

Final Submittal
(Blue Paper)

FINAL JPMS

SIMULATOR / CONTROL ROOM

HARRIS 2008-301
MARCH 2008

Facility: HARRIS Task No.: 301009H401

Task Title: Initiate Emergency Boration Following a Reactor Trip (AOP-002) JPM No.: 2008 NRC a

K/A Reference: APE024 AA1.17 (3.9/3.9) **ALTERNATE PATH**

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 was at 100% power when an automatic reactor trip occurred due to an inadvertent main turbine trip
- The crew has performed PATH-1 immediate actions and have transitioned to EPP-004, REACTOR TRIP RESPONSE

Task Standard: Emergency Boration flow ≥ 30 GPM with Charging flow ≥ 30 GPM

Required Materials: BOP required to perform EPP-004, Step 3

General References:

- EPP-004, REACTOR TRIP RESPONSE
- AOP-002, EMERGENCY BORATION

Handout: None – use simulator references

Initiating Cue:

- You are the control board operator.
- Perform EPP-004.
- Another operator has been assigned to perform Step 3, Check RCS Temperature.

Time Critical Task: No

Validation Time: 5 minutes

SIMULATOR SETUP

- Any 100% power IC
- MALF to prevent two control rods from inserting on the trip
 - CRF16a 220.0 4
 - CRF16b 220.0 27
- MALF CVC161 ENGAGED to prevent 1CS-278 from opening
- Ensure step counters are correct
- Initiate a MANUAL Main Turbine trip
- Verify immediate action conditions are met
- Stabilize RCS temperature within the required range for EPP-004, Step 3
- RUN CAEP 1NRC JPM a

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

EPP-004, Step 1

Performance Step: 1 Implement Function Restoration Procedures As Required.

Standard:

- Reviews Critical Safety Functions on plant computer screen.
- May inform USCO that none apply.

Evaluator Cue: Acknowledge, as necessary.

Evaluator Note: The applicant may periodically review Critical Safety Functions and FOLDOUT criteria. None apply in this JPM.

Comment:

EPP-004, Step 2

Performance Step: 2 Evaluate EAL Network Using Entry Point X.

Standard: Informs USCO/SSO.

Evaluator Cue: Acknowledge, as USCO or SSO.

Comment:

PERFORMANCE INFORMATION

Performance Step: 3 EPP-004, Step 3
Check RCS Temperature:

Standard: Acknowledge that, per Initial Conditions, another operator is performing this task.

Comment:

Performance Step: 4 EPP-004, Step 4
Check RCP Status:

- Check RCP's – at least one running

Standard: Verifies all three RCP's running.

Comment:

Performance Step: 5 EPP-004, Step 5
Check Feed System Status:

- RCS temperature – less than 564 °F
- Verify feed reg valves – SHUT
- Check feed flow to SG's – greater than 210 KPH

Standard:

- Verifies RCS temperature indication less than 564 °F (YES)
- Verifies each Feed Reg Valve indicating SHUT
- Verifies total AFW flow greater than 210 KPH

Comment:

PERFORMANCE INFORMATION

	EPP-004, Step 1
Performance Step: 6	Check control rod status: <ul style="list-style-type: none">• Check DRPI – available• Verify all control rods – fully inserted
Standard:	<ul style="list-style-type: none">• Determines DRPI available by indicating lights on AEP-1• Determines two rods stuck fully out• Takes RNO path to AOP-002
Evaluator Note:	Applicant may go to AEP-1 to determine which rods are stuck.
Comment:	
	AOP-002, Step 1
√ Performance Step: 7	VERIFY a Boric Acid (BA) Pump RUNNING.
Standard:	Starts at least one BA Pump
Comment:	
	AOP-002, Step 2.a
√ Performance Step: 8	ESTABLISH boration flowpath using 1CS-278 as follows: <ul style="list-style-type: none">• OPEN 1CS-278, Emergency Boric Acid Addition (NO)
Standard:	Identifies 1CS-278 will not open.
Comment:	

PERFORMANCE INFORMATION

- AOP-002, 3.a,b
- Performance Step: 9** ESTABLISH boration flowpath using FCV-113A/B as follows:
- OPEN the following valves
 - 1CS-283, Boric Acid To Boric Acid Blender FCV-113A
 - 1CS-156, Make Up To CSIP Suction FCV-113B
 - VERIFY at least 30 gpm boric acid flow to CSIP suction on recorder panel or ERFIS point FCS0113A.
 - GO TO Step 4.

Standard: Verifies ≥ 30 GPM flow indicated by ERFIS

Comment: **Candidate may use recorder FI-113A vice ERFIS**

- AOP-002, Step 4
- Performance Step: 10** VERIFY and MAINTAIN at least 30 gpm charging flow to RCS (FI-122A.1) until required boration is completed.

Standard: Verifies ≥ 30 GPM flow indicated on FI-122A.1.

Comment:

Terminating Cue: **After Charging flow is verified: Evaluation on this JPM is complete.**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant was at 100% power when an automatic reactor trip occurred due to an inadvertent main turbine trip
- The crew has performed PATH-1 immediate actions and have transitioned to EPP-004, REACTOR TRIP RESPONSE

INITIATING CUE:

- You are the control board operator.
- Perform EPP-004.
- Another operator has been assigned to perform Step 3, Check RCS Temperature.

Facility: HARRIS Task No.: 301149H601

Task Title: Align ECCS for long-term recirculation (EPP-010) JPM No.: 2008 NRC JPM b

K/A Reference: 006 A4.05 3.9/3.8 **ALTERNATE PATH**

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:

- A large break LOCA caused a reactor trip and safety injection
- SI has been reset and CCW has been aligned to the RHR HXs
- CSIP "A" and CSIP "C" (as "B") are running
- EPP-010, Transfer to Cold Leg Recirculation, was just entered

Task Standard: Recirculation flow established on both trains.

Required Materials: None

General References: EOP-EPP-010, Transfer to Cold Leg Recirculation, Revision 17

Handout: Use Simulator copy of EPP-010 and ensure it is cleaned after each use or provide a paper copy.

Initiating Cue: Perform EPP-010. In accordance with the Step 1 CAUTION, the steps should be performed without delay. However, this is NOT a time-critical JPM because the procedure would normally be read to you.

Time Critical Task: NO

Validation Time: 12 minutes

SIMULATOR SETUP

- THE FOLLOWING STEPS DESCRIBE THE STEPS NEEDED TO ESTABLISH CONDITIONS:
- IC-19
- Substitute CSIP "C" for "B"
 - CVC045, 046, 049, 050 removes CSIP "B" and installs CSIP "C"
- Insert malfunctions:
 - SIS029 ENGAGED (Fails 1SI-340)
 - Fail PT-402 HIGH
 - OPEN 1CS-746 then CVC085 ENGAGED (fails 1CS-746 OPEN)
 - MSC01 to 10,000 gpm (RWST Leak)
- Initiate a large break LOCA RCS01A
- Perform PATH-1 to transition to EPP-010.
- Ensure SI RESET and align CCW to the RHR heat exchangers.
- FREEZE the simulator and SNAP to NRC JPM b.
- When Applicant is ready, place simulator in RUN.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain copy of EOP-EPP-010.

