

FINAL AS-ADMINISTERED WALKTHROUGH JPMS

FOR THE FERMI INITIAL EXAMINATION - JUNE 2001

Facility: Fermi 2

Task No: 02B3100003 & 02B3100036

Task Title: Trip the Recirc Pump A due to Motor Vibration High.

Job Performance Measure No: B.1.a

K/A Reference: 202001

K5., Knowledge of the operational implications of the following concepts as they apply to RECIRCULATION SYSTEM : (CFR: 41.5 / 45.3)

K5.03, Pump/motor cooling: RO 2.7 SRO 2.7

A2., Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.18, Loss of motor cooling RO 2.9 SRO 3.1

A3., Ability to monitor automatic operations of the RECIRCULATION SYSTEM including: (CFR: 41.7 / 45.7)

A3.04, Lights and alarms RO 3.2 SRO 3.1

A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7/45.5 to 45.8)

A4.01, Recirculation pumps RO 3.7 SRO 3.7

A4.02, System valves RO 3.5 SRO 3.4

A4.05, Lights and alarms RO 3.3 SRO 3.3

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X _____

Classroom _____ Simulator X _____ Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant is in MODE 1 with the reactor operating in Single Loop. Recirculation Pump A (C001A)/ Motor Generator Set A (North)(S001A) is ready to be returned to service.

Task Standard:

The A Reactor Recirc. Pump is tripped based on high motor vibration in conjunction with a high temperature alarm on Bearing Oil Cooling Water per ARP 3D138.

Required Materials: None

General References:

GOP 22.000.03, POWER OPERATION 25% TO 100% TO 25%
SOP 23.138.01, REACTOR RECIRCULATION SYSTEM
ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH
AOP 20.138.01, RECIRCULATION PUMP TRIP

Initiating Cue:

The NASS directs you to startup the North RR MG Set per SOP 23.138.01, REACTOR RECIRCULATION SYSTEM, section 8.0 RR MG SET STARTUP WITH REACTOR NOT SHUTDOWN UNDER ALL CONDITIONS.

All applicable prerequisites for RR MG Set startup required by 23.138.01 section 8.1 have been completed.

Currently at step 8.2 of SOP 23.138.01.

You are to focus on those Main Control Room operator actions performed by the P603 operator.

Time Critical Task: YES/NO

Validation Time: 40 minutes

Simulator Setup:

Initialize to a suitable IC for RR MG SET STARTUP WITH REACTOR NOT SHUTDOWN UNDER ALLCONDITIONS.

Verify 55% power with B RR pump at 70% speed.

Ensure simulator indications allow successful completion of SOP 23.138.01 Enclosure D, IDLE RECIRC PUMP STARTUP (MODE 1, 2, 3 AND 4).

Verify prerequisites for RR MG Set startup required by SOP 23.138.01 section 8.0 have been completed.

Verify applicable conditions required by SOP 23.138.01, PRECAUTIONS AND LIMITATIONS, step 3.1 For System Startup and 3.5 Single Loop Operation are met.

Verify the following (H11-P603):

- Lockout Bus A red POWER AVAILABLE light is on.
- Gen A Field Breaker is open by Trip Coil #1 and #2 white TRIPPED lights on.

COMPLETE SOP 23.138.01, REACTOR RECIRCULATION SYSTEM, Enclosure D 052400Idle RR Pump Startup (Mode 1, 2, 3 and 4)

After Applicant completes of step 8.2.23 resetting RR Limiter 4 **ACTIVATE** the following:

Malfunction **MF2009**, Recirc Pump A Motor Vibration High to 1.

Run **BATCH FILE** {dap:motorton,mg1} to increase RR pump motor heat load, this ensures a high temperature alarm on B3103-S001A, North RR MG Set, Bearing Oil Cooling Water, Point 4.

START TIME: _____

_____ Performance step:

8.2.1 If Drywell is accessible, remove upper and lower oil level gauge caps (two pipe wrenches required) on RR Pump Motor, and verify oil level is within 1" of oil level shelf.

Standard: No action required.

CUE: If ask, report the Drywell NOT accessible.

Comment:

SAT or UNSAT

_____ Performance step:

8.2.2 If Drywell is **not** accessible, verify the following Annunciators are clear:
3D125, RECIRC PMP A MTR BEARING OIL LEVEL HIGH/LOW

Standard: Applicant verifies annunciator 3D125 is clear:

Comment:

SAT or UNSAT

CAUTION - Starting N(S) RR MG Set, with Reactor Water Level > 255" may flood the Main Steam Lines.

_____ Performance step: 8.2.3 Verify Reactor Vessel Water Level is > Level 4.

Standard: Applicant verifies Reactor Vessel Water Level is > Level 4 but < 255".

Comment:

SAT or UNSAT

_____ Performance step:

8.2.10 For the North RR MG Set to be started, at B31-P003A, Rx Recirc Pump MG Set A Auxiliary Relay Cubicle, perform the following (RB4-A13):

- Reset any protective relay targets and Generator Lockout Relay.
- Verify, white GENERATOR LOCKOUT light is off.

Standard:

Applicant directs field operator to perform the following (RB4-A13):

- Reset any protective relay targets and Generator Lockout Relay.
- Verify, white GENERATOR LOCKOUT light is off.

CUE: As field operator, report all protective relay targets and the Generator Lockout Relay are reset. The white GENERATOR LOCKOUT light is off.

Comment:

SAT or UNSAT

_____ Performance step: 8.2.11 Verify 3D135, RECIRC SYS A GEN LOCKOUT RELAY TRIPPED, is clear.

Standard: Applicant verifies annunciator 3D135 is clear.

Comment:

SAT or UNSAT

NOTE (1): The red LIMITER 1, 2, 3, 4 and MANUAL RUNBACK, boxes for RR MG Set A(B) are visible when the respective RR Limiters are enforcing on the C32-K816, FW & RR Flat Panel Display.

NOTE (2): Resetting RR Limiter 3 also resets RR Limiter 2 and RR Limiter 4, if present.

_____ Performance step:

8.2.12 Place or verify Recirc A & B Flow Limiter 2/3 Defeat Switch to DEFEAT and perform the following:

1. Verify 3D129, RECIRC A & B FLOW LIMITER 2/3 DEFEATED, is in alarm.
2. If available, yellow LIMITER 2/3 DEFEATED, boxes for RR MG Sets A and B are visible on C32-K816, FW & RR Flat Panel Display.

Standard:

Applicant places or verifies Recirc A & B Flow Limiter 2/3 Defeat Switch to/in DEFEAT.

Applicant verifies 3D129 is in alarm.

Applicant verifies yellow LIMITER 2/3 DEFEATED, boxes for RR MG Sets A and B are visible on C32-K816, FW & RR Flat Panel Display.

Comment: C32-K816, FW & RR Flat Panel Display is available.

SAT or UNSAT

_____ Performance step:

8.2.12.3 If C32-K816, FW & RR Flat Panel Display, is unavailable, simultaneously push Recirc Runback Reset A RESET and Recirc Runback Reset B RESET pushbuttons.

Standard: NONE

Comment: C32-K816, FW & RR Flat Panel Display is available.

SAT or UNSAT

_____ Performance step:

8.2.12.4 If C32-K816, FW & RR Flat Panel Display, is available, perform the following:

- a. Verify the following RR Limiters are clear. Otherwise, proceed to Step b or c, as applicable.
 - 1) Red LIMITER 2, boxes for RR MG Sets A and B are clear.
 - 2) Red LIMITER 3, boxes for RR MG Sets A and B are clear.
- b. If LIMITER 2 boxes for RR MG Set A and B are not clear, perform the following:
 - 1) Push Recirc Runback Reset A RESET pushbutton and verify RR Limiter 2 for North RR MG set is reset as follows:
 - a) Red LIMITER 2, box for RR MG Set A is clear on C32-K816, FW & RR Flat Panel Display.
 - 2) Push Recirc Runback Reset B RESET pushbutton and verify RR Limiter 2 for South RR MG Set is reset as follows:
 - a) Red LIMITER 2, box for RR MG Set B is clear on C32-K816, FW & RR Flat Panel Display.
- c. If LIMITER 3 boxes for RR MG Set A and B are not clear, perform the following:
 - 1) Simultaneously push both Recirc Runback Reset A RESET and Recirc Runback Reset B RESET pushbuttons and verify RR Limiter 3 for North and South RR MG Sets are reset as follows:
 - a) Red LIMITER 3, boxes for RR MG Set A and B are clear on C32-K816, FW & RR Flat Panel Display.

Standard:

Applicant verifies the RR Limiters 2/3 are clear on C32-K816, FW & RR Flat Panel Display.

- 1) Red LIMITER 2, boxes for RR MG Sets A and B are clear.
- 2) Red LIMITER 3, boxes for RR MG Sets A and B are clear.

Comment: C32-K816, FW & RR Flat Panel Display is available.

SAT or UNSAT

_____ Performance step:

8.2.13 Perform the following for the RR MG Set to be started:

1. Turn Scoop Tube A Brake switch to RESET, then release.
2. Verify 3D112, RECIRC SYS A FLUID DRIVE SCOOP TUBE LOCK, is clear.
3. If available, red SCOOP TUBE LOCKED, box for RR MG Set A(B) is clear on C32-K816, FW & RR Flat Panel Display.
4. Push Recirc Pump Vib Switch Reset A pushbutton.
5. Verify 3D138, RECIRC PMP A MOTOR VIBRATION HIGH, is clear.

Standard:

1. Applicant turns Scoop Tube A Brake switch to RESET, then releases.
2. Applicant verifies annunciator 3D112 is clear.
3. Applicant verifies red SCOOP TUBE LOCKED, box for RR MG Set A is clear on C32-K816, FW & RR Flat Panel Display.
4. Applicant pushes Recirc Pump Vib Switch Reset A pushbutton.
5. Applicant verifies annunciator 3D138 is clear.

Comment: C32-K816, FW & RR Flat Panel Display is available.

SAT or UNSAT

NOTE: At 30% power with a 70% rod line, there is approximately a 6% to 8% power increase when starting the second RR MG Set.

_____ Performance step:

8.2.14 To prevent inadvertent opening of Turbine Bypass Valves, consistent with the expected power increase for starting a RR MG Set, perform the following:

1. Raise Turbine Speed/Load demand.
2. Raise Turbine Flow Limiter.

Standard:

Applicant raises:

1. Turbine Speed/Load demand.
2. Turbine Flow Limiter.

Examiner Notes: Turbine Speed/Load demand, may already be run up out of the way. Turbine Flow Limiter, may require a slight adjustment. After RR Pump started verify Turbine Bypass Valves did not open.

Comment:

SAT or UNSAT

PERFORMANCE INFORMATION

- (Denote critical steps with a check mark)

____ Performance step:

8.2.15 Record information required by Enclosure D, Logging Requirements for RR Pump Startup.

Standard: Applicant request/obtains blank copy of Enclosure D.

CUE: Inform Applicant that Enclosure D has just been completed by another licensed operator. Provide copy of completed Enclosure D

CUE: If ask, acknowledge Unit Log Entry made.

Examiner Note: Note time completed Enclosure D given to Applicant. ____:____

Comment:

SAT or UNSAT

____ Performance step:

8.2.16 Comply with Technical Specifications, Section 3.4.10, "RCS Pressure and Temperature (P/T) Limits." (SR 3.4.10.3, SR 3.4.10.4, SR 3.4.10.5 and SR 3.4.10.6)

Standard: Applicant verifies Enclosure D items 3.c., 3.e. and 4.c. checked off as verified.

Comment:

SAT or UNSAT

Performance step:

8.2.17 Close or verify closed B3105-F031A, N RR Pump Discharge Vlv, for the pump to be started.

Standard: Applicant closes B3105-F031A.

Comment:

SAT or UNSAT

CAUTION - Operation of the RR Pump at a suction pressure (RPV Pressure) below 300 psig should be minimized since such operations may shorten seal life.

CAUTION - Do not start RR MG Set if the Fluid Drive Oil Temperature is < 80°F.

CAUTION - Consult with Station Nuclear Engineer for desired plant conditions and Control Rod configuration before starting a RR MG Set with a critical Reactor.

CAUTION - To prevent stratification of a non-isolated idle Recirculation loop, avoid steady-state Single Loop Operation with core flow < 39%.

CAUTION - While in Single Loop Operation, avoid RR MG Set speeds < 45% because of Core Flow recorder, B21-R613, being inaccurate. The Power to Flow Map can be used to approximate flow at a given power level.

NOTE (1): When the North RR MG Set, Generator A Field Breaker is open, the DCS logic automatically sets the B31-R621A, N RR MG Set Speed Controller, output to 12% and the setpoint to 28% for startup of the respective RR MG Set. The speed controller setpoint and output are not adjustable in AUTO or MANUAL when the field breaker is open.

NOTE (2): The B31-R621A, N RR MG Set Speed Controller, may be in either MANUAL or AUTO for startup. The DCS logic design automatically places the speed controllers in AUTO after the respective, Generator A Field Breaker closes.

NOTE (3): The following step will clear 3D127, RECIRC SYS LOOP A ONLY OPERATING, when B3105-F031A, N RR Pump Discharge Vlv, is full open.

NOTE (4): Step 8.2.19 should be read and understood prior to performing Step 8.2.18.

Performance step: 8.2.18 Start North RR MG Set.

Standard:

- (✓) Applicant places the North RR MG Set CMC in run.
- (✓) Verify applicant has started the North RR MG Set within 15 minutes of performing Enclosure D, IDLE RECIRC PUMP STARTUP (MODE 1, 2, 3 AND 4)

Examiners Note: Record time North RR MG Set started, ____:____.
If applicant approaches the 15 minute mark without starting the North RR MG Set, the applicant **may** re-perform Enclosure D.

Comment:

SAT or UNSAT

_____ Performance step:

8.2.19 Observe the following during start:

1. North RR MG Set ammeter increases momentarily to full scale.
2. North RR MG Set speed increases to approximately 80% indicated on B31-R621A, North RR MG Set Gen Speed Controller process variable or, if available, on C32-K816, FW & RR Flat Panel Display.
3. North RR MG Set Field Breaker closes approx 6 seconds after RR MG Set start.
4. North RR MG Set ammeter decreases to approximately 320 amps.
5. B3105-F031A, N RR Pump Discharge Vlv, jogs open.
6. Verify North RR MG Set speed is approximately 28% indicated on B31-R621A, North RR MG Set Gen Speed Controller process variable or if available, on C32-K816, FW & RR Flat Panel Display.

