Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #1**	OP-Test # **2020**

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.

Turnover: 13 AFW Pump is OOS.

Instructions to the crew: Maintain 100% power.

Critical Tasks

1. Trip the reactor within 1 minute of the PROT CH TRIP alarm.
2. Commences an RCS Cooldown not to exceed 100°F in any one hour.
3. Commences OTCC when both S/G levels are below (-)350 inches and prior to CET temperatures reaching 560°F after Heat Removal capability has been lost.

Event #	Malfunction #	Event Type*	Event Description
1	ceds012_01	C-ALL T-SRO	Dropped CEA / AOP-1B
2	hdv001_02	C-BOP/SRO	12 Heater Drain Tank Pump trips / AOP-3G
3	srw003_02	C-BOP/SRO T-SRO	12 SRW Pump Trip / AOP-7B
4	480v003_04 Downpower	C-BOP/SRO R-ATC	Loss of MCC-116 / AOP-7I
5	rps005 rcs006_02	C-ATC/SRO	11B RCP Trip / ATWS / EOP-0
6	rcs002	C-ALL	LOCA
7	swyd002	C-ALL	Loss of Offsite Power
8	afw001_01	M-ALL	11 AFW Pump Trip (Loss of All Feed) / EOP-8

* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #1**	OP-Test # **2020**

Scenario Overview

Initial Conditions:
Unit-1 at 100% power, MOC, Unit-2 at 100% power
Equipment OOS: 13 AFW Pump.
Abnormal Conditions: None
Instructions for shift: Maintain 100% power.

Event 1 – CEA #1 in Group 5 fully drops into the reactor core requiring the crew to enter AOP-1B, CEA Malfunctions. The crew will perform the immediate action to lower Turbine Load to restore T_{COLD} to program. To crew will commence the actions required to realign the CEA. Determines TS LCO 3.1.4.B is applicable with a required action to restore CEA alignment within the COLR limit of 2 hours.

Event 2 – 12 Heater Drain Tank Pump trips requiring the crew to enter AOP-3G, Malfunction of Main Feedwater System. The crew will start the third Condensate Booster Pump and ensure adequate Steam Generator Feed Pump suction pressure is maintained.

Event 3 – 12 SRW Pump trips requiring the crew to enter AOP-7B, Loss of Service Water. The crew will perform the actions to start 13 SRW Pump and restore flow to the 12 SRW header. Determines TS LCO 3.7.6.B applies with a required action to restore the SRW subsystem to operable status within 72 hours. TS LCO 3.6.6.B applies with a required action to restore containment cooling train to operable status within 7 days. Also, TS LCO 3.8.1.B applies with a required action to restore the 1B EDG to operable status within 14 days.

Event 4 – A Loss of MCC-116 will occur requiring the crew to implement AOP-7I Section XXI. The crew will commence a rapid downpower to obtain a Condensate header flow less than 8000 gpm which equals approximately 40% reactor power.

Event 5 – During the rapid downpower, 11B RCP will trip causing RPS trip criteria to be exceeded. An RPS failure will cause the reactor to fail to trip and the crew will recognize ATWS conditions exist and perform the action to manually trip the reactor using the control board pushbuttons. The crew will enter EOP-0, Post Trip Immediate Actions.

Event 6 – After the reactor trip, a small break LOCA of 300 gpm will occur. The ATC operator will perform alternate actions for the Pressure and Inventory control safety function to isolate Letdown due to lowering Pressurizer level.

Event 7 – 2 minutes after the reactor trip, a Loss of Offsite Power will occur. The ATC operator will be required to manually restart Charging Pumps as necessary to restore Pressurizer level. The BOP operator will recognize the loss of Main Feedwater and attempt to initiate AFW flow to the Steam Generators.

Event 8 – 11 AFW Pump will trip immediately upon start resulting in a Loss of All Feedwater. 23 AFW Pump will not be available due to a 2B EDG start failure. 12 AFW will be unable to be reset when initially requested. The crew should identify the success paths in EOP-8 (RC-1 Met, VA-2 Met, PIC-1 Met, HR-1 Not Met, CE-1 Met, RLEC-1 Met) and priority (HR-1, and then PIC-1, CE-1, RLEC-1, RC-1, VA-2). Crew will commence HR-1 and PIC-1. As part of HR-1, the crew will be directed to transition to HR-4 and pursue OTCC. The scenario will end once OTCC has been established.

Instructor Scenario Information

_____ 1. Reset to IC-34.

_____ 2. Place simulator in RUN.

_____ 3. Clear PPC Screen trend lines if necessary.

_____ 4. Place simulator in FREEZE.

_____ 5. Enter Triggers:

- _____ a. Reactor Power, P1C05_JI008_MT < 84.0, to trigger Event 5.
- _____ b. Reactor Trip, CEA_ROD_POSITION(7) < 5, to trigger Event 6.
- _____ c. Reactor Trip, CEA_ROD_POSITION(7) < 5, to trigger Event 7.
- _____ d. 11 AFW Pump Start, P1C04_1HS4070_SWOPEN or P1C04_1HS4071_SWOPEN, to trigger Event 8.

_____ 6. Enter Malfunctions:

- _____ a. rps005, ATWS (K1 and K2 relays fail), at time zero.
- _____ b. ceds012_01, Dropped CEA #1 Group 5, on Event 1.
- _____ c. hdv001_02, 12 Heater Drain Tank Pump Breaker Failure, on Event 2.
- _____ d. srw003_02, 12 SRW Pump trips, on Event 3.
- _____ e. 480v003_04, Loss of MCC-116, on Event 4.
- _____ f. rcs006_02, 11B RCP trips, on Event 5.
- _____ g. rcs002 to 300, LOCA of 300 gpm, on Event 6.
- _____ h. swyd002, Loss of Offsite Power after 120 seconds, on Event 7.
- _____ i. 4kv002, Fault on the 24 4KV Bus after 120 seconds, on Event 7.
- _____ j. afw001_01 after 5, 11 AFW Pump trips after 5 second delay, on Event 8.

_____ 7. Enter Remote Functions:

- _____ a. 152-1116 to RACKED_OUT at time zero.

_____ 8. Enter Panel Overrides:

- _____ a. P1C04_1HS4540 to PTL at time zero.
- _____ b. P1C04_W06_LTON to Off at time zero.
- _____ c. P1C03_C65_LTON to Off at time zero.
- _____ d. P1C03_C51_LTON to Off at time zero.

_____ 9. Administrative:

- _____ a. Place red dots on W06 on 1C04, Motor Sys L/U Bkr OL Fail and C65 on 1C03, AFW Status Panel.
- _____ b. Perform lamp check of CEA mimic lights.
- _____ c. Place an “INFO” Tag on 13 AFW Pump Handswitch **in PTL**.

_____ d. Place protected equipment tags NEXT TO 11 & 12 AFW Pumps.

_____ e. Verify ovation screens are reset and working.

_____ f. Verify RMS screens are operating correctly and not bypassed.

_____ 10. Independently verify correct completion of the following:

_____ a. Event Triggers correctly entered

_____ b. Malfunctions correctly entered

_____ c. Remote Functions correctly entered

_____ d. Panel Overrides correctly entered

_____ e. Administrative actions correctly performed

_____ 11. Place simulator in RUN.

_____ 12. Ensure schedule files are in RUN.

_____ 13. Ensure Trigger files are in RUN.

_____ 14. If required, ensure SBT Report is running with the SBT Insight file open.

_____ 15. Reset/Acknowledge panel and PPC alarms.

_____ 16. Ensure all PPC screens selected to Main Menu, Alarms, or SPDS Operating Summary page.

_____ 17. Select "Clock" and ensure "Horn On" for annunciators.

_____ 18. Brief the Crew:

1. Present plant conditions:	Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.
2. Power history:	Reactor has been at steady state 100% power for the last 3 months.
3. Equipment out of service:	13 AFW Pump is OOS for scheduled work, due back in 24 hours. (IAS 3.7.3.B)
4. Abnormal conditions:	None
5. Surveillances due:	None
6. Instructions for shift:	Maintain 100% power.

