Facility: **Prairie Island** Scenario No.: 2003NRC-A Op-Test No.:

Examiners: Operators:

- RO:
- Lead:
- SS:

Initial Conditions: (IC-40)

- 100% power EOC
- Turbine impulse pressure failed with S/D abnormal per C51

Turnover:

-

Event No.	Malf. No.	Event Type*	Event Description
1	VC01A	C	Loss of charging pump **(RO)**
2	RC21A	C	Reactor vessel flange O-ring leak **(RO)**
3	Various Overrides	I	Rad monitor (R-11 &12) low flow **(LEAD)** {T.S}
4	MS01B	**M**	Steam line rupture inside containment [Ramp 35% over 5 minutes]
5	FW34A/B	C	AFW pumps fail to start **(RO)**
5	FW32	C	Trip of MDAFW pump on manual start
6	RP06	C	MSIVs fail to auto close
6	DI-46158C DI-46159C	C	MSIVs fail to close in manual (ECA-2.1) **(LEAD has CT actions)**
7	CS03A/B	C	CS pumps fail to start **(LEAD)**
8	CS02A/B	C	Caustic addition valves fail to open **(LEAD)**

Critical Tasks:

- E-0 (E) Minimum containment cooling equipment
- E-0 (F) Minimum AFW flow
- ECA-2.1 (A) Reduce AFW flow

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

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 1	Page 2 of 2
Event Description: Loss of Charging pump			

Initial Conditions:
EOC
100% power
560 MWe
111 ppm boron

Turnover Information:
Out of Service:
- Diesel Generator D1
- 123 Instrument Air Compressor
- Pressurizer PORV CV-31231

Simulator Setup:
Preset Simulator inputs:

Malfunctions:
- FW34A, TD AFW Pump Fails to Auto Start
- FW34B, MD AFW Pump Fails to Auto Start
- RP06, Failure of MSIVs to Isolate
- CS02A, Caustic Addition Valve (CV-31938) Fails to Open
- CS02B, Caustic Addition Valve (CV-31941) Fails to Open
- CS03A, 11 CS Pump Fails to Auto Start
- CS03B, 12 CS Pump Fails to Auto Start

Overrides:
- Annunciator M47024:1003 Crywolf (Associated with DG out of service)
- Annunciator M47024:1103 Crywolf (Associated with DG out of service)
- Switch DI-46158C OFF (Prevents manual closure of associated MSIV)
- Switch DI-46159C OFF (Prevents manual closure of associated MSIV)

Triggered Simulator Inputs:

INPUT	VALUE	TITLE
VC04A	N/A	11 Charging Pump Trip – Trigger #1
RC21A	N/A	Reactor Vessel O-Ring Leak (Inner Seal) – Trigger #2
LO-1R11:DS04	ON	Turns on R11/12 Low Flow Panel Light – Trigger #3
DI-1R11:S107	OFF	Disables R11/12 Suction Path Switch – Trigger #3
DI-1R11:S108	OFF	Disables R11/12 Suction Path Switch – Trigger #3
MS01B	35%	#12 Steam Line Rupture Inside Containment – Trigger #4
MS07A	50%	SG Safety Valve Leakage – Trigger #4 (ensures ECS-2.1 transition)
FW32	N/A	MD AFW Pump Trip – Trigger #5

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 1	Page 3 of 26
Event Description: Loss of Charging pump			

Time	Position	Applicant's Actions or Behavior
+5	RO	Respond to annunciators 47015-0103, 0206, and 0207 1. May start standby charging pump 2. Adjusts charging pump speed and 1HC-142 to restore charging flow and seal injection 3. Transfers one charging pump speed control back to AUTO
	Lead	Contacts Auxiliary Building operator to investigate tripped pump.
	SS	1. May direct start of second charging pump to restore normal configuration. (The pump is NOT needed to control pressurizer level.) 2. WHEN appropriate and IF time is available, SS should conduct a briefing which should include: • Statement of Risk Assessment • Statement of T.S. applicability

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 2	Page 4 of 26
Event Description: Reactor Vessel O-Ring Leak			

Time	Position	Applicant's Actions or Behavior
+15	RO	Respond to annunciator 47012-0603 1. Confirms valid high temperature condition using ERCS 2. Closes CV-31324, RX Vessel leak off isolation 3. Monitors parameters to determine if RCS leakage is stopped. 4. Should report to SS that RCS leakage has stopped
	SS	Initiates containment entry to determine source of leak. (This may be done by discussing need with Shift Manager) IF personnel are summoned to the control room, the SS must perform a pre-job brief for this evolution including: • Control room actions • Lineup to establish (RC-9-1 closed and RC-9-2 open) • Radiological safety concerns WHEN appropriate and IF time is available, SS should conduct a briefing which should include: • Statement of Risk Assessment • Statement of T.S. applicability
	RO	AFTER local lineup is complete, opens CV-31324. Monitors leak off temperature AND determines that the leak is isolated.