Standard: Enters EPP-010.

Evaluator's Cue: **Provide handout if necessary.**

Comment:

Performance Step: 2 Read CAUTION statements before Step 1.

- Do Steps 1 through 8 without delay. Do NOT implement Function Restoration Procedures prior to completion of these steps.
- SI recirculation flow to RCS must be maintained at all times.
- Switchover to recirculation may cause high radiation levels in the reactor auxiliary building. Radiation levels must be assessed prior to performance of local actions in the affected area.

Standard: Reviews CAUTION's.

Comment:

PERFORMANCE INFORMATION

-
- Performance Step: 3** Read Notes before Step 1
- Foldout applies.
 - CNMT wide range sump level of greater than 142 INCHES should ensure a long term recirculation suction source.
 - The following sequence of steps to transfer to cold leg recirculation assumes operability of at least one train of safeguards equipment.

Standard: Reviews NOTE's and may review to FOLDOUT items.

Comment:

-
- Performance Step: 4** Step 1.a
Verify both RHR pumps – Running.

Standard: Verifies both RHR pumps running by observing RED light ON, flow and/or current indicated.

Comment:

-
- Performance Step: 5** Step 1.b
Establish RHR Pump Recirculation Alignment:
Verify CNMT sump to RHR pump suction valves OPEN:
- Train A RHR pump: 1SI-300 AND 1SI-310
 - Train B RHR pump: 1SI-301 AND 1SI-311

Standard:

- Verifies Train A sump valves open by observing RED lights ON, green lights OFF on 1SI-300 and 1SI-310.
- Verifies Train B sump valves open by observing RED lights ON, green lights OFF on 1SI-301 and 1SI-311.

Comment:

PERFORMANCE INFORMATION

	Step 1.c
√ Performance Step: 6	Shut RWST to RHR pump suction valves: <ul style="list-style-type: none">• 1SI-322 (Train A)• 1SI-323 (Train B)
Standard:	<ul style="list-style-type: none">• Places 1SI-322 and 1SI-323 handswitches to CLOSE• Verify valves closed by observing RED lights ON, green lights OFF on 1SI-322 and 1SI-323
Comment:	Critical to isolate RHR pumps from RWST as suction source.

	Step 1.d
Performance Step: 7	Shut low head SI Train A to cold leg valve: 1SI-340
Standard:	<ul style="list-style-type: none">• Places 1SI-340 Control Power ON.• Verifies ORANGE Control Power Light ON.• Places 1SI-340 handswitch to CLOSE.• Determines that 1SI-340 does NOT close by observing RED light ON, GREEN light OFF.• Goes to Step 1.c RNO.
Comment:	

	Step 1.d RNO
√ Performance Step: 8	Shut low head SI Train B to cold leg valve: 1SI-341
Standard:	<ul style="list-style-type: none">• Places 1SI-341 Control Power ON.• Verifies ORANGE Control Power Light ON.• Places 1SI-341 handswitch to CLOSE.• Verifies that 1SI-341 closes by observing RED light OFF, GREEN light ON.
Comment:	Critical to isolate one train to comply with EOP BKG assumptions.

PERFORMANCE INFORMATION

Performance Step: 9	<p>Step 1.e</p> <p>Check RHR Pump recirculation alignment – at least one train established.</p>
Standard:	Verifies both trains aligned.
Comment:	
Performance Step: 10	<p>Establish CSIP Recirculation Alignment:</p> <p>a. Shut CSIP alternate miniflow isolation valves:</p> <ul style="list-style-type: none"> • 1CS-746 (Train A CSIP) • 1CS-752 (Train B CSIP)
Standard:	<ul style="list-style-type: none"> • Places 1CS-746 handswitch in CLOSE. • Determines 1CS-746 did NOT close by observing RED light ON, GREEN light OFF. • Goes to Step 2.a RNO. • Verifies 1CS-752 closed by observing RED light OFF, GREEN light ON.
Comment:	
√ Performance Step: 11	<p>Step 2.a.RNO</p> <p>Shut the associated block valve: 1CS-745 (Train B CSIP).</p>
Standard:	<ul style="list-style-type: none"> • Places 1CS-745 handswitch in CLOSE. • Verifies 1CS-745 closed by observing RED light OFF, GREEN light ON.
Comment:	Critical to CLOSE 1CS-745 to isolate miniflow to RWST.
Evaluator Note:	Applicant may also CLOSE 1CS-753 as part of RNO although this is NOT required.

PERFORMANCE INFORMATION

Step 2.b

Performance Step: 12 Verify normal miniflow isolation valves - SHUT

- 1CS-182
- 1CS-196
- 1CS-210
- 1CS-214

Standard: Verifies at least one valve closed in each line (RED lights OFF, GREEN lights ON.)

Comment:

Step 2.c

√ **Performance Step: 13** Open RHR discharge to CSIP suction valves:

- 1RH-25
- 1RH-63

Standard:

- Places handswitches for both 1RH-25 and 1RH-63 in OPEN.
- Verifies 1RH-25 and 1RH-63 open by observing RED lights ON, GREEN lights OFF.

Comment: **Critical to supply suction flowpath from sump to CSIP.**

Step 2.d

Performance Step: 14 Reset SI.

Standard: SI RESET in Initial Conditions but may reset again.

Comment:

PERFORMANCE INFORMATION

	Step 2.e
Performance Step: 15	Manually realign safeguards equipment following a loss of offsite power.
Standard:	Reads continuous action and determines off-site power available.
Comment:	
	Step 2.f
√ Performance Step: 16	Shut RWST to CSIP suction valves AND place in pull-to-lock position: <ul style="list-style-type: none"> • LCV-115B • LCV-115D
Standard:	<ul style="list-style-type: none"> • Places LCV-115B and LCV-115D in CLOSE and then in PULL-TO-LOCK • Verifies LCV-115B and LCV-115D closed by observing RED lights OFF, GREEN lights ON.
Comment:	Critical to isolate RWST suction while aligned for recirc.
	Step 3.a
Performance Step: 17	Check Charging System Status: <ul style="list-style-type: none"> • Check charging line – isolated.
Standard:	<ul style="list-style-type: none"> • Checks Charging Line Isolation Valves 1CS-235 and 1CS-238 CLOSED by observing RED lights OFF, GREEN lights ON. • May also check FCV-122.1 CLOSED by observing flow indication at ZERO.
Comment:	

PERFORMANCE INFORMATION

Step 3.b

Performance Step: 18 Verify Both Charging Pumps – RUNNING.**Standard:** Verifies CSIPs 1A-SA and 1C-SB both running by observing RED lights ON, GREEN lights OFF.**Comment:**

Step 4.a

√ **Performance Step: 19** Establish Recirculation Injection Flowpath:

- Open alternate high head SI to cold leg valve: 1SI-52

Standard:

- Places 1SI-52 Control Power ON.
- Verifies ORANGE Control Power Light ON.
- Places 1SI-52 handswitch to OPEN.
- Verifies 1SI-52 open by observing RED light ON, green light OFF.

Comment: Critical to establish injection flowpath.

