

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **1** Op-Test No.: **Day 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Complete the AC/DC Weekly Surveillance Control Room portion.
2. Lower Reactor Power using Recirculation Flow.
3. Respond to a failure of APRM 'A' upscale.
4. Take actions in response to a Low Pressure Feedwater Heater 3B Tube leak. Complete actions of the Loss of Feedwater Heating ONEP.
5. Analyze the affects of a reduction of Main Condenser Vacuum on plant operations and take required actions.
6. Take actions per the EOPs in response to an ATWS and mitigate the consequences of the ATWS with no Main Steam Bypass Valves.
7. Respond to a failure of a division of ADS to Inhibit to prevent initiation of ADS.
8. Take actions for a failure of Standby Liquid Control to inject to the Reactor during an ATWS.

Initial Conditions: Reactor Power is at 100 %.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
ESF 12 Transformer is tagged out of service for maintenance
TBCW Pump 'C' is tagged out of service for pump seal replacement
Appropriate clearances and LCOs are written.

Turnover: Plans are to lower power to % for ATT testing. The Dispatcher is ready for the load reduction. The AC/DC Lineup Weekly surveillance is due to be performed. There are scattered thunder showers reported in the Tensas Parish area.

Scenario 1 Day 1 (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	2, 4, 5, 6, 7, 8	202001 A4.04 202002 A4.08 2.2.2	R (RO)	Reduce Total Core Flow to 90 % Reactor Power (IOI 03-1-01-2)
2	4	262001 A4.01; A4.05	N (BOP)	Perform AC/DC Weekly Surveillance Control Room portion. (06-OP-1R20-W-0001)
3	3, 5	215005 A2.02 2.1.12; 2.1.33	I (RO)	Respond to APRM 'A' failure upscale. Complete Technical Specification determinations.
4	3, 4, 5, 6	2.4.49 295014 AA1.07; AA2.03	C(RO, BOP)	Respond to a tube failure in LP FW Heater 3B. Perform actions per ONEP 05-1-02-V-5. Lower Reactor power with Recirc flow.
5	3, 4, 5, 6	2.4.49 295002 AA1.02; AA1.05; AA2.01	C(RO, BOP)	Recognize and respond to a loss of Main Condenser vacuum. Take actions per ONEP 05-1-02-V-8.
	2, 3, 4, 7	2.4.4; 2.4.49 295006 AA1.01; AA1.05; AA1.07		When required initiate a manual Reactor Scram.
6	6, 8, 12, 13	295037 EA1.0; EA2.0 203000 A3.08 241000 A4.06	M (ALL)	Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS.
	3, 4	218000 A4.02; A4.03; A4.04; A4.05	I (BOP)	Recognize the failure of ADS to Inhibit and take actions to prevent automatic initiation of ADS.
	3, 4, 8	295037 EA1.04; EA1.10 211000 A1.0; A2.04; A3.0	C (BOP)	Recognize the failure of Standby Liquid Control to meet the parameters to inject into the Reactor when initiated and actions taken for Alternate Boron Injection.

All evolutions test 55.45(a) 12 & 13.

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

Scenario 1 Day 1 (Continued)

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
- Identify the need for Alternate Standby Liquid Control injection.
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches -192".
- Insert Control Rods in response to ATWS conditions.

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3. Respond to a failure of APRM 'A' upscale.
4. Take actions in response to a Low Pressure Feedwater Heater 3B Tube leak. Complete actions of the Loss of Feedwater Heating ONEP.
5. Analyze the affects of a reduction of Main Condenser Vacuum on plant operations and take required actions.
6. Take actions per the EOPs in response to an ATWS and mitigate the consequences of the ATWS with no Main Steam Bypass Valves.
7. Respond to a failure of a division of ADS to Inhibit to prevent initiation of ADS.
8. Take actions for a failure of Standby Liquid Control to inject to the Reactor during an ATWS.

Initial Conditions: Reactor Power is at 100 %.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
 ESF 12 Transformer is tagged out of service for maintenance
 TBCW Pump 'C' is tagged out of service for pump seal replacement
 Appropriate clearances and LCOs are written.

Turnover: Plans are to lower power to 90 % for ATT testing. The Dispatcher is ready for the load reduction. The AC/DC Lineup Weekly surveillance is due to be performed. There are scattered thunder showers reported in the Tensas Parish area.

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO)	Reduce Total Core Flow to 90 % Reactor Power (IOI 03-1-01-2)
2		N (BOP)	Perform AC/DC Weekly Surveillance Control Room portion. (06-OP-1R20-W-0001)

Scenario 1 Day 1 (Continued)

Event No.	Malf. No.	Event Type*	Event Description
3	c51009a	I (RO)	Respond to APRM 'A' failure upscale. Complete Technical Specification determinations.
4	fw232h	C(RO, BOP)	Respond to a tube failure in LP FW Heater 3B. Perform actions per ONEP 05-1-02-V-5. Lower Reactor power with Recirc flow.
5	fw163b @ %	C(RO, BOP)	Recognize and respond to a loss of Main Condenser vacuum. Take actions per ONEP 05-1-02-V-8.
			When required initiate a manual Reactor Scram.
6	c11164 @ 25%	M (ALL)	Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS.
	di_1b21m6 60a NORM	I (BOP)	Recognize the failure of ADS to Inhibit and take actions to prevent automatic initiation of ADS.
	c41263 @ 60%	C (BOP)	Recognize the failure of Standby Liquid Control to meet the parameters to inject into the Reactor when initiated and actions taken for Alternate Boron Injection.

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

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
- Identify the need for Alternate Standby Liquid Control injection.
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches -192".
- Insert Control Rods in response to ATWS conditions.

Scenario 1 Day 1 (Continued)

Crew Turnover:

Rx at 100% CTP.

The plant is preparing to lower power to 90% to support ATT testing.

APRM 'H' is failed due to a failed power supply card and bypassed.

ESF 12 Transformer is tagged out of service for maintenance.

TBCW Pump 'C' is tagged out of service for pump seal replacement.

Appropriate clearances and LCOs are written.

Plan for the shift is to lower reactor power to 90% Core Thermal Power.

NSA has requested the Weekly AC/DC surveillance (06-OP-1R20-W-0001 Attachment II) be performed for ESF 12 Transformer Outage.

Plant EOOS factor is

There are scattered thunderstorms reported in the Tensas Parish area.

Simulator Setup: (Scenarios may be setup and shot into encrypted ICs and Password protected.)

Start the process from a new simulator load.

Reset to IC-17.

Verify or perform the following:

IC: 17

OOS: ESF Transformer 12 (Place tags on 152-1903, 1904, 1905,
1511, 1611, and 1704)
TBCW C Pump (Place tag on start HS)

Active malfunctions: **c51010h** APRM H downscale
c11164 @ 25% SDV Block
c41263 @ 80% SLC injection pipe rupture

Active overrides **di_1b21m660a** ADS Division I Inhibit Switch H13-P601 **NORM**

Pending overrides None

Pending malfunctions: **c51009a** APRM 'A' upscale (TRG 1)
fw232h LP FW Htr 3B tube failure (TRG 2)
fw163b Main Condenser Vacuum leak (TRG 3) ramp to ___%

Pending component malfunctions: None

Trigger files:

Trigger 1 APRM 'A' upscale
Trigger 2 LP FW Heater Tube Rupture
Trigger 3 Condenser Vacuum leak

COMPONENT	PANEL	INDICATION or CONTROL	SIMULATOR CODE	STATUS	DONE
APRM H		DOWNSCALE	c51010h		
TBCW PUMP C	P870-5C	GREEN LIGHT	lo_1p43m600c_g	OFF	
		HANDSWITCH	di_1p43m600c	STOP	
ESF 12 BREAKER 152-1903	P807-1C	GREEN LIGHT	lo_1r21m623_g	OFF	
		HANDSWITCH	di_1r21m623	TRIP	
ESF 12 BREAKER 152-1904	P807-1C	GREEN LIGHT	lo_1r21m624_g	OFF	
		HANDSWITCH	di_1r21m624	TRIP	
ESF 12 BREAKER 152-1905	P807-1C	GREEN LIGHT	lo_1r21m637_g	OFF	
		HANDSWITCH	di_1r21m637	TRIP	
ESF 12 FEEDER 152-1511	P864-1C	GREEN LIGHT	lo_1r21m601a_g	OFF	
		HANDSWITCH	di_1r21m601a	TRIP	
ESF 12 FEEDER 152-1611	P864-2C	GREEN LIGHT	lo_1r21m601b_g	OFF	
		HANDSWITCH	di_1r21m601b	TRIP	
ESF 12 FEEDER 152-1704	P601-16C	GREEN LIGHT	lo_1e22m709_g	OFF	
		HANDSWITCH	di_1e22m709	TRIP	
115 KV DISCONNECT J3885	P807-1C	GREEN LIGHT	lo_1r27r602_g	OFF	
J3885		DISCONNECT		OPEN	

Bypass Division 2 APRM Bypass Joystick to APRM H position.

Open Circuit Breakers 152-1903, 1904, 1905, 1511, 1611, and 1704

Place TBCW pump B to STOP (to clear Standby light) then to START, stop TBCW pump C.

Startup all PDS / SPDS screens. Clear any graphs and trends off of SPDS.

Setup the presently used cyclops display and verify it is functional.

