a. Simulator JPM

CRO-065C

TITLE**: Perform An Emergency Boration**

EVALUATION LOCATION: __X__ SIMULATOR

PROJECTED TIME: __10 MIN__ SIMULATOR IC NUMBER: __IC-217__

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 emergency boration to the charging pump suction.
- Complete step 4 RNO of ESP-0.1 and align Letdown on service.
- Complete ESP-0.1 attachment 2 to align the RWST to the charging pump suctions.
- Increase charging flow to >92 gpm.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Aaron Forsha	Date: 2/11/13
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 at normal operating temperature.
b. CVCS is in operation with 1C charging pump running.
c. 1A BAT is on service, 1B BAT is in standby.
d. A Reactor Trip has occurred, and ESP-0.1, Reactor Trip Response, is in progress.
e. A pre-job brief is NOT required.

Your task is to complete the actions of ESP-0.1, beginning at step 4.

INITIATING **CUE**: "You may begin."

EVALUATION CHECKLIST

ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
____ START TIME		
Candidate will evaluate step 4 and determine there is one stuck rod. The RNO steps are below.		
1. (step 4.1 RNO) 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:
- NO flow will be observed after opening MOV8104 due to a clogged Boric Acid filter. It is likely that the candidate may perform a variety of the following actions after completing element 2:
  - Start a second BAT Pump (Repeat of element 1).
  - Evaluate that the normal emergency flow path is NOT available and perform RNO step 4.2.2, align manual emergency boration flowpath (Element 3).
  - Continue with or without noticing the inability to obtain boric acid flow through FI-110. (Element 4)
  - May use AOP-27.0 guidance (STEP 2-NOTE: and align flow through FCV113A&B to attempt to establish a flow path), the actions of AOP-27 are consistent with these elements.
- The Radside SO may be dispatched to investigate pumps, valves, local flow indicators or pressures. If so, the reports will be consistent with fully functional pumps with elevated discharge pressures; NO flow indicated locally on FI-110A. If Boric Acid filter DP directed to be checked, then inform the Control room that the D/P is **35 psid.**

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
2. (step 4.2.1 RNO) Align normal emergency boration flow path.	Open EMERG BORATE TO CHG PUMP SUCT MOV8104. **Observes** MOV8104 RED light is LIT.	S / U
3. (step 4.2.2 RNO) IF determined that Normal emergency flowpath is NOT available then align manual emergency boration flowpath.	Uses Gaitronics to contact Radside SO. Directs Opening of V185 per RNO step 4.2.2 of ESP-0.1.	S / U
- Directs Radside SO to open V185	**CUE from Booth operator: Radside SO acknowledges** **AFTER 1 minute: CUE from Booth operator: Radside operator reports V185 is open.**	
- OPENS FCV113A (may also open FCV113B while waiting on local actions per AOP-27)	OPENS FCV-113A. **Observes** FCV113A RED light is LIT.	

NOTE:
- Although not directed by this procedure, the candidate might raise Charging flow, and place PK-145 in manual at 50% demand prior to opening a letdown orifice isolation, to prevent Letdown pressure surges and temperature alarms (per operating procedure for letdown).
- ARP-1.4 DE1, which will come into alarm if the actions above are not taken, and would direct the adjustment of charging flow, if addressed.

4. (step 4.3.1 RNO) Verify 45 gpm letdown orifice in service.	OPEN LTDN ORIF ISO 45 GPM HV8149A. **Observes** HV8149A RED light is LIT.	S / U
5. (step 4.3.2 RNO) Verify 60 gpm letdown orifice in service.	OPEN LTDN ORIF ISO 60 GPM HV8149B or C. **Observes** HV8149B or C RED light is LIT.	S / U
6. (step 4.4.1 RNO) Verify charging flow greater than 40 gpm.	Adjust charging flow to greater than 40 gpm by manually opening FCV-122. **Observes** FI-122A reads >40 gpm.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
7. (step 4.4.2/3/4 RNO) Check emergency or manual emergency boration flow greater than 30 gpm.	Check emergency & manual boration flow greater than 30 gpm. **Observes** FI-110 and/or FI-113 indicate <30 gpm. **IF REQUESTED, CUE from Booth operator: RADSIDE SO reports FI-110A indicates ≤ 10 gpm.**	S / U

NOTE:
- Examinee will determine Boration flow not adequate and commence verifying Boration flow path per Attachment 2.
- Element 8 has two potential flowpaths dependent upon the actions taken above and the determination made by the candidate regarding the "aligned" flowpath. IF RNO column implemented, then element 8 may not be performed.

8. (ATT 2 step 1) Verify 1C CHG PUMP header valves open.	Verifies 1C CHG PUMP HDR valves open. **Observes** CHG PUMP SUCTION HDR ISO MOV 8132A, 8132B, 8133A & 8133B RED lights are LIT.	S / U
9. (ATT 2 step 2) Check boration flow adequate.	Determine that NO boration flow from any boration flow path is available. **Observes** FI-110 and FI-113 indicates ≤10 gpm. **IF REQUESTED, CUE from Booth operator: RADSIDE SO reports FI-110A indicates ≤ 10 gpm.**	S / U
* 10. (ATT 2 step 2 RNO) Align charging pump suction to RWST.	Open RWST TO CHG PMP valves LCV115B & D, Close VCT OUTLET ISO LCV115C & E. **Observes** LCV115B & D red lights are LIT, LCV115C & E GREEN lights are LIT.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
11. (ATT 2 step 3.1) Verify charging pump discharge flow path – ALIGNED.	Verify CHG PUMPS TO REGEN HX MOV8107 & MOV8108 open. **Observes** MOV8107 & 8108 RED lights are LIT.	S / U
12. (ATT 2 step 3.2) Verify only one charging line valve – OPEN.	Verify RCS NORMAL CHG LINE HV8146 OR RCS ALT CHG LINE HV8147 OPEN. **Observes** Q1E21HV8146 OR HV8147 RED light is LIT.	S / U

NOTE: Element 13 is critical; Although the necessary adjustments may have been performed as early as Element 4 (while placing letdown in service).

*	13. (ATT 2 step 3.3 RNO) Verify charging flow - GREATER THAN 92 gpm.	CHG FLOW FK 122 manually adjusted as necessary. **Observes** FI-122A indicates >92 gpm.	S / U

_____ STOP TIME

Terminate when flow rate has been determined/verified adequate.

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

GENERAL REFERENCES:

1. FNP-1-ESP-0.1, Version 32.0
2. Technical Specifications
3. K/As: 024AA2.02 RO-3.9 SRO-4.4
   024AA2.01 RO-3.8 SRO-4.1

GENERAL TOOLS AND EQUIPMENT:

1. None

Critical ELEMENT justification:

STEP **Evaluation**

1. Not critical since this course of action will not be successful.
2. Not critical since this course of action will not be successful.
3. Not critical Aligning manual emergency makeup is an alternative path that could

be taken, but is not critical since this course of action will not be successful.

4. Not critical**:** Verify 45 gpm letdown orifice in service is not critical since this will be addressed later in the procedure.
5. Not critical**:** Verify 60 gpm letdown orifice in service is not critical since this will be addressed later in the procedure.
6. Not critical since this flow is not sufficient for the required supply. However this is the step at which the required flow is likely to be achieved.
7. Not critical since this step is a check and improper evaluation alone does not constitute the critical step.
8. Not critical since these valves are open
9. Not critical since the BA filter is clogged.
10. **Critical:** Align charging pump suction to RWST since these MOVs are closed and this is required to align boration flow to the chg pump suctions.
11. not critical since these valves are open
12. not critical since one of these valves is open
13. **Critical:** Verify charging flow - GREATER THAN 92 gpm is a critical step since charging flow is low at the beginning and there is no requirement until now to increase flow to > 92 gpm until this step.

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 at normal operating temperature.
b. Chemical and Volume Control System is in operation with 1C charging pump running.
c. 1A BAT is on service, 1B BAT is in standby.
d. A Reactor Trip has occurred, and ESP-0.1, Reactor Trip Response, is in progress.
e. A pre-job brief is NOT required.

Your task is to complete the actions of ESP-0.1, beginning at step 4.

b. Simulator JPM

CRO-406A
TITLE: **Verify CTMT Isolation Phase "A" Is Actuated And Aligned**
EVALUATION LOCATION: __X__ SIMULATOR ONLY
PROJECTED TIME: __20 MIN__ SIMULATOR IC NUMBER: __IC-218__
ALTERNATE PATH __X__ TIME CRITICAL ___ PRA __X__

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:

- Verify CTMT Isolation Phase "A" Is Actuated and Aligned.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to perform **AUTOMATIC ACTIONS VERIFICATION.** The conditions under which this task is to be performed are:

a. A safety injection has occurred.
b. EEP-0 is in progress.
c. A pre-job brief is NOT required.

Your task is to perform Attachment 2 "Automatic Actions Verification", of EEP-0 starting at step 11.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
_____ START TIME		
1. (step 11.1) Verify PHASE A CTMT ISO actuated.	Checks MLB2 1-1 and MLB2 11-1 lights LIT. **Observes** both are not LIT.	S / U
2. (step 11.1) Actuate train "A" CTMT ISO PHASE A.	Train "A" CTMT ISO PHASE A hand switch placed to actuate. **Observes** nothing happens.	S / U

NOTE:

- The following B train components will be NOT be capable of being isolated requiring the A train equivalent to be closed:
  - MLB 2 15-1, Q1E21MOV8100 RCP SEAL WTR RTN ISO
  - MLB 2 19-3 QSV47HV3625 CONT RM HVAC SUPP (BOP)

√	A train	B train	system
	HV8112 - closed	HV8100 (can not be closed)	Seal Return (MCB)
	F001A/3A (start)	F001B/3B (start)	1A/B CONT RM FILTRATION RECIRC UNIT (BOP)
	HV3622 - closed	HV3623 - closed	COMPUTER RM HVAC RTN (BOP)
	HV3624 - closed	HV3625 (can not be closed)	CONT RM HVAC SUPP (BOP)
	F002A - (start)	F002B - (start)	CONT RM HVAC SUPP (BOP)
	HV3626 - closed	HV3627 - closed	COMPUTER RM HVAC SUPP
	HV3628 - closed	HV3629 – closed	CONT RM UTILITY EXH

3.	(step 11.2) Check all MLB 2 lights lit.	Observes some MLB 2 lights NOT LIT.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)

NOTE:
- **CRITICAL COMPONENTS are listed below and Annotated with # symbol in ELEMENT 4.**

*4.	(step 11.2 RNO) Verifies Phase A CTMT isolation using attachment 3.	For each light not LIT, the handswitch for the component is taken to the required position to ensure MLB 2 light LIT.	S / U

NOTE:
- THE BELOW CHART IS INTENDED TO BE USED AS AN EXAMINER AIDE.
- SHADED BOXES DESIGNATE THE INDICATING LIGHT IS INTIALLY LIT.
- If all MLB-2 lights for A train are LIT and all but 2 lights for B train are LIT, then all of the elements are considered sat. The table is provided as an enhancement, for the examiner, for marking which components have been manipulated.

	1	2	3	4	5	6	7	8	9	10
1	CTMT ISO PHASE A CLOSED	3657 CLOSED	3198A CLOSED	3772A CLOSED	8112 CLOSED	LCV1003 CLOSED	7126 CLOSED	CONT RM FILT FAN 1A ON	CONT RM PRZN FAN 1A ON	3622 CLOSED
2	3234A CLOSED	3660 CLOSED	3198D CLOSED	3772B CLOSED	8149A CLOSED	3377 CLOSED	3103 CLOSED	3104 CLOSED	3649A CLOSED	3624 CLOSED
3	P16V515 CLOSED	3318B CLOSED	2866C CLOSED	3772C CLOSED	8149B CLOSED	3360 CLOSED	8033 CLOSED	3765 CLOSED	3649B CLOSED	3626 CLOSED
4	P16V517 CLOSED	3999A CLOSED	2867C CLOSED	3443 CLOSED	8149C CLOSED	8871 CLOSED	8028 CLOSED	3766 CLOSED	3649C CLOSED	3628 CLOSED

	11	12	13	14	15	16	17	18	19	20
1	CTMT ISO PHASE A CLOSED	3658 CLOSED	3198B CLOSED	3196 CLOSED	8100 CLOSED	7136 CLOSED	3331 CLOSED		CONT RM FILT FAN 1B ON	CONT RM PRZN FAN 1B ON
2	3234B CLOSED		3198C CLOSED	3197 CLOSED	8152 CLOSED	3376 CLOSED	3332 CLOSED		3623 CLOSED	3627 CLOSED
3	P16V514 CLOSED	3318A CLOSED	2866D CLOSED	3067 CLOSED	8880 CLOSED	7150 CLOSED	3333 CLOSED		3625 CLOSED	3629 CLOSED
4	P16V516 CLOSED	3999B CLOSED	2867D CLOSED	3095 CLOSED	8860 CLOSED	8961 CLOSED	3334 CLOSED		8047 CLOSED	3659 CLOSED