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 3	Page 5 of 26
Event Description: Radiation Monitor Failure			

Time	Position	Applicant's Actions or Behavior
+25	Lead	Respond to annunciator C47022-0309 Rad Monitor Sampling Equip Panel Alarm 1. Determines R11/R12 failed by inspection of Rad Monitor Panel 2. Refers to C-11 and removes RM from service by: • Turning off pump • Completing PINGP-729 • Notifying chemist • Placing OOS sticker on panel. 3. Notifies SRO to refer to TS 3.4.16
	SS	SRO refers to TS LCO 3.4.16 and determines: 1. 30 day LCO 2. Every 24 hours either • Containment Grab samples **OR** • RCS inventory balance (leak rate SP) WHEN appropriate and IF time is available, SS should conduct a briefing which should include: • Statement of Risk Assessment • Statement of T.S. applicability

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 3	Page 6 of 26
Event Description: Radiation Monitor Failure			

Time	Position	Applicant's Actions or Behavior
+40	**NOTE**	Required actions that may be performed at anytime: • Recognition and announcement of ADVERSE CONTAINMENT • Tripping of RCPs when RCS pressure drops below 1575 pgig
	LEAD	Responds to fire alarm by inspecting fire panel and announcing location of the fire alarms.
	RO	Reports affected RCS parameters. MAY reduce turbine load to prevent exceeding 100% power.
	SS	Directs a MANUAL reactor trip.
	RO and LEAD	Perform immediate actions of E-0 from memory and report completion to the SS.
	SS	Starts reading EOPs starting at E-0 step 1. At Step 5, SS directs LEAD to perform Attachment L
Event #5	SS and RO **Critical Task**	**Manually start AFW pumps.** **(At least one pump is running before going to step 7 of E-0)**
	RO	Reports loss of the MDAFW pump. Monitors TDAFW pump discharge pressure as steam generator pressure drops. Adjusts TDAFW throttle valves as necessary to prevent TDAFW pump on low discharge pressure.
Event #7 & #8	LEAD (Att. L) **Critical Task is in BOLD type**	Independently performs actions from Attachment L • IF not running, will start AFW pumps due to SI status step. • Makes plant announcements • Contact Aux Building to check Category I doors and openings. • **Manually starts containment spray pumps.** **(At least one pump is running before Attachment L is completed)** • Manually opens Caustic Addition Valves (CV-31941 & CV-31938) • Contacts Turbine Building operator for local actions. • Places steam dump in STM PRESS mode.
	NOTE	LEAD will complete Attachment L or pass it to a Unit 2 operator and rejoin SS and RO in performing EOP actions. The exact point where this will occur is unknown. In validation, operator took about 15 minutes to complete Att. L
	SS and RO	Attempt to close MSIVs due to RCS temperature response. Diagnose event as a Faulted Steam Generator.
	SS	Directs transition to E-2, Faulted Steam Generator Isolation. Review Critical Safety Function Status Information at transition. Starts reading E-2.
Event #6	SS and RO	WHEN MSIVs will NOT close, DIAGNOSE event as uncontrolled depressurization of BOTH steam generators.

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 3	Page 7 of 26
Event Description: Radiation Monitor Failure			

Time	Position	Applicant's Actions or Behavior
	SS	Directs transition to ECA-2.1, Uncontrolled Depressurization of Both Steam Generators. Review Critical Safety Function Status Information at transition. Starts reading ECA-2.1. Dispatches people to attempt to locally close MSIVs.
	RO or LEAD **Critical Task**	**Reduces AFW flow to 40 gpm to each steam generator.** **(This must be completed within 10 minutes of being directed. SS may continue on in ECA-2.1 before this action is completed.)**
	LEAD	WHEN directed, will stop both RHR pumps.
	SS	WHEN MSIV is closed locally, THEN confirm SG is intact and direct transition to E-2. NOTE: This is an INFO PAGE item and can be done anytime except when performing steps 16-18 to terminate SI.

