

a. Simulator JPM

CRO-065C	
TITLE: Perform An Emergency Boration	
EVALUATION LOCATION: <u> X </u> SIMULATOR	
PROJECTED TIME: <u> 10 MIN </u>	SIMULATOR IC NUMBER: <u> IC-217 </u>
ALTERNATE PATH <u> X </u> TIME CRITICAL <u> </u> PRA <u> </u>	

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Correctly align emergency boration to the charging pump suction.
- Determine correct amount of Boric acid addition required.

Examinee:
Overall JPM Performance: Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)

EXAMINER: _____

Developer	S Jackson	Date: 07/15/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **Perform An Emergency Boration**. The conditions under which this task is to be performed are:

- a. Unit 1 is in Mode 3.
- b. CVCS is in operation with 1C charging pump running.
- c. 1B BAT is on service, 1A BAT is in standby.
- d. RCS boron concentration is 1500 ppm.
- e. An uncontrolled cooldown due to a Steam Dump System malfunction has occurred.
- f. RCS Tavg has decreased to less than 525°F
- g. A pre-job brief is NOT required.

Your task is to perform an emergency boration in accordance with FNP-1-AOP-27.0.

INITIATING CUE: "You may begin."

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
_____ START TIME		
* 1. (step 1) Start 1A or 1B boric acid transfer pump.	1A or 1B BAT Pump hand switch taken to start and observes pump breaker indicator lights LIT.	S / U
NOTE: May use (STEP 2-NOTE: and align flow through FCV113A&B to attempt to establish a flow path).		
2. (step 2) Align normal emergency boration flow path.	Takes hand switch for MOV8104 EMERG BORATE TO CHG PUMP SUCT to OPEN. Observes MOV8104 GREEN light is LIT. Proceeds to step 2 RNO	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
------------------	-------------------	------------------------------

NOTE: BOTH FCV-113A AND V185 must be opened to satisfy this Element.

* 3. (step 2 RNO)

Align manual emergency boration flow path.

- *OPENS FCV113A (may also open FCV113B while waiting on local actions per AOP-27)

Hand switch for FCV-113A taken to OPEN. Observes FCV113A RED light is lit and GREEN light is NOT LIT.

S / U

- *Directs Radside SO to open V185

Uses Gaitronics to contact Radside SO. Directs Opening of V185.

S / U

**CUE from Booth operator:
Radside SO acknowledges**

**CUE from Booth operator:
Radside operator reports V185 is open.**

NOTE: OPEN Q1E21V185 (REMOTE / E21 / LOA-CVC033 / 1 / 10 sec ramp) AND CALL OPERATOR TO INFORM HIM THE VALVE IS OPEN.

4. (step 3)
Verify at least one CHG PUMP STARTED

Observes 1C CHG PUMP RED breaker closed light is LIT.

S / U

5. (step 4.1)
Verify 45 gpm letdown orifice IN SERVICE.

Observes HV8149A RED light is LIT.

S / U

6. (step 4.2)
Verify at least one 60 gpm letdown orifice IN SERVICE.

Observes HV8149C RED light is LIT and approx. 120 gpm flow on FI-150 LTDN HX OUTLET FLOW.

S / U

7. (step 5)
Verify charging flow GREATER THAN 40 GPM.

Observes FI-122 CHG FLOW is greater than 40 gpm.

S / U

8. (step 6)
Check manual emergency boration flow greater than 30 gpm.

Observes FI-113 indicates >30 gpm.

S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
9. (step 7) Direct Chemistry to secure the zinc addition system (ZAS)	Contacts Chemistry via phone or gaitronics to secure zinc addition system.	S / U
	CUE from Booth operator: Chemistry acknowledges	
Isolate RMW to the RMCS Close RMW to BLENDER Q1E21FCV114B	Hand switch for FCV114B taken to close. Observes GREEN light LIT. (FCV114B was CLOSED with H/S in AUTO)	S / U
Stop any running RMW pump. 1A RMW PUMP placed in STOP 1B RMW PUMP placed in STOP	Hand switch for 1A and 1B placed in STOP. RED light goes OUT and GREEN light is LIT.	S / U
NOTE: Examinee will determine that Element 10 (step 8) is Not Applicable (N/A)		
10. (step 8) IF no RCP is running AND RHR is aligned for cooldown operation, THEN perform the following. - Verify alternate charging path in service.	Determines this action as N/A	S / U
11. (step 9.1) Check reactor NOT CRITICAL.	Checks reactor NOT Critical Observes Rx Trip and Bypass breakers OPEN	S / U
NOTE: May calculate Tavg based on MCB indications instead of using the IPC.		
12. (step 9.2.1) Check RCS TAVG LESS THAN 525°F.	Observes RCPs RUNNING Observes TAVG (WIDE RANGE IPC) 1A, (1B, 1C) RCS LOOP - TC4601 - TC4603 - TC4603 Less than 525°F (approx. 510°F to 512°F)	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
------------------	-------------------	------------------------------

NOTE: Step 9.2.2 is N/A

* 13. (step 9.3) Continue emergency boration based on initial boron concentration and RCS TAVG.	Observes temperature has decreased by 13°F to 15°F below 525°F and determines 64 gal of boric acid required per °F from table based upon initial boron concentration. Determines MINIMUM quantity of Boric Acid required to be added is 13 X 64 = 832 gal to 15 X 64 = 960 gal.	S / U
--	--	-------

STOP TIME

Terminate when quantity of boric acid to be added has been determined.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-AOP-27.0, Version 17.1
2. K/As: 024AA2.02 RO-3.9 SRO-4.4
024AA2.01 RO-3.8 SRO-4.1
024AA2.05 RO-3.3 SRO-3.9

GENERAL TOOLS AND EQUIPMENT:

1. None

Critical ELEMENT justification:**STEP****Evaluation**

1. **Critical:** Starting a boric acid pump is critical and required to align boration flow to the chg pump suctions.
2. **Not critical:** since this course of action will not be successful.
3. **Critical:** Aligning manual emergency makeup is critical and required to align boration flow to the chg pump suctions.
4. **Not critical:** A charging pump is already running and will supply boric acid if the system is properly aligned. Omission of this step would not result in failure to complete boric acid addition.
5. **Not critical:** Verify 45 gpm letdown orifice in service is not critical since this will not inhibit the addition of the required quantity of boric acid.
6. **Not critical:** Verify 60 gpm letdown orifice in service is not critical since this will not inhibit the addition of the required quantity of boric acid.
7. **Not critical:** since this flow is already sufficient for the required supply. However this is the step at which the required flow is likely to be achieved.
8. **Not critical:** since this step is a check and improper evaluation alone does not constitute the critical step.
9. **Not critical:** since this action does not inhibit the addition of the required quantity of boric acid. While the ZAS is a dilution source the injection rate is on the order of less than 2 gph of water and would not adversely affect the boron concentration resulting from the addition of the required quantity of boric acid.
10. **Not critical:** since this alignment is not required based upon plant conditions and taking this action rather than evaluating this step as not required does not inhibit or adversely affect the boric acid addition.
11. **Not critical:** since this step is a check and improper evaluation alone does not constitute the critical step.
12. **Not critical:** since this step is a check and improper evaluation alone does not constitute the critical step.
13. **Critical:** since the proper determination of the required quantity of boric acid addition is critical to offsetting the positive reactivity addition of any cooldown less than 525°F.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **Perform An Emergency Boration**. The conditions under which this task is to be performed are:

- a. Unit 1 is in Mode 3.
- b. CVCS is in operation with 1C charging pump running.
- c. 1B BAT is on service, 1A BAT is in standby.
- d. RCS boron concentration is 1500 ppm.
- e. An uncontrolled cooldown due to a Steam Dump System malfunction has occurred.
- f. RCS Tavg has decreased to less than 525°F
- g. A pre-job brief is NOT required.

Your task is to perform an emergency boration in accordance with FNP-1-AOP-27.0.

b. Simulator JPM

CRO-NEW2	
TITLE: Perform required actions of FRP-H.1	
EVALUATION LOCATION: <u> X </u> SIMULATOR ONLY	
PROJECTED TIME: <u> 15 MIN </u>	SIMULATOR IC NUMBER: <u> IC-218 </u>
ALTERNATE PATH <u> X </u> TIME CRITICAL <u> </u> PRA <u> X </u>	

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Establish bypass HHSI flow.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Richard Ellis	Date: 5/07/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to perform required actions of FRP-H.1. The conditions under which this task is to be performed are:

- a. A Loss of Offsite Power has occurred.
- b. 1-2A EDG is tripped on a generator fault trip
- c. 1C EDG is aligned to Unit 2 and unavailable for Unit 1
- d. FRP-H.1 is in progress.
- e. A Site Area Emergency has been declared due to a potential loss of 2 fission product barriers
- f. A pre-job brief is NOT required.

Your task is to perform required actions of FRP-H.1 beginning at step 11.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
____ START TIME		
1. (step 11) Check for loss of secondary heat sink.	Checks S/G WR LEVEL. Observes both 1B and 1C SG WR LVL less than 12%.	S / U
2. (step 12) Manually actuate SI.	Either SI ACTUATION hand switch placed to actuate. Observes indications of SI actuation. MLB-1 1-1 and MLB-1 11-1 and Bypass and Permissive Safety Injection Actuated Lights Lit	S / U
NOTE:	<ul style="list-style-type: none"> • The following components will fail to operate properly upon manual actuation of Safety Injection: <ul style="list-style-type: none"> ○ Due to the existing LOSP when SI is manually actuated 1B DG output breaker will open generating a load shed signal the output breaker will reclose and the ESS load sequencer will run. ○ 1C CHG PUMP does not restart following SI actuation. ○ MOV-8108 CHG PUMPS TO REGENERATIVE HX does not close following SI actuation. ○ MOV-8803B HHSI TO RCS CL ISO does not open following SI actuation. 	
3. (step 13) Check HHSI flow – Greater Than 0 gpm on FI-943 A TRN HHSI FLOW.	Checks HHSI flow. Observes no flow indicated on FI-943 A TRN HHSI FLOW. Proceeds to step 13 RNO.	S / U
*4. (step 13.1 RNO) Verify at least one charging pump started.	Starts 1C CHG PUMP. 1C CHG PUMP handswitch taken to START. Observes red running light lit and amps indicated on 1C CHG Pump ammeter. (Critical Task)	S / U

EVALUATION CHECKLIST

**RESULTS:
(CIRCLE)**

ELEMENTS:

STANDARDS:

NOTE:

- ONLY one valve listed in Element 5 is a Critical task. MOV-8108 CHG PUMPS TO REGENERATIVE HX is in the incorrect position and IS capable of being operated.**