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*4. CONTINUED		
1-2	TDAFWP STM SUPP WARMUP ISO (BOP)-Q1N12HV3234A	S / U
1-3	SW TO TURB BLDG ISO A TRN-Q1P16V515	S / U
1-4	SW TO TURB BLDG ISO B TRN-Q1P16V517	S / U
2-1	CTMT ATMOS TO R-11/12 ISO (BOP)-Q1E14HV3657	S / U
2-2	CTMT ATMOS TO R-11/12 ISO (BOP)-Q1E14MOV3660	S / U
2-3	CTMT ΔP ISO (BOP)-Q1E14MOV3318B	S / U
2-4	RX CAV CLG DMPR (BOP)-Q1E12HV3999A	S / U
4-1	CHEM ADD TO 1A SG ISO (BOP) Q1N25HV3772A	S / U
4-2	CHEM ADD TO 1B SG ISO (BOP)-Q1N25HV3772B	S / U
4-3	CHEM ADD TO 1C SG ISO (BOP)-Q1N25HV3772C	S / U
4-4	CCW FROM EXC LTDN/RCDT HXS-Q1P17HV3443	S / U
5-1 (#)	RCP SEAL WTR RTN ISO-Q1E21MOV8112	S / U
5-2	LTDN ORIF ISO 45 GPM-Q1E21HV8149A	S / U
5-4	LTDN ORIF ISO 60 GPM-Q1E21HV8149C	S / U
6-2	CTMT SUMP DISCH (BOP)-Q1G21HV3377	S / U
6-3	CTMT SUMP RECIRC (BOP) Q1G21HV3380	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*4. CONTINUED		
7-1	RCDT VENT LINE ISO-Q1G21HV7126	S / U
8-1 (# OR 19-1)	1A CONT RM FILTRATION RECIRC UNIT (BOP)-QSV49F001A/3A	S / U
8-3	RCS LOOPS 2 & 3 SAMPLE ISO (BOP)-Q1P15HV3765	S / U
9-1 (# or 20-1)	1A CONT RM PRZN FILTER UNIT (BOP)-QSV49F002A	S / U
10-1 (# or 19-2)	COMPUTER RM HVAC RTN (BOP)-QSV47HV3622	S / U
10-2 (#)	CONT RM HVAC SUPP (BOP)-QSV47HV3624	S / U
10-3 (# or 20-2)	COMPUTER RM HVAC SUPP (BOP)-QSV47HV3626	S / U
10-4 (# or 20-3)	CONT RM UTILITY EXH (BOP)-QSV49HV3628	S / U
BEGIN B TRAIN		
15-1 (Unable To Close and Remain Closed)	RCP SEAL WTR RTN ISO Q1E21MOV8100 **NOTE: Valve will stroke closed, but will IMMEDIATELY re-open.**	S / U
19-1 (# or 8-1)	1B CONT RM FILTRATION RECIRC UNIT (BOP) QSV49F001B/3B	S / U
19-2 (# or 10-1)	COMPUTER RM HVAC RTN (BOP) QSV47HV3623	S / U
19-3 (Unable to Close)	CONT RM HVAC SUPP (BOP) QSV47HV3625 **NOTE: Handswitch is disabled.**	S / U
20-1 (# or 9-1)	1B CONT RM PRZN FILTER UNIT (BOP) QSV49F002B	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
20-2 (# or 10-3)	COMPUTER RM HVAC SUPP (BOP) QSV47HV3627	S / U
20-3 (# or 10-4)	CONT RM UTILITY EXH (BOP) QSV49HV3629	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-EEP-0, Version 44.0
2. K/As: 013A4.01 RO-4.5 SRO-4.8

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1	**NOT Critical:** Actions not required to complete task successfully.
2	**NOT Critical:** Action will be unsuccessful, and thus not required to complete task successfully. An alternate path will be successful.
3	**NOT Critical:** Actions not required to complete task successfully.
4	**Critical:** Task completion: A TRAIN: 2 fans must be started and 22 valves/dampers must be manually closed to complete actions which should have automatically occurred for a Phase A containment isolation. OR for B Train: 2 fans must be started and 3 valves/dampers manually closed which should have automatically occurred for a Phase A containment isolation. Only one set of valves/fans on each train is critical.

COMMENTS:

NONE

HANDOUT

CONDITIONS

When I tell you to begin, you are to perform **AUTOMATIC ACTIONS VERIFICATION.** The conditions under which this task is to be performed are:

a. A safety injection has occurred.
b. EEP-0 is in progress.
c. A pre-job brief is NOT required.

Your task is to perform Attachment 2 “Automatic Actions Verification”, of EEP-0 starting at step 11.

c. Simulator JPM

CRO-333C

TITLE: **Perform The Required Actions For Transfer to Simultaneous Cold Leg and Hot Leg Recirculation**

EVALUATION LOCATION: X SIMULATOR ONLY

PROJECTED TIME: 15 MIN SIMULATOR IC NUMBER: IC-219

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:

- Perform required actions to establish Cold and Hot Leg Recirculation.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **PERFORM THE REQUIRED ACTIONS FOR TRANSFER TO SIMULTANEOUS COLD LEG AND HOT LEG RECIRCULATION.** The conditions under which this task is to be performed are:

a. A safety injection is in progress following a Large Break LOCA.
b. The 1A and 1B RHR pumps and the 1A and 1C charging pumps are running in the cold leg recirculation alignment.
c. Seven and one-half hours have passed since the LOCA event started.
d. The 1B Chg Pump is aligned to A train.
e. A pre-job brief is NOT required.

Your task is to align ECCS for Transfer To Simultaneous Cold Leg and Hot Leg Recirculation starting at Step 1 of ESP-1.4.

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
	_____ START TIME		
1.	(step 1.1) Verify A(B) RHR HX TO RCS COLD LEGS ISO MOV8888A and 8888B closed.	Handswitches for MOV8888A & B are taken to CLOSE. **Observes** red lights out and green lights lit.	S / U
2.	(step 1.1) Open RHR TO RCS HOT LEGS XCON MOV8887A and 8887B.	Handswitches for MOV8887A & B are taken to OPEN. **Observes** green lights out and red lights lit.	S / U
3.	(step 1.1) Open RHR TO RCS HOT LEGS ISO MOV8889.	Handswitch for MOV8889 taken to OPEN. (MOV8889 will not open) **Observes** green light lit.	S / U
	NOTE: Either 8887A or 8887B closed will satisfy the critical task		
*4.	(step 1 RNO) Close RHR TO RCS HOT LEGS XCON MOV8887A and 8887B	Handswitches for MOV8887A & B are taken to CLOSE. **Observes** red lights out and green lights lit.	S / U
5.	(step 1 RNO) Verify closed RHR TO RCS HOT LEGS ISO MOV8889	Light for MOV8889 checked. **Observes** green light lit.	S / U

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
NOTE: Either 8888A or 8888B Open will satisfy the critical task			
*6.	(step 1 RNO) Open A(B) RHR HX TO RCS COLD LEGS ISO MOV8888A and 8888B.	Handswitches for MOV8888A & B are taken to OPEN. **Observes** green lights out and red lights lit.	S / U
NOTE: Either elements 7-12 OR 13-16 will satisfy the critical task.			
*7.	(step 2.1) Stop 1A Chg Pump.	Handswitch for 1A Chg Pump taken to OFF. **Observes** green light lit, amps fall to 0 amps.	S / U
NOTE: Step 2.2 will be evaluated by the student as N/A.			
*8.	(step 2.3) Close HHSI TO RCS CL ISO valves MOV8803A and B	Handswitches for HHSI TO RCS CL ISO valves MOV8803A & B taken to CLOSE. **Observes** green lights lit.	S / U
*9.	(step 2.4) Open CHG PUMP RECIRC TO HOT LEGS valve MOV8886.	Handswitch for MOV8886 taken to OPEN. **Observes** green light out and red light lit.	S / U
*12.	(step 2.5) Start either 1A or 1B Chg Pump.	Handswitch for 1A or 1B Chg Pump taken to START. **Observes** red light lit, amps rise, flow increases.	S / U
*13.	(step 3.1) Stop 1C Chg Pump	Handswitch for 1C Chg Pump taken to OFF. **Observes** green light lit, amps fall to 0 amps.	S / U
*14.	(step 3.2) Close CHG PUMP RECIRC TO RCS COLD LEGS valve MOV8885	Handswitch for MOV8885 taken to CLOSE. **Observes** green light lit.	S / U
*15	(step 3.3) Open CHG PUMP RECIRC TO RCS HOT LEGS valve MOV8884	Handswitch for MOV8884 taken to OPEN. **Observes** red light lit.	S / U
*16.	(step 3.4) Start 1C Chg Pump	Handswitch for 1C Chg Pump taken to START. **Observes** red light lit, amps rise, flow increases.	S / U

EVALUATION CHECKLIST

ELEMENTS:		STANDARDS:	RESULTS: (CIRCLE)
17.	(step 4) Check at least one train of LHSI aligned to the hot legs and at least one train HHSI aligned to cold legs OR at least one train of LHSI aligned to cold legs and at least one train HHSI aligned to hot legs.	Alignment checked for proper LHSI and HHSI line-up.	S / U
18.	(step 5) Verify SI flow stable	Flow checked on FI-943, 940, HHSI Flow A (B) train recirc flow and FI-605A/605B RHR HDR flow.	S / U

____ STOP TIME

Terminate JPM after SI flow verified stable.

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

GENERAL REFERENCES:

1. FNP-1- ESP-1.4, Rev. 16.0
2. K/A: 006A4.07 RO-4.4 SRO-4.4
   011EA1.11 RO-4.2 SRO-4.2

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1-3	NON Critical: System alignment and discovery of failed component MOV8889. The alignment of these components will not affect examinees ability to establish Low Head Cold leg Recirculation.
4	**CRITICAL:** Closing one MOV-8887A OR B is required for train separation.
5	NON Critical: MOV8889 is failed closed.
6	**CRITICAL:** Re-opening MOV8888A OR MOV8888B will establish low head cold leg recirculation.
7-12	**CRITICAL:** Elements 7-12 stops the charging pump and realigns flow to hot leg. Since the flow is secured during realignment securing the pump prevents damage to the pump. This establishes High Head Hot Leg Recirculation.
13-16	**CRITICAL:** Elements 13-16 stops the charging pump and realigns flow to hot leg. Since the flow is secured during realignment securing the pump prevents damage to the pump. This establishes High Head Hot Leg Recirculation.
17	NON Critical: Verification step only no action taken
18	NON Critical: Indication verification step only no action taken

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **PERFORM THE REQUIRED ACTIONS FOR TRANSFER TO SIMULTANEOUS COLD LEG AND HOT LEG RECIRCULATION.** The conditions under which this task is to be performed are:

a. A safety injection is in progress following a Large Break LOCA.
b. The 1A and 1B RHR pumps and the 1A and 1C charging pumps are running in the cold leg recirculation alignment.
c. Seven and one-half hours have passed since the LOCA event started.
d. The 1B Chg Pump is aligned to A train.
e. A pre-job brief is NOT required.

Your task is to align ECCS for Transfer To Simultaneous Cold Leg and Hot Leg Recirculation starting at Step 1 of ESP-1.4.

d. Simulator JPM

CRO-043A with high vibrations
TITLE: **Start the 1C RCP**
EVALUATION LOCATION: __X__ SIMULATOR ONLY
PROJECTED TIME: __15 MIN__ SIMULATOR IC NUMBER: __IC-220__
ALTERNATE PATH __X__ 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:

- Startup the 1C RCP per FNP-1-SOP-1.1
- Recognize RCP trip criteria being exceeded and
- Trip the 1C RCP.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **START the 1C RCP**. The conditions under which this task is to be performed are:

a. The Plant is in Mode 3 with RCS temperature at ~ 360 °F.
b. A bubble is established in the Pressurizer.
c. 1A and 1B RCPs are running.
d. RCS pressure is ~ 420 psig.
e. 1C RCP was secured to add oil to the upper reservoir. The oil addition is now complete.
f. Steps 4.3.1 through 4.3.10 of FNP-1-SOP-1.1 have been completed.
g. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will start at step 4.3.11 to start the 1C RCP.

Your task is to continue the startup of the 1C RCP per SOP-1.1, starting at Step 4.3.11.

INITIATING **CUE**, "You may begin."

EVALUATION CHECKLIST

ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
_____ START TIME		
*1. (step 4.3.11) Start the 1C RCP oil lift pump.	Handswitch for oil lift pump for 1C RCP taken to START. **Observes** the red indicating light comes on.	S / U
2. (step 4.3.12) Verify 1C RCP SEAL LEAKOFF VALVE Q1E21HV-8141C is open.	Handswitch indication for HV-8141C checked. **Observes** valve position indicator red light is lit.	S / U
3. (step 4.3.13) Verify 1C RCP No. 1 seal leakoff flow rate is within the limits of Figure-1	Seal leakoff flow rate determined on PI-154A to be ~ 375 psig and FI-154A blue pen reads ~ 0.5 gpm. **Evaluates** Figure-1 conditions SAT.	S / U
4. (step 4.3.14/15) Verify that DC4, SEAL WTR INJ FLTR HI D/P and DD1, RCP SEAL INJ FLOW LO are clear.	Checks DC4 & DD1. **Observes** the annunciators are not lit.	S / U
5. (step 4.3.16) Verify all RCP No. 1 seal DPs are greater than 210 psid.	PI-156A, 155A, and 154A indication observed to be greater than 210 psid.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
6. (step 4.3.17) Verify that DC3, RCP #1 SEAL LO D/P is clear.	Checks DC3 and **Observes** the annunciator is not lit.	S / U
7. (step 4.3.18) Verify oil lift pump for 1C RCP has been running for at least two minutes and is producing adequate pressure.	Verifies at least two minutes has elapsed. **Observes** the white indicating light is on above the 1C RCP oil lift pump handswitch.	S / U
NOTE: High Vibration alarm will come in when Flow reaches 100%		
*8. (step 4.3.19) Start 1C RCP.	Pump handswitch placed to start with red handswitch indication. **Observes** FI-434/435/436 for increasing flow rate, then the flow indicators stabilize at ~ 115 %.	S / U
9. (step 4.3.20) Verify 1C RCP amperage decreases to normal operating range	1C RCP AMPMETER checked to indicate ~ 840 amps.	S / U
10. (step 4.3.21) Verify EF3, 1C RCS LOOP FLOW LO or 'C' RCP BKR OPEN annunciator is clear.	Checks and **Observes** the annunciator is not lit.	S / U
NOTE: Applicant may not have enough time to stop RCP oil lift pump if HIGH Vibration alarms come in before 1 minute elapsed. Leaving this pump running has no detrimental effect.		
11. (step 4.3.22) Stop the oil lift pump for 1C RCP after at least one minute of operation.	1C RCP Oil Lift Pump handswitch taken to stop. **Observes** the pump breaker indicator green light lit.	S / U
12. Responds to annunciator HH4, RCP VIB TRBL	Acknowledges annunciator(s) AND references ARP for HH4	S / U
13. (step 1 of HH4) Monitor RCS flow, subcooling conditions and RCP run current to determine if low NPSH conditions exist.	**Observes** RCS flow, subcooling, and RCP current and determines NPSH is adequate.	S / U
14. (step 2 of HH4) Monitor seal injection flow to insure a seal problem is not causing the increased vibration.	**Observes** Seal injection flows and trends and determines no problems.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
15. (step 3 of HH4) Monitor RCP bearing temperatures.	On plant computer observes RCP bearing temperatures.	S / U
CUE: After dispatched provide the following report. "1C RCP shaft vibration is reading 21 MILS and slowly increasing, frame vibration is reading 3.5 MILS and slowly increasing."		
16. (step 4 of HH4) Dispatch appropriate personnel to the 139' EPR to observe vibration monitoring equipment to determine affected pump, vibration level, and rate of increase.	Dispatches SSS or Radside to investigate vibration readings.	S / U
17. (step 5 of HH4) IF Westinghouse has not been previously notified of an abnormal vibration on a RCP, THEN notify Westinghouse of the RCP vibration. (Ref. Westinghouse Infogram IG95008A)	Notifies SSS or Shift Supervisor to make appropriate notifications.	S / U
*18. (step 6 of HH4) IF shaft vibration is 15 MILS AND the rate of increase in vibration exceeds 1 MIL per hour OR shaft vibration under any conditions exceeds 20 MILS, THEN perform the following: • Stop the affected RCP.	Recognize conditions exceed RCP trip criteria and secures 1C RCP **Observes** the pump breaker indicator green light lit and amps decrease to zero.	S / U

_____ STOP TIME

Terminate when 1C RCP is secured.