Standard:

Applicant verifies North RR MG Set ammeter increases momentarily to full scale.

Applicant verifies North RR MG Set speed increases to approximately 80% indicated on B31-R621A, North RR MG Set Gen Speed Controller process variable or on C32-K816, FW & RR Flat Panel Display.

Applicant verifies North RR MG Set Field Breaker closes approximately 6 seconds after RR MG Set start.

Applicant verifies North RR MG Set ammeter decreases to approximately 320 amps.

Applicant verifies B3105-F031A, N RR Pump Discharge Vlv, jogs open.

Applicant verifies North RR MG Set speed is approximately 28% indicated on B31-R621A, North RR MG Set Gen Speed Controller process variable or on C32-K816, FW & RR Flat Panel Display.

Comment:

SAT or UNSAT

PERFORMANCE INFORMATION

- (Denote critical steps with a check mark)

_____ Performance step:

8.2.20 Verify proper Recirculation Loop Jet Pump flows on the following:

- B21-R611A, Jet Pumps 11-20 Loop A Flow.
- B21-R611B, Jet Pumps 1-10 Loop B Flow.

Standard:

Applicant verifies proper RR Loop Jet Pump flows on B21-R611A, Jet Pumps 11-20 Loop A Flow. {approximately 2.74 mlbm/hr}

Applicant verifies proper RR Loop Jet Pump flows on B21-R611B, Jet Pumps 11-20 Loop B Flow. {approximately 56.66 mlbm/hr}

Comment:

SAT or UNSAT

_____ Performance step:

8.2.21 Verify Fluid Drive Bearing Oil Supply is 25 to 45 psig as indicated on B31-RA15A, North RR MG Set Brg Oil Supply Press Ind (locally at RR MG Set gauge board).

Standard:

Applicant directs field operator to report North RR MG Set Brg Oil Supply Press Ind on B31-RA15A

CUE: Report Fluid Drive Bearing Oil Supply is 35 psig, as indicated on B31-RA15A.

Comment:

SAT or UNSAT

_____ Performance step:

8.2.22 Throttle P4200-F066A, RBCCW From North RR MG Set Oil Cooler Outlet Iso Vlv, (locally at RR MG Set Oil Cooler) to maintain oil temperature 110 to 130°F on B31-RA17A, North RR MG Set Lube Oil Supply Hdr Temp Ind (locally at RR MG Set gauge board).

Standard:

Applicant directs field operator to throttle P4200-F066A to maintain oil temperature 110 to 130°F on B31-RA17A.

CUE: Report P4200-F066A throttled to maintain oil temperature 120°F on B31-RA17A.

Comment:

SAT or UNSAT

CAUTION - Because of RR MG Set speed oscillation, avoid steady-state operation of the RR MG Sets in the 22% to 26% and 49% to 54% speed ranges. If this speed region is entered, take action to exit this region if possible.

NOTE (1): RR Limiter 4 is actuated by an open North RR MG Set Drive Motor Breaker or North RR MG Set Generator Field Breaker. When this condition exists, maximum speed of the running respective RR MG Set is limited to 75%.

NOTE (2): The red LIMITER 1, 2, 3, 4 and MANUAL RUNBACK, boxes for RR MG Set A(B) are visible when the respective RR Limiters are enforcing on the C32-K816, FW & RR Flat Panel Display.

NOTE (3): RR Limiter 4 is reset after both RR MG Sets are started to allow 3D126, RECIRC SYS A(B) RECIRC FLOW LIMITING to clear after RR Limiter 1 resets when total Feedwater flow is > 20% of original rated value (approximately 3.15 Million lb/hr).

_____ Performance step:

8.2.23 After startup of second RR MG Set, reset RR Limiter 4 as follows:

1. If required, push Recirc Runback Reset A RESET pushbutton, and verify RR Limiter 4 for North RR MG Set is reset as follows:
 - a. Verify amber Recirc A Flow Limiter, LIMITER 4, light off.
 - b. If available, red LIMITER 4, box for RR MG Set A is clear on C32-K816, FW & RR Flat Panel Display.
2. If required, push Recirc Runback Reset B RESET pushbutton, and verify RR Limiter 4 for South RR MG Set is reset as follows:
 - a. Verify amber Recirc B Flow Limiter, LIMITER 4, light off.
 - b. If available, red LIMITER 4 box for RR MG Set B is clear on C32-K816, FW & RR Flat Panel Display.

Standard:

Applicant verifies amber Recirc A Flow Limiter, LIMITER 4, light off.

Applicant verifies red LIMITER 4 box is clear on C32-K816, FW & RR Flat Panel Display.

Applicant pushes Recirc Runback Reset B RESET pushbutton.

Applicant verifies amber Recirc B Flow Limiter, LIMITER 4, light off.

Applicant verifies red LIMITER 4 box is clear on C32-K816, FW & RR Flat Panel Display.

Comment:

SAT or UNSAT

_____ Performance step: Respond to 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

Standard: Applicant reports annunciator 3D138 and refers to ARP

Comment:

SAT or UNSAT

ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

_____ Performance step:

1. Monitor the following Recirc Pump A Motor temperatures on Motor Bearing and Winding Temperature Monitor:

- B31-N380A, Recirc Pump A Motor Upper Thrust Bearing (Point 204).
- B31-N381A, Recirc Pump A Motor Lower Thrust Bearing (Point 205).
- B31-N382A, Recirc Pump A Motor Upper Guide Bearing (Point 206).
- B31-N383A, Recirc Pump A Motor Lower Guide Bearing (Point 207).

Standard: Applicant monitors A Recirc Pump temperatures on Motor Bearing and Winding Temperature Monitor.

Examiners Note: The Motor Bearing and Winding Temperature Monitor is physically located at H11-P805, but is not actively simulated, cues must be provided.

CUE: IF annunciator 5D94, BEARING/WINDING TEMP MON TROUBLE is in alarm then report:

Temperatures for points 204 and 206 are > 176 degrees F but < 203 degrees F and trending up while points 205 and 207 are < 176 degrees F but also trending up.

OTHERWISE, report temperatures on all points are < 176 degrees F and trending up.

Comment:

SAT or UNSAT

ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

_____ Performance step:

2. Attempt to reset alarm by depressing RECIRC PUMP VIB SWITCH RESET A pushbutton.

Standard:

Applicant depresses the RECIRC PUMP VIB SWITCH RESET A pushbutton.

Comment:

SAT or UNSAT

ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

_____ Performance step:

3. **IF** Motor vibration alarm does **not** reset, direct an operator to check and report vibration amplitudes at the local vibration monitor (RB1-D17, inside GETARS cabinet).

Standard:

Applicant directs an operator to check and report vibration amplitudes at the local vibration monitor (RB1-D17, inside GETARS cabinet).

CUE: If requested, report vibration amplitudes at the local vibration monitor indicate 0.5 in/sec, and increasing rapidly.

Comment:

SAT or UNSAT

ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

_____ Performance step:

4. **IF** vibration alarm is received in conjunction with a high temperature alarm on B3103-S001A, North RR MG Set, Bearing Oil Cooling Water, Point 4, trip B3103-S001A, North RR MG Set.

Standard:

Applicant checks on B3103-S001A, North RR MG Set, Bearing Oil Cooling Water, Point 4 and verifies the point is in alarm.

Comment:

SAT or UNSAT

ARP 3D138, RECIRC PMP A MOTOR VIBRATION HIGH

Performance step: Trip B3103-S001A, North RR MG Set.

Standard: Applicant places the North RR MG Set CMC in trip.

Comment:

SAT or UNSAT

Terminating cue:

Another operator will complete securing the North RR MG Set.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant is in MODE 1 with the reactor operating in Single Loop. Recirculation Pump A (C001A)/ Motor Generator Set A (North)(S001A) is ready to be returned to service.

Initiating Cue:

The NASS directs you to startup the North RR MG Set per SOP 23.138.01, REACTOR RECIRCULATION SYSTEM, section 8.0 RR MG SET STARTUP WITH REACTOR NOT SHUTDOWN UNDER ALL CONDITIONS.

All applicable prerequisites for RR MG Set startup required by 23.138.01 section 8.1 have been completed.

Currently at step 8.2 of SOP 23.138.01.

You are to focus on those Main Control Room operator actions performed by the P603 operator.

IDLE RECIRC PUMP STARTUP (MODE 1, 2, 3 AND 4)

NOTE: The following shall be performed within 15 minutes prior to startup of an idle recirc loop.

1. Record the time data collection is started: XX : XY
2. If in MODE 1 or 2 record the following, otherwise N/A: N/A
 - a. Core Thermal Power: 1899 MWth

NOTE: The Core Flow Recorder is not accurate during Single Loop Operation at low pump speed (< 45%).

 - b. Core Flow (B21-R613 red pen): 49 Mgalpm
3. If in MODE 1, 2, 3 or 4, record the following:
 - a. RPV Pressure (C32-R609): 978 psig
 - b. RPV Steam Space Temperature determined from Enclosure C: 544 °F
 - c. Verify RWCU Vessel Bottom Drain Line flow is maximized in accordance with 23.707.
 - d. Reactor Vessel Bottom Head Drain Temperature (G33-R607): 510 °F
 - e. Verify difference between Reactor Bottom Head Drain Temperature and RPV Steam Space Temperature is $\leq 145^{\circ}\text{F}$.
4. If in MODE 1, 2, 3 or 4, record the following:
 - a. Idle Loop Temperature for the loop to be started (B31-R650): 545 °F
 - b. RPV Coolant Temperature from:
 - Line 3d if available 510 °F
 - RHR Hx Inlet while in SDC (E11-R601A(B)) N/A °F
 - Operating loop temperature (B31-R650) 545 °F
 - c. Verify difference between Idle Loop Temperature and RPV Coolant Temperature is $\leq 50^{\circ}\text{F}$.
5. Record the above data in the Unit Log indicating acceptable parameters exist to start the Recirc Pump.

Facility: Fermi 2

Task No: 02N2100016

Task Title: Transfer from 1 Element Level Control to Startup Level Control Mode

Job Performance Measure No: B.1.b

K/A Reference: 259002 Reactor Water Level Control System

K4. - Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)

- K4.08 TDRFP speed control: TDRFP 2.9/3.0
- K4.09 Single element control (reactor water level provides the only input) 3.1/3.1
- K4.12 Manual and automatic control of the system 3.5/3.4

A4. - Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

- A4.01 All individual component controllers in the manual mode 3.8/3.6
- A4.07 All individual component controllers when transferring from automatic to manual mode 3.8/3.6

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant is in Mode 1 at 29% power, with a plant shutdown in progress in accordance with GOP 22.000.03, POWER OPERATION 25% TO 100% TO 25%. The North Reactor Feed Pump is operating with suction flow is between approximately 25 to 30%.

Task Standard:

Transfer from 1 Element Level Control to Startup Level Control Mode while maintaining normal RPV level. Deviations from normal level shall not exceed a band of > Level-3 low to < Level-8 high.

Required Materials:

SOP 23.107, REACTOR FEEDWATER AND CONDENSATE SYSTEMS

General References:

SOP 23.107, REACTOR FEEDWATER AND CONDENSATE SYSTEMS

GOP 22.000.03, POWER OPERATION 25% TO 100% TO 25%

GOP 22.000.04, PLANT SHUTDOWN FROM 25% POWER

Initiating Cue:

You are an extra licensed operator assigned to the shift crew.

The NASS directs you to Transfer from 1 Element Level Control to Startup Level Control Mode while maintaining normal RPV level in accordance with SOP 23.107, REACTOR FEEDWATER AND CONDENSATE SYSTEMS.

Time Critical Task: YES/NO

Validation Time: 35 minutes

Simulator Setup:

Verify two Condenser Pumps, one Heater Feed Pump, and the North Reactor Feed Pump are in operation.

Verify operating Reactor Feed Pump suction flow is between approximately 25 to 30%.

Verify reactor power at 25 to 30%, as indicated on APRMs.

START TIME: _____

____ Performance step:

8.5.1 Prerequisites

1. This section should be performed when the operating North(South) Reactor Feed Pump suction flow is between approximately 25 to 30%.
2. Two Condenser Pumps, one Heater Feed Pump, and one Reactor Feed Pump are in operation.

Standard:

Applicant verifies North Reactor Feed Pump suction flow is between approximately 25 to 30%.

Applicant verifies two Condenser Pumps, one Heater Feed Pump, and one Reactor Feed Pump are in operation.

Comment:

SAT or UNSAT

NOTE (1): Unless otherwise noted, all controls and indications are located on COP H11-P603.

NOTE (2): To minimize cool-down rate, the following valves may be closed per GOP 22.000.04, "Plant Shutdown From 25% Power."

_____ Performance step:

8.5.2.1. **IF** Reactor Feed Pump Turbine North is operating, open the following valves (COP H11-P805):

P9500-F408 N RFPT MS Line Drain Valve
 P9500-F615 NRFPT LP Above Seat Drain Valve
 P9500-F658 N RFPT Exh Duct Drain Valve
 P9500-F406 NRFPT Gland Stm Sply Drn Vlv
 P9500-F607 N RFPT MS Line Drain Iso Valve
 P9500-F609 N RFPT HP Stop Vlv Drain Valve
 P9500-F407 RFPT Main Stm Sply Line Drn Vlv

Standard: Applicant opens the following valves:

P9500-F408 N RFPT MS Line Drain Valve
 P9500-F615 NRFPT LP Above Seat Drain Valve
 P9500-F658 N RFPT Exh Duct Drain Valve
 P9500-F406 NRFPT Gland Stm Sply Drn Vlv
 P9500-F607 N RFPT MS Line Drain Iso Valve
 P9500-F609 N RFPT HP Stop Vlv Drain Valve
 P9500-F407 RFPT Main Stm Sply Line Drn Vlv

Comment:

SAT or UNSAT

_____ Performance step: 8.5.2.2. **IF** Reactor Feed Pump Turbine South is operating,

Standard: N/A, Reactor Feed Pump Turbine North is operating

Comment:

SAT or UNSAT

___ Performance step:

8.5.2.3. Verify open N2100-F611, N RFP To RPV S/U LCV Iso Vlv, for **operating** (feeding) Reactor Feed Pump Turbine North (COP H11-P805).