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 3	Page 8 of 26
Event Description: Radiation Monitor Failure			

Op-Test No.: NRC 2003	Scenario No.: A	Event No.: 3	Page 9 of 26
Event Description: Radiation Monitor Failure			

Facility: **Prairie Island** Scenario No.: 2003NRC-B Op-Test No.:

Examiners: Operators:

- RO:
- Lead:
- SS:

Initial Conditions: (IC-6)

- 6% power
-

Turnover:

-

Event No.	Malf. No.	Event Type*	Event Description
1	RX216	I	SG pressure fails (HIGH) {T.S.} **(LEAD)**
2	SI07A	C	SI accumulator check valve leakage **(LEAD)**
3	FW13A	C	Main feedwater pump trips **(RO – power reduction)**
4	ED18, ED19, DG07A/B	**M**	Loss of all AC power (ECA-0.0) with restoration from DG within 5 minutes
5	SG02A	**M**	SG tube rupture [10%]
6	DI-46158C	C	Associated MSIV won't close in manual
7	RC22A or B	C	Pressurizer PORV leaks after RCS depressurization **(RO)**

Critical Tasks:

- E-0 (A) Restore heat sink -OR- Manual reactor trip
- E-0 (C) Restore electrical power
- E-3 (A) Isolate ruptured SG
- E-3 (C) Depressurize RCS
- E-3 (D) Terminate SI

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

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 1	26
Event Description: SG pressure channel fails (HIGH)			

Initial Conditions:
BOC
6% power
0 Mwe
1776 ppm boron

Turnover Information:
Out of Service: None

Simulator Setup:
Preset Simulator inputs:

Malfunctions:

- DG07A, D1 Emergency Auto Start Failure
- DG07B, D2 Emergency Auto Start Failure

Overrides: None

Triggered Simulator Inputs:

INPUT	VALUE	TITLE
RX216	1400	MS Pressure Controller 21203 (PT 478) – Trigger #1
SI07A	N/A	11 SI Accumulator Check Valve Leakage – Trigger #2
FW13A	N/A	11 Main Feed Water Pump Trip – Trigger #3
ED18	N/A	Fault in 1R Transformer – Trigger #4
ED19	N/A	Fault in CT11 Transformer – Trigger #4
SG02A	10%	11 SG Tube Rupture – Trigger #4 (5 min ramp)
RC22A or B	N/A	Pressurizer PORV Leakage – Trigger #5

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 1	26
Event Description: SG pressure channel fails (HIGH)			

Time	Position	Applicant's Actions or Behavior
+ 5	Lead	WHEN SG PORV opening is recognized, THEN PORV is manually closed. Responds to annunciator C47011-0405, FW System Trouble Correctly Identifies the failed SG pressure channel. Responds in accordance with C51, Instrument Failure Guide AND informs SS. Contacts I&C to trip affected bistables.
	SS	May direct Lead to close affected SG PORV. WHEN appropriate and IF time is available, SS should conduct a briefing which should include: • Statement of Risk Assessment • Statement of T.S. applicability

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 2	Page 12 of 26
Event Description: Accumulator check valve leakage			

Time	Position	Applicant's Actions or Behavior
+ 15	RO	May recognize RCS leakage by changes in charging flow, seal injection flow or VCT level.
	SS	IF RCS leakage is identified, SS will implement 1C4 AOP1. NOTE: AOP will not provide any guidance for this leak location.
	RO	IF RCS leakage is identified, RO will adjust charging flow to maintain pressurizer level and RCP seal injection flow.
	LEAD	Acknowledges accumulator high level and/or pressure alarm. Implements the actions in the alarm response procedure. Informs SS of the required actions to drain accumulator and attempt to reseat the check valves.
	LEAD	Refers to C-18 appropriate section to lower level • Opens Accumulator drain valve until level is 48% • Closes Accumulator drain valve Observes Accumulator level increasing and reports to SS
	LEAD	Refers to C-18 appropriate section to stop in leakage • Coordinates with Aux Bldg operator to seat Accumulator check valves • Directs Aux Bldg operator to energize Accumulator isolation motor valve • Closes Accumulator isolation motor valve • Directs Aux Bldg operator to open Accumulator lest line valve • Directs Aux Bldg operator to close Accumulator lest line valve • Opens Accumulator isolation motor valve and observes Accumulator level
	SS	Provides oversight for LEAD activities Refers to Technical Specifications WHEN appropriate and IF time is available, SS should conduct a briefing which should include: • Statement of Risk Assessment • Statement of T.S. applicability