*5. (step 13.2 RNO)
Verify proper SI alignment

- MOV-8107 CHG PUMPS TO REGENERATIVE HX observes no indication available for MOV-8107 no action taken no power available.
- *MOV-8108 CHG PUMPS TO REGENERATIVE HX observes red open indication for MOV-8108. Handswitch taken to close observes green closed indication lit.(Critical Task) S / U
- LCV-115B RWST TO CHG PUMP observes no indication available for LCV-115B no action taken no power available.
- LCV-115D RWST TO CHG PUMP observes red open indication for LCV-115D valve is in required position. S / U
- LCV-115C VCT OUTLET ISO observes no indication available for LCV-115C no action taken no power available.
- LCV-115E VCT OUTLET ISO observes green closed indication for LCV-115E valve is in required position. S / U
- MOV-8803A HHSI TO RCL CL ISO observes no indication available for MOV-8803A no action taken no power available.
- MOV-8803B HHSI TO RCL CL ISO observes green closed indication for MOV-8803B. Handswitch taken to open observes no change in indication. Valve will not open. S / U

EVALUATION CHECKLIST

**RESULTS:
(CIRCLE)**

ELEMENTS:

STANDARDS:

- | | | |
|--|--|---------------------------|
| <p>5. (step 13.2 RNO)
Verify proper SI alignment
(continued)</p> | <ul style="list-style-type: none"> • MOV-8130A CHG PUMP SUCTION
HDR ISO observes no indication
available for MOV-8130A. No action
taken no power available. • MOV-8130B CHG PUMP SUCTION
HDR ISO observes no indication
available for MOV-8130B. No action
taken no power available. • MOV-8131A CHG PUMP SUCTION
HDR ISO observes red open indication
for MOV-8131A valve is in required
position. • MOV-8131B CHG PUMP SUCTION
HDR ISO observes red open indication
for MOV-8131B valve is in required
position. • MOV-8132A CHG PUMP DISCH HDR
ISO observes no indication available for
MOV-8132A. No action taken no power
available. • MOV-8132B CHG PUMP DISCH HDR
ISO observes no indication available for
MOV-813BA. No action taken no power
available. • MOV-8133A CHG PUMP DISCH HDR
ISO observes red open indication for
MOV-8133A valve is in required
position. • MOV-8133B CHG PUMP DISCH HDR
ISO observes red open indication for
MOV-8133B valve is in required
position. | <p>S / U</p> <p>S / U</p> |
| <p>6. (step 13.3 RNO)
IF HHSI flow now established
THEN proceed to step 14
IF NOT perform the
following.</p> | <p>Checks HHSI flow. Observes no flow indicated
on FI-943 A TRN HHSI FLOW. Proceeds to
step 13.3.1 RNO.</p> | <p>S / U</p> |

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
7. (step 13.3.1 RNO) RESET SI	Depresses SI BLOCK RESET A TRN and SI BLOCK RESET B TRN pushbuttons observes MLB-1 1-1 and MLB 1 11-1 lights NOT LIT	S / U
NOTE: <ul style="list-style-type: none"> ONLY one valve listed in Element 8 is a Critical task. MOV-8885 CHG PUMP RECIRC TO RCS COLD LEGS is required to be opened and is a Critical Task. 		
*8. (step 13.3.4 RNO) Establish HHSI bypass SI flow.	<ul style="list-style-type: none"> *MOV-8885 CHG PUMP RECIRC TO RCS COLD LEGS takes the handswitch to open for MOV-8885 and observes red open indication.(Critical Task) MOV-8803A HHSI TO RCS CL ISO observes no indication available for MOV-8803A. Student should ascertain that the valve is closed based upon the valve being closed prior to manually actuating SI and with no power available has not repositioned from its closed condition. No action taken. MOV-8803B HHSI TO RCL CL ISO observes green closed indication for MOV-8803B valve is in the required position. 	S / U
9. (step 13.4 RNO) IF HHSI flow now established THEN proceed to step 14 IF NOT perform the following.	Checks HHSI flow. Observes approximately 200 gpm HHSI flow on FI-940 HHSI B TRN RECIRC FLOW proceeds to step 14.	S / U

STOP TIME

Terminate when all elements of the task have been completed.

CRITICAL ELEMENTS: Critical Elements are denoted by an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-FRP-H.1, Version 27.0
2. IPE/PRA Human Reliability Analysis Notebook List of Operator Actions 10.50 OAB_A_1-----
H, OPERATOR FAILS TO ESTABLISH BLEED AND FEED COOLING
3. K/As: 013A4.01 RO-4.5 SRO-4.8
013A4.02 RO-4.3 SRO-4.4
013A4.03 RO-4.5 SRO-4.7

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

<u>ELEMENT</u>	<u>Evaluation</u>
1	NOT Critical: Actions not required to complete task successfully.
2	NOT Critical: Actions not required to complete task successfully.
3	NOT Critical: Actions not required to complete task successfully.
4	Critical: Task completion: 1C Charging Pump must be manually started to provide HHSI flow. 1C charging pump should have automatically started from step 1 of the ESS loading sequencer following manual actuation of Safety Injection.
5	Critical: Task completion: MOV-8108 must be manually closed to isolate the normal charging flow path and ensure full HHSI flow to the HHSI flow path and to prevent having 2 parallel flow paths open and prevent potential charging pump run out when the HHSI flow path through MOV-8885 is aligned. MOV-8108 should have automatically closed following manual actuation of Safety Injection.
6	NOT Critical: Actions not required to complete task successfully.
7	NOT Critical: Actions not required to complete task successfully.
8	Critical: Task completion: MOV-8885 must be opened to align HHSI bypass flow to the RCS cold legs to provide core cooling for bleed and feed since MOV-8803A did not open automatically following manual actuation of Safety Injection and could not be manually opened in previous steps.
9	NOT Critical: Actions not required to complete task successfully.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to perform required actions of FRP-H.1. The conditions under which this task is to be performed are:

- a. A Loss of Offsite Power has occurred.
- b. 1-2A EDG is tripped on a generator fault trip
- c. 1C EDG is aligned to Unit 2 and unavailable for Unit 1
- d. FRP-H.1 is in progress.
- e. A Site Area Emergency has been declared due to a potential loss of 2 fission product barriers
- f. A pre-job brief is NOT required.

Your task is to perform required actions of FRP-H.1 beginning at step 11.

c. Simulator JPM**CRO-076**TITLE: **Raise The “A” Accumulator Pressure**EVALUATION LOCATION: X SIMULATOR ONLYPROJECTED TIME: 10 MIN SIMULATOR IC NUMBER: IC-219 ALTERNATE PATH TIME CRITICAL PRA **JPM DIRECTIONS:**

1. Place student in quiet area with HANDOUT, reference material, and a copy of starting procedure to perform a pre-job brief.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. After pre-job brief complete, allow student time to review control board.
4. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Raise the “A” accumulator pressure.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Richard Ellis	Date: 05/08/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **RAISE THE 'A' ACCUMULATOR PRESSURE**. The conditions under which this task is to be performed are:

- a. The plant is in Mode 1.
- b. 'A' accumulator pressure slowly drifted down and annunciator CD1 is in alarm.
- c. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will begin at section 4.5 of FNP-1-SOP-8.0.

Your task is to raise the 'A' accumulator pressure in accordance with FNP-1-SOP-8.0, Safety Injection System - Accumulators.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
<u> </u> START TIME		
1. (step 4.5.1) Ensure high pressure nitrogen banks are greater than 1000 psig	Contacts the Outside System Operator to ascertain high pressure nitrogen banks pressure. CUE: High pressure nitrogen banks pressure is 2000 psig.	S / U
2. (step 4.5.2.1) Ensure nitrogen atmosphere has been established in 1A accumulator.	Ascertains with the Unit in Mode 1 that a nitrogen atmosphere exists in the 1A accumulator. IF REQUESTED CUE: A nitrogen atmosphere is established in the 1A accumulator.	S / U
3. (step 4.5.2.2) Verify ACCUM N2 VENT HIK 936(V092) closed.	Verifies HIK 936 ACCUM N2 VENT is rotated fully counter clockwise to 0% demand CLOSE position.	S / U
*4. (step 4.5.2.3) Open or check open PRIP ACCUM N2 SUPPLY ISOLATION Valves N1E21HV3938A N1E21HV3938B	Contacts the Rad Side System Operator to Open PRIP ACCUM N2 SUPPLY ISOLATION Valves HV3938A and HV3938B. CUE: ACCUM N2 SUPPLY ISOLATION Valves N1E21HV3938A and N1E21HV3938B are OPEN.	S / U
*5. (step 4.5.2.4) Open or check open ACCUM N2 SUPP ISO Q1E21HV8880	Handswitch for ACCUM N2 SUPP ISO Q1E21HV8880 taken to OPEN. Observes RED light LIT and GREEN light OUT.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*6. (step 4.5.2.5) Open 1A ACCUM N2 SUPP/VT ISO Q1E21HV8875A	Handswitch for 1A ACCUM N2 SUPP/VT ISO Q1E21HV8875A taken to OPEN. Observes GREEN light OUT and RED light LIT.	S / U
7. (step 4.5.2.6) Monitor accumulator pressure and verify 1A is the only accumulator which shows a pressure increase.	Observes the following pressure indicators: PI-921 & PI-923 TK1 Accumulator Pressure PI-925 & PI-927 TK2 Accumulator Pressure PI-929 & PI-931 TK3 Accumulator Pressure Determines only PI-921 & PI-923 are increasing.	S / U
NOTE: When this task is complete, the 'A' Accumulator pressure must be within Tech Spec pressure limits of ≥ 601 psig and ≤ 649 psig and Annunciator CD1 CLEAR.		
*8. (step 4.5.2.7) When pressure increases to approx. 625 psig, THEN close 1A ACCUM N2 SUPP/VT ISO Q1E21HV8875A	Observes the following pressure indicators: PI-921 & PI-923 TK1 Accumulator Pressure at approx. 625 psig. Handswitch for 1A ACCUM N2 SUPP/VT ISO Q1E21HV8875A taken to CLOSE. Observes RED light OUT and GREEN light LIT.	S / U
9. (step 4.5.2.8) IF pressure is to be increased in another accumulator immediately then proceed to section 4.5.3 or 4.5.4.	Determines no other accumulator pressure is to be increased and proceeds to step 4.5.2.9	S / U
10. (step 4.5.2.9) Close the following valves on the PRIP ACCUM N2 SUPPLY ISOLATION Valves N1E21HV3938A N1E21HV3938B	Contacts the Rad Side System Operator to CLOSE PRIP ACCUM N2 SUPPLY ISOLATION Valves HV3938A and HV3938B. CUE: ACCUM N2 SUPPLY ISOLATION Valves N1E21HV3938A and N1E21HV3938B are CLOSED.	S / U
11. (step 4.5.2.10) Close ACCUM N2 SUPP ISO Q1E21HV8880	Handswitch for ACCUM N2 SUPP ISO Q1E21HV8880 taken to CLOSE. Observes GREEN light LIT and RED light OUT.	S / U

STOP TIME

Terminate JPM after all elements are completed.

