

Facility: Calvert Cliffs Units 1 & 2		Date of Examination: 8/28/06 - 9/1/06	
Exam Level (circle one): RO / SRO-I / SRO-U		Operating Test Number: 2006	
Control Room Systems [@] (8 for RO ; 7 for SRO-I; 2 or 3 for SRO-U)			
	System / JPM Title	Type Code*	Safety Function
a.	CVCS / Respond to Inadvertent Dilution While Critical (NRC-01)	A,M,S	1
b.	RCS / Align HPSI for Core Flush Via Pressurizer Inject (NRC-02)	D,S	2
c.	ECCS / Respond to Spurious SIAS (NRC-03)	M,S	3
d.	AFW / Respond to Loss of Condensate < 5% Power (NRC-04)	A,D,L,S	4 (secondary)
e.	RHR / Respond to Loss of Shutdown Cooling Pumps (NRC-05)	A,M,S	4 (primary)
f.	EDG / Parallel 1A DG to the 11/17 4KV Bus (NRC-06)	A,M,S	6
g.	NI / Perform Excore Calibration (NRC-07)	A,N,S	7
h.	CC / Shift Component Cooling Heat Exchangers (NRC-08)	D,S	8
In-Plant Systems [@] (3 for RO ; 3 for SRO-I; 3 or 2 for SRO-U)			
i.	RHR / Align SDC Locally During Control Room Fire (NRC-13)	E,N,R	4
j.	AC / Restore Reactor MCCs and Instrument Buses (NRC-10)	D,E,R	6
k.	IA / Compressor Startup On Loss of Normal Cooling (NRC-11)	D	8
@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.			
* Type Codes		Criteria for RO / SRO-I / SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator		4-6 / 4-6 / 2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$	

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System / JPM Title	Type Code*	Safety Function
a. CVCS / Respond to Inadvertent Dilution While Critical (NRC-01)	A,M,S	1
b.		
c. ECCS / Respond to Spurious SIAS (NRC-03)	M,S	3
d. AFW / Respond to Loss of Condensate < 5% Power (NRC-04)	A,D,L,S	4 (secondary)
e. RHR / Respond to Loss of Shutdown Cooling Pumps (NRC-05)	A,M,S	4 (primary)
f. EDG / Parallel 1A DG to the 11/17 4KV Bus (NRC-06)	A,M,S	6
g. NI / Perform Excore Calibration (NRC-07)	A,N,S	7
h. CC / Shift Component Cooling Heat Exchangers (NRC-08)	D,S	8
In-Plant Systems® (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. AFW / Align Fire Water to AFW Pp Suction (NRC-09)	E,N	4
j. AC / Restore Reactor MCCs and Instrument Buses (NRC-10)	D,E,R	6
k. FH / Respond to Lowering Refuel Pool Level (NRC-12)	N,R	8
@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)ternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

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d. AFW / Respond to Loss of Condensate < 5% Power (NRC-04)	A,D,L,S	4
e.		
f.		
g.		
h.		
In-Plant Systems [@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i.		
j. AC / Restore Reactor MCCs and Instrument Buses (NRC-10)	D,E,R	6
k. FH / Respond to Lowering Refuel Pool Level (NRC-12)	N,R	8
@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-01**Task Title: **Respond to Inadvertent Dilution While Critical (SOER 94-2)****[Alternate Path]**Task Number: **202.006**K/A Reference: **024.AA1.17 (3.9, 3.9)**Method of testing:Simulated Performance: _____ Actual Performance: √ Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is in Mode 1 at 97% power.**
- 2. Regulating CEAs are inserted to 105" for MTC testing.**
- 3. Reactor power unexpectedly begins to increase.**

Initiating Cue:

You are performing the duties of the Unit 1 RO/CRO. The CRS directs you to respond per AOP-1A, Section V.

Task Standard:

Initiate fast boration to control reactor power in accordance with AOP-1A, "Inadvertent Boron Dilution".

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

None

General References:

1. AOP-1A, "Inadvertent Boron Dilution", Revision 3
2. Dwg 61075 Sheet 33B for CVC-514-MOV, Revision 2
3. NO-1-201, "Calvert Cliffs Operating Manual", Revision 17
4. PR-1-103, "Use of Procedures", Revision 5

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

1. Start with IC-13. Lower power to 97% with CEAs inserted to 105".
2. Use System Lineup (26) Command VCT_CONC(1) = 0 to simulate placing a deborating demin in service. Execute the file and allow power to start rising.
3. Insert malfunction CEDS008 for Shim Switch failure after CEAs are at 105".
4. Run simulator until power begins to rise, then freeze. Reset the VCT concentration back to initial concentration using system lineup.
5. Ensure 11 CC HX in service and 12 CC PP running (matches setup for JPM NRC-08).
6. Disable and tag out 13 Charging Pump.
7. Load REF CMD SET at 89.7.
8. When the applicant has placed CV-520 in bypass to remove the IXs from service, execute the VCT concentration file to stop the deboration.
9. When the applicant attempts to open CVC-514-MOV, use Remote Function for CVC-514-MOV (Bkr 52-10425) to OPEN the breaker.

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME START _____

Locates AOP-1A Section V actions

Same as element.

V. A. STOP THE PRIMARY SOURCES OF DILUTION

_____ 1. Stop any makeup to the RCS.

Verifies RC M/U Pps are not running, CVC-512 is shut.

_____ * 2. Place the IX BYPASS handswitch, 1-HS-2520, to BYPASS.

Places HS-2520 to BYPASS on 1C07 and BYP position indication illuminated for CVC-520.

B. CONTROL REACTOR POWER

_____ 1. IF the rate of power rise can NOT be stopped, ...

No action required at present time.

_____ 2. Control the rise in power using CEAs and/or boration:

CUE: CRS directs you to insert CEAs 5 inches and then fast borate for 10 seconds.

CAUTION CEAs must be maintained above the Transient Insertion Limits PER Tech Spec 3.1.6. to maintain SDM.

_____ • Insert CEAs as necessary while maintaining the CEAs above the Transient Insertion Limit.

Selects Manual Sequential or Manual Group (and CEA Group V) and attempts to insert CEAs to control power rise. Recognizes that CEAs are not inserting.

CUE: CRS acknowledges and directs you to attempt to fast borate for 10 seconds.

_____ • Borate the RCS as necessary by completing the following actions:

_____ a. Shut the VCT M/U valve, 1-CVC-512-CV

Checks green position indication light on for CVC-512 on 1C07.

Examiner Note: CVC-514 indication lost. Simulator Operator will simulate tripping CVC-514-MOV breaker when applicant takes handswitch to OPEN position.

_____ b. Open the BA DIRECT M/U valve, 1-CVC-514-MOV

Places HS-2514 in open and checks indication for CVC-514. Recognizes CVC-514 does not open. Applicant

informs CRS.

Examiner Note: If RO applicant asks CRS for guidance, CRS will direct applicant to follow the procedure and fast borate for 10 seconds using only the running charging pump.

- _____ •.1 IF this boration flowpath is NOT available, THEN attempt alternate methods of boration PER ATTACHMENT (1) BORATING THE RCS Refers to Attachment (1).

NOTE: The following eight methods of boration are arranged in order of preference. The method used should be based on equipment availability.

- _____ 1. IF the RCS is to be borated by ANY of the following methods, THEN proceed to the appropriate step: Places HS-226X and Y to stop and check stopped indication on BA Pps

- _____ • Step 3, Page 3, BORATING FROM THE BASTs USING THE GRAVITY FEED VALVES Applicant should select the gravity feed option because it is the first method in sequence which can be performed. Boration using BA pumps is not a viable option because of CVC-514 failed closed.

3. BORATING FROM THE BASTs USING THE GRAVITY FEED VALVES

- _____ a. Check that the BAST(s) are available. Verifies adequate level in one or both BASTs.

* b. Open 11 and/or 12 BAST GRAVITY FD valves:

- 1-CVC-508-MOV
- 1-CVC-509-MOV

Turns handswitch(es) for CVC-508 and/or CVC-509 to OPEN position, verifies both red and green indicating lights lit, and releases handswitch(es) (which spring return(s) to AUTO position). Verifies valve(s) fully open by observing green handswitch light(s) out.

* c. Shut the VCT OUT valve, 1-CVC-501-MOV.

Turns handswitch for CVC-501 to CLOSE position. Verifies has both red and green indicating lights lit. Verifies CVC-501 fully closes by

ELEMENT
 (* = CRITICAL STEP)

STANDARD

- observing red handswitch lights out.
- d. IF the RCS is on Shutdown Cooling, THEN verify that the boration flowpath is aligned to a RCS leg with Shutdown Cooling flow. No action required.

CAUTION: Anytime the RCS temperature is less than 365°F AND Pressurizer level is greater than or equal to 170 inches, only ONE Charging Pump is allowed to be operated.

CUE: When informed of procedural requirement to start all charging pumps, CRS directs applicant to deviate from procedure and to use only the running charging pump and NOT the idle charging pumps.

Examiner Note: Procedure requires all charging pumps. However, applicant was directed earlier to "fast borate" for 10 seconds to control the reactivity addition event. All charging pumps running will cause an excessive boration, resulting in an unnecessary plant transient.

- _____ * e. Start ALL available CHG PPs. Recognizes that procedure step conflicts with directions and informs CRS.
- _____ f. Verify Charging Flow by observing BAST level lowering. Monitors BAST level.
- g. WHEN the RCS has the required boron concentration, THEN secure the boration.
- (1) If desired, stop the CHG PP(s) No additional pumps were started.
- _____ * (2) Open the VCT OUT valve, 1-CVC-501-MOV and place the VCT OUT handswitch, 1-HS-2501, in AUTO. Places CVC-501 handswitch in OPEN, observes the red and green handswitch lights lit, places handswitch in AUTO, observes green light out when valve fully open.
- _____ * (3) Shut the BAST GRAVITY FD valves:
- 1-CVC-508-MOV
 - 1-CVC-509-MOV
- Turns handswitch the open gravity feed valves, CVC-508 and/or CVC-509 to CLOSE position, verifies both red and green indicating lights lit, and releases handswitch(es) (which spring return(s) to AUTO position). Verifies valve(s) fully close by observing green

ELEMENT
(* = CRITICAL STEP)

STANDARD

handswitch light(s) out.

CAUTION: Turbine load or steam demand should not be raised if an inadvertent boron dilution event is in progress.

- | | | | |
|-------|----|---|---------------------|
| _____ | 3. | Maintain T _{COLD} on program by performing the following appropriate steps: | No action required. |
| | | <ul style="list-style-type: none">• Adjust TBVs or ADVs• Reduce Turbine load | |
| _____ | 4. | Notify the SO-BP of any electrical load changes. | No action required. |

Examiner Note: This JPM is completed when boration has been completed and Tc and load have been checked per AOP-1A Steps V. No further actions are required. The applicant is expected to end the JPM.
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TIME STOP _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is in Mode 1 at 97% power.
2. Regulating CEAs are inserted to 105" for MTC testing.
3. Reactor power unexpectedly begins to increase.

INITIATING CUE:

You are performing the duties of the Unit 1 RO/CRO. The CRS directs you to respond per AOP-1A, Section V.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-02**Task Title: **Align HPSI for Core Flush via Pressurizer Injection**Task Number: **201.058**K/A Reference: **011.EA1.11 (4.2, 4.2)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. A loss of coolant accident has occurred.**
- 2. RCS pressure is 18 PSIA with CETs indicating 233°F.**
- 3. SIAS actuated 9 hours ago.**
- 4. EOP-5 implemented.**

Initiating Cue:

The CRS directs you, the CRO, to perform EOP-5, Block Step AE, "Commence Core Flush".

Task Standard:

Establish core flush flow via pressurizer injection.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

None

General References:

1. EOP-5, "Loss of Coolant Accident", Revision 21
2. EOP Attachment 10, "High Pressure Safety Injection Flow", Revision 18

Time Critical Task:

No

Validation Time:

20 minutes

Simulator Setup:

1. IC-13, 100% power
2. Insert Malfunction RCS001. Run the simulator until RAS, perform EOP-5, Block Step V, then freeze the simulator.

TIME START _____

_____	Identify and locate EOP-5, Step AE.	Same as element.
_____	<p>1. IF the elapsed time from SIAS actuation is between 8 and 11 hours, AND ANY of the following conditions exist:</p> <ul style="list-style-type: none"> · RCS subcooling is less than 30°F based on CET temperatures · Pressurizer level is less than 30 inches {90} · RVLMS indicates level below the top of the hot leg <p>THEN commence core flush by lining up for Pressurizer Injection as follows:</p>	Determines core flush is required.
_____	a. Check TWO HPSI PPs are available.	Checks HPSI pumps and determines 11 and 13 HPSI pumps are running (Red light on, Green light off, normal running amps).
_____	* b. Open the SI TO CHG HDR valve, 1-CVC-269-MOV.	Places HS in open, verifies red light lit, green light out
_____	c. IF CIS has actuated, AND IA CNTMT ISOL valve, 1-IA-2080-MOV is shut, THEN perform the following actions:	Determines CIS has actuated.
_____	* (1) Place the 1-IA-2080-MOV CIS OVERRIDE switch, 1-HS-2080A, in OVERRIDE.	Places 1-HS-2080A in OVERRIDE.
_____	* (2) Open IA CNTMT ISOL valve, 1-IA-2080-MOV.	Places 1-HS-2080 in OPEN, verifies red light lit, green light out.
_____	* d. Shut LOOP CHG valves: 1-CVC-518-CV 1-CVC-519-CV	Places HS-518 and HS-519 in CLOSE, verifies green lights lit, red lights out.

