

Facility:	BRUNSWICK	Scenario No.: LOIX-029	Op Test No.: <b>DRAFT</b>
Examiners:		Operators:	(SRO)
			(RO)
			(BOP)
<b>Initial Conditions:</b> The plant is operating at 95% power, End of Cycle. 1A NSW Pump U/C, 2C TCC Pump in service on Unit One, APRM 2 INOP and bypassed.			
<b>Turnover:</b> Feedwater temperature reduction will be implemented this weekend.			
Event No.	Malf. No.	Event Type*	Event Description
1	ZA411	C	DWEDT Pump failure
2	RM004F	C	RBV Rad Monitor failure / SBTG fails to auto start (TS)
3	RC053F	C	VFD Cell Failure / Power maneuver (TS)(AOP)
4	CN012F	C	Condenser Tube leak (AOP)
5		R	Power reduction to remove waterbox from service
6		N	Remove waterbox from service
7	RW013F	M C	RWCU leak Room Cooler Failures
8	K1507A	M C	ED Failure of 2 ADS valves to open
(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

## Scenario Description

Event	Description
1	Annunciator A-04 1-1, Drywell Equip Drain Sump Lvl Hi, will annunciate and the sumps will not auto start. One of the sump pumps will need to be manually started
2	Reactor Building Vent Radiation Monitor A will fail resulting in a Group 6 isolation, Secondary Containment isolation and SBTG initiation. SBTG A will fail to auto start requiring manual action. The crew will address TS.
3	A power cell in VFD A will fail. Recirc Pump 2A speed will lower and a speed hold will initiate. Loop flows will be outside mismatch limits. The crew will address TS and reset the speed hold and match loop flows.
4	A tube leak will occur in the main condenser resulting in high conductivity alarms. The crew will respond per OAP-26.0
5	Power should be reduced to 53% for water box removal
6	The water box will be removed from service per 2OP-29.0.
7	A large un-isolable RWCU leak will occur. Crew will enter AOP-5.0 and SCCP. SRO should direct a SCRAM. The south room cooler will not start and the north room cooler will run for 5 minutes and then trip.
8	Secondary containment conditions will worsen, forcing the SRO to direct an Emergency Depressurization due to high water levels. Two ADS SRV's will fail to manually open. SRO should direct opening two additional SRV's.

Facility:	BRUNSWICK	Scenario No.: LOIX-030	Op Test No.: <b>DRAFT</b>
Examiners:		Operators:	(SRO)
			(RO)
			(BOP)
<b>Initial Conditions:</b> The plant is operating at 54% power, Middle of Cycle. 1A NSW Pump U/C, 2C TCC Pump in service on Unit One, APRM 2 INOP and bypassed.			
<b>Turnover:</b> Transfer 2D and 2C BOP Buses to the UAT then raise power to ~60% to place the second reactor Feedpump in service.			
Event No.	Malf. No.	Event Type*	Event Description
1		N	BOP Bus Transfer
2		R	Raise Power
3	NB007F	C	C32-LT-N004A fails Low (TS)(AOP)
4	K4526A	C	ADHR Pump Trip (AOP)
5	ES013F	C	HPCI Logic failure (TS)
6	CN017F	C	AOG Guard Bed Fire
7	EE009F	M C	LOOP DG Failures
8	NB002F	M C	LOCA / ED RHR Inj Vlv Failure
(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

### Scenario Description

Event	Description
1	The crew will transfer BOP 2C Bus from the SAT to the UAT per OP-50
2	Raise reactor power to ~60% using reactor recirculation flow
3	C32-LT-N004A will fail low. The crew will reference Tech Spec 3.3.2.2 and determine a 7 day LCO exists to place the failed channel in the tripped condition. The crew should select level B per OP-32. (AOP-23)
4	The running ADHR Secondary Loop Pump (RCC Pump D) will trip. The crew will have to start RCC Pump C. Shutdown RCC Pump A. Re-align RCC Pump A for ADHR mode and then start the pump for ADHR. (AOP-38.1 will be entered.
5	The HPCI logic power fuse will blow requiring HPCI to be manually isolated per the APP and declared Inoperable per TS 3.5.1, Condition D.
6	An AOG off gas fire will occur in the guard bed. High temperatures will quickly spread into the charcoal absorber beds. The APPs require bypassing and isolating the AOG system, and initiating a nitrogen purge
7	A Loss of Offsite Power will occur. The crew will respond per 0AOP-36.1. All Diesel Generators will start on the LOOP signal. DG3 will trip on Diff O/C. DG 4 output breaker will fail to auto close. The BOP operator will close DG 4 output breaker to energize bus E4. (AOP-36.1)
8	After scram actions have been completed and level is stabilized, a LOCA will occur in the drywell. The crew will maximize RCIC flow and implement LEP-01 for alternate cooling systems. Level will lower until Emergency Depressurization is required. RHR Loop B injection valve E11-F015B will fail to automatically open due to mechanical binding. Annunciator A-03 5-8, RHR B Valves Overload, will be received. The thermal overload may be reset and the valve opened using the control switch.