_____ 19. Allow crew 2-3 minutes to acclimate themselves with their positions.

_____ 20. Instructions for the Booth Operator:

_____ a. **Event 1:** Activate Event 1, Dropped CEA, when directed by the Lead Examiner. Then, **REMOVE malfunction** to allow for CEA withdrawal.

_____ b. **Event 2:** Activate Event 2, 12 Heater Drain Tank Pump trips when directed by the Lead Examiner.

_____ c. **Event 3:** Activate Event 3, 12 SRW Pump Trip, when directed by the Lead Examiner.

_____ d. **Event 4:** Activate Event 4, Loss of MCC-116, when directed by the Lead Examiner.

_____ e. **Event 5:** Activate Event 5, 11B RCP Trip, on a trigger at 84% or when directed by the Lead Examiner.

_____ f. **Event 6:** Ensure Event 6, LOCA, is automatically activated on the Reactor Trip.

_____ g. **Event 7:** Ensure Event 7, Loss of Offsite Power, is automatically activated 2 minutes after the reactor trip or when directed by the Lead Examiner.

_____ h. **Event 8:** Ensure Event 8, 11 AFW Pump trips, is automatically activated with a 5 second delay when the AFW steam supply valves are opened.

_____ i. **During EOP-8:** If the RCS Cooldown is stopped, call the Unit Supervisor as the WEC and report continue the RCS Cooldown at the maximum rate to support RCS repairs.

Responses to Crew Requests

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
Event 1 – Dropped CEA	
1. WEC/IM informed of issue/status.	Acknowledge request. No further actions are required.
2. Request for latest F_{rt} value for U-1.	Report latest F_{rt} was taken last shift and is 1.54.
3. Electrical Maintenance to investigate and connect equipment to troubleshoot dropped CEA.	Acknowledge request. After 2 minutes, report equipment is connected to perform a rod trace of CEA #1. There is no obvious issues that will prevent CEA realignment.
Event 2 – 12 Heater Drain Tank Pump trips	
1. WEC/Maintenance informed of issue/status.	Acknowledge request. No further actions are required.
2. TBO investigate 12 HDP pump and breaker.	After 3 minutes, report the breaker tripped on overload, no apparent issues with the pump.
3. Chemistry notified that Precoats have been bypassed.	Acknowledge report. No further actions are required.
4. TBO check status of 13 CBP.	Report 13 CBP is running SAT.
Event 3 – 12 SRW Pump Trip	
1. WEC/Maintenance informed of issue/status.	Acknowledge request. No further actions are required.
2. TBO investigate 12 SRW Pump and its breaker.	After 2 minutes, report no issues with the pump but the breaker tripped on overload.
3. TSO notified of reducing MVars to zero on Unit-1.	Acknowledge report.
4. TBO verify 13 SRW Pump is running SAT.	After 1 minute, report 13 SRW Pump is running SAT.
Event 4 – Loss of MCC-116	
1. TBO investigate loss of MCC-116.	After 2 minutes, report MCC-116 feeder breaker is tripped open. Unknown reason, Electricians will have to investigate.
2. WEC/EM informed of issue.	Acknowledge request. No further actions are required.
3. TSO/Generation Dispatch informed of downpower for casualty.	Acknowledge request. No further actions are required.

4. TBO – Standby to operate MSR Panel Loaders during downpower.	Acknowledge request. Use Remote functions 1-MS-4024-CV and 1-MS-4021-CV to AUTO if needed.
Event 5 – 11B RCP Trip / ATWS / EOP-0	
1. Electrical Maintenance/WEC notified of 11B RCP trip or RPS failure.	Acknowledge request. No further actions are required.
Event 6 – LOCA	
1. WEC/Radiation Protection notified of an RCS LOCA in containment.	Acknowledge request. No further actions are required.
2. TBO take panel loader control valves to manual, 0% output.	Use **Remotes 1-MS-4021(4)-CV and 1-MS-4021(4)_PO** to take the low load CVs in Manual and 0%. Then, report completion.
Event 7 – Loss of Offsite Power	
1. Electrical Maintenance/WEC notified of the LOOP.	Acknowledge report. No further actions are required.
2. TSO/Generation Dispatch investigate restoration of offsite power.	Report a large area grid loss has occurred, no return to service estimate at this time.
3. ABO verify SWGR ventilation is in service per OI-22H.	Acknowledge request. No further actions are required.
4. Status of SMECO availability.	SMECO is not available and there is no return to service estimate at this time.
5. Status of 24 4KV Bus.	Report 24 4KV Bus is faulted, still investigating.
Event 8 – 11 AFW Pump trips / EOP-8	
1. TBO investigate 11 AFW Pump.	After 1 minute, report 11 AFW tripped on overspeed, the reset linkage has broken.
2. TBO align 12 AFW Pump for service.	After 1 minute, report throttle/stop valve is stuck shut and the handwheel has broken. Recommend contacting Mechanical Maintenance.
3. Unit-2 align 23 AFW Pump.	Report 23 AFW Pump does not have power due to a fault on the 24 4KV Bus.
4. WEC/Maintenance informed to investigate the AFW Pumps.	Acknowledge request. No further actions are required. Report Mechanical Maintenance is not able to repair the AFW Pumps at this time.
5. Chemistry sample Steam Generators per CP-436 and place Hydrogen Monitors in service.	Acknowledge request. After 5 minutes, report no activity in either Steam Generator.
6. TBO manually shut upstream drain MOVs.	Acknowledge report. No further actions are required.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #1**	OP-Test # **2020**

Event #1	**Dropped CEA / AOP-1B**	**C-ALL, T-SRO**

Time	**Position**	**Applicant's Actions or Behavior**
	ATC/BOP	Recognizes multiple alarms and notifies the Unit Supervisor.
	ATC	Determines alarms are due to a CEA malfunction or monitors Primary parameters for changing conditions. Determines a CEA has dropped into the core.
	BOP	If multiple alarms are announced, determines that RPS is not calling for a trip.
	SRO	Implements AOP-1B, CEA Malfunctions. Distributes trip criteria on CEA status.
	ATC	Verifies only one CEA has dropped.
	BOP	Lowers turbine load to restore T_{COLD} to program.
	SRO	May contact WEC/Instrument Maintenance to investigate failure.
	ATC/BOP	May perform an RCS boration to control reactor power.
	ATC	Commences withdrawal of the dropped CEA to realign it with its group.
	SRO	Determines TS LCO 3.1.4.B is applicable with a required action to restore CEA alignment within the COLR limit of 2 hours.

Examiner notes:

Event concludes when 12 Heater Drain Tank Pump trips. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to initiate Event #2, 12 Heater Drain Tank Pump trips.

Event #2	12 Heater Drain Tank Pump trips	C-BOP/SRO

Time	Position	Applicant's Actions or Behavior
	BOP	Announce "Non-Essential 4KV Motor Overload" alarm
	SRO	Determine 12 Heater Drain Tank Pump tripped and report to the US.
	BOP	May refer to the 1C03 Alarm Manual.
	SRO	• Implement AOP-3G Malfunction of Main Feedwater System. • Direct ATC/BOP to monitor for reactor trip criteria (low S/G level). • Direct BOP to perform Section V "Failure of a Pump > 5% Power".
	BOP	Performs Step V.B.2 "Maximize SGFP Suction Pressure" as necessary: • Condenser Hotwell Controller 1-LIC-4405 to 50% • Open Precoat Bypass Valve 1-CD-5818-CV • Checks Open Condensate Demin Bypass Valve 1-CD-4439-MOV
	ATC	Evaluates current reactor power level and may partially insert CEAs to prevent exceeding thermal power limits.
	SRO	May inform WEC/Maintenance/Chemistry of the issue.
	BOP	May perform Step V.B.6.1 and start the third Condensate Booster Pump.