_____	* e. Shut the PRESSURIZER SPRAY VLVS by adjusting the output I-HIC-100 to 0%: I-RC-100E-CV I-RC-100F-CV	Adjusts HIC-100 to 0% output, observes 100E and 100F green lights lit, red lights out.
_____	f. Verify HPSI AUX HDR ISOL valve, 1-SI-656-MOV, is open.	Observes 656-MOV red light lit, green light off.
_____	* g. Open AUX SPRAY valve, 1-CVC-517-CV.	Places CVC-517 HS in OPEN, verifies red light lit, green light off.
_____	h. IF 13 HPSI PP is available, THEN perform the following actions:	Determines step is applicable.
_____	(1) Verify 13 HPSI PP is running	Checks 13 HPSI PP indicating lights and amps.
_____	* (2) Verify HPSI HDR XCONN valve, 1-SI-653-MOV, is shut.	Places SI-653 HS in OVERRIDE CLOSE, verifies green light lit, red light out.
_____	* (3) Shut AUX HPSI HDR valves: I-SI-617-MOV I-SI-627-MOV I-SI-637-MOV I-SI-647-MOV	Places HS in CLOSE for 617, 627, 637, 647, verifies green lights lit, red lights out.
_____	(4) Verify 11 or 12 HPSI PP is running.	Checks 11 HPSI PP indicating lamps and amps.
_____	(5) IF approximately 150 GPM is NOT indicated THEN initiate Hot Leg Injection.	Determines Hot Leg Injection is not required. Verifies flow is ≥ 150 GPM on 1-FIA-212.
_____	i. IF 13 HPSI is NOT available...	Determines step is NA.
_____	2. WHEN Pressurizer Injection OR Hot Leg Injection is in progress, AND HPSI PPs are being used for Cold Leg Injection, THEN perform the following actions:	Determines step is applicable.
_____	a. Balance the flow between Pressurizer or Hot Leg Injection and Cold Leg Injection by throttling the MAIN HPSI HDR	Throttles MAIN HPSI HDR valves as needed to balance Cold Leg injection flows.

valves:

- 1-SI-616-MOV
- 1-SI-626-MOV
- 1-SI-636-MOV
- 1-SI-646-MOV

* b. Maintain the minimum flow required to remove decay heat **PER ATTACHMENT (10), HIGH PRESSURE SAFETY INJECTION FLOW.**

Refers to Attachment (10) and determines that minimum flow of 385 GPM is required. Checks total HPSI flow, and equally raises Cold Leg injection flow as required to meet the Attachment (10) requirement. Determines at least 150 gpm flow is going to the pressurizer (upper limit of charging flow instrument) plus indicated flow to the loops on total HPSI flow instrument.

_____ c. Ensure CET temperatures remain constant or lowering.

Monitors CET temperature and determines temperatures are slowly lowering.

TIME STOP _____

Examiner Note:	The task is complete when the operator has determined that CET temperatures are lowering after initiation of core flush flow. No further actions are required.
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APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. A loss of coolant accident has occurred.
2. RCS pressure is 18 PSIA with CETs indicating 233°F.
3. SIAS actuated 9 hours ago.
4. EOP-5 implemented.

INITIATING CUE:

The CRS directs you, the CRO, to perform EOP-5, Block Step AE, "Commence Core Flush".

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-03**Task Title: **Respond to Spurious Safety Injection Actuation Signal**Task Number: **048.028**K/A Reference: **006.A2.13 (3.9, 4.2)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is in Mode 3 at 380°F, 800 psia. Four RCPs are in service.**
- 2. A heatup to hot standby conditions was in progress, but was suspended 3 hours ago to perform plant maintenance.**
- 3. OP-1, Step 6.5 has been completed. Currently at Step 6.6.**

Initiating Cue:

You are performing the duties of the Unit 1 RO/CRO.

Task Standard:

Reset the spurious SIAS and terminate injection.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

Provide curves from OP-1, "Plant Startup From Cold Shutdown:

- **Figure 4, "RCS P/T Limits - 4 RCPs Running"**
- **Appendix 1, Pressurizer Heatup Log"**
- **Appendix 2, "RCS Heatup Log"**

General References:

1. **1C08-ALM, "ESFAS 11 Alarm Manual", Revision 34 (Window G05)**
2. **EOP Attachment 2, "SIAS Verification Checklist", Revision 18**
3. **ESFAS Drawing 61058 and 58A, Revision 35 (1-LD-058, 058A)**
4. **Drawing 61076 Sheet 14B, Control Ckt for 1-PS-5464-CV**
5. **Dampierre Spurious SI Event, IAEA Nuclear Safety Review for 2003**
6. **OP-1, "Plant Startup From Cold Shutdown", Revision 52**

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

1. **RCS at 380°F, 800 psia, 4 RCPs in operation. Complete OP-1 through Step 6.5.**
2. **Open RCS Sample Isolation 1-PS-5464-CV.**
3. **Enter malfunction esfa003_02 on F1.**
4. **After applicant begins the JPM, initiate a spurious Train B SIAS signal by inserting Malfunction ESFA003_02 via F1. REMOVE MALFUNCTION after it has been initiated.**
5. **Provide curves from OP-1:**
 - **Figure 4, "RCS P/T Limits - 4 RCPs Running"**
 - **Appendix 1, Pressurizer Heatup Log"**
 - **Appendix 2, "RCS Heatup Log"**
6. **Display Pressure-Temperature curves on Plant Computer CRT on 1C04.**

TIME START _____

Examiner Note: After **applicant** has "taken the watch", simulator booth operator will initiate a spurious Train B SIAS by inserting Malfunction ESFA003-02. Booth operator will then **REMOVE** the malfunction, so that applicant will be able to reset the signal later.

_____ Locate and reference Alarm Manual for 1C08, G-05. Same as element.

RESPONSE

_____ 1.a. **IF** the reactor trips, Determines step is N/A.

b. **DETERMINE** the validity of the SIAS by observing alternate channels of indication for the same parameter.

_____ • Check containment pressure parameters on 1C09. Checks Containment pressure indications for pressure > 2.8 psig for 1C09. Determines pressure < 2.8 psig.

_____ • Check pressurizer pressure parameters on 1C06. Checks Pressurizer pressure indications for pressure < 1740 psia on 1C06. Determines pressure < 1740 and rising.

CUE: Acknowledge report from the applicant.

* • Conclusion Determines that SIAS actuation is not valid. Reports conclusion to CRS or SM..

CUE: SM/CRS acknowledges invalid SIAS. (For RO applicants only), CRS directs you to respond per ALM 1C08 Window G-05, "ACTUATION SYS SIAS TRIP".

_____ c. **IF** the SIAS is invalid OR inadvertent, **THEN**, with Shift Manager OR Control Room Supervisor approval, **RESET** the SIAS AND RETURN components to their normal OR desired status. Obtains approval to reset SIAS-B.

- CUE: IF requested to reset SIAS locally, THEN the CRS directs reset from CR due to no additional resources.
- CUE: IF applicant requests permission to stop 13 HPSI Pump and/or 12 Charging Pump, the CRS authorizes placing the pump handswitches in PTL.
- CUE: CRS advises utilizing EOP Attachments to reset SIAS.

_____	•	Reference EOP Attachment (2) and reposition handswitch to post-accident position for equipment indicated with an asterisk (*).	References EOP Attachment (2). Requests permission to reset the SIAS signal from the SM or CRS. Repositions equipment handswitches indicated with an asterisk (*) to their post accident positions.
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1C08, 1C09, 1C10

- | | | | |
|-------|----|---|---|
| _____ | a. | 11 and 13 HPSI PPs
RUNNING | May check HPSI PPs running by red lights lit. |
| _____ | b. | 11 and 12 LPSI PPs
RUNNING | May check LPSI PPs running by red lights lit. |
| _____ | c. | 11 and 12 CS PPs
RUNNING | May check CS PPs running by red lights lit. |
| _____ | d. | MAIN HPSI HDR valves:

• 1-SI-616-MOV OPEN
• 1-SI-626-MOV OPEN
• 1-SI-636-MOV OPEN
• 1-SI-646-MOV OPEN | May check valves open by red lights lit. |
| _____ | e. | AUX HPSI HDR valves:

• 1-SI-617-MOV OPEN
• 1-SI-627-MOV OPEN
• 1-SI-637-MOV OPEN
• 1-SI-647-MOV OPEN | May check valves open by red lights lit. |
| _____ | f. | LPSI HDR valves:

• 1-SI-615-MOV OPEN
• 1-SI-625-MOV OPEN
• 1-SI-635-MOV OPEN | May check valves open by red lights lit. |

ELEMENT
 (* = CRITICAL STEP)

STANDARD

	• 1-SI-645-MOV	OPEN	
_____	g. SIT CKV LKG DRN valves:		May check valves closed by green lights lit.
	• 1-SI-618-CV	SHUT	
	• 1-SI-628-CV	SHUT	
	• 1-SI-638-CV	SHUT	
	• 1-SI-648-CV	SHUT	
_____	h. SIT OUT valves:		May check valves open by red lights lit.
	• 1-SI-614-MOV	OPEN	
	• 1-SI-624-MOV	OPEN	
	• 1-SI-634-MOV	OPEN	
	• 1-SI-644-MOV	OPEN	
_____	i. SIT RECIRC TO RCDT valve, 1-SI-661-CV	SHUT	May check valve closed by green light lit.
_____	j. 11, 12, 13 & 14 CNTMT AIR CLR RUNNING IN LOW		May check fans running in low by slow speed lights lit.
_____	k. CNTMT CLR EMER OUT valves:		May check valves open by red lights lit.
	• 1-SRW-1582-CV	OPEN	
	• 1-SRW-1585-CV	OPEN	
	• 1-SRW-1590-CV	OPEN	
	• 1-SRW-1593-CV	OPEN	
_____	l. 11, 12 and 13 IODINE FILT FANs RUNNING		May check fans running by red lights lit.
_____	m. RCDT PP CNTMT ISOL valve, 1-RCW-4260-CV	SHUT	May check valve closed by green light lit.
_____	n. WGS CNTMT ISOL valves:		May check valves closed by green light lit.
	• 1-WGS-2180-CV	SHUT	
	• 1-WGS-2181-CV	SHUT	
_____	* o. CNTMT RMS ISOL valves:		Repositions 5292-CV handswitch to CLOSE.
	• 1-CRM-5291-CV	SHUT	
	• 1-CRM-5292-CV	SHUT	

ELEMENT
 (* = CRITICAL STEP)

STANDARD

_____ p. CNTMT NORMAL SUMP DRN valves:
 • 1-EAD-5462-MOV SHUT
 • 1-EAD-5463-MOV SHUT

* q. RCS SAMPLE ISOL valve,
 1-PS-5464-CV SHUT
 Repositions PS-5464-CV handswitch to CLOSE.

_____ r. H₂ PURGE ISOL valves:
 • 1-HP-6900-MOV SHUT
 • 1-HP-6901-MOV SHUT
 May check valves shut by green lights lit.

1C07

a. L/D CNTMT ISOL valves:
 • 1-CVC-515-CV SHUT
 May reposition CVC-515 handswitch to CLOSE.

* • 1-CVC-516-CV SHUT
 Repositions CVC-516 handswitch to CLOSE.

_____ b. 11, 12 and 13 CHG PPs
 RUNNING
 May check pumps running by red lights lit.

_____ c. VCT OUT valve,
 1-CVC-501-MOV SHUT
 May check valve closed by green light lit.

_____ d. VCT M/U valve,
 1-CVC-512-CV SHUT
 May check valve closed by green light lit.

_____ e. BA DIRECT M/U valve,
 1-CVC-514-MOV OPEN
 May check valve open by red light lit.

_____ f. 11 and 12 BA PPs
 RUNNING
 May check pumps running by red lights lit.

_____ g. BAST GRAVITY FD valves:
 • 1-CVC-508-MOV OPEN
 • 1-CVC-509-MOV OPEN
 May check valves open by red lights lit.

_____ h. BAST RECIRC valves:
 • 1-CVC-510-CV SHUT
 • 1-CVC-511-CV SHUT
 May check valves closed by green lights lit.

* i. RCP BLEED-OFF ISOL valves:

- 1-CVC-505-CV SHUT
- 1-CVC-506-CV SHUT

Repositions CVC-505 handswitch to CLOSE.

CUE: Inform applicant the rest of Attachment (2) is complete.

* • Reset the SIAS by depressing the SIAS reset pushbutton for channel B.

Depresses SIAS B reset pushbutton on 1C10 Channel B ON.
 Verifies "Actuation Sys SIAS Tripped" alarm annunciator 1C08 G-05 is clear (green).

CUE: IF permission requested, CRS will direct applicant to stop injection pumps which started on the spurious SIAS.

_____ Return components to their normal or desired status.

Requests CRS permission to stop injection pumps (12, 13 HPSI PPs, 12 CHG PP, 12 LPSI PP)

_____ - STOP 12 LPSI PP

Places 12 LPSI PP handswitch in STOP, observes green light, lowering discharge pressure

* - STOP 13 HPSI PP

* - STOP 12 CHG PP

Places 13 HPSI PP handswitch in STOP, observes green light, lowering discharge pressure, before entering non-operating area of RCS P/T curve.

