

Facility:   Ginna   Scenario No.:   01   Op-Test No.:   02-01  

Examiners:   Bissett   Operators: \_\_\_\_\_  
  Laughlin (Conte)   \_\_\_\_\_  
  Silk   \_\_\_\_\_

Initial Conditions:   Plant is at ~48% reactor power, MOL.  $C_B = 824$  ppm. Power was reduced 4 hours ago for condenser tube leakage and is ready to go back to full power. BAST  $C_B = 11,000$  ppm. "B" MDAFW pump and "C" charging pump are OOS.  

Turnover:   Plant is at ~48% reactor power, MOL.  $C_B = 824$  ppm. Power was reduced 4 hrs ago for condenser tube leakage and is ready to go back to full power. BAST  $C_B = 11,000$  ppm. "C" charging pump is OOS for excessive leakage, "B" MDAFW pump is OOS for check valve repair.  

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(CRF) R(HCO)	Raise power to 100% IAW O-1.2. (Rods in Manual)
2	NIS07A	I(CRF, HCO)	PR channel N41 fails high, rods insert. (Enter ER-NIS.3, TS entry)
3	ROD2A	C(CRF, HCO)	Dropped control rod C7. (Enter AP-RCC.2 for RCC malfunction, AP-RCC.3 Dropped Rod Recovery)
4	CND07 A	C(All)	Loss of condenser vacuum-east 1B, results in turbine/Rx trip. (Enter AP-TURB.4 and E0)
5	EDS01 A&B	M(All)	Loss of offsite power. "A" EDG runs on bus 14.
6	GEN04 B	C(All)	"A" EDG runs on bus 14, "B" EDG fails to auto-start but can be started manually.
7	GEN04 A	M(All)	"A" EDG trips, station blackout. (Enter ECA-0.0) Terminate when transition to ECA-0.1

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



Op-Test No.: 02-01 Scenario No.: 01 Event No.: 2Page 2 of 6Event Description: PR Channel N41 Fails High

Time	Position	Applicant's Actions or Behavior
	All	Identify failed PR channel (ANN AR-E-19, 21, 26)
	HCO	Place rod control bank selector switch in manual
	HCO/CO	Adjust Tave/ Tref as necessary
	CRF	Address Technical Specifications (ITS3.2.3)
		Direct NIS channel 41 to be defeated per "Attachment N-41 Defeat"
	HCO	Verify rod control bank selector switch in manual
	HCO/CO	Place DROPPED ROD MODE switch to bypass and verify
		following alarms - DROPPED ROD BYPASS light is lit:
		POWER RANGE ROD DROP BYPASS (MCB status light) is lit:
		Annunciator E-7 NIS TRIP BYPASS is lit
		Place T/405E DELTA T DEFEAT switch to LOOP A UNIT 1
		Place OVERTEMP TRIP bistable switch to DEFEAT and verify
		the following - F-23 RCS O $\Delta$ T CHANNEL ALERT is lit
		Red bistable status light O $\Delta$ T LOOP A TC405C is lit
		Place OVERPOWER TRIP B/S switch to DEFEAT and verify the
		following: F-32 RCS OP $\Delta$ T CHANNEL ALERT is lit
		Red B/S status light OP $\Delta$ T LOOP A TC405A is lit
		Place UPPER SECTION DEFEAT switch to the PRN41 position &
		verify the following: Local light for CHANNEL DEFEAT is lit
		Place LOWER SECTION DEFEAT switch to the PRN41 position &
		verify the following: Local light for CHANNEL DEFEAT is lit
		Place POWER MISMATCH BYPASS switch to BYPASS PRN41
		Place ROD STOP BYPASS switch to BYPASS PRN41
		Place COMPARATOR CHANNEL DEFEAT switch to N41 & verify
		the following COMPARATOR DEFEAT light is lit -

Op-Test No.: 02-01 Scenario No.: 01 Event No.: 2 (con't)Page 3 of 6Event Description: PRN41 Failure