Standard: Applicant verifies N2100-F611 open on COP H11-P805.

Comment:

SAT or UNSAT

NOTE: The START or RUN box displayed on C32-K816, FW & RR Flat Panel Display, is the actual DCS logic state.

Performance step:

8.5.2.4. Place RPV Startup LCV Mode Switch is in START. If C32-K816, FW & RR Flat Panel Display, is available, verify DCS logic is in START.

Standard:

Applicant PLACES RPV Startup LCV Mode Switch is in START.

Applicant verifies DCS logic is in START.

Comment:

SAT or UNSAT

NOTE: N21-R805, RPV Startup Line Flow Ind, will indicate approximately 0% until N2100-F607 and N2100-F608, N and S RFP Disch Line Iso Valves, are closed.

____ Performance step:

- 8.5.2.4. Closely monitor RPV water level when shifting to Startup Level Control mode while performing the following:
- a. Adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to approximately 50%. If RPV level or Feedwater flow rates change, allow Reactor Feed Pump Turbine North speed time to respond.

Examiners Note:

Adjusting R620 to approximately 50% becomes a critical step **IF:**

- a. Applicant fails to perform step 8.5.2.4.f, placing R620 to AUTO. This results in no injection to RPV when 8.5.2.4.h, closing operating RFP discharge valve is performed.
- OR**
- b. Level transient following performance of 8.5.2.4.f and 8.5.2.4.h results in exceeding either Level-3 low or Level-8 high.

Standard:

Applicant adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to approximately 50%.

Applicant monitors RPV water level.

Comment:

SAT or UNSAT

Performance step:

8.5.2.4.b. Close or verify closed, N2100-F608(F607), S(N) RFP Disch Line Iso Valve, on **non-operating** (non-feeding) Reactor Feed Pump Turbine South(North) (COP H11-P805).

8.5.2.4.c. Allow time for RPV water level to stabilize and N2100-F607(F608), N(S) RFP Disch Line Iso Valve, to fully close.

Standard:

Applicant closes, N2100-F608, S RFP Disch Line Iso Valve, on **non-operating** (non-feeding) Reactor Feed Pump Turbine South (COP H11-P805).

Applicant allows time for RPV water level to stabilize and N2100-F608, S RFP Disch Line Iso Valve, to fully close.

Comment:

SAT or UNSAT

NOTE: When C32-R616A, N Reactor Feed Pump Controller, and C32-R616B, S Reactor Feed Pump Controller, are in MANUAL, C32-R618, Master Feedwater Level Controller, is forced to MANUAL. C32-R618, Master Feedwater Level Controller, cannot be placed in AUTO until either C32-R616A, N Reactor Feed Pump Controller, or C32-R616B, S Reactor Feed Pump Controller, is placed in AUTO.

Performance step:

8.5.2.4.d. Place the operating (feeding) C32-R616A(B), N(S) Reactor Feed Pump Controller, in MANUAL.

8.5.2.4.e. Verify C32-R618, Master Feedwater Level Controller, is in MANUAL.

Standard:

Applicant places the operating (feeding) C32-R616A, N Reactor Feed Pump Controller, in MANUAL

Applicant verifies C32-R618, Master Feedwater Level Controller, is in MANUAL.

Comment:

SAT or UNSAT

NOTE: With C32-R618, Master Feedwater Level Controller, and C32-R620, N21-F403 RPV Startup LCV Controller, are in MANUAL, the RPV water level setpoint tracks actual RPV water level to provide bumpless transfer to AUTO.

Performance step:

8.5.2.4.f. Place C32-R620, N21-F403 RPV Startup LCV Controller, in AUTO.

Standard:

Applicant places C32-R620, N21-F403 RPV Startup LCV Controller, in AUTO.

Comment:

SAT or UNSAT

NOTE: The RPV water level setpoint may be adjusted from C32-R618, Master Feedwater Level Controller or C32-R620, N21-F403 RPV Startup LCV Controller, when at least one of the controllers are in AUTO.

Performance step:

8.5.2.4.g. Adjust RPV water level setpoint to desired level (Level 4 to Level 7).

Standard:

Applicant adjust RPV water level setpoint to desired level {197 inches} (Level 4 to Level 7).

Comment:

SAT or UNSAT

CAUTION: Large increases in Feedwater flow and RPV water level will cause neutron flux increases.

CAUTION: During performance of the next 2 steps, the speed and discharge pressure of the feeding North(South) Reactor Feed Pump must be adjusted to maintain adequate Feedwater flow through N21-F403, RPV Startup LCV.

Performance step:

8.5.2.4.h. Close N2100-F607, N RFP Disch Line Iso Valve, on operating (feeding) Reactor Feed Pump Turbine North (COP H11-P805).

Standard:

Applicant closes N2100-F607, N RFP Disch Line Iso Valve, on operating (feeding) Reactor Feed Pump Turbine North (COP H11-P805).

Comment:

SAT or UNSAT

Performance step:

8.5.2.4.i. Adjust the output of C32-R616A(B), N(S) Reactor Feed Pump Controller, to maintain constant Feedwater flow rate and RPV water level.

8.5.2.4.j. Allow time for C32-R620, N21-F403 RPV Startup LCV Controller, to control RPV water level.

Standard:

Applicant adjust output of R616A such that R620 maintains RPV level >Level-3 but <Level-8.

Comment:

SAT or UNSAT

Terminating cue:

RPV level being maintained constant at approximately 197 inches or within a band of Level-4 to Level-7 and level swings are not divergent.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant is in Mode 1 at 29% power, with a plant shutdown in progress in accordance with GOP 22.000.03, POWER OPERATION 25% TO 100% TO 25%. The North Reactor Feed Pump is operating with suction flow is between approximately 25 to 30%.

Initiating Cue:

You are an extra licensed operator assigned to the shift crew.

The NASS directs you to Transfer from 1 Element Level Control to Startup Level Control Mode while maintaining normal RPV level in accordance with SOP 23.107, REACTOR FEEDWATER AND CONDENSATE SYSTEMS.

Facility: Fermi 2

Task No: 02E5100006 & 02E5100015

Task Title: Operate RCIC in Test Mode for Pressure Control IAW 23.206.

Job Performance Measure No: B.1.c

K/A Reference: EPE: 295025 High Reactor Pressure

EA1. Ability to operate and/or monitor the following as they apply to HIGH REACTOR
PRESSURE: (CFR: 41.7 / 45.6)

EA1.05 RCIC:

RO 3.7 SRO 3.7

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant has scrammed from full power, all control rods inserted to 00.

AOP 20.000.21 Reactor Scram and EOP 29.100.01 Sheet 1 RPV Control have been entered.

The MSIVs are closed, with LOW LOW Set SRVs controlling RPV pressure.

RHR is in Torus Cooling IAW 23.205.

The Standby Feedwater System is being used to maintain RPV level per 29.100.01.

Task Standard:

Shutdown RCIC due to high Turbine Governor/Coupling bearing oil temperature.

Required Materials: NONE

General References:

23.206	Reactor Core Isolation Cooling System
23.205	Residual Heat Removal System
20.000.21	Reactor Scram
29.100.01 Sh 1	RPV Control
1D64	RCIC TURBINE GOV/COUPLING BRG OIL TEMP HIGH

Initiating Cue:

You are an extra licensed operator assigned to the shift crew.

The CRS directs you to operate RCIC in the Test Mode per 23.206, "Reactor Core Isolation Cooling System" to control RPV pressure in accordance with 29.100.01 Sh 1, RPV Control.

Time Critical Task: YES/NO

Validation Time: 30 minutes

Simulator Setup:

Scram the plant from full power, with all control rods inserted to 00.
Close the MSIVs, with LOW LOW Set SRVs controlling RPV pressure.
Place RHR is in Torus Cooling IAW 23.205.
Place Standby Feedwater System in service to maintain RPV level per 29.100.01.

ACITVATE Malfunction **MF1570**; H30-01D064, RCIC Turbine Governor Brg Oil Temp High, after RCIC is in service for RPV Pressure Control.

START TIME: _____

_____ Performance step:

6.1.1 Specific Prerequisites:

1. RCIC System is in Standby in accordance with Section 5.2, Standby Mode.
2. If Main Turbine is not on line, Main Turbine Bypass Valves are open at least 15%.

Standard:

1. Applicant verifies RCIC System is in Standby.
2. Not applicable, only applies if reactor operating.

Comment:

SAT or UNSAT

NOTE (1): E5101-C004, RCIC Baro Cndr Vacuum Pump, and E5101-C003, RCIC Baro Cndr Cond Pump, will trip at Level 1 or High Drywell Pressure.

NOTE (2): If RCIC auto initiation signal is received while in Test Mode (CST to CST), RCIC System will automatically realign and inject to RPV.

NOTE (3): A file has been established in GETARS (Work File 4) to collect data while RCIC is running for purposes of trending hydraulic anomalies. This file should be run while RCIC is running.

Examiners Note: If Applicant request GETARS (Work File 4) to run, inform the Applicant that the STA will initiate the file.

MPB
N/A ← Performance step:

6.1.2.1 Open or verify open P1100-F606, CST Common Rtrn Iso Valve (COP H11-P805).

Standard: Applicant ~~opens~~ P1100-F606, CST Common Rtrn Iso Valve.

verifies open

Comment:

SAT or UNSAT

____ Performance step:

6.1.2.2 If required, place RHR System in Torus Cooling Mode in accordance with 23.205, "Residual Heat Removal System."

Standard: N/A, condition established in Initial Conditions.

Comment:

SAT or UNSAT

____ Performance step:

6.1.2.3 If necessary, defeat RCIC Level 8 Trip in accordance with Attachment 4.

Examiner Note: If Applicant request CRS input, reply defeating Level-8 Trip is not required.

Standard: N/A.

Comment:

SAT or UNSAT

____ Performance step:

6.1.2.4 If using Test Mode for a non-emergency operation:
• Log Suppression Pool temperature every 5 minutes in accordance with 24.000.01, "Situation Surveillances/LCO Action Tracking", Attachment 10, Torus Water Temperature During Testing Which Adds Heat to Torus.

Standard: N/A, EOPs in use.

Comment:

SAT or UNSAT

Performance step:

- 6.1.2.5 Verify or place E41-K820, Test Iso/PCV E41-F011 Ctrlr, in AUTO (manual operation is acceptable but not preferred).

Standard: Applicant places E41-K820 in AUTO.

Comment:

SAT or UNSAT

Performance step:

- 6.1.2.6 Place E4100-M001, HPCI Test Line Iso/PCV E41-F011 Selector Switch, in OPER.

Standard: Applicant places E4100-M001, HPCI Test Line Iso/PCV E41-F011 Selector Switch, in OPER.

Comment:

SAT or UNSAT

Performance step:

6.1.2.7 If E41-K820, Test Iso/PCV E41-F011 Ctrlr, is in AUTO, set E41-F011, HPCI/RCIC Test Iso/PCV, Valve Position and Pressure Permissives as follows: (H11-P602)

- a. Adjust E41-K820 to set valve position opening setpoint to approximately 20% open (S-display).
- b. Adjust E41-K820 to set discharge pressure setpoint as follows:
 - If Reactor Pressure > 400 psig, set discharge pressure setpoint to 500 psi (Y-display).
 - If Reactor Pressure < 400 psig, set discharge pressure setpoint to Reactor Pressure + 100 psi (Y-display).

Standard:

Applicant depresses D button on E41-K820 until S comes ON.

Applicant turns the pulser knob to set the valve position open setpoint to approximately 20% on the digital display.

Applicant depresses D button on E41-K820 until Y comes ON.

Applicant turns the pulser knob to set the discharge pressure setpoint to 500 psi on the digital display.

Comment:

SAT or UNSAT

Performance step:

6.1.2.8 Verify closed E41-F011, HPCI/RCIC Test Iso/PCV.

Standard: Applicant verifies E41-F011, HPCI/RCIC Test Iso/PCV closed.

Comment:

SAT or UNSAT

Performance step:

6.1.2.9 Open E5150-F022, RCIC Test Line Iso Vlv.

Standard: Applicant opens E5150-F022, RCIC Test Line Iso Vlv.

Comment:

SAT or UNSAT

Performance step:

6.1.2.10 Start E5101-C004, RCIC Baro Cndr Vacuum Pump.

Standard: Applicant starts E5101-C004, RCIC Baro Cndr Vacuum Pump.

Comment:

SAT or UNSAT

Performance step:

6.1.2.11 Open E5150-F046, RCIC Oil Clr Clg Water Iso Vlv.

Standard: Applicant opens E5150-F046, RCIC Oil Clr Clg Water Iso Vlv.

Comment:

SAT or UNSAT

Performance step:

6.1.2.12 Start RCIC System as follows:

- a. Open E5150-F095, RCIC Turb Stm Inlet Byp Vlv.
- b. After approximately 15 seconds, open E5150-F045, RCIC Turb Steam Inlet Vlv.

Standard:

Applicant opens E5150-F095, RCIC Turb Stm Inlet Byp Vlv.

After approximately 15 seconds, Applicant opens E5150-F045, RCIC Turb Steam Inlet Vlv.

Comment:

SAT or UNSAT

Performance step:

6.1.2.13 Verify the following:

- a. RCIC Turbine speed increases.
- b. E5150-F019, RCIC Min Flow Vlv, opens when:
 - RCIC Pump discharge pressure increases to greater than 125 psig.
 - and**
 - RCIC Pump flow is less than 90 gpm.
- c. E5150-F019, RCIC Min Flow Vlv, closes when flow is established through E41-F011, HPCI/RCIC Test Iso/PCV, and RCIC Pump flow exceeds 130 gpm.

Standard:

Applicant verifies the following:

- RCIC Turbine speed increases.
- E5150-F019, RCIC Min Flow Vlv, opens when RCIC Pump discharge pressure increases to > 125 psig **and** RCIC Pump flow is < 90 gpm.
- E5150-F019, RCIC Min Flow Vlv, closes when flow is established through E41-F011, HPCI/RCIC Test Iso/PCV, and RCIC Pump flow exceeds 130 gpm.

Comment:

SAT or UNSAT

NOTE: Minimize operating E41-F011, HPCI/RCIC Test Iso/PCV, less than 9% open and between 29% to 47% open due to being a high wear region of valve internals.