Ensure the correct startup sequence is available at the P680 for the present IC.

Install turnover guide, red tag, and LCO paperwork as applicable.

Advance all chart recorders and ensure all pens are inking properly.

(APRM chart recorders must be turned on and settings for scales on pens 0 – 125 scale)

SIMULATOR OPERATION

Once simulator is reinitialized and setup complete take the simulator out of Freeze.

Once the Crew has taken control note the simulator time.

The Crew will lower reactor power using Reactor Recirc Flow Control.

Cues:

If asked, acknowledge reports to Dispatcher, Chemistry, Radwaste, Radiation Protection, and STA of impending down power to 90%.

If asked, report as Reactor Engineer or STA, ramp rate for down power is at the discretion of the SRO.

After down power, the BOP operator should perform 06-OP-1R20-W-0001 Attachment II.

Cues:

If asked, report as either the Jackson Dispatcher that the Baxter Wilson and Franklin Transmission lines are energized at 500KV and 60 Hertz. Port Gibson 115 KV line is out of service for UC& M maintenance.

Upon completion of the surveillance, **activate TRIGGER 1.**

Cues:

If asked, report that APRM 'A' appears to be failed somehow upscale.

If asked, as I&C report the failure on APRM 'A' will require more in depth troubleshooting and that a MAI will be generated.

The Crew will bypass APRM 'A' using the Division 1 Neutron Monitoring Bypass joystick and reset RPS 'A' using the Division 1 and 3 RPS RESET Key switches.

The SRO will review Tech Specs 3.3.1.1 and 3.3.2.1. Tracking LCOs will be written.

Six (6) minutes after APRM upscale, **activate TRIGGER 2.**

The Crew will lower power per Loss of Feedwater Heating ONEP to 60% core flow.

Cues:

If asked, report at Turbine Building Operator the controllers on H22-P172 for LP FW Heater 3B are calling for dumps and drains to be full open and valves are responding.

When plant is stabilized and four (4) minutes after isolation of LP FW Heater String B, **activate TRIGGER 3.**

Main Condenser Vacuum leak

Cues:

If asked, report as Turbine Building Operator that you hear a high pitched whistling sound in the Condenser Bay.

The Crew will manually scram the reactor at which time the ATWS will appear.

The Main Turbine will trip.
RFPTs will require a vacuum reset.
Main Steam Bypass Valves will close.

EP Attachments which may be requested:

Attachment 12 Defeat RHR Shutdown Cooling interlocks	6 minutes to DONE
Attachment 18 Defeat ATWS ARI	3 minutes to DONE
Attachment 19 Defeat RPS	4 minutes to DONE
Attachment 20 Defeat RCIS	5 minutes to DONE
Attachment 8 Defeat MSIV isolations	9 minutes to DONE

Attachment 28 can not be done by any remote functions, just acknowledge the request.

TERMINATION

Once Control Rods are being inserted and the Lead Evaluator concurs the scenario may be terminated.

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
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- Identify the need for Alternate Standby Liquid Control injection.
-
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
-
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches -192".
-
- Insert Control Rods in response to ATWS conditions.

Op-Test No.: _____ Scenario No.: 1 Event No.: 1		
Event Description: Reduce Reactor power using Recirculation Flow Control		
Time	Position	Applicant's Actions or Behavior
	SS	Conduct reactivity manipulation brief.
	RO	Reduces Total Core Flow by throttling closed on the Recirc Flow Control Valves.
	BOP	Monitors Pressure, Level, Power, and Turbine Loading.

Op-Test No.: _____ Scenario No.: 1 Event No.: 2		
Event Description: Perform AC/DC Weekly Surveillance Control Room portion (06-OP-1R20-W-0001 Attachment II)		
Time	Position	Applicant's Actions or Behavior
	SS	Authorizes the performance of the surveillance.
	BOP	Performs the surveillance using attachment II.

Op-Test No.: _____ Scenario No.: 1 Event No.: 3

Event Description: **Respond to a failure of APRM 'A' Upscale.**

Time	Position	Applicant's Actions or Behavior
	RO	Determines APRM 'A' is Upscale and reviews Alarm Response Instructions.
	SS	Reviews applicable Technical Specifications 3.3.1 Reactor Protection System 3.3.2 Control Rod Block Instrumentation
	BOP	Observe and report indications on APRM 'A'.
	SS	Contact I&C to investigate APRM failure.
	RO	Shift Neutron Monitoring APRM Division 1 to A bypassed.
	RO	Reset ½ scram.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 4 </u>		
Event Description: Respond to a tube failure on LP FW Heater 3B. Perform actions per ONEP 05-1-02-V-5.		
Time	Position	Applicant's Actions or Behavior
	RO	Recognizes annunciator concerning High level in 3B LP FW heater. Calls up display on PDS computer of N23 to determine heater level and operation of drains and dumps.
	SS	Dispatch an operator to H22-P172 panel to investigate Heater Drains Controllers.
	RO	Lowers Reactor Power using Reactor Recirc Flow control to 60 % Core flow or lower power by 20% per ONEP 05-1-02-V-5 Loss of Feedwater Heating. Monitor operation on the Power to Flow Map.
	BOP	Verify isolation of LP FW heater string N19-F042B and N19-F040B on H13-P870 section 6C.
	RO or BOP	Monitors Reactor for Thermal Hydraulic Instability per ONEP 05-1-02-III-3, Reduction in Recirc Flow.
	RO or BOP	Monitors Feedwater temperature vs Reactor Power per ONEP 05-1-02-V-5 Loss of Feedwater Heating.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 5 </u>		
Event Description: Loss of Main Condenser Vacuum (ONEP 05-1-02-V-8) and subsequent Manual Scram		
Time	Position	Applicant's Actions or Behavior
	SS	Directs lowering of power by control rod insertion using insertion sequence.
	SS	Dispatches local operators to monitor condenser area for leaks.
	SS	Determines minimum vacuum for insertion of manual scram and communicates this to crew.
	RO	Verifies control rods and positions per Pull Sheet and selects control rods per next gang of control rods. (May select Individual or Gang movement and may select any Control Rod in the Gang.)
	BOP	Act as Verifier for Control Rod movements and monitors Main Condenser Vacuum.
	RO	Inserts Control Rods per Control Rod Movement Sequence Sheet to reduce turbine load.
	SS	Based on lowering Main Condenser Vacuum, orders manual scram of the Reactor
	RO	Places the Reactor Mode Switch to Shutdown or arms and depresses at least one Manual Scram Pushbutton per RPS
	RO	Verifies All Control Rods have fully inserted to position 00 and determines ALL Control Rods NOT fully inserted and reports to the SS.
	RO	If the Manual Scram Pushbuttons utilized confirms stable reactor pressure and places the Reactor Mode Switch in Shutdown.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>6</u>		
Event Description: ATWS with no Main Steam Bypass Valves		
Time	Position	Applicant's Actions or Behavior
	SS	Enters EP-2A.
	RO	Reports downshift of Recirc Pumps to Slow Speed.
	RO	On orders initiates ARI/RPT.
	BOP	On orders inhibits ADS, reports failure of Division 1 to inhibit, depresses manual reset pushbutton for Division 1 periodically.
	BOP	On orders initiates and overrides HPCS.
	RO	Realigns Condensate and Feedwater on Startup Level Control and maintains reactor level within level band specified by the SS. RFPTs will require the Vacuum Trip to be overridden with permission of the SS.
	RO	Reports closure of Main Steam Bypasses due to Condenser vacuum.
	BOP	On orders maintains RPV pressure in band specified by SS.
	BOP	When ordered by SS, restores Auxiliary Building, Containment, and Drywell isolation (Instrument Air, Plant Service Water, and Drywell Chilled Water).
	SS **	Orders Standby Liquid Control initiated prior to Suppression Pool Temperature reaching 110 0F.
	BOP **	When ordered, initiates Standby Liquid Control and identifies the failure of SLC to inject.
	SS **	Orders implementation of Attachment 28 Alternate Boron Injection.

	SS **	Orders installation of Attachments 18, 19, and 20 of EP-2.
	SS **	Based on conditions orders Terminate and Prevent step to lower RPV level to reduce reactor power.
	BOP/RO **	Terminates and prevents systems ordered by SS.
	RO **	On orders of SS, initiates flow to the RPV from Condensate / Feedwater.
	BOP/RO **	Insert Control Rods by scrambling rods and inserting rods using CRD/RCIS. CRD Drive Pressure, Instrument Air to Containment and Auxiliary Building, and RPS reset.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **2** Op-Test No.: **Day 2**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Start SSW 'B' in support of chemical addition.
2. Lower Reactor Power by inserting control rods. Respond to single immovable control rod per ONEP 05-1-02-IV-1.
3. Downshift Reactor Recirculation Pumps per IOI 03-1-01-2 & SOI 04-1-01-B33-1. Respond to trip to OFF of Recirculation Pump 'A' per ONEP 05-1-02-III-3.
4. Respond to Service Transformer 11 trouble and subsequent trip.
5. Take actions to mitigate a small break failure of Feedwater piping in the Drywell per EOPs.
6. Take actions to manually initiate Division 2 ECCS upon failure to automatically initiate.