Examiner notes:

Event concludes when 12 SRW Pump trips.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, 12 SRW Pump trip, when desired.

Event #3	12 SRW Pump Trip / AOP-1B	C-BOP/SRO, T-SRO

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May recognize and call multiple alarms and reports to SRO.
	ATC/BOP	Determines 12 SRW Pump has tripped, reports to SRO.
	ATC/BOP	Directs TBO to investigate 12 SRW Pump.
	SRO	Directs implementation of AOP-7B, Loss of Service Water.
	SRO	May inform WEC/Maintenance of the issue.
	BOP	May contact TSO and lower Unit-1 Main Generator MVARS to zero.
	BOP	May place 12 SRW Pump handswitch in Pull To Lock.
	BOP	Starts 13 SRW Pump.
	SRO	Determines most limiting TS LCO 3.7.6.B applies with a required action to restore the SRW subsystem to operable status within 72 hours. May also enter TS LCO 3.6.6.B with a required action to restore containment cooling train to operable status within 7 days. May also enter TS LCO 3.8.1.B with a required action to restore the 1B EDG to operable status within 14 days.

Examiner notes:

Event concludes when a Loss of MCC-116 occurs. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Loss of MCC-116, when desired.

Event #4	Loss of MCC-116 / AOP-7I	C-BOP/SRO, R-ATC

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May recognize and call multiple alarms and reports to SRO.
	BOP	May determines that RPS is not calling for a reactor trip.
	BOP	Determines that a Loss of MCC-116 has occurred.
	SRO	Directs the implementation of AOP-7I Section XXI.
	SRO	Directs the crew to commence a rapid downpower to obtain a Condensate header flow less than 8000 gpm which equals approximately 40% reactor power.
	BOP	May open the Precoat System Bypass valve, 1-CD-5818-CV, if not performed earlier.
	BOP	May monitor secondary pump bearing temperatures and stop 12 and 13 Condensate Pumps as necessary.
	BOP	May place 13 and 14 CAR Pumps in Pull To Lock.
	ATC	May equalize Boron per OP-3.
	SRO	May inform TSO/Generation Dispatch of Downpower.
	ATC	Performs a rapid downpower using a combination of CEA insertion and RCS boration to lower reactor power.
	BOP	Lowers turbine load during the rapid downpower to maintain T_{COLD} on program.
	BOP	May direct TBO to operate the Panel Loader Control Valves.
	BOP	May place hotwell level controller back in auto.

Examiner notes:

Event concludes when 11B RCP Trip / ATWS occurs.

NOTE TO EXAMINER
Cue Booth Operator to insert next malfunction, 11B RCP Trip, when desired.

Event #5	11B RCP Trip / ATWS / EOP-0	C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes multiple alarms associated with a trip of 11B RCP and the RPS Protected Channel Trip alarms.
	BOP	Determines that RPS is calling for a reactor trip due to the RCS low flow condition.
	SRO	Directs the ATC to trip the reactor.
	ATC	Recognizes that an ATWS condition exists and the reactor has failed to automatically trip.
	ATC	Manually trips the reactor using the 1C05 control board pushbuttons.
	ATC	**CRITICAL TASK** Trip the reactor within 1 minute of the PROT CH TRIP alarm
	ATC	Determines and reports the reactor is tripped.

Examiner notes:

Event concludes when a LOCA occurs and the continuation of EOP-0.

NOTE TO EXAMINER

The next malfunction, LOCA, activates automatically upon the reactor trip.

Event #6	LOCA	C-ALL

Time	Position	Applicant's Actions or Behavior
	ATC	Determines Reactor is tripped and Reactivity Safety Function is met. Informs the SRO that Reactivity is complete.
	BOP	Performs the alternate actions to direct the manually closure of the low load CVs. May report monitoring turbine trip for MSR 2nd Stage MOVs going closed. Determines Turbine Trip is met. Depending on timing of the LOOP may also take the alternate action and shut the MSIVs. Informs the SRO that Turbine Trip is complete.
	ATC	Manually starts Charging Pumps as necessary to control Pressurizer Level.
	ATC	Determines Pressure and Inventory Control Safety Function is not met. Informs the SRO that Pressure and Inventory Control is not met due to low PZR level.

Examiner notes:

Event concludes when a Loss of Offsite Power occurs.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Loss of Offsite Power, when desired.

Events #7/8	7: Loss of Offsite Power 8: 11 AFW Pump Trip / EOP-8	7: C-ALL 8: M-ALL

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes that a Loss of Offsite Power has occurred and reports to the SRO.
	SRO	May direct the re-assessment of EOP-0 safety functions.
	BOP	Manually starts at least one Component Cooling Pumps. Reports Vital Auxiliaries is complete.
	BOP	Commences the alternate actions for the loss of main feedwater by attempting to start 11 AFW Pump. Recognizes that 11 AFW Pump tripped causing a loss of all feedwater condition.
	BOP	Dispatches Equipment Operators to investigate 11 AFW Pump and/or align 12 AFW Pump for service. Determines from reports provided that 11 and 12 AFW Pumps cannot be aligned or placed back in service.
	BOP	Reassesses Core and RCS Heat Removal Safety Function and reports not met due to the loss of all feedwater and no RCPs.
	ATC/BOP	Determines Containment Environment Safety Function is not met due to high Containment pressure and temperature. Performs the alternate actions to start the idle Containment Air Cooler and open all CAC SRW emergency outlet valves. Informs the SRO that Containment Environment is not met.
	ATC/BOP	Determines Radiation Levels External to Containment Safety Function is complete.
	SRO	Evaluates the EOP-0 flowchart and recommends the implementation of EOP-8. Directs implementation of EOP-8.

Examiner notes:

NOTE TO EXAMINER

Events #7/8 continue on the next page.

Events #7/8	7: Loss of Offsite Power 8: 11 AFW Pump Trip / EOP-8	7: C-ALL 8: M-ALL

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Chemistry to perform samples on both S/Gs and place the Hydrogen Monitors in service.
	ATC/BOP	Evaluates Resource Assessment Table. Determines RC-1 Met, VA-2 Met, PIC-1 Met, HR-1 Not Met, CE-1 Met, RLEC-1 Met. Informs the SRO of assessment results.
	SRO	Determines EOP-8 priority is HR-1, and then PIC-1, CE-1, RLEC-1, RC-1, VA-2. Crew will commence HR-1 and PIC-1.
	ATC/BOP	Shuts both MSIVs due to low S/G pressure or loss of power effects on the turbine MSR valves.
	ATC/BOP	Shuts the Steam Generator Blowdown isolation valves.
	ATC/BOP	Places Main Steam Upstream Drain valves, 1-HS-6622, in close.
	ATC/BOP	Commences RCS boration by opening 1-CVC-514-MOV and starting both 11 and 12 Boric Acid Pumps.
	ATC/BOP	**CRITICAL TASK** Commences an RCS Cooldown not to exceed 100°F in any one hour. (Initial data will be at the time and temperature that ADVs/TBVs are opened.)

Examiner notes:

NOTE TO EXAMINER

Events #7/8 continue on the next page.