_____ Performance step:

- 6.1.2.14 If E41-K820, Test Iso/PCV E41-F011 Ctrlr, is in MANUAL:
- When RCIC discharge pressure increases above 500 psig:
 - Maintain RCIC discharge pressure approximately 100 psi above reactor pressure by adjusting E41-F011, HPCI/RCIC Test Iso/PCV, with the pulser knob for E41-K820, Test Iso/PCV E41-F011 Ctrlr.

Standard: **N/A**, E41-K820, Test Iso/PCV E41-F011 Ctrlr, is in Auto.

Comment:

SAT or UNSAT

_____ Performance step:

- 6.0.2.15 If E41-K820, Test Iso/PCV E41-F011 Ctrlr, is in AUTO:
- E41-F011, HPCI/RCIC Test Iso/PCV, strokes open to approximately 20% (E41-K820, V-display), after pump discharge pressure exceeds either:
 - 500 psig (E41-K820, P-Display) if Reactor Pressure > 400 psig.
 - Reactor Pressure + 100 psig (E41-K820, P-Display) if Reactor Pressure < 400 psig.

Standard:

Applicant verifies E41-F011, HPCI/RCIC Test Iso/PCV, strokes open to approximately 20% after pump discharge pressure exceeds 500 psig.

Comment:

SAT or UNSAT

_____ Performance step:

6.1.2.16 E5101-C003, RCIC Baro Cndr Cond Pump, runs intermittently **and** maintains level below high level alarm.

Standard:

Applicant verifies E5101-C003, RCIC Baro Cndr Cond Pump, runs intermittently **and** maintains level below high level alarm.

Comment:

SAT or UNSAT

_____ Performance step:

6.1.2.17 The following valves close:

- E5150-F025, RCIC Turb Stm Drn Pot Inbd Iso
- E5150-F026, RCIC Turb Stm Drn Pot Otbd Iso.
- E5150-F004, RCIC Cond To RW Inbd Iso Vlv.
- E5150-F005, RCIC Cond To RW Otbd Iso Vlv.

Standard:

Applicant verifies the following valves close:

- E5150-F025, RCIC Turb Stm Drn Pot Inbd Iso
- E5150-F026, RCIC Turb Stm Drn Pot Otbd Iso.
- E5150-F004, RCIC Cond To RW Inbd Iso Vlv.
- E5150-F005, RCIC Cond To RW Otbd Iso Vlv.

Comment:

SAT or UNSAT

____ Performance step:

6.1.2.18 If Reactor Water Level remains above Level 2, E5150-F095, RCIC Turb Stm Inlet Byp Vlv, closes 15 seconds after opening.

Standard:

Applicant verifies E5150-F095, RCIC Turb Stm Inlet Byp Vlv, closes 15 seconds after opening.

Comment:

SAT or UNSAT

Performance step:

RESPOND to 1D64 - RCIC TURBINE GOV/COUPLING BRG OIL TEMP HIGH and refer to ARP.

Standard: Applicant ACKNOWLEDGES ^{1D64}~~2D68~~_{MCS} and REPORTS to CRS.

() Applicant refers to ARP.

Comment:

SAT or UNSAT

ARP 1D64 - RCIC TURBINE GOV/COUPLING BRG OIL TEMP HIGH

____ Performance step:

INITIAL RESPONSE: 1. Verify E5150-F046, RCIC Oil Clr Clg Water Iso Vlv, open.

Standard: Applicant verifies E5150-F046, RCIC Oil Clr Clg Water Iso Vlv, open.

Comment:

SAT or UNSAT

ARP 1D64 - RCIC TURBINE GOV/COUPLING BRG OIL TEMP HIGH

___ Performance step:

INITIAL RESPONSE: 2. Direct an operator to RCIC Turbine to verify open or adjust as necessary E51-F015, RCIC Oil Cooler Cooling Water PCV, to control oil temperature.

Standard:

Applicant directs an operator to ^{RCIC MEB} ~~HPCI~~ Turbine to verify open or adjust as necessary E51-F015, RCIC Oil Cooler Cooling Water PCV, to control oil temperature.

CUE: If requested, as field operator report Oil Temperature 183°F and rising.

CUE: (If directed to adjust ~~E41-F035~~ ^{MEB} ~~E51-F015~~) As field operator report E51-F015 will not move.

Comment:

SAT or UNSAT

Performance step:

SUBSEQUENT ACTIONS: 1. IF RCIC Turbine Oil Cooler Discharge temperature does not decrease and RCIC is not needed to maintain RPV water level, shut down RCIC in accordance with 23.206, Reactor Core Isolation Cooling System."

Standard:

Applicant reports to CRS that RCIC Oil Cooler Discharge temperature cannot be controlled less than 180 °F and shutdown is required.

CUE: If asked, as CRS inform Applicant RCIC not required for RPV level control.

Comment:

SAT or UNSAT

23.206, section 8.1 RCIC Shutdown

CAUTION - DO NOT run RCIC Turbine at speeds less than 2100 rpm for an extended period of time. Bearing damage may result from low bearing oil pressure. E5150-F001, RCIC Turb Exh Iso Vlv, and E5100-F040, RCIC Turb Exh Line Check Valve, may also be damaged.

CAUTION - To prevent draining CST to Suppression Pool, DO NOT run RCIC pump with indicated flow less than 130 gpm, for an extended period of time.

_____ Performance step:

8.1.2.1 Place E51-R614, RCIC Pump Flow Controller, in MANUAL.

Standard: Applicant places E51-R614, RCIC Pump Flow Controller, in MANUAL.

Comment:

SAT or UNSAT

_____ Performance step:

8.1.2.2 Using CLOSE pushbutton on E51-R614, RCIC Pump Flow Controller, decrease turbine speed until indicating 2100 to 2300 rpm.

Standard:

Applicant uses CLOSE pushbutton on E51-R614, RCIC Pump Flow Controller, to decrease turbine speed until indicating 2100 to 2300 rpm.

Comment:

SAT or UNSAT

_____ Performance step:

- 8.1.2.3 Place or verify E4100-M001, HPCI Test Line Iso/PCV E41-F011 Selector Switch, in ISOLATE:
- Verify E41-F011, HPCI/RCIC Test Iso/PCV, closes or is closed.

Standard:

Applicant places E4100-M001, HPCI Test Line Iso/PCV E41-F011 Selector Switch, in ISOLATE.

Applicant verifies E41-F011, HPCI/RCIC Test Iso/PCV, closes.

Comment:

SAT or UNSAT

Performance step:

8.1.2.4 Trip RCIC turbine as follows:

- a. Place RCIC Turbine Trip pushbutton collar in ARMED.
 - Verify Annunciator 1D90, RCIC TURBINE TRIP PUSHBUTTON ARMED, alarms.
- b. Depress RCIC Turbine Trip pushbutton, and verify:
 - Annunciator 1D94, RCIC TURBINE TRIPPED, alarms.
 - Annunciator 1D24, RCIC SYSTEM ACTUATED, clears.
 - If open, E5150-F059, RCIC Turbine Trip Throttle Vlv, closes.
 - RCIC Turbine speed is decreasing **or** is at zero.
 - RCIC Turbine Trip Solenoid ENERGIZED white light is ON.
 - If open, E5150-F013, RCIC Disch to FW Inbd Iso Valve, closes.
 - If open, E5150-F019, RCIC Min Flow Vlv, closes.

Standard:

(✓) Applicant arms Turbine Trip Pushbutton, by rotating pushbutton collar.

Applicant verifies 1D90 alarms.

(✓) Applicant depresses Turbine Trip Pushbutton

Applicant verifies 1D94 alarms.

Applicant verifies 1D24 clears.

Applicant verifies RCIC Turbine speed is decreasing **or** is at zero.

Applicant verifies RCIC Turbine Trip Solenoid ENERGIZED white light is ON.

Applicant verifies E5150-F019, RCIC Min Flow Vlv, closes.

Comment:

SAT or UNSAT

_____ Performance step:

8.1.2.5 Close or verify closed E5150-F046, RCIC Oil Clr Clg Water Iso Vlv.

Standard:

Applicant closes E5150-F046, RCIC Oil Clr Clg Water Iso Vlv.

Comment:

SAT or UNSAT

Terminating cue:

RCIC Turbine Trip Solenoid Energized light comes ON.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant has scrammed from full power, all control rods inserted to 00.

AOP 20.000.21 Reactor Scram and EOP 29.100.01 Sheet 1 RPV Control have been entered.

The MSIVs are closed, with LOW LOW Set SRVs controlling RPV pressure.

RHR is in Torus Cooling IAW 23.205.

The Standby Feedwater System is being used to maintain RPV level per 29.100.01.

Initiating Cue:

You are an extra licensed operator assigned to the shift crew.

The CRS directs you to operate RCIC in the Test Mode per 23.206, "Reactor Core Isolation Cooling System" to control RPV pressure in accordance with 29.100.01 Sh 1, RPV Control.

Facility: Fermi 2

Task No: 02A0001040

Task Title:

Perform Alternate Reactor Coolant Circulation and Decay Heat Removal - Core Spray or RHR IAW 23.800.05

Job Performance Measure No: B.1.d

K/A Reference: 295021 Loss of Shutdown Cooling

AA1. Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: (CFR: 41.7 / 45.6)

AA1.04, Alternate heat removal methods RO 3.7 SRO 3.7

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant is in MODE 4.

The Shutdown cooling mode of RHR is not available.

E1100-F015A, LPCI loop A Inboard Isolation Valve is tagged out of service due to a binding motor operator.

RHR Service Water Pumps B and D have tripped and can not be restarted.

The A Reactor Recirculation pump is in service.

Division 1 RHR is in service in Suppression Pool Cooling.

Division 2 RHR is aligned to Standby Mode.

RHR Pump D is not available due to low upper bearing oil level.

Task Standard:

Perform Alternate Reactor Coolant Circulation and Decay Heat Removal - Core Spray or RHR IAW 23.800.05. Completion of task requires use of an injection source other than the one initially prescribed.

Required Materials:

SOP 23.800.05, ALTERNATE REACTOR COOLANT CIRCULATION AND DECAY HEAT REMOVAL CORE SPRAY OR RHR

General References:

SOP 23.800.05, ALTERNATE REACTOR COOLANT CIRCULATION AND DECAY HEAT REMOVAL CORE SPRAY OR RHR

Attachments

- 1 090696 Suppression Pool Temperature Log
 - 2 090696 Suppression Pool Heatup/Cooldown Graph
 - 3 090696 SRV Drain Line Temperatures
 - 4 090696 RHR Heat Exchanger Temperatures
- Enclosure: A 090696 Equipment Required for Alternate Decay Heat Removal Method

- 22.000.05, Pressure/Temperature Monitoring During Heatup and Cooldown
- 23.138.01, Reactor Recirculation System
- 23.203, Core Spray System
- 23.205, Residual Heat Removal System

Initiating Cue:

The CRS directs you to establish Decay Heat Removal using Division 2 of RHR as the preferred source, with suction from the Suppression Pool and discharging to the RPV, in accordance with SOP 23.800.05, "ALTERNATE REACTOR COOLANT CIRCULATION AND DECAY HEAT REMOVAL CORE SPRAY OR RHR"

Prerequisites of 23.800.05 section 4.1 have been met.

Steps 1 through 3 of 4.2.1, 23.800.05, have been completed.

- The A Reactor Recirculation Pump is in service in accordance with 23.138.01, "Reactor Recirculation System."
- Monitoring of Reactor Coolant temperature and pressure hourly is in progress in accordance with 22.000.05, "Pressure/Temperature Monitoring During Heatup and Cooldown."

Personnel have been evacuated from the Drywell and Reactor Building steam tunnel.

Time Critical Task: **YES/NO** However, per 23.800.05 Precautions and Limitations: If shutdown cooling mode cannot be established, then this method must be in operation within one hour to the extent that coolant circulation is established and coolant temperature and pressure is monitored at least once every hour.

Validation Time: 30 minutes

Simulator Setup:

The plant is in MODE 4.

The Shutdown cooling mode of RHR is not available.

E1100-F015A, LPCI loop A Inboard Isolation Valve is tagged out of service due to a binding motor operator.

RHR Pump D is tagged out due to low upper bearing oil level.

RHR Service Water Pumps B and D have tripped and can not be restarted.

The A Reactor Recirculation Pump is in service in accordance with 23.138.01, "Reactor Recirculation System."

Division 1 RHR is in service in Suppression Pool Cooling.

Division 2 RHR is aligned to Standby Mode.

Monitoring of Reactor Coolant temperature and pressure hourly is in progress in accordance with 22.000.05, "Pressure/Temperature Monitoring During Heatup and Cooldown."

RPV Water Level is maintained greater than or equal to 214 inches.

Verify flow path from Reactor Pressure Vessel down each of the Main Steam Lines is prevented by one or more of the following means: Inboard MSIVs closed.

Close or verify closed B21-F016 Main Steam Line Drain Valve.

Verify flow path from Reactor Pressure Vessel down the HPCI Steam Lines is prevented by one or more of the following means: a. E4150-F002, HPCI Steam Supply Inboard Isolation Valve, closed **OR** b. E4150-F003, HPCI Steam Supply Outboard Isolation Valve, closed, and E4150-F600, E41-F003 Bypass Valve, closed.

Verify flow path from Reactor Pressure Vessel down the RCIC Steam Line is prevented by one or more of the following means: a. E5150-F007, RCIC Steam Line Inboard Isolation Valve, closed **OR** b. E5150-F008, RCIC Steam Line Outboard Isolation Valve, closed

ACTIVATE malfunction (MF0597) for RHR Pump B flow reduction after RHR pump is injecting into core and applicant is attempting to stabilize pressure greater than 105 psig with one SRV open.

START TIME: _____

_____ Performance step:

4.2.1.1 Start a Reactor Recirculation Pump in accordance with 23.138.01.

Standard: Condition Met {Given in Initial Conditions}.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.3 Monitor Reactor Coolant temperature and pressure hourly in accordance with 22.000.05, "Pressure/Temperature Monitoring During Heatup and Cooldown."

