Facility: Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

Examiners: C. Moore, D. McNeil, M. Morris **Operators:** _____

Initial Conditions: IC-20, MOL, 100% Rx. Power

Turnover: The plant has been operating at 100 % Reactor power for the last 205 days. #2 GSW is OOS for motor replacement. Expected return to service is two weeks. "B" CRD Pump is OOS for oil replacement on gear reducer. Return to service is expected tomorrow.

Event No.	Malf. No.	Event Type*	Event Description
1	NGADN302 1C002TVSP	C(BOP) C(SRO)	#2 TCV Unitized Actuator Failure (Oil Leak) – 4D2
2		R(ATC) R(SRO)	Reduce Reactor Power < 93% to lock down #2 TCV
3		N(BOP) N(SRO)	Lock Down #2 TCV - 23.109, Main Turbine
4	C11MF1106	C(ATC) C(SRO)	CR 58-39 Individual SCRAM from half scram during #2TCV lockdown and blown fuse. Disarm CR due to badly damaged fuse clip. CRS enter TS 3.1.3, Control rod operability – one rod inop and inserted.
5	C93RF0001 C97MF1087	NA	Earthquake - AOP 20.000.01 – AOP Actions
6	E51MF0010 EOPRF0024 EOPRF0025	C(All)	RCIC Steam Leak. Auto Isolation Fails. Manual isolation Successful. EOP 29.100.01 Sheet 5 **(CT 1)** CRS enter TS 3.5.3, RCIC
7	N20MF0023 N20MF0024 N20MF0025	M(All)	Loss of Feedwater – AOP 20.107.01 – Mode Switch to S/D EOP 29.100.01 Sheet 1 - RPV Control
8	E41MF0011 N21MF0011 N21MF0038	C(All)	Loss of High Pressure Feed Sources – Lower RPV pressure to feed with HFP. Inhibit ADS **(CT -2)**

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

Facility: Fermi 2 **Scenario No.** 1 **Op-Test No:** 2013-1

Examiners: C. Moore **Operators:** _____
D. McNeil _____
B. Palagi _____

Initial Conditions: IC-20, MOL, 100% Rx. Power

Event No.	Malf. No.	Event Type*	Event Description
9	B31MF0066	M(All)	Leak in drywell – EOP 29.100.01 Sheet 2 – Primary Containment Control Emergency Depressurization EOP 29.100.01 Sheet 3 – **(CT-3)**
10	E21RF0005	C(BOP) C(SRO)	Auto Start Failure – Div. 1 Core Spray
11	E11MF0016	C(ATC) C(SRO)	Containment Spray Valve Failure E1150-F016A Spray Drywell **(CT 4)**

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

Facility: Fermi 2 **Scenario No.** 2 **Op-Test No:** 2013-2

Examiners: C. Moore, D. McNeil, M. Morris **Operators:** _____

Initial Conditions: IC-15 (55% Power)

Turnover: _ Reactor power is 55%. A plant startup is in progress following a planned shutdown for repairs to Main Transformer 2A. The startup is currently on hold, awaiting chemistry results on heater drains. CW Pump #5 is OOS for motor replacement

Event No.	Malf. No.	Event Type*	Event Description
1	C102C11_PS_N001A_STFCLOSE C11MF1117	C(ATC) C(SRO)	Trip of A CRD Pump (B CRD Fails) AOP 20.106.01 - restart A CRD. TS 3.1.5
2	TEAJSPECIFIC_F78875 3TFF	C(BOP) C(SRO)	High Vibration/High Amps #6 Drywell Cooling Fan – 8D45 – Shutdown Fan
3	B21MF0025	C(All)	H SRV Open – AOP 20.000.25 - SRV closes when fuses pulled TS 3.4.3 SRV, TS 3.5.1 ADS SRV
4		N(BOP) N(SRO)	Torus Cooling - 23.205
5	NMRDFU_11CC	M(All)	Loss of Steam Jet Air Ejectors/Loss of Vacuum – AOP 20.125.01 Mode Switch to Shutdown
6	C11MF0001 C71MF0006	M(All)	ATWS – EOP 29.100.01 Sheet 1 and 1A Inhibit ADS **(CT 1)** Terminate and Prevent **(CT 2)**
7	C41MF0003 C41MF0004	C(ATC) C(SRO)	SLC Pumps Trip 29.ESP.02 – Alternate Boron Injection
8	EOPRF0007 thru EOPRF0014	NA	Insert Control Rods **(CT 3)** 29.ESP.10 29.ESP.11
9	B21MF0028	C(All)	F SRV fails Open - EOP 29.100.01Sheet 2 – High Torus Temp