Places 12 CHG PP handswitch in STOP, observes green light, lowering discharge pressure, before entering non-operating area of RCS P/T curve.

TIME STOP _____

TERMINATING CUE: This JPM is complete when SIAS-B is reset, 12 HPSI PP is off, 13 HPSI PP is off, 12 CHG PP is off.

Verification of Completion

Job Performance Measure Number: NRC-03

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is in Mode 3 at 380°F, 800 psia. Four RCPs are in service.
2. A heatup to hot standby conditions was in progress, but was suspended 3 hours ago to perform plant maintenance.
3. OP-1, Step 6.5 has been completed. Currently at Step 6.6.

INITIATING CUE:

You are performing the duties of the Unit 1 RO/CRO.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-04**Task Title: **Respond to Loss of Condensate at Less Than 5% Power [Alternate Path]**Task Number: **202.037**K/A Reference: **056.A2.04 (2.6, 2.8)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is at 4.5% power during a plant startup.**
- 2. 13 Condensate Pump is danger tagged.**
- 3. 11 and 12 Condensate Pumps were in operation when both pumps tripped. Multiple alarms on 1C03 came in at the same time.**
- 4. The running feed pump, 11 SGFP, tripped on low suction pressure.**

Initiating Cue:

You are performing the duties of the Unit 1 CRO. The CRS directs you to respond per AOP-3G, Section VI.

Task Standard:

Take actions for a pump trip when <5% power, control SG levels between -24" and +30".

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**

- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

None

General References:

- 1. AOP-3G, "Malfunction of Main Feedwater System", Revision 9**

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

- 1. Establish stable conditions at ~45% power.**
- 2. Tag out 13 Condensate Pump.**
- 3. Insert Malfunctions CD004_01 and FW004_01 to trip 11 and 12 Condensate Pumps and 11 SGFP.**
- 4. Ensure 11 AFW Pump is aligned for service.**
- 5. Assign Trigger 1 as ms_4070A_open. Assign malfunction AFW001_01 to T1, which will trip 11 AFW Pump when the AFW MS admission CVs are opened.**

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME START _____

CUE: Begin at Step VI.A.1.

_____ Identify and locate AOP-3G, Step VI.A.1. Same as element.

A. DETERMINE IF A REACTOR TRIP IS REQUIRED.

_____ 1. **IF** SG level is approaching (-)50 inches, Monitors S/G levels, on 1C03. Determines Step is N/A at this time, and proceeds to Step B.

_____ B. ESTABLISH A SOURCE OF FEEDWATER.

CAUTION: Excessive feeding at low power conditions will affect T_{COLD} and Reactivity. PZR level and RCS pressure can be affected.

CAUTION: A severe waterhammer may result if Main Feedwater flow is restored after it has been stopped for greater than 80 minutes.

CUE: If asked, the CRS does not desire to start any SGFPs due to the tripped condensate pumps.

_____ 1. **IF** the following conditions exist: Determines step is N/A. (Standby SGFP is not available due to loss of condensate pumps)

- A SGFP has tripped
- The standby SGFP is available
- There is sufficient time available to start the standby SGFP

_____ 2. **IF** time does **NOT** permit starting the standby SGFP, Determines step is N/A. (Tripped SGFP cannot be restarted.)

CUE: If asked, the CRS does not desire to start any Condensate Booster Pumps due to the tripped Condensate pumps.

- | | | | |
|-------|----|---|--|
| _____ | 3. | IF a Condensate Booster Pump has tripped, | Determines Condensate Booster Pumps are not available (no Condensate Pumps operating). Proceeds to Step 4. |
| _____ | 4. | IF a Condensate Pump has tripped, THEN perform the following actions: | Determines step is applicable. |
| _____ | a. | IF a backup Condensate Pump starts automatically, THEN ensure that the pump is NOT affected by the failure mode. | Determines no backup pumps are available. |

ALTERNATE ACTIONS

CAUTION: Starting a pump without determining the cause of the failure could initiate a common mode failure.

CUE: If asked, CRS directs attempt to start the tripped Condensate pumps.

- | | | | |
|-------|-----|--|--|
| _____ | a.1 | IF a backup Condensate Pump did NOT start, THEN , with the approval of the SM/CRS, attempt to start the backup Condensate Pump. | Attempts pump start. Determines no pumps will operate. |
| _____ | a.2 | IF a backup Condensate Pump will NOT start, THEN , with the approval of the SM/CRS, attempt to start the tripped Condensate Pump. | Proceeds to Step 5 based on direction of CRS. |

_____	5.	IF Main Feedwater flow has been restored,	Determines step is N/A and proceeds to Step 6.
-------	----	---	--

NOTE: Restoration of Main or Auxiliary Feedwater will affect RCS T_{COLD}.

_____	6.	Control RCS T _{COLD} by using ANY of the following methods, as applicable:	Monitors Tc, 1C05 and/or 1C06, and TBV operation.
-------	----	---	---

- adjusting TBVs
- adjusting ADVS

to maintain the following temperature band:

_____		<ul style="list-style-type: none"> • IF the Reactor is critical, THEN within 2°F of program T_{COLD} 	Determines Tc is within 2°F of program.
-------	--	---	---

_____		<ul style="list-style-type: none"> • IF the Reactor is NOT critical, 	Determines step is N/A.
-------	--	---	-------------------------

_____	7.	IF Main Feedwater flow will NOT be restored , THEN perform the following actions:	Determines step is applicable.
-------	----	---	--------------------------------

a. Initiate AFW using 11 or 12 AFW PP as follows:

_____		(1) Verify open the steam driven train SG AFW Block Valves:	Verifies OPEN AFW Block valves; 1-AFW-4520, 4521, 4530, 4531-CV on 1C04.
-------	--	---	--

- 11 SG
- 1-AFW-4520-CV
 - 1-AFW-4521-CV

- 12 SG
- 1-AFW-4530-CV
 - 1-AFW-4531-CV

*		(2) Open the SG AFW STM SUPP & BYPASS valves: • (11 SG) 1-MS-4070-CV • (11 SG) 1-MS-4070A-CV • (12 SG) 1-MS-4071-CV • (12 SG) 1-MS-4071A-CV	Places handswitches 4070 and 4071 to OPEN and checks position indication for MS-4070A, 4071A, 4070, and 4071.
---	--	---	---

Examiner Note: AFW Pp aligned for service, trips when steam supply valves are opened.

		(3) Adjust and maintain 11 or 12 AFW PP discharge pressure at least 100 PSI greater than SG pressure using the AFW PP SPEED CONTRs: • (11 AFW) 1-HC-3987A • (12 AFW) 1-HC-3989A	Determines step can not be completed. Refers to Alternate Actions.
	a.1	Initiate AFW using 13 AFW PP as follows:	
		(1) Verify open the motor driven train SG AFW Block valves: 11 SG . 1-AFW-4522-CV . 1-AFW-4523-CV 12 SG . 1-AFW-4532-CV . 1-AFW-4533-CV	Verifies OPEN AFW Block valves; 1-AFW-4522, 4523, 4532, 4533-CV on 1C04. [5]

CAUTION: 13 AFW PP flow limit is 575 GPM.

*		(2) Start 13 AFW PP.	
		(3) Ensure the feedwater flowrate does NOT cause RCS cooldown to exceed the following limits for any	Monitors RCS temperature and lowers flow controller setpoint if necessary.

one hour: [B0126]

>256°F	100°F/hr
106°F to 256°F	40°F/hr
<106°F	35°F/hr

CAUTION: Total AFW flow should NOT exceed 600 GPM per unit (300 GPM per unit when feeding both Units from either Unit 1 OR Unit 2).

- | | | |
|----------------|--|--|
| <p>_____ *</p> | <p>(4) Adjust the SG FLOW CONTRs to maintain SG level at approximately zero inches:</p> <ul style="list-style-type: none"> • (11 SG)
1-FIC-4525A • (12 SG)
1-FIC-4535A | <p>Monitors SG level and adjusts flow controller setpoint to maintain SG level.</p> |
| <p>_____</p> | <p>b. Shut the SG FW ISOL valves:</p> <ul style="list-style-type: none"> • (11 SG)
1-FW-4516-MOV • (12 SG)
1-FW-4517-MOV | <p>Places handswitches 4516 and 4517 to SHUT, on 1C03 and checks position indication for FW-4516 and 4517.</p> |
| <p>_____</p> | <p>c. Notify Plant Chemistry that the AFW System is in service.</p> | <p>Notifies Plant Chemistry.</p> |
| <p>_____ *</p> | <p>d. Reduce power to less than 1%.</p> | <p>Inserts CEAs and/or borates to reduce Reactor Power. Monitors Reactor Power, on 1C05</p> |
| <p>_____</p> | <p>8. IF AFW is maintaining SG levels between (-)24 inches and (+)30 inches, THEN, with the approval of SM/CRS, perform ONE of the following:</p> | <p>Monitors S/G levels.</p> |

CUE: The CRS directs maintaining Reactor critical.

- | | | |
|--------------|--|---|
| <p>_____</p> | <ul style="list-style-type: none"> • Maintain power less than 1% while attempting to restore the Main Feedwater System. | <p>Monitors Reactor Power, on 1C05.</p> |
|--------------|--|---|

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME STOP _____

TERMINATING CUE:

This JPM is complete when applicant has adjusted 13 AFW pump for maximum flow and has initiated action to lower Reactor power to less than 1%. No further actions are required. The examiner is expected to end this JPM.

Verification of Completion

Job Performance Measure Number: **NRC-04**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 4.5% power during a plant startup.
2. 13 Condensate Pump is danger tagged.
3. 11 and 12 Condensate Pumps were in operation when both pumps tripped. Multiple alarms on 1C03 came in at the same time.
4. The running feed pump, 11 SGFP, tripped on low suction pressure.

INITIATING CUE:

You are performing the duties of the Unit 1 CRO. The CRS directs you to respond per AOP-3G, Section VI.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-05**Task Title: **Respond to Loss of Shutdown Cooling [Alternate Path]**Task Number: **202.026**K/A Reference: **025.AA1.03 (3.4, 3.3)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is in Mode 5 and has been shutdown for 5 days.**
- 2. 12 LPSI PP is running on SDC. 11 LPSI PP is aligned for SDC operation and is not running.**
- 3. RCS is at 140°F and 150 psia with a bubble in the pressurizer.**

Initiating Cue:

You are performing the duties of the Unit 1 RO/CRO.

Task Standard:

Stop 12 LPSI pump and re-establish RCS temperature control with SDC using 11 CS Pump.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

1. **Copy of alarm response for Window SM-66 of 1C24B-ALM, "Fire Systems Alarm Manual", Revision 40, Page 74 of 295.**

General References:

1. **AOP-3B, "Abnormal Shutdown Cooling Conditions", Revision 22**
2. **1C24B-ALM, "Fire Systems Alarm Manual", Revision 40 (Window SM-66, "U-1 WEST ECCS PP RM 118 CNTMT RECIRC PIPE TUNNEL")**
3. **1C09-ALM, "", Revision 35 (Window H-21, "11 LPSI PP • SIAS BLOCKED • AUTO START")**
4. **NO-1-200, "Control of Shift Activities", Revision 31 (Section 5.18, "Equipment Control")**

Time Critical Task:

No

Validation Time:

20 minutes

Simulator Setup:

1. **Unit 1 in Mode 5 with a pressurizer bubble. RCS is at 140°F / 150 psia.**
2. **Ensure 12 LPSI PP is in operation on SDC.**
3. **Stop 11 LPSI Pump.**
4. **Reduce FIC-306 to 3000 gpm in AUTO.**
5. **Adjust HIC-3657 to 27.5%.**
6. **Adjust CC HX Flow Controllers HIC-5206 and HIC-5208 to 20%.**
7. **Enter MALFUNCTIONS as follows:**
 - **SI003_01, "11 LPSI Pump Breaker Failure" (will trip when started)**
 - **FIRE001, "Fire Alarm" on F1**
 - **SI003_02, "12 LPSI Pump Breaker Failure" on F2**
 - **CW002_01, "Screen Clog" at 0% on F3 (to initiate trigger T1)**

-
8. Enter **REMOTE FUNCTIONS** as follows:
 - **SI-314 to OPEN on T1**
 - **SI-444 to OPEN on T1**
 9. Enter **OVERRIDES** as follows:
 - **1C02 Window B-38 "TURB TROUBLE" alarm ON**

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME START _____

SIM OPER: After applicant has received cue, **Activate F1**, to initiate fire alarm.

CUE: Inform **applicant** that Alarm Window SM-66 has actuated on Fire Panel 1C24B and hand applicant a copy of the alarm response for the alarm window.

- _____ 1. Smoke or flame detected in Unit 1 ECCS Pump Rooms 118 (West Room) or Containment Recirculation Pipe Tunnel Room 122. Determines step is applicable.
- _____ a. **DISPATCH** an operator and/or Fire and Safety Watch (FASW) to the Unit 1 ECCS Pump Room 118 (West Room) and Containment Recirculation Pipe Tunnel Room 122 to investigate the cause of alarm. Dispatches an operator and/or the Fire and Safety Watch to the west pump room and the pipe tunnel to investigate.
- _____ b. **IF** a fire exists, **THEN IMPLEMENT ERPIP 3.0**.