CRITICAL ELEMENTS: Critical Elements are denoted by an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1- SOP-8.0 Version 42.0
2. K/A: 006A1.13 RO-3.5 SRO-3.7
 006A4.02 RO-4.0 SRO-3.8

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT

Evaluation

- | | |
|------|--|
| 1-3 | NON Critical: Information determined and System alignment will not affect examinees ability to raise 1A accumulator pressure. |
| 4-6 | CRITICAL: System alignment is necessary to supply nitrogen to the accumulator to raise pressure. |
| 7 | NON Critical: Information determined will not affect examinees ability to raise 1A accumulator pressure. |
| 8 | CRITICAL: Task objective – pressure raised to clear alarm. Additionally, N2 pressure IAW Technical Specification limits is established on the ‘A’ Accumulator. |
| 9-11 | NON Critical: Information determined and System alignment restores system to normal alignment and has no bearing on examinees ability to raise 1A accumulator pressure. |

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **RAISE THE 'A' ACCUMULATOR PRESSURE**. The conditions under which this task is to be performed are:

- a. The plant is in Mode 1.
- b. 'A' accumulator pressure slowly drifted down and annunciator CD1 is in alarm.
- c. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will begin at section 4.5 of FNP-1-SOP-8.0.

Your task is to raise the 'A' accumulator pressure in accordance with FNP-1-SOP-8.0, Safety Injection System - Accumulators.

d. Simulator JPM

CRO-336B	
TITLE: Check Feedwater status in response to a Reactor Trip and Safety Injection	
EVALUATION LOCATION: <u> X </u> SIMULATOR ONLY	
PROJECTED TIME: <u> 10 MIN </u>	SIMULATOR IC NUMBER: <u> IC-220 </u>
ALTERNATE PATH <u> X </u> TIME CRITICAL <u> </u> PRA <u> </u>	

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Start 1A and 1B MDAFW pumps
- Isolate Feedwater to 1C SG.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Richard Ellis	Date: 05/14/14
NRC Approval	SEE NUREG 1021 FORM ES-301-2	

CONDITIONS

When I tell you to begin, you are to **CHECK FEEDWATER STATUS IN RESPONSE TO A REACTOR TRIP AND SAFETY INJECTION**. The conditions under which this task is to be performed are:

- a. A Reactor Trip and Safety Injection occurred from 100% power.
- b. Step 7 of EEP-0.0, Attachment 2 has just been completed.
- c. The TDAFW pump tripped on overspeed.
- d. A pre-job brief is not required.

Your task is to continue with Step 8 of FNP-1-EEP-0.0, Attachment 2.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
<u> </u> START TIME		
*1. (step 8.1) Verify both MDAFW Pumps STARTED.	Handswitch for 1A and 1B MDAFW pumps taken to START. Observes the red indicating lights comes on, MDAFW pump amps at 56 amps and AFW flow to each SG at approx. 200 gpm.	S / U
NOTE: EXAMINEE MAY STATE THAT THE TDAFWP IS TRIPPED BUT NOT NEEDED AND MAY USE RNO STEP TO ADVANCE TO CRITICAL ELEMENT 6 (Step 9).		
2. (step 8.2) Check TDAFW Pump start required.	Observes for RCP Bus UV and SG Low Low Level: TSLB2 1-1, 1-2, & 1-3 NOT LIT. A, B, & C 4160V Busses 4155V. TSLB4 4-1, 4-2, 4-3, 5-1, 5-2, 5-3, 6-1, 6-2, & 6-3 LIT. A, B, & C SG's at <28% NR levels.	S / U
3. (step 8.3) Verify TDAFWP started.	Observes MBL4 1-3, 2-3, & 3-3 LIT. TDAFWP speed on SI-3411A at 0 rpm. TDAFWP speed control SIC-3405 adjusted to 100% demand.	S / U
4. Recognizes that the TDAFW pump trip throttle valve needs to be reset.	Contacts the Rover System Operator to reset the TDAFW pump trip-throttle valve (TTV). CUE: Rover reports TTV is broken and cannot be reset.	S / U
5. (step 8.4) Verify TDAFW flow path to each SG.	Observes HV-3228 A, B, & C handswitches in MOD. HIC-3228 AA, BA, & CA demand at 100% Open	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
6. (step 9.1) Verify main feedwater flow control and bypass valves CLOSED.	Observes FCV's 478, 479, 488, 489, and 499 indications GREEN LIGHTS LIT. FCV 498 indication GREEN AND RED LIGHTS LIT. Proceeds to step 9.1 RNO	S / U
NOTE: COMPLETION OF EITHER ELEMENT 7 OR ELEMENT 9 WILL SATISFY THE CRITICAL TASK OF ACCOMPLISHING FEEDWATER ISOLATION. ONLY MOV-3232C HAS TO BE CLOSED TO SATISFY ELEMENT 7.		
*7. (step 9.1 RNO) Verify main feedwater stop valves closed.	Handswitches for MAIN FW TO 1A, 1B & 1C SG STOP VLV MOV-3232A, B, & C taken to CLOSE. Observes green lights LIT and red lights NOT LIT.	S / U
8. (step 9.2) Verify both steam generator feed pumps TRIPPED.	Both SGFPs TURBINE TRIP pushbuttons depressed. Observes TURBINE TRIPPED light LIT and 1A SGFP speed decreasing on SGFP 1A E-H UPPER. TURBINE TRIPPED light NOT LIT and 1B SGFP speed at 3200 rpm on SGFP 1B E-H UPPER. Proceeds to Step 9.2 RNO	S / U
*9. (step 9.2 RNO) Stop both EH PUMPs	Handswitches for 1A and 1B EH pumps taken to STOP. Observes green lights LIT and red lights NOT LIT.	S / U
10. (step 9.3) Verify SG blowdown ISOLATED	Places hand switches for HV-7614A, B & C in the CLOSE position. Observes GREEN lights LIT and RED light OUT.	S / U
11. (step 9.4) Verify SG blowdown sample ISOLATED MLB lights LIT.	Observes MLB1 19-2, 19-3, & 19-4 LIT	S / U

STOP TIME

Terminate when SG blowdown sample MLB lights are verified LIT.

CRITICAL ELEMENTS: Critical Elements are denoted by an asterisk (*) before the element number.

GENERAL REFERENCES:

- | | | |
|-------------------|--------------|---------|
| 1. FNP-1-EEP-0.0, | Version 45.0 | |
| 2. K/As: 059A3.04 | RO-2.5 | SRO-2.5 |
| 059A3.06 | RO-3.2 | SRO-3.3 |
| 059A4.08 | RO-3.0 | SRO-2.9 |
| 061A3.01 | RO-4.2 | SRO-4.2 |

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:**ELEMENT****Evaluation**

- | | |
|-------|---|
| 1 | Critical: Task completion: Required to provide greater than 395 gpm total AFW flow to ensure adequate heat sink with SG NR levels less than 32% and the TDAFW pump tripped on overspeed. |
| 2-5 | NOT Critical: Verifying TDAFW Pump started and flowpath aligned is not required based upon MDAFW Pumps running and providing adequate AFW flow. |
| 6 | NOT Critical: Verifying main feedwater FCVs and Bypass FCVs is not possible due to stuck open main feedwater FCV and is not required as long as subsequent corrective actions are taken. |
| 7 | Critical: Task completion: Closure of main feedwater stop valves accomplishes main feedwater isolation if element 9 is omitted. |
| 8 | NOT Critical: Tripping the SGFPs does not accomplish feedwater isolation since the B SGFP cannot be tripped. |
| 9 | Critical: Task completion: Tripping of EH pumps will trip SGFPs and accomplish main feedwater isolation if element 7 is omitted. |
| 10-11 | NOT Critical: Verifying SGBD and Sample isolation is not critical to providing adequate AFW flow or accomplishing main feedwater isolation. |

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **CHECK FEEDWATER STATUS IN RESPONSE TO A REACTOR TRIP AND SAFETY INJECTION**. The conditions under which this task is to be performed are:

- a. A Reactor Trip and Safety Injection occurred from 100% power.
- b. Step 7 of EEP-0.0, Attachment 2 has just been completed.
- c. The TDAFW pump tripped on overspeed.
- d. A pre-job brief is not required.

Your task is to continue with Step 8 of FNP-1-EEP-0.0, Attachment 2.

e. Simulator JPM**CRO-066D****TITLE: Borate The RHR System To Prepare For RCS Cooldown**EVALUATION LOCATION: X SIMULATOR ONLYPROJECTED TIME: 20 MIN SIMULATOR IC NUMBER: IC-221 ALTERNATE PATH TIME CRITICAL PRA **JPM DIRECTIONS:**

1. Place student in quiet area with HANDOUT, reference material, and a copy of starting procedure to perform a pre-job brief.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. After pre-job brief complete, allow student time to review control board.
4. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Borate 'A' Train RHR

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Richard Ellis	Date: 4/15/14
NRC Approval	SEE NUREG 1021 FORM ES-301-2	

CONDITIONS

When I tell you to begin, you are to **BORATE 'A' TRAIN OF RHR**. The conditions under which this task is to be performed are:

- a. The CCW system is in operation and aligned per SOP-23.0.
- b. The Plant is in Mode 3.
- c. 'A' Train RHR is running and sample results indicate that RHR boron concentration is less than the cold shutdown boron concentration of 1000 ppm.
- d. Steps 4.1.1 through 4.1.13 of Section 4.1, Preparing 'A' Train RHR for RCS Cooldown from ECCS Standby Alignment, of FNP-1-SOP-7.0, have been completed.
- e. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will begin at step 4.1.14 of section 4.1 of FNP-1-SOP-7.0.

Your task is to borate 'A' Train of RHR per FNP-1-SOP-7.0, section 4.1 beginning at step 4.1.14.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
START TIME		
1. (SOP-7.0 Step 4.1.14.1) Verify closed 'B' train RHR to CVCS letdown isolation RHR-V-8720B (V013B).	Contacts Rad Side Systems Operator by phone or gaitronics to verify (V013B) closed. CUE from Booth operator: Radside operator reports V013B is closed.	S / U
*2. (SOP-7.0 Step 4.1.14.2) Open 'A' train RHR to CVCS letdown isolation RHR-V-8720A (V013A).	Contacts Rad Side Systems Operator by phone or gaitronics to open (V013A). CUE from Booth operator: Radside operator reports V013A is open.	S / U
NOTE: Open V-8720A (V013A) – REMOTE / E11 / LOA-RHR001 / 1 / 10 second ramp and report (V013A) is OPEN.		
3. (SOP-7.0 Step 4.1.14.3) If desired then establish excess letdown flow per SOP-2.7.	CUE: THE SHIFT SUPERVISOR DOES NOT DESIRE EXCESS LETDOWN IN SERVICE.	S / U
4. (SOP-7.0 Step 4.1.14.4) If letdown pressure is higher than RHR pump discharge pressure then Isolate letdown per SOP-2.1.	Check letdown PI-145 LTDN HX OUTLET PRESS and PI-600A RHR PUMP DISCH PRESS. Observes PI-145 > PI-600A. Proceeds to SOP-2.1 section 4.4 or Figure 1 (MCB operator aid) to isolate letdown.	S / U

EVALUATION CHECKLIST**RESULTS:
(CIRCLE)****ELEMENTS:****STANDARDS:**

NOTE: Applicant may use the operator aid on the MCB (Figure 1 of SOP-2.1). These steps start at Element 16. If the MCB operator aid is used, then Elements 5 through 15 are NOT evaluated and critical Element 8 will be performed at Element 17.