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

Op-Test No.: 2013-1 Scenario No.: 1 Event No.: N/A Page 1 of 10

Event Description: Overview

Initial Conditions:

The plant has been operating at 100 % Reactor power for the last 205 days. #2 GSW is OOS for motor replacement. Expected return to service is two weeks. B CRD Pump is OOS for oil replacement on gear reducer. Return to service is expected tomorrow. Plans for the shift are to maintain full power.

The objectives of this scenario are to:

1. Recognize, respond to, and take the required actions for an instrument / equipment failures requiring the use of operator and Tech Spec actions.
2. Recognize and respond to a Unitized Actuator Failure.
3. Recognize and respond to a Seismic Event.
4. Recognize and respond to a RCIC Steam Leak
5. Recognize and respond to Loss of High Pressure Feed Sources
6. Recognize and respond to LOCA conditions.
7. Operate RHR in all modes for Primary Containment Control.
8. Execute steps in Primary Containment Control and operate the RHR System to control Drywell and Torus Temperature and Pressure.
9. Execute the steps of RPV Control for level (L) and pressure (P).
10. Direct and supervise the Shift team during Normal, Abnormal, and Emergency operations.

The crew will be required to respond to the following order of events:

- Failure #2 TCV Unitized Actuator - Oil leak
- Reactor Power reduction to <93% Power
- Individual Control Rod Scram
- Earthquake
- RCIC Steam Leak
- Loss of Feedwater/Loss of High Pressure Feed Sources
- Leak in Drywell

Op-Test No.: 2013-1 Scenario No.: 1 Event No.: 1 Page 2 of 10

Event Description: #2 HPCV Unitized Actuator Failure

Time	Position	Applicant's Actions or Behavior
T+1m		**MALF: NG12N3021LSEN236BTFCLOSE #2 TCV UA LL Alarm**
	SRO	• Respond to 4D2, Unitized Actuator Throttle Vlv Fault • Briefs crew on actions for UA Failure • Briefs Power Reduction to lock-down UA.
	ATC	• Monitors plant conditions.
	BOP	• Respond to 4D2, Unitized Actuator Throttle Vlv Fault • Direct operator to investigate #2 HPCV Unitized Actuator • **ROLE PLAY: Report leak inside UA enclosure. Cannot see where leak is coming from, oil spray obscuring window. No leakage outside UA enclosure. Standing by in low dose area.** • **ROLE PLAY: if update requested, report conditions unchanged**

Op-Test No.: 2013-1 Scenario No.: 1 Event No.: 2 Page 3 of 10

Event Description: Power Reduction to <93%

Time	Position	Applicant's Actions or Behavior
T+5m		
	SRO	• Directs power reduction to <93% per SOP 23.109 prerequisite for closing #2 HPCV. • Monitors power reduction to <93% • Plant announcement of power reduction.
	ATC	• Monitors plant conditions. • Lower reactor power by reduction of reactor recirculation pump speed per SOP 23.138.01. • Reports power less than 93% when completed. • May request rounds operator monitor Recirc oil temperatures
	BOP	• Monitors plant conditions • Brief lockdown of #2 HPCV per 23.109 • Brief Shutdown of Unitized Actuator per 23.110

