Scenario Outline

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

Examiners: Operators:

Objectives: To evaluate the applicants' ability to lower reactor power; respond to a failure of the selected FWLC Instrument, an isolable leak on the Core Spray System, a small break LOCA, and a loss of feedwater which leads to alternate depressurization.

Initial Conditions: 100% power, HPCI OOS. 'A' TBCCW pump is in service.

Turnover: The plant is operating at 100% power, HPCI is out of service for aux oil pump replacement. Currently in Day 2 of 14 day LCO. All required surveillances complete. 'B' TBCCW pump is out of service for maintenance, expected to return to service tomorrow. The Feedwater Flow Correction Factor is NOT applied.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Lower Rx power in response to report of 'B' RFP overheating. (To be verbally reported shortly after shift turnover.)
2	FW-24	I	Downscale failure of selected FWLC level instrument. (Inserted when directed by Chief Examiner.)
3	N/A Verbal Report	C	Leak on 'B' core spray suction (isolable). (Reported when directed by Chief Examiner.)
4	PC-01	M	Small Break LOCA. (Inserted when directed by Chief Examiner.)
5	ED-08	C	Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization. (Pre-inserted to occur upon A-1 transfer.)
6	RC-02	C	RCIC Turbine Trip. (Pre-inserted to occur when RCIC flow reaches 400 GPM.)

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

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Page 1 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	CRS	Receive report from electrical maintenance of overheating on the 'B' Reactor Feed Pump motor with the need to remove the pump from service as soon as practical.
	CRS	Brief crew on the power reduction. Direct the power reduction in accordance with PNPS 2.1.14.
	CRS	Direct reducing reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr.
	RO	Reduce reactor recirculation pump speed to reduce core flow to 39 Mlbm/hr. Monitor core flow reactor power, reactor pressure, and reactor water level on Panel C905.
	RO	Insert control rods in reverse order of the pull sheet. Monitor reactor power, reactor pressure, and reactor water level on Panel C905.
	CRS	When reactor power is reduced to less than 60%, direct removal of the 'B' Reactor Feed Pump from service.
	BOP	Turn the RFP TRIP SEQUENCE SELECT switch to OFF.
	BOP	Stop the 'B' RFP by placing Control Switch to STOP.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Page 2 of 2

Event Description: Lower Reactor Power in Response to Report of 'B' Reactor Feed Pump Overheating

Time	Position	Applicant's Actions or Behavior
	RO	Verify reactor water level.
	BOP	Acknowledge and reset all RFP annunciators.
	BOP	Verify amps are normal on Reactor Feed Pumps 'A' and 'C'.
	BOP	Verify RFP 'B' Aux Oil Pump auto starts.
	BOP	Verify RFP 'B' Recirc Valve (FV-3436) closes.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 1 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Rx feed pump high water level channel alarm downscale.
	RO/BOP	Refer to ARP.
	RO	Check feedwater narrow range level indication (LR-640-26 on Panel C905).
	RO	Determine which channel (A or B) is malfunctioning.
	RO	Select unaffected channel with Reactor Level Selector Switch on C905. **NOTE: CRITICAL TASK**
	RO	Recognize/announce #2 Speed Limiter Runback on Reactor Recirc Pump.
	RO	Refer to ARP.
	CRS	Direct resetting runback.
	RO	Lower demanded speed on both Reactor Recirc Pumps until a discernable speed decrease occurs. **Note:** This step may not be required if pump speed was already less than 44%.
	RO	Reset runback on both Reactor Recirc Pumps by momentarily depressing the runback reset pushbuttons.
	CRS	Direct I&C to investigate and correct cause of alarm.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 2 of 2

Event Description: Downscale failure of selected FWLC level instrument

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to Tech. Spec. Table 3.2.F.
	CRS	Enter 30 day active LCO for failure of one FWLC Level instrument.
	CRS	Brief crew on the need to manually trip the RFPs if the high level trip setpoint is exceeded.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 Page 1 of 1

Event Description: Leak on 'B' core spray suction (isolable). Report will be of three inches of water on the floor in the Quad with leak located between MO-1401-3B 'B' Core Spray suction and the 'B' Core Spray Pump.

Time	Position	Applicant's Actions or Behavior
	CRS	Recognize entry into EOP-04.
	CRS	Direct isolation of the 'B' Core Spray Pump Suction. (Closure of MO-1401-3B and placement of 'B' Core Spray Pump in Pull to Lock.)
	BOP	Obtain key and take keylock for MO-1401-3B to Close Position.
	BOP	Place 'B' Core Spray Pump in Pull to Lock.
	CRS	Recognize entry condition/enter Tech Spec 3.5.C.2. and 3.5.C.3 Recognize with HPCI OOS and Core Spray inoperable that 3.5.C.3 requires the plant to be in cold shutdown within 24 hours.
	CRS	Brief crew, inform ODM and make preparation for plant shutdown.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 1 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Direct venting of the drywell.
	BOP	Open AO-5043A, Drywell Normal Exhaust Isolation Valve.
	BOP	Open AO-5043B, Drywell Normal Exhaust Isolation Valve.
	BOP	Verify open or open: a) AO-N-98, Contaminated Exh to SGTS Inlet Plenum b) AO-N-101, Refuel Floor Exh to SGTS Inlet Plenum

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 2 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Verify or establish: a) AO-N-99, Train 'A' Inlet Damper, is open b) AO-N-108, Train 'A' Outlet Damper, is open c) VEX-210B, Standby Gas Fan 'B', in standby d) Start VEX-210A, Standby Gas Fan 'A', Panel C7 by placing the control switch in "Run"
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "Shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01/03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 3 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 4 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 5 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 6 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 7 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 8 of 8

Event Description: Small Break LOCA

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 - +45 inches using Table 'A'.