5. (SOP-2.1 Step 4.4.1) Have Chemistry Secure the Zinc Addition System (ZAS).	Contacts Chemistry via phone or gaitronics to Secure ZAS. CUE from Booth operator: Zinc Addition System is secured.	S / U
6. (SOP-2.1 Step 4.4.2) Place LP LTDN PRESS PK 145 in MANUAL.	PK 145 Manual Pushbutton is depressed and is backlit.	S / U
7. (SOP-2.1 Step 4.4.3) Verify LP LTDN PRESS PK 145 demand signal is approx 50%	Demand is adjusted to approx. 50% demand.	S / U
*8. (SOP-2.1 Step 4.4.4) Close Ltdn Orif ISO valves HV8149A, B & C	The hand switches for HV-8149A & C taken to close. Observes: HV-8149A, B & C GREEN lights are LIT, RED lights are NOT LIT.	S / U
9. (SOP-2.1 Step 4.4.5) IF desired then close both Ltdn Line Iso LCV459 and LCV460	V459 & V460 may be closed or left open. Observes RED light lit for open valves and GREEN light lit for closed valves.	S / U
10. (SOP-2.1 Step 4.4.6) Place CHG FLOW FK 122 in MANUAL.	FK 122 Manual pushbutton is depressed and is backlit.	S / U
11. (SOP-2.1 Step 4.4.7) Adjust CHG FLOW FK 122 demand signal to 0% (closed)	Demand is lowered to 0% (closed).	S / U
12. (SOP-2.1 Step 4.4.8.1) If #1 seal leakoff is in service then maintain seal injection flow at <input type="checkbox"/> pprox.. 8 gpm.	Observes #1 seal leakoff flow indicated on FR0154A RCP WIDE RANGE SEAL LEAKOFF and HV 8141A, (B, & C) RCP SEAL LEAKOFF valves Open. HIK 186 is adjusted as needed to maintain \approx 8 gpm flow to each RCP.	S / U
13. (SOP-2.1 Step 4.4.8.2) If #1 seal leakoff is NOT in service then maintain seal injection flow 2 to 8 gpm.	Determines this action not required	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
14. (SOP-2.1 Step 4.4.9) If desired then utilize excess letdown system per SOP-2.7 to maintain PRZR level at its programmed value.	CUE: THE SHIFT SUPERVISOR DOES NOT DESIRE EXCESS LETDOWN IN SERVICE.	S / U
15. (SOP-2.1 Step 4.4.10) If RCS Pressure is between 2215 and 2255 then perform STP-8.0	CUE: ANOTHER OPERATOR WILL PERFORM STP-8.0 PER STEP 4.4.10.	S / U
NOTE: If MCB operator aid is used, then Elements 16 through 21 are Evaluated.		
16. (SOP-2.1 FIG 1 Step 1) Place PK-145 in MANUAL and adjust demand to less than or equal to 50%.	PK 145 Manual Pushbutton is depressed and is backlit. Demand is adjusted to approx. 50% demand.	S / U
*17. (SOP-2.1 FIG 1 Step 2) Close LTDN ORIF ISO 45 GPM, Q1E21HV8149A AND LTDN ORIF ISO 60 GPM, HV8149B OR HV8149C, as applicable.	The hand switches for HV-8149A & C taken to close. Observes: HV-8149A, B & C GREEN lights are LIT, RED lights are OUT.	S / U
18. (SOP-2.1 FIG 1 Step 3) Close both Ltdn Line Iso LCV459 and LCV460	The hand switches for V459 & V460 taken to close. Observes: V459 & V460 GREEN lights are LIT, RED lights are OUT.	S / U
19. (SOP-2.1 FIG 1 Step 4) Place FK-122 in MANUAL and adjust to 0% (closed).	FK 122 Manual pushbutton is depressed and is backlit. Demand is lowered to 0% (closed).	S / U
20. (SOP-2.1 FIG 1 Step 5) Verify SEAL WTR INJECTION HIK 186 adjusted.	HIK 186 adjusted to maintain 6-13 gpm Seal Injection.	S / U
21. (SOP-2.1 FIG 1 Step 6) Refer To SOP-2.1 when time permits.	Applicant states they will refer to SOP-2.1 after task is completed.	S / U
*22. (SOP-7.0 Step 4.1.14.5) Divert letdown to the VCT by placing handswitch for LTDN HI TEMP Divert VLV TCV143 to the VCT position	Places handswitch for LTDN HI TEMP DIVERT VLV TCV-143 to the VCT position. Observes the The VCT light is lit, the Demin light is NOT lit.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*23. (SOP-7.0 Step 4.1.14.6) Divert letdown to the RHT's by placing VCT HI LEVEL DIVERT VLV LCV115A to the RHT position.	VCT HI LEVEL DIVERT VLV LCV-115A placed to the RHT position. Observes the VCT light is NOT lit, the RHT light is lit.	S / U
*24. (SOP-7.0 Step 4.1.14.7) Slowly open RHR TO LTDN HX HIK 142	HIK-142 turned slowly fully clockwise to 100% open.	S / U

NOTE: Element 25 is only critical if PK-145 was not placed in MANUAL at approximately 50% demand in Element 7 or 16.

*25. (SOP-7.0 Step 4.1.14.8) Adjust LP LTDN PRESS PK 145 as necessary to provide maximum letdown flow.	LP LTDN PRESS PK-145 adjusted not to exceed 135 gpm flow on FI-150.	S / U
---	---	-------

CUE: FIVE MINUTES HAVE ELAPSED.

*26. (SOP-7.0 Step 4.1.14.9) After at least 5 minutes of flushing close RHR to LTDN HX HIK 142 and sample RHR for boron concentration	HIK-142 turned fully counter clockwise to 0% closed.	S / U
27. (SOP-7.0 Step 4.1.14.9) Requests Chemistry sample 'A' Train RHR	Contacts Chemistry via phone or gaitronics to sample 'A' train RHR. CUE: From Booth Operator Chemistry acknowledges the request for a sample of 'A' train RHR.	S / U

Terminate JPM when Boron sample has been requested.

STOP TIME

CRITICAL ELEMENTS: Critical Elements are denoted by an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-SOP-7.0, Version 103
2. FNP-1-SOP-2.1, Version 134
3. K/As: 005K1.04 RO-2.9 SRO-3.1
004A2.10 RO-3.9 SRO-4.2
005K5.09 RO-3.2 SRO-3.4

GENERAL TOOLS AND EQUIPMENT: NONE

Critical ELEMENT justification:

<u>ELEMENT</u>	<u>Evaluation</u>
1	NON Critical: Valve is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
2	CRITICAL: Completes part of the assigned task by establishing a portion of the mechanical line up of LP letdown.
3	NON Critical: Establishing Excess Letdown is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
4	NON Critical: Procedure flow path step, directing operator to next section.
Elements 5-15 are N/A if MCB operator aid is used to remove Letdown from service.	
5	NON Critical: Securing the Zinc Addition System is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow
6-7	NON Critical: Operations with PK-145 is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
8	CRITICAL: Isolates the Normal Letdown flow path so that flow may be obtained when Low Pressure letdown is aligned since operating pressure of normal letdown is greater than RHR pump discharge pressure.
9	NON Critical: These valves are not critical since normal letdown is isolated in the previous element.
10-11	NON Critical: Manually closing FK-122 is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
12-13	NON Critical: Adjusting seal injection flow is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
14-15	NON Critical: Procedure flow path step, directing operator to next section.
Elements 16-21 are N/A if SOP-2.1 Section 4.4 used to remove Letdown from service.	
16	Non Critical: PK-145 is opened in SOP-7.0 to borate RHR, it is not necessary to perform this step to isolate letdown.
17	CRITICAL: Isolates the Normal Letdown flow path so that flow may be obtained when Low Pressure letdown is aligned since operating pressure of normal letdown is greater than RHR pump discharge pressure.
18	NON Critical: These valves are not critical since normal letdown is isolated in the previous element.
19	NON Critical: Manually closing FK-122 is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow.
20	NON Critical: Adjusting seal injection flow is not critical to the mechanical alignment necessary to borate the RHR system via Low Pressure letdown flow
21	NON Critical: Letdown is isolate. Referring to SOP-2.1 is not necessary to complete RHR boration.
22	CRITICAL: Bypassing the demineralizers is critical to establishing the proper letdown flowpath to prevent diluting the demineralizer beds.
23	CRITICAL: Bypassing the VCT to the RHT's critical to establishing the proper letdown flowpath to prevent diluting the RCS.
24	CRITICAL: Completes part of the assigned task by establishing a portion of the mechanical line up of LP letdown.
25	CRITICAL: Completes part of the assigned task by establishing a portion of the mechanical line up of LP letdown.
26	CRITICAL: Completes part of the assigned task by establishing a portion of the mechanical line up of LP letdown.
27	NON Critical: Requesting action from another department not critical.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **BORATE 'A' TRAIN OF RHR**. The conditions under which this task is to be performed are:

- a. The CCW system is in operation and aligned per SOP-23.0.
- b. The Plant is in Mode 3.
- c. 'A' Train RHR is running and sample results indicate that RHR boron concentration is less than the cold shutdown boron concentration of 1000 ppm.
- d. Steps 4.1.1 through 4.1.13 of Section 4.1, Preparing 'A' Train RHR for RCS Cooldown from ECCS Standby Alignment, of FNP-1-SOP-7.0, have been completed.
- e. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will begin at step 4.1.14 of section 4.1 of FNP-1-SOP-7.0.

Your task is to borate 'A' Train of RHR per FNP-1-SOP-7.0, section 4.1 beginning at step 4.1.14.

f. Simulator JPM**CRO-MOD****TITLE: Energize Pressurizer Heaters and Start an Instrument Air Compressor**EVALUATION LOCATION: X SIMULATOR ONLYPROJECTED TIME: 20 MIN SIMULATOR IC NUMBER: IC-222 ALTERNATE PATH X TIME CRITICAL PRA **JPM DIRECTIONS:**

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Align the electrical distribution system to energize Pressurizer Heaters.
- Align the electrical distribution system to energize a Service Air Compressor.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Richard Ellis	Date: 05/16/14
NRC Approval	SEE NUREG 1021 FORM ES-301-2	

CONDITIONS

When I tell you to begin, you are to **Energize Pressurizer Heaters and Start an Instrument Air Compressor.**

The conditions under which this task is to be performed are:

- a. A Loss of Offsite Power has occurred.
- b. Attachment 2 of ESP-0.1, Reactor Trip Response is in progress.
- c. A pre-job brief is NOT required.