Op-Test No.: 2013-1 Scenario No.: 1 Event No.: 3, 4 Page 4of10

Event Description: CR 58-39 Individual SCRAM

Time	Position	Applicant's Actions or Behavior
T+15m		**MALF: C11MF1106 Scram CR 58-39**
	SRO	• Direct #2 HPCV Lockdown • Direct Shutdown of #2 HPCV UA • Brief actions for individual rod scram • Contact SNE about individual rod scram • Direct CR 58-39 disarmed after fuse clip damage reported. • Enter TS 3.1.3, Control Rod Operability.
	ATC	• Monitors plant conditions. • Reports half scram, rod drift alarm and individual rod scram CR 58-39 • Dispatch operator to check HCU 58-39. • **ROLE PLAY: Rounds operator reports both Scram Valves open at HCU 58-39. Nothing else is abnormal.** • Dispatch operator to check fuses for CR 58-39. • **ROLE PLAY: Report blown fuse and severely damaged and charred fuse clips on A side for 58-39** • Reset half scram and verifies scram signal clears. • Directs rounds operator to disarm CR 58-39 per 23.106
	BOP	• Monitors plant conditions. • Perform #2 HPCV lock-down per 23.109 • Raise Load Demand till it stops rising with Speed/Load raise push-button • Depress SELECT Pushbutton for #2 HPCV • Open N30-39-F613, HP Turb Loop B Line Drain Valve • Depress VALVE TEST pushbutton • Depress TRIP SOLENOID A and TRIP SOLENOID B pushbuttons

		• Reports half scram, rod drift alarm and individual rod scram CR 58-39 • Depress CANCEL TEST pushbutton. • Depress Select/locked Closed pushbutton • Depress VALVE TEST pushbutton • Depress TRIP RESET pushbutton • Perform #2 HPCV UA shutdown per 23.110 • Place UA to be shutdown in OFF • Directs rounds operator to close TBCCW Valve for shutdown UA • **ROLE PLAY: Rounds operator reports TBCCW valve to #2 HPCV Unitized Actuator closed** • May dispatch RTC to assist rounds operator to check fuses.

Op-Test No.:2013-1 Scenario No.: 1 Event No.: 5 Page 5 of 10

Event Description: Seismic Event

Time	Position	Applicant's Actions or Behavior
T+35m		**MALF: C97MF1087 CD69 - Seismic System Event/Trouble (Earthquake)** **MALF: C93RF0001 Earthquake Sound**
	SRO	• Responds to Seismic Event and enters 20.000.01, Acts of Nature. • Briefs Crew on Seismic event. • Makes Hi-Com announcement of event • Directs Monitoring the following for abnormal values: □ Reactor Vessel Level. □ Reactor Vessel Pressure. □ Reactor Power. □ Drywell Pressure. □ Torus Water Level. □ Drywell Unidentified Leakage. □ Process Radiation Monitors. □ Spent Fuel Pool Water Level. □ Spent Fuel Pool Temperature. • Directs seismic event actions for Condition AC. • May contact offsite agencies to confirm Earthquake • **ROLE PLAY: if contacted as offsite agency, confirm earthquake at 0.02G horizontal and vertical.**
	ATC	• Monitors Power, Pressure and Level as directed by SRO for the seismic event. • May dispatch operators to perform visual inspection of plant systems
	BOP	• Responds to alarm 6D69, Seismic Event/Trouble • Dispatches an operator to the relay room to check status of Seismic Panel indications (RR H11-P831) per 23.612 • **ROLE PLAY: Operator reports from the relay room that seismic event has occurred with an indication of 0.02 G Horizontal and 0.02G Vertical** • Reports Relay Room indications of 0.02 G. horizontal and 0.02G vertical. • Starts all RHRSW MDCT Fans and checks for proper

Op-Test No.:2013-1 Scenario No.: 1 Event No.: 5 Page 5 of 10

Event Description: Seismic Event

		running indications. • **ROLE PLAY: When directed, report satisfactory operation of MDCT fans following start.** • Directs rounds operator to reset D1 and D2 CCHVAC Purge Compressors. • **ROLE PLAY: When directed, after about 5 min, report D1 and D2 CCHVAC Purge Compressors are reset.** • May dispatch operators to perform visual inspection of plant systems • **ROLE PLAY: As part of seismic walk down prior to triggering steam leak, Rounds Operator report 1 foot steam plume from packing gland area of E5150-F045.**

Op-Test No.:2013-1 Scenario No.: 1 Event No.: 6 Page 6 of 10

Event Description: RCIC Steam Leak.