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Page 1 of 1

Event Description: Lockout of bus A-1 (Loss of Feedwater) leading to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce lockout of Bus A-1 and Loss of Feedwater
	CRS	Direct investigation of bus A-1 lockout.
	CRS	Direct restarting the 'B' Reactor Feed Pump.
	BOP	Restart the 'B' Reactor Feed Pump.
	BOP	Recognize/announce the immediate trip of the 'B' Reactor Feed Pump.
	CRS	Direct injection with RCIC.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 Page 1 of 2

Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)

Time	Position	Applicant's Actions or Behavior
	BOP	Momentarily depress the RCIC System Injection Mode push button. (Following are actions for auto mode, the candidate may elect to use manual mode).
	BOP	Verify the MANUAL START SEQUENCE indicating light is energized.
	BOP	Verify the following: - MO-1301-61, TURBINE SUPPLY VALVE, has opened. - MO-1301-49, INJ VLV #2, has opened. - MO-1301-60, PUMP MIN FLOW VLV closes when flow exceeds 100 GPM - AO-1301-34 and AO-1301-35, STEAM LINE DRN VLVs, close. - AO-1301-12 and AO-1301-13, BAROMETRIC CONDR DRN VLVs, close - MO-1301-62, COOLING WTR SUPPLY VLV, opens. - P-222, VACUUM PUMP, starts. - P-221, CONDENSATE PUMP, starts. - RCIC flow levels off and stays at 400 GPM, indicating that FIC-1340-1, INJECTION FLOW CONTROL, has control of turbine speed.
	BOP	Perform the following: (**Note:** These are the steps for manual mode. The candidate may elect to use the auto mode) Verify FIC-1340-1,INJECTION FLOW CONTROL, is in AUTO and set for 400 GPM - OPEN/VERIFY OPEN MO-1301-62, COOLING WTR SUPPLY VLV - START/VERIFY RUNNING P-222, VACUUM PUMP - OPEN/VERIFY OPEN MO-1301-60 PUMP MIN FLOW VLV - SIMULTANEOUSLY OPEN MO-1301-61, TURBINE SUPPLY VLV AND MO-1301-49 INJ VLV #2 - OBSERVE that flow is supplied to reactor vessel and stabilizes at 400 GPM. - VERIFY MO-1301-60, PUMP MIN FLOW VLV closes as flow increases. - MONITOR system operation and adjust FIC-1340-1 as necessary to maintain desired reactor water level

Scenario Outline

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 Page 2 of 2

Event Description: RCIC Turbine Trip (inserted after flow stabilizes at 400 GPM)

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce RCIC turbine trip.
	BOP	Check RCIC Turbine Stop Valve closed.
	BOP	Close MO-1301-49 INJ VLV #2.
	CRS	Direct NLO to check RCIC turbine. (Report will be that the turbine trip throttle valve is tripped and problems are being encountered in getting the valve to stay reset.)

Scenario Outline

Facility: Pilgrim Scenario No.: 2 Op-Test No.: 2

Examiners: Operators:

Objectives: To evaluate the applicants' ability to place the third RFP in service, respond to squib valve failure, APRM upscale failure, and loss of vacuum resulting in an incomplete scram with SBLC failure.

Initial Conditions: 58% power, no equipment out of service.

Turnover: The plant is starting up from a one week outage for equipment repairs. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to place the third RFP in service and continue with the power ascension. PNPS 2.2.96 has been completed through Step 7.3.1[7] for starting the 'A' RFP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place third RFP in service. (Direction given in shift turnover.)
2	I/O	C	Failure of 'A' squib valve. (Inserted upon direction of Chief Examiner.)
3	NM-20	I	APRM 'B' upscale failure. (Inserted upon direction of Chief Examiner.)
4		M	Loss of vacuum – ATWS. (Loss of vacuum inserted upon direction of Chief Examiner. ATWS is pre-inserted.)
5	TC-14	C	Main Turbine bypass valves fail to open. (Pre-inserted)
6	LP-01/ LP-02	C	Trip of 'B' SBLC pump/discharge line of 'A' SBLC clogged. (Pre-inserted)

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

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 1 Page 1 of 2

Event Description: Place third RFP In Service

Time	Position	Applicant's Actions or Behavior
	CRS	Direct/brief placing 'A' RFP in service
	BOP	Direct NLO to adjust the RFP lube oil cooler(s) TBCCW outlet valve(s) to maintain 90°F to 110°F oil temperature.
	BOP	Verify that the RFP suction pressure is greater than 250 psig.
	BOP	Place the associated RFP 'A' recirc valve (A=FV-3435) control switch (Panel C1) in the "Open" position.
	BOP	Verify that the RFP trip sequence enable switch is in "off" (Panel C1).
	BOP	Start RFP by placing C/S on Panel C1 in "start" position.
	RO	Verify reactor water level.
	RO	Verify total feedwater flow.
	BOP	Place associated RFP 'A' recirc valve control switch (A=FV-3435) on Panel C1 in "Auto".
	BOP	Verify the following reactor feed pumps indicators on Panel C1: (a) PI-3429, Suct Press (b) PI-3448, Disch Press RFP 'A' (c) PI-3458, Disch Press RFP 'B' (d) PI-3468, Disch Press RFP 'C'
	BOP	Verify appropriate reactor feed pumps RFP 'A', 'B', or 'C' motor current indicators on Panel C1 for normal operating amperage (approximately 600 amps.).