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

GENERAL REFERENCES:

1. FNP-1-SOP-1.1, Version 47.2
2. FNP-1-UOP-1.1, Version 94.3
3. FNP-1/2-SOP-2.1; Reference only, no steps or actions contained in the SOP.
4. FNP-1-ARP-1.8, Version 35.2
5. K/As: 003A1.01 RO-2.9 SRO-2.9
   003A2.02 RO-3.7 SRO-3.9

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1	**Critical:** Task completion: required to start the 1C RCP oil lift pump for successful completion of the task. In the plant if this is not done then the RCP amps will be higher than normal and a possible RCP trip could occur.
2	**NOT Critical:** Verifying components which are already in the required position.
3-6	**NOT Critical:** Verifying flows are within limits and alarms are cleared prior to starting the RCP.
7	**NOT Critical:** Verifying RCP oil lift pump white light is lit. This occurs w/i 2 minutes after the pump is started.
8	**Critical:** Task completion: This starts the 1C RCP which is the task at hand.
9-10	**NOT Critical:** to check alarms are clear and amps decrease.
11	**NOT Critical:** stopping the oil lift pump is not critical in this situation since there are no adverse affects to not stopping the oil lift pump and it is more important to stop the running RCP with high vibrations.
12	**NOT Critical:** Responding to the alarm is not critical as long as the correct actions are taken.
13-15	**NOT Critical:** Plant conditions observed have no bearing on vibration condition
16	**NOT Critical:** Dispatching an operator to obtain information that provides the decision point to secure the RCP. Examine may choose to secure RCP before receiving this data.
17	**NOT Critical:** Notification step only
18	**Critical:** Secures RCP to prevent further damage.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **START the 1C RCP**. The conditions under which this task is to be performed are:

a. The Plant is in Mode 3 with RCS temperature at ~ 360 °F.
b. A bubble is established in the Pressurizer.
c. 1A and 1B RCPs are running.
d. RCS pressure is ~ 420 psig.
e. 1C RCP was secured to add oil to the upper reservoir. The oil addition is now complete.
f. Steps 4.3.1 through 4.3.10 of FNP-1-SOP-1.1 have been completed.
g. The pre-job brief that is required will be done in a briefing room and when the pre-job brief is concluded, you will start at step 4.3.11 to start the 1C RCP.

Your task is to continue the startup of the 1C RCP per SOP-1.1, starting at Step 4.3.11.

e. Simulator JPM

CRO-239
TITLE: **Align Service Water to the AFW System**
EVALUATION LOCATION: __X__ SIMULATOR ONLY
PROJECTED TIME: __15 MIN__ SIMULATOR IC NUMBER: __IC-221__
ALTERNATE PATH ___ 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 service water to AFW pumps
- Start 1A MDAFW pump

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **ALIGN SERVICE WATER TO THE AFW SYSTEM, THEN START THE 1A or 1B MDAFW PUMP.** The conditions under which this task is to be performed are:

a. Just entered ESP-1.2, Post LOCA Cooldown and Depressurization.
b. Foldout page criteria has been met to Align AFW pumps suction to Service Water.
c. CST level is falling rapidly due to a tank rupture.
d. The 1A / 1B MDAFW and TDAFW pumps were secured due to the onset of cavitation.
e. A pre-job brief is NOT required.

Your task is to align service water to the AFW system, then start the 1A or 1B MDAFW pump per ESP-1.2 foldout page criteria.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
_____ START TIME		
NOTE: BOP keys are labeled for inventory purposes only, any key will fit any valve on BOP.		
1. (per Note) Obtain the keys for MOV-3209A and MOV-3209B.	Keys obtained. NOTE: Keys for BOP valves on Simulator are located outside the MCR, going towards the BOP, in a key locker on the side of the chart rack.	S / U
2. (Step 4.7.1) Notify Shift Chemist that SW will be added to the steam generators.	Shift Chemist is called and informed that SW will be supplied to the steam generators. (**CUE from Booth operator:** The Shift Chemist acknowledges.)	S / U
3. (step 4.7.2) Verify the service water system is in operation.	Service water system checked. **Observes** bus power is available, the pump breakers are closed, and header pressure is >70psig.	S / U
*4. (step 4.7.3) Open MOV-3209A.	Key placed in switch for MOV-3209A and taken to open. **Observes** Red light lit and Green Light out.	S / U
*5. (step 4.7.3) Open MOV-3209B.	Key placed in switch for MOV-3209B and taken to open. **Observes** Red light lit and Green Light out.	S / U
*6. (step 4.7.4) Open service water to MDAFW pump 1A MOV-3210A.	Handswitch for MOV-3210A taken to open. **Observes** Red light lit and Green Light out.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*7. (step 4.7.4) Open service water to MDAFW pump 1B MOV-3210B.	Handswitch for MOV-3210B taken to open. **Observes** Red light lit and Green Light out.	S / U
*8. (step 4.7.4) Open service water to TDAFW pump MOV-3216.	Handswitch for MOV-3216 taken to open. **Observes** Red light lit and Green Light out.	S / U
9. (step 4.7.4.1) IF necessary to align TDAFWP suction from B Train service water, THEN perform the following:	Determines this is NOT necessary	S / U
10. (step 4.7.5) IF required, THEN place AFW system in operation per Section 4.1 or 4.3 of this SOP.	Operator goes to section 4.1 of SOP-22 for MDAFW pump start-up	S / U
11. (step 4.1.1) Verify 1A or 1B MDAFWP SUCT PRESS LO annunciator clear for the MDAFWP to be started. • JK1, 1A MDAFWP SUCT PRESS LO clear. • JK2, 1B MDAFWP SUCT PRESS LO clear.	Operator checks JK1 and JK2 not in alarm. **Observes** JK1 and JK2 white lights not lit.	S / U

NOTE: Depending on plant conditions, an AFW Auto-Start signal may be present. Use of the MCB placard (Figure 3 of SOP-22) will be required to reset this signal. The student may elect to take all three handswitches to RESET per the guidance below. However, only MDAFWP FCV 3227 RESET A TRN **and/or** MDAFWP FCV 3227 RESET B TRN will be required to be taken to RESET if its associated handswitch WHITE light is lit. Taking the handswitch(es) to RESET will cause the associated WHITE light(s) to go out and allow 3227A/B/C to be closed in element 12.

Placard on MCB:

1. Momentarily place the following handswitches in RESET:

- **MDAFWP FCV 3227 RESET A TRN**
- **MDAFWP FCV 3227 RESET B TRN**
- **TDAFWP FCV 3228 RESET**

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
12. (step 4.1.2) Fully close MDAFWP TO 1A, 1B and 1C SG FLOW CONT HIC 3227AA, BA and CA (0% demand).	Operator adjusts HIC 3227AA, BA and CA to 0% demand.	S / U
13. (step 4.1.3) Verify in the MOD position: • MDAFWP TO 1A, 1B and 1C SG Q1N23HV3227A, B and C • MDAFWP to 1A/1B/1C SG B TRN FCV3227	Operator checks 3227A, B, and C in MOD position. Operator checks MDAFWP to 1A/1B/1C SG B TRN FCV3227 hand switch in MOD position	S / U
*14. (step 4.1.4) Verify that a startup transient is indicated on the pump motor ammeter and that pump discharge pressure increases for the selected MDAFWP to be started. • **Start** 1A/1B MDAFWP	Operator rotates 1A/1B pump start switch to start position and releases switch. **Observes** Red light lit, starting current on II3305A/B increases and discharge pressure on PI3213A/B rising	S / U

Terminate JPM after one MDAFW Pump is running.

_____ STOP TIME

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

GENERAL REFERENCES:

1. FNP-1-SOP-22.0, Version 68.4
2. FNP-1-ESP-1.2, Version 24
3. K/As: 061A1.05 RO-3.6 SRO-3.7
   009EA1.11 RO-4.1 SRO-4.1
   009EA2.39 RO-4.3 SRO-4.7

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1	NON Critical: Valves in element 4 and 5 are operated with these keys but getting the key is not critical.
2	NON Critical: Notification step only

3	NON Critical: Check step only no actions required
4-8	**CRITICAL:** Completes part of the assigned task by establishing the mechanical line up of Service Water the AFW pump suctions.
9	NON Critical: Evaluation step, even if evaluated incorrectly has no consequence.
10	NON Critical: Procedure flow path step, directing operator to next section.
11	NON Critical: Check step only no actions required
12	NON Critical: Valves will already be nearly closed and failure to fully close them would have no adverse effects on the plant.
13	NON Critical: Check step only no actions required
14	**CRITICAL:** Starting one MDAFW pump is part of the assigned task and therefore critical. Observing proper starting indications is NOT Critical.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **ALIGN SERVICE WATER TO THE AFW SYSTEM, THEN START THE 1A or 1B MDAFW PUMP.** The conditions under which this task is to be performed are:

a. Just entered ESP-1.2, Post LOCA Cooldown and Depressurization.
b. Foldout page criteria has been met to Align AFW pumps suction to Service Water.
c. CST level is falling rapidly due to a tank rupture.
d. The 1A / 1B MDAFW and TDAFW pumps were secured due to the onset of cavitation.
e. A pre-job brief is NOT required.

Your task is to align service water to the AFW system, then start the 1A or 1B MDAFW pump per ESP-1.2 foldout page criteria.

f. Simulator JPM

CRO-406E

TITLE: **Two Train Verification Of ECCS Equipment**

EVALUATION LOCATION: __X__ SIMULATOR ONLY

PROJECTED TIME: __5 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:

- Recognize lack of support conditions for the operating diesel generator.
- Perform an emergency shutdown of the diesel generator.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Aaron Forsha	Date: 2/2/13
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to perform **TWO TRAIN ECCS ALIGNMENT VERIFICATION**. The conditions under which this task is to be performed are:

a. A safety injection has occurred due to a LOCA in containment.
b. Unit 2 service water to the 1B Diesel Generator is tagged closed.
c. A pre-job brief is NOT required.

Your task is to complete Attachment 4 "Two Train ECCS Alignment Verification", of EEP-0.

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
	_____ START TIME		
1.	(step 1.1) Check breaker DF01 closed.	Check DF01 closed. **Observes** DF01 red light lit. White power available lights lit for 'F' 4160V bus.	S / U
2.	(step 1.2) Verify breaker DF02 closed.	Check DF02 closed. **Observes** DF02 red light lit. White power available lights lit for 'K' 4160V bus.	S / U
3.	(step 1.3) Check breaker DG15 closed.	Check DG15 closed. **Observes** DG15 red light lit. White power available lights lit for 'G' 4160V bus.	S / U
4.	(step 1.4) Verify breaker DG02 closed.	Examinee may take breaker DG02 to reset then to close. The examinee should not attempt to reset the breaker. **Observes** DG02 green and amber lights lit. White power available lights **not** lit for 'L' 4160V bus.	S / U
	RNO 1.4 Secure 1B DG per attachment 1 (student may use posted procedure).		
*5.	(step 1.1) Attachment 1 Verify SI is RESET.	Train A and B SI reset pushbuttons depressed. **Observes** MLB-1 1-1 and MLB1 11-1 are not lit.	S / U
*6.	(step 1.2) Attachment 1 Place the affected diesel generator MODE SELECTOR SWITCH to MODE 2.	1B DG MODE SELECTOR SWITCH placed in MODE 2 position. **Observes** The MSS is in MODE 2.	S / U
*7.	(step 1.3) Attachment 1 Depress the affected diesel generator DIESEL EMERG START RESET pushbutton.	1B diesel generator EMERG START RESET pushbutton depressed. **Observes** the DG EMERG START light goes out.	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)

Note: Failure to perform steps 1.5 (Element 9) and 1.6 (Element 10) immediately following step 1.4 (Element 8) may result in restart of the diesel generator when the low speed relay de-energizes.

*8.	(step 1.4) Attachment 1 Depress affected diesel generator STOP pushbutton.	1B diesel generator STOP pushbutton depressed. **Observes** DIESEL STOP light lit.	S / U
*9.	(step 1.5) Attachment 1 Place affected diesel generator MODE SELECTOR SWITCH to MODE 3.	1B diesel generator MODE SELECTOR SWITCH placed to MODE 3. **Observes** The MSS is in MODE 3. EPB annunciator VB1 alarms.	S / U
10.	(step 1.6) Attachment 1 Depress the affected diesel generator DIESEL EMERG START RESET pushbutton.	1B diesel generator DIESEL EMERG START RESET button is depressed. **Observes** DG EMERG START light remains off.	S / U

_____ STOP TIME

Terminate when all elements of the task have been completed.

CUE: "Another operator will complete the remainder of Attachment 4."

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

GENERAL REFERENCES:

1. FNP-1-EEP-0, Version 44.0
2. K/As: 064A4.06 RO-3.9 SRO-3.9

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1-4	NON Critical: Elements have no consequential actions performed. Checking positions of breakers.
5	**CRITICAL:** Allows the Emergency Start Signal to clear to allow shutdown of DG.
6	**CRITICAL:** Position allows for DG to be shutdown from EPB.
7	**CRITICAL:** Resets the Emergency Restart signal allowing the DG to be shutdown.
8	**CRITICAL:** Shuts DG down.
9	**CRITICAL:** Prevents any AUTO starts from restarting the DG.
10	NON Critical: Clears any Emergency Start signals present. While in Mode 3 these signals have no effect on the diesel.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to perform **TWO TRAIN ECCS ALIGNMENT VERIFICATION**. The conditions under which this task is to be performed are:

a. A safety injection has occurred due to a LOCA in containment.
b. Unit 2 service water to the 1B Diesel Generator is tagged closed.
c. A pre-job brief is NOT required.

Your task is to complete Attachment 4 “Two Train ECCS Alignment Verification”, of EEP-0.

g. Simulator JPM

CRO-406E
TITLE: **Lower The Refueling Cavity Level Using The Residual Heat Removal System**
EVALUATION LOCATION: __X__ SIMULATOR ONLY
PROJECTED TIME: __15 MIN__ SIMULATOR IC NUMBER: __IC-241__
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:

- Operate the RHR system to lower cavity level.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

SIMULATOR SETUP	
	Reset into IC-243
	Danger tag the following: o RCP hand switches o PZR heater control switches o 8809 MOV's o 8811 MOV's o 8812 MOV's o RMW pump
	Trend LT-2965B on the OATC IPC Computer
	Place working radios in booth and on OATC desk.