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 3	Page 13 of 26
Event Description: Main Feed water pump trip			

Time	Position	Applicant's Actions or Behavior
+ 35	Lead	Respond to Alarm 47010-0101 11 FEED WATER PUMP LOCKED OUT Informs SS that 11 MFW pump locked out.
	SS	Directs RO to reduce Reactor Power to maintain SG levels. NOTE: SS may direct RO to trip the reactor rather than reducing power. Should establish a manual reactor trip criterion based on SG level. Maintains oversight and, IF necessary, directs a manual reactor trip.
	RO **Critical Task**	**As directed by SS, reduces and maintains reactor power < 2%.** **(Either power is stabilized at level within capacity of AFW system -OR- a manual reactor trip is performed before an automatic setpoint is reached.** NOTE: RO does not need to inform SS of each negative reactivity insertion during this transient. However, if rods need to be withdrawn, RO must communicate with SS before rods are moved.
	Lead	Monitors SG levels for approach to reactor trip setpoint. WHEN power is reduced, THEN adjust AFW flow to maintain SG levels.

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 4	Page 14 of 26
Event Description: Loss of All AC Power with restoration from DG			

Time	Position	Applicant's Actions or Behavior
+ 40	RO and SS	Should determine that a reactor trip is necessary (i.e. loss of RCPs and MDAFW pump) and manually trip the reactor.
	SS	Directs entry into E-0
	RO and LEAD	Perform immediate actions of E-0 from memory. LEAD informs SS that a transition to ECA-0.0 is required.
	RO and LEAD	Determines loss of All AC Power and enters ECA 0.0
	SS	Starts reading EOPs starting at E-0 step 1. At Step 3, SS directs transition to ECA-0.0. SS should remind operators that Critical Safety Function status trees are monitored for information only. (UPDATE or BRIEF)
	SS	Directs or makes notification: • PA announcement • SM and SEC • NRC
	SS and LEAD **Critical Task**	**Restore power to Bus 16 by manually starting DG D2.** **(Power restored prior to attempting to power Bus 15)**
	SS	WHEN power is restored, transition back to E-0 Step 3. SS should remind operators that Critical Safety Function status trees will be monitored on next transition from E-0. (UPDATE or BRIEF) Starts reading at E-0 step 3.

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 4	Page 15 of 26
Event Description: Loss of All AC Power with restoration from DG			

Time	Position	Applicant's Actions or Behavior
+ 45	SS	Directs LEAD or Unit 2 operator to restore power to Bus 15. At Step 5, SS directs LEAD to perform Attachment L
	LEAD (Att. L)	Independently performs actions from Attachment L • Makes plant announcements • Contact Aux Building to check Category I doors and openings. • Contacts Turbine Building operator for local actions. • Places steam dump in STM PRESS mode.
	NOTE	LEAD will complete Attachment L or pass it to a Unit 2 operator and rejoin SS and RO in performing EOP actions. The exact point where this will occur is unknown. In validation, operator took about 15 minutes to complete Att. L
	SS and RO	Diagnose event as a Ruptured Steam Generator.
	SS	Directs transition to E-3, Steam Generator Tube Rupture. Review Critical Safety Function Status Information at transition. Starts reading E-3.
	SS and RO	Correctly identify the ruptured SG.
	RO May be LEAD if Attachment L is complete **Critical Task**	**Isolates A – Steam Generator as directed by SS** • **PORV set point at 75% and closed** • **Closes steam supply from A – SG to TD AFW pump** • **Close MSIV** **(Must be completed before planned RCS cooldown is started.)**
	RO	Isolates AFW flow to the ruptured SG.
	NOTE	RCS cooldown will probably not be required.
	SS	Directs dumping steam from B – SG PORV at maximum rate.
	RO	IF required, RO will fully open B – SG PORV. WHEN conditions exists, RO will close B – SG PORV and either manually control RCS temperature or return PORV control to AUTO to prevent Tavg increase.
	LEAD	WHEN directed, will stop both RHR pumps.
	SS and RO	Will NOT establish charging unless the RCP seal injection lines are locally isolated.
	SS	Directs RCS depressurization using pressurizer PORV.
Event #7	RO **Critical Task**	**RO will open a pressurizer PORV.** **WHEN conditions exists, RO will close PORV.** **RO will recognize continued leakage through the PORV and close block valve to isolate leakage.** **(Must be completed without transition to ECA-3.1)**
	SS	Determines that SI can be terminated.

