

Simulation Facility Byron Scenario No.: Operating Test No. (2014 NRC) **14-1**

Examiners: _____ Applicant: _____ SRO
 _____ RO
 _____ BOP

Initial Conditions: IC-18, 75% power, steady state, MOL

Turnover: Unit 1 is at 76% power, steady state, MOL, CB D is @ 141 steps and boron concentration is 998 ppm.. Online risk is green. Crew is to raise power to 100% for grid demand @ 0.5 MW/min. Crew is to switch Bus 156 from SAT to UAT following ACB 1561 maintenance.

Event No.	Malf. No.	Event Type*	Event Description
Preload	IMF RP02A IMF RP02B IMF TC03 ZDIHSTG010 NORM		Turbine fails to AUTO trip from Rx trip Manual Turbine trip PB fails to trip turbine
1		N (BOP,SRO)	Switch Bus 156 Electrical Lineup
2		R (RO, SRO)	Raise power to full power
3	None	TS (SRO)	Notified that 1A SI pump failed ASME surveillance
4	IMF FW22C	C (BOP,SRO) TS (SRO)	SX Fan high vibration requiring fan swap
5	MF RX18A 630	I (RO, SRO) TS (SRO)	1A TCOLD RTD Fail High
6	IMF RX04D 0 30	I (BOP,SRO)	Feedwater flow channel 1FT-521 fails Low
7	MF CV16 0	I (RO, SRO)	VCT Level Channel LT-112 Fail Low
8	MF TH16C	M (ALL)	ATWS 1C RCP Trip with Rx Trip Breakers Fail To Open
9	Pre-load	C (ALL)	Failure of Main Turbine to Trip on auto signal or manual push button (OWS PB will trip it)

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

Simulation Facility Byron Scenario No.: Operating Test No.: (2014 NRC)
NRC 14-2
 Examiners: _____ Applicant: _____ SRO
 _____ RO
 _____ BOP

Initial Conditions: IC-182

Turnover: Unit 1 is at 90% power, steady state, equilibrium xenon, MOL. RCS boron concentration is 914 ppm. On line risk is green. 1A MDFW pump has been OOS for the last 2 days for motor replacement and is expected back in 2 shifts. At the end of last shift, following an ASME run of the 1A AF pump it was noticed that the temperature on the 1A Train of AFW to the 1A S/G has elevated temperature of 160 degrees. No actions have been taken.

Event No.	Malf. No.	Event Type	Event Description
Preload	IMF FW44 IOR ZDI1FW01PA ptl IOR ZDI1FW002A cls IOR ZLO1FW002A1 off IOR ZDI1FW012A cls IOR ZLO1FW012A1 off IOR ZDI1FW01PAB ptl MRF FW027 0 IOR ZLO1FW002A off		1B AF pump fail to start 1A MDFW pp O.O.S.
1	None	C (BOP, US) TS (US)	Local report of hot AFW piping at 1AF005A (Replaces "N")
2	IMF CV01A	C (RO, US) TS (US)	1A CV pump trip.
3	IMF ED07A	C (US, BOP) TS (US)	Loss of bus 141
4	IMF FW02A	C (BOP, US)	1B FW pp Trips requiring a main turbine runback.
5	IMF RD09 1	R (RO, US)	Auto rod speed fails to 1 SPM
6	IMF RX21A 2500 10 IMF TH11A 25 90	I (RO, US)	Pressurizer pressure channel 1PT-455 fails high 1RY455A stuck partially open
7	Preload	M (ALL)	Loss of heat sink

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

Simulation Facility Byron

Scenario No.: Operating Test No. (2014 NRC)
14-3

Examiners:

Applicant:

SRO
RO
BOP

Initial Conditions: IC-22

Turnover: Unit 1 is in MODE 2 at 3% power, BOL, at 1BGP 100-2, step 20, Initiate RCS Dilution, preparing to go to MODE 1. Boron concentration is 892 ppm.