CONDITIONS

When I tell you to begin you are to **LOWER THE REFUELING CAVITY LEVEL USING THE RESIDUAL HEAT REMOVAL SYSTEM.** The conditions under which this task is to be performed are:

a. Fuel is in the reactor vessel.
b. The upper internals are on the stand in the lower cavity.
c. The Tri-Nuclear Filter system is shutdown.
d. The Cavity underwater lights are de-energized.
e. The pressurizer is adequately vented to the PRT.
f. "B" Train RHR is in service with low press letdown aligned.
g. "A" Train RHR is operable and secured.
h. Surveillances are current for both trains of RHR.
i. The refueling cavity level is currently 151.7'.
j. A systems operator has been briefed and is in containment with communication established with the control room by gaitronics.

Your task is to lower the refueling cavity level to the desired level of 150.0' on IPC LT-2965B per SOP-7.0, Step 4.11.2.

INITIATING **CUE**: "You may begin."

EVALUATION CHECKLIST

	ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
	____ START TIME		
*1.	(step 4.11.2.2) Close RHR to RCS hot legs X-connect MOV-8887B	Handswitch for MOV-8887B taken to close. **Observes** GREEN light is lit.	S / U
*2.	(step 4.11.2.3) Close 1A RHR Hx to RCS cold leg iso MOV-8888A	Handswitch for MOV-8888A taken to close. **Observes** GREEN light is lit.	S / U
3.	(step 4.11.2.4) Verify open RCS loop suction MOV-8701A & 8701B	MOV-8701A & 8701B position indication checked. **Observes** RED lights are lit.	S / U
4.	(step 4.11.2.5) Verify closed RHR to hot leg iso MOV-8889	MOV-8889 position indication checked. **Observes** GREEN light is lit.	S / U
5.	(step 4.11.2.6) Verify pump seal cooler flow >5.5 gpm for 1A RHR pump	SO directed to locally verify flow. (**CUE from Booth operator:** SO reports CCW seal flow is 7 gpm.)	S / U

EVALUATION CHECKLIST

ELEMENTS:		STANDARDS:	RESULTS: (CIRCLE)
*6.	(step 4.11.2.7) Start the 1A RHR pump	1A RHR pump handswitch taken to start. **Observes** the RED light lit, and ~25 amps indicated.	S / U
7.	(step 4.11.2.8) Verify open 1A RHR miniflow MOV-602A	MOV-602A indicates open. **Observes** RED light is lit.	S / U

NOTE: FOR THE PERFORMANCE OF THE REMAINING STEPS, OPERATORS ARE ON STATION AT THE REFUELING CAVITY AND AT V-8881 AVAILABLE BY GAITRONICS.

*8.	(step 4.11.2.9) While monitoring the RWST and cavity levels, unlock and throttle open V-8881 to control cavity drain rate	SO directed to throttle open V-8881 and commence lowering level. (**CUE from Booth operator:** SO reports V-8881 throttled open.)	S / U
9.	(step 4.11.3) Lower Refueling Cavity level to obtain one of the following conditions: • approximately 6 inches below the reactor vessel flange (draining to install removed components) • desired level	Monitors level for desired condition. **Observes** IPC level indication lowering.	S / U
*10.	(step 4.11.3.1) WHEN desired level obtained, THEN Stop 1A(1B) RHR PUMP started in step 4.11.2.7.	1A RHR pump handswitch taken to stop. **Observes** the GREEN light is lit and amps decrease to 0.	S / U
11.	(step 4.11.3.2) Close and lock V-8881	SO directed to close and lock V-8881. (**CUE from Booth operator:** SO reports V-8881 closed and locked.)	S / U

_____ STOP TIME

Terminate when RHR pump secured.

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

GENERAL REFERENCES:

1. FNP-1-SOP-7.0, Version 100.1
2. K/A: 034A1.02 RO-2.9 SRO-3.7

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
1	**CRITICAL:** Provides separation between operating train and train being used for draining.
2	**CRITICAL:** Isolates flow path to RCS
3	NON Critical: Check step only no operation performed.
4	NON Critical: Check step only no operation performed.
5	NON Critical: Check step only no operation performed.
6	**CRITICAL:** Starting pump provides pressure to move water to RWST.
7	NON Critical: Check step only no operation performed.
8	**CRITICAL:** Initiates flow to RWST draining cavity level.
9	NON Critical: Check step only no operation performed.
10	**CRITICAL:** Stopping pump secures lowering of cavity level prior to level reaching 149.5'.
11	NON Critical: Stopping the RHR pump will stop the cavity from lowering. The RWST is at a higher level than the refueling cavity and the configuration is such that siphoning will not occur.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin you are to **LOWER THE REFUELING CAVITY LEVEL USING THE RESIDUAL HEAT REMOVAL SYSTEM.** The conditions under which this task is to be performed are:

a. Fuel is in the reactor vessel.
b. The upper internals are on the stand in the lower cavity.
c. The Tri-Nuclear Filter system is shutdown.
d. The Cavity underwater lights are de-energized.
e. The pressurizer is adequately vented to the PRT.
f. "B" Train RHR is in service with low press letdown aligned.
g. "A" Train RHR is operable and secured.
h. Surveillances are current for both trains of RHR.
i. The refueling cavity level is currently 151.7'.
j. A systems operator has been briefed and is in containment with communication established with the control room by gaitronics.

Your task is to lower the refueling cavity level to the desired level of 150.0' on IPC LT-2965B per SOP-7.0, Step 4.11.2.

h. Simulator JPM

CRO-395D
TITLE: **OBTAIN THE VALUE OF THERMOCOUPLE J12**
EVALUATION LOCATION: __X__ SIMULATOR
PROJECTED TIME: __7 MIN__ SIMULATOR IC NUMBER: IC-243
ALTERNATE PATH ___ TIME CRITICAL ___ PRA ___

JPM DIRECTIONS:

1. Examinee will obtain all references from the simulator.
2. Turn one IPC computer around so that the examinee will not be able to see it available for examiner. Display point J12.
3. 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.
4. Provide student with HANDOUT.
5. Allow student time to review control board.
6. Instructor will be provided to address alarms not related to evaluated task.

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

- Report the value of the specified CETC as indicated by SOP-68.0.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

Developer	Howard Fitzwater	Date: 4/25/11
NRC Approval	SEE NUREG 1021 FORM ES-301-3	

CONDITIONS

When I tell you to begin, you are to **OBTAIN THE VALUE OF THERMOCOUPLE J12**. The conditions under which this task is to be performed are:

a. The Integrated Plant Computer (IPC) is NOT available.

Your task is to obtain the value of Core Exit Thermocouple J12 per FNP-1-SOP-68.0.

INITIATING **CUE**, "You may begin."

NOTES TO EXAMINER:

1) J12 ADDRESS IS IN TABLE 7, AND J12 IS IN CHANNEL 'A'; a common error is that B train is manipulated during this task.

2) J12 will be displayed on a Plant Computer unavailable to the examinee to aid the examiner in verifying the correct value is obtained.

3) An alternate method exists to complete this task. Although not expected to be performed by the examinee, this method starts at element 9.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
START TIME		
1. (step 4.6.2.1) Determine the two digit address for thermocouple J12	Table 7 used to identify **CE 14 as address point and is an A train CETC.**	S / U

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 2.	(step 4.6.1 provides the guidance to set initial conditions required by 4.6.2.2 this action may or may not be conducted prior to step 4.6.2.2: "**With CET portion of the TMAX/CET push-button illuminated**…") **Place A** train in CET AS found: TMAX mode 1st button push: CET Mode 2nd button push: return to TMAX mode May be repeated until desired mode achieved.	TMAX/CET pushbutton depressed once. **Observes** CET light lit.	S / U
* 3.	(step 4.6.2.2) Select display to CE AS found: HI 1st button push: CE 2nd button push: ALL 3rd button push: return to HI mode May be repeated until desired mode achieved	$\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton depressed until "CE" displayed.	S / U
* 4.	(step 4.6.2.3 and 4.6.2.4) Select display to CE00 AS found: HI . 1st button push: CE . 2nd button push: ALL. 3rd button push: return to HI . mode May be repeated until desired mode achieved	$\frac{SUBMODE\ \ ACK}{ALARM\ \ ACK}$ pushbutton depressed until submode portion of the $\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton is illuminated and not flashing, "1st" portion of the $\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton is flashing.	S / U
* 5.	(step 4.6.2.5) Align display to read CE 10	Depress $\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton until 1 appears in the "tens" digit.	S / U

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
*	6. (step 4.6.2.6) Align to select ones digit	Depress $\frac{SUBMODE\ ACK}{ALARM\ ACK}$ pushbutton.	S / U
*	7. (step 4.6.2.7) Align display to read CE 14	Depress $\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton until 4 is displayed in the "ones" digit. 1st/2nd pushbutton depressed until CE 14 in monitor window.	S / U
*	8. (step 4.6.2.8) Determine value of J12	$\frac{SUBMODE\ ACK}{ALARM\ ACK}$ pushbutton depressed.	S / U
	ALTERNAT E METHOD		
	9. (step 4.6.2.1) Determine the two digit address for thermocouple J12	Table 7 used to identify **CE 14 as address point and is an A train CETC.**	S / U
*	10. (step 4.6.1 provides the guidance to set initial conditions required by 4.6.2.2 this action may or may not be conducted prior to step 4.6.2.2: "**With CET portion of the TMAX/CET push-button illuminated**…") **Place A** train in CET	TMAX/CET pushbutton depressed once. **Observes** CET light lit.	S / U

AS found: TMAX mode
1st button push: CET Mode
2nd button push: return to TMAX mode
May be repeated until desired mode achieved.

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
* 11. (step 4.6.2.2) Select display to ALL AS found: HI 1st button push: CE 2nd button push: ALL 3rd button push: return to HI mode May be repeated until desired mode achieved	$\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton depressed until "ALL" displayed.	S / U
* 12. (step 4.6.2.3) Acknowledge display in ALL AS found: HI . 1st button push: CE . 2nd button push: ALL. 3rd button push: return to HI . mode May be repeated until desired mode achieved	$\frac{SUBMODE\ \ ACK}{ALARM\ \ ACK}$ pushbutton depressed until submode portion of the $\frac{SUBMODE}{1st\ /\ 2nd}$ pushbutton is illuminated and not flashing,	S / U

NOTE: In the "ALL" submode, the display will start to automatically sequence through all quadrant and core exit temperature values as soon as the $\frac{SUBMODE\ \ ACK}{ALARM\ \ ACK}$ pushbutton is depressed.

* 13. Determine value of J12	Examinee will wait until CE14 is displayed and then determine the value.	S / U

_____ STOP TIME

Terminate when the value for thermocouple J12 is displayed.

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

GENERAL REFERENCES:

1. FNP-1- SOP-68.0 Revision 8.1
2. K/As: 017A4.01 RO-3.8 SRO-4.1

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

STEP **Evaluation**

1. Not critical since finding the correct value in the Table will be revealed at element 7; affect on the final outcome of the task will be captured at a later element (#7).
2. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
3. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
4. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
5. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
6. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
7. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.
8. CRITICAL to accomplish the assigned TASK's objective
   - This button has to be in the correct alignment to get the correct value for the thermocouple.

ALTERNATE METHOD

9. Not critical since finding the correct value in the Table will be revealed at element 7; affect on the final outcome of the task will be captured at a later element (#13).
10. CRITICAL to accomplish the assigned TASK's objective
    - This button has to be in the correct alignment to get the correct value for the thermocouple.
11. CRITICAL to accomplish the assigned TASK's objective
    - This button has to be in the correct alignment to get the correct value for the thermocouple.
12. CRITICAL to accomplish the assigned TASK's objective
    - This button has to be in the correct alignment to get the correct value for the thermocouple.
13. CRITICAL to accomplish the assigned TASK's objective
    The examinee must wait until the correct thermocouple address is displayed get the correct value for that thermocouple.

COMMENTS:

HANDOUT

CONDITIONS

When I tell you to begin, you are to **OBTAIN THE VALUE OF THERMOCOUPLE J12**. The conditions under which this task is to be performed are:

a. The Integrated Plant Computer (IPC) is NOT available.

Your task is to obtain the value of Core Exit Thermocouple J12 per FNP-1-SOP-68.0.

i. In Plant JPM

SO-344
TITLE: **Start Up An Instrumentation Inverter**
EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM __X__ PLANT
PROJECTED TIME: __20 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:

- Place the A Instrument Inverter in service

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **START UP AN INSTRUMENTATION INVERTER**. The conditions under which this task is to be performed are:

a. The Plant is in Mode 1.
b. Instrumentation inverter 'A' is being returned to service after maintenance.

Your task is to place instrumentation inverter 'A' in service per FNP-1[2]-SOP-36.4 starting at step 4.1.2.

INITIATING **CUE**, "You may begin."

NOTE: THIS JPM MAY BE PERFORMED ON EITHER UNIT. THE UNIT TWO NUMBERS, IF DIFFERENT, ARE [BRACKETED].

EVALUATION CHECKLIST

	ELEMENTS:	**STANDARDS:**	**RESULTS: (CIRCLE)**
	____ START TIME		
1.	(step 4.1.2.1) Verify the battery input breaker in OFF	Breakers verified in OFF. (CUE: the identified breaker(s) is as you described.)	S / U
2.	(step 4.1.2.2) Verify the inverter output breaker in OFF	Breaker is verified in OFF. (CUE: the identified breaker(s) is as you described.)	S / U
3.	(step 4.1.2.3) Verify closed respective inverter bypass AC supply breaker	In 120VAC Distribution Panel 'G' breaker #8 [#7] is verified closed. (CUE: the identified breaker(s) is as you described.)	S / U
*4.	(step 4.1.2.4) Close the inverter 'A' DC supply breaker	LA-10 handswitch is taken to the closed position. (CUE: The indicating light changed from green to red and the mechanical indicator indicates closed.)	S / U
*5.	(step 4.1.2.5) Place the battery input breaker in the ON position	The battery input breaker is taken to 'ON'. (CUE: the identified breaker(s) is as you described.)	S / U

EVALUATION CHECKLIST

ELEMENTS:		STANDARDS:	RESULTS: (CIRCLE)
*6.	(step 4.1.2.6) Place the inverter output breaker in the ON position	The inverter output breaker is taken to 'ON'. (CUE: the identified breaker(s) is as you described.)	S / U
7.	(step 4.1.2.7) Verify that the inverter is in sync with the bypass source	The Inverter 'In Sync' light should be lit and the 'Out Of Sync' light should be out. (CUE: In SYNC lamp is lit and OUT OF SYNC lamp is not.)	S / U

NOTE: In the following step, the FAN FAILURE light will go out (if illuminated) and the BYPASS SOURCE AVAILABLE light will illuminate (if not already on).

*8.	(step 4.1.2.8) Transfer the MANUAL BYPASS switch to the NORMAL OPERATION position	The Manual Bypass Switch is transferred. (CUE: the identified switch is as you described.)	S / U
*9.	(step 4.1.2.9) Press the INVERTER TO LOAD pushbutton	The INVERTER TO LOAD pushbutton is depressed.	S / U

NOTE: NON-CRITICAL ELEMENT 10 IS NOT PROCEDURALIZED ON UNIT 2.