CUE: Operator reports heavy smoke, but no flames, issuing from the motor vents on 12 LPSI Pump.

SIM OPER: **Activate F2**, to insert malfunction SI003_02, "12 LPSI Pump Breaker Failure" on 30 second time delay.

- _____ Conclusion Informs CRS of field report of heavy smoke from 12 LPSI motor.
Recommends stopping 12 LPSI.

CUE: CRS acknowledges report. If **applicant** recommends stopping 12 LPSI, then CRS should direct stopping 12 LPSI. If no recommendation, CRS should ask **applicant** if he/she has any recommendations. If no, then CRS should direct stopping 12 LPSI. Pump will automatically trip 30 seconds after report of smoke.

- _____ Stop 12 LPSI PP. Takes 12 LPSI PP handswitch to STOP, releases handswitch. Observes green light lit and red light out. Observes amps go to zero. Informs CRS.

CUE: CRS directs **applicant** to respond to the loss of SDC starting at AOP-3B, Step IV.A.6

	Locates AOP-3B, Step IV.A.6.	Same as element.
_____ IV.A.6.	IF SDC is lost due to failure of the operating LPSI PP, AND the cause will NOT result in a common mode failure, THEN complete the following actions:	Determines step is applicable. Monitors SI-651 and 652 position indication on 1C09. Observes alarm windows clear. Determines that the 12 LPSI Pump failure will not result in a common mode failure.
_____ a.	Place the failed PP handswitch in PULL TO LOCK.	Places 12 LPSI PP handswitch in PTL.
_____ b.	IF RCS purification is in service, THEN place IX BYP valve handswitch 1-HS-2520 in the BYP position.	Verifies HS-2520, on 1C07 is in BYP position.
_____ *	c. Shut S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	Lowers output of HIC-657 on 1C09 to zero or places HS-3657 on 1C09 to CLOSE. Checks position indication for SI-657.
_____ *	d. Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	Shifts FIC-306 on 1C08 to MANUAL.
_____ *	e. Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	Adjusts output of FIC-306 to 95%.
_____ f.	Verify BOTH RAS OVERRIDE switches in OVERRIDE:	Checks position on HS-302XA and 302YA on 1C08 and 1C09. If not in OVERRIDE position, places HS in OVERRIDE.
	<ul style="list-style-type: none"> • 11 LPSI PP RAS OVERRIDE, 1HS-302XA • 12 LPSI PP RAS OVERRIDE, 1-HS-302YA. 	

CAUTION: Before starting the standby LPSI PP, the cause for the running LPSI PP failure should be determined to preclude a common mode failure.

CUE: If necessary, CRS will inform **applicant** that cause appears to be motor internal fault. A common mode failure is not suspected.

	g. Start the standby LPSI PP.	Places 11 LPSI PP handswitch in START. Observes breaker open
--	-------------------------------	--

green light on. Acknowledges 1C09 Window H-21 in alarm. Informs CRS.

- _____ g.1. **IF** the standby LPSI PP does **NOT** start,
THEN PROCEED to Step B,
 Page 17
- Refers to Step B.

CUE: CRS reports Step B to be performed by alternate operator. CRS directs you to perform Step C.5.

- _____ C.5. **IF NO** LPSI PPs are available,
THEN align the CS PPs for cooling.
- Determines step is applicable.

CAUTION: To prevent CS PP shaft seal and bearing damage, RCS temperature shall be less than 120°F OR the associated ECCS Pump Room Air Cooler shall be functional.

- _____ a. Verify RCS temperature less than 120°F OR the associated ECCS PP Room Air Cooler is functional.
- Checks CET temperatures on 1C05 or checks that ECCS PP Room Air Coolers are not OOS.

CAUTION: To prevent over pressurization of the ECCS PP suction headers, RCS pressure shall be less than 170 PSIA.

- _____ b. Check that RCS pressure is less than 170 PSIA.
- Checks RCS pressure on PI-103 and/or PI-103-1 on 1C06.
 Determines pressure < 170 psia.

- _____ c. Check that the SDC HDR RETURN ISOL valves are open:
- 1-SI-651-MOV
 - 1-SI-652-MOV
- Verifies position of valves on 1C09

- _____ * d. Shut the 11 RWT OUT valves:
- 1-SI-4142-MOV
 - 1-SI-4143-MOV
- Places handswitches to CLOSE.
 Verifies valves close by observing green lights on, red lights off.

- _____ e. Isolate CS PP Min Flow to the RWT:

- _____ * (1) Place the SI PP RECIRC LOCKOUT handswitches to ON.
- 1-HS-3659A
 - 1-HS-3660A
- Places HS-3659A and 3660A on 1C09 in the ON position. Checks lockout lights on HS-3659 and 3660 are out.

_____*	(2)	Shut the MINI FLOW RETURN TO RWT ISOL valves: 1-SI-659-MOV 1-SI-660-MOV	Places HS-3659 and 3660 on 1C09 in CLOSE.
--------	-----	---	---

CUE:	CRS directs use of 11 CS PP.
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Examiner Note:	When requested to locally open valves, Activate F3 , to open SI-314 and SI-444.
----------------	--

CUE:	When dispatched, PO reports SI-314 and 444 are open.
------	--

_____	f.	IF 11 CS PP is desired for SDC, THEN open the following valves: <ul style="list-style-type: none"> • 11 CS PP Discharge valve, 1-SI-314 • 11 LPSI PP NORM SUCT ISOL valve, 1-SI-444 	Determines step is applicable. Dispatches PO to open SI-314 and SI-444.
_____	g.	IF 12 CS PP is desired for SDC,	Determines step is N/A.
_____	h.	Shut the S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	Verifies output of HIC-657 is zero or HS-3657 is in CLOSE. Checks position indication for SI-657.
_____	i.	Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	Verifies FIC-306 in MANUAL.
_____	j.	Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	Verifies output of FIC-306 is 95%.
_____*	k.	Start the selected CS PP.	Starts 11 CS Pump, observes running indications.
_____*	l.	Slowly adjust the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to raise SDC flow to 1500-2000 GPM.	Slowly lowers output of FIC-306. Checks flow indication for FIC-306. Lowers output until flow indicates 1500-2000 GPM.

ELEMENT
(* = CRITICAL STEP)

STANDARD

CUE: The CRS desires to have FIC-306 in Auto.

Examiner Note: If applicant does not adjust auto setpoint on FIC-306, flow will attempt to control at previous setpoint of 3000 gpm. Per system description, Containment Spray Pumps are designed to pump approximately 1400 gpm in injection mode.

- _____ m. Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in AUTO, if desired. Adjusts flow setpoint on FIC-306 to match existing flow, then places FIC-306 to AUTO.

CUE: The CRS desires to restore RCS temperature to 140 °F. When SI-657-CV is throttled open, inform applicant that temperature is slowly lowering on TR-351.

- _____ * n. Adjust the S/D COOLING TEMP CONTR valve, 1-SI-657-CV, as desired. If HS-3657 is in CLOSE, places HS-3657 to AUTO. Raises output of HIC-657. Checks SDC temperature slowly lowering (TR-351 on 1C09).

TERMINATING CUE: This JPM is complete when SDC has been restored using a CS Pump. The examiner is expected to end the JPM after applicant adjusts SI-657-CV. No further actions are required.

TIME STOP _____

Verification of Completion

Job Performance Measure Number: **NRC-05**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is in Mode 5 and has been shutdown for 5 days.
2. 12 LPSI PP is running on SDC. 11 LPSI PP is aligned for SDC operation and is not running.
3. RCS is at 140°F and 150 psia with a bubble in the pressurizer.

INITIATING CUE:

You are performing the duties of the Unit 1 RO/CRO.

Facility: **Calvert Cliffs 1&2**

Job Performance Measure No.: **NRC-06**

Task Title: **Parallel 1A DG to 4kV Bus 11/17 [Alternate Path]**

Task Number: **024.006**

K/A Reference: **064.K4.02 (3.9, 4.2)**

Method of testing:

Simulated Performance: _____ Actual Performance: √

Classroom: _____ Simulator: √ Plant: _____

READ TO THE APPLICANT:

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

Initial Conditions:

- 1. 1A Diesel Generator has been emergency started from the Control Room and is running unloaded.**
- 2. 1A Diesel Generator output breaker is open.**
- 3. The Initial Conditions and General Precautions of OI-21A have been met.**

Initiating Cue:

You are performing the duties of the Unit 1 CRO. The CRS directs you to parallel 1A Diesel Generator to 4kV Bus 11 per OI-21A, beginning at Step 6.3.B.1, and load the generator to 4.5 MW for testing.

Task Standard:

Parallel and load 1A Diesel Generator in accordance with OI-21A and trip the engine after receiving report about lo-lo lube oil pressure.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**

4. **JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

None

General References:

1. OI-21, "1A Diesel Generator", Revision 19
2. 1C18A-ALM, "1A Diesel Generator Control Board Alarm Manual", Revision 2, Window AA01
3. 1C188-ALM, "1A Diesel Generator Local Control Panel Alarm", Revision 7, Window SL64

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

1. IC-19, 80% power.
2. Verify sync scope has been recently calibrated.
3. Emergency start 1A DG by depressing 1-HS-1707.
4. Adjust incoming volts higher than running volts.
5. Adjust frequency for faster than desired in FAST direction.
6. Start 12 Control Room HVAC Fan.
7. Override 1C18A Alarm Window AA01, "1A DG" to ON on Trigger T1.
8. Override 1C17 Alarm Window M6, "1A DG CONTR BOARD 1C18A" to ON on Trigger T1.
9. Enter malfunction cw002_01 on F1.
10. Activate F1 after 1C08 "SEQUENCER INITIATED" annunciator alarms (after applicant has paralleled the DG).

TIME START

Identify and locate OI-21A, Step 6.3.B.1. Same as element.

CAUTION: When the DG is paralleled to the bus, the Shutdown Sequencer will start 11 and 12 Post-LOCI Filter fans and stop the Kitchen/Toilet Exhaust fan.

1. **IF** desired, **ALIGN** the Control Room HVAC as follows:
 - **VERIFY** 1C22, 0-RI-5350 "CONTR RM VENT" is clear. Same as element

CUE: Kitchen / Toilet Fan Handswitch 0-HS-5359 is in OFF.

- **PLACE** the Kitchen/Toilet Exhaust Fan Handswitch, 0-HS-5359, to OFF. No action required. Handswitch is located outside of control room.
- **START** the Post-LOCI filter fans by placing the handswitches to **START AND LOG** the starting time in the Charcoal Filter Log. Same as element
 - 11 Post-LOCI Filter Fan & Damper handswitch, 0-HS-5352
 - 12 Post-LOCI Filter Fan & Damper handswitch, 0-HS-5353
- Control Room HVAC Units in the following alignment:

CUE: RO will log Post-LOCI filter fan start time in the Charcoal Filter Log.

- **START** the Post-LOCI filter fans by placing the handswitches to **START AND LOG** the starting time in the Charcoal Filter Log. Same as element
 - 11 Post-LOCI Filter Fan & Damper handswitch, 0-HS-5352
 - 12 Post-LOCI Filter Fan & Damper handswitch, 0-HS-5353
- Control Room HVAC Units in the following alignment:

- **PREFERRED ALIGNMENT-**
12 CR HVAC in operation

Verifies 12 CR HVAC in operation

OR

- 11 CR HVAC in operation with the Control Room chiller Unit secured.

- _____ 2. **IF** 1A DG received an emergency start signal,
THEN DEPRESS 1A DG SLOW START, 1-HS-1708, pushbutton, to clear the emergency start signal.

Determines step is applicable and depresses 1-HS-1708 pushbutton at 1C18A to clear start signal.

CAUTION: 1A DG should **NOT** be paralleled with 11/17 4KV Bus during periods when power is suspect (for example, during a severe storm).

- * 3. **INSERT** the Sync Stick for 1A DG OUT BKR, 152-1703.

Inserts sync stick into sync jack at 152-1703 (1C18A).

- _____ 4. **MOMENTARILY PLACE** 1A DG SPEED CONTR, 1-CS-1705, to RAISE OR LOWER.

Same as element at 1C18A.

- _____ 5. **CHECK** the Synchroscope and Sync Lights are operating on 1C18B.

Same as element.

- * 6. **ADJUST INCOMING VOLTS,** 1-EI-4001A, equal to **RUNNING VOLTS,** 1-EI-4001B, using 1A DG **AUTO VOLT CONTR,** 1-CS-1704.

Lowers incoming volts using 1-CS-1704.

- * 7. **ADJUST** 1A DG frequency so the Synchroscope pointer is rotating slowly in the **FAST** direction using 1A DG **SPEED CONTR,** 1-CS-1705.

Lowers incoming frequency to obtain "slowly" using 1-CS-1705.

CAUTION: TABLE 1, **SHUTDOWN SEQUENCER LOADS,** lists equipment that receives an auto start signal from the Shutdown Sequencer when the 1A DG output breaker is closed.

- * 8. **WHEN** the Synchroscope pointer is approximately 5 degrees prior to the 12 o'clock position,
THEN PLACE 1A DG OUT BKR, 1-CS-152-1703, to **CLOSE.**

Closes generator breaker when synchroscope needle reaches the 12 o'clock position \pm 5 degrees.

- * 9. **VERIFY** 1A DG picks up approximately 0.70 MW load on 1A DG VAR/WATT,

Verifies approximately 0.70 MW load on 1A DG.