Initial Conditions: Reactor Power is at 48 %. Plant shutdown is in progress for an outage. Reactor Recirculation pumps in Fast Speed; a single Reactor Feed Pump in three element Master Level Control;

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card

ESF 12 Transformer is tagged out of service for maintenance

TBCW Pump 'C' is tagged out of service for pump seal replacement

Appropriate clearances and LCOs are written.

Turnover: Chemistry requires SSW 'B' in operation to support a chemical addition. Continue plant shutdown per IOI-2. There are scattered thunder showers reported in the Tensas Parish area.

Scenario 2 Day 2 (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	4, 5, 6	2.1.30	N (BOP)	Place Standby Service Water 'B' in service for chemical addition. (EPI 04-1-03-P41-1)
2	1, 2, 5, 6, 8	201005 A3.01; A3.02; A3.03; A4.01 2.2.2	R (RO)	Lower Reactor power using control rods to between 40 and 45%. (Control Rod Pull Sheet)
3	1, 2, 3, 5, 6, 8	201001 A4.04 2.4.4; 2.4.11; 2.4.48	C (RO, BOP)	Identify immovable control rod, take actions to move the control rod. (ONEP 05-1-02-IV-1)
4	2, 3, 4, 5, 6, 8	202001 A1.07; A3.02; A4.01 202002 A1.01; A4.01	N (RO)	Downshift Reactor Recirculation Pumps. (IOI 03-1-01-2 & SOI 04-1-01-B33-1)
	3, 4, 5, 6	202001 A2.03	C (RO)	Respond to trip to OFF of Recirculation Pump 'A'. (ONEP 05-1-01-III-3)
5	3, 5, 6, 8	295003 AA1.01; AA2.01 262001 A2.03; A2.07; A4.01	C (ALL)	Respond to Service Transformer 11 Trouble and subsequent trip of ST-11. (ONEP 05-1-02-I-4 & 05-1-02-I-1)
6	3, 4, 5, 6, 7, 13	295031 EA1.0 203000 A3.08 241000 A4.06	M (ALL)	Respond to indications of small break LOCA on Feedwater Line 'B' per EOPs.
	3, 4, 7, 10	2.4.4 295024 EA1.0	I (BOP)	Respond to a failure of Division 2 ECCS to automatically initiate on High Drywell Pressure.
	3	295031 EA1.04 209002 A2.02	C (BOP)	Respond to a trip of the High Pressure Core Spray Pump.

All evolutions test 55.45(a) 12 & 13.

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

Critical Tasks

- Recognize failure of Division 1 to initiate and manually initiate Division 1.
- Lower reactor pressure to allow injection from Low Pressure systems.

REVISION 0 1/31/2001

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **3** Op-Test No.: **Day 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Raise Reactor Power using Recirculation Flow.
2. Start 3rd Condensate and Condensate Booster Pumps.
3. Respond to a trip of RPS Motor Generator 'B'.
4. Determine the source and respond to a leak on the suction valve of RHR Pump 'C', EOP entry.
5. Respond to a steam leak in the Auxiliary Building Steam Tunnel and a failure of Group 1 to isolate.
6. Take actions per the EOPs in response to two stuck control rods following a Reactor Scram.
7. Take actions per EOPs to control RPV parameters with a failure the MSIVs to isolate the steam leak.

Initial Conditions: Reactor Power is at 70 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card

ESF 12 Transformer is tagged out of service for maintenance

TBCW Pump 'C' is tagged out of service for pump seal replacement

Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Radwaste is prepared for full Condensate and Feedwater operation. There are scattered thunder showers reported in the Tensas Parish area.

Scenario 3 Day 1 (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	1, 2, 4, 5, 6, 8	202001 A4.04 202002 A4.08 2.2.2	R (RO)	Raise Total Core Flow to >12.5 Mlbm/hr Feedwater Flow. (IOI 03-1-01-2)
2	2, 4, 5, 6	256000 A3.02; A4.01	N (RO)	Start 3 rd Condensate and Condensate Booster Pump. (SOI 04-1-01-N19-1)
3	3, 5, 6	212000 A1.11; A2.01; A4.07	C (RO, BOP)	Respond to trip of RPS Motor Generator 'B'. (ONEP 05-1-01-III-2)
4	3, 4, 5, 6	295036 EA1.02	C (BOP)	Determine the source and respond to a packing leak on E12-F004C RHR 'C' Suction Valve, with the valve failure determine unisolable and take actions per EOP – 3 & 4.
5	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49	M (ALL)	Recognize and respond to a steam leak in the Auxiliary Building Steam Tunnel.
	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49 290001 A2.06; A4.04	I (BOP)	Recognize the failure of Group 1 to automatically isolate and take actions to isolate the Main Steam Lines (ONEP 05-1-01-III-5)
	3, 4, 6, 13	2.4.46; 2.4.47; 2.4.48; 2.4.49 290001 A2.06; A4.04		Recognize the failure of a single Main Steam line to isolate and take actions for mitigation of the leak.
	4, 6, 12, 13	295037 EA1.0; EA2.0 212000 A4.17	C (RO)	Recognize the failure of two control rods to fully insert on the Reactor Scram and take actions as necessary per procedures to insert the control rods.

All evolutions test 55.45(a) 12 & 13.

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

Critical Tasks

- Manually scram the reactor.
- Isolate the main steam lines.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **3** Op-Test No.: **Day 1**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Raise Reactor Power using Recirculation Flow.
2. Start 3rd Condensate and Condensate Booster Pumps.
3. Respond to a trip of RPS Motor Generator 'B'.
4. Determine the source and respond to a leak on the suction valve of RHR Pump 'C', EOP entry.
5. Respond to a steam leak in the Auxiliary Building Steam Tunnel and a failure of Group 1 to isolate.
6. Take actions per the EOPs in response to two stuck control rods following a Reactor Scram.
7. Take actions per EOPs to control RPV parameters with a failure the MSIVs to isolate the steam leak.

Initial Conditions: Reactor Power is at 83 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
 ESF 12 Transformer is tagged out of service for maintenance
 TBCW Pump 'C' is tagged out of service for pump seal replacement
 Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Radwaste is prepared for full Condensate and Feedwater operation. There are scattered thunder showers reported in the Tensas Parish area.

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO)	Raise Total Core Flow to >12.5 Mlbm/hr Feedwater Flow. (IOI 03-1-01-2)
2		N (RO)	Start 3 rd Condensate and Condensate Booster Pump. (SOI 04-1-01-N19-1)

Scenario 3 Day 1 (Continued)

Event No.	Malf. No.	Event Type*	Event Description
3	c71077b	C (RO, BOP)	Respond to trip of RPS Motor Generator 'B'. (ONEP 05-1-01-III-2)
4	ct218c See overrides	C (BOP)	Determine the source and respond to a packing leak on E12-F004C RHR 'C' Suction Valve, with the valve failure determine unisolable and take actions per EOP – 3 & 4.
5	ms066b @ 0.2%	M (ALL)	Recognize and respond to a steam leak in the Auxiliary Building Steam Tunnel.
	epatt09 ms067b @ 20%	I (BOP)	Recognize the failure of Group 1 to automatically isolate and take actions to isolate the Main Steam Lines (ONEP 05-1-01-III-5)
	ms183b ms184b		Recognize the failure of a single Main Steam line to isolate and take actions for mitigation of the leak.
	z022022 _08-29 _12_09	C (RO)	Recognize the failure of two control rods to fully insert on the Reactor Scram and take actions as necessary per procedures to insert the control rods.

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

Critical Tasks

- Manually scram the reactor.
- Isolate the main steam lines.

Scenario 3 Day 1 (Continued)

Crew Turnover:

Rx at 83% CTP.

The plant is raising power following an outage.

APRM 'H' is failed due to a failed power supply card and bypassed.

ESF 12 Transformer is tagged out of service for maintenance.

TBCW Pump 'C' is tagged out of service for pump seal replacement.

Appropriate clearances and LCOs are written.

The reactor is at the target rod line.

Continue to bring the plant to full power per IOI-2 step 6.6.

Plant EOOS factor is

There are scattered thunderstorms reported in the Tensas Parish area.

Simulator Setup: (Scenarios may be setup and shot into encrypted ICs and Password protected.)

Start the process from a new simulator load.

Reset to IC-14.

Verify or perform the following:

IC: 14

OOS: ESF Transformer 12 (Place tags on 152-1903, 1904, 1905, 1511, 1611, and 1704)
TBCW C Pump (Place tag on start HS)

Active malfunctions: **c51010h** APRM H downscale
z022022_08_29 Control Rod 08-29 stuck
z022022_12_09 Control Rod 12-09 stuck
ms183b MSIV B21-F022B failed open
ms 184b MSIV B21-F028B failed open

Active overrides **epatt09** EP Attachment 9 Defeat MSIV/Group 1 isolation

Pending overrides **lo_1e12ads23p601** RHR C MOV Overload/Power loss Status light **ON** (TRG 3)
lo_1e12m602c_g E12-F004C green light **OFF** (TRG 3)
lo_1e12m602c_r E12-F004C red light **OFF** (TRG 3)
di_1e12m602c E12-F004C handswitch **OPEN** (TRG 3)

Pending malfunctions: **c71077b** RPS Motor Generator 'B' trip (TRG 1)
ct218c @ XX% Leak in RHR C room from Suppression Pool (TRG 2)
ms066b @ 0.2% Main Steam Line B steam leak in Auxiliary Building
 Steam Tunnel (TRG 4) ramp to 20% over 6 minutes.
ms067b @ 20% Main Steam Line B Rupture ramp to 40% over 7
 minutes (TRG 5).