Time	Position	Applicant's Actions or Behavior
	HCO/CO	Remove 118V 5A AC INSTR POWER fuses & verify the following
		E-18 POWER RANGE LOSS OF DETECTOR VOLTAGE
		E-19 POWER RANGE HI RANGE CHANNEL ALERT 108%
		E-21 POWER RANGE OVERPOWER ROD STOP 103%
		E-27 POWER RANGE LO RANGE CHANNEL ALERT 24%
		E-28 POWER RANGE ROD DROP ROD STOP -5%/5 SEC
		Verify the following red bistable lights (MCB) are lit:
		HI POW RANGE P-10 NC41M
		HI POW RANGE P-8 NC41N
		LO POW RANGE TRIP NC41P
		HI POW RANGE TRIP NC41R
		HI POW RANGE P-9 NC41S
		Verify various status lights on PR N41A drawer are lit
		Verify following status lights on PRN41B drawer are extinguished:
		INSTRUMENT POWER ON
		CHANNEL ON TEST
	CRF	Notify I&C to install jumpers
	HCO/CO	Restore ROD CONTROL back to AUTO
		Reset dropped rod rod stop signals at PR NIS drawers
	CRF	Check Tech Specs
		Notify Operations. I&C Supervision: Reactor Engineer



Op-Test No.: 02-01 Scenario No.: 01 Event No.: 4Page 5 of 6Event Description: Loss of condenser vacuum- east 1B resulting in a turbine/Rx trip

Time	Position	Applicant's Actions or Behavior
	CO	Identifies decreasing vacuum, monitors condenser indications ANN H-7 (Cond HI Press), I-18 (Cond Exp Joint Lo Lvl)
	CRF	Directs entry into AP-TURB.4 LOSS OF CONDENSER VACUUM Dispatches AO to perform local actions, directs turbine trip
	CRF	Directs Rx Trip and entry into E-0
	HCO/CO	Performs Immediate Actions of E-0 Verify Rx Trip Verify Turbine Stop Valves Shut Verify Both Trains of AC Emergency Buses Energized Check if SI is Actuated SI NOT Required - Transition to ES 0.1 Reactor Trip Response Monitor RCS Tave-stable or trending to 547 deg Check S/G Feed Flow Status Verify all rods on bottom
	CUE:	Needed for LOOP Verify All AC Buses ENERGIZED BY OFFSITE POWER - NO Perform RNO actions of step 4 of ES-0.1 Verify at Least Two SW Pumps running - NO Start one SW pump per RNO step 5 Verify IA Available Check PZR Level Control - start charging pump(s) per RNO step 7
	CUE:	"A" D/G trips - Loss of all AC
	CRF	Directs transition to ECA-0.0 Loss of all AC

Op-Test No.: 02-01 Scenario No.: 01 Event No.: 5.6.7Page 6 of 6Event Description: Loss of all AC

Time	Position	Applicant's Actions or Behavior
	CRF	Directs immediate actions of ECA-0.0
	CO	Close MSIVs
	HCO	Isolate RCS by closing AOV 200A, B, C, AOV 371, 427 & AOV 310
	CO	Verify adequate TDAFW flow >200 gpm
		Try to restart a D/G
	CRF	Direct AO to locally restart a D/G
	HCO/CO	Pull Stop AC emergency bus loads, SW switches to STOP-AUTO
		Isolate RCP seal injection
		Try to restore offsite power - NO Restore IA using D/G A/C
	CRF	Initiate local actions to isolate RCS, provide cooling to vital equip.
		Place hotwell level control in manual at 50%
		Check S/G status - secondary side and tubes intact
		Monitor intact S/G levels
		Check DC bus loads ("B" EDG restored at this point)
<i>CT</i>	CRF	Direct manual start of "B" D/G (pick up busses 16&17)
	CO	Manually control S/G ARVs to stabilize S/G pressures
<i>CT</i>		Restore SW pumps (refer to AP-SW.2 start "D" SW pump)
		Verify equipment loaded on available AC emergency buses
	CRF	Direct AO to check battery chargers
		Direct transition to ECA-0.1, END at transition
	CRF	Site Area Classification

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Examiners:   Bissett   Operators: \_\_\_\_\_  
  Laughlin (Conte)   \_\_\_\_\_  
  Silk   \_\_\_\_\_

Initial Conditions:   Plant is at 100% power, BOL, C<sub>B</sub> 1329 ppm, equilibrium xenon.    
  PORV-430 isolated due to high leakage. MOV-516 closed. BAST C<sub>B</sub> - 11,000 ppm.  