Step 4.b

Performance Step: 20 Check any BIT outlet valve – open

- 1SI-3
- 1SI-4

Standard: Verifies both 1SI-3 and 1SI-4 open by observing RED lights ON, GREEN lights OFF.**Comment:**

PERFORMANCE INFORMATION

Step 4.c

√ **Performance Step: 21** Shut CSIP discharge cross connect valves based on Table:
CSIP "A" and CSIP "C" running:

- 1CS-217 and 1CS-219

Standard:

- Places handswitches to CLOSE position for valves 1CS-217 and 1CS-219 (√)
- Verifies respective valves re-position by observing RED lights OFF, GREEN lights ON

Comment:**Critical to separate SI Trains during recirculation phase.**

Step 5

Performance Step: 22 Verify High Head SI Flow:

- Alternate header flow (Train A): FI-940
- Normal header flow (Train B): FI-943

Standard:

- Verifies Train A flow indication on FI-940.
- Verifies Train B flow indication on FI-943.

Comment:**Terminating Cue:****When the candidate moves to Step 6, Verify CCW Alignment
--- : Evaluation on this JPM is complete.****STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM b

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- INITIAL CONDITIONS:
- A large break LOCA caused a reactor trip and safety injection
 - SI has been reset and CCW has been aligned to the RHR HXs
 - CSIP "A" and CSIP "C" (as "B") are running
 - EPP-010, Transfer to Cold Leg Recirculation, was just entered

INITIATING CUE: Perform EPP-010. In accordance with the Step 1 CAUTION, the steps should be performed in an expeditious manner. However, this is NOT a time-critical JPM because the procedure would normally be read to you.

Facility: HARRIS Task No.: 301170H601

Task Title: Initiate RCS Feed and Bleed (FRP-H.1) JPM No.: 2008 NRC JPM c

K/A Reference: E05 EA1.1 (4.1) **ALTERNATE PATH**

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 reactor tripped from 100% power due to a loss of off-site power.
 - A SBLOCA occurred following the reactor trip.
 - Adverse containment values are in effect.
 - Bus 1A-SA is locked out on an electrical fault.
 - Motor Driven AFW Pump "B" is partially disassembled for maintenance.
 - The Turbine-Driven AFW Pump failed while starting.
 - The crew is performing FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
 - The Foldout criteria for initiation of RCS Feed and Bleed have just been met.

Task Standard: RCS feed established with maximum available bleed path.

Required Materials: Attach PATH-1 GUIDE Attachment 1 to this JPM for use by the evaluator.

General References: FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Revision 21

Handout:	Use Simulator copy of FRP-H.1 and ensure it is cleaned after each use or provide a paper copy.
Initiating Cue:	Observe the procedure CAUTION prior to FRP-H.1, Step 12, then initiate RCS feed and bleed.
Time Critical Task:	No
Validation Time:	8 minutes

SIMULATOR SETUP

- At power IC
- Tag MDAFW Pump "B"
- MALF for an electrical fault to lock out Bus 1A-SA
- MALF to trip TDAFW Pump during AUTO start
- Overrides to block MANUAL OPEN on PCV-445A and PCV-444B
- Loss of Off-site power
- Perform PATH-1
- Perform EPP-4
- SBLOCA after entering FRP-H.1 to get to adverse containment values.
- Perform FRP-H.1 without establishing any source of feed flow
- Allow SG levels to reach feed and bleed Foldout (ADVERSE) criteria
- Place shifting 1A and 1B Air Compressors to LOCAL Mode on a trigger
- FREEZE and SNAP for 2008 NRC JPM c

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Procedure CAUTION: FRP-H.1, Step 12
Perform Steps 12 through 21 quickly to establish RCS heat removal by RCS bleed and feed.

Performance Step: 1 Verify All RCPs - STOPPED

Standard: All RCP's stopped on LOOP.

Comment:

Performance Step: 2 FRP-H.1, Step 13
Actuate SI.

Standard: Verifies SI actuated.

Comment:

Performance Step: 3 FRP-H.1, Step 14
Verify RCS Feed Path:
VERIFY BOTH OF THE FOLLOWING:

- VERIFY CSIPs - AT LEAST ONE RUNNING.
- VERIFY SI VALVES - PROPERLY ALIGNED. (REFER TO PATH-1 GUIDE, ATTACHMENT 1)

Standard:

- Verifies CSIP "B" running. (RED lights)
- Verifies valve alignment using Guide 1, Attachment 1, and/or verifies flow indication on the SI Flow meters.

Evaluator Cue: **Guide 1, Attachment 1 has been performed. Alignment is correct for the current power situation.**

Evaluator Note: **Only Train "B" is operable – no power to Train "A".**

Comment:

PERFORMANCE INFORMATION

√ Performance Step: 4	FRP-H.1, Step 15 Reset SI.
Standard:	<ul style="list-style-type: none">• Places both SI Train RESET Switches in RESET and releases. (√)• Verifies RESET on Bypass Permissive Panel.
Comment:	Critical to allow operator control of equipment/signals.

Performance Step: 5	FRP-H.1, Step 16 MANUALLY REALIGN SAFE-GUARDS EQUIPMENT FOLLOWING A LOSS OF OFF-SITE POWER. (REFER TO PATH-1 GUIDE, ATTACHMENT 2.)
Standard:	Reads/acknowledges.
Comment:	

√ Performance Step: 6	FRP-H.1, Step 17 Reset Phase A AND Phase B Isolation Signals.
Standard:	<ul style="list-style-type: none">• Places Train "A" and Train "B" Phase "A" RESET Switches in RESET and releases. (√)• Places Train "A" and Train "B" Phase "B" RESET Switches in RESET and releases.
Comment:	Critical to allow operator to restore IA to CNTMT for PORV's.

PERFORMANCE INFORMATION

√ Performance Step: 7	FRP-H.1, Step 18 Energize AC Buses 1A1 AND 1B1.
Standard:	<ul style="list-style-type: none">• Energizes Bus 1B1 by closing the cross-tie from the vital bus.• No power available to 1A1.
Comment:	

√ Performance Step: 8	FRP-H.1, Step 19 Establish Instrument Air AND Nitrogen To CNMT: a. Open the following valves: <ul style="list-style-type: none">• 1IA-819• 1SI-287 b. Place air compressor 1A and 1B in the local control mode. (Refer to PATH-1 GUIDE, Attachment 5.)
Standard:	<ul style="list-style-type: none">• Opens 1IA-819 (√)• Opens 1SI-287 (√)• Dispatches an AO to place 1A and 1B Air Compressors in the LOCAL Control Mode.
Booth Operator Cue:	Acknowledge assignment then actuate the ET to place 1A and 1B Air compressors in the LOCAL Mode and report back.
Comment:	Critical to supply air to PRZR PORV's.