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 4	Page 16 of 26
Event Description: Loss of All AC Power with restoration from DG			

Time	Position	Applicant's Actions or Behavior
	LEAD	Stops SI Pumps

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 4	Page 17 of 26
Event Description: Loss of All AC Power with restoration from DG			

Op-Test No.: NRC 2003	Scenario No.: B	Event No.: 4	Page 18 of 26
Event Description: Loss of All AC Power with restoration from DG			

Facility: **Prairie Island** Scenario No.: 2003NRC-C Op-Test No.:

Examiners: Operators:

- RO:
- Lead:
- SS:

Initial Conditions: (IC-

- 79% power
- Maximize pressurizer bypass spray flow
- Ensure pressurizer heaters are in AUTO

Turnover:

-

Event No.	Malf. No.	Event Type*	Event Description
1	EG200	I	Generator gas temperature controller failure **(LEAD)**
2	RX014	I	Pressurizer low level bistable failure (No heaters) **(RO)**
3	CC01B	C	Running CC pump trips
3	CC02A	C	Standby CC pump fails to auto-start {T.S. 3.0.3} **(LEAD)**
4	MS02B	**M**	Main steam rupture outside containment before MSIV
5	various	C	ATWS (setup using computer assisted exercise)
6	TC01A	C	Turbine stop valve sticks open **(LEAD)**
7	NI04A	I	IR compensation causes P-6 failure (SR does not energize) **(RO)**

Critical Tasks:

- E-0 (A) Manual reactor trip
- E-0 (K) Minimum CCW pumps
- FR-S.1 (C) Negative reactivity insertion

FR-S.1 (A) Isolate Main Turbine

Initial Conditions:
BOC
79% power
450 Mwe
1365 ppm boron

Turnover Information:
Out of Service:
- Diesel Generator D1
- 123 Instrument Air Compressor
- Pressurizer PORV CV-31231

Simulator Setup:
Preset Simulator inputs:

Malfunctions:
- TC01A, Turbine Stop Valve Sticks Open
- TC14D, Turbine Control Valve Sticks Open
- NI04A, Intermediate Range Improper Compensating Voltage
- CC02A, 11 CC Pump Fails to Auto Start
- RP07, Mechanical Failure of Reactor Trip Breakers
- TC11A, Failure of Turbine Auto Trip

Overrides:
- Annunciator M47024:1003 Crywolf (Associated with DG out of service)
- Annunciator M47024:1103 Crywolf (Associated with DG out of service)
- Annunciator M47014:0606B Disable (Hides AMSAC/DSS failure)
- ERCS Point CP-1Y0501D Reset (Hides AMSAC/DSS failure)
- Light LO-46263G Off (Disables block valve for PORV CV-31231)
- Switch DI-46263O Off (Disables block valve for PORV CV-31231)
- Switch DI-46447B On (Disables AMSAC/DSS)
- Switch DI-46447I Off (Disables AMSAC/DSS)
- Switch DI-46182 Off (Disables AMSAC/DSS)

Triggered Simulator Inputs:

INPUT	VALUE	TITLE
EG200	0%	Generator Gas Temperature Controller Failure – Trigger #1
RX04	N/A	Pressurizer Heaters Fail Off – Trigger #2
CC01B	N/A	12 CC Pump Trip – Trigger #3
MS02B	40%	12 Main Steam Line Rupture Outside Containment – Trigger #4

Op-Test No.: NRC 2003 Scenario No.: C Event No.: 1
Event Description: Generator gas temperature controller failure (detector fails low)
Sys Override: EG200 EG Temperature Controller 15047 (TE 15047)
Final Value 0 with no ramp (Event Trigger#1)

Tme	Position	Applicant's Actions or Behavior
+5 min	Lead	Responds to alarm 47007-0401Generator or Exciter cold or hot gas Hi temp 1. Observes Generator recorder temps to verify valid alarm 2. Informs SS alarm is valid 3. Determines Generator cooling water control valve is closed, takes manual control of controller for CV-31360 and restores cooling. 4. Restores temperature and clears alarm. 5. Contacts NLO to determine cause of local alarm 6. Initiates action to investigate and repair failure, calls I & C.
	SS	Provides direction as needed 1. May direct Lead to take manual control of Generator cooling water 2. Directs Lead to initiate investigation and repair
	BOOTH OPERATOR	When contacted, report local alarm 70403:0105 Hydrogen Temperature High. Alarm can be reset using remote EG113.