Events #7/8	7: Loss of Offsite Power 8: 11 AFW Pump Trip / EOP-8	7: C-ALL 8: M-ALL

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May block SGIS and SIAS during the RCS cooldown.
	SRO	May inform the WEC, Radiation Protection, and Chemistry of issue.
	SRO	Directs Chemistry to perform samples on both S/Gs and place the Hydrogen Monitors in service.
	ATC/BOP	May commence RCS depressurization using Aux Spray.
	SRO	Direct the transition from HR-1 to HR-4 to pursue Once Through Core Cooling.
	BOP	Commences the implementation of HR-4.
	ATC/BOP	**CRITICAL TASK** – Commences OTCC when both S/G levels are below (-)350 inches and prior to CET temperatures reaching 560°F after Heat Removal capability has been lost.
	ATC/BOP	Establishes OTCC conditions by performing the following: • Opens Both PORVs • Start all three HPSI Pumps • Opens the Main and Aux HPSI header MOVs

Examiner notes:

The scenario will terminate once OTCC has been established as directed by the Lead Examiner.

SHIFT TURNOVER INFORMATION SHEET [B0459]

Date: Today

Station: Calvert Cliffs

Unit: 1	**Mode:** Online	**% Rx Power:** 100	**MWE:** 920
Days On-Line (or Outage): 30		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

13 AFW Pump

Unit: 2	**Mode:** Online	**% Rx Power:** 100	**MWE:** 906
Days On-Line (or Outage): 230		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

Station Event-Free Days: 691
Reactivity Management Event-Free Days: 197
Configuration Control Event-Free Days: 206
Critical Component Failure Clock Days: 103
Clearance & Tagging Event-Free Days: 691

Station Duty Manager: Jake Smith

Significant Event Reporting: (on the first business day following a weekend or holiday include the events since the last business day):

No Significant Events

SHIFT TURNOVER INFORMATION SHEET [B0459]

MISCELLANEOUS	UNIT 1	UNIT 2
S/G Blowdown Status	100 gpm to CW OI-8A Sect 6.7	100 gpm to CW OI-8A Sect 6.7
VCT Pressure Band	35 – 41 psig **H2**	33 – 39 psig **H2**

SPENT FUEL EQUIPMENT CHECKOUTS:		
SFHM PE 0-081-01-O-Q	New Fuel Elevator OI-25B App A	SF Insp. Elev. OI-25B App B
Last done Two Months Ago **{C93668376}** **PMC-18-107842 extended to semi -annually (DDD Next Year)**	**6 Months Ago**	**9 Months Ago**

COMMON

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. None.

SHIFT TURNOVER INFORMATION SHEET [B0459]

UNIT 1					
Max Header Pressure PE 1-12-21-O-M SW PUMP		OI-29 Value	STP O-73A Quarterly Value (Rolling past 3 quarters) (Date Format – MM/DD/YY)		
	11	32.9 psig Yesterday Sec 6.39	32.8 Yesterday	32.9 psig 3 Months Ago	33.2 psig 6 Months Ago
	12	30.7 psig Yesterday Sec 6.46	30.7 psig Yesterday	30.8 psig 3 Months Ago	30.6 psig 6 Months Ago
	13 (11 Hdr)	32.0 psig 2 Weeks Ago Sec 6.39			
	13 (12 Hdr)	30.2 psig Yesterday Sec 6.46	29.6 psig Yesterday	30.4 psig 3 Months Ago	30.6 psig 6 Months Ago

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. 13 AFW Pump OOS due to emergent maintenance, LCO 3.7.3.B entered, expected return in 24 hours.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #2**	OP-Test # **2020**

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.

Turnover: 13 CAC is OOS.

Instructions to the crew: None.

Critical Tasks

1. Notes MTSV-1 is stuck open. Shuts both MSIVs prior to exiting EOP-0.
2. Trips all RCPs within 15 minutes after receiving CIS actuation.
3. Identifies 12 Steam Generator as faulted and isolates 12 S/G.
4. Establishes at least one train of Containment Spray flow to Containment.

Event #	Malfunction #	Event Type*	Event Description
1	rcs004_03	I-BOP/SRO T-SRO	11A Loop T_{COLD} 1-TT-112CC Fails High
2	480v001_08	C-ALL T-SRO	Loss of 14B 480V Bus / AOP-7I
3	Rapid Downpower	N-BOP/SRO R-ATC	Call from TSO to reduce load to <825 MWE in <15 minutes
4	ccw002_01	C-BOP/SRO T-SRO	11 CCW Pump Breaker Failure / AOP-7C
5	4kv001_02	C-ATC/SRO	12 4KV Bus / AOP-7I EOP-0
6	tg005_01 esfa012	C-BOP/SRO	MTSV-1/MTCV-1 fail as-is / SGIS Failure
7	ms010_02	M-ALL	Steam Line Rupture in Containment / EOP-4
8	esfa004_01/02 esfa005_01/02	I-ATC/SRO	CSAS Auto and Manual Failure

* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #2**	OP-Test # **2020**

Scenario Overview

Initial Conditions:
Unit-1 at 100% power, MOC, Unit-2 at 100% power
Equipment OOS: 13 CAC
Abnormal Conditions: None
Instructions for shift: None

Event 1 – 11A Loop T_{COLD} 1-TT-112CC Fails High. Alarm Response Manual 1C05 actions will have crew investigate failure at 1C15. When the failure is recognized, the crew should reference OP-CA-103-102-100 and bypass RPS Channel C trip units 1,7, & 10 and enter Tech Spec 3.3.1.A with required actions to place trip units in bypass or trip within 1 hour and then restore trip units to operable status or in trip status within 48 hours.

Event 2 – Once the trip units are bypassed, a Loss of 14B 480V Bus will occur. The crew will implement AOP-7I Section XXVII, Loss of 14B 480V Bus, which will direct their actions in protecting plant equipment and placing a Charging Pump and 11 Main Vent Fan in service. Determines Tech Spec LCO 3.8.9.A is applicable with a required action to restore the AC subsystem to operable status within 8 hours.

Event 3 – A call from the TSO will direct a power reduction to <825 MWe in <15 minutes. Crew should perform this downpower.

Event 4 – 11 Component Cooling (CCW) Pump trips. The crew will implement AOP-7C and determine that a common mode failure does not exist. Either 12 or 13 CCW Pump (if realigned to 11 480V) will be started and the RCPs will be monitored to ensure bearing temperatures and flows are returning to normal. Evaluates Tech Specs 3.7.5 and 3.6.6 and determines LCO 3.7.5. Condition A and 3.6.6 Condition A apply with a required action to restore CC loop to operable status within 72 hours.

Event 5 – A loss of 4KV Bus 12 will occur causing a loss of 1 Condensate Pump and 2 Condensate Booster Pumps. The crew will trip the reactor and implement EOP-0.

Event 6 – In EOP-0, MTSV-1 and MTCV-1 will fail as-is causing an overcooling of the RCS requiring the crew to perform the Critical Task to shut the MSIVs.

Event 7 – The major event will be a 12 SG Steam Line Rupture inside Containment that will occur 4 minutes after the reactor trip. In EOP-0, the crew will perform the Critical Task of securing all RCPs after the CIS actuation. In EOP-4, the crew will perform the Critical Task of identifying 12 SG as being faulted and isolating 12 SG.

Event 8 – Both CSAS channels will fail to automatically actuate and manually actuate with the pushbuttons requiring the crew to perform the Critical Task to take manual actions to initiate at least one train of Containment Spray flow.