PERFORMANCE INFORMATION

√ Performance Step: 9	<p>FRP-H.1, Step 20</p> <p>ESTABLISH RCS BLEED PATH:</p> <p>ESTABLISH TWO RCS BLEED PATHS LISTED IN TABLE 2 BY PERFORMING THE FOLLOWING FOR EACH BLEED PATH:</p> <ul style="list-style-type: none"> • VERIFY PRZ PORV BLOCK VALVE - OPEN. • OPEN PRZ PORV. • Evaluate EAL network using entry point U.
Standard:	<ul style="list-style-type: none"> • Verifies RC-115 and RC-117 indicate OPEN (RED light) • No indication for RC-113 • Opens PCV-445B (√) • Informs Shift Superintendent to evaluate EAL network using entry point U
Evaluator Cue:	<ul style="list-style-type: none"> • The last known position for RC-113 was OPEN. • As Shift Superintendent, acknowledge direction to evaluate the EAL network using entry point U.
Evaluator Note:	<p>Only PCV-445B will open. The applicant should attempt to open all PRZ PORV's.</p>
Comment:	<p>Critical to establish the available PORV bleed path.</p>

Performance Step: 10	<p>FRP-H.1, Step 21.a (ALTERNATE PATH begins)</p> <p>Verify Adequate RCS Bleed Path:</p> <p>Check PRZ PORVs AND associated block valves - TWO BLEED PATHS OPEN</p> <p>RNO a. GO TO Step 21c.</p>
Standard:	<ul style="list-style-type: none"> • Determines only one PRZ PORV is OPEN. • Proceeds to RNO.
Comment:	

PERFORMANCE INFORMATION

FRP-H.1, Step 21.c

√ **Performance Step: 11** Open all RCS vent valves to commence venting:

- 1RC-900
- 1RC-901
- 1RC-902
- 1RC-903
- 1RC-904
- 1RC-905

Standard:

Opens:

- 1RC-901 ____
- 1RC-903 ____
- 1RC-905 ____

Evaluator Note:

There is no power available to 1RC-900, 1RC-902, 1RC-904.

Comment:

Critical to establish the maximum available bleed path.

Terminating Cue:

**After RCS Vent Valves with power available are OPEN:
Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM c

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The reactor tripped from 100% power due to a loss of off-site power.
- A SBLOCA occurred following the reactor trip.
- Adverse containment values are in effect.
- Bus 1A-SA is locked out on an electrical fault.
- Motor Driven AFW Pump "B" is partially disassembled for maintenance.
- The Turbine-Driven AFW Pump failed while starting.
- The crew is performing FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- The Foldout criteria for initiation of RCS Feed and Bleed have just been met.

INITIATING CUE:

Observe the procedure CAUTION prior to FRP-H.1, Step 12, then initiate RCS feed and bleed.

Facility: HARRIS

Task No.:

Task Title: Respond to a Loss of Normal
Service Water (AOP-022)JPM No.: 2008 NRC d

K/A Reference: 076 A2.01 (3.5/3.7)

ALTERNATE PATH

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:
- Reactor power is 9%
 - The Main Turbine is rolling at 1800 RPM synchronized to the Grid in accordance with GP-005, POWER OPERATION
 - NSW Pump "A" is under clearance to investigate excessive shaft vibration
 - CCW Pump "A" is under clearance while electricians investigate a breaker alignment problem

Task Standard: Emergency Service Water isolated from NSW and Main Turbine tripped

Required Materials: None

General References: AOP-022, LOSS OF SERVICE WATER
GP-005, POWER OPERATION

Initiating Cue: You are the board operator. Standby to raise reactor power greater than P-10 in accordance with GP-005, Step 97, when the USCO gives the order.

Time Critical Task: NO

Validation Time: 5 minutes

SIMULATOR SETUP

- IC-38 (Power <P-10, Main Turbine at 1800 RPM)
- Go to RUN on Simulator
- Start "B" NSW Pump
- Secure and tag "A" NSW Pump
- Start "B" CCW
- Secure and tag "A" CCW
- MALF to prevent ESW Pump AUTO start (PT:9101A 200.0)

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Responds to alarms/indication.

- Standard:**
- Determines NSW Pump "B" has tripped and "A" is unavailable
 - Enters AOP-022

Comment:

Performance Step: 2 AOP-022, Step 1 (Immediate Action)
CHECK ESW flow lost to ANY RUNNING CSIP - MORE THAN 1-minute:

Standard: Answers NO

- Evaluator Note:**
- Applicant may go back and perform Step 1 RNO Path actions (trip the running CSIP and isolate Letdown) if ESW flow is lost for more than one minute.
 - Applicant may start "A" ESW Pump at any time after recognizing auto start failure (> 20 secs, no SW flow) in accordance with management expectations for operator action on failures.

Comment:

PERFORMANCE INFORMATION

Performance Step: 3 AOP-022, Step 2 (Immediate Action)
CHECK ESW flow lost to ANY RUNNING EDG - MORE THAN 1-minute:

Standard: Answers NO – no EDG operating

Comment:

Performance Step: 4 AOP-022, Step 3
GO TO the appropriate step as indicated by the parameter LOST:

Standard: Proceeds to Step 6 for NSW Pump lost/loss of flow.

Comment:

Performance Step: 5 AOP-022, Step 6

- CHECK loss of NSW Header due to NSW Pump FAILED or LOSS OF FLOW.
 - 6a) START standby NSW Pump (NA)
 - 6b) CHECK ANY NSW Pump – RUNNING (NO)

Standard:

- Determines loss of NSW header due to loss of only available pump
- Determines no NSW Pump running and proceeds to RNO

Comment:

PERFORMANCE INFORMATION

√ Performance Step: 6	AOP-022, Step 6.b RNO VERIFY BOTH ESW Pumps - RUNNING.
Standard:	<ul style="list-style-type: none">• Determines "B" ESW Pump running and initiates a MANUAL start on "A" ESW Pump (√)• GO TO Section 3.2 (page 30)
Comment:	Critical to provide adequate flow to the ESW headers.

Performance Step: 7	AOP-022, Step 3.2.1 CHECK Turbine trip required by ANY of the following conditions - EXIST: <ul style="list-style-type: none">• No NSW Pump can be operated
Standard:	Answers YES
Comment:	

Performance Step: 8	AOP-022, Step 3.2.2 CHECK Reactor power greater than P-10 (10%).
Standard:	<ul style="list-style-type: none">• Verifies reactor power < P-10 and answers NO• Proceeds to RNO column
Comment:	

PERFORMANCE INFORMATION

AOP-022, Step 3.2.2 RNO

Performance Step: 9 IF Turbine is operating, THEN TRIP Turbine AND GO TO Step 4.

- Standard:**
- Initiates a MANUAL Turbine Trip
 - Verifies Turbine Stop Valves closed

Comment:

Terminating Cue: When the turbine trip is verified: Evaluation on this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM d

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Reactor power is 9%
- The Main Turbine is rolling at 1800 RPM synchronized to the Grid in accordance with GP-005, POWER OPERATION
- NSW Pump "A" is under clearance to investigate excessive shaft vibration
- CCW Pump "A" is under clearance while electricians investigate a breaker alignment problem

INITIATING CUE:

You are the board operator. Standby to raise reactor power greater than P-10 in accordance with GP-005, Step 97, when the USCO gives the order.

Facility: HARRIS Task No.:

Task Title: Place the Containment Hydrogen Purge System in Operation (OP-125) JPM No.: 2008 NRC JPM e

K/A Reference: 028 A4.01 (4.0/4.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____
 Classroom _____ Simulator _____ Plant X

This JPM will be simulated in the Control Room.