Standard: Condition Met {Given in Initial Conditions}.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.4 If a Recirc Pump cannot be started and SDC cannot be established with either division of RHR, verify flow path from Reactor Pressure Vessel down each of the Main Steam Lines is prevented by one or more of the following means:
a. Inboard MSIV closed **OR** b. Outboard MSIV closed

Standard: Applicant verifies Inboard MSIV's closed.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.5 Close or verify closed B21-F016 or B21-F019, Main Steam Line Drain Valve.

Standard: Applicant verifies B21-F016 or F019, MS Line Drain Valve closed.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.6 Evacuate all personnel from the Drywell and Reactor Building steam tunnel except personnel assigned to monitor lines for leakage.

Standard: Condition Met {Given in Initial Conditions}.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.7 Verify flow path from Reactor Pressure Vessel down the HPCI Steam Lines is prevented by one or more of the following means:

a. E4150-F002, HPCI Steam Supply Inboard Isolation Valve, closed.

OR

b. E4150-F003, HPCI Steam Supply Outboard Isolation Valve, closed, and E4150-F600, E41-F003 Bypass Valve, closed.

Standard:

Applicant verifies HPCI Steam Supply Inboard Isolation Valve closed.

Applicant verifies HPCI Steam Supply Outboard Isolation Valve, closed, and Bypass Valve, closed.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.8 Verify flow path from Reactor Pressure Vessel down the RCIC Steam Line is prevented by one or more of the following means:

a. E5150-F007, RCIC Steam Line Inboard Isolation Valve, closed.

OR

b. E5150-F008, RCIC Steam Line Outboard Isolation Valve, closed.

Standard:

Applicant verifies RCIC Steam Line Inboard Isolation Valve, closed.

Applicant verifies RCIC Steam Line Outboard Isolation Valve, closed.

Comment:

SAT or UNSAT

NOTE: The following step will allow SRVs to open when pressure is established (step 4.2.1.16).

Performance step:

4.2.1.9 Depress the open pushbutton for at least one but no more than three SRVs.

Standard: Applicant depresses open pushbutton for at least one SRV.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.10 Record Suppression Pool Temperature on Attachment 1.

CUE: Inform Applicant another operator will record this information.

Standard: None

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.11 Place Residual Heat Removal System in Suppression Pool Cooling in accordance with 23.205, "Residual Heat Removal System."

Standard: Condition Met {Given in Initial Conditions}.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.12 Record SRV tail pipe temperature for open SRVs on Attachment 3.

CUE: Inform Applicant another operator will record this information.

Standard: None

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.13 Record RHR inlet/outlet temperatures on Attachment 4.

CUE: Inform Applicant another operator will record this information.

Standard: None

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.14 If Core Spray system is used to fill the RPV, slowly throttle E2150-F005A or E2150-F005B to control the rate of level increase. a. Verify proper automatic closure of E2150-F031A(B), Minimum Flow Valve.

Standard: N/A, using Div 2 RHR.

Comment:

SAT or UNSAT

_____ Performance step:

4.2.1.15 If the RHR System is used to fill the RPV, close E1150-F010 and verify proper automatic closure of E1150-F007A(B), Minimum Flow Valve.

Standard:

Applicant closes E1150-F010.

Applicant verifies automatic closure of E1150-F007B RHR Minimum Flow Valve.

Comment:

SAT or UNSAT

4.2.1.16 Raise RPV water level to the level to establish a water flow path through the open SRVs to the Torus using, **23.205, "Residual Heat Removal System."**

9.2 LPCI Manual Initiation

___ Performance step: 9.2.2.2 Perform the following at H11-P602:

- a. Close or verify closed the following valves:
- E1150-F006B, Div 2 RHR Pump B SDC Suct Iso Vlv.
 - E1150-F006D, Div 2 RHR Pump D SDC Suct Iso Vlv.

Standard:

Applicant verifies Div 2 RHR Pump B SDC Suct Iso Vlv closed.

Applicant verifies Div 2 RHR Pump D SDC Suct Iso Vlv closed.

Comment:

SAT or UNSAT

___ Performance step: 9.2.2.2

- b. Open or verify open the following valves:
- E1150-F004B, Div 2 RHR Pump B Torus Suct Iso.

Standard: Applicant verifies Div 2 RHR Pump B Torus Suct Iso open.

Comment:

SAT or UNSAT

___✓___ Performance step: 9.2.2.2

- c. Start the following pump:
- E1102-C002B, Div 2 RHR Pump B.

Standard: Applicant places CMC switch to start for Div 2 RHR Pump B.

Comment:

SAT or UNSAT

Performance step:

9.2.2.3 Close B3105-F031A(B), N(S) RR Pump Discharge Vlv, for loop where injection is desired.

Standard: Applicant closes B3105-F031B, S RR Pump Discharge Vlv.

Comment:

SAT or UNSAT

EXAMINER NOTE: E1150-F010, RHR Crosstie Vlv is to remain closed, A RR Pump is in service for core circulation. RR loop operation and RHR injection concurrently not allowed by procedure.

Performance step:

9.2.2.4 If E1150-F010, RHR Crosstie Vlv, is closed, then if desired, open E1150-F010, RHR Crosstie Vlv as follows:

- Place E1150-F010, Operate Permissive keylock switch in OPER.
- Open E1150-F010, RHR Crosstie Vlv.

Standard: Applicant verifies E1150-F010, RHR Crosstie Vlv, is closed.

Comment:

SAT or UNSAT

NOTE: If a division of RHR was operating in Shutdown Cooling Mode and RPV level lowered below L3, both E1150-F015A and E1150-F015B, Div 1(2) LPCI Inbd Iso Vlv, are closed by PCIS logic and must be reset before they can be realigned.

Performance step:

9.2.2.5 When Reactor pressure is less than 461 psig, open the following valve to loop where injection is desired:

- E1150-F015B, Div 2 LPCI Inbd Iso Vlvs.

Standard: Applicant OPEN's E1150-F015B, Div 2 LPCI Inbd Iso Vlv.

Comment:

SAT or UNSAT

_____ Performance step:

9.2.2.6 When E11-R603B, RHR Loop B Flow Indicator, is > 3000 gpm, verify E1150-F007B, Div 2 RHR Pmp Min Flow Vlv, closes.

Standard: Applicant verifies Div 2 RHR Pmp Min Flow Vlv closes.

Comment:

SAT or UNSAT

_____ Performance step:

9.2.2.7 Verify LPCI System operation by monitoring the following Control Room indications:

- E11-R603BRHR Loop B Flow Indicator, and E11-R608B, Loop B Flow Recorder indicate >10,000 gpm.
- B21-R604A or B, Reactor Water Level Indicators increasing.
- B21-R623A or B, Post Accident Monitor Pressure/Level Recorder increasing.

Standard:

Applicant verifies E11-R603B RHR Loop B Flow Indicator indicates >10,000 gpm.

Applicant verifies E11-R608B, Loop B Flow Recorder indicates >10,000 gpm.

Applicant verifies B21-R604A or B, Reactor Water Level Indicators increasing.

Applicant verifies B21-R623A or B, Post Accident Monitor Pressure/Level Recorder increasing.

Comment:

SAT or UNSAT

____ Performance step:

9.2.2.8 Start RHR Service Water in accordance with 23.208, "RHR Complex Service Water."

Standard: N/A {Given in Initial Conditions that B & D RHR Service Water Pumps tripped and could not be restarted}.

Comment:

SAT or UNSAT

RETURN TO SOP - 23.800.05

____ Performance step:

4.2.1.17 Increase RHR flow to maximum.

Standard: Applicant verifies E1150-F015B, Div 2 LPCI Inbd Iso Vlv fully open and RHR pump flow to core is maximized.

Comment:

SAT or UNSAT

Performance step:

4.2.1.18 Stabilize RPV pressure between 105 psig and 160 psig above Torus pressure by opening or closing SRVs.

Standard:

Applicant attempts to stabilize RPV pressure between 105 psig and 160 psig above Torus pressure by opening or closing SRVs.

(✓) Applicant recognizes RHR pump B has degraded flow, which will prevent achieving required pressure.

Comment:

SAT or UNSAT

Performance step:

4.2.1.19 If pressure cannot be maintained greater than 105 psig with one SRV open, start an additional core spray or RHR pump.

Standard:

Applicant recognizes no additional RHR pumps available.

(✓) Applicant refers to 23.203, Core Spray System section 5.4 Manual Initiation for additional flow.

CUE: If necessary, as CRS direct applicant to follow procedure 23.800.05.

Comment:

SAT or UNSAT

23.203, Core Spray System Section 5.4 Manual Initiation

Performance step:

5.4.2.2 Start Division 2 Core Spray per the following:
a. Start E2101-C001B, Div 2 CS Pump B.
b. Start E2101-C001D, Div 2 CS Pump D.

Standard:

Applicant places CMC for CS Pump B to start.

Applicant places CMC for CS Pump D to start.

Comment:

SAT or UNSAT

CAUTION - Core Spray System piping is sized for two pump operation of each division. If only one pump is running, and E2150-F005A(B), Div 1(2) CS Inbd Iso Vlv), is fully open, pump runout may occur.

Performance step:

- 5.4.2.3 When Reactor Pressure drops below 461 psig, open the following valves:
- E2150-F005B, Div 2 CS Inbd Iso Vlv.

Standard: Applicant OPENS E2150-F005B, Div 2 CS Inbd Iso Vlv.

Comment:

SAT or UNSAT

Performance step:

- 5.4.2.4 When Reactor pressure drops below approximately 290 psig, verify Core Spray flow is injected into Reactor Vessel:
- Division 2:
 - E21-R601B, Div 2 Core Spray Flow Ind.
 - E2100-F006B, Div 2 CS Testable Check Vlv opens.

Standard:

Applicant verifies Core Spray flow is injected into Reactor Vessel by:
Verifying E21-R601B, Div 2 Core Spray Flow Ind.
Verifying E2100-F006B, Div 2 CS Testable Check Vlv opens.

Comment:

SAT or UNSAT

Performance step:

- 5.4.2.5 As Reactor Pressure decreases and flow through each division exceeds 775 gpm, as indicated on E21-R601B, Div 2 Core Spray Flow Ind, verify the following valves close:
- E2150-F031B, Div 2 CS Pmps Min Flow Vlv.

Standard:

Applicant verifies E2150-F031B, Div 2 CS Pmps Min Flow Vlv close when division flow exceeds 775 gpm as indicated on E21-R601B, Div 2 Core Spray Flow Ind.

Comment:

SAT or UNSAT

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant is in MODE 4.

The Shutdown cooling mode of RHR is not available.

E1100-F015A, LPCI loop A Inboard Isolation Valve is tagged out of service due to a binding motor operator.

RHR Service Water Pumps B and D have tripped and can not be restarted.

The A Reactor Recirculation pump is in service.

Division 1 RHR is in service in Suppression Pool Cooling.

Division 2 RHR is aligned to Standby Mode.

RHR Pump D is not available due to low upper bearing oil level.

Initiating Cue:

The CRS directs you to establish Decay Heat Removal using Division 2 of RHR as the preferred source, with suction from the Suppression Pool and discharging to the RPV, in accordance with SOP 23.800.05, "ALTERNATE REACTOR COOLANT CIRCULATION AND DECAY HEAT REMOVAL CORE SPRAY OR RHR"

Prerequisites of 23.800.05 section 4.1 have been met.

Steps 1 through 3 of 4.2.1, 23.800.05, have been completed.

- The A Reactor Recirculation Pump is in service in accordance with 23.138.01, "Reactor Recirculation System."
- Monitoring of Reactor Coolant temperature and pressure hourly is in progress in accordance with 22.000.05, "Pressure/Temperature Monitoring During Heatup and Cooldown."

Personnel have been evacuated from the Drywell and Reactor Building steam tunnel.

Facility: Fermi 2

Task No: 02-A0004-006, Vent/purge the Primary Containment during Emergency Operating Procedures performance.

Task Title: Vent the Torus Irrespective of Offsite Release Rates IAW 29.ESP.07

Job Performance Measure No: B.1.e

K/A Reference: 223001

A4.07, Ability to manually operate and/or monitor Drywell pressure in the control room.
RO 4.2 SRO 4.1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

You are an extra licensed operator assigned to the shift.
A major plant transient has occurred.
The EOP Flowcharts have been entered.
Chemistry has been notified to sample the Primary Containment atmosphere.

Task Standard:

Vent the Torus Irrespective of Offsite Release Rates via the SC Hard Vent IAW 29.ESP.07 Section 2.0.

Required Materials: None

General References:

29.ESP.07, PRIMARY CONTAINMENT VENTING
29.ESP.22, Defeat of Primary Containment Vent Valve Isolations
29.ESP.01, Supplemental Information
23.404, Standby Gas Treatment System
23.406, Primary Containment Nitrogen Inerting and Purge System
23.426, Reactor Building Heating, Ventilation and Air Conditioning

Initiating Cue:

The CRS directs you to Vent the Torus Irrespective of Offsite Release Rates in accordance with 29ESP.07 Section 2.0, to lower Primary Containment pressure.

Time Critical Task: YES/NO

Validation Time: 30 minutes

Simulator Setup:

Setup the Simulator for a Post LOCA with high torus pressure.

Run an ATWS with MSIV's closed and a drywell steam leak until torus pressure is >40 psig.

Ensure one division of SGTS in service.

Defeat PCIS isolation IAW 29.ESP.22 by using the following remote functions under EOP actions:

RF 2323
RF 2324
RF 2325
RF 2326
RF 1699
RF 1666
RF 1667

START TIME: _____

29.ESP.07, section 2.0 TORUS VENTING IRRESPECTIVE OF OFFSITE RAD
RELEASE RATES**NOTE:** Unless otherwise noted, all controls and indications are on H11-P808 or H11-P817.**CAUTION - Simultaneously venting the Drywell and Torus is prohibited.**

____ Performance step: 2.1 If venting the Drywell, notify the NSS and exit this section.

Standard: Applicant verifies from H11-P808 & H11-P817 configuration that Drywell venting is not in progress. {Applicant verifies T4803-F602, DW Exh Iso Vlv & T4800-F455, DW Press Ctrl Inbd Iso Vlv are closed.}

Comment:

SAT or UNSAT

____ Performance step: 2.2 If Torus Level is at or above 570 feet (H11-P602), exit this section.

Standard: Applicant verifies Torus level < 570 feet on H11-P602.

Comment:

SAT or UNSAT

____ Performance step:

2.3 Contact Chemistry to sample the Primary Containment atmosphere for activity and continue in this section concurrently.