Pending component malfunctions: None

Trigger files: Trigger 1 RPS Motor Generator 'B' trip
 Trigger 2 Leak in RHR 'C' Pump Room
 Trigger 3 E12-F004C failure
 Trigger 4 Steam leak in Aux Bldg Steam Tunnel
 Trigger 5 Steam Rupture in Aux Bldg Steam Tunnel

COMPONENT	PANEL	INDICATION or CONTROL	SIMULATOR CODE	STATUS	DONE
APRM H		DOWNSCALE	c51010h		
TBCW PUMP C	P870-5C	GREEN LIGHT	lo_1p43m600c_g	OFF	
		HANDSWITCH	di_1p43m600c	STOP	
ESF 12 BREAKER 152-1903	P807-1C	GREEN LIGHT	lo_1r21m623_g	OFF	
		HANDSWITCH	di_1r21m623	TRIP	
ESF 12 BREAKER 152-1904	P807-1C	GREEN LIGHT	lo_1r21m624_g	OFF	
		HANDSWITCH	di_1r21m624	TRIP	
ESF 12 BREAKER 152-1905	P807-1C	GREEN LIGHT	lo_1r21m637_g	OFF	
		HANDSWITCH	di_1r21m637	TRIP	
ESF 12 FEEDER 152-1511	P864-1C	GREEN LIGHT	lo_1r21m601a_g	OFF	
		HANDSWITCH	di_1r21m601a	TRIP	
ESF 12 FEEDER 152-1611	P864-2C	GREEN LIGHT	lo_1r21m601b_g	OFF	
		HANDSWITCH	di_1r21m601b	TRIP	
ESF 12 FEEDER 152-1704	P601-16C	GREEN LIGHT	lo_1e22m709_g	OFF	
		HANDSWITCH	di_1e22m709	TRIP	
115 KV DISCONNECT J3885	P807-1C	GREEN LIGHT	lo_1r27r602_g	OFF	
J3885		DISCONNECT		OPEN	

Bypass Division 2 APRM Bypass Joystick to APRM H position.

Open Circuit Breakers 152-1903, 1904, 1905, 1511, 1611, and 1704

Place TBCW pump B to STOP (to clear Standby light) then to START, stop TBCW pump C.

Ensure only two Condensate and Condensate Booster Pumps are operating.

Startup all PDS / SPDS screens. Clear any graphs and trends off of SPDS.

Setup the presently used cyclops display and verify it is functional.

Ensure the correct startup sequence is available at the P680 for the present IC.

Install turnover guide, red tag, and LCO paperwork as applicable.

Advance all chart recorders and ensure all pens are inking properly.

(APRM chart recorders must be turned on and settings for scales on pens 0 – 125 scale)

SIMULATOR OPERATION

Once simulator is reinitialized and setup complete take the simulator out of Freeze.

Once the Crew has taken control note the simulator time.

The Crew will raise reactor power using Recirculation Flow to just above 14 mlbm/hr Feedwater Flow.

Above 14 mlbm/hr, they will place the third Condensate and Condensate Booster Pump in service. They may contact Radwaste about Condensate Demins.

Two (2) minutes after the Condensate Pump evolution is complete, **activate TRIGGER 1.**

Loss of RPS MG 'B'

Cues:

If asked, report as Control Building Operator, RPS MG 'B' has tripped. The Alternate supply EPA breakers are closed.

If asked, report as Electrical Maintenance, that the RPS MG voltage is running high and will require further investigation.

Five (5) Minutes after the Hydrogen Temperature Controller alarms are received, **activate TRIGGER 3.**

When Crew initiates Manual scram, **activate TRIGGER 4.**

Two (2) Minutes after Reactor Scram, report as Security white smoke or steam is coming out of the top of the Auxiliary Building.

If contacted, report as Health Physics there are NO abnormal radiation surveys of the Auxiliary Building.

If contacted, report as Chemistry there are NO verified leaking fuel bundles in the reactor.

TERMINATION

Once reactor pressure has lowered to < 600 psig and a system is aligned for RPV level control and the Lead Evaluator concurs the scenario may be terminated.

Critical Tasks

- Manually scram the reactor.
-
- Isolate the main steam lines.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 1 </u>		
Event Description: Shift Recirc Pump B to Fast Speed. Then raise total Recirc flow to 67.5 Mlbm/hr. (04-1-01-B33-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies position on Power to Flow Map (Operating in Region III).
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the Recirc Pump 'B'.
	BOP	Raise Taps on Transformers to raise voltage on 12HE bus to 7.2 KV.
	RO	Start the Recirc 'B' Pump in Fast Speed.
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the second Recirc Pump.
	RO	Start the second Recirc Pump in Fast Speed.
	BOP	Lower Taps on Transformer 11B to lower voltage on 12HE bus to 7.0 KV.
	BOP	Monitor Power, Level, Pressure, and Turbine Loading during the evolution.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 2 </u>		
Event Description: Raise Total Core Flow to 67.5 Mlbm/hr using Recirc Flow Control. (This will raise Reactor Power from ~ 37% to ~43% power and Total Core Flow from ~ 52 to ~ 67.5 Mlbm/hr.)		
Time	Position	Applicant's Actions or Behavior
	RO	Raise both Recirc Flow Control Valves positions to achieve 67.5 Mlbm/hr Total Recirc Flow. (The RO may elect to use both hands to adjust core flow by raising both Recirc Flow Control Valves at the same time to maintain the loops balanced. This is acceptable.)
	BOP	Monitors Pressure, Level, Power, and Turbine Loading.
	RO & BOP	Monitor operation on the Power to Flow Map.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 3 </u>		
Event Description: Withdraw control rods to increase power. (Control Rod Pull Sheet) Control Rod 32-09 is stuck, un-stick control rod per ONEP. (ONEP 05-1-02-IV-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies control rods and positions per Pull Sheet and selects control rods per next gang of control rods. (May select Individual or Gang movement and may select any Control Rod in the Gang.)
	BOP	Act as Verifier for Control Rod movements.
	RO	Moves Control Rods from Position 04 to position 08. Once Control Rod 32-09 is attempted to be moved will recognize control rod is immovable.
	SS	Obtains CRD Malfunctions ONEP 05-1-02-IV-1 and verifies action per section 3.5, orders CRD Drive pressure raised ~25 psid.
	BOP	Raises CRD Drive pressure ~ 25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports no movement.
	BOP	Raises CRD Drive pressure ~25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports movement and positions Control Rod 32-09 at position 08.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 4 </u>		
Event Description: Respond to a failure of the reference leg of D004A Reactor Level Instrument.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces and acknowledges alarms on H13-P680. <ul style="list-style-type: none"> - RPS scram (1/2 scram signal on RPS A) - Main Turb/RFPT Level 8 trip (1 of 3; 2 of 3 required for trip) - Level 8 Scram signal
	RO	Observes Level Instruments and determines common indication of D004A failure on reference leg side.
	BOP	Observes Level Instruments on H13-P601 off the same condensing pot and determines upscale indication for confirmation.
	RO	Confirms with ARI actions correct and the Main Turbine and Reactor Feed Pumps should NOT have tripped and there should only be a ½ scram signal.
	SS	Verifies Technical Specifications. See attached Attachment from 04-1-01-B21-1 for LCOs associated with D004A. (Based on Drywell Conditions the SS may require a followup question to cover this action.)
	CREW	Determines Drywell Pressure is rising and failure is most likely from an instrument line break. (May be a followup question.)

Op-Test No.: _____ Scenario No.: 1 Event No.: 5

Event Description: **Manual scram the reactor based on rising Drywell Pressure.**