1-JI-1701B.

- _____ 10. **CHECK** 1C08 annunciator, "SEQUENCER INITIATED" alarms. Checks "SEQUENCER INITIATED" alarm on 1C08.
- _____ 11. **CHECK** 1C17 annunciator "RAD MON PANEL 1C22" alarms (N/A if 0-RI-5350 is bypassed.) Check "RAD MON PANEL 1C22" alarm on 1C17.

NOTE: The Control Room Vent RMS alarm, 0-RI-5350, may NOT be lit.

- **BYPASS** 1C22, 0-RI-5350 "CONT RM VENT"

- _____ 12. **REMOVE** the Sync Stick AND RETURN to Home Base. Same as element.

CAUTION: Do NOT exceed limits of 5.400 MW, 500 KVARs, AND 752 amps.

- _____ 13. **RAISE MW AND KVAR** loads concurrently to the desired levels **PER** the following:

- _____ * a. **RAISE MW** load by less than **OR** equal to 1.0 MW over a one minute time period using 1A DG SPEED CONTR, 1-CS-1705. Takes speed control switch to raise generator load until load is at least 1.0 MW.

Examiner Note: 1C18A Alarm Window AA01, "1A DG" shortly after receiving 1C08 "SEQUENCER INITIATED" alarm.

- _____ * Respond to 1C18A alarm. Informs CRS. Contacts PO at 1A DG for further information.

CUE: Plant Operator at 1A Diesel Generator reports that alarm is Window SL64, "LUBE OIL PRESS LO LO". Local lube oil pressure indicator shows 26 psi and lowering.

- _____ * Respond per 1C188-ALM. Refers to 1C188 ALM. Recognizes that condition exceeds automatic trip setting for 1A DG. Informs CRS. Recommends manual trip. Manually trips 1A DG.

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME STOP _____

TERMINATING CUE:	This task is complete when 1A Emergency Diesel Generator has been tripped in response to report of low lube oil pressure.
------------------	---

Verification of Completion

Job Performance Measure Number: **NRC-06**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. 1A Diesel Generator has been emergency started from the Control Room and is running unloaded.
2. 1A Diesel Generator output breaker is open.
3. The Initial Conditions and General Precautions of OI-21A have been met.

INITIATING CUE:

You are performing the duties of the Unit 1 CRO. The CRS directs you to parallel 1A Diesel Generator to 4kV Bus 11 per OI-21A, beginning at Step 6.3.B.1, and load the generator to 4.5 MW for testing.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-07**Task Title: **Perform Excore Calibration [Alternate Path]**Task Number: **xxx.xxx**K/A Reference: **015.A1.01 (3.5, 3.8)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is in Mode 1 at 80% power, equilibrium conditions.**
- 2. Delta-T power pot settings were checked per OP-3, "Normal Operations", Step 6.1.I.2.b and determined to be greater than acceptable tolerances.**

Initiating Cue:

You are performing the duties of the Unit 1 RO/CRO. In accordance with OP-3, "Normal Operations", Step 6.1.I.2.c(2), the CRS directs you to perform a NI calibration PER OI-30.

Task Standard:

Perform NI Calibration IAW OI-30.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

1. Plant Setpoint File, system #94.
2. Plant Setpoint File, system #58.
3. Unit One Nuclear Instrumentation Calibration Data Sheet with "as found" values filled in as shown in the table below.

TABLE 1: DATA SHEET AS-FOUND VALUES					
CHAN	NUC PWR %	NUC PWR V	NUC PWR POT SET	DELTA T PWR %	DELTA T PWR POT SET
A	79.2	-----	0.512	79.1	0.404

General References:

1. OP-3, "Normal Power Operation", Revision 55
2. OI-30, "Nuclear Instrumentation, Revision 23
3. OI-50A, "Plant Computer", Revision 5

Time Critical Task:

No

Validation Time:

25 minutes

Simulator Setup:

1. Initialize simulator in IC-19 at 80% power (2160 MWth), MOL.
2. On the plant computer:
 - Select POINT MODIFY from the POINT PROCESSING MENU
 - Enter a value of 76.5 for Point ID PAK0026 (RCP heat input constant) to reduce calculated thermal output by ~60 MWth.
3. Run simulator to stabilize the PC thermal power calculations (PA912, PA911).
4. Set ALL RPS Channels to the "misadjusted" as-found values, shown in Table 1 of this JPM under the "Required Materials" heading.

5. Place the DVM METER INPUT Switch on ALL RPS channels in the NUCLEAR POWER position.

TIME START _____

CAUTION: Reactor thermal power level must be maintained constant throughout the calibration procedure.

NOTE:

- Computer point status is indicated by a quality tag in the column between the VALUE and ENG UNITS columns.
- **IF** the quality tag status column is blank **AND** the constants associated with the point are correct **AND** the value for PA912 is consistent with related plant parameters, **THEN** the point is considered in service **AND** reliable.

CAUTION: This procedure contains reactivity sensitive steps, actions, or consequences. Caution should be used to control plant parameters that affect reactivity.

_____	Locates OI-30, Section 6.3	Same as element.
_____	1. IF the Plant Computer is in service, THEN CHECK the reliability of PA912, 16 Minute Average Reactor Thermal Output calculation, as follows:	Determines step is applicable.
_____	a. CHECK the quality tag column for computer point PA912.	Observes computer point PA912. Determines that no quality tag applied.
_____	b. CHECK the following computer points are updating properly:	No action required.
	<ul style="list-style-type: none"> • F1111 • F1121 • P1013A • P1013B • P1023A • P1023B • P4490 • P4495 • P3991 • P4008 • S3968 (Unit 1 only) • S3975 (Unit 1 only) • S8002 (Unit 2 only) • S8042 (Unit 2 only) 	Observes the points. Determines they are updating properly.

NOTE: Plant Computer Group 087 is reserved for the constants used in PA911, 2 Minute Average Reactor Thermal Output, which is used to generate PA912, 16 Minute Average Reactor Thermal Output.

CUE: When asked, provide copy of Plant Setpoints File, system #94.

CUE: If applicant requests further guidance of CRS upon discovering a constant is not set correctly, then inform applicant he is to take actions as directed by procedure.

Point ID	Point Description
PAK0001	11(21) Steam Generator Steam Quality
PAK0002	12(22) Steam Generator Steam Quality
XVBARO	Barometric Pressure (Unit 1 only)
PAK0021	Average Power To Heater and Electrical Equipment
PAK0022	Energy Loss - Equipment and Piping
PAK0023	Energy in Seal Water
PAK0024	Energy in Letdown Flow
PAK0025	Energy in Reactor Coolant Pump Drive
PAK0026	Average Power Input Coolant Pump Drive
PAK0027	Average Power Into Miscellaneous Electrical Equipment
PAK0068	Energy Lost to Cooling Water
FDK1132	11(21) Feedwater Flow Const1
FDK1096	11(21) Feedwater Flow Const2
FDK1128	12(22) Feedwater Flow Const1
FDK1130	12(22) Feedwater Flow Const2

Calls up each point. Compares constant value in computer to plant setpoint file. Determines that Point PAK0022 does not match setpoint file value.

d. PERFORM ONE of the following for the Plant Computer points listed below:

Checks point values. Determines points correctly set at 1.0

- **IF** the plant is below 95% Rx Power (2565 MWth), **THEN CHECK** the values of the Feedwater Flow Correction Factors are set to a value of 1.0

OR

- **IF** the plant is at 95% Rx Power (2565 MWth), **OR** greater, **THEN CHECK** the values of the Feedwater Flow Correction Factors match those listed on the Shift Turnover Sheet **OR** are set to a value of 1.0

- PTF1100, 11/21 FW Flow Correction Factor

- PTF1200, 12/22 FW Flow Correction Factor

e. **IF** the quality tag column for computer point PA912 is blank **AND** its value is consistent with related plant parameters **AND** all of the constants used in PA911 agree with the Plant Setpoint File, **THEN USE** computer calculation PA912 for core thermal power in this calibration.

Determines that will not use PA912 because of constant PAK0022 disagreement.

* 2. **IF** the Plant Computer is out of service **OR** the quality tag column for computer point PA912 is **NOT** blank **OR** the value of PA912 appears suspect **OR** the constants used in PA911 do **NOT** agree with the Plant Setpoint File, **THEN PERFORM** Section 6.5 **MANUAL SECONDARY CALORIMETRIC CALCULATION** **AND USE** the results of the manual secondary calorimetric to continue on with the next step.

Determines constant does not agree. Goes to Section 6.5.

CUE: **If applicant goes to Section 6.5, then CRS informs him that Section 6.5 has been completed with manual secondary calorimetric result of 2162 MWth=80.07%**

3. Calculate the required trip unit input voltage as follows:

No action required.

a. **IF** PA912 is used, **THEN OBTAIN** the value from the Plant Computer for PAPCNTPW **OR DIVIDE** PA912 value by 27 **AND RECORD** this number in the NUCLEAR INSTRUMENTATION CALIBRATION log sheet as CALCULATED POWER %.

No action required.

* b. **IF** PA912 is **NOT** used, **THEN RECORD** the manual secondary calorimetric calculation result obtained in APPENDIX A, in the NUCLEAR INSTRUMENTATION CALIBRATION log sheet as CALCULATED POWER %.

Logs 80.07 MWth in procedure.

*	c.	DIVIDE the percent power calculated above by 20 AND RECORD this number in the NUCLEAR INSTRUMENTATION CALIBRATION log sheet as CAL. POWER/20 _____ VOLTS.	Divides 80.07 by 20. Logs 4.0037 VOLTS in procedure.
---	----	--	--

- NOTE:
- Signoff spaces are provided for placekeeping only, complete only for channels requiring calibration. (N/A blocks for channels not calibrated)
 - Excore NI Power Range Safety Channel As Found data is collected one entire channel at a time, with the channels selected in any order.

CUE: Inform applicant that as-found data has been taken per Step 4 and is recorded on the data sheet. Direct applicant to continue at Step 5 for RPS Channel A only.

- _____ 5. **DETERMINE** the difference between the following for each channel: Records differences:
- CALC PWR % **AND** DELTA T PWR % Calc-Delta T = 1.0
 - CALC PWR % **AND** NUC PWR % Calc-Nuc = 0.8
- _____ 6. **IF** any of the following apply, Proceeds to step 8.
THEN PROCEED to step 8:
- Power < 70%
 - PA912 does **NOT** have a good quality point
 - Either difference calculated in step 5 is \geq to 1/2% for a specific channel

CAUTION: Calibration of an Excore NI Power Range Safety Channel renders the channel inoperable **AND** requires entry into Tech Spec 3.3.1 Action Statement.

CUE: CRS and other RO have entered TS 3.3.1 for inoperable NI channel for calibration.

- _____ 8. **IF** directed by step 6, or if desired, No action required.
THEN CALIBRATE each channel requiring calibration, by performing Steps a. through af. For a specific channel. RECORD all data in the As Left section of the NUCLEAR INSTRUMENTATION CALIBRATION log sheet (unless otherwise specified).

_____ * a. **BYPASS** the following RPS trips Inserts keys in designated trip units.

ELEMENT
(* = CRITICAL STEP)

STANDARD

for the channel to be calibrated:	
TRIP UNIT	BYPASS KEY
HI POWER	1
HI RATE	2
TM/LP	7
LOSS LOAD	8
AXIAL PWR	10

Turns to bypass trip unit. Observes bypass lights on the each unit.

CUE: RO has independently verified that trip units 1,2,7,8 & 10 are bypassed.

- _____ b. **INDEPENDENTLY VERIFY** that RPS Trip Units 1, 2, 7, 8 & 10 are bypassed. Asks for independent verification.
- _____ c. **PLACE** the Linear Power Drawer Operate - Test switch in ZERO for the channel to be calibrated. Same as element.
- * _____ d. **PLACE** the AT, TM/LP CALCULATOR MODE switch (FIGURE 1 - Item G) in ZERO/EXT INPUT. Same as element.
- _____ e. **ENSURE** the DVM METER INPUT switch in NUCLEAR PWR **AND OBSERVE** DVM reading. Same as element.
- _____ f. **IF** the DVM reading is $\geq 1\%$, **THEN PERFORM** the following: No action required.
 - (1) **STOP** the calibration
 - (2) **NOTIFY** the CRS
 - (3) **INITIATE** an IR to investigate **AND REPAIR** the channel.
- _____ g. **PLACE** the Linear Power Drawer Operate - Test switch in OPERATE. Same as element.
- _____ h. Momentarily **DEPRESS** the Reset pushbutton on the front of the Linear Power Drawer Same as element.
- _____ i. **IF** tripped, **THEN RESET** VOPT **AND** RPS Trip Units 1, 2 and 10 **AND** Same as element.

associated Control Room annunciators.

* j. **IF** the RPS Channel has the Trip Test Cable attached, **THEN CONNECT** the RPS Trip Test Cable to the RPS HI POWER Trip Unit.

Same as element.

NOTE: Each end of the male connector of the portable Calibration Cable is designed so that it will only fit in to it's respective receptacle.

* k. **IF** the portable Calibration Cable is available, **THEN PERFORM** the following:
Connect the appropriate end of the Calibration Cable to the module drawer.
Connect the appropriate end of the Calibration Cable to the RPS High Power Trip Unit.

Same as element.

* l. **PLACE** the DVM METER INPUT switch in METER INPUT.