Turnover:   Plant is at 100% power, equil. xenon, C<sub>B</sub>=1329 ppm, BASTC<sub>B</sub>=11,000 ppm. "A"    
  and "D" SW pumps are selected on Safeguard Selector Switches, PORV-430 is isolated due    
  to excessive leakage.  

Event No.	Malf. No.	Event Type*	Event Description
1	PZR01 A	C(CRF, HCO)	PZR spray valve PCV-431A fails open approx 50%. (Enter AP-PRZR.1)
2	PZR03 C	I (CRF, HCO)	PZR level instrument LT428 fails low (Enter ER.INST.1)
3	TUR05 C	C(CRF, CO) R(HCO)	Turbine vibration increases. (Enter AP-TURB.3, requires load reduction to stabilize vibration)
4	SGN04 A	C(All)	S/G tube leak on S/G 1A at 400 gpm. (Enter AP-SG.1, E-0)
5	TUR02 TUR11 D	C(CRF, CO)	Turbine fails to trip. (Manually trip turbine per E-0)
6		C(HCO CO)	Instrument air to CNMT fails.
7	SIS03B	C(CRF, HCO)	1B SI pump fails to start.
8	SGN04 A	M(All)	SGTR on S/G 1A. (Enter E-3)
9	PZR05 B	C(CRF, HCO)	PORV 431 fails open, resulting in SBLOCA. (Enter ECA-3.1) Terminate when RCS cool-down is underway.

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









Op-Test No.: 02-01 Scenario No.: 02 Event No.: 5.6.7Page 5 of 7Event Description: Rx Trip, turbine fails to trip, 1B SI pump fails to start, IA to CNMT fails

Time	Position	Applicant's Actions or Behavior
	CRF	Direct actions of E-0
	HCO/CO	Verify Rx Trip
<i>CT</i>		Verify turbine stop valves closed- NO- MANUALLY TRIP TURBINE
		Verify both AC Emergency Busses Energized
		Check if SI Actuated
		Verify SI/RHR pumps running -NO-MANUALLY START B SI PUMP
		Verify CNMT RECIRC FANS running
		Verify CNMT Spray NOT required
		Check if Main Steamlines should be isolated
		Verify MFW Isolation
		Verify AFW Pumps Running
		Verify at least Two SW Pumps running
		Verify CI and CVI
		Check CCW System Status
		Verify SI and RHR Pump Flow
		Verify AFW Flow > 200 GPM
		Verify AFW Valve Alignment
		Verify SI Pump and RHR Pump Emergency Alignment
		Check CCW Flow to RCP Ther Barr. (ANN A-7.15 ext)
		Check if TDAFW can be stoped. Tav stable or trending to 547
		Check PZR PORVs and Spray Valves - closed. press<2260
		Monitor RCP Trip Criteria
		Check if S/G Secondary Side is Intact
		Check if S/G Tubes are Intact - NO- Transition to E-3
	HCO	Identifies loss IA to CNMT

Op-Test No.: 02-01 Scenario No.: 02 Event No.: 8Page 6 of 7Event Description: Steam Generator Tube Rupture

Time	Position	Applicant's Actions or Behavior
	CRF	Direct actions of E-3 Steam Generator Tube Rupture
	HCO/CO	Monitor RCP Trip Criteria
		Identify Ruptured S/G- 1A S/G (incr level. R-31 alarm)
		Isolate Flow From Ruptured 1A S/G (ARV, TDAFW supp. B/D)
<b>CT</b>		Complete Ruptured S/G Isolation (MSIV, AO to isol)
		Check Ruptured S/G Level
		Verify Ruptured S/G Isolated
		Establish Condenser Steam Dump Pressure Control
		Reset SI
		Initiate RCS Cooldown - dump steam from S/G B
		Monitor Intact S/G Level - maintain 17-50%
		Check PZR PORVs and Block Valves - PORVs closed, 1 Blk open
		Reset CI
		Monitor AC Busses - Energized by Offsite Power
		Verify adequate SW Flow - 2 pumps running
		Establish IA to CTMT - AOV 5392 FAILS to OPEN
		Check if RHR Pumps should be stopped (place to OFF, AUTO)
		Establish Charging Flow - start pump
		Check if RCS Cooldown Should be Stopped
		Check ruptured S/G pressure
		Check RCS subcooling
		Depressurize RCS to minimize break Flow and Refill PZR
		IA to CNMT available - NO. depress using PORV (Att N2 PORVs)
		Close PORV - NO. Block valve - NO
		Check RCS Pressure INCR - NO - TRANSITION TO ECA-3.1