Op-Test No.: NRC 2003	Scenario No.: C	Event No.: 2
Event Description: Pressurizer low level bistable failure		
Malfunction: RX04 PRESSURIZER HEATERS FAIL OFF (Event Trigger #2) (FAILURE OF LEVEL CONTROLLER LC-427 B/D OUTPUT)		

Time	Position	Applicant's Actions or Behavior
+10 min	RO	Responds to annunciator 47012-0607 PRZR LO-LO LVL HEATERS OFF AND LETDOWN SECURED 1. Determines all pressurizer heaters off and letdown isolated 2. Determines pressurizer level normal and increasing (failed bistable) 3. Reports observations to SS 4. Reduces charging flow to minimum
	Lead	1. Refers to alarm response for 47012-0607 PRZR LO-LO LVL HEATERS OFF AND LETDOWN SECURED 2. May refer to Instrument Failure Guide. 3. Reports observations to SS
	SS	Based on information from RO, Lead and control board indications determines: 1. Directs RO to manually control charging 2. Directs Lead to place excess Letdown in service
	Lead	1. Places excess letdown in service 2. Initiates investigation and repair, calls I&C.
	Booth Operator	When contacted as I&C, respond with "you will investigate the failure". After investigation, report failed bistable card and estimate 40 minutes to obtain, calibrate and install a new bistable card. When contacted as Chemist, report "normal" RCS activity. If a value is needed, report 0.8 µc/cc.
	SS	Reviews Technical Specifications and determines LCO 3.4.9b is NOT met. Recognizes that no condition is applicable and enters LCO 3.0.3. May direct RO and Lead to prepare and commence plant shut down When appropriate and IF time is available, SS should conduct a briefing which should include: • Impacts of failed bistable, pressurizer heaters all inoperable (LCO 3.0.3: 7 hrs to mode 3, 13 hrs to Mode 4) • Challenge to pressurizer pressure and level control • Plant shutdown must be initiated within one hour.

Op-Test No.: NRC 2003 Scenario No.: C Event No.: 3
Event Description: Running CC pump trips, Standby CC pump fails to auto start
Malfunction: CC01B COMPONENT COOLING WATER PUMP #12 TRIP (Event Trigger #3)
Malfunction: CC02A COMPONENT COOLING WATER PUMP #11 FAILS TO START AUTOMATICALLY (preset)

Time	Position	Applicant's Actions or Behavior
+ 25	Lead	Responds to multiple alarms. • Determines 12 CC pump tripped, 11 CC did not auto start • Manually starts 11 CC pump and restores CC pressure After manual action only alarm 47020-0102 12 CC PUMP LOCKED OUT remains and is addressed: 1. Initiates action to investigate, calls Station Electrician.
	SS	Provides direction to Lead as needed to restore CC system. 1. May direct Lead to manually start 11 CC pump. 2. May direct Lead to initiate investigation and repair When appropriate and IF time is available, SS should conduct a briefing which should include: • TS both trains CC inoperable due to pump locked out and auto start failure LCO 3.0.3: 7 hours to Mode 3, 13 hours to Mode 4

Op-Test No.: NRC 2003 Scenario No.: C Event No.: 5 & 6
Event Description: Reactor Trip Failure (during steam line rupture)
Malfunction: RP07 MECHANICAL FAILURE OF REACTOR TRIP BREAKERS (preset)
Override: DI-46447B ON (preset)
Override: DI-46447I OFF (preset)
Override: ERCS Point CP-1Y0501D Final Value Reset (preset)
Override: Annunciator M47014:0606b Final Value Disable (preset)
Malfunction: MS02B MS LINE #12 RUPTURE OUTSIDE CONTAINMENT UPSTREAM OF MSIV Final Value 40% with 600 second ramp (Event Trigger #4)