Same as element.

m. **RECORD** the DVM reading as NUC PWR (V) in the As Found section of the NUCLEAR INSTRUMENTATION CALIBRATION log sheet.

Records 3.976V.

NOTE: Clockwise rotation of the potentiometers lowers the DVM reading and counterclockwise rotation raises the reading.

CAUTION: Potentiometer adjustments must be stopped immediately if 1(2)C05 annunciator "POWER LEVEL HIGH CHANNEL PRE-TRIP" alarms while adjusting a potentiometer.

* n. **UNLOCK AND SLOWLY ADJUST** the NUCLEAR PWR CALIBRATE potentiometer (FIGURE 1 - Item D) to obtain a DVM reading equal to the **REQUIRED TRIP UNIT INPUT VOLTAGE** calculated in Step 6.3.b.3.c.

Adjusts potentiometer to obtain reading on DVM equal to value calculated in Step 6.3.b.3.c. (4.0037, rounded to 4.00)

ELEMENT

STANDARD

(* = CRITICAL STEP)

ELEMENT		STANDARD
_____	1. PLACE the DVM METER INPUT switch in METER INPUT.	Same as element.
	(1) IF 1(2)C05 annunciator "POWER LEVEL HIGH CHANNEL PRE-TRIP" alarms while the potentiometer is being adjusted, THEN STOP the adjustment AND ENSURE the test switch alignment is correct.	Same as element.
	(2) IF 1(2)C05 annunciator "POWER LEVEL HIGH CHANNEL PRE-TRIP" alarmed AND the test switch alignment is correct, THEN REQUEST IM to check the HIGH POWER Trip Unit pre-trip AND trip setpoints on that channel.	
_____	o. LOCK the locking device on the NUCLEAR PWR CALIBRATE potentiometer.	Same as element
_____	p. IF the DVM reading changed while locking the potentiometer above, THEN GO TO Step 1 [as in LIMA].	Same as element.
_____	q. RECORD the DVM reading as NUC PWR (V),	Same as element.
_____	r. RECORD the NUCLEAR PWR CALIBRATE potentiometer setting as NUC PWR POT SET.	Same as element.
_____	s. PLACE the DVM METER INPUT switch in NUCLEAR PWR AND RECORD the DVM reading as NUC PWR %.	Same as element.
_____	t. PLACE the ΔT , TM/LP CALCULATOR MODE switch in OPERATE.	Same as element.
_____	u. IF the Trip Test cable was used, THEN DISCONNECT the RPS Trip Test cable from the HI POWER Trip Unit.	Same as element.
_____	v. IF the portable Calibration Cable was used, THEN PERFORM the following: <ul style="list-style-type: none"> • Disconnect the Calibration Cable 	Same as element.

from the module drawer

- Disconnect the Calibration Cable from the RPS HI PWR Trip Unit.

NOTE: The deviation meter will fluctuate due to noise in the ΔT Power Channels. Nuclear Power and ΔT Power DVM readings are equal at the zero mark.

_____	* w.	PLACE the DVM METER INPUT switch in ΔT PWR.	Same as element.
_____	* x.	UNLOCK AND SLOWLY ADJUST the ΔT PWR CALIBRATE potentiometer (FIGURE 1 - Item E) to null the NUCLEAR PWR - ΔT PWR (%) Deviation Meter (FIGURE 1 - Item F) such that the fluctuations occur evenly about the zero mark.	Same as element.
_____	y.	LOCK the locking device on the ΔT PWR CALIBRATE potentiometer.	Same as element
_____	z.	IF the DVM reading changed while locking the potentiometer above, THEN GO TO Step u.	No action required.
_____	aa.	COMPARE the ΔT PWR CALIBRATE potentiometer setting to the As Found ΔT PWR CALIBRATE potentiometer setting AND the Plant Setpoint File, system #58.	Compares actual 0.428 to the tolerance of ± 0.01 on setting of 0.431 (0.421 to 0.441).
_____	ab.	IF the ΔT PWR CALIBRATE potentiometer setting is outside the tolerance listed in the Plant Setpoint File THEN REFER to APPENDIX B for appropriate actions.	Determine setting is within tolerance.

TERMINATING CUE:	This JPM is complete one channel calibration is complete. Inform applicant that task is complete when applicant has determined that Delta T Power settings are within tolerance band.
------------------	---

TIME STOP _____

Verification of Completion

Job Performance Measure Number: **NRC-07**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is in Mode 1 at 80% power, equilibrium conditions.
2. Delta-T power pot settings were checked per OP-3, "Normal Operations", Step 6.1.I.2.b and determined to be greater than acceptable tolerances.

INITIATING CUE:

You are performing the duties of the Unit 1 RO/CRO. In accordance with OP-3, "Normal Operations", Step 6.1.I.2.c (2), the CRS directs you to perform a NI calibration PER OI-30.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-08**Task Title: **Shift Component Cooling Heat Exchangers**Task Number: **015.003**K/A Reference: **008.A4.01 (3.3, 3.1)**Method of testing:Simulated Performance: _____ Actual Performance: √Classroom: _____ Simulator: √ Plant: _____**READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 is at 97% power.**
- 2. 11 CC Heat Exchanger is in service.**

Initiating Cue:

You are performing the duties of the Unit 1 CRO. The CRS directs you to shift Component Cooling Heat Exchangers per the OI in preparation for tagging out 11 Salt Water Header.

Task Standard:

Shift CC Heat Exchangers to place 12 HX in service and 11 HX in standby in accordance with OI-16.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

None

General References:

1. **OI-16, "Component Cooling System", Revision 30**

Time Critical Task:

No

Validation Time:

10 minutes

Simulator Setup:

1. **Start with IC-13. Lower power to 97% (matches initial conditions for JPM NRC-01).**
2. **Ensure 11 CC HX in service and 12 CC PP running.**

TIME START _____

CUE: Initial Conditions and General Precautions are satisfied. Begin at Step 6.4.B.

CAUTION: RCS boron concentration will be affected when CVCS ion exchangers are returned to service if the letdown heat exchanger outlet temperature has changed since they were bypassed [B0270]

- Lower Letdown system temperature will add positive reactivity.
- Higher Letdown system temperature will add negative reactivity

CUE: The CRS desires the CVCS Ion Exchangers to be bypassed.

CUE: The RO will log stop time in the CVCS Ion Exchanger and Filter Log.

NOTE TO EVALUATOR: *If asked, the CRS and the RO will ensure proper documentation (Locked Valve Deviation Sheets, etc) for the evolution.*

- | | | |
|------------|---|---|
| _____ 1. | IF it is desired to bypass the CVCS ion exchangers, THEN PLACE IX BYPASS, 1-CVC-520-CV, to BYPASS AND RECORD stop time in the CVCS Ion Exchanger and Filter Log. [B0018] [B0270] | RO will log stop time |
| _____ 2. | OPEN the Component Cooling Heat Exchanger outlet on the heat exchanger being placed in service:

11 CC HX CC OUT, 1-CC-3824-CV

12 CC HX CC OUT, 1-CC-3826-CV | Verifies that 1-CC-3826-CV is open. |
| _____ * 3. | THROTTLE the Component Cooling Heat Exchanger saltwater outlet controller for the heat exchanger being placed in service to a value equal to the heat exchanger being removed from service.

11 CC HX SW FLOW CONTR,
1-HIC-5206

12 CC HX SW FLOW CONTR,
1-HIC-5208 | THROTTLES 12 CC HX SW FLOW CONTR 1-HIC-5208 to match the output on 11 CC HX SW FLOW CONTR 1-HIC-5206. |

CUE:	If asked, inform applicant that a dedicated operator has been assigned per the plaque on 1C13.
------	--

* 4. CLOSE the Component Cooling Heat Exchanger outlet on the heat exchanger being removed from service:
11 CC HX CC OUT, 1-CC-3824-CV
12 CC HX CC OUT, 1-CC-3826-CV

Closes 1-CC-3824-CV. Places 11 and 13 CC Pump in PTL in accordance with 1C13 plaque guidance.

5. CHECK (1C13) "COMPT CLG PPS DISCH PRESS LO" annunciator clear.

Operator checks annunciator clear.

NOTE: For optimum Reactor Coolant Pump seal life and performance, controlled bleed off temperature must be maintained between 110 °F and 200 °F.

6. SHUT the component Cooling Heat Exchanger saltwater outlet on the heat exchanger being removed from service: (N/A if needed OPEN to maintain SW PP minimum flow requirements)

Evaluates Total SW flow and SHUTS 11 CC HX SW FLOW CONTR, 1-HIC-5206.

11 CC HX SW FLOW CONTR,
1-HIC-5206

12 CC HX SW FLOW CONTR,
1-HIC-5208

NOTE: If Component Cooling Heat Exchanger outlet temperature can NOT be maintained at approximately 95 °F, it is permissible to operate as low as 70 °F. Operation below 70 °F requires an engineering evaluation.

* 7. ADJUST the in service Component Cooling Heat Exchanger saltwater outlet to maintain the Component Cooling Heat Exchanger outlet temperature approximately 95°F:
11 CC HX SW FLOW CONTR,
1-HIC-5206
12 CC HX SW FLOW CONTR,
1-HIC-5208

Monitors CC temperature and adjusts 12 CC HX SW FLOW CONTR, 1-HIC-5208 as needed.

ELEMENT
(* = CRITICAL STEP)

STANDARD

TERMINATING CUE: This task is complete when applicant has adjusted CC HX saltwater flow.
--

TIME STOP _____

Verification of Completion

Job Performance Measure Number: **NRC-08**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 is at 97% power.
2. 11 CC Heat Exchanger is in service.

INITIATING CUE:

You are performing the duties of the Unit 1 CRO. The CRS directs you to shift Component Cooling Heat Exchangers per the OI in preparation for tagging out 11 Salt Water Header.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-09**Task Title: **Align Fire Water to AFW Pump Suction**Task Number: **xxx.xxx**K/A Reference: **061.K4.01 (4.1, 4.2)**Method of testing:Simulated Performance: √ Actual Performance: Classroom: Simulator: Plant: √ **READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. A loss of all feedwater event is in progress on Unit 2.**
- 2. The crew is implementing EOP-3.**

Initiating Cue:

You are an extra RO on-shift, assigned as the Operations Technical Advisor. The CRS directs you to align the fire system to #23 AFW Pump per EOP Attachment 8, Step 4.b.

Task Standard:

Align fire water to #23 AFW Pump suction per EOP Attachment 8.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

1. **Unit 2 EOP Attachment 8, "Maintain AFW Pump Suction Supply and CST Inventory", Revision 17 (Pg 2 of 5)**

General References:

1. **Unit 2 EOP Attachment 8, "Maintain AFW Pump Suction Supply and CST Inventory", Revision 17**
2. **Unit 2 EOP-3, "Loss of All Feedwater", Revision 17**

Time Critical Task:

No

Validation Time:

5 minutes

Simulator Setup:

None

TIME START _____

NOTE: The following substeps are different methods, listed in preferred order, which may be used to line up an alternate supply to auxiliary feedwater pump suction. Each available method should be attempted until a source of water has been established.

CAUTION: Before transferring AFW Pump suction to an alternate supply, the possibility of suction line or CST rupture should be considered.

CUE: The CRO reports that 23 AFW PP handswitch is in PULL TO LOCK.

- _____ b. Align the Fire System to 23 AFW PP suction as follows: No action required.
- (1) **PLACE** 23 AFW PP in PULL TO LOCK. Calls Control Room. Requests 23 AFW PP Handswitch to be placed in PTL.

CUE: Valve stem fully lowered. Handwheel will not turn any further.

- * (2) **SHUT** 23 AFW PP Suction Valve, 2-AFW-182. Removes locking device. Turns handwheel clockwise until stem fully lowered.
[Location: SRW PP RM - NE]

CUE: Fire hose is connected to hose station and at pump suction hose fitting.

Examiner Note: Key for locker on Turbine Building Operator key ring.

- * (3) **CONNECT** fire hoses between pump suction and a fire main. Locates hose station. Pulls hose out of tool chest. Lays flat, no kinks or folds. Screws hose onto hose fitting on pump suction.
[Hose station located N of 21 Plant Air Compressor, tools located N of SRW Pp Room entrance, in Red EOP/AOP tool chest.]

CUE: 2-AFW-180 valve stem is fully raised. Handwheel will not turn.

- * (4) **OPEN** the FIRE HOSE CONNECTION AUX FEED SUCTION LINE ISOLATION VALVE, 2-AFW-180. Turns valve handwheel counterclockwise. Observes stem fully rise.
[Location: NE of 23 AFW PP]

CUE: Fire hose discharge valve stem is fully raised. Handwheel will not turn any further.

- * (5) **OPEN** the fire hose discharge valve. Turns valve handwheel counterclockwise. Observes stem fully rise.
[Location: at hose station]

ELEMENT
(* = CRITICAL STEP)

STANDARD

CUE: CRS / CRO acknowledges that 23 AFW PP suction is aligned to fire system.

* (6) RESTORE 23 AFW PP as required.

Calls Control Room. Informs CRS or CRO that 23 AFW PP suction is aligned to fire system.

TERMINATING CUE: Task is complete when fire system is aligned to pump suction.

TIME STOP _____

Verification of Completion

Job Performance Measure Number: NRC-09

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. A loss of all feedwater event is in progress on Unit 2.
2. The crew is implementing EOP-3, "Loss of All Feedwater".