Time	Position	Applicant's Actions or Behavior
T+45m		**MALF: E51MF0010, RCIC Steam Leak**
	SRO	• Respond to 1D66 • Respond to 1D70 • Enter 29.100.01 Sheet 5 • Determine rising room temperature in RCIC/Core Spray room. • Enter 29.100.01 Sheet 5, Secondary Containment Control • May direct RCIC isolation. • Validate isolation of leak by monitoring for lowering room temperatures • Enter TS 3.5.3 RCIC
	ATC	• Monitors plant conditions.
	BOP	• Respond to 1D66 • Respond to 1D70 • Monitor RCIC system and determine RCIC Automatic isolation did **NOT** occur. • Manually isolate RCIC System by closing E5150-F007 and E5150-F008 (**CT-1)** • Validate isolation of leak by monitoring for lowering room temperatures

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Event Description: Loss of Feedwater

Time	Position	Applicant's Actions or Behavior
T+55m		**MALF: N20MF0023 C HFP Trip** **MALF: N20MF0024 E HFP Trip** **MALF: N20MF0025 W HFP Trip**
	SRO	• Directs Mode Switch to Shutdown per AOP 20.107.01 • Directs Scram reports from ATC and BOP. • Enters EOP 29.100.01, Sheet 1, RPV Control • Establishes Level band of 173 to 214 inches and pressure band of 900 to 1050 psig.
	ATC	• Places Reactor Mode Switch in Shutdown • Provides Scram report. • Verifies all control rods are fully inserted.
	BOP	• Provides scram report. • May dispatch operator to HFP's to investigate • **ROLE PLAY: If dispatched to HFP, after about 3 min, report nothing visibly wrong with HFP's.**

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Event Description: Loss of High Pressure Feed Sources

Time	Position	Applicant's Actions or Behavior
T+55m		**MALF: E41MF0011, HPCI Exhaust Check Valve Failure** **MALF: N21MF0011, A SBFW Pump Trip** **MALF: N21MF0038, B SBFW Pump Shaft Shear**
	SRO	• Directs ATC to perform Scram Procedure AOP 20.000.21 • Expands Level band to 0 to 214 inches • Directs ADS inhibited • Briefs crew on options and intended course of action • Directs start of SLC Pump • Directs attempted restart of HFPs • Directs RPV pressure lowered with Bypass Valves or Pressure Regulator to feed with W HFP
	ATC	• May report HPCI unavailable due to isolation • Starts A or B SLC Pump • Attempts HFPs start, W HFP starts • Lowers RPV pressure with Bypass Valves or Pressure Regulator to feed with W HFP
	BOP	• Reports Both SBFW Pumps unavailable • Reports HPCI unavailable due to isolation • Inhibits ADS **– (CT-2)** • Attempts HFPs start, W HFP starts • Lowers RPV pressure with Bypass Valves or Pressure Regulator to feed with W HFP • May dispatch operator to SBFW Pumps • **ROLE PLAY: If dispatched to SBFW pumps, after about 3 min, report nothing visibly wrong with A SBFW Pump. B SBFW motor is rotating, pump is not rotating (if running)(check panel display)**

		• **ROLE PLAY: If dispatched to SBFW Pump breakers (A Pump 64V-V2;) report breaker tripped on 64 device – ground fault.**

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Event Description: Recirculation Loop Rupture, ED, Level recovery