Standard: Condition Met {Given in Initial Conditions}.

Comment:

SAT or UNSAT

_____ Performance step:

- 2.4 Direct Defeat Primary Containment Vent Valve Isolations in accordance with 29.ESP.22, "Defeat of Primary Containment Vent Valve Isolations," (entire procedure) and continue in this section concurrently.

Standard:

Applicant directs performance of 29.ESP.22, "Defeat of Primary Containment Vent Valve Isolations," (entire procedure).

CUE: Inform applicant, procedure 29.ESP.22 was completed by another operator.

Comment:

SAT or UNSAT

_____ Performance step:

- 2.5 Determine pressure to stop venting the Torus as follows:
 2.5.1 If venting to lower pressure below the Primary Containment Pressure Limit curve, stop venting at 32 to 39 psig. {Wide Range}
 2.5.2 If venting for any other reason, lower pressure as required to achieve desired results as directed by EOP or Severe Accident Guideline Flowcharts.

Standard: Condition Met {Given in Initial Conditions}.
 Applicant recognizes venting to lower pressure below the Primary Containment Pressure Limit curve, stop venting at 32 to 39 psig.

Comment:

SAT or UNSAT

CAUTION - Venting the Primary Containment may release radioactive gas/steam into the Reactor Building.

Performance step:

- 2.6 If Torus Pressure is less than 1.68 PSIG, perform the following, otherwise continue at step 2.10.

Standard: Applicant recognizes Torus pressure > 1.68 psig and proceeds to step 2.10.

Comment:

SAT or UNSAT

Performance step:

- 2.10 Shutdown SGTS.

Standard: {Applicant refers to 23.404, section 8.0 to shutdown SGTS.}

(✓) Applicant places T4600-C003, Div 1 SGTS Exhaust Fan in OFF/RESET.

Applicant verifies the following dampers close at H11-P808:

- T4600-F004A, Div 1 SGTS Exh Fan Inlet Iso Damper.
- T4600-F008A, Div 1 SGTS SC Otbd Iso Dmpr.
- T4600-F409, Div 1 SGTS SC Inbd Iso Dmpr.

Comment:

SAT or UNSAT

Performance step:

- 2.11 Isolate SGTS by closing or verifying closed:
- 2.11.1 T4600-F008A, Div 1 SGTS SC Otbd Iso Dmpr
 - 2.11.2 T4600-F409, Div 1 SGTS SC Inbd Iso Dmpr
 - 2.11.3 T4600-F008B, Div 2 SGTS SC Otbd Iso Dmpr
 - 2.11.4 T4600-F408, Div 2 SGTS SC Inbd Iso Dmpr
 - 2.11.5 T4600-F407, RBHVAC To SGTS Iso Vlv
 - 2.11.6 T4600-F406, HPCI To SGTS Iso Vlv
 - 2.11.7 T4600-F410, RB5 Air Inlet Iso Vlv

Standard:

Applicant isolates Div. 1 SGTS by closing or verifying closed the following dampers.

T4600-F008A, Div 1 SGTS SC Otbd Iso Dmpr

T4600-F409, Div 1 SGTS SC Inbd Iso Dmpr

T4600-F407, RBHVAC To SGTS Iso Vlv

T4600-F406, HPCI To SGTS Iso Vlv

T4600-F410, RB5 Air Inlet Iso Vlv

Comment:

SAT or UNSAT

Performance step: 2.12 Place Keylock switch for T4600-F421, SC Hard Vent Otbd Iso Vlv, in OPER.

Standard: Applicant places Keylock switch for T4600-F421, SC Hard Vent Otbd Iso Vlv, in OPER.

Comment:

SAT or UNSAT

PERFORMANCE INFORMATION

- (Denote critical steps with a check mark)

Performance step: 2.13 Place Keylock switch for T4600-F420, SC Hard Vent Inbd Iso Vlv, in OPER.

Standard: Applicant places Keylock switch for T4600-F420, SC Hard Vent Inbd Iso Vlv, in OPER.

Comment:

SAT or UNSAT

Performance step: 2.14 Open or verify open T4600-F421, SC Hard Vent Otbd Iso Vlv.

Standard: Applicant opens T4600-F421, SC Hard Vent Otbd Iso Vlv.

Comment:

SAT or UNSAT

Performance step: 2.15 Open or verify open T4600-F420, SC Hard Vent Inbd Iso Vlv.

Standard: Applicant opens T4600-F420, SC Hard Vent Inbd Iso Vlv.

Comment:

SAT or UNSAT

Performance step:

- 2.16 Open or verify open the following 6" Vent Path Valves:
2.16.1 T4600-F412, Torus 6" Purge Iso Vlv.
2.16.2 T4600-F400, Torus Exh Iso Valve.

Standard:

Applicant opens T4600-F412, Torus 6" Purge Iso Vlv.
Applicant opens T4600-F400, Torus 6" Purge Iso Vlv.

Comment:

SAT or UNSAT

PERFORMANCE INFORMATION

- (Denote critical steps with a check mark)

NOTE(1): The vent path can be secured at anytime (step 2.23) to prevent Torus Pressure from going below 5 inches wc.

NOTE(2): Torus Pressure may not be reduced immediately, plant conditions will have to be evaluated by the Shift Team to determine if the larger vent paths are required.

Performance step:

2.17 If Torus Pressure is reduced to the value determined above, proceed to step 2.23, otherwise continue.

Standard:

Applicant reports that Torus pressure is lowering and has been reduced to less than 39 psig.

Comment:

SAT or UNSAT

Terminating cue:

When applicant reports Torus pressure is lowering and has been reduced to less than 39 psig, via the SC Hard Vent IAW 29.ESP.07 Section 2.0, inform applicant that another operator will be assigned to secure Torus Venting per step 2.23.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

You are an extra licensed operator assigned to the shift.
A major plant transient has occurred.
The EOP Flowcharts have been entered.
Chemistry has been notified to sample the Primary Containment atmosphere.

Initiating Cue:

The CRS directs you to Vent the Torus Irrespective of Offsite Release Rates in accordance with 29ESP.07 Section 2.0, to lower Primary Containment pressure.

Facility: Fermi 2

Task No: 02-A0001-042, Recognize and respond to a loss of Offsite power.

Task Title: Restore Offsite Power to an ESF Bus IAW 23.321

Job Performance Measure No: B.1.f

K/A Reference: 262001 AC Electrical Distribution

K1.01 Knowledge of the physical connections and/or cause-effect relationships between A.C. ELECTRICAL DISTRIBUTION and Off-site power RO 3.8 SRO 4.3

A2.03 Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of a Loss of Offsite power. RO 3.9 SRO 4.3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

You are the Control Room NSO.
A loss of offsite power has occurred on ESF Bus 64C due to a fault on the C6 Breaker. AOP 20.300.64C, Loss of Bus 64C, has been entered and appropriate actions have been taken up to the step of restoring offsite power to Bus 64C.
Bus 64C breaker C6 has been repaired and is Racked In.
Bus 64C is being supplied by the EDG.
The SM has authorized restoring offsite power to the bus.

Task Standard:

Restore Offsite Power to ESF Bus 64C in accordance with 23.321 Section 7.2. Bus 64C is to remain energized at all times during performance of the task.

Required Materials:

General References:

23.321, Engineered Safety Features Auxiliary Electrical Distribution System
20.300.64C, LOSS OF BUS 64C

Initiating Cue:

The CRS directs you to restore offsite power to Bus 64C IAW 23.321. Another operator will be responsible for the shutdown and placing the EDG in standby, and resetting the load sequencer.

Time Critical Task: YES/NO

Validation Time: 15 minutes

Simulator Setup:

Set up the simulator in any IC with the EDGs available.

Open the C6 Breaker and allow the EDG to power the ESF Bus.

Restore any equipment lost due to the loss of power per 20.300.04.

START TIME: _____

Performance step: Applicant opens procedure 23.321 to step 7.2.

Standard: Applicant opens procedure 23.321 to step 7.2.

CUE: If asked, inform applicant that prerequisites 7.2.1.1 and 7.2.1.2 are met.

Comment:

SAT or UNSAT

Performance step:

7.2.2 Place switch for associated EDG Output Breaker in CLOSE.

Standard: Applicant places EDG #12 Output Breaker in CLOSE.

Comment:

SAT or UNSAT

Performance step:

7.2.3 Place switch for associated EDG Output Breaker Auto/Manual Operate Select switch in MANUAL.

Standard: Applicant places EDG #12 Output Breaker Auto/Manual Operate Select switch in MANUAL.

Comment:

SAT or UNSAT

Performance step:

- 7.2.4 Place Synchronize switch for Normal Feeder Breaker (6 Breaker) associated with selected 4160V ESF Bus in On and verify:
- Div 1 (2) Syn. Bus Running Volt Meter indicates voltage on the associated SST secondary windings (approximately 120V AC).
 - Div 1 (2) Syn. Bus Starting Volt Meter indicates associated 4160V ESF Bus Voltage (approximately 120V AC).
 - Div 1 (2) Synchroscope is operating.

Standard:

Applicant places Sync switch for Normal Feeder Breaker (6 Breaker) in On.

Applicant verifies Div 1 Syn. Bus Running Volt Meter indicates voltage on the associated SST secondary windings (approximately 120V AC).

Applicant verifies Div 1 Syn. Bus Starting Volt Meter indicates associated 4160V ESF Bus Voltage (approximately 120V AC).

Applicant verifies Div 1 Synchroscope is (rotating) operating.

Comment:

SAT or UNSAT

NOTE: Synchroscope may be in phase and only show slight movement at first. Changing EDG frequency slightly will rotate scope.

Performance step:

- 7.2.5 With EDG Governor Control switch:
- Adjust EDG speed until synchroscope is rotating slowly in FAST direction.

Standard: Applicant uses EDG Governor Control switch to adjust EDG speed until synchroscope is rotating slowly in FAST direction.

Comment:

SAT or UNSAT

Performance step: ●

7.2.6 With EDG Voltage Control switch:

- Adjust Starting Voltage until it is equal to or slightly higher than Running Bus Voltage indication.

Standard: Applicant uses EDG Voltage Control switch to adjust Starting Voltage until it is equal to or slightly higher than Running Bus Voltage indication.

Comment:

SAT or UNSAT

CAUTION - When the Normal Feeder Breaker (6) is closed, the operating mode of the EDG will be Speed Droop. Operator action will be required to keep sufficient load on the EDG and thus prevent the EDG from tripping on Reverse Power.

Performance step:

7.2.7 When Synchroscope is at approximately two minutes to 12 o'clock:

- Close associated 4160V ESF Bus Normal Feeder Breaker (6 Breaker).

Standard:

Applicant closes associated 4160V ESF Bus Normal Feeder Breaker (6 Breaker) when Synchroscope is at approximately two minutes to 12 o'clock.

Examiner Note: Critical element is applicant closes 4160V ESF Bus Normal Feeder Breaker (6 Breaker)

Comment:

SAT or UNSAT

____ Performance step:

7.2.8 Place Synchronize Switch for Normal Feeder Breaker (6 Breaker) associated with selected 4160V ESF Bus in OFF.

Standard: Applicant places Synchronize Switch for Normal Feeder Breaker (6 Breaker) in OFF.

Comment:

SAT or UNSAT

Performance step:

7.2.9 Reduce EDG load to approximately 300kW, while maintaining kVARS positive.

Standard: Applicant reduces EDG load to approximately 300kW, while maintaining kVARS positive. {Reverse power EDG trip = failure of critical step}

Comment:

SAT or UNSAT

Performance step:

7.2.10 Open EDG Output Breaker and verify:

- Bus POWER ON Light associated with affected Bus is ON.
- Associated 4160V ESF Bus Voltage Recorder on H11-P812 indicates approximately 120V AC when selected to affected bus.

Standard:

(✓) Applicant opens the EDG Output Breaker.

Applicant verifies Bus POWER ON Light associated with affected Bus is ON.

Applicant verifies associated 4160V ESF Bus Voltage Recorder on H11-P812 indicates approximately 120V AC when selected to affected bus.

Comment:

SAT or UNSAT

Terminating cue:

Offsite power has been restored to the ESF Bus and the associate EDG Output Breaker is open, in accordance with 23.321

Another operator will shutdown the EDG per 23.307.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

You are the Control Room NSO.

A loss of offsite power has occurred on ESF Bus 64C due to a fault on the C6 Breaker. AOP 20.300.04, Loss of 4160V ESS Busses, has been entered and appropriate actions have been taken up to the step of restoring offsite power to Bus 64C.

The 64C C6 breaker has been repaired and is Racked In.

64C is being supplied by the EDG.

The SM has authorized restoring offsite power to the bus.

Initiating Cue:

The CRS directs you to restore offsite power to Bus 64C IAW 23.321.

Another operator will be responsible for the shutdown and placing the EDG in standby, and resetting the load sequencer.

Facility: Fermi 2

Task No: 02A0006016

Task Title: Perform Division 1 Testable MSIV Leakage Control System valve full travel cycle test IAW 24.137.16.

Job Performance Measure No: B.1.g

K/A Reference: 239003

A4., Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

A4.02, †Surveillance testing: RO 2.5 SRO 2.8

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant is in MODE 1.
You are an extra operator assigned to shift.

Task Standard:

Perform Division 1 Testable MSIV Leakage Control System valve full travel cycle test IAW 24.137.16.

Required Materials: NONE

General References:

24.137.16, MSIV LEAKAGE CONTROL SYSTEM MONTHLY OPERABILITY TEST
23.137.01, MSIV Leakage Control System

Initiating Cue:

The CRS directs you to perform Division 1 Testable MSIV Leakage Control System valve full travel cycle test IAW 24.137.16 Section 5.1.
All prerequisites are complete.

Time Critical Task: YES/NO

Validation Time: 16 minutes

Simulator Setup:

Any IC with MSIV Leakage Control System valves are lined up in accordance with 23.137.01, MSIV Leakage Control System.

START TIME: _____

5.1 Division 1 MSIV Leakage Control Valve Test

NOTE: All controls and indications for Division 1 MSIV Leakage Control System (MSIVLCS) are located on COP H11-P601 unless otherwise specified.

_____ Performance step: 5.1.1 Verify Division 1 MSIVLCS Initiate keylock switch in OFF.

Standard: Applicant verifies Division 1 MSIVLCS Initiate keylock switch in OFF.