10.	(step 4.1.2.9.1 **UNIT 1 ONLY**) Verify the INVERTER POWERING LOAD lamp lit	INVERTER POWERING LOAD lamp checked. (CUE: INVERTER POWEREING LOAD lamp is lit.)	S / U
11.	Report to the CRO that inverter 'A' has been placed in service	The CRO is notified. (CUE: The CRO acknowledges.)	S / U

____ STOP TIME

Terminate after Control Room Operator is informed that inverter A has been placed in service.

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

GENERAL REFERENCES:

1. FNP-1-SOP-36.4, Ver 81.0
2. FNP-2-SOP-36.4, Ver 62.1
3. K/As: 062A2.03 RO-2.9 SRO-3.4

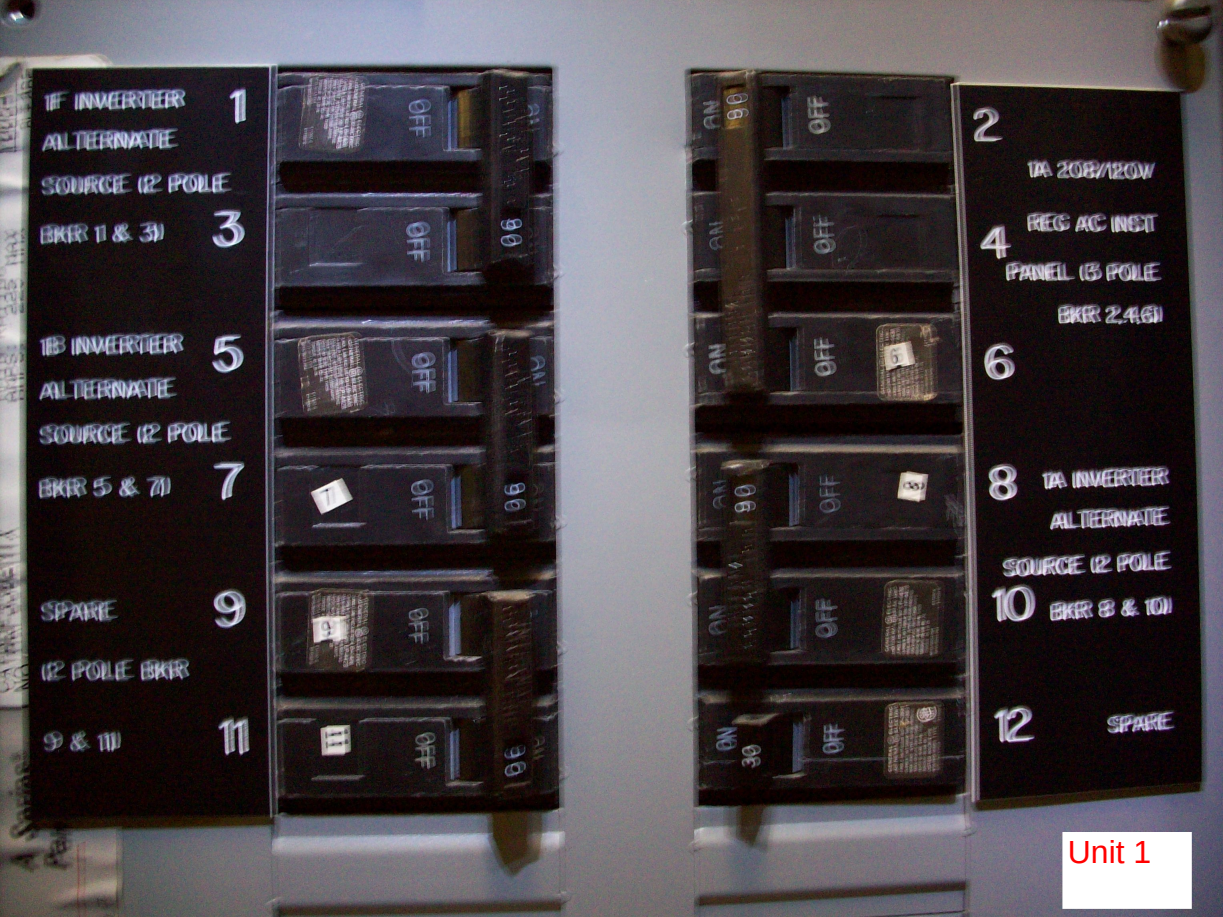
057AA1.01 RO-3.7 SRO-3.7

GENERAL TOOLS AND EQUIPMENT:
None

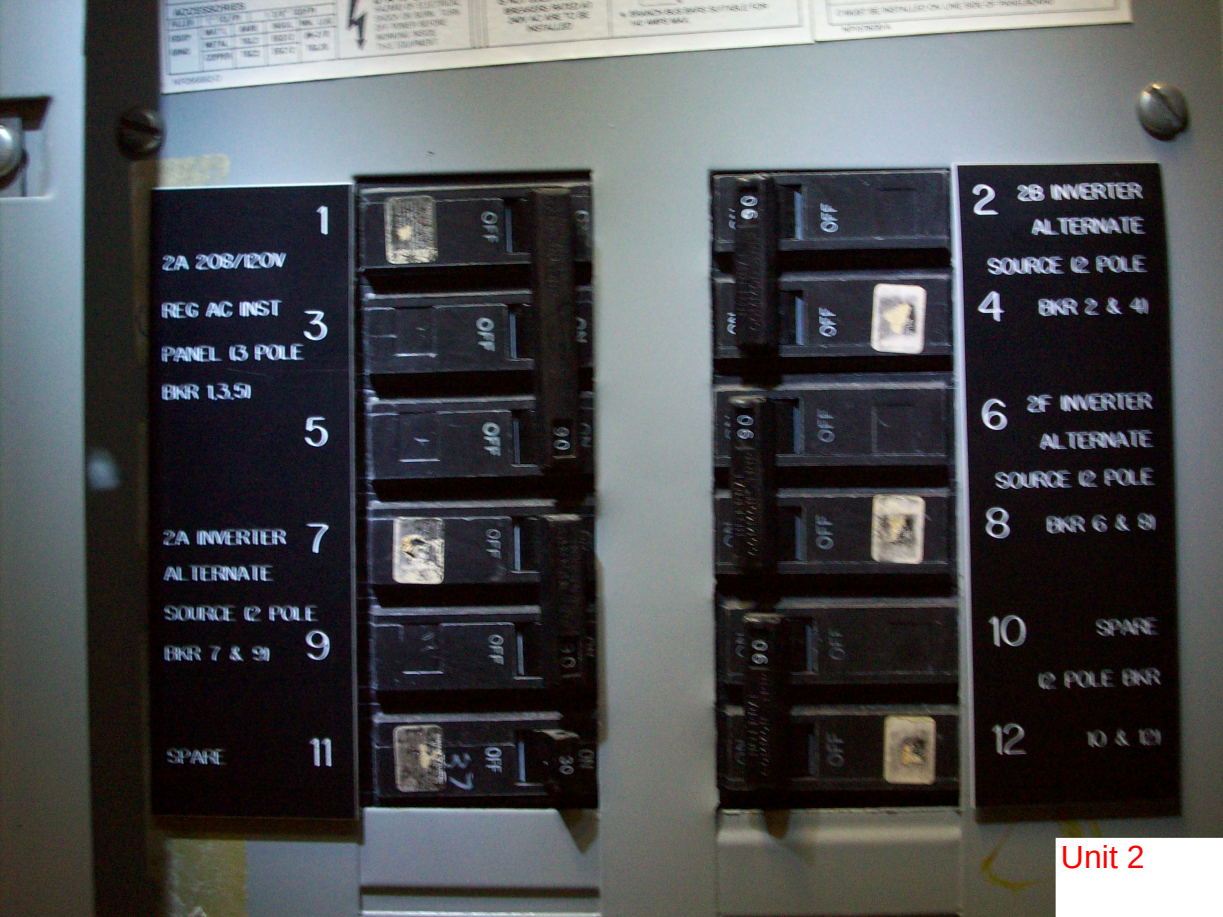
Critical ELEMENT justification:

ELEMENT	Evaluation
1-3	**NOT Critical:** Check steps only, no operations performed.
4-6	**Critical:** This is the assigned task, improper performance of any of these will result in the Inverter not being in-service.
7	**NOT Critical:** No operations performed.
8, 9	**Critical:** This is the assigned task, improper performance of any of these will result in the Inverter not being in-service.
10	**NOT Critical:** Check steps only, no operations performed.
11	**NOT Critical:** Notification step only.

COMMENTS:


1F INVERTER/ALTERNATE SOURCE (2 POLE BKR 1 & 3)
1
3
1B INVERTER/ALTERNATE SOURCE (2 POLE BKR 5 & 7)
5
7
SPARE (2 POLE BKR 9 & 11)
9
11
2
1A 208/120V
4
REC AC INST PANEL (3 POLE BKR 2,4,6)
6
8
1A INVERTER/ALTERNATE SOURCE (2 POLE BKR 8 & 10)
10
12
SPARE
ON
OFF
30
60
90

Unit 1


1
2A 208/120V
REC AC INST
3
PANEL 13 POLE
BKR 13,15
5
2A INVERTER
7
ALTERNATE
SOURCE 12 POLE
BKR 7 & 9
9
SPARE
11
2
2B INVERTER
ALTERNATE
SOURCE 12 POLE
4
BKR 2 & 4
6
2F INVERTER
ALTERNATE
SOURCE 12 POLE
8
BKR 6 & 8
10
SPARE
12 POLE BKR
12
10 & 12
OFF
Unit 2

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HANDOUT

CONDITIONS

When I tell you to begin, you are to **START UP AN INSTRUMENTATION INVERTER**. The conditions under which this task is to be performed are:

a. The Plant is in Mode 1.
b. Instrumentation inverter 'A' is being returned to service after maintenance.

Your task is to place instrumentation inverter 'A' in service per FNP-1[2]-SOP-36.4 starting at step 4.1.2.

SAFETY RELATED

120V AC DISTRIBUTION SYSTEMS

PROCEDURE LEVEL OF USE CLASSIFICATION PER NMP-AP-003	
CATEGORY	**SECTIONS**
Continuous:	**ALL**
Reference:	**NONE**
Information:	**NONE**

Approved By: David L Reed (for)
Operations Manager

Effective Date: November 1, 2012

Procedure Version Description

Version Number	Version Description
81.0	Updated procedure to requirements of NMP-AP-002, SNC FLEET PROCEDURES WRITERS GUIDE.

Table of Contents

1.0 Purpose

This procedure provides the initial conditions, precautions and limitations, and instructions for operating the 120V AC distribution system.

2.0 Initial Conditions

2.1 The 600V electrical distribution system is energized and aligned per FNP-1-SOP-36.3, 600, 480 AND 208/120 Volt AC Electrical Distribution System.

2.2 The 125V DC auxiliary building distribution system is energized and aligned per FNP-1-SOP-37.1, 125 Volt D.C. Auxiliary Building Distribution System.

3.0 Precautions and Limitations

3.1 Loss of 120V vital A. C. instrumentation panel will result in the loss of one channel of reactor protections and E.S.F. instrumentation and may cause a reactor trip.

3.2 120V vital AC instrumentation panels 1A, 1B, 1C, and 1D are supplied by inverters 1A, 1B, 1C, and 1D respectively. Distribution panels 1J and 1K are supplied by inverters 1F and 1G respectively. The inverters bypass supply automatically supplies the panel if the inverter fails. The bypass supplies are from 208/120V regulated AC distribution panel 1G for A train and 1H for B train. {AI 2009206420}

3.3 Distribution panels 1J (K) feed BOP panels J (K). These BOP panels have an auctioneered power supply from solatron regulators 1G (1H).

3.4 Changing the position of the key lock switches associated with SSPS RCP Bus UV relays will result in an automatic start of the TDAFWP if more than one channel is deenergized.

3.5 Observe the NO SMOKING signs. Do not strike a spark or operate space heaters in the TDAFWP Uninterruptible Power Supply Battery area.

3.6 The TDAFWP uninterruptible power supply battery charger volts and amps should not exceed 56V and 100 amps.

3.7 If DC supply voltage to the inverters rises to 145 volts, then the DC supply breaker will open and the load will shift to the bypass supply.

3.8 DO NOT operate an inverter at no load and high DC input voltage (greater than or equal to 140V DC) for longer than 72 hours. The magnetic structure of the regulating ferro-resonant transformer may experience high losses under such conditions, which may result in overheating and component failure. If operation at high DC input voltage is necessary, then the inverter should be loaded to at least 20% of rated load.

3.9 208/120V regulated AC distribution panel 1G and 1H are each supplied by a constant voltage transformer consisting of three separate devices called isolimiters--one per phase. The loss of an isolimiter only affects the loads in the distribution cabinet that are powered off of the phase supplied by that isolimiter. Drawing D-181599, sh. 3, shows the relationship of the load in each cabinet to the isolimiters.

3.10 120V regulated AC distribution cabinet 1A and 1B are supplied with three phase AC from 208/120V regulated AC distribution panel 1G and 1H. Therefore step 3.9 also applies to 120V regulated AC distribution cabinet 1A and 1B. Drawings D-181599, sh. 3, D-177024, and D-177025 shows the relationship of the loads in each cabinet to the isolimiters.

3.11 Operation of the120V AC instrumentation inverters without batteries connected to the DC bus should be minimized. Transient AC input conditions to the 125V Battery Chargers can lead to fluctuations in the DC input to the inverters, causing the inverter fuses to blow.

3.12 Prior to swapping the on service TDAFW Pump UPS battery charger, Electrical Maintenance should ensure the batteries have been placed in Float.

3.13 Do not restart a 120V AC Instrumentation Inverter prior to 60 seconds after the inverter was shutdown, to allow sufficient time for internal capacitors to discharge.

3.14 For the AMSAC UPS, the High Speed Transfer Logic “HTL” sense an inverter overload(O/L) and initiates a “No-Break AC Transfer” to the commercial power via the AC Regulator Filter-Conditioner on an inverse time basis. Only when the overload is cleared will the load be auto-retransferred to the inverter after approximately 1 minute delay. The occurrence of an O/L is stored in the O/L memory of the HTL and is indicated by a pilot light. Pressing the O/L memory cancel button will cancel the alarms. U265512

3.15 To ensure proper reset, any operation of the Manual Bypass Switch on the Aux. Bldg. or DEH Inverters should be to a hard stop rather than just to align with the position markings. Ref CR 367519.