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 1 Page 2 of 2

Event Description: Place third RFP In Service

Time	Position	Applicant's Actions or Behavior
	BOP	Verify associated auxiliary L.O. Pump RFP 'A', '(P-152A) has auto-shutdown light indication (Panel C1).
	BOP	Have NLO verify RFP lube oil cooler(s) TBCCW outlet valves are returned to the full open position.
	BOP	Place RFP trip sequence select switch in sequence desired, then place RFP trip sequence enable switch in "on" position.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 2 Page 1 of 1

Event Description: Failure of 'A' Squib Valve

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce Squib Vlv Continuity Failure Alarm.
	CRS/RO	Refer to ARP.
	RO	Check amber squib valve continuity lights (1106A, 1106B) on Panel C905.
	RO	Check ammeters on back of Panel C905.
	RO	Determine which circuit is experiencing a loss of continuity.
	CRS	Direct troubleshoot and repair of faulty circuit.
	CRS	Ensure Tech. Spec. 3.4.B and 3.4.C/4.4.3 are satisfied.
	CRS	Enter 7 day LCO for SBLC failure.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 3 Page 1 of 1

Event Description: APRM 'B' Upscale Failure

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce RPS Channel 'B' APRM Hi-Hi INOP Alarm.
	RO	Check reactor power at C905 and Recirc Pumps 'A' & 'B' flow at Panel C904.
	RO	Check APRM status lights on Panel C905.
	RO	Bypass the alarming APRM channel and reset half-scram as directed.
	CRS	Direct I&C to investigate and correct cause of HI-HI INOP condition.
	CRS	Ensure Tech. Specs. 3.1 and 3.2.C are satisfied. Initiate tracking LCO for APRM 'B' failure.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 1 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	ALL	Recognize/announce lowering condenser vacuum.
	CRS	Direct actions of PNPS 2.4.36.
	RO	Reduce reactor power in accordance with PNPS 2.1.14, Sections 7.10 and 7.11 to stop the vacuum decrease.
	RO	Reduce Reactor Recirc Pump Speed to lower core flow to 39 Mlbm/hr.
	RO	Insert Control Rods using Reverse Order of Pull Sheet or Rapid Power Reduction Array as directed.
	CRS	When main condenser vacuum is lowering and is approaching the Turbine trip setpoint (22") with no indication of recovering, then prior to Turbine trip, order manual reactor scram. **Note:** If the crew is able to stabilize vacuum with the air-in leakage malfunction maximized, the vacuum breakers will be opened from the IF upon direction from the examiners.
	RO	Recognize/announce failure to scram: - Initiate ARI - Verify/runback recirc pumps to minimum - Verify reactor power above 3% - Trip both reactor recirculation pumps
	CRS	Notify Reactor Engineering.
	CRS	Direct inhibiting ADS.

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 2 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	RO	Insert control rods using PNPS 5.3.23: - Order CRD-25 valve closed - Bypass Rod Worth Minimizer - Throttle closed MO-302-8 to raise drive water pressure by 50 psi - Rapidly insert RPR rods - Rapidly insert ROPS rods
	CRS	Direct I&C to bypass RPS and ARI trips.
	RO	When I&C reports RPS and ARI trips are bypassed: - Reset scram on panel C905 - Place air dump test switch to isolate - Verify "SPVAH Pressure Lo" alarm clear - Place air dump test switch to norm - When "SDIV Level Hi" or "SDIV East Not Drained" and SDIV West Not Drained" are clear, initiate a manual scram - Repeat above scram/reset scram steps **NOTE: CRITICAL TASK**
	RO	Maintain level –125 to +45 with FWLC in auto until below 10% power. Level control should then be placed on Startup Feed Reg Valve.

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 3 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	CRS	Direct terminating/preventing injection if: 1) BIIT is exceeded 2) DW pressure is 2.2 psig or an SRV is open 3) Reactor power >3% 4) Level above TAF **NOTE:** This is not expected when started from approximately 60% power.
	RO/BOP	If/when directed to terminate/prevent injection: 1) Close FRV downstream block valve 2) Close S/U FRV 3) Place core spray pumps in PTL 4) Place HPCI aux oil pump in PTL 5) Trip RCIC turbine 6) Place RHR pumps in PTL except as needed for containment/cooling
	CRS	Direct placing torus cooling in service
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 4 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" OR (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". AND • Place the LPCI override switch "manual override".
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 5 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	CRS	Direct placing H_2/O_2 monitoring in service when time permits.
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 6 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Op-Test No.: 2 Scenario No.: 2 Event No.: 4 Page 7 of 7

Event Description: Loss of Vacuum – ATWS

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 5 Page 1 of 1

Event Description: Main Turbine bypass valves fail to open.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed.