Comment:

SAT or UNSAT

Performance step: 5.1.2 Place Division 1 MSIVLCS Test switch in TEST, and hold.

Standard:

Applicant places Division 1 MSIVLCS Test switch in TEST.

Applicant holds Division 1 MSIVLCS Test switch in TEST.

Comment:

SAT or UNSAT

Performance step:

5.1.3 Close B21-F432, Div 1 MSIVLCS Drain Valve, by depressing and **holding** CLOSE pushbutton, verify valve closes.

Standard:

(✓) Applicant depresses and holds B21-F432, Div 1 MSIVLCS Drain Valve CLOSE pushbutton.

Applicant verifies B21-F432, Div 1 MSIVLCS Drain Valve closes. (Non Critical)

Comment:

SAT or UNSAT

Performance step:

5.1.4 Open B21-F432, Div 1 MSIVLCS Drain Valve, by releasing CLOSE pushbutton, and verify valve opens.

Standard:

(✓) Applicant opens B21-F432, Div 1 MSIVLCS Drain Valve, by releasing CLOSE pushbutton.

Applicant verifies B21-F432, Div 1 MSIVLCS Drain Valve opens. (Non Critical)

Comment:

SAT or UNSAT

Performance step:

5.1.5 Open B2100-F433, Div 1 MSIVLCS Otbd Iso Valve, by depressing and **holding** OPEN pushbutton, and verify valve opens.

Standard:

(✓) Applicant depresses and holds B2100-F433, Div 1 MSIVLCS Otbd Iso Valve OPEN pushbutton.

Applicant verifies B2100-F433, Div 1 MSIVLCS Otbd Iso Valve opens. (Non Critical)

Comment:

SAT or UNSAT

Performance step:

5.1.6 Close B2100-F433, Div 1 MSIVLCS Otbd Iso Valve, by releasing OPEN pushbutton, and verify valve closes.

Standard:

(✓) Applicant closes B2100-F433, Div 1 MSIVLCS Otbd Iso Valve, by releasing OPEN pushbutton.

Applicant verifies B2100-F433, Div 1 MSIVLCS Otbd Iso Valve closes. (Non Critical)

Comment:

SAT or UNSAT

Performance step:

5.1.7 Open B21-F431, Div1 MSIVLCS Injection Valve, by depressing and **holding** OPEN pushbutton, and verify valve opens.

Standard:

(✓) Applicant depresses and holds B21-F431, Div1 MSIVLCS Injection Valve OPEN pushbutton.

Applicant verifies B21-F431, Div1 MSIVLCS Injection Valve opens. (Non Critical)

Comment:

SAT or UNSAT

Performance step:

5.1.8 Close B21-F431, Div 1 MSIVLCS Injection Valve, by releasing OPEN pushbutton, and verify valve closes.

Standard:

(✓) Applicant closes B21-F431, Div 1 MSIVLCS Injection Valve, by releasing OPEN pushbutton.

Applicant verifies B21-F431, Div 1 MSIVLCS Injection Valve closes. (Non Critical)

Comment:

SAT or UNSAT

_____ Performance step: 5.1.9 Release Division 1 MSIVLCS Test switch.

Standard: Applicant releases Division 1 MSIVLCS Test switch.

Comment:

SAT or UNSAT

Terminating cue:

Applicant has released the Division 1 MSIVLCS Test switch and is ready for Independent Verification to be performed.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant is in MODE 1.
You are an extra operator assigned to shift.

Initiating Cue:

The NASS directs you to perform Division 1 Testable MSIV Leakage Control System valve full travel cycle test IAW 24.137.16.
All prerequisites are complete.

Facility: Fermi 2

Task No: 02-A0004-034 Defeat L1 Isolation of Main Steam Line Isolation Valves and MSL Drains.

Task Title: Defeat of all MSIV and Main Steam Line Drain Valve Isolation Signals IAW 29.ESP.12

Job Performance Measure No: B.2.a

K/A Reference:

295037 - EK3.06, Maintaining heat sinks external to the containment
RO 3.8 SRO 4.1

295037 - EA2.07, Containment conditions/isolations
RO 4.1 SRO 4.2

223002 - K4.08, Manual defeat of selected isolations during emergency conditions
RO 3.3 SRO 3.7

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

The plant has tripped and the EOP flowcharts direct Defeat of MSIV Logic per 29.ESP.11. All MSIV's are open.

Task Standard: MSIV Defeats for L1 and High Rad are installed per 29.ESP.11

Required Materials:

29.ESP.11, 1.1 EOP Defeat Package from NSS EOP Locker. A key to this locker is available from the NSS, NASS, and the NSS Key Locker.

General References: 29.ESP.11, "Defeat of RPV Level 1 and High Rad MSIV and MSL Drain Valve Isolation Signals"

Initiating Cue: NASS directs you to defeat MSIV Logic Trips per 29.ESP.11.

Time Critical Task: YES/NO

Validation Time: 15 minutes

Setup Notes:

Ensure CRS informed of JPM walkthrough in relay room and cabinet doors opened for walkthrough of this task. Stop the JPM if, at any time, this JPM interferes with plant operation.

ESP Defeats are installed either by installing a jumper, lifting leads, or removing a plug-in relay or fuse. For each of these types of defeats an explanation of cues are supplied as follows;

Installing jumpers

- Ensure the operator goes to the CRS and obtains the key to the EOP cabinet.
- Upon unlocking the cabinet, the operator finds the correct package and ensures the proper equipment is in the package.
- Per the attached drawing, locate the panel and verify the panel opened is correct and the operator has opened the correct side door.
- Within the panel, locate the proper terminal strip and verify that the proper terminal number is selected.
- Using proper safety techniques, a jumper is landed on each terminal ensuring that no other terminal is touched or cabinet ground is touched with the free end.
- Repeat until all jumpers are installed per the package.
- For some cabinets, the terminals are separated load to source side of the terminal point by a Knife Switch. In these cabinets the direction of the ESP has the knife switch screw unlocked and opened prior to installing the defeat. This will be spelled out and then the same rules as above apply.
- When both ends are safely landed on all jumpers per the package in the proper location, the operator calls the control room and informs them that the defeat is installed.

START TIME: _____

_____ Performance step:

1.1 EOP Defeat Package from NSS EOP Locker. A key to this locker is available from the SM, CRS, and the SM Key Locker.

Standard: Applicant demonstrates ability to obtain EOP Defeat Package from SM EOP Locker.

Comment:

SAT or UNSAT

CAUTION - The following steps involve working with energized circuits.

Examiner Note: Entry into the Simulator or Main Control Room should not be required for step 2.1 or 2.6.

_____ Performance step:

2.1 Depress the CLOSE pushbuttons for MSIVs that are in the closed position to reset valve logic circuitry.

Standard: Condition Met, initial conditions state "all MSIVs are open."

CUE: If asked, state all MSIVs are open.

Comment:

SAT or UNSAT

 Performance step:

2.2 At RR H11-P611 East Bay, install a jumper between Terminal AA-96 and DEVICE AQ TERMINAL 2 (Division 2).

Standard: Applicant installs jumper between Terminal AA-96 and DEVICE AQ TERMINAL 2 (Division 2) at RR H11-P611 East Bay.

Comment:

SAT or UNSAT

Performance step:

2.3 At RR H11-P611 West Bay, install a jumper between Terminal DD-17 and DEVICE CY TERMINAL 2 (Division 2).

Standard: Applicant installs jumper between Terminal DD-17 and DEVICE CY TERMINAL 2 (Division 2) at RR H11-P611 West Bay.

Comment:

SAT or UNSAT

Performance step:

2.4 At RR H11-P609 East Bay, install a jumper between Terminal AA-76 and DEVICE AQ TERMINAL 2 (Division 1).

Standard: Applicant installs jumper between Terminal AA-76 and DEVICE AQ TERMINAL 2 (Division 1) at RR H11-P609 East Bay.

Comment:

SAT or UNSAT

Performance step:

2.5 At RR H11-P609 West Bay, install a jumper between Terminal DD-28 and DEVICE CY TERMINAL 2 (Division 1).

Standard: Applicant installs jumper between Terminal DD-28 and DEVICE CY TERMINAL 2 (Division 1) at RR H11-P609 West Bay.

Comment:

SAT or UNSAT

_____ Performance step:

2.6 If an MSIV Level 1 Isolation has occurred, reset the isolation signal as follows:

2.6.1 At H11-P601, depress A7100-M120 Inbd MSIV Iso Reset Sw pushbutton.

2.6.2 At H11-P602, depress A7100-M146 Otbd MSIV Iso Reset Sw pushbutton.

Standard:

Applicant may ask if MSIV Level 1 Isolation has occurred.

CUE: Main Control Room responds that an MSIV Level 1 Isolation has **NOT** occurred.

Comment:

SAT or UNSAT

Terminating cue:

MSIV Level 1 and High Rad is reset in accordance with 29.ESP.11.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

The plant has tripped and the EOP flowcharts direct Defeat of MSIV Logic per 29.ESP.11. All MSIV's are open.

Initiating Cue: The CRS directs you to defeat MSIV Logic Trips per 29.ESP.11.

Facility: Fermi 2

Task No: 04-C7102-001, Startup the Reactor Protection System MG set A/B and Alternate Transformer.

Task Title: Startup of RPS MG Sets and Alternate Transformers IAW 23.316.

Job Performance Measure No: B.2.b

K/A Reference: 212000

K2.01, Knowledge of Power Supply to RPS MG sets. RO 3.2 SRO 3.3

K4.03, Design features/interlocks which provide prevention of supplying power to a given RPS bus from multiple sources simultaneously. RO 3.0 SRO 3.1

K4.04, Design features/interlocks which provide prevention of supplying both RPS buses simultaneously from the alternate power source. RO 3.1 SRO 3.1

A1.01, Monitor changes in RPS MG output voltage. RO 2.8 SRO 2.9

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

You are the Reactor Building Rounds.
The "A" RPS was down powered for maintenance and is ready to be returned to service.
The "A" RPS MG Set is in STANDBY.
All Prerequisites have been completed.

Task Standard: Remove the "A" RPS MG Set from service due to voltage fluctuations.

Required Materials: EPA Breaker Assembly Trip Bypass Keys

General References: 23.316, RPS 120V AC AND RPS MG SETS

Initiating Cue:

The Control Room NSO directs you to start RPS MG Set and Alternate Transformer A.

23.316, RPS 120V AC AND RPS MG SETS, prerequisites are met.

EXAMINER PREREQUISITE INFO:

NOTE: RPS MG Set Control Panels are mounted on the respective RPS MG Sets located inside the respective MG Set Rooms, AB3-H11.

- 480V AC MCC 72B-4C, Pos. 2C at RB1-G13 (MCC 72E-5B Pos. 1C-R located at RB1-D9) Circuit Breaker is closed and locked (hasp engaged) for RPS MG Set A (B).
- Generator Output Circuit Breaker on RPS MG Set A (B) Control Panel is in OPEN.
- Green MOTOR OFF light for RPS MG Set A (B) on RPS MG Set A (B) Control Panel is ON.}

Applicant should retrieve the EPA Breaker Keys prior to starting task.

After Applicant describes the process for obtaining a copy of procedure 23.316, RPS 120V AC AND RPS MG SETS, provide the Applicant with a copy of the entire procedure.

Time Critical Task: YES/NO

Validation Time: 30 minutes

START TIME: _____

23.316, RPS 120V AC AND RPS MG SETS

4.0 STARTUP OF RPS MG SETS AND ALTERNATE TRANSFORMERS

NOTE: Generator voltage is monitored on the RPS MG Set A (B) Control Panel Voltmeter.

Performance step:

4.2.1 Depress and hold the MOTOR ON pushbutton, located on the RPS MG Set A Control Panel until MG Set A Generator Voltage increases to 115 to 125V AC.

Standard: Applicant depresses and holds the MOTOR ON pushbutton, located on the RPS MG Set A Control Panel until MG Set A Generator Voltage increases to 115 to 125V AC.

CUE: Voltage increases to approximately 120VAC in 30 seconds.

Comment:

SAT or UNSAT

____ Performance step: 4.2.2 Release MOTOR ON pushbutton.

Standard: Applicant releases MOTOR ON pushbutton.

Comment:

SAT or UNSAT

____ Performance step: 4.2.3 Verify the red MOTOR ON light is on.

Standard: Applicant verifies the red MOTOR ON light is on.

Comment:

SAT or UNSAT

NOTE: Shutdown the MG Set if erratic Generator Output Voltage is observed.

___ Performance step:

4.2.4 Adjust the VOLT ADJUST Potentiometer on RPS MG Set A (B) Control Panel until 120V AC is obtained as read on Generator Voltmeter.

Standard: Applicant uses the VOLT ADJUST Potentiometer on RPS MG Set A (B) Control Panel to obtain 120VAC as read on Generator Voltmeter.

CUE: Voltage reads 120VAC after adjustment.

Comment:

SAT or UNSAT

___ Performance step:

4.2.5 Verify stable operation of RPS MG Set A (B) for at least one minute at a Generator Output Voltage of 120V AC.

Standard: Applicant monitors operation for approximately 1 minute to ensure stable operation.

CUE: If A RPS MG Set is in service inform applicant that voltage is "as indicated."

OR

If A RPS MG Set is **NOT** in service indicate generator output voltage of 120V AC on meter.

Comment:

SAT or UNSAT

Performance step: 4.2.6 Close Generator Output Circuit Breaker on RPS MG Set A (B) Control Panel AB3-H11.

Standard: Applicant closes Generator Output Circuit Breaker on RPS MG Set A Control Panel AB3-H11.

(Applicant should mimic closing breaker)

CUE: Inform applicant that breaker is in the position applicant indicated.

Comment:

SAT or UNSAT

Performance step:

4.2.7 Place Keylock Reset switch in RESET, then back to OPER, and verify Trip Lights are OFF on EPA Circuit Breaker C7100-S003A inside Div 1 MG Set Room.

Standard:

Applicant places Keylock Reset switch in RESET.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

Applicant places Keylock Reset switch back to OPER.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

Applicant verifies Trip Lights are OFF on EPA Circuit Breaker C7100-S003A inside Div 1 MG Set Room.