Your task is to energize pressurizer heaters and start an instrument air compressor beginning with step 1.6 of attachment 2 of ESP-0.1.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
_____ START TIME		
1. (step 1.6) Verify all RCP busses ENERGIZED.	Observes Bus Potential lights NOT LIT for A, B, and C busses. 0 KV indicated on VI2000AB 4160V BUS SEL.	S / U
2. (step 1.7) Check 1E 4160V bus ENERGIZED.	Observes Bus Potential lights NOT LIT for E bus. 0 KV indicated on VI2000AB 4160V BUS SEL. Proceeds to step 1.7. RNO.	S / U
3. (step 1.7.1 RNO) Place Handswitch for pressurizer heater group 1B in OFF.	Places handswitch for 1B PRZR HTR GROUP BACKUP in OFF. Observes Green light LIT and Red light NOT LIT.	S / U
4. (step 1.7.2 RNO) Open BKR EC08-1.	Places handswitch for EC08 to TRIP. Observes EC08 Green light Lit and Red light NOT LIT.	S / U
5. (step 1.7.3 RNO) Close BKR EE07-1 and EC10-1.	Places handswitch for EE07 to CLOSE. Observes EE07 Green light LIT and Red light NOT LIT. EC10-1 Red light LIT and Green light NOT LIT. AC PWR AVAIL NOT LIT for LC BUS 1C.	S / U
6. (step 1.7.4 RNO) Energize pressurizer heater group 1B as required.	Determines energizing 1B pressurizer heaters not possible due to failure to energize LC 1C and proceeds to step 1.8.	S / U
7. (step 1.8) Check 1D 4160V bus ENERGIZED.	Observes Bus Potential lights NOT LIT for D bus. 0 KV indicated on VI2000AB 4160V BUS SEL. Proceeds to step 1.8. RNO Proceeds to Step 1.10.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
8. (step 1.10.1) Place handswitch for pressurizer heater group 1A in OFF.	Places handswitch for 1A PRZR HTR GROUP BACKUP in OFF. Observes Green light LIT and Red light NOT LIT.	S / U
9. (step 1.10.2) Verify open BKR EA08-1.	Observes EA08 Green and Amber lights LIT and Red light NOT LIT.	S / U
*10. (step 1.10.3) Verify closed BKRs ED08-1 and EA09-1.	Places handswitch for ED08-1 to CLOSE. Observes ED08-1 Red light LIT and Green light NOT LIT. EA09-1 Red light LIT and Green light NOT LIT. AC PWR AVAIL LIT for LC BUS 1A.	S / U
*11. (Step 1.10.4) When pressurizer heater group 1A operation is desired then place HTR GRP 1A BLOCKING BYPASS SW to BYPASS.	Places PRZR HTR GRP 1A BLOCKING BYPASS SW in BYPASS. Observes switch is in BYPASS.	S / U
*12. (Step 1.10.5) If required than manually energize pressurizer heater group 1A	Places handswitch for 1A PRZR HTR GROUP BACKUP in ON or AUTO. Observes Red light LIT and Green light NOT LIT.	S / U
13. (Step 1.11) Verify 1C air compressor in service.	Observes 1C Air Compressor Green light LIT, Red light NOT LIT.	S / U
14. (Step 1.11.1) Verify 1C air compressor handswitch in AUTO after START/RUN.	Places handswitch for 1C Air Compressor to START/RUN and returns handswitch to AUTO. Observes 1C Air Compressor Green light LIT, Red light NOT LIT.	S / U
15. (Step 1.11.2) Verify 1C air compressor started.	Observes 1C Air Compressor Green light LIT, Red light NOT LIT. Proceeds to step 1.11 RNO.	S / U
16. (Step 1.11.a RNO) Verify 1C air compressor handswitch in OFF	Places handswitch for 1C Air Compressor in OFF. Observes handswitch in OFF.	S / U

EVALUATION CHECKLIST**ELEMENTS:****STANDARDS:****RESULTS:
(CIRCLE)**

NOTE: EXAMINEE MAY NOTE BKR DF13 is CLOSED and NOT perform Elements 17 and 18. Elements 17 and 18 are not required to be performed since BKR DF13 is already closed and 1H 4160V Bus is energized. Elements 17 and 18 would only be required if an SI signal were present and 1H bus needed to be energized. Examinee may elect to perform them in order to comply with the procedure as written with no consequence.

17.	(Step 1.11.b RNO) Place BKR DF13 SYNCH SWITCH in MAN	Places SYNC SWITCH for BKR DF13 In MAN. Observes sync switch in MAN.	S / U
18.	(Step 1.11.c RNO) Close BKR DF13	Places handswitch for DF13 to CLOSE. Observes Red light is LIT, Green light is NOT LIT.	S / U
*19	(Step 1.11.d RNO) IF 1H 4160 V bus energized then energize 1G 600 V LC from normal supply. BKR DH01 closed BKR EG02-1 closed	Observes AC PWR AVAIL lights LIT on 1H 4160V bus. Places the handswitch for DH01 to CLOSE. Observes Red light LIT, Green Light NOT LIT for BKRS DH01 and EG02-1. AC PWR AVAIL LIT for LC BUS 1G.	S / U
20.	(Step 1.11.e RNO) Start 1A Air Compressor	Observes 1A Air Compressor Red lit LIT, Green light NOT LIT.	S / U

STOP TIME

Terminate when 1A Air Compressor is verified started.

CUE: “Another operator will complete the remainder of Attachment 2.”

CRITICAL ELEMENTS: Critical Elements are denoted by an asterisk (*) before the element number.

GENERAL REFERENCES:

1.	FNP-1-ESP-0.1,	Version 34.0	
2.	K/As: 062A2.04	RO-3.1	SRO-3.4
	062A4.01	RO-3.3	SRO-3.1
	056AA1.31	RO-3.3	SRO-3.3
	056AA1.37	RO-3.4	SRO-3.5

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT

Evaluation

- | | |
|-------|--|
| 1-2 | NON Critical: Elements have no consequential actions performed. Checking power available to 4160V Non Vital Busses. |
| 3-6 | NON Critical: Elements have no consequential actions performed. Actions are attempting to align power to 1B Przr heater group which will be unsuccessful. |
| 7 | NON Critical: Element has no consequential action performed. Checking power available to 4160V Non Vital Bus. |
| 8-9 | NON Critical: Elements have no consequential actions performed. Alignment steps for energizing 600V LC 1A. |
| 10 | CRITICAL: Energizes the emergency section of 600V LC 1A to provide power for pressurizer heater group 1A and other vital loads. |
| 11-12 | CRITICAL: Task completion. |
| 13-15 | NON Critical: Elements have no consequential actions performed. Alignment steps for starting 1C Air compressor which will be unsuccessful. |
| 16-18 | NON Critical: Elements have no consequential actions performed. Alignment steps for energizing 600V LC 1G. |
| 19 | CRITICAL: Energizes 600V LC 1G to provide power for 1A Air compressor to restore Instrument Air for plant control. |
| 20 | NON Critical: Element has no consequential action performed. Starting 1A Air Compressor which automatically started when power was aligned to 600V LC 1G. |

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **Energize Pressurizer Heaters and Start an Instrument Air Compressor**. The conditions under which this task is to be performed are:

- a. A Loss of Offsite Power has occurred.
- b. Attachment 2 of ESP-0.1, Reactor Trip Response is in progress.
- c. A pre-job brief is NOT required.

Your task is to energize pressurizer heaters and start an instrument air compressor beginning with step 1.6 of attachment 2 of ESP-0.1.

g. Simulator JPM

CRO-127A	
TITLE: Perform actions of AOP-100 for a NI-42 failure.	
EVALUATION LOCATION: <u> X </u> SIMULATOR	
PROJECTED TIME: <u> 10 MIN </u>	SIMULATOR IC NUMBER: <u> IC- </u>
ALTERNATE PATH <u> </u> TIME CRITICAL <u> </u> PRA <u> </u>	

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Perform the actions of AOP-100. NI-42 will be removed from service.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	S. Jackson	Date: 5/16/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **perform actions of AOP-100 for an NI-42 failure.**

The conditions under which this task is to be performed are:

- a. The Plant is at 95% power with the ramp on hold for a calorimetric.
- b. N-42 upper detector current indicator has failed low.
- c. The actions of FF5, COMP ALARM ROD SEQ/DEV OR PR FLUX TILT, have already been taken.
- d. STP-37.0, Power Distribution Surveillance Plant Computer Inoperable, is in progress

Your task is to perform Section 1.12 of AOP-100 starting at step 1.

INITIATING CUE: "You may begin."

EVALUATION CHECKLIST

ELEMENTS:

STANDARDS:

RESULTS: (CIRCLE)

START TIME : _____

NOTE: Step 1 is an immediate operator action. The applicant may state that they are taking their immediate operator actions IAW AOP-100 for a Power Range failure. In this case, no actions are required. No CUE is necessary.

1. (step 1)
Verify rod control is in manual.

This step is N/A.

S / U

2. (step 2)
STOP any load change in progress.

Turbine DEH control console checked

S / U

Observes: The GO light is not illuminated.

ELEMENTS:

3. (step 3)
Within one hour, check P-10 interlock in the required state for existing unit conditions. (TS 3.3.1 Function 17e)

STANDARDS:

Checks BYPASS & PERMISSIVE S / U panel light.

Observes: NUCLEAR
ΔT POWER PERMISSIVE P-10 is lit.

OR

Checks TSLB 3.

Observes: At least 2 of 4 lights lit in column 5 for PR P10.

(CUE if required: “Shift Supervisor directs you to verify that the interlock functions are in their required state.”)

Shift Supervisor informed that P-10 interlock is in the required state per TS 3.3.1 Function 17e.

(CUE if required: “The Shift Supervisor acknowledges.”)

RESULTS:
(CIRCLE)

ELEMENTS:

4. (step 4)
 Within one hour, check the following interlocks are in the required state for existing unit conditions: (TS 3.3.1 Function 17b, c, d)
 P-7 P-8 P-9

STANDARDS:

Checks BYPASS & PERMISSIVE panel

Observes: Lights not lit for the following:

- LOW POWER TRIP BLOCK P-7
- LOW POWER LOW FLOW TRIP BLOCK P-8
- TURB TRIP-RX TRIP BLOCK P-9

OR

Checks TSLB 3

Observes: At least 2 of 4 lights lit in:

- column 4 for PR P8
- #column 5 for PR P10 (feeds P-7 interlock)
- column 9 for PR P9.

#Optional: May observe 1 of 2 lights lit in column 8 to check P-7 met

(CUE if required: “Shift Supervisor directs you to verify that the interlock functions are in their required state.”)

Shift Supervisor informed that P-7, P-8, P-9 interlocks are in the required state per TS 3.3.1 Function 17b, c, d).

(CUE if required: “The Shift Supervisor acknowledges.”)

5. (step 5)
 Check THERMAL POWER -
 GREATER THAN OR EQUAL TO 75%.

Thermal Power Checked

S / U

Observes: ~ 95% power.

RESULTS:
(CIRCLE)

S / U

ELEMENTS:

6. (step 6 of AOP-100)
Perform FNP-1-STP-122.0, QUADRANT
POWER TILT MEASUREMENT WITH AN
INOPERABLE EXCORE DETECTOR as
required by Tech Spec SR 3.2.4.2 within 12 hours
OR Reduce power to <75% thermal power
within 12 hours.

STANDARDS:

Shift Supervisor notified of
Technical Specification
requirements.