Time	Position	Applicant's Actions or Behavior
	SS	Based on rising Drywell Pressure due to the Instrument Line break, orders manual scram of the Reactor
	RO	Places the Reactor Mode Switch to Shutdown or arms and depresses at least one Manual Scram Pushbutton per RPS Division (A & B).
	RO	Verifies All Control Rods have fully inserted to position 00 and reports to the SS "All Rods Inserted".
	RO	If the Manual Scram Pushbuttons utilized confirms stable reactor pressure and places the Reactor Mode Switch in Shutdown.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 6 </u>		
Event Description: Respond to a failure of Division 1 ECCS to automatically initiate on High Drywell Pressure.		
Time	Position	Applicant's Actions or Behavior
	BOP **	Observes Initiation of ECCS on High Drywell Pressure and observes Division 1 ECCS failed to initiate automatically. Reports failure of Division 1 to the SS.
	BOP **	Manually initiates Division 1 ECCS using the Division 1 (LPCS/LPCI A Manual Initiation Pushbutton).
	BOP	Reports operation of Division 1 ECCS to the SS.
	SS	Enters Emergency Procedure 3 Containment Control.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 7 </u>		
Event Description: Feedwater Line Rupture in the Turbine Building with leakage from the Reactor.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces loss of the ability to feed the Reactor and observes the following: <ul style="list-style-type: none"> - Lowering Reactor Water Level - Turbine Building Sump Level alarms - Reactor Feed Pump Suction flow without Feed flow to Reactor
	SS	Enters Emergency Procedure 2.
	SS	Determines systems for injection into the Reactor and prioritizes system use for injection into the reactor Reactor Core Isolation Cooling (RCIC) High Pressure Core Spray (HPCS)
	BOP	Initiates RCIC either using the Manual Initiation Pushbutton or manual realignment. Determines RCIC will NOT develop enough pressure to inject into the Reactor and reports failure to SS.
	RO	Secures the Condensate and Feedwater System after determination of unisolable rupture.
	BOP	Observes HPCS has tripped on initiation and reports failure to SS.
	SS	Orders injection from Control Rod Drive (CRD) system with maximized flow.
	BOP	Attempts to start CRD pumps A and B following LSS actuation and observes trip on both then reports failure to the SS.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 8 </u>		
Event Description: Respond to degraded high pressure injection systems and lowering Reactor level.		
Time	Position	Applicant's Actions or Behavior
	SS	Determine available high pressure injection systems and orders injection from Standby Liquid Control (SLC) from either the boron or test tank.
	SS **	Determines Reactor level continuing to lower with SLC injection and orders reduction of Reactor pressure using either Main Steam Bypass Valves or Safety Relief Valves. Pressure reduction should be sufficient to allow injection with Low Pressure Core Spray (LPCS) or Low Pressure Coolant Injection (LPCI A or B). (LPCI may be through E12-F042 or E12-F053 with Attachment 12.)
	RO **	Lowers Reactor pressure using the Main Steam Bypass Valves on the jack or lowering pressure set to the pressure band specified by the SS. (This action may be N/A if Safety Relief Valves are used.)
	BOP **	If ordered lowers RPV pressure using Safety Relief Valves to the band specified by the SS. (This action may be N/A if Main Steam Bypass Valves are used.)
	SS	Orders alignment of Systems for injection to the Reactor: LPCS LPCI A or B (may order alignment of Fire Water (Att 26) and Condensate Transfer (Att 25))
	BOP	Aligns systems for injection to the vessel and when Reactor pressure allows injection informs the SS of injection and Reactor level recovery.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **4** Op-Test No.: **BACKUP**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Raise Reactor Power using Recirculation Flow.
2. Shift running CCW pumps to 'B' and 'C'.
3. Respond to a failure of the Main Generator Hydrogen Temperature Controller.
4. Respond to a trip of CCW pump 'C' and determine the cause of the trip followed by trip of CCW pump 'B'.
5. Respond to ATWS with Main Steam Bypass Valve controller fault and take actions per EOPs.
6. Recognize failure of Standby Liquid Control injection and determine the need for Alternate Boron injection.

Initial Conditions: Reactor Power is at 80 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card

ESF 12 Transformer is tagged out of service for maintenance

TBCW Pump 'C' is tagged out of service for pump seal replacement

Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Shift operating CCW pumps to allow removal of CCW pump A from service for motor bearing inspections. There are scattered thunder showers reported in the Tensas Parish area.

Scenario 4 **BACKUP** (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	1, 2, 4, 5, 6, 8	202001 A4.04 202002 A4.08 2.2.2	R (RO)	Raise Total Core Flow to raise Reactor power to rated conditions. (IOI 03-1-01-2)
2	4, 5, 6	400000 A2.01; A4.01 2.1.30	N (BOP)	Shift CCW pumps to 'B' and 'C' operating and pump 'A' secured. (SOI 04-1-01-P42-1)
3	3, 4, 5	245000 A3.09; A4.11 2.1.30; 2.4.10	C (RO)	Respond to failure of the Main Generator Hydrogen Temperature controller failure. (Alarm Response Instructions)
4	3, 4, 5, 6, 8	2.4.49 295018 AA2.03	C (BOP)	Trip of CCW pump 'C', determine the source and respond to the loss of the pump and subsequent complete loss of CCW. (ONEP 05-1-02-V-1)
5	2, 3, 4, 7	2.4.4; 2.4.49 295006 AA1.01; AA1.05; AA1.07		When required initiate a manual Reactor Scram.
6	6, 8, 12, 13	295037 EA1.0; EA2.0 203000 A3.08 241000 A4.06	M (ALL)	Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS.
	3, 4	295007 AA1.04 295025 EA1.03 239001 A2.06 241000 A2.03	C (RO)	Recognize failure of Main Steam Bypass Control Valves to open and attempt manual operation using Manual Bypass Jack operation.
	3, 4	295037 EA1.04; EA1.10 211000 A1.0; A2.04; A3.0	C (BOP)	Recognize the failure of Standby Liquid Control pump 'A' to start when initiated and determine need for Alternate Boron Injection.

All evolutions test 55.45(a) 12 & 13.

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

Scenario 4 **BACKUP** (Continued)

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches -192".
- Insert Control Rods in response to ATWS conditions.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **4** Op-Test No.: **BACKUP**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Raise Reactor Power using Recirculation Flow.
2. Shift running CCW pumps to 'B' and 'C'.
3. Respond to a failure of the Main Generator Hydrogen Temperature Controller.
4. Respond to a trip of CCW pump 'C' and determine the cause of the trip followed by trip of CCW pump 'B'.
5. Respond to ATWS with Main Steam Bypass Valve controller fault and take actions per EOPs.
6. Recognize failure of Standby Liquid Control injection and determine the need for Alternate Boron injection.

Initial Conditions: Reactor Power is at 80 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
 ESF 12 Transformer is tagged out of service for maintenance
 TBCW Pump 'C' is tagged out of service for pump seal replacement
 Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Shift operating CCW pumps to allow removal of CCW pump A from service for motor bearing inspections. There are scattered thunder showers reported in the Tensas Parish area.

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO)	Raise Total Core Flow to raise Reactor power to rated conditions. (IOI 03-1-01-2)
2		N (BOP)	Shift CCW pumps to 'B' and 'C' operating and pump 'A' secured. (SOI 04-1-01-P42-1)

Scenario 4 **BACKUP** (Continued)

Event No.	Malf. No.	Event Type*	Event Description
3		C (RO)	Respond to failure of the Main Generator Hydrogen Temperature controller failure. (Alarm Response Instructions)
4		C (BOP)	Trip of CCW pump 'C', determine the source and respond to the loss of the pump and subsequent complete loss of CCW. (ONEP 05-1-02-V-1)
5			When required initiate a manual Reactor Scram.
6		M (ALL)	Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS.
		C (RO)	Recognize failure of Main Steam Bypass Control Valves to open and attempt manual operation using Manual Bypass Jack operation.
		C (BOP)	Recognize the failure of Standby Liquid Control pump 'A' to start when initiated and determine need for Alternate Boron Injection.

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

Critical Tasks

- Inject Standby Liquid Control prior to Suppression Pool Temperature reaching 110 °F.
- Terminate and prevent injection from Feedwater and ECCS when conditions require entry into Level/Power Control.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling when reactor level reaches -192".
- Insert Control Rods in response to ATWS conditions.

Scenario 3 Day 1 (Continued)

Crew Turnover:

Rx at 36% CTP.

The plant is raising power following an outage. Reactor Recirculation Pump 'A' is in fast speed and 'B' is operating in Slow Speed. The 'A' Reactor Feed Pump is operating in Single Element Master Level Control.

APRM 'F' is failed due to a failed power supply card and bypassed.

ESF 12 Transformer is tagged out of service for maintenance.

CCW Pump 'C' is tagged out of service for pump seal replacement.

RHR 'C' Pump is tagged out of service for motor oil replacement.

Appropriate clearances and LCOs are written.

Continue to bring the plant to full power per IOI-2 step 5.11.

Startup Pull Sheet Step 117.

Fraction of Core Boiling Boundary is < 1.0.

There are scattered thunderstorms reported in the Tensas Parish area.

Simulator Setup:

Start the process from a new simulator load.

Reset to IC-13.

Run BAT file setup1 and verify or perform the following:

IC: 13

OOS: ESF Transformer 12 (Place tags on 152-1903, 1904, 1905, 1511, 1611, and 1704)
CCW C Pump (Place tag on start HS)
RHR C Pump (Place tag on start HS)

Active malfunctions: **z022022_32_09** Control Rod 32-09 stuck
rr040a @ 0 Drywell Pressure Transmitter B21-N094A
e22052 HPCS Pump Trip on start
e51044 @ 25 RCIC Turbine Speed Control Failure

Active overrides None

Pending overrides None

Pending malfunctions: **rr188a** Upscale Failure D004A Narrow Range (TRG 1)
 rr188e Upscale Failure D004A Wide Range (TRG 1)
 rr063a @ 0.5% Recirc Loop A leak (TRG 1) ramp to 3%
 after scram
 fw070a @ 100% Feedwater Rupture Turb Bldg (TRG 2)
 c11028a CRD A Pump Trip (TRG 3)
 c11028b CRD B Pump Trip (TRG 4)

Pending component malfunctions: None

Trigger files: Trigger 1 D004A Instrument Failure
 Trigger 2 Feedwater Rupture in Turbine Building
 Trigger 3 CRD A pump trip after LSS sequence
 (will not restart after shed)
 Trigger 4 CRD B will NOT be able to be started after
 LSS actuation.

(Triggers 3 and 4 are to simulate a common mode failure of LSS Sequencing.)

Place RHR C OOSVC handswitch to OOSVC.

Bypass Division 2 APRM Bypass Joystick to APRM F position.

Open Circuit Breakers 152-1903, 1904, 1905, 1511, 1611, and 1704

Place CCW pump B to STOP (to clear Standby light) then to START, stop CCW pump C.