Instructor Scenario Information

_____ 1. Reset to IC-34.

_____ 2. Place simulator in RUN.

_____ 3. Clear PPC Screen trend lines if necessary.

_____ 4. Place simulator in FREEZE.

_____ 5. Enter Triggers:

_____ a. Reactor Trip, CEA_ROD_POSITION (1) < 5, to trigger Event 7.

_____ 6. Enter Malfunctions:

_____ a. rcs004_03 to 1_HIGH, 11A Loop T_{COLD} 112CC Fails High, on Event 1.

_____ b. 480v001_08, Loss of 14B 480V Bus, on Event 2.

_____ c. ccw002_01, 11 CCW Pump Breaker Failure, on Event 4.

_____ d. 4kv001_02, Loss of 12 4KV Bus, on Event 5.

_____ e. tg005_01 to 999, MTSV-1 and MTCV-1 Fail as is, on Event 6.

_____ f. ms010_02 after 240 to 50, 12 SG Steam Line Rupture in Containment to 50% after a 4-minute delay, on Event 7.

_____ g. esfa004_01, CSAS Channel A Auto Failure, at time zero.

_____ h. esfa004_02, CSAS Channel B Auto Failure, at time zero.

_____ i. esfa005_01, CSAS Channel A Manual Failure, at time zero.

_____ j. esfa005_02, CSAS Channel B Manual Failure, at time zero.

_____ k. esfa012, SGIS Automatic Failure, at time zero.

_____ 7. Enter Remote Functions:

_____ a. None.

_____ 8. Enter Panel Overrides:

_____ a. P1C10_1HS5301 to STOP, 13 CAC, at time zero.

_____ b. P1C10_1HS5301_LTGREE to Off, 13 CAC, at time zero.

_____ c. P1C03_C51_LTON to OFF, at time zero.

_____ 9. Administrative:

_____ a. Ensure 14 CAC is one of the three running CACs.

_____ b. Ensure 12 Charging Pump is the selected running pump.

_____ c. Ensure 12 Main Vent Fan is running.

_____ d. Place an INFO tag on 13 CAC handswitch.

_____ e. Verify ovation screens are reset and working.

_____ 10. Independently verify correct completion of the following:

_____ a. Event Triggers correctly entered.

_____ b. Malfunctions correctly entered.

_____ c. Remote Functions correctly entered.

_____ d. Panel Overrides correctly entered.

_____ e. Administrative actions correctly performed.

_____ 11. Place simulator in RUN.

_____ 12. Ensure schedule files are in RUN.

_____ 13. Ensure Trigger files are in RUN.

_____ 14. Ensure SBT Report is running with the SBT Insight file open.

_____ 15. Reset/Acknowledge panel and PPC alarms.

_____ 16. Ensure all PPC screens selected to Main Menu, Alarms, or SPDS Operating Summary page.

_____ 17. Select "Clock" and ensure "Horn On" for annunciators.

_____ 18. Brief the Crew:

1. Present plant conditions:	Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.
2. Power history:	Reactor has been at steady state 100% power for the last 3 months.
3. Equipment out of service:	13 CAC is OOS for breaker work. (IAS 3.6.6.B)
4. Abnormal conditions:	None
5. Surveillances due:	None
6. Instructions for shift:	None

_____ 19. Allow crew 3-5 minutes to acclimate themselves with their positions.

_____ 20. Instructions for the Booth Operator:

_____ a. **Event 1:** Activate Event 1, 11A Loop T_{COLD} 112CC Fails High, when directed by the Lead Examiner.

_____ b. **Event 2:** Activate Event 2, Loss of 14B 480V Bus, when directed by the Lead Examiner.

_____ c. **Event 3:** Call as the TSO and direct a rapid downpower to <825 MWe in <15 minutes due to an issue at Waugh Chapel.

_____ d. **Event 4:** Activate Event 4, Loss of 11 CCW Pump, when directed by the Lead Examiner.

Activate Event 6 prior to Event 5

_____ e. **Event 5:** Activate Event 5, Loss of 12 4KV Bus, when directed by the Lead Examiner.

_____ f. **Event 6:** Activate Event 6, MTSV-1 and MTCV-1 fail as is, prior to activating Event 5 but after the rapid downpower is complete.

_____ g. **Event 7:** Ensure Event 7, 12 SG Steam Line Rupture in Containment, activates automatically upon the reactor trip with a 4-minute delay.

Responses to Crew Requests

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
Event 1 – 11A Loop T_{COLD} 112CC Fails High	
1. WEC/Maintenance informed of issue/status.	Acknowledge request. No further actions are required.
Event 2 – Loss of 14B 480V Bus	
1. WEC/Maintenance informed of issue/status.	Acknowledge request. No further actions are required.
2. TBO investigate 14B 480V Bus.	3 minutes later report 14B 480V Bus feeder breaker has tripped open, unknown reason.
3. PPO/TBO Align 13 CHG PP to the 14 480V Bus	Acknowledge request. Imitate System Lineup **cvcs_chgpp13_bus14.sch** to align 13 Chg Pp to 14 480V Bus (expedite schedule per Lead Instructor direction). Report completion of activity to Control Room when schedule is complete.
4. PPO/TBO Align 13 CCW Pump to 11 480V Bus	Acknowledge request. Imitate System Lineup **ccw_pp13_bus11.sch** to align 13 CCW to 11 480V Bus (expedite schedule per Lead Instructor direction). Report completion of activity to Control Room when schedule is complete.
Event 4 – Loss of 11 CCW Pump	
1. Chemistry informed that Corrosion Product Sampler may have experienced high temperatures.	Acknowledge request. No further actions required.
2. ABO/TBO – Inspect 11 CCW Pump and its breaker.	Acknowledge request. • After 2 minutes, report as the TBO that the breaker tripped on overload. • After 1 more minute, report as the ABO that 11 CCW pump has no visible issues.
3. WEC informed of 11 CCW Pump failure.	Acknowledge request. No further actions required.

Event 5 – Loss of 12 4KV Bus / EOP-0	
1. WEC/Maintenance informed of the issue.	Acknowledge request. No further actions are required.
2. TBO Investigate loss of 12 4KV Bus.	Acknowledge request. 3 – 5 minutes later report indication of a faulted Bus.
Event 7 – 12 SG Steam Line Rupture inside Containment / EOP-4	
1. WEC/Maintenance informed of the issue.	Acknowledge request. No further actions are required.
2. TBO align 12 ADV to 1C43 with a 0% output signal.	After 1 minute, use **Remote 1-MS-3939-HV** to align to 1C43, then report completion.
3. ABO verify no SG safeties leaking.	After 1 minute, report no SG safety valves are leaking.
4. WEC pull alarm card F07	After 1 minute, use remote to pull alarm card for F07.
Event 8 – CSAS Automatic and Manual Actuation Failure	
1. WEC/Maintenance informed to the issue.	Acknowledge request. No further actions are required.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #2**	OP-Test # **2020**

Event #1	**11A Loop T_{COLD} 112CC Fails High**	**I-BOP/SRO, T-SRO**

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May report Multiple Alarms.
	SRO	May direct ATC to monitor primary.
	ATC	Determines and reports that primary is stable but 11A Loop T_{COLD} indication has failed high.
	SRO	May direct BOP to check if RPS is calling for a trip.
	BOP	Determines RPS is not calling for a trip.
	BOP	Determines and reports that Channel C RPS T_{COLD} indication has failed high.
	SRO	May inform WEC/Maintenance of the issue.
	SRO	May reference OP-CA-103-102-100, determines Tech Specs LCO 3.3.1.A applies with required actions to place trip units in bypass or trip within 1 hour and then restore trip units to operable status or in trip status within 48 hours.
	BOP	Bypasses RPS Channel C trip units 1,7, &10 per OI-6 by performing the following for each trip unit: • INSERT the bypass key in the Trip Unit to be bypassed • TURN the bypass key clockwise to BYPASS • CHECK the BYPASS light illuminates
	ATC	May place pink tags on affected instruments on the control boards.

Examiner notes:

Event concludes when a Loss of 14B 480V Bus occurs. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to initiate Event #2, Loss of 14B 480V Bus, when desired.