Scenario Outline

Op-Test No.: 2 Scenario No.: 2 Event No.: 6 Page 1 of 2

Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged

Time	Position	Applicant's Actions or Behavior
	CRS	Direct initiation of SBLC as required by EOP-02 or Operations Policy Statement.
	RO	Start one SBLC system by placing the SLC ACTUATE switch to SYS A or SYS B position on Panel C905 (**Note:** Candidate will likely choose SYS 'B' due to earlier failure of SYS 'A' squib valve).
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. (**NOTE:** This annunciator will already be on due to earlier failure of squib valve.) - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
	RO	Recognizes/reports that the 'B' SBLC pump trips immediately after starting.
	CRS	Direct using other train of SBLC.
	RO	Start the other SBLC train with the SLC ACTUATE switch. (**Note:** The "Other" train is probably the 'A' train.)

Op-Test No.: 2 Scenario No.: 2 Event No.: 6 Page 2 of 2

Event Description: Trip of 'B' SBLC Pump/Discharge Line of 'A' SBLC Clogged

Time	Position	Applicant's Actions or Behavior
	RO	Verify the following: - SQUIB VLV CONTINUITY FAILURE annunciator is ON. (**Note:** This annunciator will already be on due to earlier failure of squib valve.) - SQUIB VAVLE CONTINUITY light for selected system is OFF. - Red STANDBY LIQUID CONTROL PUMP 'A' or PUMP 'B' motor running light for the selected system is ON. - Reactor Cleanup System isolation, if system operating, and alarm "DEMIN FAILURE" is ON. - Pump discharge pressure indicator on PI-1140-1, INJ HDR PRESS. - Reactor power decreasing. - Decreasing level on Storage Tank Level Indicator (LI-1140-2 on C905) - STORAGE TANK LEVEL HI/LO alarm is ON.
		Recognize/report that after starting the 'A' SBLC train, the 'A' SBLC pump discharge pressure is high (approximately relief valve setpoint) and that tank level is not lowering.
	ALL	Determine that SBLC is not injecting boron.
	CRS	Direct injection of SBLC using RWCU.

Scenario Outline

Facility: Pilgrim Scenario No.: 3 Op-Test No.: 3

Examiners: Operators:

Objectives: To evaluate the applicants' ability to place the standby RBCCW pump in service, respond to a trip of an RPS MG set resulting in a single rod scram, loss of RBCCW leading to high drywell temperature and alternate depressurization with a failure of one SRV to open.

Initial Conditions: 100% power, no equipment out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. It was reported last shift that SBLC tank concentration was 8.3% boron by weight. L.C.O. 3.4.A has been entered. Chemistry is making calculations for an addition. Directions for the shift are to support Chemistry and to remove 'D' RBCCW pump from service to allow repair of seal leak.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Place standby RBCCW pump in service, remove 'D' RBCCW pump from service. (Instruction given as part of turnover.)
2	RP-09/ RD-11A	I	Trip of 'B' RPS MG Set/one rod scrams (Rod 42-07). (Failure of RPS solenoid pre-inserted. MG set trip inserted as directed by Chief Examiner.)
3	CW-06	C	Unisolable gross seal failure of RBCCW pump causes loss of 'B' loop RBCCW. (Inserted as directed by Chief Examiner.)
4	TC-14	C	Main Turbine Bypass Valves fail closed. (Pre-inserted)
5	N/A	M	Alternate Depressurization on high DW temp.
6	MS-15	C	'B' SRV fails to open. (Inserted upon initiation of Alternate Depressurization.)

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

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 1 Page 1 of 1

Event Description: Place Standby RBCCW Pump In Service, Remove 'D' RBCCW Pump from Service

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct placing 'E' or 'F' RBCCW pump in service and removing 'D' RBCCW pump from service.
	BOP	Start the 'E' or 'F' RBCCW pump from Panel C-1.
	BOP	Verify loop 'B' RBCCW pressure.
	BOP	Stop 'D' RBCCW pump from Panel C-1.
	CRS	Enter tracking LCO per Tech. Spec. 3.5.B.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 2 Page 1 of 1

Event Description: Trip of 'B' RPS MG Set/One Rod Scrams

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce trip of 'B' RPS MG set and one control rod scram.
	CRS	Refer to PNPS 2.4.11: - Diagnose rod as no longer drifting (fully inserted) - Contact Reactor Engineering for direction
	RO	Refer to ARP.
	CRS	Direct transfer RPS bus 'B' to Standby Transformer (Panel C511) and reset half-scram.
	CRS	Direct I&C to determine the cause of the breaker trip and inspect equipment powered from this source for electrical faults.
	CRS	Ensure Tech. Spec. 3.1 and 3.1.1 satisfied.
	CRS	Direct checking and replacement of 'A' RPS fuse for rod 42-07.
	CRS	When advised by Reactor Engineering, brief/direct recovery of scrammed control rod. **Note:** When asked as Reactor Engineer, advise the CRS that rod 42-07 may be withdrawn to its pre-transient position without adjusting recirc flow.
	RO	Recover scrammed rod 42-07 as advised by Reactor Engineering to pre-transient position.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 3 Page 1 of 1

Event Description: Unisolable Gross Seal Failure of RBCCW Pump Causes Loss of 'B' Loop RBCCW

Time	Position	Applicant's Actions or Behavior
	CRS	Refer to/direct actions of PNPS 2.4.42.
	BOP	If the standby pump has not started, then start the standby pump. **Note:** Standby Pump(s) will start, run for 5 seconds, then trip.
	CRS	Direct NLO to investigate the pump(s) trip.
	CRS	Direct NLO to crosstie Loops 'A' and 'B' of RBCCW together.
	RO/CRS/BOP	Monitor increasing drywell pressure and temperature due to loss of drywell cooling.
	CRS	Brief/direct reactor scram prior to reaching 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS	Enter EOP-01 and EOP-03 on high drywell pressure/temperature.
	CRS	Direct reactor water level band of +20 to +40 inches and reactor pressure band of 900-1050 psig.