Shift Reactor Recirculation Pump 'A' to Fast Speed and return transformer taps to 7.0 KV.

Startup all PDS / SPDS screens. Clear any graphs and trends off of SPDS.

Setup the presently used cyclops display and verify it is functional.

Ensure the correct startup sequence is available at the P680 for the present IC.

Install turnover guide, red tag, and LCO paperwork as applicable.

Advance all chart recorders and ensure all pens are inking properly.

(APRM chart recorders must be turned on and settings for scales on pens 0 – 125 scale)

SIMULATOR OPERATION

Once simulator is reinitialized and setup complete take the simulator out of Freeze.

Once the Crew has taken control note the simulator time.

Crew will prepare to and shift Recirc Pump 'B' to Fast Speed.

Cues:

If asked, report as Auxiliary Building Operator – Recirc Pump Seal Purge flow is 1.8 gpm.

If asked, report as Reactor Engineer – Core Thermal power is indicating 34 % (~1303 MWth).

The Crew will raise Recirc Total Core Flow to ~ 67.5 Mlbm/hr using flow control valves.

After Recirc Pumps are in Fast Speed, the SS should request FCTR switches be placed in NORMAL.

**Remote Action page NEUTRON MONITOR C51309 to NORM
C51310 to NORM**

The Crew should note Feedwater flow is not sufficient to transfer to Three Element Control.

If asked, as Reactor Engineer report sufficient margin to withdraw control rods starting at step 117 to achieve 6.6 Mlbm/hr Feed flow. Withdrawal is allowed in either gang or individual at SS and ACRO discretion.

The Crew when Control Rod 32-09 is attempted to be withdrawn will note its inability to move. After the second time to raise CRD Drive Water Pressure remove malfunction z022022 32 09.

Once CRD Drive Pressure is returned to normal **activate TRIGGER 1.**

On Scram, **activate TRIGGER 2.**

When Manual Scram inserted, Raise leak rr063a to 3%.

After LSS actuation, trigger events on Triggers 3 & 4.

If required to cause Reactor level to begin to lower rr063a may be raised to 5%.

EP Attachments which may be requested:

Attachment 12 Defeat RHR Shutdown Cooling interlocks.

Attachment 26 Align Fire Water makeup to the Reactor (no simulator modeling)

Attachment 25 Align Condensate Transfer makeup to the Reactor (no simulator modeling)

If asked, report as Electrical Supervisor – HPCS Pump Breaker has Motor overcurrent lockout further investigation required.

If asked, report as I & C Supervisor – RCIC speed controller has failed.

If CRD Pump Breakers are checked indicate there are no apparent reasons for the CRD Pumps

Crew may request Circ Water Pump A cooling be transferred to pump discharge. Remote Function page Circulating Water N71195 to pump discharge.

TERMINATION

Once Reactor Water Level is being restored using LPCS or LPCI and the Lead Evaluator concurs the scenario may be terminated.

Critical Tasks

- Recognize failure of Division 1 to initiate and manually initiate Division 1.
- Lower reactor pressure to allow injection from low pressure systems.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 1 </u>		
Event Description: Shift Recirc Pump B to Fast Speed. Then raise total Recirc flow to 67.5 Mlbm/hr. (04-1-01-B33-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies position on Power to Flow Map (Operating in Region III).
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the Recirc Pump 'B'.
	BOP	Raise Taps on Transformers to raise voltage on 12HE bus to 7.2 KV.
	RO	Start the Recirc 'B' Pump in Fast Speed.
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the second Recirc Pump.
	RO	Start the second Recirc Pump in Fast Speed.
	BOP	Lower Taps on Transformer 11B to lower voltage on 12HE bus to 7.0 KV.
	BOP	Monitor Power, Level, Pressure, and Turbine Loading during the evolution.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>2</u>		
Event Description: Raise Total Core Flow to 67.5 Mlbm/hr using Recirc Flow Control. (This will raise Reactor Power from ~ 37% to ~43% power and Total Core Flow from ~ 52 to ~ 67.5 Mlbm/hr.)		
Time	Position	Applicant's Actions or Behavior
	RO	Raise both Recirc Flow Control Valves positions to achieve 67.5 Mlbm/hr Total Recirc Flow. (The RO may elect to use both hands to adjust core flow by raising both Recirc Flow Control Valves at the same time to maintain the loops balanced. This is acceptable.)
	BOP	Monitors Pressure, Level, Power, and Turbine Loading.
	RO & BOP	Monitor operation on the Power to Flow Map.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>3</u>		
Event Description: Withdraw control rods to increase power. (Control Rod Pull Sheet) Control Rod 32-09 is stuck, un-stick control rod per ONEP. (ONEP 05-1-02-IV-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies control rods and positions per Pull Sheet and selects control rods per next gang of control rods. (May select Individual or Gang movement and may select any Control Rod in the Gang.)
	BOP	Act as Verifier for Control Rod movements.
	RO	Moves Control Rods from Position 04 to position 08. Once Control Rod 32-09 is attempted to be moved will recognize control rod is immovable.
	SS	Obtains CRD Malfunctions ONEP 05-1-02-IV-1 and verifies action per section 3.5, orders CRD Drive pressure raised ~25 psid.
	BOP	Raises CRD Drive pressure ~ 25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports no movement.
	BOP	Raises CRD Drive pressure ~25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports movement and positions Control Rod 32-09 at position 08.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 4 </u>		
Event Description: Respond to a failure of the reference leg of D004A Reactor Level Instrument.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces and acknowledges alarms on H13-P680. <ul style="list-style-type: none"> - RPS scram (1/2 scram signal on RPS A) - Main Turb/RFPT Level 8 trip (1 of 3; 2 of 3 required for trip) - Level 8 Scram signal
	RO	Observes Level Instruments and determines common indication of D004A failure on reference leg side.
	BOP	Observes Level Instruments on H13-P601 off the same condensing pot and determines upscale indication for confirmation.
	RO	Confirms with ARI actions correct and the Main Turbine and Reactor Feed Pumps should NOT have tripped and there should only be a ½ scram signal.
	SS	Verifies Technical Specifications. See attached Attachment from 04-1-01-B21-1 for LCOs associated with D004A. (Based on Drywell Conditions the SS may require a followup question to cover this action.)
	CREW	Determines Drywell Pressure is rising and failure is most likely from an instrument line break. (May be a followup question.)

Op-Test No.: _____ Scenario No.: 1 Event No.: 5

Event Description: **Manual scram the reactor based on rising Drywell Pressure.**

Time	Position	Applicant's Actions or Behavior
	SS	Based on rising Drywell Pressure due to the Instrument Line break, orders manual scram of the Reactor
	RO	Places the Reactor Mode Switch to Shutdown or arms and depresses at least one Manual Scram Pushbutton per RPS Division (A & B).
	RO	Verifies All Control Rods have fully inserted to position 00 and reports to the SS "All Rods Inserted".
	RO	If the Manual Scram Pushbuttons utilized confirms stable reactor pressure and places the Reactor Mode Switch in Shutdown.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 6 </u>		
Event Description: Respond to a failure of Division 1 ECCS to automatically initiate on High Drywell Pressure.		
Time	Position	Applicant's Actions or Behavior
	BOP **	Observes Initiation of ECCS on High Drywell Pressure and observes Division 1 ECCS failed to initiate automatically. Reports failure of Division 1 to the SS.
	BOP **	Manually initiates Division 1 ECCS using the Division 1 (LPCS/LPCI A Manual Initiation Pushbutton).
	BOP	Reports operation of Division 1 ECCS to the SS.
	SS	Enters Emergency Procedure 3 Containment Control.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 7 </u>		
Event Description: Feedwater Line Rupture in the Turbine Building with leakage from the Reactor.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces loss of the ability to feed the Reactor and observes the following: <ul style="list-style-type: none"> - Lowering Reactor Water Level - Turbine Building Sump Level alarms - Reactor Feed Pump Suction flow without Feed flow to Reactor
	SS	Enters Emergency Procedure 2.
	SS	Determines systems for injection into the Reactor and prioritizes system use for injection into the reactor Reactor Core Isolation Cooling (RCIC) High Pressure Core Spray (HPCS)
	BOP	Initiates RCIC either using the Manual Initiation Pushbutton or manual realignment. Determines RCIC will NOT develop enough pressure to inject into the Reactor and reports failure to SS.
	RO	Secures the Condensate and Feedwater System after determination of unisolable rupture.
	BOP	Observes HPCS has tripped on initiation and reports failure to SS.
	SS	Orders injection from Control Rod Drive (CRD) system with maximized flow.
	BOP	Attempts to start CRD pumps A and B following LSS actuation and observes trip on both then reports failure to the SS.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 8 </u>		
Event Description: Respond to degraded high pressure injection systems and lowering Reactor level.		
Time	Position	Applicant's Actions or Behavior
	SS	Determine available high pressure injection systems and orders injection from Standby Liquid Control (SLC) from either the boron or test tank.
	SS **	Determines Reactor level continuing to lower with SLC injection and orders reduction of Reactor pressure using either Main Steam Bypass Valves or Safety Relief Valves. Pressure reduction should be sufficient to allow injection with Low Pressure Core Spray (LPCS) or Low Pressure Coolant Injection (LPCI A or B). (LPCI may be through E12-F042 or E12-F053 with Attachment 12.)
	RO **	Lowers Reactor pressure using the Main Steam Bypass Valves on the jack or lowering pressure set to the pressure band specified by the SS. (This action may be N/A if Safety Relief Valves are used.)
	BOP **	If ordered lowers RPV pressure using Safety Relief Valves to the band specified by the SS. (This action may be N/A if Main Steam Bypass Valves are used.)
	SS	Orders alignment of Systems for injection to the Reactor: LPCS LPCI A or B (may order alignment of Fire Water (Att 26) and Condensate Transfer (Att 25))
	BOP	Aligns systems for injection to the vessel and when Reactor pressure allows injection informs the SS of injection and Reactor level recovery.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **5** Op-Test No.: **BACKUP**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Startup 2nd Reactor Feed Pump and place in service.
2. Raise Reactor Power using control rod withdrawal.
3. Respond to a failure of a LPRM downscale.
4. Respond to a spurious HPCS initiation and subsequent pump trip.
5. Respond to Feedwater line rupture in the Turbine Building with degraded high pressure injection systems.
6. Recognize failure of Reactor Core Isolation Cooling System to initiate and manual startup failure.
7. Initiate actions to recover Reactor water level.