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:
- A large break LOCA has occurred.
 - Hydrogen Recombiner problems have resulted in a Containment Hydrogen concentration > 4%.
 - The USCO has directed that the Hydrogen Purge System be placed in operation in accordance with OP-125, POST ACCIDENT HYDROGEN SYSTEM.
 - The Hydrogen Purge System is aligned in accordance with OP-125, Attachments 4 and 5.
 - A release permit has been approved.
 - The Containment is at atmospheric pressure
 - An AO is standing by to operate local valves

Task Standard: System aligned with release in progress.

Required Materials: Key for 1CM-2

General References: OP-125, POST ACCIDENT HYDROGEN SYSTEM.

Handout: OP-125 with 5.3.1.1 and 5.3.1.2 initialed.

Initiating Cue: Simulate placing the Hydrogen Purge System in operation in accordance with OP-125. DO NOT OPERATE ANY EQUIPMENT. Discuss indications that you would expect to see as a result of the simulated operations. Time compression will be used to report field operations and/or indications.

Time Critical Task: NO

Validation Time: 8 minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 OP-125
Obtain/review procedure

Standard:

- Reviews Precaution and Limitations and Initial Conditions for the task.
- Proceeds to Section 5.3.

Evaluator Cue: **Provide handout for NRC JPM e.**

Comment:

Performance Step: 2 OP-125, 5.3.2.1
OBTAIN the key for 1CM-2, Hydrogen Purge Isolation Valve.

Standard:

- Discusses location and process for obtaining the key(s)
- Proceeds to ARP-4

Evaluator Cue: **After the applicant discusses the process for obtaining the key: Assume that you have the key for 1CM-2.**

Comment:

PERFORMANCE INFORMATION

	OP-125, 5.3.2.2
√ Performance Step: 3	At ARP-4A SA TURN the key switch for Hydrogen Purge Isolation (CS-3074.1SA) to ON.
Standard:	Points out ON position for 1CM-2 (labeled Control Power Key Switch 1CM-2 H2 Purge Exh Valve) and simulates turning the key.
Evaluator Note:	Turning the switch to ON energizes control power for 1CM-2.
Evaluator Cue:	When the applicant goes to the MCB to operate 1CM-2, he/she may verify the control power light on. If so: The CONTROL POWER ON light is illuminated for 1CM-2. Verification of the light is not a critical task.
Comment:	
	OP-125, 5.3.2.3
Procedure Note:	If in MODES 1, 2, 3, or 4, opening 1CM-2 will result in entering an LCO for Tech Spec 3.6.3.
√ Performance Step: 4	OPEN HYDROGEN PURGE ISOLATION 1CM-2 SA.
Standard:	<ul style="list-style-type: none">• Applicant should inform the USCO of TS requirement.• Points out OPEN position and simulates opening 1CM-2.
Evaluator Cue:	<ul style="list-style-type: none">• Acknowledge report of TS requirement.• 1CM-2 indicating lights has gone from GREEN to RED.
Comment:	

PERFORMANCE INFORMATION

OP-125, 5.3.2.4

Performance Step: 5 Locally, UNLOCK and OPEN the following:

- 1CM-4 H2 Purge Exhaust CIV (Outside Containment).
- 1CM-5 H2 Purge Makeup CIV (Outside Containment).

Standard: Directs AO to unlock and open 1CM-4 and 1CM-5.

Evaluator Cue: **The AO reports: 1CM-4 and 1CM-5 are unlocked and open.**

Comment:

OP-125, 5.3.2.5

Procedure Note: IF the "Containment H2 Purge Filter/System High ΔP " (ALB-028-7-2) alarm is received, THEN it should be investigated and appropriate action taken.

√ **Performance Step: 6** START HYDROGEN PURGE EXHAUST FAN E-4.

Standard: Points out the START position and simulates placing the E-4 Switch to START.

Evaluator Cue:

- **E-4 indicating lights have gone from GREEN to RED.**
- **ALB-028-7-2 is clear**

Comment:

PERFORMANCE INFORMATION

OP-125, 5.3.2.6

Performance Step: 7

VERIFY the following dampers indicate open on SLB-7:

- a. Window 1-1, H2 Purge CM-B1
- b. Window 2-1, Fan E4 CM-B2
- c. Window 3-1, H2 Purge CM-B3

Standard:

At SLB-7, verifies each of the following are RED:

- Window 1-1, H2 Purge CM-B1
- Window 2-1, Fan E4 CM-B2
- Window 3-1, H2 Purge CM-B3

Evaluator Cue:**As each is checked:**

- **Window 1-1, H2 Purge CM-B1, is RED**
- **Window 2-1, Fan E4 CM-B2, is RED**
- **Window 3-1, H2 Purge CM-B3, is RED**

Comment:**Terminating Cue:****After the damper positions are verified: Evaluation on this JPM is complete.****STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM e

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A large break LOCA has occurred.
- Hydrogen Recombiner problems have resulted in a Containment Hydrogen concentration > 4%.
- The USCO has directed that the Hydrogen Purge System be placed in operation in accordance with OP-125, POST ACCIDENT HYDROGEN SYSTEM.
- The Hydrogen Purge System is aligned in accordance with OP-125, Attachments 4 and 5.
- A release permit has been approved.
- The Containment is at atmospheric pressure
- An AO is standing by to operate local valves

INITIATING CUE:

Simulate placing the Hydrogen Purge System in operation in accordance with OP-125. DO NOT OPERATE ANY EQUIPMENT. Discuss indications that you would expect to see as a result of the simulated operations. Time compression will be used to report field operations and/or indications.

Facility: HARRIS

Task No.:

Task Title: Transfer an Emergency Bus to an
EDG due to a Degraded Grid
Condition (AOP-028, Attachment 2)JPM No.: 2008 NRC f

K/A Reference: 062 A4.01 (3.3/3.1)

ALTERNATE PATH

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 unit is at 100% power
 - The failure of a major line resulted in the cascading trip of several units on the grid
 - Grid frequency is below normal and the crew has entered AOP-028, GRID INSTABILITY, and has completed Step 9 – Check for indications of a load rejection - - - .

Task Standard: EDG "B" supplying 1B-SB Bus and the Load Sequencer reset

Required Materials: None

General References: AOP-028, GRID INSTABILITY

Handout: Use Simulator copy of AOP-028 and ensure it is cleaned after each use or provide a paper copy.

Initiating Cue: Observe the CAUTION prior to AOP-028, Step 10, and then perform the procedure steps.

Time Critical Task: NO

Validation Time: 9 minutes

SIMULATOR SETUP

IC-19

Bring up ERFIS Display of AOP-028, Attachment 1 parameters

MALFUNCTIONS:

- PPI08 (59.2 HZ)
- ZDSQ52ATB – FAIL_ASIS (Load Block 9 Manual Loading Permissive failure)

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

- Performance Step: 1** AOP-028, Step 10
CAUTION
- With off-site voltage or system frequency unstable, EDGs must NOT be paralleled with off site power since severe load swings may occur and overload the EDGs.
 - Loss of Service Water flow to an EDG requires the affected EDG be stopped.