Time	Position	Applicant's Actions or Behavior
T+65m		**MALF: B31MF0066, Recirc Loop Rupture A** **MALF: E21RF0005, Auto Start Failure – Div. 1 CS**
	SRO	• Enters EOP 29.100.01 Sheet 2, Primary Containment Control • Establishes Level band of 173 to 214 inches, expands band to 0 to 214 inches. • Conduct EOP Brief • Conduct Brief for Emergency Depressurization • Enter 29.100.01, Sheet 3, Emergency Depressurization • At TAF, Direct 5 ADS SRVs opened. – (**CT-3)** • Directs placing RHR in Torus Cooling and Torus Spray. • Directs level band of 173 to 214 following ED
	ATC	• Reports rising Drywell Pressure • Coordinate with BOP to shutdown/operate LP Pumps to restore and maintain RPV water level 173 to 214 inches • Places RHR in Torus Cooling and Torus Spray as directed • **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.**
	BOP	• Reports rising Drywell Pressure • Reports unable to maintain RPV level with available high pressure sources. • Reports Division 1 Core Spray Pumps failed to start, manually starts/align Division 1 Core Spray Pumps • Opens 5 SRVs as directed– (**CT-3)** • Coordinate with ATC to shutdown/operate LP Pumps to restore and maintain RPV water level 173 to 214 inches • **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.**

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Event Description: Containment Cooling and Failures

Time	Position	Applicant's Actions or Behavior
T+75m		**MALF: E11MF0016 - Containment Spray Valve Failure E1150-F16A**
	SRO	• Directs placing RHR in Torus Cooling and Torus Spray. • When Torus Pressure reached 9 psig directs Drywell Spray after securing the A Recirc Pump and stopping all Drywell Cooling Fans**– (CT-4)** • Directs securing Drywell and Torus Sprays before Drywell and Torus Pressure reach 0 psig, • Monitors DWSIL curve prior to spraying drywell • Directs Drywell Spray on Division 2 RHR

	ATC	• Shuts down the A Reactor Recirc pump
		• Shuts down all drywell cooling fans
		• Places RHR Div 1 in Torus Cooling and Torus Spray
		  • Place Containment Spray Mode Select Switch in MANUAL
		  • Unlock and Open E1150-F028A
		  • Start 1 Div 1 RHR Pump
		  • Open E1150-F024A
		  • Open E1150-F027A
		  • Partially open E1150-F068A
		  • Start both RHRSW Pumps
		  • Fully open E1150-F068A
		• Initiate Drywell Spray when directed
		  • Open E1150-F021A
		  • Start 2nd RHR Pump
		  • Unlock and Open E1150-F016A
		• Reports failure of E11-F016A

Op-Test No.:2013-1 Scenario No.: 1 Event No.: 10 Page 10 of 10

Event Description: Containment Cooling and Failures

		• Places RHR D2 in Drywell Spray– (**CT-4)**
		  • Place Containment Spray Mode Select Switch in MANUAL
		  • Unlock and Open E1150-F028B
		  • Start 1 Div 1 RHR Pump
		  • Open E1150-F024B
		  • Partially open E1150-F068B
		  • Start both RHRSW Pumps
		  • Fully open E1150-F068B
		• Initiate Drywell Spray when directed
		  • Open E1150-F021B
		  • Start 2nd RHR Pump
		  • Unlock and Open E1150-F016B
		• Secures Torus and Drywell Sprays before Drywell and Torus pressure reach 0 psig.
		• **ROLE PLAY If dispatched to E1150-F16A breaker, after 3 min report, acrid burned insulation smell near MCC (72C-3A-5D)**
		• **ROLE PLAY If dispatched, after 3 min report, report D 1(D2) Radiation Monitor Sample Pump in service.**

	BOP	• Places RHR Div 1 in Torus Cooling and Torus Spray.
		• Open E1150-F027A
		  • Place Containment Spray Mode Select Switch in MANUAL
		  • Unlock and Open E1150-F028A
		  • Start 1 Div 1 RHR Pump
		  • Open E1150-F024A
		  • Open E1150-F027A
		  • Partially open E1150-F068A
		  • Start both RHRSW Pumps
		  • Fully open E1150-F068A
		• Initiate Drywell Spray when directed
		  • Open E1150-F021A
		  • Start 2nd RHR Pump
		  • Unlock and Open E1150-F016A
		• Reports failure of E11-F016A
		• Places RHR Div. 2 in Drywell Spray– (**CT-4)**
		  • Place Containment Spray Mode Select Switch in MANUAL
		  • Unlock and Open E1150-F028B
		  • Start 1 Div 1 RHR Pump
		  • Open E1150-F024B
		  • Partially open E1150-F068B
		  • Start both RHRSW Pumps
		  • Fully open E1150-F068B
		• Initiate Drywell Spray when directed
		  • Open E1150-F021B
		  • Start 2nd RHR Pump
		  • Unlock and Open E1150-F016B
		• Secures Torus and Drywell Sprays before Drywell and Torus pressure reach 0 psig.
		• **ROLE PLAY If dispatched, after 5 min report, report D 1(D2) Radiation Monitor Sample Pump in service.**