Facility:   Ginna   Scenario No.:   03   Op-Test No.:   02-01  

Examiners:   Bissett   Operators: \_\_\_\_\_  
  Laughlin (Conte)   \_\_\_\_\_  
  Silk   \_\_\_\_\_

Initial Conditions:   The plant is at 100% power BOL xenon equilibrium. Boron=1329ppm, BAST conc. = 11,000. Circuit 751 is OOS due to an auto accident, "D" SW pump is OOS due to motor failure.  

Turnover:   Plant is at 100% power, BOL xenon equilibrium. Boron=1329 ppm, BAST=11,000 ppm. Ckt 751 is OOS due to auto accident, "D" SW pump OOS due to motor failure. Continue normal operations.  

Event No.	Malf. No.	Event Type*	Event Description
1	PZR2D	I(CRF, HCO)	PZR pressure channel PT-449 fails high. (Enter AP-PRZR.1, ER-INST.1 to defeat channel)
2	RCS14 B	C(CRF, HCO)	"B" RCP #3 seal failure. (Enter AP-RCP.1)
3	RCS2A	C(CRF, HCO)	RCS leak inside containment from loop A hot leg, 15 gpm. (Enter AP-RCS.1) (Cue to start shutdown)
4	N/A	N(CRF) R(HCO)	Perform plant shutdown in response to RCS leak. (Enter O-2.1 or AP-TURB.5, 100% to 95%)
5	CND8	C(CRF, CO)	Condensate header break 20K gpm, complete loss of main feedwater. (Enter E-0, AP-FW.1)
6	RPS5A & B	M(All)	ATWS (Enter FR-S.1)
7	TUR2	C(CRF, CO)	Main turbine fails to automatically trip.
8	N/A	N(All)	Loss of reactor or secondary coolant (Enter E-1), due to RCS leak
9	N/A	C(All)	Low CST level <5 feet (Enter ER-AFW.1 if needed)
			Terminate drill when SI termination criteria met in E-1.

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

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Event Description: PZR pressure channel PT-449 fails HI

Time	Position	Applicant's Actions or Behavior
	CRF	PT-449 fails HI, directs entry into AP-PZR. 1Abnormal PZR PRESS
	HCO/CO	Acknowledges ANN F-2 PZR HI Press
		Checks PZR Press -Place cont. 431K in MANUAL, restore press.
		Refer to ER-INST.1 RPS Bistable Defeat (Sect. 4.4)
		Refer to Attachment PZR PRESSURE PI-449 YELLOW CHANNEL
		to defeat failed channel
		Place P/429A to DEFEAT-1 (PLP PZR PRESS/LVL RACK)
		Place T/405F DELTA T DEFEAT switch to LOOP B UNIT 2
		(RIL INSERTION LIMIT Rack)
		In Y-1 PROTECTION CHANNEL 4 rack Place B/S switches
		To DEFEAT (ANN F-23, F-27)
		408 LOOP B-2 - OVER TEMP TRIP (light on MCB)
		449 CHANNEL 4 - LOW PRESS TRIP (light on MCB)
		Place PZR pressure recorder to position 1-3 (MCB)
		Delete 404/408 from the PPCS
		Restore PZR Pressure Control to automatic
	CRF	Refer to ITS for applicable LCOs
		Section 3.3.1 Table 3.3.1-1 Functions 5 and 7a
		Section 3.3.3 Table 3.3.3-1 Functions 1 and 6
		Check TRM 3.4.3 ATWS mitigation
		Notify maintenance and Operations Supervision



Op-Test No.: 02-01 Scenario No.: 03 Event No.: 3Page 3 of 9Event Description: RCS leak inside CNTMT from A loop hot leg 15 gpm