Standard: Reads/acknowledges

Comment:

- Performance Step: 2** AOP-028, Step 10
CHECK ANY EDG operating paralleled to the Grid.

Standard:

- Verifies no EDG running and answers NO
- GO TO Step 12

Comment:

PERFORMANCE INFORMATION

Performance Step: 3 AOP-028, Step 12
CHECK ALL of the following parameters WITHIN the limits of the indicated range:
6.9 kV Emergency Buses – 6550 to 7250 volts:

- EI-6956A1 SA, EMER BUS A VOLTS
- EI-6956B1 SB, EMER BUS B VOLTS
- Frequency - 59.5 to 60.5 Hz

Standard: Determines Frequency outside of range and proceeds to RNO.

Comment:

Performance Step: 4 AOP-028, Step 12 RNO
ENERGIZE the Emergency Buses with the associated EDG per Attachment 2.

Standard: Proceeds to Attachment 2.

Comment:

Performance Step: 5 AOP-028, Attachment 2 – Step 1
DETERMINE which Emergency Bus is supplying power to the operating CSIP.

Standard: Verifies CSIP “A” running – Bus 1A-SA.

Comment:

PERFORMANCE INFORMATION

AOP-028, Attachment 2 – Step 2

Performance Step: 6**NOTE**

- MDAFW FCVs will get an auto open signal (unless an AFW isolation signal is present) when either breaker 105 or 125 opens.
- On a loss of power to an emergency bus the associated steam supply valve to the Turbine Driven AFW Pump will open.
- This step will cause CVIS isolation and render both Containment Vacuum Reliefs inoperable (Tech Spec 3.0.3).

Standard:

- Reads/acknowledges
- May inform the USCO

Evaluator Cue:**Acknowledge any report.****Comment:**

AOP-028, Attachment 2 – Step 2

√ **Performance Step: 7**

OPEN the supply breaker to the Emergency Bus NOT supplying power to the operating CSIP:

- Emergency Bus A-SA to Aux Bus D Tie Breaker 105
- Emergency Bus B-SB to Aux Bus E Tie Breaker 125 SB

Standard:

Opens Emergency Bus B-SB to Aux Bus E Tie Breaker 125 SB.

Comment:**Critical to start EDG without losing charging.**

PERFORMANCE INFORMATION

- Performance Step: 8** AOP-028, Attachment 2 – Step 3
VERIFY the associated EDG STARTS AND ENERGIZES the associated Emergency Bus.
- Standard:**
- Verifies EDG “B” start (Speed, Voltage, Frequency)
 - Verifies Breaker 126 closed
- Comment:**
- Performance Step: 9** AOP-028, Attachment 2 – Step 4
VERIFY proper load sequencing for the Emergency Bus being ENERGIZED per OMM-004, Post-Trip/Safeguards Review, Attachment 12.
- Standard:** Locates OMM-004, Attachment 12.
- Evaluator Cue:** **After OMM-004, Attachment 12 is located: Another operator will perform OMM-004, Attachment 12.**
- Comment:**
- Performance Step: 10** AOP-028, Attachment 2 – Step 5
CHECK the following for the Emergency Bus being ENERGIZED:
- B Sequencer Load Block 9 AUTO ACT COMPLETE MAN LOAD PERMITTED light is LIT.
- Standard:**
- Observes the Load Sequencer progress on the EDG panel.
 - Determines “B” Sequencer Load Block 9 AUTO ACT COMPLETE MAN LOAD PERMITTED light is NOT LIT.
- Comment:**

PERFORMANCE INFORMATION

- AOP-028, Attachment 2 – Step 5 RNO
- √ **Performance Step: 11** PLACE the applicable Emer Load Sequencer Manual Loading switches to PERM AND CHECK the following:
- Load Sequencer B MAN PERM light is LIT
- Standard:**
- PLACES the “B” Emer Load Sequencer Manual Loading switch to PERM.
 - Verifies B MAN PERM light is lit.
- Evaluator Note:** There is a 150 seconds time delay (from initiation) before **MANUAL** Reset is permitted by the circuit. If the applicant attempts a **RESET** before that times out then they should allow some additional time and re-attempt. If they cannot accomplish reset without a prompt or cue then that constitutes failure of this critical step.
- Comment:**
- Terminating Cue:** After the B MAN PERM light is lit: Evaluation on this JPM is complete.
- STOP TIME:** _____

INITIAL CONDITIONS:

- The unit is at 100% power
- The failure of a major line resulted in the cascading trip of several units on the grid
- Grid frequency is below normal and the crew has entered AOP-028, GRID INSTABILITY, and has completed Step 9 – Check for indications of a load rejection - - - .

INITIATING CUE:

Observe the CAUTION prior to AOP-028, Step 10, and then perform the procedure steps.

Facility: HARRIS

Task No.:

Task Title: Respond to a Fuel Handling
Building RMS Alarm (AOP-005, OP-
170)JPM No.: 2008 NRC g

K/A Reference: APE061 AA4.01 (3.6/3.6)

ALTERNATE PATH

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:

- 100% power
- All major controllers are in AUTO and no equipment is misaligned

Task Standard: FHB Evacuated and FHBV properly aligned.

Required Materials: None

General References: AOP-005, RADIATION MONITORING SYSTEM
OP-170, FUEL HANDLING BUILDING HVAC

Handout: Use Simulator copy of AOP-005/OP-170 and ensure each is cleaned after each use or provide paper copies.

Initiating Cue: Maintain current conditions.

Time Critical Task: NO

Validation Time: 14 minutes

SIMULATOR SETUP

- IC-19
- MALF to prevent start of Train "A" FHBV Exhaust Fan E-12 start
- **Ensure RM-11 alarms are clear prior to starting JPM**
- 5 seconds after the applicant assumes the watch, MALF to actuate Train "A" FHB Area Monitor alarm

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Responds to alarm.

Standard: Enters AOP-005.

Comment:

AOP-005, Step 1

Performance Step: 2 CHECK radiation levels NOT in HIGH ALARM:

- Area Radiation Monitors

Standard: Checks RM-11 Panel and/or indication, answers NO and proceeds to RNO column.

Evaluator Note: The applicant may start FHB HVAC Exhaust Fan E-12 at any time after the alarm is confirmed in accordance with management expectations for operator action on interlock failures.