Facility:	BRUNSWICK	Scenario No.: LOIX-031	Op Test No.: <b>DRAFT</b>
Examiners:		Operators:	(SRO)
			(RO)
			(BOP)
<b>Initial Conditions:</b> The plant is operating at 95% power, End of Cycle. 1A NSW Pump U/C, 2C TCC Pump in service on Unit One, APRM 2 INOP and bypassed.			
<b>Turnover:</b> Swap Condensate pumps so that the WCC can place 2A Condensate Pump under clearance. Feedwater temperature reduction will be implemented this weekend.			
Event No.	Malf. No.	Event Type*	Event Description
1		R	Reduce power for CBP swap
2		N	Swap CBP
3	CW025F	C	NSW Pump trip (AOP-18)(TS)
4	NI031F	C	APRM failure (TS)
5	CF039F	C	HD level controller failure (AOP-23)
6	RC007F RC009F	C	Recirc Pump seal failures (AOP-14)
7	RP010F	M C	ATWS T/P Level SLC Failure
8	RD036F	C	SDV Failure
(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

## Scenario Description

Event	Description
1	In order to swap Condensate pumps power the crew will determine that power must be reduced to ~80% (Operating with B & C Condensate pumps, condensate flow is limited to 13,500 gpm). The crew will lower power using recirc.
2	Swap condensate pumps in accordance with 2OP-32. The crew will re-align LOCA/Unit Trip Load Shed switches.
3	The running NSW pump will TRIP on motor overload. The STBY NSW pump will fail to AUTO start. The BOP operator should recognize the failure and manually start the STBY NSW pump. (AOP-18)(TS)
4	APRM 4 will fail upscale resulting in a rod block. The APRM will be declared Inoperable per TS 3.3.1.1. WCC SRO will request APRM TS Actions be taken in order to troubleshoot which requires the APRM mode selector switch to be place in INOP IAW 0OI-18.
5	The Heater Drain Deaerator level control system will fail causing the HD pumps discharge valves to fail full open. The crew will respond per AOP-23.0 stop 1 HD pump before HDD level goes <24" and then use the HD-V57 to control HDD level.
6	Reactor Recirc Pump 2A seal #1 will fail and seal pressures will equalize. Shortly after the seal #1 failure, a seal #2 failure will occur. The crew will respond to the Recirc Pump seal failure and the rising drywell temperature and pressure per AOP-14.0. AOP-14.0 will direct the Recirc Pump be shutdown and then be isolated. The discharge valve will have thermal overload, can be reset after the crew initiates a reactor scram. A reactor scram signal will occur on high drywell pressure. The auto scram signals will not cause a scram but the manual scram signal will
7	When a scram is inserted due to DW pressure an ATWS will occur. Scram discharge volume vents and drain fail closed on the scram, SLC flowpath will have blockage requiring alternate boron injection. Rods will be able to be driven in with RMCS
8	When actions are taken to control reactor water level during the ATWS after terminating and preventing, the SDV vents and drains will be repaired and rods can be inserted

Facility:	BRUNSWICK	Scenario No.: LOIX-032	Op Test No.: <b>DRAFT</b>
Examiners:		Operators:	(SRO)
			(RO)
			(BOP)
<b>Initial Conditions:</b> The plant is operating at ~3.7% power. 1A NSW Pump U/C, 2C TCC Pump in service on Unit One, APRM 2 INOP and bypassed.			
<b>Turnover:</b> Continue to raise power using rods. Step 5.3.45 of OGP-02 is complete. Rod pulls will commence at Step 166 (10-23 @ 12) of the A2X sequence..			
Event No.	Malf. No.	Event Type*	Event Description
1	NI018F	N	IRM C Fails Upscale (TS)
2		R	Shift Steam Packing Exhauster (SPE)
3		C	Raise Reactor Power by Pulling Control Rods
4	RD012M RD032M	C	Difficult to Move Control Rod (AOP)
5	ED-IAUPB2A6 K5608A K5609A	C	Stack Rad Monitor Failure - RBV failure to isolate (TS)
6	CF035F	C	SULCV failure (AOP)
7	RD005M	M	4 Control Rods Drift / Scram
8	ES004F CA020F	C C M	SRV Failure Tailpipe Rupture ED
(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

## Scenario Description

Event	Description
1	The crew will continue raising power by pulling control rods in preparation for placing the Mode switch to RUN. Rod pulls will commence at Step 166 (10-23 @ 12) of the A2X sequence. While withdrawing control rod 10-23 from position 12, IRM C will fail upscale causing a rod block and half scram. SRO will address IRM A and C inoperability IAW TS 3.3.1.1. Once addressed, I&C will report IRM A is ready to be returned to service following proper channel check. The crew will take the actions of the APP and bypass IRM C and reset the half scram.
2	Maintenance will contact the control room and request SPEs be swapped due to low oil level. Shift Steam Packing Exhausters (SPE) IAW 2OP-26.1, Section 8.
3	Following SPE shift, control rods will continue to be withdrawn raising power.
4	When control rod 26-23 is selected for withdrawal, it will be stuck at position 12. AOP-02 may be entered and 2OP-07, Section 8.2 actions are required to withdraw a difficult intermediate control rod.
5	Power to the Main Stack Radiation Monitor will fail. The loss of power will result in a Group 6 Isolation signal, but the Reactor Building Ventilation will fail to isolate and must be manually isolated. Technical Specifications will be addressed.
6	The SULCV will fail closed stopping feed flow to the vessel. Reactor water level will drop requiring action to re-establish flow to the vessel.
7	When level control has been established, multiple control rods will drift. The RO will insert a manual reactor scram IAW the requirements of AOP-02.
8	SRV F will fail open. AOP-30 will be entered. The SRV will not reset using the control switch. Pulling fuses IAW AOP-30 results in loss of indication but the SRV remains open.
9	SRV F tailpipe will rupture, pressurizing containment. Emergency Depressurization is required.