Time	Position	Applicant's Actions or Behavior
	CRF	Directs actions of AP-RCS.1 REACTOR COOLANT LEAK
	HCO/CO	Acknowledges ANN F-14 (CHV pp spd), A-2 (VCT level), F-4(PZR)
		E-16 (R-2&10A high activity), C-18 (sump pump auto start)
		Check PZR level (Decreasing) RNO actions
		Start additional charging pumps (stab. PZR level)
		Check VCT M/U System (level>20% or stable)
		Check if RCS leakage in CTMT
		R-2,10A not normal, direct RP sample CNTMT
		Dispatch AO to Aux Bldg investigate leak
		Check for leak to CCW System-normal
		Check CVCS Conditions -normal
		Check AUX Bldg radiation levels-normal
		Check PRT Indications-normal
		Check S/Gs for Leakage-rad monitors normal
		Check SI Accumulator levels
		Check RCP Seal Leakoff Flows
		Check RCDT Leak Rate normal
		Check Valve Leakoff Temps
		Establish Stable Plant Conditions-PZR level, pressure
		Evaluate RCS Leakage -not within limits (12-15 gpm)
		NOTE: Cue S/D @ 1%/min
		RNO - Commence Plant Shutdown at 1%/min (AP-TURB.5)
	CRF	Notify higher supervision





Op-Test No.: 02-01 Scenario No.: 03 Event No.: 6-7Page 6 of 9Event Description: ATWS and Failure of Main Turbine to Trip

Time	Position	Applicant's Actions or Behavior
	CRF	Direct actions of E-0
	HCO/CO	Verify Rx Trip - NO
		Manually trip the reactor - NO -
	CRF	Transition to FR-S.1
	HCO/CO	Verify Rx Trip - NO
		RNO- Manually trip reactor
<b>CT</b>		Manually insert rods
		Verify Turbine Stop Valves closed - NO
<b>CT</b>		Manually trip turbine
		Verify AFW flow
		Initiate Emergency Boration - 2 BAT pumps
		Check PZR PORV status - NO
		Open PORVs as necessary to control pressure
		Verify CTMT ventilation isolation (ANN A-25)
	CRF	Dispatch AO to locally trip reactor - YES
		Transition to E-0
		Direct actions of E-0
	HCO/CO	Verify Rx Trip
		Verify turbine stop valves closed
		Verify both trains AC emergency busses
		Check if SI is actuated
		Verify SI and RHR pumps running
		Verify CTMT recirc fans running
		Verify CTMT spray not actuated

Op-Test No.: 02-01 Scenario No.: 03 Event No.: 6-7 con'tPage 7 of 9Event Description: ATWS and Failure of Main Turbine to Trip

Time	Position	Applicant's Actions or Behavior
	HCO/CO	Check if any main steamline should be isolated
		Verify MFW isolation
		Verify AFW pumps running
		Verify at least 2 SW pumps running
		Verify CI and CVI (ANN A-25, 26)
		Check CCW system status
		Verify SI and RHR flow
		Verify AFW flow > 200 gpm. and valve alignment
		Verify SI pump and RHR pump emergency alignment
		Check CCW flow to RCP Thermal barriers
		Check if TDAFW pump can be stopped-Yes
		Monitor RCS Tave- stable at or trending to 547 degrees
		Check PZR PORVs and Spray valves
		Monitor RCP Trip Criteria
		Check if S/G Secondary side is intact
		Check if S/G Tubes are intact
		Check if RCS is intact - NO
	CRF	Transition to E-1

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Event Description: Loss of Reactor or Secondary Coolant (E-1), due to RCS leak

Time	Position	Applicant's Actions or Behavior
	CRF	Direct actions of E-1
	HCO/CO	Monitor RCP Trip Criteria
		Check if S/G secondary side intact
		Monitor intact S/G levels
		Monitor if secondary radiation levels are normal
		Monitor PRZ PORV status
		Reset SI and CI
		Verify adequate SW flow
		Establish IA to CTMT
		Check normal power available to charging pumps
		Check if charging flow has been established
		Check if SI should be terminated
		Monitor if CTMT spray should be stopped
		Monitor if RHR pumps should be stopped
		Check RCS and S/G pressures
		Check if EDGs should be stopped
		Check if RHR should be throttled-No pumps running
		Verify CTMT sump recirculation capability
		Evaluate Plant Status
		NOTE: SHOULD MEET SI TERMINATION CRITERIA PER FOLDOUT PAGE CRITERIA OR STEP 12 OF E-1
	CRF	Transition to ES-1.1. SI TERMINATION
		Classify as a Site Area

