve will not function. SBLC injection and a second CRD pump will be started to inject water into the RPV.

		Place CNTMNT Spray/Cooling LPCI initiation C/S to bypass Open MO-2006 Open MO-2010 Throttle open MO-2008 Line up RHRSW Report torus spray in service
	BOP	Inhibits ADS by placing both ADS inhibit switches in bypass
	SRO	May conduct crew brief (Past, Present, Plan, Poll)

Op-Test No.: W90115 Scenario No.: 03 Event No.: 07 Page 17 of 18

Event Description: The RCIC flow controller will fail in automatic. If the RCIC controller is taken to manual, for injection. Drywell temperatures and pressure will rise requiring drywell spray initiation. The leak rate will surpass the ability of make up systems requiring an Emergency Depressurization after RPV water level reaches -126 inches and before RPV water level reaches -149 inches. Three ADS SRVs will be opened and ECCS pumps will inject to restore RPV water level above TAF. ECCS will be secured as necessary to restore and maintain RPV water level between +9 - +48 inches.

Time	Position	Applicant's Actions or Behavior
	BOP	Reports the RCIC turbine injection is 0 and may diagnose the flow controller is failed in auto. If taken to manual, the injection rate will rise. (RCIC will subsequently after drywell sprays are initiated).
	BOP	Responds to annunciator 4-A-9 (RCIC TURBINE TRIPPED): Reports alarm to SRO Verify Rx water level is being maintained by FW and /or ECCS systems as necessary Determine cause of RCIC turbine trip, correct as necessary
	SRO	Observes drywell temperature and pressure continuing to rise and directs drywell sprays per C.5-3502
	BOP	Initiates drywell sprays: Place CNTMNT 2/3 height C/S to bypass Place CNTMNT Spray/Cooling LPCI initiation C/S to bypass Open MO-2021 Open MO-2023 Verify closed MO-2009 Verify closed MO-2012 & MO-2013
	SRO	When RPV water level is below -126 inches and before RPV water level reaches -149 inches, enters EOP 2002 (EMERGENCY DEPRESSURIZATION)
	SRO	Enters EOP 2002, Emergency RPV Depressurization: Verifies all rods inserted Verifies D/W pressure <2 psig Directs prevention of Core Spray and LPCI Verifies torus level > -5.9 ft Directs opening of 3 ADS SRVs
	BOP	Opens 3 ADS SRVs
	BOP/RO	Reports RPV water level above -126 inches (TAF)

Op-Test No.: W90115Scenario No.: 03Event No.: 07

Page 18 of 18

Event Description: The RCIC flow controller will fail in automatic. If the RCIC controller is taken to manual, for injection. Drywell temperatures and pressure will rise requiring drywell spray initiation.
The leak rate will surpass the ability of make up systems requiring an Emergency Depressurization after RPV water level reaches -126 inches and before RPV water level reaches -149 inches. Three ADS SRVs will be opened and ECCS pumps will inject to restore RPV water level above TAF. ECCS will be secured as necessary to restore and maintain RPV water level between +9 - +48 inches.

RO

Coordinates with BOP operator to monitor RPV water level and secure ECCS injection as necessary to end up with 1 Core Spray system maintaining level between +9 - +48