**(CUE if required: “The Shift
Supervisor acknowledges.”)**

RESULTS:

(CIRCLE)

S / U

- NOTE:**
- **FC5 PR CH DEV will clear when the comparator channel defeat switch is selected to N-42.**
 - **Elements 7, 8, 9 are bulleted and may be performed in any order.**
 - **Applicant may inform the Shift Supervisor or OATC of the alarms clearing. If required – (CUE: Shift Supervisor / OATC acknowledges)**

- * 7. (step 7.a.bullet #1 of AOP-100)
Defeat the rod stop bypass for N-42.

ROD STOP BYPASS switch taken S / U
to the BYPASS PR N42 position.

- * 8. (step 7.a.bullet #2 of AOP-100)
Defeat the channel comparator for N-42.

COMPARATOR CHANNEL
DEFEAT switch taken to the N42 S / U
position.

Observes: FC5 clear.

- * 9. (step 7.a.bullet #3 of AOP-100)
Defeat the upper and lower detector on the
detector current comparator drawer for
N-42.

For the DETECTOR CURRENT S / U
COMPARATOR:

UPPER SECTION taken to the
PRN42 position.

LOWER SECTION taken to the
PRN42 position.

Observes: FB4 and FB5 clear

ELEMENTS:

STANDARDS:

RESULTS:
(CIRCLE)

10. (step 7.b)
Reset rate trip on the 'A' drawer for the affected channel.

No action is required for this step since the RATE TRIP bistables should not have actuated.

S / U

Actions that the candidate may perform:

RATE MODE handswitch on the 'A' drawer for N-42 taken to RESET and spring returns to NORMAL.

Checks POSITIVE RATE TRIP light not LIT.

Observes: POSITIVE RATE TRIP light not LIT

11. (step 8)
Restore Tavg to program as necessary:

Tavg to Tref checked.

S / U

(CUE: "The extra operator will restore Tavg to program.")

12. (step 9)
IF N-44 is NOT failed, THEN place rods in AUTO, if desired.

Rods may be in MAN or AUTO. If required: **(CUE: "Shift Supervisor acknowledges.")**

S / U

13. (step 10)
IF N-43 has failed...

This step is N/A.

S / U

- 14 (step 11)
Monitor operable Power Range Channels on NR-45B.

NR-45B located and the remaining operable PR Channels are monitored.

S / U

Observes: Power as read (~95%)

15. (step 12)
Submit a condition report on the failed instrument channel, and notify the Work Week Coordinator (Maintenance ATL on backshifts) of the condition report.

Candidate states that they would submit a CR or request that a CR be written.

S / U

(CUE if required: "The Shift Supervisor acknowledges, and another operator will initiate the CR.")

ELEMENTS:

STANDARDS:

RESULTS:
(CIRCLE)

NOTE: Applicant may inform the Shift Supervisor or OATC of the alarms. If required – (CUE: Shift Supervisor / OATC acknowledges).

The applicant may state that Element 16 and 17 will be performed after an investigation of the failure or at another time since there is a 72 hr time limit. If this occurs then provide the following CUE: “Shift Supervisor directs you to continue with the procedure”.

<p>* 16. (step 13.a) Remove the AC Control Power Fuses on the ‘A’ drawer for N-42.</p>	<p>Candidate removes BOTH the control power fuses for N-42.</p> <p>Observes: FC1 and FC3 alarm</p>	<p>S / U</p>
<p>* 17. (step 13.b) Trip overtemperature delta-T bistables for affected channel.</p>	<p>Candidate requests that the OT delta-T bistables for N-42 are placed in TRIP.</p> <p>(CUE : “The Shift Supervisor acknowledges.”)</p>	<p>S / U</p>
<p>18. (step 14) IF the plant computer is inoperable OR annunciator FC4 is otherwise inoperable, THEN within one hour perform STP-37.0</p>	<p>This step is determined to be N/A.</p>	<p>S / U</p>
<p>19. (step 15) Notify the Shift Manager.</p>	<p>Notifies the Shift Manager (or informs the Shift Supervisor that the notification is required)</p> <p>(CUE: “Shift Manager acknowledges.”)</p>	<p>S / U</p>

Terminate when the Applicant notifies the Shift Manager.

STOP TIME: _____

CRITICAL ELEMENTS: Critical Element are denoted with an Asterisk (*) before the element number.

GENERAL REFERENCES:

1. PROCEDURE: FNP-1-AOP-100, v13.0
2. K/As: 015A2.01 - 3.5 / 3.9
015A3.02 – 3.7 / 3.9
015A4.03 - 3.8 / 3.9

GENERAL TOOLS AND EQUIPMENT:

Provide/Acquire:

1. A copy of FNP-1-AOP-100 section 1.12 and any other procedure will be provided via normally available Simulator procedures.

Critical ELEMENT justification:

STEP

Evaluation

- | | | |
|--------|--------------|---|
| 1 | Not critical | since this applies to N-44 only |
| 2 | Not critical | no load change in progress, no action required |
| 3-6 | Not critical | interlocks are in the required state or actions not required due to power level |
| 7-9 | CRITICAL | - Task objective, required to place N-42 in the required state to trip interlocks and remove the detector from service. |
| 10 | Not critical | – this step is not required to be performed. |
| 11 | Not critical | – an extra operator will perform this task. |
| 12, 13 | Not critical | – does not apply to N-42 |
| 14, 15 | Not critical | monitor and submit CR is not critical to task completion. |
| 16, 17 | CRITICAL | - to place bistables in the correct condition for a failed channel. Part of Tech Spec RAS. |
| 18, 19 | Not critical | Natural termination point of assigned task. |

COMMENTS:

CONDITIONS

When I tell you to begin, you are to **perform actions of AOP-100 for an NI-42 failure.**

The conditions under which this task is to be performed are:

- a. The Plant is at 95% power with the ramp on hold for a calorimetric.
- b. N-42 upper detector current indicator has failed low.
- c. The actions of FF5, COMP ALARM ROD SEQ/DEV OR PR FLUX TILT, have already been taken.
- d. STP-37.0, Power Distribution Surveillance Plant Computer Inoperable, is in progress

Your task is to perform Section 1.12 of AOP-100 starting at step 1.

h. Simulator JPM

CRO-346

TITLE: Align The Containment Spray System For The Post-Accident Recirculation Phase Of Operation

EVALUATION LOCATION: X SIMULATOR CONTROL ROOM PLANT

PROJECTED TIME: 10 MIN SIMULATOR IC NUMBER: IC-225

ALTERNATE PATH X TIME CRITICAL PRA

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. The actions of this task are intended to be performed on an Active Simulator in which the examinee may diagnose the correctness of system response to his/her actions and respond to any abnormal conditions which may arise.
3. Provide student with HANDOUT.
4. Allow student time to review control board.
5. Instructor will be provided to address alarms not related to evaluated task.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Correctly align The Containment Spray System For The Post-Accident Recirculation Phase Of Operation.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	S. Jackson	Date: 05/16/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **ALIGN THE CONTAINMENT SPRAY SYSTEM FOR THE POST-ACCIDENT RECIRCULATION PHASE OF OPERATION**. The conditions under which this task is to be performed are:

- a. Containment spray system is in operation following a LOCA.
- b. You are directed by Shift Supervisor to perform Step 10 of ESP-1.3.
- c. A pre-job brief is not required.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
------------------	-------------------	------------------------------

 START TIME

NOTE: Applicant may STOP both Containment Pumps based on Continuing Action Step 1. If this occurs, then Element 7 becomes a CRITICAL task.

1.	(step 10.1) Reset Phase B CTMT ISO. MLB-3 1-1 not lit MLB-3 6-1 not lit	Observes: MLB-3, 1-1 and 6-1 lights go out.	S / U
*2.	(step 10.2) Open containment spray pump containment sump suctions isolation valves. Q1E13MOV8826A, Q1E13MOV8827A Q1E13MOV8826B Q1E13MOV8827B	Handswitches for MOV8826A, MOV8827A , MOV8826B and MOV8827B taken to open. Observes: MOV8826A, MOV8827A, MOV8826B GREEN lights go out and RED lights light. MOV8827B GREEN light stays LIT.	S / U
3.	(step 10.2.1 RNO) CS RESET TRN A(B) containment spray signals – RESET (Annunciator EE4 clear)	Depresses CS RESET B TRN Observes: EE4 will already be clear	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*4. (step 10.2.1 RNO) CTMT SPRAY PUMP 1A(B) STOPPED in affected train.	Handswitch for 1B CS pump taken to STOP. Observes: 1B CS pump RED light goes out and GREEN light lights. FI-958B, CS FLOW goes to ZERO.	S / U
5. (step 10.2.2 RNO) Verify closed BOTH containment sump suction isolation valves in affected train Q1E13MOV8826B Q1E13MOV8827B	Handswitch for MOV8826B taken to CLOSE. Observes: MOV8826B RED light goes out and GREEN light lights.	S / U
NOTE: Only MOV8817A is CRITICAL in Element 6 as the 1B CS pump is NOT running.		
*6 (step 10.3) Close containment spray pump RWST suction isolation valves Q1E13MOV8817A Q1E13MOV8817B	Handswitch for MOV8817A & MOV8817B taken to close. Observes: MOV8817A & MOV8817B RED lights go out and GREEN lights light.	S / U
*7. (step10.4) WHEN containment spray aligned for recirc, THEN start containment spray pumps IF secured due to RWST level less than 4.5 ft. CS PUMP 1A(B)	This step is N/A OR Starts 1A CS pump. Observes RED Light LIT, GREEN light is NOT LIT, FLOW on FI 958A.	S / U
8. (step 10.5) [CA] WHEN containment spray recirculation flow has been established for at least 8 hours, AND containment pressure is less than 16 psig, THEN stop both CS PUMPs.	Reports to Shift Supervisor status of spray recirculation and requirements of step 10.5. (CUE: Shift Supervisor acknowledges)	S / U

STOP TIME _____

Terminate when all elements of this JPM are complete.

CRITICAL ELEMENTS: Critical Element are denoted with an Asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-1-ESP-1.3, Version 22
2. K/As: 026A4.01 – 4.5/4.3

GENERAL TOOLS AND EQUIPMENT:

1. FNP-1-ESP-1.3, Version 22 provided to the applicant in the Simulator.

Critical ELEMENT justification:

STEP

Evaluation

1. **Not critical**: perform previously in the procedure.
2. **Critical**: task objective. The 1A CS pump suction will be aligned to the Containment Sump. This allows for Iodine removal and Containment cooling.
3. **Not critical**: CS signal already reset in EEP-1
4. **Critical**: not securing the 1B CS pump will result in damage to the pump due to cavitation.
5. **Not critical**: MOV8827B is already closed thus no consequences if MOV8826B is not shut.
6. **Critical**: will cause loss of RWST level and possible air binding of 1A CS pump.
7. **Not critical** / **Critical**: this step is N/A unless the 1A CS pump stopped at the beginning of Step 10. Then it is required to be running to provide at least one train of CS Spray.
8. **Not critical**: continuing action step and is not due for another 8 hours & <16 psig in Containment. Natural termination point for the JPM.