4.0 Instructions

4.1 120V AC Instrumentation Inverter 1A (B, C, D, F, G) Operation

NOTE

The Preferred method of operation is with the battery connected to the DC Bus; however, there will be times this will not be feasible, and the battery will require disconnecting. Per discussion with the vendor, it is permissible to operate the inverter without the battery for a 12 hour period without any adverse affects. ☐

4.1.1 IF battery is disconnected from its DC Bus, THEN **verify** charger output is properly balanced as follows:

4.1.1.1 **Verify** charger is on float charge. ☐

4.1.1.2 **Allow** charger components to warm up and output to stabilize. ☐

NOTE

The unbalance can be more than 10% when the charger is running at less than 75% load. The unbalance should be within 10% when charger is above 75% load. ☐

4.1.1.3 Using DC clamp-on ammeter, **measure** AS FOUND load current at the output of each SCR: ☐ EM

SCR1	SCR2	SCR3	SCR4	SCR5	SCR6
_____	_____	_____	_____	_____	_____

Electrical Maintenance Initials_____Date _____

4.1.1.4 IF measure AS FOUND load current at the output of any SCR in Step 4.1.1.3 is less than one (1) amp, THEN **contact** TL/ATL for resolution. ☐ EM

CAUTION

Do not restart a 120V AC Instrumentation Inverter prior to 60 seconds after the inverter was shutdown, to allow sufficient time for internal capacitors to discharge. ☐

4.1.2 Placing 120V AC Instrumentation Inverter 1A (B, C, D, F, G) In Service

4.1.2.1 **Verify** the BATTERY INPUT breaker in the OFF position. ☐

4.1.2.2 **Verify** the INVERTER OUTPUT breaker in the OFF position. ☐

4.1.2.3 **Verify** closed respective inverter bypass AC supply breaker as follows:

INVERTER	AC SUPPLY BREAKER 120V AC Distribution:	Placekeeping
1A	Panel 1G Brk #8	☐
1B	Panel 1G Brk #5	☐
1C	Panel 1H Brk #7	☐
1D	Panel 1H Brk #2	☐
1F	Panel 1G Brk #1	☐
1G	Panel 1H Brk #6	☐

4.1.2.4 **Close** respective inverter DC supply breaker as follows:

INVERTER	DC SUPPLY BREAKER	Placekeeping
1A	LA 10	☐
1B	LA 12	☐
1C	LB 04	☐
1D	LB 06	☐
1F	LA 16	☐
1G	LB 10	☐

NOTE

At startup, an audible alarm will be heard. ☐

4.1.2.5 **Place** the BATTERY INPUT breaker in the ON position. ☐

4.1.2.6 **Place** the INVERTER OUTPUT breaker in the ON position. ☐

4.1.2.7 **Verify** inverter is in sync with the bypass source as follows:

4.1.2.7.1 **Verify** IN SYNC lamp lit. ☐

4.1.2.7.2 **Verify** OUT OF SYNC lamp NOT lit. ☐

CAUTION

Do not transfer unless unit is in sync. ☐

NOTE

In the following step, the FAN FAILURE light will go out (if illuminated) and the BYPASS SOURCE AVAILABLE light will illuminate (if not already on). ☐

4.1.2.8 **Transfer** the MANUAL BYPASS Switch to the NORMAL OPERATION position. ☐

4.1.2.9 **Press** the INVERTER TO LOAD pushbutton. ☐

4.1.2.9.1 **Verify** the INVERTER POWERING LOAD lamp lit. ☐

4.1.3 Removing 120V AC Instrumentation Inverter 1A (B, C, D, F, G) From Service:

4.1.3.1 **Verify** the BYPASS SOURCE AVAILABLE lamp lit. ☐

4.1.3.2 **Verify** bypass source is in sync with the inverter as follows:

4.1.3.2.1 **Verify** IN SYNC lamp lit. ☐

4.1.3.2.2 **Verify** OUT OF SYNC lamp NOT lit. ☐

CAUTION

Do not transfer unless unit is in sync. ☐

4.1.3.3 **Press** the BYPASS SOURCE TO LOAD pushbutton. ☐

NOTE

In the following step, the FAN FAILURE light will illuminate and the BYPASS SOURCE AVAILABLE light will go out. ☐

4.1.3.4 **Transfer** the manual bypass switch to the BYPASS SOURCE TO LOAD position. ☐

4.1.3.5 **Open** the following breakers for respective inverter.

- BATTERY INPUT breaker ☐
- INVERTER OUTPUT breaker ☐

4.1.3.6 **Open** respective inverter DC supply breaker as follows:

INVERTER	DC SUPPLY BREAKER	Placekeeping
1A	LA 10	☐
1B	LA 12	☐
1C	LB 04	☐
1D	LB 06	☐
1F	LA 16	☐
1G	LB 10	☐

SAFETY RELATED

120V A. C. DISTRIBUTION SYSTEMS

PROCEDURE LEVEL OF USE CLASSIFICATION PER NMP-AP-003	
CATEGORY	**SECTIONS**
Continuous:	**ALL**
Reference:	**NONE**
Information:	**NONE**

Approved:

David L Reed (for)
Operations Manager

July 2, 2012
Effective Date

Procedure Version Description

Version Number	Version Description
61.0	Updated procedure to requirements of NMP-AP-002, SNC FLEET PROCEDURES WRITERS GUIDE. ● Changed title of steps 4.7, 4.8, 4.9 & 4.10, deleting "Loss of Flow" and replacing with "RCP Bus UV". DCP 2082084101 ● Changed step 3.4 to address RCP Bus UV and TDAFWP auto start. DCP 2082084101. ● Deleted step 3.13 and renumbered. DCP 2082084101 ● Deleted cautions before steps 4.7 & 4.10. DCP 2082084101 ● Reworded caution after steps 4.7, 4.8, 4.9 & 4.10. Modified steps 4.7.1, 4.8.1, 4.9.1 & 4.10.1 to reference "RCP Bus UV" rather than "Loss of Flow". DCP 2082084101
62.0	● Changed position for breakers from OPEN to OFF and CLOSED to ON in steps 4.1.2.1, 4.1.2.2, 4.1.2.5, 4.1.2.6, 4.2.3.5.5, and 4.2.4.5.5 to match labeling in plant CR 345068 ● Enhanced wording of step 4.2.2.12 CR 2011104041 ● Enhanced wording of 1st bullet of note above 4.2.1.4 CR 2011104064 ● Added steps 4.2.3.1 and 4.2.4.1 to close TDAFW warm-up valves for shutting down TDAFWP UPS and steps 4.2.1.22 and 4.2.2.22 to open TDAFW warm-up valves CR 353795 ● Added P&L 3.14 CR 367519 ● Corrected reference steps in 1st bullet of note below 4.2.1.5 CR 423361 ● Corrected location of CB6 and CB16 breakers from in cabinet to on cabinet in notes above steps 4.2.1.4, 4.2.1.6, 4.2.2.4, 4.2.2.6, 4.2.3.5.1, and 4.2.4.5.1 CR 423361 ● Added notes above 4.2.1.18, 4.2.2.18, 4.2.1.23.5, and 4.2.2.23.5 addressing Rectifier/charger overload light. CR 423913
62.1	**CR - 471536** - Corrected breaker designation and nomenclature to match ESOMs for steps 4.2.1.1, 4.2.2.1, 4.2.3.5.6, 4.2.4.5.6 **CR - 471536** - Added amplifying instructions to CAUTIONS preceding steps 4.2.1.13 & 4.2.2.13 **CR - 475833** - corrected NOTE prior to step 4.2.2.5.1 which had letter designations that were not changed when step numbers were changed from letters to numbers - brc

Table of Contents

1.0 Purpose

This procedure provides the Initial Conditions, Precautions and Limitations and Instructions for operating the 120V AC distribution system.

2.0 Initial Conditions

2.1 The 600V electrical distribution system is energized and aligned per FNP-2-SOP-36.3, 600, 408 AND 208/120 Volt Ac Electrical Distribution System.

2.2 The 125V DC auxiliary building distribution system is energized and aligned per FNP-2-SOP-37.1, 125 VOLT D.C. Auxiliary Building Distribution System.

3.0 Precautions and Limitations

3.1 Loss of 120V vital A. C. instrumentation panel will result in the loss of one channel of reactor protection and ESF instrumentation and may cause a reactor trip.

3.2 120V vital AC instrumentation panels 2A B, C, D are supplied by inverters 2A B, C,D respective. Distribution panels 2G and H are supplied by inverters 2F and G respective. The inverters bypass supply automatically supplies the panel if the inverter fails. The bypass supplies are from 208/120V regulated AC distribution panel 2G for A train and 2H for B train. {AI2009206421}

3.3 Distribution panel 2J (2K) feeds BOP panel 2J (2K). BOP panel 2J (2K) does have auctioneered power supplies from solatron regulator 2G (2H).

3.4 Changing the position of the key lock switches associated with SSPS RCP Bus UV Relays will result in an automatic start of the TDAFWP if more than one channel is deenergized.

3.5 Observe the NO SMOKING signs. Do not strike a spark or operate space heaters in the TDAFWP Uninterruptible Power Supply Battery area.

3.6 The TDAFWP Uninterruptible Power Supply Battery Charger volts and amps should not exceed 56V and 100 amps.

3.7 If DC supply voltage to the inverters rises to 145 volts, then the DC supply breaker will open and the load will shift to the bypass supply.

3.8 Do not operate an inverter at no load and high DC input voltage (greater than or equal to 140V DC) for longer than 72 hours. The magnetic structure of the regulating ferro-resonant transformer may experience high losses under such conditions, which may result in overheating and component failure. If operation at high DC input voltage is necessary, then the inverter should be loaded to at least 20% of rated load.

3.9 208/120V regulated AC distribution panel 2G and 2H are each supplied by a constant voltage transformer consisting of three separate devices called isolimeters--one per phase. The loss of an isolimeter only affects the loads in the distribution cabinet that are powered off the phase supplied by that isolimeter.

3.10 120V regulated AC distribution cabinet 2A and 2B are supplied with three phase AC from 208/120V regulated AC distribution panel 2G and 2H. Therefore step 3.9 also applies to 120V regulated AC distribution cabinets 2A and 2B.

3.11 Operation of the 120V AC instrumentation inverters without batteries connected to the DC bus should be minimized. Transient AC input conditions to the 125V Battery Chargers can lead to fluctuations in the DC input to the inverters, causing the inverter fuses to blow.

3.12 Prior to swapping the on service TDAFW Pump UPS battery charger, Electrical Maintenance should ensure the batteries have been placed in Float.

3.13 Do not restart a 120V AC Instrumentation Inverter prior to 60 seconds after the inverter was shutdown, to allow sufficient time for internal capacitors to discharge.

3.14 To ensure proper reset, any operation of the Manual Bypass Switch on the Aux. Bldg. or DEH Inverters should be to a hard stop rather than just to align with the position markings. Ref CR 367519.

4.0 Instructions

4.1 120V AC Instrumentation Inverter 2A (B, C, D, F, G) Operation:

NOTE

The Preferred method of operation is with the battery connected to the DC Bus; however, there will be times this will not be feasible, and the battery will require disconnecting. Per discussion with the vendor, it is permissible to operate the inverter without the battery for a 12 hour period without any adverse affects.

4.1.1 IF battery is disconnected from its DC Bus, THEN **verify** charger output is properly balanced as follows:

4.1.1.1 **Verify** charger is on float charge. ☐

4.1.1.2 **Allow** charger components to warm up and output to stabilize. ☐

NOTE

The unbalance can be more than 10% when the charger is running at less than 75% load. The unbalance should be within 10% when charger is above 75% load.

4.1.1.3 Using DC clamp-on ammeter, **measure** AS FOUND load current at the output of each SCR:

SCR1	SCR2	SCR3	SCR4	SCR5	SCR6
_____	_____	_____	_____	_____	_____

Electrical Maintenance Initials _____Date_____

4.1.1.4 IF measured AS FOUND load current at the output of any SCR in Step 4.1.1.3 is less than one (1) amp, THEN **contact** TL/ATL for resolution.

EM

CAUTION

Do not restart a 120V AC Instrumentation Inverter prior to 60 seconds after the inverter was shutdown, to allow sufficient time for internal capacitors to discharge.

4.1.2 Placing 120V AC instrumentation inverter 2A (B, C, D, F, G) in service:

4.1.2.1 **Verify** BATTERY INPUT breaker in the OFF position. ☐

4.1.2.2 **Verify** INVERTER OUTPUT breaker in the OFF position. ☐

4.1.2.3 **Verify** closed respective inverter bypass AC supply breaker as follows: ☐

INVERTER	AC SUPPLY BREAKER 120V AC Distribution:
2A	Panel 2G Brk #7
2B	Panel 2G Brk #2
2C	Panel 2H Brk #7
2D	Panel 2H Brk #2
2F	Panel 2G Brk #6
2G	Panel 2H Brk #6

4.1.2.4 **Close** respective inverter DC supply breaker as follows: ☐

INVERTER	DC SUPPLY BREAKER
2A	LA 10
2B	LA 12
2C	LB 04
2D	LB 06
2F	LA 16
2G	LB 10

NOTE

At startup, an audible alarm will be heard.

4.1.2.5 **Place** the BATTERY INPUT breaker in the ON position. ☐

4.1.2.6 **Place** the INVERTER OUTPUT breaker in the ON position. ☐

4.1.2.7 **Verify** inverter is in sync with the bypass source as indicated by IN SYNC lamp lit and OUT OF SYNC lamp NOT lit. ☐

CAUTION

Do not transfer unless unit is in sync.

NOTE

In the following step, the FAN FAILURE light will go out (if illuminated) and the BYPASS SOURCE AVAILABLE light will illuminate (if not already on).

4.1.2.8 **Transfer** the MANUAL BYPASS Switch to the NORMAL OPERATION position. ☐

4.1.2.9 **Press** the INVERTER TO LOAD pushbutton. ☐

4.1.3 Removing 120V AC instrumentation inverter 2A (B, C, D, F, G) from service.

4.1.3.1 **Verify** the BYPASS SOURCE AVAILABLE lamp lit. ☐

4.1.3.2 **Verify** bypass source is in sync with the inverter as indicated by the IN SYNC lamp lit and the OUT OF SYNC lamp NOT lit. ☐

CAUTION

Do not transfer unless unit is in sync.

4.1.3.3 **Press** the BYPASS SOURCE TO LOAD pushbutton. ☐

NOTE

In the following step, the FAN FAILURE light will illuminate and the BYPASS SOURCE AVAILABLE light will go out.

4.1.3.4 **Transfer** the manual bypass switch to the BYPASS SOURCE TO LOAD position. ☐

4.1.3.5 **Open** the following breakers for respective inverter.