INITIATING CUE:

You are an extra RO on-shift, assigned as the Operations Technical Advisor. All other operators in the plant are busy with assigned tasks. The CRS directs you to align the fire system to #23 AFW Pump per EOP Attachment 8, Step 4.b.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-10**Task Title: **Restore Reactor MCCs and Instrument Buses**Task Number: **201.027**K/A Reference: **062.A2.05 (2.9, 3.3)**Method of testing:Simulated Performance: √ Actual Performance: Classroom: Simulator: Plant: √ **READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. A fault in the switchyard resulted in a reactor trip on Unit 2.**
- 2. EOP-7 was implemented because of 2A and 2B DGs failing to start and load their respective buses.**
- 3. After a short delay, the 0C DG has been aligned to 4kV Bus 24.**

Initiating Cue:

You are performing the duties of the Unit 2 ABO. The CRS directs you to tie MCC-214 to MCC-204 in accordance with EOP-7, Block Step R.

Task Standard:

Tie MCC-214 to MCC-204 after 4kV Bus 24 is re-energized during a station blackout.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

1. **Unit 2 EOP-7, "Station Blackout", Revision 16, Pages 32 through 36.**

General References:

1. **Unit 2 EOP-7, "Station Blackout", Revision 16**

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

Not applicable. JPM simulated in the plant.

TIME START _____

Locates and identifies EOP-7, Block Step R.

CUE: No fault is suspected on MCC-214.

CAUTION: ATTEMPTS should NOT be made to re-energize a bus if a fault is suspected.

1. IF MCC-204R or MCC-214R is de-energized, THEN perform the following actions:

_____ a. IF MCC-214R is energized AND MCC-204R is NOT energized, Determines that this step is N/A. (MCC-204 is energized).

Examiner Note: 4 KV Bus 24 has been re-energized, as stated in initial conditions, and is the normal supply to MCC-204R. Must use Step R.1.b, beginning on EOP-7 Page 34 to tie "214 to 204" vice "204 to 214".

CAUTION: Loads must be stripped from MCC-214R and MCC-204R to ensure 204R REACTOR MCC breaker, 52-2409 will NOT be overloaded.

_____ b. IF MCC-214R is NOT energized AND MCC-204R is energized, THEN tie MCC-214R to MCC-204R as follows: Determines that this step applies. Goes to MCC-214 in Electrical Equipment Room, 69' Aux Bldg.

CUE: Handle is down.

(1) Open the following MCC breakers:

- BORIC ACID BATCH TANK HEATER 21, 52-21410
- BORIC ACID BATCH TANK MIXER 21, 52-21425

Simulates opening the MCC breakers by pushing the white handle down to the OFF position.

CUE: 22 SALTWATER SYSTEM AIR COMPRESSOR is available.

CUE: Handle is in OFF position.

* (2) Verify SALTWATER SYSTEM AIR COMPRESSOR 22 is available, AND open the SALTWATER SYSTEM AIR COMPRESSOR 21 breaker, 52-21405.

Asks if 22 compressor is available and simulates opening the breaker for 21 compressor by turning the breaker handle counter clockwise to the OFF position.

CUE: 22 BORIC ACID PUMP is available.

CUE: Handle is in OFF position.

* (3) Verify BORIC ACID PUMP 22 is available, AND open the BORIC ACID PUMP 21 breaker, 52-21406.

Asks if 22 pump is available and simulates opening the breaker for 21 pump by turning the breaker handle counter clockwise to the OFF position

CUE: Handle is down.

* (4) Open MCC-214R Main Feeder Breaker, 52-21401.

Simulates opening the MCC breaker by handle down to the OFF position.

Examiner Note: Procedure directs rotating bottom key, but keys are mounted side-by-side. Should say rotate left key. Correctly identified as the "left" key in OI-27D, "Station Power 480V System", Step 6.12.B.13.b. Determined during JPM validation to be a minor problem. If applicant does not mention, then ask followup question after JPM about rules for procedure use. NO-1-201, "Calvert Cliffs Operating Manual", Step 5.1.B.1.c states "when steps are found which are incorrect, stop the job and consult with immediate supervision per PR-1-103, Use of Procedures.

CUE: If applicant identifies procedure problem, inform applicant that Shift Manager has authorized a procedure deviation in order to meet the intent of the step.

CUE: LEFT key is rotated. Both keys are removed.

* (5) Rotate the bottom key on the MCC-214R Main Feeder Breaker, and remove BOTH interlock keys.

Simulates rotating the **left** key and removing both keys.

CUE: Key is inserted.

* (6) Insert the appropriate interlock key into MCC-214R Tie Breaker, 52-21420.

Simulates inserting key into interlock on face of Tie Bkr 52-21420

CUE: Key is rotated clockwise.

* (7) Turn the key in the clockwise direction.

Simulates rotating key clockwise.

CUE: Handle is up.

* (8) Close MCC-214R Tie Breaker, 52-21420.

Simulates closing the MCC breaker by pushing the breaker handle up to the ON position.

CUE: Key is inserted.

* (9) Insert the appropriate interlock key into MCC-204R Tie Breaker, 52-20420.

Goes to MCC-204 in 45' Aux Bldg Electrical Equipment Room. Simulates inserting key into interlock on Tie Bkr 52-20420.

CUE: Key is turned clockwise.

* (10) Turn the key in the clockwise direction.

Simulates turning key clockwise.

CUE: Handle is in ON position.

* (11) Close MCC-204R Tie Breaker, 52-20420.

Simulates closing the MCC breaker by turning the breaker handle clockwise to the ON position.

TERMINATING CUE: The JPM is complete when Breaker 52-20420 is closed. No further actions are required.

TIME STOP _____

Verification of Completion

Job Performance Measure Number: **NRC-10**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. A fault in the switchyard resulted in a reactor trip on Unit 2.
2. EOP-7 was implemented because of 2A and 2B DGs failing to start and load their respective buses.
3. After a short delay, the 0C DG has been aligned to 4kV Bus 24.

INITIATING CUE:

You are performing the duties of the Unit 2 ABO. The CRS directs you to tie MCC-214 to MCC-204 in accordance with EOP-7, Block Step R.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-11**Task Title: **Compressor Startup On Loss of Normal Cooling**Task Number: **019.002**K/A Reference: **078.K1.04 (2.6, 2.9)**Method of testing:Simulated Performance: Actual Performance: Classroom: Simulator: Plant: **READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 2 is in Mode 3.**
- 2. A loss of service water has occurred on Unit 2, resulting in a loss of instrument air due to a loss of air compressor cooling.**

Initiating Cue:

You are performing the duties of an extra TBO qualified operator. The CRS directs you to line up alternate cooling to the Instrument Air Compressors from the fire system per the appropriate procedure.

Task Standard:

Align fire water cooling to the instrument air compressors per OI-19.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**
- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

1. Unit 2 OI-19, "Instrument Air", Revision 23

General References:

1. Unit 2 OI-19, "Instrument Air", Revision 23

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

None

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME START _____

_____ Identify & locate OI-19, Section 6.4

Same as element.

CUE: All initial conditions and precautions are met. A Fire System use permit has been obtained.

_____ 1. **OBTAIN** a Fire System Use Permit.

Asks if Fire System Use Permit has been obtained.

_____ 2. **ALIGN** the Fire Booster Pps as follows:

CUE: Booster pump starts.

_____ a. **PLACE BOOSTER JOCKEY PUMP FIRE PROT/SYS, 0-HS-9600, in EXER.**

Simulates placing HS-9600 in EXER position (Pump and local handswitch located NE Turbine Bldg 12' on Unit 1 side).

CUE: When asked, 0-HS-6227 has been placed in PTL by the OSO.

_____ b. **PLACE MAIN PRESSURIZER #13, 0-HS-6227 in PTL.**

Requests the OSO or FASW to place 0-HS-6227 in PTL.

* 3. **SHUT** the following valves **AND MONITOR** AFW room temperature **PER** TBO log notes:

- **INLET TO AUX FD PP RM CLR, 2-SRW-502**
- **OUT FROM AUX FD PP RM CLR, 2-SRW-503**

Locates valves, simulates operation and initiates AFW PP RM temperature monitoring as demonstrated by locating room temperature indicator 2-TI-5473 on the west wall of the TDAFW Pump Room (12' TB West Side).

- NOTE:**
- **Compliance with MN-1-110, TROUBLESHOOTING & PROCEDURE CONTROLLED ACTIVITIES, is required when using temporary hose connections.**
 - **The supply and discharge fire hoses are located in the AOP/EOP locker outside the SRW Room.**

Examiner Note: Applicant will locate a ladder in the cage east of the CO2 Cardox Unit on the south end of Unit 2 TB 12' or from the toolroom in the Service Building on the 45'.

_____ 4. **ALIGN** Fire Main to supply cooling water to the Instrument Air Compressors as follows:

* a. **CONNECT** a fire hose to the nearest available Fire Hose Station adjacent to 2-SRW-182

Locates nearest Fire Main & simulates connecting Fire Hose (Hose Station H-208, N of compressor).

_____ b. **CRACK OPEN** Fire Main Supply to the hose connected in Step above **AND** purge fire main to a drain until clear water is discharged **AND THEN SHUT** the supply valve.

Simulates flushing the Fire Hose.

* c. **CONNECT** the fire hose to Auxiliary Water Supply to Air Compressors, 2-SRW-182 **AND OPEN** the fire main supply to the hose.

Simulates connecting fire hose at 2-SRW-182 and simulates opening the fire main supply valve.

_____ d. **CONNECT** the drain hose to Auxiliary Water Return from Air Compressors, 2-SRW-184, **AND DIRECT** the hose to a floor drain.

Simulates connecting drain hose at 2-SRW-184 and routing to nearest floor drain.

CUE: Hoses have been verified connected properly by the other TBO.

_____ e. **ENSURE** that another TBO qualified operator **VERIFIES** the hoses connected properly.

Requests verification of hose connection.

_____ f. **LOG** the connection of hose in the Turbine Building Operator's Log

Verbalizes logging the hose connections in the TBO Log.

CAUTION: Steps 4.g, 4h, 4.i and 4.j must be completed in a timely manner due to the Fire Main and Service Water System being cross-connected.

*	g.	OPEN Auxiliary Water Return from Air Compressors, 2-SRW-184.	Locates and opens 2-SRW-184.
*	h.	OPEN Auxiliary Water Supply to Air Compressors, 2-SRW-182.	Locates and opens 2-SRW-182.
*	i.	SHUT SRW Supply to Air Compressors, 2-SRW-181.	Locates and shuts 2-SRW-181.
*	j.	SHUT SRW Return from Air Compressors, 2-SRW-183.	Locates and shuts 2-SRW-183.

CUE:	Inform applicant that Step 5 is complete. 21 Instrument Air Compressor is running. Proceed with Step 6.
-------------	---

_____	5. IF the Instrument Air Compressors are shutdown,	Determines that step is N/A.
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NOTE: Optimal Service Water return temperature is 110°F. SRW Return Temperature will be lower during colder months.

The IA Compressor TCV bypass valve SHALL be a minimum of 1/2-turn open under all normal operating conditions.

CUE:	21 Instrument Air Compressor is in service and SRW Outlet temperature is 103°F. No adjustment is necessary.
-------------	---

_____	6. IF an Instrument Air Compressor is running, THEN MONITOR the Service Water Outlet Temperature maintaining temperature at 110°F (+10°F)	Identifies proper TI and recognizes SRW outlet temperature is in the normal range (temperature indicator is upstream of 2-SRW-190 above the intercooler on N end of compressor).
-------	--	--

TIME STOP _____

TERMINATING CUE:	This JPM is complete when #21 Instrument Air Compressor Service Water Outlet temperature is checked. No further actions are required.
-------------------------	---

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 2 is in Mode 3.
2. A loss of service water has occurred on Unit 2, resulting in a loss of instrument air due to a loss of air compressor cooling.

INITIATING CUE:

You are performing the duties of an extra TBO qualified operator. The CRS directs you to line up alternate cooling to the Instrument Air Compressors from the fire system per the appropriate procedure.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-12**Task Title: **Respond to Lowering Refuel Pool Level**Task Number: **202.055**K/A Reference: **033.A2.03 (3.1, 3.5)**Method of testing:Simulated Performance: √ Actual Performance: Classroom: Simulator: Plant: √ **READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 2 is at 100% power. Unit 1 is in Mode 6 with fuel handling in progress.**
- 2. The refuel machine operator has withdrawn a fuel assembly from the core into the refuel machine.**
- 3. The upender is in the vertical position in containment.**
- 4. The refuel machine is currently positioned over the core with the fuel assembly fully raised in the mast.**

Initiating Cue:

You are the Fuel Handling Supervisor and the fuel handling machine operator and are directed to place the fuel assembly in the upender per OI-25C, section 6.4.B step 28 and section 6.3.B step 10.

Task Standard:

Respond to loss of refueling pool level per AOP-6E.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**

3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Required Materials:

1. Unit 1 AOP-6E, "Loss of Unit 1 Refueling Pool Level", Revision 7, Pages 1 thru 16 and Attachment 2.
2. OI-25E, "Fuel Transfer System", Revision 18.
3. OI-25C "Refueling Machine" sections 6.3 and 6.4

General References:

1. AOP-6E, "Loss of Unit 1 Refueling Pool Level", Revision 7
2. OI-25E, "Fuel Transfer System", Revision 18.
3. OI-25C "Refueling Machine" sections 6.3 and 6.4

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

None

ELEMENT
(* = CRITICAL STEP)

STANDARD

TIME START _____

Evaluator instructions: Begin JPM AT RFM console (Unit 1, 69' Electrical Pen. Rm.)