Event #2	Loss of 14B 480V Bus	C-ALL, T-SRO

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May recognize and call multiple alarms and reports to SRO.
	ATC	May report that Pressurizer Level is lowering due to previously running 12 Charging Pump has lost power.
	BOP	May report that RPS is not calling for a trip. Determines and reports 14B 480V Bus is deenergized.
	SRO	Directs crew to implement AOP-7I, Section XXVII for a Loss of 14B 480V Bus.
	SRO	May inform WEC/Maintenance of the issue.
	ATC	May direct PPO/TBO to realign 13 Charging Pump to the 14A 480V bus.
	BOP	May direct PPO/TBO to realign 13 CCW Pump to the 11B 480V bus.
	ATC	Starts 11 or 13 Charging Pump per AOP-7I or 1C07 Alarm Manual actions. May secure Letdown if a Charging Pump is not promptly returned to service.
	BOP	Starts 11 Main Exhaust Fan per OI-22A, Main Exhaust Fan System.
	SRO	Determines most limiting Tech Spec LCO 3.8.9.A is applicable with a required action to restore the AC subsystem to operable status within 8 hours. May also enter 3.4.9.B for PZR heaters. May reiterate entry into 3.6.6.B for Containment Air Coolers.
	SRO	May reference OP-CA-TRM-100 for Charging flow paths depending on realignment of 13 CHG pump power supply. In TRM 15.1.2.A if 13 Charging pump power supply is not realigned to 11B 480V bus.

Examiner notes:

Event concludes when TSO calls directing a rapid downpower to <825 MWe. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to call as the TSO and direct a rapid downpower to <825 MWe in <15 minutes, when desired.

Event #3	Rapid Downpower	N-BOP/SRO, R-ATC

Time	Position	Applicant's Actions or Behavior
	SRO	Order Rapid Downpower to ≈90% in <15 min
	ATC	Borate to RCS by performing the following. • Open the BA Direct M/U Valve, 1-CVC-514-MOV • Verify two charging pumps are running • Start a BA Pump and run for ~ 30 seconds • Shut the BA Direct M/U Valve, 1-CVC-514-MOV • Open the RWT CHG PP Suct Valve, 1-CVC-504-MOV • Shut the VCT Outlet Valve, 1-CVC-501-MOV
	ATC	Insert CEAs per pre-prepared REMA
	ATC	Equalize Pressurizer boron as follows: • Energize all Pressurizer Backup Heater Banks and adjust the setpoint on Pressurizer Pressure Controllers to maintain Pressurizer pressure at 2250 PSIA
	BOP	Reduce Turbine Generator load to maintain Tc within 5 °F of program
	SRO	When approaching 825 MWe direct ATC/BOP to secure downpower
	ATC	Secure borating the RCS by: • Open the VCT Outlet Valve, 1-CVC-501-MOV • Shut the RWT Suct Valve, 1-CVC-504-MOV
	BOP	Place Turbine Control System back in Manual (if Auto used)
	ATC	Withdraw CEAs as required to maintain Reactor Power (due to Xenon buildup)

Examiner notes:

Event concludes when 11 CCW Pump Trips.

NOTE TO EXAMINER

At approximately 90% reactor power or when desired, cue Booth Operator to initiate Event #4, 11 CCW pump trip.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #2**	OP-Test # **2020**

Event #4	**11 CCW Pump Breaker Failure**	**C-BOP/SRO, T-SRO**

Time	**Position**	**Applicant's Actions or Behavior**
	BOP	Notes CC PP DISCH PRESS LO alarm on 1C13 and U-1 480V ESF U/V TRIP alarm on 1C19. Informs the SRO.
	ATC	Notes low CCW FLOW LO alarms on 1C06 and 1C07. Informs the SRO.
	BOP	Determines that 11 CCW Pump has tripped.
	SRO	Implements AOP-7C. Distributes RCP Parameter Trip Criteria.
	ATC	Monitors RCP Thrust bearing and Guide bearing temperatures. Initially determines no Trip Criteria have been met.
	BOP	Verifies that CC Heat Tank level is > 40". Determines a common mode failure does not exist.
	BOP	May place 11 CCW Pump HS in Pull-To-Lock. Starts either 12 or 13 CCW Pump (if aligned to 11B 480V Bus).
	BOP/SRO	May notify Chemistry that the Corrosion Product Sampler may have experienced high temperatures.
	ATC	Verifies RCP Thrust bearing and Guide bearing temperatures are lowering once CCW restored.
	SRO	Notifies the WEC of plant conditions. Requests support.
	SRO	Evaluates Tech Specs 3.7.5 and 3.6.6 and determines LCO 3.7.5. Condition A and 3.6.6 Condition A apply.

Examiner notes:

Event concludes when 12 4KV Bus is lost. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to initiate Event #5, Loss of 12 4KV Bus, when desired.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #2**	OP-Test # **2020**

Event #5	**Loss of 12 4KV Bus/EOP-0**	**C-ATC/SRO**

Time	**Position**	**Applicant's Actions or Behavior**
	ATC/BOP	May recognize and call multiple alarms and reports to SRO.
	BOP	May report that RPS is not calling for a trip. Determines and reports 12 4KV Bus is deenergized.
	SRO	May implement AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power.
	SRO	Orders an immediate Reactor trip based on the loss of Condensate and Condensate Booster Pumps with Reactor power > 70%.
	ATC	Manually trips reactor using pushbuttons on 1C05.
	SRO	Directs implementation of EOP-0.

Examiner notes:

Event concludes when the reactor is tripped.

NOTE TO EXAMINER

On the reactor trip, Event #6, the failure of MTSV-1 and MTCV-1 will initiate automatically.

Event #6	MTSV-1 and MTCV-1 Failure/EOP-0	C-BOP/SRO

Time	Position	Applicant's Actions or Behavior
	ATC	Determines Reactivity Safety Function is met. Informs the SRO that Reactivity is complete.
	BOP	CRITICAL TASK - Notes MTSV-1 is stuck open. Shuts both MSIVs prior to exiting EOP-0.
	BOP	Determines Turbine Trip Safety Function is met. Informs the SRO that Turbine Trip is complete.
	ATC	Determines Pressure and Inventory Safety Function is met. Informs the SRO that Pressure and Inventory Safety Function is complete.
	BOP	Determines Vital Auxiliaries Safety Function is met. Informs the SRO that Vital Auxiliaries is complete.
	BOP	Takes alternate actions for a loss of MFW: • Starts an AFW Pump and adjusts flow to restore S/G levels • Trips the SGFPs • Shuts the SG FW Isolation Valves
	BOP	Determines Core and RCS Heat Removal Safety Function is met. Informs the SRO that Core and RCS Heat Removal is complete after taking alternate actions for loss of MFW.
	ATC/BOP	May determine Containment Environment Safety Function is met. Informs the SRO that Containment Environment is complete (depending on timing of Event #7).
	ATC/BOP	May determine Radiation Levels External to Containment Safety Function is met. Informs the SRO that Radiation Levels External to Containment is complete (depending on timing of Event #7).

Examiner notes:

Event concludes when the 12 SG Steam Line Rupture inside Containment occurs.

NOTE TO EXAMINER

Six minutes after the reactor trip, Event #7 will initiate automatically to initiate a 12 SG Steam Line Rupture inside Containment.

Events #7,8	12 SG Steam Line Rupture/CSAS Auto and Manual Failure/EOP-4	M-ALL I-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Determines an additional transient is occurring based on RCS temperatures, PZR level and pressure, and Containment parameters.
	SRO	May direct the re-assessment of EOP-0 Safety Functions.
	ATC	Verifies the SIAS and CIS actuations.
	ATC	CRITICAL TASK - Trips all RCPs within 15 minutes after receiving CIS actuation.
	ATC	Determines that Containment pressure is greater than the CSAS setpoint and that the automatic and manual CSAS actuations failed. • May determine the validity of the CSAS by observing alternate channels of indication for the same parameter.
	ATC	May push CSAS Manual Initiation pushbuttons and recognize/report failure of manual pushbutton to the SRO.
	ATC	May utilize ESFAS action placard OR Alarm manual actions to verify CSAS actuation: • VERIFY CSAS actuation by performing the following: o CHECK CS HDR ISOL CVs open. o CHECK Condensate Booster Pumps tripped.
	ATC	CRITICAL TASK - Establishes at least one train of Containment Spray flow to Containment.
	ATC	Determines Pressure and Inventory Control Safety Function is not met. Informs the SRO that Pressure and Inventory Control is not met due to low PZR level and pressure.
	BOP	Determines Core and RCS Heat Removal Safety Function is not met. Informs the SRO that Core and RCS Heat Removal is not met due to no RCPs running and low 12 SG pressure and T_{COLD}.
		Event #7 continues next page.