- BATTERY INPUT breaker ☐
- INVERTER OUTPUT breaker ☐

4.1.3.6 **Open** respective inverter DC supply breaker as follows: ☐

INVERTER	DC SUPPLY BREAKER
2A	LA 10
2B	LA 12
2C	LB 04
2D	LB 06
2F	LA 16
2G	LB 10

j. In Plant JPM

Fire Pump-NEW
TITLE: **Start the MDFP and #2 DDFP locally**
EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM __X__ PLANT
PROJECTED 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 ☐ Unsatisfactory ☐
Evaluator Comments (attach additional sheets if necessary)

EXAMINER: _____

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)
	_____ 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
5.	(step 4.6.1) on #2 DDFP Verify the DDFP CLG WTR PRESS REG BYP valve throttled as follows: • 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

EVALUATION CHECKLIST

ELEMENTS:		STANDARDS:	RESULTS: (CIRCLE)
*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: • 4.6.3.1 At the local control panel, push the CIRCUIT BREAKER DC (AC) RESET pushbuttons for the following: o 4.6.3.1.1 AC mini breaker. o 4.6.3.1.2 DC mini breaker. (1 of 2) o 4.6.3.1.3 DC mini breaker. (2 of 2) o 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 46.0
2. K/As: 086A3.01 RO-2.9 SRO-3.3
   086A4.01 RO-3.3 SRO-3.3

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

ELEMENT	Evaluation
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:


FIRE PUMP CONTROLLER
SERIAL NO.


CIRCUIT BREAKERS
DC DC AC
START
RESET
4TR
1TR
2TR
3TR
1GCB
1CB
2CB
3GCB


MAN A-A BA
MAN B-B BA
SELECTOR
TEST
AUTO
MAN.A
MAN.B
OFF
START
RESET
1TR
2TR
3TR

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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

4.3.4 IF a DDFP was running to maintain fire main header pressure, THEN perform the following:

4.3.4.1 **Place** the running DDFP control switch to OFF. ☐

4.3.4.2 At the local control panel, **push** the CIRCUIT BREAKER DC (AC) RESET pushbuttons for the following:

4.3.4.2.1 AC mini breaker. ☐

4.3.4.2.2 DC mini breaker. (1 of 2) ☐

4.3.4.2.3 DC mini breaker. (2 of 2) ☐

4.3.4.3 **Push** the RESET pushbutton at the DDFP local control panel. ☐

4.3.4.4 **Verify** the DDFP CLG WTR PRESS REG BYP valve throttled as follows:

4.3.4.4.1 IF securing #1 DDFP, THEN **throttle** open #1 DDFP COOLING WATER PRESSURE REGULATOR BYPASS, N1P43V0152, 1 turn. ☐

4.3.4.4.2 IF securing #2 DDFP, THEN **throttle** open #2 DDFP COOLING WATER PRESSURE REGULATOR BYPASS, N1P43V0156, 45 degrees (valve is a 90 degree ball valve). ☐

4.3.4.5 **Place** DDFP control panel selector switch in AUTO to return the DDFP to automatic standby status. ☐

4.3.5 **Verify** fire main header pressure is being maintained at approximately 125 psig or greater by operation of the MDFP. ☐

4.4 Startup of the MDFP from Local Control Panel

4.4.1 **Place** MDFP LOCAL/REMOTE switch to LOCAL. ☐

4.4.2 **Depress** START pushbutton. ☐

4.4.3 **Return** LOCAL/REMOTE switch to REMOTE. ☐

CAUTION

Failure to secure the jockey pump while running any fire pump when no flow demand exists on the system, may result in overheating or damage to the fire pump. ☐

4.4.4 **Place** the handswitch controller for the jockey pump to STOP, to secure the jockey pump. ☐

4.5 Shutdown of the MDFP

4.5.1 **Place** the handswitch controller for the jockey pump to START, to start the jockey pump. ☐

NOTE

The MDFP cannot be shutdown from Main Control Board. ☐

4.5.2 **Place** LOCAL/REMOTE switch for the motor driven fire pump (MDFP) to LOCAL. ☐

4.5.3 **Depress** STOP/RESET pushbutton for the MDFP. ☐

4.5.4 IF started from Main Control Board, THEN **place** handswitch on MCB to STOP and **verify** handswitch spring returns to NEUTRAL. (This function is to de-energize trouble light only.) ☐

4.5.5 **Place** LOCAL/REMOTE selector switch for the MDFP to REMOTE to return to automatic standby status. ☐

4.5.6 **Verify** the jockey pump running and maintaining approximately 125 psig header pressure. ☐

4.6 Manual Startup of a DDFP

4.6.1 **Verify** the DDFP CLG WTR PRESS REG BYP valve throttled as follows:

- IF starting #1 DDFP, THEN **throttle** open #1 DDFP COOLING WATER PRESSURE REGULATOR BYPASS, N1P43V0152, 1 turn. ☐
- IF starting #2 DDFP, THEN **throttle** open #2 DDFP COOLING WATER PRESSURE REGULATOR BYPASS, N1P43V0156, 45 degrees (valve is a 90 degree ball valve). ☐

4.6.2 **Place** the DDFP local control panel selector switch to MAN A OR MAN B position. ☐

NOTE

The RESET pushbutton may have to be pushed more than once to light these indications.

4.6.3 IF necessary, THEN **perform** the following to verify the "BATT A CONNECTED" and "BATT B CONNECTED" lights are lit:

4.6.3.1 At the local control panel, **push** the CIRCUIT BREAKER DC (AC) RESET pushbuttons for the following:

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. ☐

NOTE

IF engine does not start within 10 seconds, THEN the red START FAILURE light will energize. ☐

4.6.4 **Depress** and **maintain depressed** the ENGINE START pushbutton for a minimum of 10 seconds, or until the selected DDFP starts. ☐

4.6.5 IF the engine does not start, as indicated by the START FAILURE light lit, THEN **perform** the following:

4.6.5.1 **Release** START pushbutton. ☐

4.6.5.2 **Reset** controller by **depressing** RESET pushbutton. ☐

4.6.5.3 **Return** to step 4.6.2, this time selecting the alternate option (MAN A OR MAN B) for second start attempt. ☐

CAUTION

Failure to secure the jockey pump while running any fire pump when no flow demand exists on the system, may result in overheating or damage to the fire pump. ☐

4.6.6 IF jockey pump is running, THEN **place** the handswitch controller for the jockey pump to STOP to secure the jockey pump. ☐

k. In Plant JPM

SO-386
TITLE: **Commence A Waste Gas Release**
EVALUATION LOCATION: ____ SIMULATOR ____ CONTROL ROOM __X__ PLANT
PROJECTED 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:

- Commence a #3 WGDT waste gas decay tank release.

Examinee:	
Overall JPM Performance:	**Satisfactory** ☐ **Unsatisfactory** ☐
Evaluator Comments (attach additional sheets if necessary)	

EXAMINER: _____

CONDITIONS

When I tell you to begin, you are to **COMMENCE A WASTE GAS RELEASE**. The conditions under which this task is to be performed are:

a. Unit 2 is in Mode 1.
b. The initial conditions of FNP-2-SOP-51.0 Appendix 3 have been completed.
c. #3 WGDT is at 60 psig, and has been sampled and analyzed.
d. A WGDT Batch Gaseous Waste Release Permit has been issued per CCP-208.
e. The waste gas system is shut down per FNP-2-SOP-51.0.
f. FNP-2-SOP-51.0, Appendix 3, has been completed up to and including the test on process radiation monitor R-14 which has been tested and restored to normal.
g. You have the Radside watch station keys.

Your task is to continue the release of #3 WGDT using FNP-2-SOP-51.0 Appendix 3, starting at step 4.1.7.

EVALUATION CHECKLIST

	ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
	_____ START TIME		
*1.	(step 4.1.7) Open #3 WGDT outlet valve Q2G22V019C	TPNS number is recorded in SOP-51.1 and opened by turning the handwheel counter-clockwise. (CUE: the identified Valve is as you described)	S / U
*2.	(step 4.1.8) Open bank 'A' GDT bank outlet valve Q2G22V017.	TPNS number is recorded in SOP-51.1 and opened by turning the handwheel counterclockwise. (CUE: the identified Valve is as you described)	S / U
3.	(Step 4.1.9.1) Verify RCV-14 flow controller is set at zero position.	RCV-14 flow controller is verified at zero demand. (CUE: the identified controller is as you described)	S / U
4.	(step 4.1.9.2) Verify the plant vent pressure regulator Q2G22V205 is set for 15 psi.	Checks setpoint on plant vent pressure regulator. (CUE: the identified indicator is as you described.)	S / U
*5.	(step 4.1.10) Using Master Valve key, unlock and open RCV-14 upstream isolation Q2G22V089.	unlocks and turns handwheel counterclockwise until opened. (CUE: the identified Valve is as you described)	S / U

EVALUATION CHECKLIST

ELEMENTS:		STANDARDS:	RESULTS: (CIRCLE)
*6.	(step 4.1.11) Open the RCV-14 downstream isolation Q2G22V207.	turns handwheel counterclockwise until opened (CUE: the identified Valve is as you described)	S / U
*7.	(step 4.1.12) Turn GDT discharge valve to plant vent stack Q2G22V206, RCV-14 hand switch to open.	handswitch is turned to open. **Observes** the green light lit with zero demand on the controller. (CUE: The identified handswitch is as you described and the green light is lit.)	S / U
8.	(step 4.1.13) Record start time and tank pressure in SOP-51.0 and notify the Shift Radio Chemist. • Ensure examinee identifies correct pressure indicator and range.	• Start time and tank pressure are recorded in SOP-51.0. (The current time is the start time and #3 WGDT [2-PIS-1038] pressure is 60 psig.) • Shift Radio chemist notified. (CUE: Shift Radio chemist acknowledges Waste Gas release start time and pressure)	S / U
*9.	(step 4.1.14) Slowly open GDT discharge valve to plant vent RCV-14 using the Waste Gas Discharge Control HIK-014 on the Waste Gas Panel and verify the following: (See 10 below)	HIK-014 adjusted open. **Observes** the red light lit with demand on the controller. (CUE: the red light is lit.)	S / U
10.	(step 4.1.14.1) Verify R-14 count rate is less than R-14 setpoint	Observes R-14 count rate is increasing and above R-14 setpoint. [May call Control Room] (CUE: R-14 reads 5,000 counts and is steady)	S / U
11.	(step 4.1.14.2) Checks rate of pressure decrease.	Observes The pressure in GDT is decreasing at a rate that ensures the release of the entire tank will take greater than one hour. (CUE: 5 minutes have passed and pressure has dropped 2 psi)	S / U

EVALUATION CHECKLIST

ELEMENTS:	STANDARDS:	RESULTS: (CIRCLE)
12. (step 4.1.15) Monitor all gas decay tank pressures during the release.	Observes that only the tank which is being released exhibits a pressure decrease. (CUE: #3 WGDT pressure is decreasing slowly, all other pressures are steady)	S / U

_____ STOP TIME

Terminate JPM when all elements of this JPM are completed.
CUE: Another operator will continue from here.

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

GENERAL REFERENCES:

1. FNP-2-SOP-51.0, Version 49.2
2. FNP-2-CCP-213.1, Version 19.0
3. Technical Specification
4. K/As: 071A2.02 RO-3.3 SRO-3.6
   071A4.09 RO-3.3 SRO-3.5
   071A4.26 RO-3.1 SRO-3.9

GENERAL TOOLS AND EQUIPMENT:

None

Critical ELEMENT justification:

Element	Evaluation
1, 2	**Critical:** Required for task completion: required to unisolate #3 WGDT from the release flowpath.
3, 4	**NOT Critical:** Components are normally in the required position, and do not have to be manipulated for successful completion of this task.
5-7	**Critical:** Required for task completion: required to unisolate #3 WGDT from the release flowpath.
8	**NOT Critical:** Task would be completed successfully without doing this element or by doing it incorrectly (recording the wrong tank pressure, reading the pressure guage incorrectly, recording the wrong time, etc.).
9	**Critical:** Required for task completion: required to open the only remaining valve in the release flowpath for the #3 WGDT.
10	**NOT Critical:** No alarming condition exists.
11	**NOT Critical:** Check step only with no abnormal conditions.
12	**NOT Critical:** Check step only with no abnormal conditions.

COMMENTS:

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HANDOUT

CONDITIONS

When I tell you to begin, you are to **COMMENCE A WASTE GAS RELEASE**. The conditions under which this task is to be performed are:

a. Unit 2 is in Mode 1.
b. The initial conditions of FNP-2-SOP-51.0 Appendix 3 have been completed.
c. #3 WGDT is at 60 psig, and has been sampled and analyzed.
d. A WGDT Batch Gaseous Waste Release Permit has been issued per CCP-208.
e. The waste gas system is shut down per FNP-2-SOP-51.0.
f. FNP-2-SOP-51.0, Appendix 3, has been completed up to and including the test on process radiation monitor R-14 which has been tested and restored to normal.
g. You have the Radside watch station keys.

Your task is to continue the release of #3 WGDT using FNP-2-SOP-51.0 Appendix 3, starting at step 4.1.7.

RType G2.57

BATCH GASEOUS WASTE RELEASE PERMIT
WASTE GAS DECAY TANK

UNIT # 2 GWRP # NRC JPM

PART I Operational Data:

Gas Decay Tank No. 3 Tank Pressure 60(psig)

Release Permit requested by: Shift Supervisor

Date Today Time 2 hours ago

PART II Pre-Release Data:

RELEASE ESTIMATES FOR THIS SOURCE - See Attached

Maximum Monitor Setpoint: RE-14 14,000 CPM

Comment: _____

This permit authorizes the Batch Release of Gas Decay Tank No. 3 at a release rate of 100 cfm

with a MINIMUM of 1 (enter 1 or 2) Fan Operation.

Start Date Today Expiration Date 2 days from today

Approved by: Shift Radiochemist Date Today Time 1 hour ago

PART III Operational Data:

Actual number of AUX BLDG MAIN EXHAUST FANS in operation: _____ (1 or 2)

RE14 SETPOINT CHANGE REQUIRED ( ) Yes (x) No

AS FOUND SETPOINT 10,000cpm ( )N/A _____

AS LEFT SETPOINT _____ cpm ( )N/A AS LEFT SETPOINT VERIFIED BY: (I&C)

DATE_____ TIME_____

RE14 CAL DUE DATE: Next Month _____

RE-14 Reading During Release _____ cpm

Post Release: _____cpm

WGDT #_____ Initial Pressure _____ psig Final Pressure: _____ psig

SOP OTC #

RELEASE START DATE ___/___/___ TIME: ___:___

RELEASE END DATE _ __/___/___ TIME: ___:___

RELEASE CONDUCTED BY: _____

Data Reviewed by: _____ Date ___/___/___ Time _____:_____

PART IV CHM UPDATE:

FOR DOSE CALCULATIONS - See Attached

FOR RELEASE RATES AND DURATION - See Attached

Comment: _____

Permit Updated by: _____ Date: ___/___/___ Time _____:_____

CHM Form 1706.1E

FARLEY NUCLEAR PLANT

UNIT 2

APPENDIX 3

WASTE GAS SYSTEM GAS DECAY TANK RELEASE

Completed By_____Date_____

Verified By_____Date_____

Reviewed By _____ Date_____

This appendix consists of 9 pages.