CUE: Provide copy of OI-25C to applicant.

NOTE

Automatic positioning of the RFM is performed per Section 6.3.B.9 or 6.3.B.10.

CUE: Spotter has given permission to move the RFM.

OI-25C section 6.4.B

28. **WHEN** Spotter has given permission to move, **THEN** Position the RFM over the specified upender cavity coordinates.

Refers to section 6.3.B.Step10 to move RFM..
(Candidate may use the joy sticks to manually move the RFM.)

OI-25C section 6.3.B

10. PERFORM SEMI-AUTOMATIC positioning of the RFM as follows:	
*a. TOUCH the SELECT AUTO touch pad.	Same as element.
b. ENSURE SEMI-AUTO SELECTION is displayed on the touch pad.	Same as element
*c. TOUCH the REQUEST touch pad	Same as element
*d. ENTER the desired location AND Touch the ENTER touch pad. (1) IF Camera Interference message is received, THEN either ABORT OR ROTATE the mast by touching the desired rotation selection.	Candidate touches UP-1, then ENTER.
*e. VERIFY the correct destination is displayed AND touch the VERIFY touch pad.	Same as element.
*f. TOUCH the AUTO RUN touch pad.	Touches the AUTO RUN touch pad and verifies RFM is headed for the upender zone.

CUE: **WHEN** the fuel assembly has been lowered into the upender carriage at least 12 inches, **THEN** inform the applicant that the refueling control room operator has been directed to enter AOP-6E, Loss of Refueling Pool Level, due to a report of water entering the containment lower level and the CRO noting a decreasing RFP level indication. Provide a copy of AOP-6E.

- A. PLACE FUEL ASSEMBLY OR REACTOR VESSEL INTERNAL STRUCTURE IN A SAFE LOCATION.

WARNING: For a Refueling Pool seal failure caused by movement of the CSB or UGS there may NOT be adequate time available to place the CSB or UGS in a safe location before radiation levels become unsafe. [BO169]

1. IF a Reactor Vessel Internal Structure (upper guide structure or core support barrel) is suspended from the polar crane, THEN direct the Reactor Vessel Job Supervisor to place the structure in a safe location PER the applicable Technical Procedure AND PROCEED to step C. No action required.

NOTE : Applicable sections of OI-25 may be referenced if manual operation of equipment is desired.

WARNING: Failure to maintain level above an irradiated Fuel Assembly may result in overheating of the assembly and extremely high radiation levels.

2. With direction from the Fuel Handling Supervisor or the CRS, ensure that ALL Fuel Assemblies are placed in a safe location: No action required.
- a. IF a Fuel Assembly is partially inserted into the Core or a SFP storage location, THEN insert it into its Core or SFP storage location. No action required.

* b. IF a Fuel Assembly is partially inserted into the upender, THEN insert it into the upender. Lowers the spent fuel assembly into the RFP Upender and ungrapples.

NOTE : The Fuel Assembly may be ungrappled with the approval of the FHS after it is placed in an approved Core or SFP storage location.

CUE: Assembly is fully lowered into the upender and ungrappled.

- c. IF a Fuel Assembly is fully withdrawn, THEN lower it into ANY of the following locations:
- The Upender if indexed over it

- The bottom of RFP Upender area (Do NOT ungrapple)
- The bottom of the SFP Upender area (Do NOT ungrapple)
- An approved Core or SFP storage location

CUE: White Power light is out, red heaters on light is on.

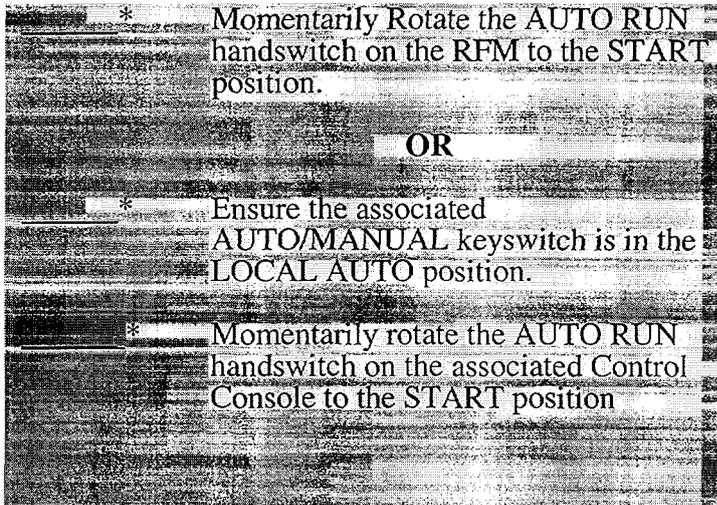
Note to examiner: *Simulate* securing power to the RFM, or the computer must be rebooted

- | | | |
|----------|--|---|
| _____ 3. | WHEN the fuel assembly is in a safe location, THEN secure power to the Refueling Machine by pushing the POWER OFF button on the console. | Depresses POWER OFF pushbutton and verifies white light is off and red heaters on light is lit. |
| B. | ISOLATE THE SFP FROM THE RFP. | No action required. |

CUE: Use OI-25E and the SFP Upender Console to demonstrate the upender operations.

CUE: Vertical light is out on RFM console.

1. IF the Transfer Carriage is in the RFP, THEN transfer it to the SFP PER OI-25E, FUEL TRANSFER SYSTEM Transfers carriage to SFP, or refers to OI-25E



Simulates placing the AUTO Run handswitch on the RFM to START.

OR

Places the AUTO MANUAL keyswitch in the LOCAL AUTO position.

Places the AUTO RUN handswitch on the Transfer Machine Console to START.

TERMINATING CUE: Task is complete when the upender has been transferred to the SFP.

TIME STOP _____

Verification of Completion

Job Performance Measure Number: NRC-12

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 2 is at 100% power. Unit 1 is in Mode 6 with fuel handling in progress.
2. The refuel machine operator has withdrawn a fuel assembly from the core into the refuel machine.
3. The upender is in the vertical position in containment.
4. The refuel machine is currently positioned over the core with the fuel assembly fully raised in the mast.

INITIATING CUE:

You are the Fuel Handling Supervisor and the fuel handling machine operator and are directed to place the fuel assembly in the upender per OI-25C, section 6.4.B step 28 and section 6.3.B step 10.

Facility: **Calvert Cliffs 1&2**Job Performance Measure No.: **NRC-13**Task Title: **Align Shutdown Cooling Locally During Control Room Fire**Task Number: **xxx.xxx**K/A Reference: **068.AK3.18 (4.2, 4.5)**Method of testing:Simulated Performance: √ Actual Performance: Classroom: Simulator: Plant: √ **READ TO THE APPLICANT:**

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

Initial Conditions:

- 1. Unit 1 was at 100% power and Unit 2 was performing a normal cooldown with shutdown cooling in service at 240°F RCS temperature.**
- 2. A fire occurred in the control room.**
- 3. AOP-9A, "Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire" has been implemented and the control room has been evacuated.**

Initiating Cue:

You are performing the duties of a qualified ABO and have been directed to lineup Unit 2 for shutdown cooling per AOP-9A, Section DB. You have just completed Steps DB.1 through DB.10. Continue with Step DB.11.

Task Standard:

Align Shutdown Cooling for operation per AOP-9A.

Evaluation Criteria:

- 1. All critical steps completed.**
- 2. All sequential steps completed in order.**
- 3. All time-critical steps completed within allotted time.**

- 4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.**

Required Materials:

- 1. Unit 2 AOP-9A, "Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire", Revision 13, Step DB, Pages 83, 84 of 94.**

General References:

- 1. Unit 2 AOP-9A, "Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire", Revision 13**
- 2. Unit 2 OI-3A, "Safety Injection and Containment Spray", Revision 22 (Attachment 1, Valve Alignment)**
- 3. OP-1, "Plant Startup From Cold Shutdown", Revision 52, Figure 7, "SDC Flow Control Valve, 1-SI-306-CV, Position Indication Diagram**

Time Critical Task:

No

Validation Time:

15 minutes

Simulator Setup:

None

TIME START _____

CUE:	Provide copy of Unit 2 AOP-9A, Step DB, Page 83 of 94 to applicant.
CUE:	Position indicator pointing at CLOSE. Handwheel will not turn any further.
Note to Examiner:	SI-399-MOV located in overhead. Applicant is not expected to climb into overhead. Have applicant point out valve from the floor level and discuss actions to be taken.

* 11. Manually shut Shutdown Cooling Heat Exchanger Recirculation, 2-SI-399-MOV. [5' hallway, N of Contmt Sump MOVs]

Pushes down and holds manual disengage lever. Turns handwheel in clockwise direction. Observes position indicator rotate to close position. Handwheel stops when valve fully closed. Releases lever.

CUE: Handwheel turns clockwise to its stop.

* 12. Shut 2-IA-643 to isolate Instrument Air to Shutdown Cooling Temperature Control Valve, 2-SI-657-CV. [SE Corner CC RM]

Turns handwheel clockwise several rotations until it stops.

CUE: Fitting is loosened. Air line is removed.

Note to Examiner: 657-CV is a fail closed valve. Air will be released from disconnected line and the valve will travel closed.

* 13. Disconnect the air line at the actuator for 2-SI-657-CV. [SE Corner CC RM]

With wrench, loosens air fitting on actuator for 657-CV by turning counter-clockwise. Removes air line at actuator.

CUE: Handwheel turned fully, stem has raised, handwheel will not turn any further.

Note to Examiner: Handwheel for 657 is turned **counter-clockwise to remove 'gag'**. Valve will go move upward to fail position (closed) under spring pressure with no control air. If applicant turns handwheel **clockwise**, provide cues for valve stem travel in downward (open) direction.

* 14. Manually shut 2-SI-657-CV. [SE Corner CC RM]

Turns handwheel **counter-clockwise**. Valve handwheel stops turning. No observed stem motion [valve closed when air line removed.]

CUE: Handwheel turns clockwise to its stop.

* 15. Shut 2-IA-641 to isolate Instrument Air

Turns handwheel clockwise several

ELEMENT
(* = CRITICAL STEP)

STANDARD

to Shutdown Cooling Flow Control Valve, 2-SI-306-CV. [E CC RM]

rotations until it stops.

CUE: Fitting is loosened. Air line is removed.

Note to Examiner: 306-CV is a fail open valve. Air will be released from disconnected line and the valve will travel open.

* 16. Disconnect the air line at the actuator for 2-SI-306-CV. [E CC RM]

With wrench, loosens air fitting on actuator for 306-CV by turning counter-clockwise. Removes air line at actuator.

CUE: Handwheel turned fully, stem has lowered, handwheel will not turn any further.

* 17. Manually shut 2-SI-306-CV. [E CC RM]

Turns handwheel clockwise. Valve stem motion observed. Handwheel stops when valve is fully closed.

CUE: Position indicator pointing at OPEN. Handwheel will not turn any further.

* 18. Manually open LPSI to Shutdown Cooling Heat Exchangers Inlet Isolation, 2-SI-658-MOV. [East end of 21 ECCS Pump Room, by 21 LPSI Pump]

Pushes down and holds manual disengage lever. Turns handwheel in counter-clockwise direction. Observes position indicator rotate to open position. Handwheel stops when valve fully open. Releases lever.

CUE: Position indicator pointing at CLOSE. Handwheel will not turn any further.

* 19. Manually shut Shutdown Cooling Recirc to 23 HPSI Pump, 2-SI-662-MOV. [22 ECCS Pump Room, south of 22 HX and north of 22 LPSI Pump]

Pushes down and holds manual disengage lever. Turns handwheel in clockwise direction. Observes position indicator rotate to close position. Handwheel stops when valve fully closed. Releases lever.

CUE: Position indicator pointing at CLOSE. Handwheel will not turn any further.

* 20. Manually shut Shutdown Cooling Recirc to 21 HPSI Pump, 2-SI-663-MOV. [21 ECCS Pump Room]

Pushes down and holds manual disengage lever. Turns handwheel in clockwise direction. Observes position indicator rotate to close position. Handwheel stops when valve fully closed. Releases lever.

ELEMENT
(* = CRITICAL STEP)

STANDARD

CUE: 2C43 acknowledges SDC lineup is complete.

_____ 21. Notifies 2C43 that the Shutdown Cooling lineup is complete. Same as element.

TERMINATING CUE: Task is complete when 2C43 informed that lineup is complete.

TIME STOP _____

Verification of Completion

Job Performance Measure Number: **NRC-13**

Applicant: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question: _____

Applicant Response: _____

Result: SAT _____ UNSAT _____

Examiner's Signature and Date: _____

APPLICANT'S CUE SHEET

INITIAL CONDITIONS:

1. Unit 1 was at 100% power and Unit 2 was performing a normal cooldown with shutdown cooling in service at 240°F RCS temperature.
2. A fire occurred in the control room.
3. AOP-9A, "Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire" has been implemented and the control room has been evacuated.

INITIATING CUE:

You are performing the duties of a qualified ABO and have been directed to lineup Unit 2 for shutdown cooling per AOP-9A, Section DB. You have just completed Steps DB.1 through DB.10. Continue with Step DB.11.