Examiner notes:

Events #7,8	12 SG Steam Line Rupture/CSAS Auto and Manual Failure/EOP-4	M-ALL I-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	BOP	May lower the AFW flow to 12 SG based on the Steam Line Rupture event.
	ATC/BOP	Determines Containment Environment Safety Function is not met. Informs the SRO that Containment Environment is not met due to high Containment temperature and pressure.
	SRO	Evaluates the EOP-0 flowchart and recommends the implementation of EOP-4. Directs implementation of EOP-4.
	SRO	May direct Block Step D to verify proper operation of ECCS Pumps upon the SIAS actuation.
	ATC	Verifies all available HPSI, LPSI, and Charging Pumps are in operation.
	BOP/SRO	Identifies 12 SG as the most affected SG.
	BOP	CRITICAL TASK - Isolates 12 SG within 1 hour of the reactor trip: • Directs TBO to Align 12 ADV to 1C43 with a 0% output • Verifies shut 12 SG FW ISOL valve, 1-FW-4517-MOV. • Verifies shut 12 MSIV BYP valve, 1-MS-4052-MOV. • Shuts 12 SG Blowdown valves, BD-4012-CV and BD-4013-CV • Shuts 12 SG AFW STM SUPP & BYPASS valves, MS-4071-CV and MS-4071A-CV • Shuts 12 S/G AFW BLOCK valves, AFW-4530-CV, AFW-4531-CV, AFW-4532-CV, AFW-4533-CV • Shuts the MS UPSTREAM DRN ISOL VLVS with 1-HS-6622 in CLOSE • Directs ABO/OSO to evaluate for leaking safety valves on 12 SG

Examiner notes:

Event concludes when CSAS is manually actuated and the affected SG is isolated.

NOTE TO EXAMINER

Scenario ends when CSAS is actuated and the affected SG is isolated, when directed by the Lead Examiner.

SHIFT TURNOVER INFORMATION SHEET [B0459]

Date: Today

Station: Calvert Cliffs

Unit: 1	**Mode:** Online	**% Rx Power:** 100	**MWE:** 920
Days On-Line (or Outage): 90		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

13 CAC OOS

Unit: 2	**Mode:** Online	**% Rx Power:** 100	**MWE:** 906
Days On-Line (or Outage): 230		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

Station Event-Free Days: 691 Reactivity Management Event-Free Days: 197 Configuration Control Event-Free Days: 206 Critical Component Failure Clock Days: 103 Clearance & Tagging Event-Free Days: 691	**Significant Event Reporting:** (on the first business day following a weekend or holiday include the events since the last business day): No Significant Events
Station Duty Manager: Jake Smith	

SHIFT TURNOVER INFORMATION SHEET [B0459]

MISCELLANEOUS	UNIT 1	UNIT 2
S/G Blowdown Status	100 gpm to CW OI-8A Sect 6.7	100 gpm to CW OI-8A Sect 6.7
VCT Pressure Band	35 – 41 psig **H2**	33 – 39 psig **H2**

SPENT FUEL EQUIPMENT CHECKOUTS:		
SFHM PE 0-081-01-O-Q	New Fuel Elevator OI-25B App A	SF Insp. Elev. OI-25B App B
Last done Two Months Ago **{C93668376}** **PMC-18-107842 extended to semi -annually (DDD Next Year)**	**6 Months Ago**	**9 Months Ago**

COMMON

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. None.

SHIFT TURNOVER INFORMATION SHEET [B0459]

UNIT 1					
Max Header Pressure PE 1-12-21-O-M SW PUMP		OI-29 Value	STP O-73A Quarterly Value (Rolling past 3 quarters) (Date Format – MM/DD/YY)		
	11	32.9 psig Yesterday Sec 6.39	32.8 Yesterday	32.9 psig 3 Months Ago	33.2 psig 6 Months Ago
	12	30.7 psig Yesterday Sec 6.46	30.7 psig Yesterday	30.8 psig 3 Months Ago	30.6 psig 6 Months Ago
	13 (11 Hdr)	32.0 psig 2 Weeks Ago Sec 6.39			
	13 (12 Hdr)	30.2 psig Yesterday Sec 6.46	29.6 psig Yesterday	30.4 psig 3 Months Ago	30.6 psig 6 Months Ago

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. 13 CAC is OOS for breaker maintenance, expected return in 48 hours. (IAS 3.6.6.B).

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #3**	OP-Test # **2020**

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Unit-1 is at 3% power, MOC. Unit-2 is at 100% power.

Turnover: 13 CBP is OOS. 11 HPSI Pump is OOS.

Instructions to the crew: Raise reactor power and stabilize at 8% per OP-2.

Critical Tasks

1. Commences an RCS Cooldown not to exceed 100°F in any one hour.
2. Trip 11A & 12B RCPs or 11B & 12A RCPs when RCS pressure decreases to <1725 PSIA prior to RCS subcooling being less than 20°F for 4 minutes.
3. Establishes at least one train of HPSI pump flow to the RCS within 15 minutes of the loss of HPSI flow.

Event #	Malfunction #	Event Type*	Event Description
1	N/A	N-SRO R-ATC	Raise Reactor Power
2	ni002_03	I-BOP/SRO T-SRO	NI-RPS Ch C Wide Range NI High Volt Power Supply fails
3	cvcs006	C-ATC/SRO	CVC-516 Fails Shut
4	cw001_01	C-BOP/SRO	11 CWP Breaker Failure/AOP-7L
5	rcs003	C-ALL T-SRO	RCS Leak Unisolated/AOP-2A EOP-0
6	rcs002	M-ALL	LOCA (600 gpm)/EOP-5
7	si002_03	C-ATC/SRO	13 HPSI Pump trips

* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec

Scenario Overview

Initial Conditions:
Unit-1 at 3% power, MOC, Unit-2 at 100% power
Equipment OOS: 13 Condensate Booster Pump, 11 HPSI Pump
Abnormal Conditions: None
Instructions for shift: Raise reactor power and stabilize at 8% per OP-3.

Event 1 – The crew will perform a normal evolution of raising reactor power.

Event 2 – A High Volt power supply for Channel C WRNI will fail low. The crew will bypass the affected RPS Channel "C" Trip units using OI-6. Tech Spec 3.3.1.A and 3.3.1.D will be entered with required actions to place the trip unit in bypass or trip within 1 hour.

Event 3 – Letdown CV-516 fails shut, isolating letdown. The crew will respond using the 1C07 Alarm Manual. The crew will secure Charging and align Charging Pumps per OI-2A to control PZR level. Tech Spec 3.4.9 may be entered if PZR level rises to greater than 225".

Event 4 – 11 Circulating Water Pump will trip. The crew will respond using AOP-7L. The crew will secure 11A Waterbox.

Event 5 – An RCS Leak inside Containment of 70 gpm will occur. The crew will respond using AOP-2A, Excessive Reactor Coolant Leakage, and will not be able to isolate the leak at which point the reactor will be tripped. EOP-0, Post-Trip Immediate Actions will be implemented. Determines Tech Spec LCO 3.4.13.A is applicable with a required action to reduce leakage to within limits of the LCO with a completion time of 4 hours. It is acceptable to enter LCO 3.4.13.B with the assumption that pressure boundary leakage exists.