Comment:

PERFORMANCE INFORMATION

- AOP-005, Step 1 RNO
- √ **Performance Step: 3** If Radiation Monitors are in HIGH ALARM then:
- Sound the local evacuation alarm and evacuate the area
 - Repeat the announcement
- Standard:**
- Sounds local evacuation alarm, announces HIGH Radiation alarm in FHB, and for all personnel to evacuate the FHB.
 - Repeats the announcement.
- Comment:** **Critical to announce evacuate the specified area because the control room does not know if personnel are in the FHB.**
- AOP-005, Step 1 RNO
- Performance Step: 4** NOTE: High area radiation levels may require initiation of the Emergency Plan.
- REFER TO PEP-110, Emergency Classification and Protective Action Recommendations, and entry point X for EAL network.
- Standard:** Notifies USCO/SSO
- Evaluator Cue:** **Acknowledge any report.**
- Comment:**

PERFORMANCE INFORMATION

- AOP-005, Step 2
- Performance Step: 5** NOTIFY Health Physics to perform the following:
- EVALUATE ANY alarm received using HPP-780, Radiation Monitoring Systems Operator's Manual.
 - IF necessary, THEN SURVEY the affected area.
- Standard:** Contacts Health Physics.
- Booth Operator Cue:** **Acknowledge report and direction.**
- Comment:**
- AOP-005, Step 3
- Performance Step: 6** CHECK ALL Stack Monitor radiation levels NOT in ALARM.
- Standard:** Checks RM-11 Panel and answers YES.
- Comment:**
- AOP-005, Step 4
- Performance Step: 7** CHECK ALL Process Monitors NOT in ALARM.
- Standard:** Checks RM-11 Panel and answers YES.
- Comment:**

PERFORMANCE INFORMATION

	AOP-005, Step 5
Performance Step: 8	REFER TO the following: <ul style="list-style-type: none">• Tech Spec Section 3.3.3.1• Tech Spec Section 3.3.3.6
Standard:	Informs USCO.
Evaluator Cue:	Acknowledge report.
Comment:	
	AOP-005, Step 6
Performance Step: 9	REFER TO the applicable attachment based on the affected area or system monitors:
Standard:	Proceeds to Attachment 2 – FHB Monitors.
Comment:	
	AOP-005, Attachment 2, Step 1
Performance Step: 10	IF fuel handling is in progress, THEN GO TO the following, as necessary: <ul style="list-style-type: none">• AOP-013, Fuel Handling Accident• AOP-031, Loss of Refueling Cavity Integrity
Standard:	N/A – no reports of Fuel Handling in Initial Conditions.
Comment:	

PERFORMANCE INFORMATION

AOP-005, Attachment 2, Step 2

Performance Step: 11 IF Any FHB Spent Fuel Pool Area monitor is in HIGH ALARM, THEN VERIFY proper FHB Emergency Exhaust alignment using OP-170, Fuel Handling Building HVAC (Section 8.1, Auto Start of Emergency Exhaust System).

Standard: Proceeds to OP-170, Section 8.1

Comment:

OP-170, 8.1.1

Performance Step: 12 Initial Condition:

- High radiation signal (100 mr/hr) received from the SFP Area Rad. Monitors (1 out of 12 coincidence on either train).

Standard: Indicates Initial Condition is met.

Comment:

OP-170, 8.1.1

Performance Step: 13

- NOTE: High radiation levels on Rad Monitor Train A (B) will automatically start EMERGENCY EXHAUST FAN E-12 1-4X-SA (EMERGENCY EXHAUST FAN E-13 1-4X-SB).
- NOTE: High radiation levels on Rad Monitor Train A or B in the FHB will secure and isolate normal ventilation.

Standard: Reads/acknowledges.

Evaluator Note: The applicant may start E-12 at this time.

Comment:

PERFORMANCE INFORMATION

OP-170, 8.1.2.1

Performance Step: 14

- NOTE: E-84 may require securing from the MCC breaker if high radiation levels exist at its' control switch. (E-84 STATUS CAN BE CHECKED AT AEP-2 SLB-1 WINDOW 9-4)
- CAUTION: E-84 needs to be secured upon receiving a FHB Ventilation Isolation Signal to prevent the potential spread of contamination through the Fuel Handling Building.

Verify E-84 is secured upon receipt of high radiation signal (1-4B1021-5B).

Standard:

Contacts AO to verify E-84 status.

Booth Operator Cue:

Acknowledge direction. Wait one minute and report E-84 is secured.

Comment:

PERFORMANCE INFORMATION

OP-170, 8.1.2.2

√ **Performance Step: 15**

- NOTE: If the FHB Radiation Monitor spikes (< 2 min. duration), dampers may not actuate due to the short duration of the high radiation signal. If this occurs, the fan should not be considered inoperable.

Verify the following dampers and fans have properly realigned as follows: If a Train A high radiation signal was received, at AEP-1:

- EMERGENCY EXHAUST FAN E-12 1-4X-SA ON
- EMER EXH FAN E-12 INLET 1FV-2 SA OPEN
- LOADING AREA ISOL DAMPERS FL-D35SA/D37SA SHUT

Standard:

Starts E-12 (√) and verifies dampers re-position.

Comment:**Critical to align fan to radiation alarm interlock position.****Terminating Cue:****After E-12 is started and damper position is verified:
Evaluation on this JPM is complete.****STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM g

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- 100% power
- All major controllers are in AUTO and no equipment is misaligned

INITIATING CUE:

Maintain current conditions.

Facility: HARRIS Task No.: 008010H101

Task Title: Align CCW to Support RHR Initiation (OP-145) JPM No.: 2008 NRC h

K/A Reference: 008 A4.01 (3.3/3.1)

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:

- The unit is in Mode 4, going to Mode 5
- Preparations are underway to place both trains of RHR in service
- Both ESW Trains are in service
- CCW Pump "A" is running

Task Standard: Two CCW Pumps running and the required CCW flow rate established through both RHR Heat Exchangers

Required Materials: None

General References: OP-145, COMPONENT COOLING WATER, Rev 54

Handout:

- OP-145, Sections 1.0-4.0
- OP-145, Section 5.2 with Initial Conditions signed off
- OP-145, Section 8.9

Initiating Cue: Align CCW to support RHR operation in accordance with OP-145, COMPONENT COOLING WATER. All Section 3.0 Prerequisites are met.

Time Critical Task: No

Validation Time: 15 minutes

SIMULATOR SETUP

- IC -16
- Place LTOPS in NORMAL and establish feed with AFW to prevent distracting alarms
- Start both ESW Pumps
- IRF CCW073 5
- IRF CCW080 0
- IRF CCW048 49
- Check FI-652.1 between 7850 to 8500 GPM (approx. 8200 GPM with 1CC-508 5% OPEN)

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

OP-145

Performance Step: 1 Obtain procedure

Standard:

- Reviews Sections 1.0 through 4.0.
- Proceeds to Section 8.9.
- Initials Initial Condition for 8.9 (RHR System operation desired)

Evaluator Cue: Provide handout OP-145, section 8.9 (ICs NOT signed off).

Comment:

PERFORMANCE INFORMATION

OP-145, 8.9.2.1

Procedure Notes:

- The purpose of this section is to ensure CCW pump runout does not occur. Maximum flow through one CCW pump is 12,650 gpm. This section will ensure that one CCW pump is not supplying both essential cooling loops and the non-essential loop simultaneously.
- Normally it is desirable to place both RHR cooling trains in operation in Mode 4. This will require both CCW pumps to be in operation and one train of non-essential supply and return valves to be shut.

Procedure Caution:

To prevent pump runout when aligning CCW flow to the RHR Hx, verify flow rate to the Non-essential header with one pump running is less than 8500 gpm, as indicated on FI-652.1 (FI-653.1) prior to opening 1CC-147 (1CC-167).