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 4 Page 1 of 1

Event Description: Main Turbine Bypass Valves Fail Closed

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize failure of bypass valves to open and control reactor pressure.
	CRS	Direct use of BPVOJ to open bypass valves.
	RO/BOP	Attempt to open bypass valves using BPVOJ. Report results as unsuccessful.
	CRS	Direct reactor pressure control with SRVs in a band of 900-1050 psig.
	BOP	Use SRVs to control pressure as directed

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 5 Page 1 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Review EOP-03. Recognize that drywell spray is prohibited since the drywell atmosphere does not meet the DWSIL curve.
	CRS	Direct actions to have Maintenance and Operations get RBCCW crosstied. (After the plant has been manually scrammed the CRS will be given the report that problems are being encountered with getting the crosstie valves open. The control room will also receive information from the personnel working on the crosstie that it looks like they are almost to get the cross-tie valves open.)
	RO/BOP	Monitor/report on drywell temperature increase.
	CRS	Brief crew on EOP-17 actions prior to reaching 280 degrees F in the drywell.
	CRS	Make the determination that drywell temperature cannot be maintained below 280 degrees F. Transition to EOP-17.
	CRS	Direct alternate depressurization.
	BOP	Open all SRVs as directed. **NOTE: CRITICAL TASK** (**Note:** If reactor pressure approaches saturation pressure for drywell temperature, RPV level oscillations will be inserted)
	RO/CRS/BOP	Recognize oscillations in RPV level indications due to high drywell temperature.

Op-Test No.: 3 Scenario No.: 3 Event No.: 5 Page 2 of 2

Event Description: Alternate Depressurization on High DW Temp.

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/enter EOP-16
	RO/BOP	Control injection using EOP-16 Table K systems to maintain: - 4 SRVs open - RPV pressure not decreasing, at least 50 psig above torus pressure but as low as practical

Scenario Outline

Op-Test No.: 3 Scenario No.: 3 Event No.: 6 Page 1 of 1

Event Description: 'B' SRV Fails to Open

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/report that 'B' SRV has failed to open.
	CRS	Enter PNPS 5.3.24 to rapidly depressurize.
	BOP	Perform Alternate Depressurization in accordance with PNPS 5.3.24. **NOTE: CRITICAL TASK** (**NOTE:** While opening the 'B' SRV from the Alternate Shutdown Panel is the most likely action, the candidate would also be allowed by 5.3.24 to use Main Steam Line Drains, HPCI, RCIC, or Head Vents to assist in depressurizing.)
	BOP	Report success in opening SRV 'B' from Alternate Shutdown Panel.

Scenario Outline

Facility: Pilgrim Scenario No.: 4 Op-Test No.: 4

Examiners: Operators:

Objectives: To evaluate the applicants' ability to transfer CRD FCV's, respond to a reactor recirc pump runaway, a steam leak on RCIC with isolation failure which will result in alternate depressurization, and a failure of bus A-5 transfer.

Initial Conditions: 100% power, EOL IC, no equipment out of service, 'A' CRD FCV in service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. Directions for the shift are to transfer to 'B' CRD FCV to allow maintenance on the 'A' CRD FCV.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Transfer CRD FCV. (Instruction given as part of turnover.)
2	H1S1	I	'A' recirc pump runaway. (Inserted at direction of Chief Examiner.)
3	RC-06	M	Steam leak in RCIC quad/drive to Alternate Depressurization. (Inserted at direction of Chief Examiner.)
4	CO-R5	C	Auto/Manual isolation of RCIC fails. (Pre-inserted)
5	RPWA 7-8 RPWB 7-8	C	RBIS Failure. (Pre-inserted)

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

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 1 Page 1 of 1

Event Description: Transfer CRD FCV

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/Direct changover of flow control valves.
	RO	Establish communications between Control Room and the master control station.
	RO	At Panel C905, place FIC-340-1, CRD Flow Control, setpoint to 0 GPM (controller may be left in automatic).
	RO	Direct NLO to: 1) Slowly open 301-40B, Standby Flow Control Valve 'B' Inlet Valve. 2) Slowly open 301-41B, Outlet Valve from Standby Flow Control Valve. 3) Close 301-41A, Outlet Valve from In-Service Flow Control Valve. 4) Close 301-40A, Inlet Valve for the Previously In-Service Flow Control Valve. 5) On local valve control panel, swap Selector Switch 3B-S1, for electrical signal to E/P unit, from valve in-service to standby valve position. 6) Swap valve 301-29, CRD Air Diversion Valve to Selected Flow Control Valve, from valve in-service position to that of standby valve.
	RO	At Panel C905, slowly raise setpoint of FIC-340-1, CRD flow control, to 50 GPM, observing the flow increase as setpoint increases.
	RO	At Panel C905, check the following ΔP indicators and adjust pressures if needed: - Drive water differential pressure - Cooling water differential pressure