COMMENTS:

CONDITIONS

When I tell you to begin, you are to **ALIGN THE CONTAINMENT SPRAY SYSTEM FOR THE POST-ACCIDENT RECIRCULATION PHASE OF OPERATION**. The conditions under which this task is to be performed are:

- a. Containment spray system is in operation following a LOCA.
- b. You are directed by Shift Supervisor to perform Step 10 of ESP-1.3.
- c. A pre-job brief is not required.

i. In-Plant JPM**SO-351 Modified**TITLE: **PERFORM A MODE 4 EMERGENCY START OF THE 2C DG.**EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM X PLANTPROJECTED TIME: 20 MIN SIMULATOR IC NUMBER: N/AALTERNATE PATH ____ TIME CRITICAL ____ PRA X**JPM DIRECTIONS:**

1. The actions of this task are to be **SIMULATED**.
2. Examinee will be provided a copy of SOP-38.1.
3. This Task is designed to be performed on 2C DG.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Perform a Mode 4 Emergency START of the 2C DG not to exceed two (2) start attempts.
- ENERGIZE the 2J 4160V AC Bus from the Diesel Local Control Panel.
 - **SAFETY significance: from the PRA-Human Reliability Analysis:**
 - **10.11 1DGCBOPCLOSE-H, OPERATOR FAILS TO MANUALLY CLOSE D/G OUTPUT BRKR**

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	S. Jackson	Date: 05/15/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **PERFORM A MODE 4 EMERGENCY START OF THE 2C DG.**

The conditions under which this task is to be performed are:

- a. A Loss of ALL AC has occurred on Unit 2.
- b. ALL 4160V AC ESF buses are **DE**-energized.
- c. The 2C Mode Selector Switch is in MODE 1.
- d. The 2C DG is the only DG available.
- e. Attempts to start the Diesel Generator from the EPB have been unsuccessful.
- f. No Damage to the DG has occurred.

Your task is to perform a Mode 4 Emergency Start of the 2C DG, AND close the output breaker to UNIT 2 from the Diesel Local Control Panel per FNP-0-SOP-38.1, Emergency Starting of a Diesel Generator, section 4.5.

INITIATING CUE: "You may begin."

EVALUATION CHECKLIST

<u>ELEMENTS:</u>	<u>STANDARDS:</u>	<u>RESULTS:</u> <u>(CIRCLE)</u>
START TIME: _____		
1. (step 4.5.1) Verify 2C MODE SELECTOR SWITCH in Mode 1 position.	Refers to Initial Conditions or calls the MCR. (CUE: “2C DG Mode Selector Switch is in Mode 1”)	S / U
2. (step 4.5.2) Check engine for any apparent damage caused during starting attempts.	Using initial conditions OR by performing a walk around of the diesel this task is satisfied. (CUE: “As you see it”)	S / U
3. (step 4.5.3) Verify at least one receiver greater than 90 psig.	CHECKS one or both air receiver pressure instruments. (CUE: “As you see it”)	S / U
4. (step 4.5.4) Prime fuel oil system using hand pump.	LOCATES and OPERATES the fuel priming pump by stroking back and forth until resistance is felt. (CUE: “You feel resistance”)	S / U
NOTE: a KEY IS NOT required to perform the below ACTION. If requested, provide the following CUE: “You are the DG Building System Operator and have the watchstation keys.”		
* 5. (step 4.5.5) Position Mode 4 selector switch to Mode 4 position.	ON the DG LCP, POSITION the Mode 4 selector switch to the MODE 4 position by turning the switch CLOCKWISE. OBSERVES that the RED MODE 4 LIGHT is LIT (CUE: “The switch operates as described, the RED light above the switch is LIT”)	S / U
6. (step 4.5.6.2) If aligning 2C DG to Unit 2, verify the following: - 2J 4160V bus is de-energized. - Supply breakers to 2G Normal supply, Q2R15BKRDG15 open. Alternate supply, Q2R15BKRDG01 open.	Utilizes initial conditions or calls the MCR to validate the 2H4160V bus is DE-Energized. (If required CUE: “The 4160V bus is de-energized and the bus supply breakers are open as required.”)	S / U

ELEMENTS:**STANDARDS:****RESULTS:**
(CIRCLE)

7. (step 4.5.7)
Verify Essential Protection Auxiliary Relay (86A)
 is reset. (on diesel local relay panel)

Checks RED light above 86A
 RELAY LIT.
 (CUE: “It is as you see it.”)

S / U

- * 8. (step 4.5.8)
Depress Engine Reset pushbutton (on diesel local
 control panel).

DEPRESS the Engine RESET
 pushbutton on the DGLCP.
 (If required CUE: “Alarm
 window 43 is clear.”)

S / U

CAUTION Attempting to start an engine prior to completion of the time delay will result in the engine trying to start with fuel racks closed, causing a loss of starting air.

NOTE: Attempting to start an engine prior to completion of the time delay will ROLL the DG BUT will NOT start, a Failure to START RELAY actuation would result.

Performing this iteration DOES NOT DAMAGE any equipment since the DG does not start. IF more than two (2) iterations occur (>2 start attempts), the JPM should be TERMINATED.

The reason is A181005 section 3.10 identifies EACH air receiver is capable of at least 5 start attempts without recharging (3 second start attempts with leakage of 36.6 psi/hr.); Therefore attempting to START the DG before the READY for AUTO START light LIT could result in bleeding down the air receiver too far to allow for subsequent attempts—ONLY ONE RE-ITERATION to element 11 (ONLY 2 start attempts) is permitted per step 4.5.11.1.

- * 9. (step 4.5.9)
 WHEN at least 100 seconds has elapsed since all
 engine shutdown signals have been reset (Engine
 Reset) THEN check Ready for Auto Start light
 illuminated on diesel local control panel.

Waits ~ 2 mins
 (CUE: “100 secs have elapsed.”)

S / U

CHECKS READY for AUTO
 Start light illuminated.
 (CUE: “The LIGHT is LIT”)

10. (step 4.4.10)
 Verify barring device is not inserted.

Observes that barring device
 (metal bar) is not engaged on the
 gear between the diesel and the
 generator.
 (CUE: “No barring device
 inserted”)

S / U

<u>ELEMENTS:</u>	<u>STANDARDS:</u>	<u>RESULTS:</u> <u>(CIRCLE)</u>
* 11. (step 4.5.11.1) Depress and hold START pushbutton.	Depresses and hold DG start pushbutton. (CUE: “Diesel starts”)	S / U
12. (step 4.5.11.2) WHEN diesel is running or start failure occurs, THEN release START pushbutton.	Releases DG star pushbutton (CUE: “Button is released”)	S / U
NOTE: Element 13 is ONLY CRITICAL if the applicant fails to start the engine on the first attempt and requires a second attempt.		
* 13. (step 4.5.11.3) IF diesel fails to start, THEN return to step 4.5.8	This step is N/A	S / U
14. (step 4.5.11.4.1) Adjust generator voltage to 4160V using AUTOMATIC VOLTAGE ADJUST switch.	Checks DG Voltage (CUE: “Voltage is 4150V”) ADJUSTS DG voltage by rotating the Automatic Voltage adjust switch CLOCKWISE to RAISE. (CUE: “Voltage is 4160V”)	S / U
15. (step 4.5.11.4.2) Adjust generator frequency to 60 Hz using SPEED CONTROL switch	CHECKS DG Frequency. (CUE: “Frequency is 61 Hz”) ADJUSTS DG frequency by rotating the SPEED CONTROL switch COUNTER-CLOCKWISE to LOWER. (CUE: “Frequency is 60 Hz.”)	S / U
* 16. (step 4.5.11.5.2) IF aligning the 2C DG to Unit 2, THEN energize the dead 2J 4160V AC Bus using the GEN BREAKER CONTROL SWITCH UNIT No. 2 on the diesel local control panel	CLOSES the output breaker by rotating the GEN BREAKER CONTROL SWITCH UNIT 2 CLOCKWISE to CLOSE. (CUE: “GREEN light is NOT LIT, RED light is LIT”)	S / U

ELEMENTS:**STANDARDS:****RESULTS:**
(CIRCLE)

17. (step 4.5.11.6)
IF DESIRED to shift control of diesel generator to the EPB, perform the following:

Applicant may call the MCR and ask if it is desired to shift control back to EPB. **(CUE: "Control Room states that it is NOT desired to shift control back to the MCR")**

S / U

- a. (step 4.5.11.6.1)
Verify 2C MODE SELECTOR SWITCH in Mode 1 position.

- b. (step 4.5.11.6.2)
Unlock the MODE 4 selector switch and select the OFF position.

18. (step 4.5.11.7)
Verify the 2C Diesel Generator is supplied from at least one SW pump.

CONTACT the MCR and report that the DG has been started and the output breaker is shut.
(CUE: "Control room acknowledges the start of the 2C DG")

S / U

STOP TIME: _____

Terminate when task has been reported as complete.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. PROCEDURE: FNP-1-SOP-38.1, V 17.0
2. K/As: 064A4.01 – 4.0 / 4.3
064A4.02 – 3.3 / 3.4
064A4.06 – 3.9 / 3.9

GENERAL TOOLS AND EQUIPMENT:

Provide/Acquire:

1. A copy of FNP-1-SOP-38.1, V17.

Critical ELEMENT justification:

<u>STEP</u>	<u>Evaluation</u>
1-2	Not critical: these conditions are established upon start of the task
3	Not critical: this step is a check step; condition is established upon the start of the task.
4	Not critical: failure to prime the fuel oil system should not prevent successful completion of this task.
5	CRITICAL- Required for task completion; Failure to perform this action would prevent any further successful actions.
6	Not critical: these conditions are established upon start of the task.
7	Not critical: this condition is established upon start of the task.
8-9	CRITICAL- Required for task completion; Failure to complete this action would prevent RESETING the DG S/D relay and this would in turn prevent the fuel racks from opening and simply deplete the available starting air; thus preventing future success.
10	Not critical: this condition is established upon the start of the task
11	CRITICAL- Required for task completion. Failure to press the start button would prevent the diesel from starting.
12	Not critical: not releasing the pushbutton has no consequences.
13	Not critical: step is N/A unless element 9 is not satisfied or some other error prevent the engine from starting. CRITICAL- If a previous Element was performed improperly and a second attempt is need to start the engine as this step will allow task completion.
14-15	Not critical: failure to establish proper speed/voltage would not prevent restoration of the ESF components.
16	CRITICAL- Required for task completion; Operation of this breaker completes the task and restores AC power to the ESF bus (PRA required action).
17	Not critical: this step is NOT applicable.
18	Not critical: Under the conditions of this task, the ESF sequencer would operate immediately upon closing the DG output breaker and automatically align Service water. THIS however is a natural termination point for this JPM.

COMMENTS:

CONDITIONS

When I tell you to begin, you are to **PERFORM A MODE 4 EMERGENCY START OF THE 2C DG.**

The conditions under which this task is to be performed are:

- a. A Loss of ALL AC has occurred on Unit 2.
- b. ALL 4160V AC ESF buses are **DE**-energized.
- c. The 2C Mode Selector Switch is in MODE 1.
- d. The 2C DG is the only DG available.
- e. Attempts to start the Diesel Generator from the EPB have been unsuccessful.
- f. No Damage to the DG has occurred.