Event No.	Malf. No.	Event Type*	Event Description
1	None	R (RO, SRO)	Power ascension to MODE 1
2	None	N (BOP, SRO)	Realign Feedwater through 1FW039 valves
3		C (RO, SRO)	RC filter clogs
4		C (BOP, SRO) TS (SRO)	SX pump trip
5		I (RO, SRO) TS (SRO)	Pressurizer Pressure channel 1PT-455 fails high
6		TS (SRO)	MSIV inoperability; MSIV 1A HYD/PNEU PRESS HIGH/LOW, 1-1-B5 alarm
7		C (BOP, SRO)	Loss of vacuum causing loss of steam dumps
8		M (all)	Safety valve stuck open
9		C (all)	All MSIVs failed open

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

Simulation Facility Byron Scenario No: Operating Test No.: (2014 NRC)
NRC 14-4
 Examiners: _____ Applicant: _____ SRO
 _____ RO
 _____ BOP

Initial Conditions: IC-18

Turnover: Unit 1 is at 76% power, steady state, equilibrium xenon, MOL with control rods in manual. RCS boron concentration is 950 ppm. Online risk is green.

Event No.	Mal. No.	Event Type*	Event Description
Preload	IMF FW35C IMF RP15A MRF RP83 OPEN TRGSET 2 ZLO1SI01PB(3) = = 1 IMF CV01B (2 0)		1C HD pump Trip/fail to start 1A CV pump auto start failure 1B CV pump trip
1	IMF PA0253 ON IOR ZDI1MS018A CLS	TS (US)	SG PORV 1MS018A inoperable (Tech Spec)
2	IMF RX13A 0 15	I (RO, US) TS (US)	Pressurizer level channel 1LT-459 fails high (Tech Spec)
3	IMF RX03B 4.8 30	I (BOP, US)	Steam flow channel 1FI-513A fails high
4	IMF FW35A	C (BOP, US)	1A Heater Drain Pump trip requiring turbine runback
5	None	R (RO, US)	Power reduction
6	IMF CV03	C (RO, US) TS (US)	Boric acid transfer pump trip.
7	IMF RX05 1500	I (BOP, US)	PT-507 fails high
8	IMF TH03A 350	M (ALL)	Ruptured 1A SG
9	Preload	C (RO, US)	1B CV pump trips/1A CV pump fails to auto start.

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

Simulation Facility Byron

Scenario No.: Operating Test No. (2014 NRC)
14-5 (spare)

Examiners:

Applicant:

SRO

RO

BOP

Initial Conditions: IC-22

Turnover: Unit 1 is at 100% power, steady state, equilibrium xenon; MOL. Boron concentration is 892 ppm. Online risk is green. A TV/GV surveillance is scheduled to be performed. The unit will be ramped to 89% power at 3MW/min for the surveillance.

Event No.	Malf. No.	Event Type*	Event Description
Preload	IMF RP26C IMF RP28C Trgset 3 "zdi1fw012c(1).gt.0" Trg 3 "dor zlo1fw012c1" Trgset 5 "fwv1fw012c.gt.0.9" Trg 5 "ior zlo1fw012c1 off"		ESF relay failure of 1A RH pump ESF relay failure of 1B RH pump 1FW012C recirc valve fails open. Manual close available.
1		R (RO) (SRO) N (BOP, SRO)	Ramp down for TV/GV surveillance
2	IMF FW16 0	I (BOP, SRO)	1PT508 fails low
3	IMF CV10 0 60 134	C (RO, SRO)	1CV121 slowly fails closed. Manual control is available.
4	IMF RX10A 0 30	I (RO, SRO) TS (SRO)	1PT 505 fails low
5	IMF ED11D	TS (SRO)	Loss of IB 114 due to a bus fault. Tech Spec 3.8.9 required shutdown within 8 hours
6	IMF TH04C 540000	M (all)	LB LOCA terminating in transfer to Cold Leg Recirc
7	Pre-load	C (all)	ESF relay failure of 1A & B RH pumps – manual start required

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