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 2 Page 1 of 2

Event Description: 'A' Recirc Pump Runaway

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Recognize/announce increasing reactor power.
	CRS	Refer to PNPS 2.4.13.
	RO/CRS	Determine the cause of the unexplained rapid increase in reactor power and follow the procedure(s) as appropriate to the transient: • Reactor Recirculation System Speed or Flow Control System Malfunction, PNPS 2.4.20.
	CRS/RO	Refer to PNPS 2.4.20.
	RO	If it is determined that a malfunction in one of the individual pump controllers has occurred, then initiate a scoop tube lockup by depressing the Manual Scoop Tube Positioner Lockup pushbutton (located on Panel C904)
	RO	Report attempt to lock scoop tube as unsuccessful.
	RO	If the malfunction is severe and could lead to a reactor scram, then trip the malfunctioning reactor recirculation pump and refer to PNPS 2.4.17, "Recirculation Pump(s) Trip".
	CRS	Direct tripping of 'A' Reactor Recirc Pump.
	RO	Trip 'A' Reactor Recirc Pump as directed. **NOTE: CRITICAL TASK**
	RO	Adjust speed of 'B' Reactor Recirc Pump to 80%.
	RO	Close affected MO-202-5A, Pump Discharge Valve and re-open after 5 minutes.

Op-Test No.: 4 Scenario No.: 4 Event No.: 2 Page 2 of 2

Event Description: 'A' Recirc Pump Runaway

Time	Position	Applicant's Actions or Behavior
	RO	Determine Total Core Flow (a) Determine direction of flow through idle jet pumps. (b) Calculate Total Core Flow (TCF).
	RO	Use current reactor power and plot position on the power/flow map using the calculated total core flow. If the plotted position is NOT within an allowable operating region, then perform the actions required in accordance with PNPS 2.1.14, Sections 7.10 and 7.11. **Note:** Expect to be in the monitored region of the power to flow map.
	RO	After the recirculation pump is secured, adjust total core flow to greater than 27.6 Mllb/hr. **Note:** Expected total core flow should be approximately 34 Mlbm/hr.
	CRS	Consult facility operating license. Determine that the plant must be in hot shutdown within 24 hours.

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 3 Page 1 of 2

Event Description: Steam Leak in RCIC Quad/Drive to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	RO	Recognize/announce fire alarm in RCIC.
	BOP	Check/report area temperature alarms in RCIC quad.
	CRS	Dispatch NLO to investigate fire alarm in RCIC quad.
	CRS	Enter EOP-04 on high area temperature in RCIC quad.
	CRS	Direct isolation of RCIC when report of steam leak is received.
	CRS	Direct RP to take EOP-04 surveys.
	CRS	Direct starting all area coolers.
	CRS	Before any area temperature exceeds Max Safe Value, enter EOP-01.
	RO	Place mode switch in shutdown and enter PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	RO	Maintain reactor water level +20 - +40 inches using feedwater.

Op-Test No.: 4 Scenario No.: 4 Event No.: 3 Page 2 of 2

Event Description: Steam Leak in RCIC Quad/Drive to Alternate Depressurization

Time	Position	Applicant's Actions or Behavior
	CRS	When temperature exceeds Max Safe Value in two areas, exit EOP-01 pressure control leg and enter EOP-17.
	BOP	Open all SRV's. **NOTE: CRITICAL TASK**
	BOP	Verify (Acoustic Monitor or Tailpipe Temperature) that all SRV's are open.
	CRS	Exit EOP-17 and re-enter EOP-01 pressure control leg.

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 4 Page 1 of 1

Event Description: Auto/Manual Isolation of RCIC Fails

Time	Position	Applicant's Actions or Behavior
	RO/CRS/BOP	Recognize failure of RCIC to isolate
	CRS	Direct manual isolation of RCIC.
	BOP	Attempt to manual close MO-1301-16 and MO-1301-17. Report the attempt was unsuccessful.
	CRS	Dispatch Maintenance or NLO's to attempt to close MO-1301-16 and MO-1301-17.

Scenario Outline

Op-Test No.: 4 Scenario No.: 4 Event No.: 5 Page 1 of 1

Event Description: RBIS Failure

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce failure of RBIS.
	CRS	Direct manually inserting RBIS.
	BOP	Manually initiate RBIS (Panel C-7). **NOTE: CRITICAL TASK**
	BOP	Report success at manually inserting RBIS.

Scenario Outline

Facility: Pilgrim Scenario No.: 5 Op-Test No.: Spare

Examiners: Operators:

Objectives: To evaluate the applicants' ability to respond to a loss of the startup transformer, a leak in the drywell, with a failure of high pressure injection.

Initial Conditions: 100% power, shutdown transformer out of service.

Turnover: The plant is operating at 100% power. The Feedwater Flow Correction Factor is not applied. The plant is currently in day 4 of 7 of Tech.Spec. 3.9.B.1.b. Directions for shift are to continue to operate at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	ED-04	C	Loss of Startup Transformer. (Inserted on direction of Chief Examiner.)
2	N/A	N	Power reduction to 25% per T.S. 3.9.B.2. (Completed as a result of Event 1.)
3	PC-01	M	Leak in drywell/reactor scram. (Inserted on direction of Chief Examiner.)
4	HP-04/ HP-06	I	HPCI flow controller failure. (Pre-inserted to have flow controller fail upon reaching 4250 GPM HPCI flow. Inverter failure inserted upon direction of Chief Examiner.)
5	RC-02	C	RCIC Inop – Trip Throttle Valve Trip. (Pre-inserted to trip when RCIC flow reaches 400 GPM.)