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: N/A Page 1 of 8

Event Description: Overview

Initial Conditions:

Reactor power is 55%. A plant startup is in progress following a planned shutdown for repairs to Main Transformer 2A. The startup is currently on hold, awaiting chemistry results on heater drains. CW Pump #5 is OOS for motor replacement. The refurbished motor arrived on-site yesterday and is currently being installed. RTS is expected late tomorrow.

The objectives of this scenario are to:

1. Recognize, respond to, and take the required actions for an instrument / equipment failures requiring the use of operator and Tech Spec actions.
2. Recognize and respond to a CRD Pump Trip.
3. Recognize and respond to a failure of #6 Drywell Cooling Fan.
4. Recognize and respond to a failure of SRV H and F.
5. Recognize and respond to a Loss of Vacuum due to loss of all SJAE.
6. Recognize and respond to ATWS conditions.
7. Execute steps in Primary Containment Control and operate the RHR System to control Torus Temperature and Pressure.
8. Execute the steps of RPV Control-ATWS for level (L) pressure (P),and power(Q).
9. Direct and supervise the Shift team during Normal, Abnormal, and Emergency operations.

The crew will be required to respond to the following order of events:

- CRD pump trip.(AOP 20.106.01)
- #6 DWC Fan Failure
- SRV H Fails Open (AOP 20.000.02)
- Loss of SJAE/loss of Vacuum (AOP 20.125.01)
- ATWS (EOP 29.100.01 Sheet 1 and 1A) Both SLC Pumps Trip
- Terminate and Prevent
- SRV F fail open - EOP 29.100.01 Sheet 2 High Torus Temperature

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: 1 Page 2 of 8

Event Description: CRD Hydraulic Pump Trips

Time	Position	Applicant's Actions or Behavior
+2 min		**MALF: C102C11_PS_N001A_STFCLOSE, CRD Pump A Trip**
	SRO	• Enters AOP 20.106.01, CRD Hydraulic System Failure. • Briefs crew on CRD Pump Trip. • Enters TS 3.1.5, Control Rod Scram Accumulators, Condition B. • Starts 20 min clock after Accumulator light occurs on withdrawn rod. • Directs restart of A CRD pump.
	ATC	• Places CRD Flow Controller in MANUAL. • Closes CRD Flow Control Valve. • Closes CRD Pressure Control Valve. • Report Accumulator lights on withdrawn rod 30-35. • Report Accumulator lights on withdrawn rod 18-27. • Reports failure of B CRD Pump. • Re-starts A CRD Pump. • Adjusts CRD flow and pressure to 37-63 gpm and differential pressure to 255-265 psid. • Places CRD flow controller in auto. • May direct operators to investigate CRD pump trip. • **ROLE PLAY: When dispatched to pump, after 3 min, (check current status on panel display) report nothing abnormal at A CRD Pump, report motor rotating on B CRD, pump is not rotating.** • **ROLE PLAY: At A CRD Pump, report good start when pump re-started.**
	BOP	• Monitors plant conditions. • May direct operators to investigate CRD pump trip. • **ROLE PLAY: ROLE PLAY: When dispatched to pump, after 3 min, (check current status on panel display) report nothing abnormal at A CRD Pump, report motor rotating on B CRD, pump is not rotating.**

		• May direct operator to Relay Room to C11-R018, CRD Temperature Recorder, (RR H21-P007) to check for high temperatures and clear alarm 3D13. • **ROLE PLAY: Report that several CRDMs (38-31, 26-27, 34-43) were in alarm (>300 deg. F) but that all temperatures are now trending down.**