Initial Conditions: Reactor Power is at 54 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card

ESF 12 Transformer is tagged out of service for maintenance

TBCW Pump 'C' is tagged out of service for pump seal replacement

Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Reactor Feed Pump 'B' is ready to be placed in service. There are scattered thunder showers reported in the Tensas Parish area.

Scenario **5 BACKUP** (Continued)

Event No.	10CFR 55.45(a)	K/A	Event Type*	Event Description
1	2, 4, 5, 6	259001 A4.02; A3.03; A3.04; A3.06; A4.04; A4.07 259002 A4.01; A4.02; A4.03	N (RO)	Startup 2 nd Reactor Feed Pump and place in service. (SOI 04-1-01-N21-1)
2	1, 2, 5, 6, 8	201005 A3.01; A3.02; A3.03; A4.01 2.2.2	R (RO)	Raise Reactor Power by withdrawing control rods. (Control Rod Pull Sheet)
3	3, 4, 5	2.1.12; 2.1.13 215005 A2.08; A4.04	C (RO)	Respond to downscale failure of a LPRM. (Alarm Response Instructions & 17-S-02-40)
4	3, 4, 5, 6	2.1.12; 2.1.13 209002 A2.01; A2.02	C (BOP)	HPCS Spurious initiation and subsequent pump trip. (Tech Specs 3.5.1 and SOI 04-1-01-E22-1)
5	7, 13	295031 EA1.0 203000A3.08 241000 A4.06	M (ALL)	Respond to a Feedwater Line rupture in the Turbine Building. (ONEPs 05-1-02-V-7)
	2, 3, 4, 7	2.4.4; 2.4.49 295006 AA1.01; AA1.05; AA1.07		Initiate manual Reactor Scram. (ONEP 05-1-02-I-1)
	3, 4, 7	295031 EA1.05 217000 A2.10; A3.02; A4.01	C (BOP)	RCIC failure to initiate and failure to respond to manual startup. (ONEP 05-1-02-V-7 and SOI 04-1-01-E51-1)
	4, 5, 6, 7	295031 EA1.0		Recover Reactor level per EOPs.

All evolutions test 55.45(a) 12 & 13.

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

Critical Tasks

- Manually scram the Reactor.
- Lower reactor pressure to allow injection from low pressure systems for Reactor water level recovery.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **5** Op-Test No.: **BACKUP**

Examiners: _____ Operators: _____

Objectives: To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Startup 2nd Reactor Feed Pump and place in service.
2. Raise Reactor Power using control rod withdrawal.
3. Respond to a failure of a LPRM downscale.
4. Respond to a spurious HPCS initiation and subsequent pump trip.
5. Respond to Feedwater line rupture in the Turbine Building with degraded high pressure injection systems.
6. Recognize failure of Reactor Core Isolation Cooling System to initiate and manual startup failure.
7. Initiate actions to recover Reactor water level.

Initial Conditions: Reactor Power is at 54 % continuing power ascension to rated conditions.

INOPERABLE Equipment

APRM 'H' is INOP due to a failed power supply card
 ESF 12 Transformer is tagged out of service for maintenance
 TBCW Pump 'C' is tagged out of service for pump seal replacement
 Appropriate clearances and LCOs are written.

Turnover: Continue power ascension. Reactor Feed Pump 'B' is ready to be placed in service. There are scattered thunder showers reported in the Tensas Parish area.

Event No.	Malf. No.	Event Type*	Event Description
1		N (RO)	Startup 2 nd Reactor Feed Pump and place in service. (SOI 04-1-01-N21-1)
2		R (RO)	Raise Reactor Power by withdrawing control rods. (Control Rod Pull Sheet)

Scenario **5 BACKUP** (Continued)

Event No.	Malf. No.	Event Type*	Event Description
3		C (RO)	Respond to downscale failure of a LPRM. (Alarm Response Instructions & 17-S-02-40)
4		C (BOP)	HPCS Spurious initiation and subsequent pump trip. (Tech Specs 3.5.1 and SOI 04-1-01-E22-1)
5		M (ALL)	Respond to a Feedwater Line rupture in the Turbine Building. (ONEPs 05-1-02-V-7)
			Initiate manual Reactor Scram. (ONEP 05-1-02-I-1)
		C (BOP)	RCIC failure to initiate and failure to respond to manual startup. (ONEP 05-1-02-V-7 and SOI 04-1-01-E51-1)
			Recover Reactor level per EOPs.

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

Critical Tasks

- Manually scram the Reactor.
- Lower reactor pressure to allow injection from low pressure systems for Reactor water level recovery.

Scenario 3 Day 1 (Continued)

Crew Turnover:

Rx at 36% CTP.

The plant is raising power following an outage. Reactor Recirculation Pump 'A' is in fast speed and 'B' is operating in Slow Speed. The 'A' Reactor Feed Pump is operating in Single Element Master Level Control.

APRM 'F' is failed due to a failed power supply card and bypassed.

ESF 12 Transformer is tagged out of service for maintenance.

CCW Pump 'C' is tagged out of service for pump seal replacement.

RHR 'C' Pump is tagged out of service for motor oil replacement.

Appropriate clearances and LCOs are written.

Continue to bring the plant to full power per IOI-2 step 5.11.

Startup Pull Sheet Step 117.

Fraction of Core Boiling Boundary is < 1.0.

There are scattered thunderstorms reported in the Tensas Parish area.

Simulator Setup:

Start the process from a new simulator load.

Reset to IC-13.

Run BAT file setup1 and verify or perform the following:

IC: 13

OOS: ESF Transformer 12 (Place tags on 152-1903, 1904, 1905, 1511, 1611, and 1704)
CCW C Pump (Place tag on start HS)
RHR C Pump (Place tag on start HS)

Active malfunctions: **z022022_32_09** Control Rod 32-09 stuck
rr040a @ 0 Drywell Pressure Transmitter B21-N094A
e22052 HPCS Pump Trip on start
e51044 @ 25 RCIC Turbine Speed Control Failure

Active overrides None

Pending overrides None

Pending malfunctions: **rr188a** Upscale Failure D004A Narrow Range (TRG 1)
 rr188e Upscale Failure D004A Wide Range (TRG 1)
 rr063a @ 0.5% Recirc Loop A leak (TRG 1) ramp to 3%
 after scram
 fw070a @ 100% Feedwater Rupture Turb Bldg (TRG 2)
 c11028a CRD A Pump Trip (TRG 3)
 c11028b CRD B Pump Trip (TRG 4)

Pending component malfunctions: None

Trigger files: Trigger 1 D004A Instrument Failure
 Trigger 2 Feedwater Rupture in Turbine Building
 Trigger 3 CRD A pump trip after LSS sequence
 (will not restart after shed)
 Trigger 4 CRD B will NOT be able to be started after
 LSS actuation.

(Triggers 3 and 4 are to simulate a common mode failure of LSS Sequencing.)

Place RHR C OOSVC handswitch to OOSVC.

Bypass Division 2 APRM Bypass Joystick to APRM F position.

Open Circuit Breakers 152-1903, 1904, 1905, 1511, 1611, and 1704

Place CCW pump B to STOP (to clear Standby light) then to START, stop CCW pump C.

Shift Reactor Recirculation Pump 'A' to Fast Speed and return transformer taps to 7.0 KV.

Startup all PDS / SPDS screens. Clear any graphs and trends off of SPDS.

Setup the presently used cyclops display and verify it is functional.

Ensure the correct startup sequence is available at the P680 for the present IC.

Install turnover guide, red tag, and LCO paperwork as applicable.

Advance all chart recorders and ensure all pens are inking properly.

(APRM chart recorders must be turned on and settings for scales on pens 0 – 125 scale)

SIMULATOR OPERATION

Once simulator is reinitialized and setup complete take the simulator out of Freeze.

Once the Crew has taken control note the simulator time.

Crew will prepare to and shift Recirc Pump 'B' to Fast Speed.

Cues:

If asked, report as Auxiliary Building Operator – Recirc Pump Seal Purge flow is 1.8 gpm.

If asked, report as Reactor Engineer – Core Thermal power is indicating 34 % (~1303 MWth).