Performance Step: 2

PERFORM the following to verify total CCW flow rate is between 7850 gpm and 8500 gpm:

- IF SFP 2&3A is in service, THEN THROTTLE SHUT 1CC-508, SFP HX 2&3A CCW Outlet Isolation Valve.
- IF SFP 2&3B is in service, THEN THROTTLE SHUT 1CC-521, SFP HX 2&3B CCW Outlet Isolation Valve.

Standard:

Determines flow at approximately 8200 GPM.

Comment:

OP-145, 8.9.2.2

Performance Step: 3

IF both trains of RHR cooling are to be placed in service, START the second CCW pump per Section 5.2.

Standard:

Proceeds to Section 5.2 to start CCW Pump "B".

Evaluator Cue:

Provides handout section 5.2 with initial conditions signed off.

Comment:

PERFORMANCE INFORMATION

Performance Step: 4 OP-145, 5.2.1
Verifies Initial Conditions

Standard: Notes all Initial Conditions are signed.

Comment:

Procedure Notes: OP-145, 5.2.2.1

- Starting the second pump could cause ΔP fluctuations across REM-01CC-3501ASA (BSB) which may shut solenoid valves 1CC-23 and 1CC-40.
- Starting the second pump may cause flow oscillations which could shut 1CC-252. Re-opening of 1CC-252 should not be attempted until the second pump is secured.

Procedure Caution:

- With one CCW pump running and the standby pump capable of an automatic start, ensure a minimum flowrate of 7850 gpm exists as indicated on FI-652.1 (FI-653.1). If both CCW pumps are running OR the CCW trains are separated, a minimum of 3850 gpm per pump is required. This lower flowrate should only be allowed for short durations to accomplish pump swapping or system realignment.

√ **Performance Step: 5** At the MCB, START CCW Pump Train B-SB (A-SA).

Standard: Selects CCW Pump "B" to start and releases

Evaluator Note: Applicant should announce pump start.

Comment: Critical because two CCW Pumps are required to support two RHR Trains and other loads.

PERFORMANCE INFORMATION

Performance Step: 6 OP-145, 5.2.2.2
VERIFY flow is greater than or equal to 3850 gpm on FI-653.1 and FI- 652.1.

Standard: Verifies \geq 3850 gpm on FI-653.1 and FI-652.1. (Actual is 5000 on "A" and 4000 on "B")

Comment:

Performance Step: 7 OP-145, 5.2.2.3
PERFORM one of the following:

- SECURE a second CCW Pump using Section 7.1.
- ALIGN CCW to support RHR cooling using Section 8.9.

Standard: Returns to Section 8.9.

Comment:

Procedure Note: OP-145, 8.9.2.3
If A (B) train RHR cooling is placed in service first, the A (B) CCW pump will only supply the A (B) CCW essential header. B (A) CCW pump will supply the non-essential CCW header and the B (A) CCW essential header.

√ **Performance Step: 8** OPEN 1CC-147 (1CC-167), CCW FROM RHR HEAT EXCHANGER A-SA (B-SB).

Standard: Places 1CC-147 in OPEN (RED indication).

Comment: **Critical to align flow through RHR HX "A".**

PERFORMANCE INFORMATION

OP-145, 8.9.2.4

Procedure Caution: With one CCW pump running and the standby pump capable of an automatic start, ensure a minimum flowrate of 7850 gpm exists as indicated on FI-652.1 (FI-653.1). If both CCW pumps are running OR the CCW trains are separated, a minimum of 3850 gpm per pump is required. This lower flowrate should only be allowed for short durations to accomplish pump swapping or system realignment. (Reference 2.6.6)

Performance Step: 9 VERIFY RHR HX A (B) out flow is 5600 to 8150 gpm on FI-688A1 (FI-689A1).

Standard: Verifies RHR HX A out flow is 5600 to 8150 gpm on FI-688A1. (Actual is 7800 GPM)

Comment:

OP-145, 8.9.2.5

Procedure Note: If a leak occurs, and surge tank level is less than 40% (below the divider plate), make up water for the B CCW header will be supplied by demin water. Makeup water for the A CCW header must be supplied by the Reactor Makeup Water System.

Procedure Caution: Shutting both 1CC-99 and 1CC-113 will result in the loss of the Nonessential Header.

√ **Performance Step: 10** IF both CCW pumps are in service, CLOSE 1CC-99 (1CC-113), CCW HEAT EXCHANGER A(B) TO NONESSENTIAL SUP.

Standard: Closes only 1CC-99 (GREEN indication).

Comment: Critical to isolate Train "A" from Non-Essential Header.

PERFORMANCE INFORMATION

- OP-145, 8.9.2.6
- Procedure Caution:** Shutting both 1CC-128 and 1CC-127 will result in the loss of the Nonessential Header.
- √ **Performance Step: 11** IF both CCW pumps are in service, CLOSE 1CC-128 (1CC-127), CCW NONESSENTIAL RETURN TO HEADER A(B).
- Standard:** Closes 1CC-128 (GREEN indication).
- Comment:** **Critical to isolate Train "A" from Non-Essential Header.**
- OP-145, 8.9.2.7
- Performance Step: 12** VERIFY the following:
- a. IF both CCW Pumps are in service, THEN PERFORM the following:
- CHECK CCW Pump A-SA (B-SB) flow between 7850 and 8050 gpm on MCB indicator FI-688A1 (FI-689A1).
 - IF necessary, THEN ADJUST and LOCK 1CC-146 (1CC-166), RHR Hx A (B) Outlet Throttle Valve, to obtain desired flow.
- Standard:** Verifies flow at approximately 8000 GPM.
- Comment:**
- OP-145, 8.9.2.8
- Procedure Caution:** Do not supply CCW to both RHR Heat Exchangers simultaneously with only one CCW pump running.
- √ **Performance Step: 13** IF both trains of RHR cooling are to be placed in service, OPEN 1CC-167 (1CC-147), CCW FROM RHR HEAT EXCHANGER B-SB (A-SA).
- Standard:** Opens 1CC-167 (RED indication).
- Comment:** **Critical to align flow through RHR HX "B".**

PERFORMANCE INFORMATION

OP-145, 8.9.2.9

Performance Step: 14 VERIFY CCW Pump B-SB (A-SA) flow rate in the required range, as follows:

- CHECK CCW Pump B-SB (A-SA) flow rate is between 10,000 and 12,500 gpm on MCB indicator FI-653.1 (FI-652.1). IF flow rate is not between 10,000 and 12,500 gpm, THEN ADJUST the applicable valve.

Standard: Verifies flow at approximately 11,900 GPM.

Comment:

OP-145, 8.9.2.10

Performance Step: 15 WHEN CCW is no longer required for RHR Operation, PERFORM the following steps:

Standard: Step is N/A at this time.

Comment:

Terminating Cue: When Step 8.9.2.10 is read: Evaluation on this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2008 NRC JPM h

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit is in Mode 4, going to Mode 5
- Preparations are underway to place both trains of RHR in service
- Both ESW Trains are in service
- CCW Pump "A" is running

INITIATING CUE:

Align CCW to support RHR operation in accordance with OP-145, COMPONENT COOLING WATER. All Section 3.0 Prerequisites are met.