Your task is to perform a Mode 4 Emergency Start of the 2C DG, AND close the output breaker to UNIT 2 from the Diesel Local Control Panel per FNP-0-SOP-38.1, Emergency Starting of a Diesel Generator, section 4.5.

INITIATING CUE: "You may begin."

j. In- Plant JPM**SO-Fire Pump**TITLE: **Start the MDFP and #2 DDFP locally**EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM X PLANTPROJECTED TIME: 15 MIN SIMULATOR IC NUMBER: N/A

ALTERNATE PATH ____ TIME CRITICAL ____ PRA ____

JPM DIRECTIONS:

1. All actions will be **SIMULATED**.
2. Provide student HANDOUT and procedure
3. Allow student time to review conditions and procedure.

TASK STANDARD: Upon successful completion of this JPM, the examinee will:

- Locally start a MDFP and #2 DDFP in response to a plant fire

Examinee:
Overall JPM Performance: Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)

EXAMINER: _____

Developer	S. Jackson	05/15/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **LOCALLY START THE MDFP AND #2 DDFP**. The conditions under which this task is to be performed are:

- a. The Fire Brigade is currently fighting a fire.
- b. #1 DDFP has tripped.
- c. The MDFP and #2 DDFP have failed to auto-start.
- d. A pre-job brief is not required.

You are being directed by the Shift Supervisor to perform the following using FNP-0-SOP-61.0:

1. locally start the MDFP starting at step 4.4
2. locally start the #2 DDFP starting at step 4.6

INITIATING CUE, "You may begin."

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
<u> </u> START TIME		
*1. (step 4.4.1) Place MDFP LOCAL/REMOTE switch to LOCAL.	Rotates switch to LOCAL position. (CUE: Switch is in LOCAL position.)	S / U
*2. (step 4.4.2) Depress START pushbutton.	Start button is depressed. (CUE: Start button is depressed, you hear the motor start.)	S / U
3. (step 4.4.3) Return LOCAL/REMOTE switch to REMOTE.	Rotates switch to REMOTE position. (CUE: the identified switch is as you described.)	S / U
4. (step 4.4.4) Place the hand switch controller for the jockey pump to STOP, to secure the jockey pump.	Hand switch placed to stop (CUE: Hand switch is in the STOP position)	S / U

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
5. (step 4.6.1) on #2 DDFP, verify the DDFP CLG WTR PRESS REG BYP valve throttled as follows: <ul style="list-style-type: none"> • IF starting #2 DDFP, THEN throttle open #2 DDFP COOLING WATER PRESSURE REGULATOR BYPASS, N1P43V0156, 45 degrees (valve is a 90 degree ball valve). 	Observes V0156 at 45 degrees. (CUE: the identified Valve is as you see it)	S / U
*6. (step 4.6.2) on #2 DDFP, place the DDFP local control panel selector switch to MAN A OR MAN B position.	Selector switch placed in MAN A or MAN B position. (CUE: the identified switch is as you described.)	S / U
7. (step 4.6.3) on #2 DDFP, IF necessary, THEN perform the following to verify the “BATT A CONNECTED” and “BATT B CONNECTED” lights are lit: <ul style="list-style-type: none"> • 4.6.3.1 At the local control panel, push the CIRCUIT BREAKER DC (AC) RESET pushbuttons for the following: <ul style="list-style-type: none"> ○ 4.6.3.1.1 AC mini breaker. ○ 4.6.3.1.2 DC mini breaker. (1 of 2) ○ 4.6.3.1.3 DC mini breaker. (2 of 2) ○ 4.6.3.2 Push the RESET pushbutton at the DDFP local control panel. 	Observes BATT A AND B CONNECTED lights lit (CUE: the identified LIGHTS ARE LIT)	S / U
*8. (step 4.6.4) on #2 DDFP, Depress and maintain depressed the ENGINE START pushbutton for a minimum of 10 seconds, or until the selected DDFP starts.	Depresses and holds start switch for 10 seconds. (CUE: Start button depressed, you hear the engine start)	S / U

STOP TIME

Terminate after both fire water pumps are running.

CRITICAL ELEMENTS: Critical Elements are denoted with an asterisk (*) before the element number.

GENERAL REFERENCES:

1. FNP-0-SOP-61.0, Ver 48.0
2. K/As: 086A3.01 - 2.9 / 3.3
086A4.01 - 3.3 / 3.3

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

<u>ELEMENT</u>	<u>Evaluation</u>
1-2	Critical: This is the assigned task, these elements start the MDFP.
3	NOT Critical: Returns switch to normal position, not required for pump to remain running.
4	NOT Critical: Jockey pump operation has no effect on ability to provide fire water.
5	NOT Critical: Check step only, no operation performed.
6	Critical: This aligns a starting battery to crank the engine.
7	NOT Critical: Check step only, no operation performed.
8	Critical: This is the assigned task, this element starts the #2 DDFP.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **LOCALLY START THE MDFP AND #2 DDFP**. The conditions under which this task is to be performed are:

- a. The Fire Brigade is currently fighting a fire.
- b. #1 DDFP has tripped.
- c. The MDFP and #2 DDFP have failed to auto-start.
- d. A pre-job brief is not required.

You are being directed by the Shift Supervisor to perform the following using FNP-0-SOP-61.0:

1. locally start the MDFP starting at step 4.4
2. locally start the #2 DDFP starting at step 4.6

k. In-Plant JPM.**SO-095B – UNIT 2**

TITLE: Align RHT To Drain To WHT

EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM X PLANTPROJECTED TIME: 10 MIN SIMULATOR IC NUMBER: N/A

ALTERNATE PATH ____ TIME CRITICAL ____ PRA ____

JPM DIRECTIONS:

1. All actions will be **SIMULATED**.
2. This JPM may be performed on UNIT 2 ONLY.
3. Provide student HANDOUT and procedure.
4. Allow student time to review conditions and procedure.

TASK STANDARD: Required for successful completion of this JPM:

- Complete the valve line up to drain the RHT to the WHT.

Examinee:	
Overall JPM Performance:	Satisfactory <input type="checkbox"/> Unsatisfactory <input type="checkbox"/>
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	S. Jackson	Date: 05/14/14
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to DRAIN 2A RECYCLE HOLDUP TANK (RHT) TO THE WASTE HOLDUP TANK (WHT) **on Unit 2**. The conditions under which this task is to be performed are:

- 2A RHT is not on service and all initial conditions have been met for draining it to the WHT (i.e., tank has remained idle for several days for fission gas decay).
- You are directed by the Unit Operator to drain 2A RHT to the WHT using the Preferred method using SOP-2.4.
- A pre-job brief is **NOT** required.

INITIATING CUE, “You may begin.”

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
START TIME		
1. (step 4.10.1.1) Verify 2A and 2B recycle evaporator feed pumps are in “local” and “pulled to lock”	DESCRIBES how to Verify 2A and 2B REV feed pumps are in “local” and “pulled to lock” verifying or placing in “local” and “pull to lock”. (CUE: “Switches (and indications) ARE as/respond as you expected/described”)	S / U
*2. (step 4.10.1.2) Close 2A recycle evaporator feed pump discharge Q2E21V295A(8567B) and 12B recycle evaporator feed pump discharge Q2E21V295B(8567A)	DESCRIBES how to Close 2A REV feed pump discharge V295A (8567B) and 2B REV feed pump disch V295B (8567A) by turning the handwheels clockwise. (CUE: “The valve(s) respond(s) as you expected/described”)	S / U
3. (step 4.10.1.3) Identify desired RHT to be drained: 2A RHT, 2B RHT or 2C RHT	REFERS to Initial condition page and Checks the block on the procedure for 2A RHT	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
4. (step 4.10.1.4) Check desired RHT <u>NOT</u> on service while draining.	<p>REVIEWS the Initial conditions</p> <p><u>ALTERNATIVELY:</u> LOCATES and describes how to CHECK the following is CLOSED by turning clockwise: 2-CVC-V-8554A(V284A) 2A RHT MAIN INLET ISO (IF NEEDED CUE: “The valve will not turn”)</p> <p>LOCATES and describes how to CHECK the following is LOCKED CLOSED by checking closed and lock installed: 2-CVC-V-8557A(V311A) 2A RHT EQUIPMENT DRAINS AND VLV LEAKOFF INLET ISO (IF NEEDED CUE: “The valve is locked and will not turn”</p>	S / U
5. (step 4.10.1.5) Verify closed ALL RHT outlet isolations: 2A RHT Q2E21V286A(8563A) 2B RHT Q2E21V286B(8563B) 2C RHT Q2E21V286C(8563C)	<p>DESCRIBES how to Close or verify closed RHT outlet isolation valves by turning clockwise: 2A RHT V286A(8563A), 2B RHT V286B(8563B), and 2C RHT V286C (8563C). (CUE: “The valve(s) respond(s) as you expected/described”)</p>	S / U
*6. (step 4.10.1.6) Open recycle evaporator feed pump casing drain valves Q2E21V598A and Q2E21V598B	<p>DESCRIBES how to Open REV feed pump casing drain valves V598A and V598B by turning handwheels counterclockwise. (CUE: “The valve(s) respond(s) as you expected/described”)</p>	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*7. (step 4.10.1.7) Throttle open the 2A RHT outlet isolation to establish the desired drain rate 2A RHT Q2E21V286A(8563A)	DESCRIBES how to Throttle open 2A RHT outlet isolation V286A (8563A) to establish the desired drain rate, by turning handwheel counter-clockwise. (CUE: “The valve(s) respond(s) as you expected/described and a drain rate is established as you described/expect”)	S / U

STOP TIME

Terminate when all elements of the task have been completed.

* **CRITICAL ELEMENTS:** Critical Elements are denoted with an Asterisk (*) preceding the element number.

GENERAL REFERENCES:

1. FNP-2-SOP-2.4, Version 61
2. K/As: 068K1.07 - 2.7 / 2.9

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

<u>STEP</u>	<u>Evaluation</u>
1	NOT Critical: Verifying components which are already in the required position.
2	CRITICAL: Task completion: required to be closed to properly drain the RHT and not drain other parts of the system.
3-4	NOT Critical: clerical part of task ensuring proper RHT is drained
5	NOT Critical: Verifying components which are already in the required position.
6	CRITICAL: Task completion: required to open valve to drain RHT.
7	CRITICAL: Task completion: required to throttle open to start the draining of the RHT.

COMMENTS:

CONDITIONS

When I tell you to begin, you are to DRAIN 2A RECYCLE HOLDUP TANK (RHT) TO THE WASTE HOLDUP TANK (WHT) **on Unit 2**. The conditions under which this task is to be performed are:

- a. 2A RHT is not on service and all initial conditions have been met for draining it to the WHT (i.e., tank has remained idle for several days for fission gas decay).
- b. You are directed by the Unit Operator to drain 2A RHT to the WHT using the Preferred method using SOP-2.4.
- c. A pre-job brief is **NOT** required.