Op-Test No.: 2013-2 Scenario No.: 2 Event No.: 2 Page 3 of 8

Event Description: High Vibration/High Amps #6 Drywell Cooling Fan

Time	Position	Applicant's Actions or Behavior
+15 min		**MALF: TEAJSPECIFIC_F788753TFF, #6 Drywell Cooling Fan vibration alarm**
	SRO	• Respond to 8D45, Div 1 Drywell Fan Brg Vib High. • Briefs crew on intended actions. • Directs BOP to shutdown #6 Drywell Cooling Fan.
	ATC	• Monitors plant conditions.
	BOP	• Respond to 8D45, Div 1 Drywell Fan Brg Vib High. • Reports High Vibration Alarm (8D45) and high amps on #6 DWC fan. • Shutdown #6 Drywell Cooling Fan.

Op-Test No.:2013-2 Scenario No.: 2 Event No.: 3 Page 4 of 8

Event Description: H SRV Failure

Time	Position	Applicant's Actions or Behavior
+25 min		**MALF: B21MF0030 – H SRV Fails Open**
	SRO	• Respond to 1D61, SRV OPEN. • Enter AOP 20.000.25, Failed Safety Relief Valve. • Conduct AOP Brief. • Directs Rapid Power Reduction per SOP23.623. • Direct fuses for SRV H pulled. • Direct RHR placed in Torus Cooling. • Enter TS 3.4.3, SRV, One valve inoperable. • Enter TS 3.5.1, ECCS – ADS Valve INOP.
	ATC	• Monitors plant conditions. • Performs Rapid Power Reduction per 23.623. • Depress Recirc Runback pushbutton. • May direct operator to monitor SRV Tailpipe temperatures at B21-R614 (RR H11-P614). • **ROLE PLAY: When dispatched, after about 3 min, report (if SRV still open) H SRV tailpipe temperature is 320 degrees, (if SRV closed) report SRV H tailpipe temperature is 275 degrees and slowly lowering.** • Report plant conditions indicate SRV closed.
	BOP	• Respond to 1D61, SRV OPEN. • Depress OPEN pushbutton, and then CLOSE pushbutton. Report SRV still open. • Dispatch operator to pull fuses for SRV H per Enclosure A in AOP 20.000.25. • Place RHR in Torus Cooling. • **ROLE PLAY: if dispatched, after about 5 min, report standing by to pull fuses for SRV H.** • Direct operator to pull fuses for SRV H. • **ROLE PLAY: (trigger step) report fuses for SRV H removed.** • Report plant conditions indicate SRV closed. • Reset D1 and D2 low-low Set Logic.

Op-Test No.:2013-2 Scenario No.: 2 Event No.: 4 Page 5 of 8

Event Description: Loss of SJAE/Loss of Vacuum.

Time	Position	Applicant's Actions or Behavior
+35 min		**MALF: NMRDFU_11CC, Loss of Steam Jet Air Ejectors – Fuse Failure**
	SRO	• Respond to numerous alarms on H11-P806 panel. • Enter AOP 20.125.01, Loss of Condenser Vacuum. • Direct attempt to restart any Steam Jet Air Ejectors. • Announce event over Hi-Com. • Conduct AOP Brief. • Direct Mode Switch to Shutdown prior to 2.8 psia.
	ATC	• Monitors plant conditions. • Place Mode Switch in Shutdown.
	BOP	• Respond to numerous alarms on H11-P806 panel. • Reports SJAE have tripped. • Attempt to restore SJAE. • Report SJAE will not start. • Reports vacuum degrading.

Op-Test No.:2013-2 Scenario No.: 2 Event No.: 5,6 Page 6 of 8

Event Description: ATWS.