The Crew will raise Recirc Total Core Flow to ~ 67.5 Mlbm/hr using flow control valves.

After Recirc Pumps are in Fast Speed, the SS should request FCTR switches be placed in NORMAL.

**Remote Action page NEUTRON MONITOR C51309 to NORM
C51310 to NORM**

The Crew should note Feedwater flow is not sufficient to transfer to Three Element Control.

If asked, as Reactor Engineer report sufficient margin to withdraw control rods starting at step 117 to achieve 6.6 Mlbm/hr Feed flow. Withdrawal is allowed in either gang or individual at SS and ACRO discretion.

The Crew when Control Rod 32-09 is attempted to be withdrawn will note its inability to move. After the second time to raise CRD Drive Water Pressure remove malfunction z022022 32 09.

Once CRD Drive Pressure is returned to normal **activate TRIGGER 1.**

On Scram, **activate TRIGGER 2.**

When Manual Scram inserted, Raise leak rr063a to 3%.

After LSS actuation, trigger events on Triggers 3 & 4.

If required to cause Reactor level to begin to lower rr063a may be raised to 5%.

EP Attachments which may be requested:

Attachment 12 Defeat RHR Shutdown Cooling interlocks.

Attachment 26 Align Fire Water makeup to the Reactor (no simulator modeling)

Attachment 25 Align Condensate Transfer makeup to the Reactor (no simulator modeling)

If asked, report as Electrical Supervisor – HPCS Pump Breaker has Motor overcurrent lockout further investigation required.

If asked, report as I & C Supervisor – RCIC speed controller has failed.

If CRD Pump Breakers are checked indicate there are no apparent reasons for the CRD Pumps

Crew may request Circ Water Pump A cooling be transferred to pump discharge. Remote Function page Circulating Water N71195 to pump discharge.

TERMINATION

Once Reactor Water Level is being restored using LPCS or LPCI and the Lead Evaluator concurs the scenario may be terminated.

Critical Tasks

- Recognize failure of Division 1 to initiate and manually initiate Division 1.
- Lower reactor pressure to allow injection from low pressure systems.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 1 </u>		
Event Description: Shift Recirc Pump B to Fast Speed. Then raise total Recirc flow to 67.5 Mlbm/hr. (04-1-01-B33-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies position on Power to Flow Map (Operating in Region III).
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the Recirc Pump 'B'.
	BOP	Raise Taps on Transformers to raise voltage on 12HE bus to 7.2 KV.
	RO	Start the Recirc 'B' Pump in Fast Speed.
	RO	Closes Flow Control Valve in manual to ~ 6% valve position (Min valve position) for the second Recirc Pump.
	RO	Start the second Recirc Pump in Fast Speed.
	BOP	Lower Taps on Transformer 11B to lower voltage on 12HE bus to 7.0 KV.
	BOP	Monitor Power, Level, Pressure, and Turbine Loading during the evolution.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>2</u>		
Event Description: Raise Total Core Flow to 67.5 Mlbm/hr using Recirc Flow Control. (This will raise Reactor Power from ~ 37% to ~43% power and Total Core Flow from ~ 52 to ~ 67.5 Mlbm/hr.)		
Time	Position	Applicant's Actions or Behavior
	RO	Raise both Recirc Flow Control Valves positions to achieve 67.5 Mlbm/hr Total Recirc Flow. (The RO may elect to use both hands to adjust core flow by raising both Recirc Flow Control Valves at the same time to maintain the loops balanced. This is acceptable.)
	BOP	Monitors Pressure, Level, Power, and Turbine Loading.
	RO & BOP	Monitor operation on the Power to Flow Map.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 3 </u>		
Event Description: Withdraw control rods to increase power. (Control Rod Pull Sheet) Control Rod 32-09 is stuck, un-stick control rod per ONEP. (ONEP 05-1-02-IV-1)		
Time	Position	Applicant's Actions or Behavior
	SS	Provides Reactivity brief to crew.
	RO	Verifies control rods and positions per Pull Sheet and selects control rods per next gang of control rods. (May select Individual or Gang movement and may select any Control Rod in the Gang.)
	BOP	Act as Verifier for Control Rod movements.
	RO	Moves Control Rods from Position 04 to position 08. Once Control Rod 32-09 is attempted to be moved will recognize control rod is immovable.
	SS	Obtains CRD Malfunctions ONEP 05-1-02-IV-1 and verifies action per section 3.5, orders CRD Drive pressure raised ~25 psid.
	BOP	Raises CRD Drive pressure ~ 25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports no movement.
	BOP	Raises CRD Drive pressure ~25 psid using C11-F003 Pressure Control Valve on H13-P601.
	RO	Attempts to move the Control Rod and reports movement and positions Control Rod 32-09 at position 08.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>4</u>		
Event Description: Respond to a failure of the reference leg of D004A Reactor Level Instrument.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces and acknowledges alarms on H13-P680. <ul style="list-style-type: none"> - RPS scram (1/2 scram signal on RPS A) - Main Turb/RFPT Level 8 trip (1 of 3; 2 of 3 required for trip) - Level 8 Scram signal
	RO	Observes Level Instruments and determines common indication of D004A failure on reference leg side.
	BOP	Observes Level Instruments on H13-P601 off the same condensing pot and determines upscale indication for confirmation.
	RO	Confirms with ARI actions correct and the Main Turbine and Reactor Feed Pumps should NOT have tripped and there should only be a ½ scram signal.
	SS	Verifies Technical Specifications. See attached Attachment from 04-1-01-B21-1 for LCOs associated with D004A. (Based on Drywell Conditions the SS may require a followup question to cover this action.)
	CREW	Determines Drywell Pressure is rising and failure is most likely from an instrument line break. (May be a followup question.)

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>5</u>		
Event Description: Manual scram the reactor based on rising Drywell Pressure.		
Time	Position	Applicant's Actions or Behavior
	SS	Based on rising Drywell Pressure due to the Instrument Line break, orders manual scram of the Reactor
	RO	Places the Reactor Mode Switch to Shutdown or arms and depresses at least one Manual Scram Pushbutton per RPS Division (A & B).
	RO	Verifies All Control Rods have fully inserted to position 00 and reports to the SS "All Rods Inserted".
	RO	If the Manual Scram Pushbuttons utilized confirms stable reactor pressure and places the Reactor Mode Switch in Shutdown.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>6</u>		
Event Description: Respond to a failure of Division 1 ECCS to automatically initiate on High Drywell Pressure.		
Time	Position	Applicant's Actions or Behavior
	BOP **	Observes Initiation of ECCS on High Drywell Pressure and observes Division 1 ECCS failed to initiate automatically. Reports failure of Division 1 to the SS.
	BOP **	Manually initiates Division 1 ECCS using the Division 1 (LPCS/LPCI A Manual Initiation Pushbutton).
	BOP	Reports operation of Division 1 ECCS to the SS.
	SS	Enters Emergency Procedure 3 Containment Control.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 7 </u>		
Event Description: Feedwater Line Rupture in the Turbine Building with leakage from the Reactor.		
Time	Position	Applicant's Actions or Behavior
	RO	Announces loss of the ability to feed the Reactor and observes the following: <ul style="list-style-type: none"> - Lowering Reactor Water Level - Turbine Building Sump Level alarms - Reactor Feed Pump Suction flow without Feed flow to Reactor
	SS	Enters Emergency Procedure 2.
	SS	Determines systems for injection into the Reactor and prioritizes system use for injection into the reactor Reactor Core Isolation Cooling (RCIC) High Pressure Core Spray (HPCS)
	BOP	Initiates RCIC either using the Manual Initiation Pushbutton or manual realignment. Determines RCIC will NOT develop enough pressure to inject into the Reactor and reports failure to SS.
	RO	Secures the Condensate and Feedwater System after determination of unisolable rupture.
	BOP	Observes HPCS has tripped on initiation and reports failure to SS.
	SS	Orders injection from Control Rod Drive (CRD) system with maximized flow.
	BOP	Attempts to start CRD pumps A and B following LSS actuation and observes trip on both then reports failure to the SS.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 8 </u>		
Event Description: Respond to degraded high pressure injection systems and lowering Reactor level.		
Time	Position	Applicant's Actions or Behavior
	SS	Determine available high pressure injection systems and orders injection from Standby Liquid Control (SLC) from either the boron or test tank.
	SS **	Determines Reactor level continuing to lower with SLC injection and orders reduction of Reactor pressure using either Main Steam Bypass Valves or Safety Relief Valves. Pressure reduction should be sufficient to allow injection with Low Pressure Core Spray (LPCS) or Low Pressure Coolant Injection (LPCI A or B). (LPCI may be through E12-F042 or E12-F053 with Attachment 12.)
	RO **	Lowers Reactor pressure using the Main Steam Bypass Valves on the jack or lowering pressure set to the pressure band specified by the SS. (This action may be N/A if Safety Relief Valves are used.)
	BOP **	If ordered lowers RPV pressure using Safety Relief Valves to the band specified by the SS. (This action may be N/A if Main Steam Bypass Valves are used.)
	SS	Orders alignment of Systems for injection to the Reactor: LPCS LPCI A or B (may order alignment of Fire Water (Att 26) and Condensate Transfer (Att 25))
	BOP	Aligns systems for injection to the vessel and when Reactor pressure allows injection informs the SS of injection and Reactor level recovery.