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

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 1 Page 1 of 1

Event Description: Loss of Startup Transformer

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce loss of startup transformer.
	CRS	Direct Electrical Maintenance/NLO to investigate cause of loss of startup transformer.
	CRS	Recognize/announce entry to Tech. Spec. 3.9.B.2 for loss of startup and shutdown transformer.
	CRS	Recognize need to reduce power to less than 25%.
	CRS	Direct reduction in power.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 2 Page 1 of 1

Event Description: Power Reduction to 25% per Tech. Spec. 3.9.B.2

Time	Position	Applicant's Actions or Behavior
	CRS	Brief/direct plant shutdown in accordance with PNPS 2.1.5.
	CRS	Notify REMVEC and start reducing power.
	RO	As directed, place/verify one of the two feedwater reg valves into manual control in accordance with PNPS 2.2.82, Section 7.4.1. FW reg valve 'B' is preferred.
	RO	As directed, verify/adjust APRM Gain Adjustment Factors (AGAFs) value to less than or equal to 0.975 prior to reducing reactor power below 87% rated.
	RO	Refer to the Pilgrim Power/Flow Map (Attachment 2) and reduce power by reducing core flow at a rate not greater than 1% of rated power per minute.
	RO	Adjust speed/load changer per PNPS 2.1.6.
	RO	At a core flow of 39 Mlb/hr, stop reducing core flow and begin inserting control rods.
	RO	At 60% reactor power, place RFP trip sequence, enable selector switch to "off" and remove one reactor feed pump (RFP) from service.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 1 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO/BOP/CRS	Recognize/announce rising drywell pressure.
	CRS	Direct maximizing drywell cooling per PNPS 2.2.19.5.
	BOP	Start/verify started two RBCCW Pumps per RBCCW loop.
	BOP	Start/verify started two SSW Pumps per SSW loop.
	BOP	Fully open MO-3800 and MO-3806, RBCCW Heat Exchanger SSW Outlet Valves.
	BOP	Lower RBCCW loop temperature controller setpoint to less than 50°F or close MO-4084 or MO-4083, RBCCW Heat Exchanger Bypass Valves.
	BOP	Direct NLO to start/verify started all available Drywell cooling fans on Panel C61.
	BOP	Fully open all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position.
	CRS	Brief reactor scram. Direct reactor scram prior to 2.2 psig drywell pressure.
	RO	Place reactor mode switch in "shutdown".
	RO	Carry out immediate actions of PNPS 2.1.6.
	RO	Verify and announce the status of APRM downscales.
	RO	Verify all control rods are fully inserted.
	RO	Insert IRM and SRM detectors, select two SRMs for recording, and place selector switch for APRM/IRM to "IRM".

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 2 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	RO	Verify or manually place reactor recirc pumps at minimum speed.
	RO	Verify or manually trip the turbine.
	CRS/RO/BOP	Recognize entry condition/enter EOP-01 and EOP-03 on high drywell pressure.
	CRS	Direct actions per EOP-01 and EOP-03.
	CRS	When level drops below –46 inches, direct placing ADS in inhibit.
	BOP	Inhibit ADS as directed. **NOTE: CRITICAL TASK**
	BOP	Place suppression pool cooling in service as directed.
	BOP	Open/verify open MO-4060A and/or MO-4060B (MO-4010A and/or MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
	BOP	If it is necessary to override LPCI initiation signals, then perform the following: (a) If only the LPCI initiation signal is present, then place the LPCI override switch to "manual override" **OR** (b) If RPV level interlock (2/3 core coverage) is present, then: • Obtain OSS or CRS permission to override the RPV level interlock, then place the key in the RPV level override switch and turn it to "manual override". **AND** • Place the LPCI override switch "manual override".

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 3 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Open MO-1001-34A(B), Torus Cooling/Spray Block Valve.
	BOP	Start/verify started one RHR pump per loop.
	BOP	Slowly open MO-1001-36A(B), Torus Cooling Valve, and increase flow to 4500 to 4800 GPM on FI-1040-1A(B).
	BOP	Close MO-1001-18A(B), Pump Min Flow Valve.
	BOP	Close MO-1001-16A(B), RHR Hx A(B) Bypass Valve.
	BOP	Throttle MO-1001-36A(B), Torus Cooling Valve, as required to establish loop flow at approximately 4800 to 5100 GPM.
	BOP	Place torus spray in service.
	BOP	Fully open MO-1001-37A(B), Torus Spray Valve, in ONE RHR loop.
	BOP	Throttle each RHR loop's Torus Cooling Valve [MO-1001-36A(B)] as needed to maintain a total loop flow of approximately 4800 to 5100 GPM.
	BOP	Place drywell spray in service as directed.
	BOP	If running, then trip the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904.
	BOP	If available, fully open both Drywell Spray valves in each RHR loop. • MO-1001-23A and MO-1001-26A • MO-1001-23B and MO-1001-26B
	BOP	Start H_2/O_2 as directed.

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 4 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065026A, Drywell return isolation valve e) SV-5065-21A, Lower drywell supply isolation valve f) SV-5065-14A, Lower drywell supply isolation valve g) SV-5065-18A, Torus supply isolation valve h) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "close" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-13B, Lower drywell supply isolation valve d) SV-5065-20B, Lower drywell supply isolation valve e) SV-5065-25B, Torus return isolation valve f) SV-5065-27B, Torus return isolation valve g) SV-5065-15B, Torus supply isolation valve h) SV-5065-22B, Torus supply isolation valve
	BOP	Position (Train A) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.
	BOP	Position (Train B) PCIS Group 2 isolation override reset switches Channel A and Channel B, Panel C904, to the "override" position.