Time	Position	Applicant's Actions or Behavior
+30 min	Lead	Responds to fire alarm by inspecting fire panel and announces location of alarm. May direct a NLO to investigate but IF SO, THEN must inform NLO of the possibility of a steam leak in the area.
	RO	Reports lowering RCS pressure and temperature.
	SS	Based on information from RO and observations directs: 1. RO to trip Reactor 2. May direct Lead to evacuate Auxiliary Building
	BOOTH OPERATOR	Report steam leak. "A lot of steam blocks stairway to access 735' level. I am leaving the area."
	RO	Attempts manual Reactor trip and announces failure.
	SS	If no automatic trip signal is present, the SS <u>may</u> dispatch operator to trip reactor locally. (NOTE: Automatic reactor trip signal will occur very quickly) Directs transition to FR-S.1.
	RO	Verifies auto rod insertion or manually inserts control rods. RO must ensure rods continuously insert until the reactor trip breakers are open.
Event #6	Lead **Critical Task**	**Trips turbine.** **Recognizes SV and CV failure.** **Attempts close turbine control valves, then manually closes MSIVs** (MSIVs are closed before Lead announces immediate actions are complete)
	SS	Directs an operator to initiate boration of RCS
	RO or Lead **Critical Task**	**Borates RCS at 12 to 15 gpm.** (Must be completed before exiting from FR-S.1)
	SS	Directs Lead to dispatch operator to locally open Reactor Trip breakers
	Lead	Dispatches operator to locally open Reactor Trip breakers
	BOOTH ACTION	When directed to locally open reactor trip breakers, then wait 3 minutes and delete malfunction RP07.
	SS	Directs Lead to stop Reactor Make Up pumps
	Lead	Stops running Reactor Make Up pump
	SS	Directs RO to check for reactivity insertion from uncontrolled cool down
	RO	Informs SS RCS temperature is decreasing in an uncontrolled manner

Op-Test No.: NRC 2003 Scenario No.: C Event No.: 5 & 6
Event Description: Reactor Trip Failure (during steam line rupture)
Malfunction: RP07 MECHANICAL FAILURE OF REACTOR TRIP BREAKERS (preset)
Override: DI-46447B ON (preset)
Override: DI-46447I OFF (preset)
Override: ERCS Point CP-1Y0501D Final Value Reset (preset)
Override: Annunciator M47014:0606b Final Value Disable (preset)
Malfunction: MS02B MS LINE #12 RUPTURE OUTSIDE CONTAINMENT UPSTREAM OF MSIV Final Value 40% with 600 second ramp (Event Trigger #4)

Time	Position	Applicant's Actions or Behavior
	SS/Lead	Determine B Steam Generator faulted
	SS	Directs Lead to isolate B Steam Generator
	Lead **Critical Task**	**Isolates B Steam Generator** 1. Main Feed 2. Aux Feed 3. Steam Supply to TD AFW pump 4. SG PORV closed (Must be completed before exiting from FR-S.1)
	SS	WHEN FR-S.1 is complete and reactor power is less than 5%, returns to E-0 Reactor Trip or Safety Injection step 1.

Op-Test No.: NRC 2003 Scenario No.: C Event No.: 4
Event Description: Main steam rupture outside containment before MSIV (E-0 implementation)
Malfunction: MS02B MS LINE #12 RUPTURE OUTSIDE CONTAINMENT UPSTREAM OF MSIV
Final Value 40% with no ramp

Time	Position	Applicant's Actions or Behavior
	SS	Transitions to E-0 Reactor Trip or Safety Injection step 1 1. At step 5 directs Lead to perform Attachment L 2. At step 10 transitions to E-2 Faulted Steam Generator Isolation 3. Reviews Critical Safety Function Status Information at transition
	Lead **Critical Task to start CC pump before Att L is complete**	Independently performs actions from Attachment L **1. Starts 11 CC pump** 2. Makes plant announcements 3. Contacts Turbine building operator for local actions 4. Places Steam Dump in STM PRESS mode. 5. Places FCU controls to SLOW.
	NOTE	Lead will complete Attachment L or pass it to a Unit 2 operator and rejoin SS and RO in performing EOP actions. (Approximately 15 minutes.)
	SS	Transitions to E-2, "Faulted Steam Generator Isolation, step 1. NOTE: All of the manual actions in E-2 were performed in FR-S.1.
	SS	Transitions to E-1: 1. Directs Lead to reset SI, CI and establish IA to Containment 2. If criteria met, transitions to ES-0.2 SI Termination 3. Directs SI Termination

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Event Description: Steam Line Rupture inside Containment			

Time	Position	Applicant's Actions or Behavior
~20 min after RX trip	RO	Recognizes Intermediate Range NI under-compensated. Reports conditions to the SS. Manually energizes the SR NIs