FARLEY NUCLEAR PLANT
UNIT 2

WASTE GAS SYSTEM GAS DECAY TANK RELEASE

1.0 Purpose

This appendix provides the Initial Conditions, Precautions and Limitations, and Instructions for the release of a gas decay tank to the vent stack.
Instructions are included in the following sections.

4.1 Gas Decay Tank Release

4.2 Radiation Monitor R-0014 Check

2.0 Initial Conditions

SJ 2.1 The version of this procedure has been verified to be the current version. (OR 1-98-498)

SJ 2.2 This procedure has been verified to be the correct unit for the task. (OR 1-98-498)

SJ 2.3 The electrical distribution system is energized and aligned for normal operation per System Check List FNP-2-SOP-36.0, PLANT ELECTRICAL DISTRIBUTION LINE-UP, with exceptions noted.

SJ 2.4 The compressed air system is in service and aligned for normal operation per FNP-2-SOP-31.0, COMPRESSED AIR SYSTEM.

SJ 2.5 Radiation monitor(s) R-14, OR (R-21 and R-22) are in service per FNP-2-SOP-45.0, RADIATION MONITORING SYSTEM.

SJ 2.6 The Gas Decay Tank to be released has been sampled and an approved gaseous waste release permit has been issued.

SJ 2.7 The Waste Gas System is NOT in operation, per FNP-2-SOP-51.0, WASTE GAS SYSTEM.

3.0 Precautions and Limitations

3.1 Radiation monitor R-14 must be frequently observed during the release of radioactive gas to assure that the count rate is not approaching R-14 setpoint as stated on the release permit.

3.2 IF R-14 becomes inoperable while discharging gaseous waste to the vent stack, THEN discharge shall be stopped immediately and the Shift Supervisor notified.

3.3 IF either R-14, R-14's alarm, or R-14's automatic termination of release function is inoperable, THEN with the Shift Supervisors permission the release may continue provided ODCM action requirements are met.

3.4 Once a gas decay tank has been isolated for sampling purposes, prior to discharging to the vent stack, the tank shall remain in an isolated condition to prevent the introduction of any gas which could alter the concentration of the tank's contained volume.

3.5 When a high alarm is initiated on channel R-14, ARDA may start (two consecutive polls one minute apart) and the Shift Radiochemist must be notified to stop the automated dose assessment per FNP-0-EIP-9.1, AUTOMATED DOSE ASSESSMENT METHOD, if ARDA is not required.

4.0 Instructions

NOTE: Initial each step as completed. Instructions for completion of gaseous waste release permit are specified in FNP-0-CCP-213, GASEOUS WASTE RELEASE PROGRAM.

CAUTION: Ensure counting room technician isolates waste gas tank from sample panel after sample has been taken.

4.1 WGDT No. 3 Release Permit No. NRC JPM.

NOTE: Steps 4.1.1 through 4.1.5 may be performed in any order.

SJ 4.1.1 Verify ALL the gas decay tanks isolated as follows:

NOTE: Perform the following steps in conjunction with Table 1 to determine the valves required to isolate the respective GDT.

SJ 4.1.1.1 Verify Closed GDT inlet & outlet valves.

SJ 4.1.1.2 Verify Closed GDT bank inlet & outlet valves.

TABLE 1

GDT	BANK	GDT OUTLET VALVE	GDT INLET VALVE	GDT BANK INLET VALVE	GDT BANK OUTLET VALVE
1	A	2-GWD-V-7823A (Q2G22V019A)	2-GWD-V-7820A (Q2G22V025A)	2-GWD-V-7818 (Q2G22V029)	2-GWD-V-7825 (Q2G22V017)
2	A	2-GWD-V-7823B (Q2G22V019B)	2-GWD-V-7820B (Q2G22V025B)	2-GWD-V-7818 (Q2G22V029)	2-GWD-V-7825 (Q2G22V017)
3	A	2-GWD-V-7823C (Q2G22V019C)	2-GWD-V-7820C (Q2G22V025C)	2-GWD-V-7818 (Q2G22V029)	2-GWD-V-7825 (Q2G22V017)
4	B	2-GWD-V-7833A (Q2G22V022A)	2-GWD-V-7830A (Q2G22V026A)	2-GWD-V-7828 (Q2G22V030)	2-GWD-V-7835 (Q2G22V020)
5	B	2-GWD-V-7833B (Q2G22V022B)	2-GWD-V-7830B (Q2G22V026B)	2-GWD-V-7828 (Q2G22V030)	2-GWD-V-7835 (Q2G22V020)
6	B	2-GWD-V-7833C (Q2G22V022C)	2-GWD-V-7830C (Q2G22V026C)	2-GWD-V-7828 (Q2G22V030)	2-GWD-V-7835 (Q2G22V020)
7	SHUT-DOWN	2-GWD-V-7886A (Q2G22V074A)	2-GWD-V-7883A (Q2G22V085A)	2-GWD-V-7881 (Q2G22V083)	2-GWD-V-7888 (Q2G22V076)
8	SHUT-DOWN	2-GWD-V-7886B (Q2G22V074B)	2-GWD-V-7883B (Q2G22V085B)	2-GWD-V-7881 (Q2G22V083)	2-GWD-V-7888 (Q2G22V076)

NOTE: Refer to FNP-ODCM, OFFSITE DOSE CALCULATION MANUAL for release limitations with R-14 out of service.

SJ 4.1.2 Check recorder RR0100 (point RR14 or RR22) in operation OR check that the Rad Met Data Acquisition (RMDA) System (for point R-14 or R-22) is operable.

NOTE: The setpoint for R-14 and R-22 can be obtained from FNP-2-CCP-213.1, GASEOUS EFFLUENT RADIATION MONITORING SYSTEM SETPOINTS.

SJ 4.1.3 For the operable rad monitor(s) read and record actual setpoint and background on R-14 and/or R-22. Actual setpoint will be found in the "Target Setpoint" column of the table at end of FNP-2-CCP-213.1, per footnote 5 of that table.

	Actual Setpoint	Background
R-14	10,000 cpm	400 cpm
R-22		

SJ 4.1.4 Check Actual Setpoints in step 4.1.3 are ≤ setpoint on release permit Section II.

SJ 4.1.5 Establish dilution flow rate, as stated in gaseous waste release permit, Section 2 and record actual flow rate 75,000 cfm ____.

SJ 4.1.6 Perform test on process radiation monitor R-14 per section 4.2 of this procedure.

NOTE: Perform the following steps in conjunction with Table 1 to determine the valves required to align the respective gas decay tank for discharge.

____ 4.1.7 Open gas decay tank outlet valve.
_____ (Record TPNS from Table 2).

____ 4.1.8 Open gas decay tank bank outlet valve.
_____ (Record TPNS from Table 2).

TABLE 2

GDT	BANK	GDT OUTLET VALVE	GDT BANK OUTLET VALVE
1	A	2-GWD-V-7823A (Q2G22V019A)	2-GWD-V-7825 (Q2G22V017)
2	A	2-GWD-V-7823B (Q2G22V019B)	2-GWD-V-7825 (Q2G22V017)
3	A	2-GWD-V-7823C (Q2G22V019C)	2-GWD-V-7825 (Q2G22V017)
4	B	2-GWD-V-7833A (Q2G22V022A)	2-GWD-V-7835 (Q2G22V020)
5	B	2-GWD-V-7833B (Q2G22V022B)	2-GWD-V-7835 (Q2G22V020)
6	B	2-GWD-V-7833C (Q2G22V022C)	2-GWD-V-7835 (Q2G22V020)
7	SHUT-DOWN	2-GWD-V-7886A (Q2G22V074A)	2-GWD-V-7888 (Q2G22V076)
8	SHUT-DOWN	2-GWD-V-7886B (Q2G22V074B)	2-GWD-V-7888 (Q2G22V076)

4.1.9 Verify the following:

____ 4.1.9.1 RCV-14 flow controller is at zero position.

____ 4.1.9.2 Plant vent pressure regulator 2-GWD-V-7896 (Q2G22V205) is set for 15 psi. (located next to RCV-14).

____ 4.1.10 Unlock and open RCV-14 upstream isolation valve 2-GWD-V-7895 (Q2G22V089).

____ 4.1.11 Open RCV-14 downstream isolation valve 2-GWD-V-7898 (Q2G22V207).

____ 4.1.12 Turn gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) handswitch (2HS-014) to OPEN.

_____ 4.1.13 Perform the following:

- Record Start Time _____
- Record Initial Tank Press _____ PSIG
- Notify the Shift Radiochemist

_____ 4.1.14 Slowly open gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) using WASTE GAS DISCHARGE CONTROL HIK-014, and verify the following:

_____ 4.1.14.1 R-14 count rate is less than R-14 setpoint.

_____ 4.1.14.2 The pressure in GDT is decreasing at a rate that ensures the release of the entire tank will take greater than one hour. (This ensures release rate specified on the Gaseous Waste Release Permit, Sec. II, is not exceeded.)

_____ 4.1.15 Monitor all gas decay tank pressures during the release. Ensure that only the tank which is being released exhibits a pressure decrease. IF any other tanks show a pressure decrease OR increase, THEN stop the release and notify the Shift Supervisor.

4.1.16 WHEN the desired gas decay tank pressure has been obtained, THEN perform the following:

_____ 4.1.16.1 Turn the gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) handswitch (2HS-014) to CLOSE.

_____ 4.1.16.2 Position WASTE GAS DISCHARGE CONTROL HIK-014 to zero.

_____ 4.1.17 Record the following:

Stop Time _____

Tank Press _____ PSIG

Final R-14 count rate _____ CPM

Final R-22 count rate _____ CPM

_____ 4.1.17.1 Notify the Shift Radiochemist of the above recorded items.

_____ 4.1.18 Close RCV-14 downstream isolation valve 2-GWD-V-7898 (Q2G22V207).

_____ 4.1.19 Close & lock RCV-14 upstream isolation valve 2-GWD-V-7895 (Q2G22V089).

_____ 4.1.20 Close gas decay tank bank outlet valve from step 4.1.8 _____ (Record TPNS).

_____ 4.1.21 Close gas decay tank outlet valve from step 4.1.7 _____ (Record TPNS).

_____ 4.1.22 For the operable rad monitor(s) record the average values during the release of R-14 and/or R-22 from recorder RR0100 (points RR14 and/or RR22) readings OR record average value obtained from the RMDA system (points R-14 and/or R-22).

R-14 Average _____ Recorder/RMDA (circle one used)

R-22 Average _____ Recorder/RMDA (circle one used)

_____ 4.1.23 Transfer required data to the release permit.

Operator _____

Date _____

_____ 4.1.24 IF necessary, THEN return waste gas system to operation per FNP-2-SOP-51.0, WASTE GAS SYSTEM.

_____ 4.1.25 Independently verify RCV-14 downstream isolation valve
IV 2-GWD-V-7898 (Q2G22V207) is closed.

_____ 4.1.26 Independently verify RCV-14 upstream isolation valve
IV 2-GWD-V-7895 (Q2G22V089) is closed & locked.

4.2 Radiation Monitor R-14 Check

SJ 4.2.1 Verify the following RCV-14 isolation valves are closed before performing this test:

[] 2-GWD-V-7895 (Q2G22V089)
[] 2-GWD-V-7898 (Q2G22V207)

SJ 4.2.2 Turn gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) handswitch (2HS-014) to OPEN.

SJ 4.2.3 Adjust HIK-014 flow controller to 100%.

NOTE:
- **Either step 4.2.4 or step 4.2.5 may be utilized to satisfy the isolation capabilities of RCV-14. Steps not required to be performed should be marked N/A (NOT APPLICABLE).**
- **Step 4.2.4 will insert a signal approximately equal to 10^5 cpm. IF the current trip setpoint of RCV-14 is greater than 10^5 cpm, THEN guidance is provided to perform step 4.2.5.**

4.2.4 Initiate HIGH ALARM on channel R-14 as follows:

SJ 4.2.4.1 Place the OPERATION SELECTOR switch to PULSE CAL.

SJ 4.2.4.2 Check HIGH ALARM is received.

SJ 4.2.4.3 IF HIGH ALARM is received, THEN proceed to step 4.2.4.4. Otherwise, proceed to step 4.2.5.

SJ 4.2.4.4 Check 2-GWD-RCV-14 (Q2G22V206) closes.

SJ 4.2.4.5 Operate handswitch (2HS-014) for 2-GWD-RCV-14 (Q2G22V206) from WGP to verify that valve cannot be opened.

SJ 4.2.4.6 Reset HIGH ALARM using the OPERATION SELECTOR switch.

SJ 4.2.4.7 Place the OPERATION SELECTOR switch to OPERATE.

SJ 4.2.4.8 Turn gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) handswitch (2HS-014) to CLOSED

SJ 4.2.4.9 Adjust HIK-014 flow controller to 0%.

SJ 4.2.4.10 Proceed to step 4.1.7.

4.2.5 Initiate high alarm on channel R-14 by having I&C insert a test signal as follows:

N/A

I&C

4.2.5.1 Place the operation selector to LEVEL CAL.

I&C

4.2.5.2 Adjust A-1 R3 clockwise to the alarm setpoint.

4.2.5.3 Check that 2-GWD-RCV-14 (Q2G22V206) closes.

4.2.5.4 Operate handswitch (2HS-014) for 2-GWD-RCV-14 (Q2G22V206) from WGP to verify that the valve cannot be opened.

I&C

4.2.5.5 Adjust A-1 R3 counter-clockwise to its minimum position.

I&C

4.2.5.6 Reset the high alarm using the OPERATION SELECTOR switch.

I&C

4.2.5.7 Place the OPERATION SELECTOR switch to OPERATE.

4.2.5.8 Turn gas decay tank discharge valve to plant vent 2-GWD-RCV-14 (Q2G22V206) handswitch (2HS-014) to CLOSED

4.2.5.9 Adjust HIK-014 flow controller to 0%.

N/A

4.2.5.10 Proceed to step 4.1.7.

5.0 References

5.1 P&ID, D-205042, sheets 5 and 6, Waste Processing System

5.2 Westinghouse System Description SD-ALA-409

5.3 FNP-ODCM, OFFSITE DOSE CALCULATION MANUAL (Corporate Documentum)

5.4 FSAR Vol. XI Section 11.3 and 11.4

5.6 FNP-0-CCP-213