CUE: If applicant placed Keylock Reset switch in RESET, then back to OPER, inform applicant either:

a) If applicant properly operated the switch, inform applicant that Trip Lights are **OFF** on EPA Circuit Breaker

OR

b) If applicant **did not** properly operated the switch, inform applicant that Trip Lights for EPA Circuit Breaker are **ON**.

Comment:

SAT or UNSAT

Performance step:

4.2.10 Reset and close EPA Circuit Breaker C7100-S003C inside Division 1 MG Set Room, AB3-H11.

Standard:

Examiner Note: System was OOS for maintenance, breaker reset not required because breaker was turned off when system was shutdown.

Applicant places EPA Circuit Breaker C7100-S003C in closed position.

CUE: Inform applicant that EPA Circuit Breaker is in position indicated.

Comment:

SAT or UNSAT

Performance step:

4.2.11 Verify stable Generator Output Voltage of 120V AC by checking Control Panel Generator Voltmeter.

1. If erratic Generator Output Voltage is observed, shutdown MG Set.

Standard:

Applicant checks Generator Output Voltage on Control Panel Generator Voltmeter.

CUE: Indicate Generator Output Voltage varying from 110V AC to 130V AC in, an erratic manner, on Control Panel Generator Voltmeter.

- (✓) Applicant recognizes erratic Generator Output Voltage is observed and determines "A" RPS MG Set must be shutdown.

Applicant either:

- (✓) recognizes requirement to complete Section 4 prior to entering Section 8 and proceeds in procedure. OR
- (✓) trips the MG Set based on observed indications. **{If Applicant trips RPS MG Set, proceed to terminating CUE.}**

Examiner Note:

If applicant proceeds to Section 8.0 SHUTDOWN OF RPS MG SET A (B) (23.316), prerequisites not met, therefore must complete Section 4 then proceed to Section 8.0.

Applicant confers with Control Room about conditions found and course of action.

CUE: As Control Room concur with applicants course of action.

Comment:

SAT or UNSAT

NOTE: Division 1 is RPS Bus A (RPS MG Set A).
Division 2 is RPS Bus B (RPS MG Set B).

Performance step:

4.2.12 Verify red GEN AVAIL light is ON at DIVISION I REAC PROT SYSTEM PWR SOURCE SEL switch on COP H11-P809.

Standard:

Applicant contacts Main Control Room and request status of GEN AVAIL light at DIVISION I REAC PROT SYSTEM PWR SOURCE SEL switch on COP H11-P809

CUE: Control room reports DIVISION I REAC PROT SYSTEM PWR SOURCE red GEN AVAIL light is ON.

Comment:

SAT or UNSAT

 ✓ Performance step:

4.2.13 Close or verify closed RPS Alternate Transformer A Power Supply Circuit Breaker on 480V AC Dist. Cab. 72C-2D, Pos. 2 at AB2-H10.

Standard: Applicant places RPS Alternate Transformer A Power Supply Circuit Breaker on 480V AC Dist. Cab. 72C-2D, Pos. 2 at AB2-H10 to **CLOSED**.

CUE: Inform applicant that breaker is in position indicated.

Comment:

SAT or UNSAT

Performance step:

4.2.14 Place Keylock Reset switch in RESET, then back to OPER, and verify Trip Lights are OFF on EPA Circuit Breaker C7100-S003E outside Div 1 MG Set Room.

Standard:

(✓) Applicant places Keylock Reset switch in RESET.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

(✓) Applicant places Keylock Reset switch back to OPER.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

Applicant verifies Trip Lights are OFF on EPA Circuit Breaker C7100-S003E outside Div 1 MG Set Room.

CUE: If applicant placed RPS Alternate Transformer A Power Supply Circuit Breaker on 480V AC Dist. Cab. 72C-2D, Pos. 2 at AB2-H10 to **CLOSED** and Keylock Reset switch in RESET, then back to OPER, inform applicant either:

a) If applicant properly operated the switch, inform applicant that Trip Lights are **OFF** on EPA Circuit Breaker

OR

b) If applicant **did not** properly operated the switch, inform applicant that Trip Lights for EPA Circuit Breaker are **ON**.

Comment:

SAT or UNSAT

Performance step:

4.2.15 Reset and close EPA Circuit Breaker C7100-S003E outside Div. 1 MG Set Room (AB3-H11).

Standard:

Examiner Note: System was OOS for maintenance, breaker reset not required because breaker was turned off when system was shutdown.

Applicant places EPA Circuit Breaker C7100-S003E in closed position.

CUE: Inform applicant that EPA Circuit Breaker is in position indicated.

Comment:

SAT or UNSAT

Performance step:

4.2.16 Place Keylock Reset switch in RESET, then back to OPER, and verify Trip Lights are OFF on EPA Circuit Breaker C7100-S003G outside Div 1 MG Set Room.

Standard:

(✓) Applicant places Keylock Reset switch in RESET.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

(✓) Applicant places Keylock Reset switch back to OPER.

CUE: Inform applicant that Keylock Reset switch is in position indicated.

Applicant verifies Trip Lights are OFF on EPA Circuit Breaker C7100-S003G outside Div 1 MG Set Room.

CUE: If applicant placed Keylock Reset switch in RESET, then back to OPER, inform applicant either:

a) If applicant properly operated the switch, inform applicant that Trip Lights are **OFF** on EPA Circuit Breaker

OR

b) If applicant **did not** properly operated the switch, inform applicant that Trip Lights for EPA Circuit Breaker are **ON**.

Comment:

SAT or UNSAT

Performance step:

4.2.17 Reset and close EPA Circuit Breaker C7100-S003G outside Div. 1 MG Set Room (AB3-H11).

Standard:

Examiner Note: System was OOS for maintenance, breaker reset not required because breaker was turned off when system was shutdown.

Applicant places EPA Circuit Breaker C7100-S003G in closed position.

CUE: Inform applicant that EPA Circuit Breaker is in position indicated.

Comment:

SAT or UNSAT

____ Performance step:

Applicant contacts Main Control Room to confirm 23.316 Section 8.0 Shutdown of RPS MG Set A, prerequisites complete.

Standard:

Applicant contacts Main Control Room to confirm 23.316 Section 8.0 Shutdown of RPS MG Set A, prerequisites complete.

CUE: As Main Control Room inform applicant that the following Section 8.0 prerequisites are complete:

- 8.1.1 RPS Alternate Transformer A is supplying RPS Bus A with DIVISION I REAC PROT SYSTEM PWR SOURCE SEL Switch, in ALTERNATE.
- 8.1.2 Red TRANS AVAIL and white ALTERNATE lights are both ON.

Comment:

SAT or UNSAT

____ Performance step: Applicant recognizes step 8.2.2 is complete.

Standard: Applicant recognizes step 8.2.2 is complete.

Comment:

SAT or UNSAT

____ Performance step:

8.2.2 Open EPA Circuit Breaker C7100-S003C inside Division 1 MG Set Room (AB3-H11).

Standard:

Applicant places EPA Circuit Breaker C7100-S003C inside Division 1 MG Set Room (AB3-H11) in the OPEN position.

CUE: Inform applicant that EPA Circuit Breaker C7100-S003C is in the position indicated.

Comment:

SAT or UNSAT

___ Performance step:

8.2.3 Open EPA Circuit Breaker C7100-S003A inside Division 1 MG Set Room (AB3-H11).

Standard:

Applicant places EPA Circuit Breaker C7100-S003A inside Division 1 MG Set Room (AB3-H11) in the OPEN position.

CUE: Inform applicant that EPA Circuit Breaker C7100-S003C is in the position indicated.

Comment:

SAT or UNSAT

Performance step:

8.2.4 Open Generator Output A Circuit Breaker on RPS MG Set A Control Panel.

Standard:

Applicant places Generator Output A Circuit Breaker on RPS MG Set A Control Panel to OPEN.

CUE: Inform applicant that Generator Output A Circuit Breaker is in the position indicated.

Comment:

SAT or UNSAT

Performance step:

8.2.5 Depress and hold MOTOR OFF pushbutton for RPS MG Set A on MG Set A Control Panel until red MOTOR ON light goes OFF.

Standard:

(✓) Applicant depresses and holds MOTOR OFF pushbutton for RPS MG Set A on MG Set A.

CUE: After a few seconds inform applicant that red MOTOR ON light goes OFF

Comment:

SAT or UNSAT

___ Performance step: 8.2.6 Release MOTOR OFF.

Standard: Applicant releases MOTOR OFF pushbutton.

Comment:

SAT or UNSAT

Terminating cue:

A RPS MG Set has been tripped due to erratic voltage when first observed.

OR

A RPS MG Set has been shutdown, IAW due to erratic voltage and RPS Alternate Transformer A is supplying RPS Bus A with DIVISION I REAC PROT SYSTEM PWR SOURCE SEL Switch, in ALTERNATE.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

You are the Reactor Building Rounds.

The "A" RPS was down powered for maintenance and is ready to be returned to service.

The "A" RPS MG Set is in STANDBY.

All Prerequisites have been completed.

Initiating Cue:

The Control Room NSO directs you to start RPS MG Set and Alternate Transformer A.

23.316, RPS 120V AC AND RPS MG SETS, prerequisites are met.

Facility: Fermi 2

Task No: 02A0001033 & 04P4400018

Task Title: RBCCW/EECW Manual Temperature Control IAW 23.127

Job Performance Measure No: B.2.c

K/A Reference: 400000

A2., Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: (CFR: 41.5 / 45.6)

A2.03, High/low CCW temperature

RO 2.9

SRO 3.0

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance X

Actual Performance _____

Classroom _____

Simulator _____

Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

You are an extra operator on shift.

The plant is shutdown due to a rupture in the RBCCW main header piping at the RBCCW Recirculation Pressure Differential Control Valve, P42-F403.

It has been determined that the EECW Heat Exchanger Temperature Control Valve P44-TCV-F400A is not responding.

Task Standard:

EECW temperature controlled by P4400-F400A in Local-Manual Operation.

Required Materials:

23.127, Reactor Building Closed Cooling Water/Emergency Equipment Cooling Water System
23.127, Enclosure - A 051200 Local-Manual Operation of P44-F400A(B)

General References:

23.127, Reactor Building Closed Cooling Water/Emergency Equipment Cooling Water System
23.127, Enclosure - A 051200 Local-Manual Operation of P44-F400A(B)

Initiating Cue:

The CRNSO has directed you to take local manual control of P44-F400A and position the valve to control EECW temperature, IAW 23.127, Enclosure A.

EXAMINER NOTE: When requested provide applicant with a copy of the "Required Materials."

Time Critical Task: YES/NO

Validation Time:

START TIME: _____

23.127, Enclosure A, LOCAL-MANUAL OPERATION OF P4400-F400A(B)

{All manipulations are at TCV P4400-F400A located at RB2-C13.}

Performance step: 1.1 ^{open} ~~Close~~ P4400-F400A SU5, Supply Air Iso Vlv.

Standard: Applicant ^{opens} ~~closes~~ P4400-F400A SU5, Supply Air Iso Vlv by turning handwheel for SU5 in clockwise direction.

CUE: After several turns ^{counter} clockwise, indicate no additional valve movement.
^{counterclockwise}

Comment:

SAT or UNSAT

Performance step: 1.2 Open P4400-F400A SU6, Bypass Vlv.

Standard: Applicant opens P4400-F400A SU6, Bypass Vlv by turning handwheel for SU6 in counter-clockwise direction.

CUE: After several turns counter-clockwise, indicate no additional valve movement.

Comment:

SAT or UNSAT

Performance step: 1.3 Unscrew coupling from top of manual override shaft.

Standard: Applicant unscrews coupling from top of manual override shaft by rotating the coupling in the counter-clockwise direction.

CUE: After several turns counter-clockwise, indicate the coupling is free of shaft.

Comment:

SAT or UNSAT

Performance step: 1.4 Turn coupling over and reinstall on top of manual override shaft.

Standard:

Applicant turns coupling over.

CUE: No matter which way applicant attempts to re-install coupling concur that applicant is installing coupling.

Applicant reinstalls coupling on top of manual override shaft by rotating the coupling in the clockwise direction.

CUE: After several turns clockwise, indicate the coupling has completed it travel.

Comment:

SAT or UNSAT

1.5 P4400-F400A(B) is now ready to position in Local-Manual Operation.

____ Performance step:

Inform Control Room that P4400-F400A is in manual override to control RBCCW temperature.

Standard: Applicant informs Control Room that P4400-F400A is in manual override to control RBCCW temperature.

CUE: When applicant informs Control Room that P4400-F400A is in manual override, direct applicant to lower RBCCW temperature using P4400-F400A is in manual override.

Comment:

SAT or UNSAT

____ Performance step: Adjust P4400-F400A in manual override to lower RBCCW temperature.

Standard:

Applicant rotates valve handwheel in the clockwise direction until directed by Control Room that RBCCW Temperature is trending down slowly.

CUE: If applicant properly installed manual override coupling, after applicant rotates valve handwheel in the clockwise several turns, respond as the Control Room that RBCCW Temperature is trending down slowly.

OTHERWISE

As the Control Room do not report RBCCW temperature lowering.

If applicant inquires if P4400-F400A is changing position respond that P4400-F400A is in the original position.

Examiners Note:

Applicant may return to step 1.1 and verify lineup. If applicant corrects coupling installation and proceeds through the remaining steps then as the Control Room that RBCCW Temperature is trending down slowly.

Comment:

SAT or UNSAT

PERFORMANCE INFORMATION

-

(Denote critical steps with a check mark)

Terminating cue: Inform Applicant that another operator will be assigned to locally operate P4400-F400A.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No. _____

Examinee's Name:

Examiner's Name:

Date performed:

Facility Evaluator:

Number of attempts:

Time to complete:

Question Documentation:

Question: _____

Response: _____

Result: SAT or UNSAT

Examiner's signature and date: _____

APPLICANT PAGE – INITIAL CONDITIONS AND INITIATING CUE

Initial Conditions:

You are an extra operator on shift.

The plant is shutdown due to a rupture in the RBCCW main header piping at the RBCCW Recirculation Pressure Differential Control Valve, P42-F403.

It has been determined that the EECW Heat Exchanger Temperature Control Valve P44-TCV-F400A is not responding.

Initiating Cue:

The CRNSO has directed you to take local manual control of P44-F400A and position the valve to control EECW temperature IAW 23.127, Enclosure A.