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 5 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-37A, Upper drywell supply isolation valve b) SV-5065-33A, Upper drywell supply isolation valve c) SV-5065-24A, Drywell return isolation valve d) SV-5065-26A, Drywell return isolation valve e) SV-5065-18A, Torus supply isolation valve f) SV-5065-11A, Torus supply isolation valve
	BOP	Place or verify the following control switches on Panel C904 to the "open" position: a) SV-5065-31B, Upper drywell supply isolation valve b) SV-5065-35B, Upper drywell supply isolation valve c) SV-5065-25B, Torus return isolation valve d) SV-5065-27B, Torus return isolation valve e) SV-5065-15B, Torus supply isolation valve f) SV-5065-22B, Torus supply isolation valve
	BOP	At Panel C-170, place recorder AR-1001-612A power switch to "on".
	BOP	At Panel C-171, place recorder AR-1001-612B power switch to "on".

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 6 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	BOP	Place or verify placed the following switches on Panel C-174 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122A — Auto (b) Torus Sample Valve SV-5065-123A — Auto (c) Lower Drywell Sample Valve SV-5065-124A — Close (d) Panel C-174 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Place or verify placed the following switches on Panel C-175 to the indicated position: SWITCH — POSITION (a) Upper Drywell Sample Valve SV-5065-122B — Auto (b) Torus Sample Valve SV-5065-123B — Auto (c) Lower Drywell Sample Valve SV-5065-124B — Close (d) Panel C-175 Main Power Switch — Analyze (e) Sample Function Selector Switch — Auto/Start (spring returns to Auto)
	BOP	Report H_2/O_2 level to SRO.
	CRS	Brief EOP-17 actions prior to reaching TAF.

Op-Test No.: Spare Scenario No.: 5 Event No.: 3 Page 7 of 7

Event Description: Leak in Drywell/Reactor Scram

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Alternate Depressurization at TAF.
	BOP	Prevent injection from core spray/LPCI.
	BOP	Open all SRV's. Verify using acoustic monitor or tailpipe temperatures that all SRVs are open. **NOTE: CRITICAL TASK**
	RO/BOP	Coordinate to restore/maintain RPV level +12 to +45 inches using Table 'A' systems.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 4 Page 1 of 1

Event Description: HPCI Flow Controller Failure

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize/announce failure of HPCI controller.
	CRS	Direct taking HPCI to manual control.
	BOP	Place HPCI controller in manual. Use HPCI to restore reactor water level. **NOTE: CRITICAL TASK**
	CRS	Direct I&C to troubleshoot HPCI controller.
	BOP	Recognize/announce loss of HPCI inverter/loss of HPCI system.
	CRS	Direct I&C to perform further troubleshooting on HPCI.
	CRS	If not already started, start RCIC in injection mode.
	BOP	Start RCIC as directed.

Scenario Outline

Op-Test No.: Spare Scenario No.: 5 Event No.: 5 Page 1 of 2

Event Description: RCIC Turbine Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Momentarily depress the RCIC System Injection Mode push button. (Following this step are actions for auto mode, the candidate may elect to use manual mode).
	BOP	Verify the MANUAL START SEQUENCE indicating light is energized.
	BOP	Verify to following: - MO-1301-61, TURBINE SUPPLY VALVE, has opened - MO-1301-49, INJ VLV #2, has opened - MO-1301-60, PUMP MIN FLOW VLV closes when flow exceeds 100 GPM - AO-1301-34 and AO-1301-35, STEAM LINE DRN VLVs, close - AO-1301-12 and AO-1301-13, BAROMETRIC CONDR DRN VLVs, close - MO-1301-62, COOLING WTR SUPPLY VLV, opens - P-222, VACUUM PUMP, starts - P-221, CONDENSATE PUMP, starts - RCIC flow levels off and stays at 400 GPM, indicating that FIC-1340-1, INJECTION FLOW CONTROL, has control of turbine speed.

Op-Test No.: Spare Scenario No.: 5 Event No.: 5 Page 2 of 2

Event Description: RCIC Turbine Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Perform the following: (**Note**: These are the steps for manual mode. The candidate may elect to use the auto mode.) - Verify FIC-1340-1,INJECTION FLOW CONTROL, is in AUTO and set fo 400 GPM - OPEN/VERIFY OPEN MO-1301-62, COOLING WTR SUPPLY VLV - START/VERIFY RUNNING P-222, VACUUM PUMP - OPEN/VERIFY OPEN MO-1301-60 PUMP MIN FLOW VLV - SIMULTANEOUSLY OPEN MO-1301-61, TURBINE SUPPLY VLV AND MO-1301-49 INJ VLV #2 - OBSERVE that flow is supplied to reactor vessel and stabilizes at 400 GPM - VERIFY MO-1301-60, PUMP MIN FLOW VLV closes as flow increases - MONITOR system operation and adjust FIC-1340-1 as necessary to maintain desired reactor water level
	BOP	Recognize/announce RCIC turbine trip.
	BOP	Check RCIC Turbine Stop Valve closed
	BOP	Close MO-1301-49 INJ VLV #2.
	CRS	Direct NLO to check RCIC turbine. (Report will be that the turbine trip throttle valve is tripped and problems are being encountered in getting the valve to stay reset.)