Time	Position	Applicant's Actions or Behavior
+45min		**MALF: C11MF0001, Rods Stuck** **MALF: C71MF0006, Total Scram Failure** **MALF: C41MF0003, A SLC Pump Trip** **MALF: C41MF0004, B SLC Pump Trip**
	SRO	• Directs Scram reports from ATC and BOP. • Enters EOP Sheet 1, RPV Control and Sheet 1A RPV Control – ATWS. • Directs FS/Q 1 thru 8. • Directs ADS inhibited **(CT-1).** • Directs SLC injection. • Directs Alternate Boron Injection (29.ESP.02). • Directs 29.ESP.11 and bypass and restore DW Pneumatics. • Directs 29.ESP.10 and insert rods with 29.ESP.03 **(CT-3).** • Directs Terminate and Prevent for level **(CT-2).** • Directs RPV water level band of 50 to 100 inches. • Conducts EOP Brief.

	ATC	• Reports failure to scram.
		• Verifies Mode Switch in Shutdown.
		• Depress manual scram pushbuttons.
		• Provides Scram report.
		• Perform FS/Q 1 thru 8
		  • Both RR Pumps to OFF-RESET.
		  • Confirm ARI (4 TRIP pushbuttons).
		• Reports FS/Q 1 thru 8 complete.
		• Reports both SLC Pumps tripped and RWCU isolated.
		• Directs operators to perform 29.ESP.02.
		• Directs 29.ESP 10 and inserts rods with 29.ESP.03**(CT-3).**
		• **ROLE PLAY: When dispatched (trigger step), after about 10 min, report 29.ESP.10 is complete**.

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Event Description: ATWS.

	BOP	• Provides scram report.
		• Inhibits ADS **(CT-1).**
		• Directs operators to perform 29.ESP.11.
		• Bypass/restore DW Pneumatics.
		  • Operate D1 and D2 Keylock Switches.
		  • Open DW pneumatic isolation valves. (if closed)(4 valves)(T4901-F465,T4901-F601, T4901-F602, T4901-F468)
		• **ROLE PLAY: When dispatched (trigger step), after about 10 min, report 29.ESP.11 is complete**.
		• Performs Terminate and Prevent for level. **(CT-2)**
		  • Both Div 1 Core Spray Pumps to OFF.
		  • Both Div 1 RHR Pumps to OFF.
		  • Both SBFW Pumps to OFF.
		  • Both Div 2 Core Spray Pumps to OFF.
		  • Both Div 2 RHR Pumps to OFF.
		  • HPCI Aux Oil Pump CMC to OFF or controller to minimum.
		  • RFP Controllers to MANUAL, lower speed to minimum.
		  • Maintain level when directed.
		• Shift Feedwater lineup to Startup Level Control Valve. (~25% power)
		  • Place N RFP Controller in Manual.
		  • Adjust RFP speed to control level.
		  • When less than ~25% power.
		  • Close N2100F607 or N2100F045A.
		  • Close N2100F608 or N2100F045B.
		  • Place Startup LCV Switch in START
		  • Place Startup LCV Controller in MANUAL.
		  • Adjust Startup LCV Controller as needed to maintain level.
		• Maintains RPV water level band of 50 to 100 inches.

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Event Description: Containment Cooling

Time	Position	Applicant's Actions or Behavior
+60 min		**MALF: B21MF0028, SRV F Open**
	SRO	• Enters - EOP 29.100.01Sheet 2 – High Torus Temperature. • Directs placing RHR in Torus Cooling. • May direct Drywell Cooling Fans restarted. • Directs RPV water level Band at 173 to 214 inches after all rods in. • May direct ATC to AOP 20.000.21 Reactor Scram. • Direct fuses removed for SRV F.
	ATC	• Continues Control Rod insertion per 29.ESP.03. • When 29.ESP.10 is complete, lines up to drain SDV. • When SDV drained, re-initiate ARI. • Reports all rods in. • Perform 20.000.21 if directed. • May places RHR in Torus Cooling.
	BOP	• Places RHR in Torus Cooling. • Maintains RPV level band 50 to 100 inches. • Restore RPV water level to 173 to 214 inches after rods in. • Direct operator remove fuses for SRV F. • **ROLE PLAY: if dispatched, after about 5 min, report standing by to pull fuses for SRV F.** • Directs operator to pull fuses. • **ROLE PLAY: (trigger step) report fuses for SRV F removed.** • Plant conditions indicate SRV closed **(fuses pulled).** • Reports SRV F Closed (closes when RPV pressure <900psig).