Event 6 – After the reactor trip, a 600 gpm RCS LOCA inside Containment will occur. The crew is expected to implement EOP-5 based on the LOCA in progress. The actions in EOP-5 will be to commence an RCS cooldown and depressurization to minimize the leakage and control RCS subcooling.

Event 7 – A failure of 13 HPSI pump will occur. The crew will start and align 12 HPSI pump to restore safety injection flow.

Instructor Scenario Information

_____ 1. Reset to IC-09.

_____ 2. Place simulator in RUN.

_____ 3. Clear PPC Screen trend lines if necessary.

_____ 4. Place simulator in FREEZE.

_____ 5. Enter Triggers:

_____ a. Reactor Trip, CEA_ROD_POSITION (1) < 5, to trigger Event 6.

_____ 6. Enter Malfunctions:

_____ a. ni002_03, Ch C WRNI failure, on Event 2

_____ b. cvcs006, CVC-516 Fails Shut, on Event 3.

_____ c. cw001_01, 11 CW Pump Failure, on Event 4.

_____ d. rcs003 to 70, RCS Leak inside Containment of 70 gpm, on Event 5.

_____ e. rcs002 after 10 to 600, LOCA of 600 gpm after 10 seconds, on Event 6.

_____ f. si002_03, 13 HPSI Pump Failure, on Event 7.

_____ g. si002_01, 11 HPSI Pump Failure at time zero.

_____ 7. Enter Remote Functions:

_____ a. 152-1304 to TRIP, 13 CBP, at time zero.

_____ b. 1-SI-655-POS to 0, HPSI Header X-Conn shut, at time zero.

_____ c. 1-SI-655-MOV to Open, HPSI Header X-Conn breaker open, at time zero.

_____ d. 1-SI-656-POS to 0, HPSI Aux Header isolation shut, at time zero.

_____ e. 1-SI-656-MOV to Open, HPSI Aux Header isolation breaker open, at time zero.

_____ 8. Enter Panel Overrides:

_____ a. P1C03_1HS4467 to PTL, 13 CBP handswitch, at time zero.

_____ b. P1C08_1HS301X to PTL, 11 HPSI in PTL, at time zero.

_____ c. P1C09_H17_LTON to Off, SIAS blocked auto start alarm for 11 HPSI, at time zero.

_____ d. P1C07_F07_LTON to Off on Event 8.

_____ e. P1C07_X65_LTON to OFF, 655 MOV alarm, at time zero.

_____ 9. Administrative:

_____ a. Place 13 CBP handswitch **in the PTL position.**

_____ b. Place an “INFO” Tag on 13 CBP handswitch.

_____ c. Place Protected Equipment tags on 11 and 12 CBP handswitches.

_____ d. Verify CVCS integrators all read 0.

_____ e. Verify ovation screens are reset and working.

_____ f. 11 SGFP aligned to Aux Steam placard in place.

_____ g. Place 11 HPSI Pump handswitch **in the PTL position.**

_____ h. Place an "INFO" Tag on 11 HPSI Pump handswitch.

_____ i. Place a red dot on 1C09 Alarm Window H17, 11 HPSI Pump SIAS Blocked/Auto Start Alarm.

_____ j. Place 1-SI-655 in **close**.

_____ k. Place an "INFO" Tag on 1-SI-655.

_____ l. Place 1-SI-656 in **close**.

_____ m. Place an "INFO" Tag on 1-SI-656.

_____ 10. Independently verify correct completion of the following:

_____ a. Event Triggers correctly entered.

_____ b. Malfunctions correctly entered.

_____ c. Remote Functions correctly entered.

_____ d. Panel Overrides correctly entered.

_____ e. Administrative actions correctly performed.

_____ 11. Place simulator in RUN.

_____ 12. Ensure schedule files are in RUN.

_____ 13. Ensure Trigger files are in RUN.

_____ 14. Ensure SBT Report is running with the SBT Insight file open.

_____ 15. Reset/Acknowledge panel and PPC alarms.

_____ 16. Ensure all PPC screens selected to Main Menu, Alarms, or SPDS Operating Summary page.

_____ 17. Select "Clock" and ensure "Horn On" for annunciators.

_____ 18. Allow crew to pre-brief the evolution of raising reactor power per OP-2.

_____ 19. Brief the Crew:

1. Present plant conditions:	Unit-1 is at 3% power, MOC. Unit-2 is at 100% power.
2. Power history:	Reactor power is being returned to 100% after a 5 day maintenance outage.
3. Equipment out of service:	13 Condensate Booster Pump is OOS for breaker work. 11 HPSI Pump is OOS for Piping Inspections.
4. Abnormal conditions:	None

5. Surveillances due:	None
6. Instructions for shift:	Raise reactor power and stabilize at 8% per OP-2 Section 6.9.

_____ 20. Allow crew 3-5 minutes to acclimate themselves with their positions.

_____ 21. Instructions for the Booth Operator:

_____ a. **Event 1:** Call as Shift Manager and inform the Unit Supervisor that the OCC is requesting power be raised and stabilized at 8% for testing.

_____ b. **Event 2:** Activate Event 2, Channel C WRNI Failure, when directed by the Lead Examiner.

_____ c. **Event 3:** Activate Event 3, CVC-516 Fails Shut, when directed by the Lead Examiner.

_____ d. **Event 4:** Activate Event 4, 11 CW Pump Trip, when directed by the Lead Examiner.

_____ e. **Event 5:** Activate Event 5, RCS leak inside CTMT, when directed by the Lead Examiner.

_____ f. **Event 6:** Verify Event 6 actuates to increase RCS Leak rate on the Rx Trip.

_____ g. **Event 7:** Activate Event 7, 13 HPSI Pump Trip, when directed by the Lead Examiner.

Responses to Crew Requests

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
Event 1 – Up Power	
1. Chemistry perform RCS Boron Sample.	Acknowledge request and report sampling is in progress, expect to report results in about 45 minutes.
2. Chemistry confirm requirements of CP-217 have been satisfied.	Report requirements are complete.
Event 2, Channel C WRNI Failure	
1. WEC/Maintenance informed of issue/status.	Acknowledge report. No further actions required.
Event 3 – CVC-516 Fails Shut	
1. WEC/Maintenance informed of issue/status.	Acknowledge report. No further actions required.
2. Chemistry informed that letdown is isolated.	Acknowledge report. No further actions required.
3. Secure Zinc Addition Skid.	Acknowledge request. No further actions required.
Event 4 – 11 CW Pump Trips	
1. WEC/Maintenance notified of issue/status.	Acknowledge report. No further actions required.
2. Equipment Operator investigate 11 CW Pump and its breaker.	After 2 minutes, report 11 CW Pump breaker tripped on overload, unknown reason.
3. Chemistry informed to ensure Circulating Water Chemical Injection is secured to 11 CWP.	Acknowledge report. No further actions required.
4. Shut 11A Condenser Shell Stop, 1-CAR-101.	Acknowledge request. • After 2 minutes, perform action using Remotes, and report as complete.
5. Secure 11A Amertap per OI-14C.	Acknowledge request. • After 5 minutes, perform action using

	Remotes, and report as complete.
Event 5 – RCS Leak inside Containment/ EOP-0	
1. Chemistry sample SGs per CY-CA-180-436, Qualitative Determination of Affected S/G in a Tube Leak Event.	Acknowledge request. After 5 minutes, report "There is no RCS activity in either 11 or 12 SG."
2. Equipment Operators dispatched to investigate for an RCS leak in the Aux Building.	Acknowledge request. After 3 minutes, report there are no indications of a leak in the Aux Building.
3. Radiation Protection informed of an RCS leak and radiation may change throughout the plant.	Acknowledge information.
4. Generation Dispatch informed of Unit-1 being taken offline.	Acknowledge information.
Event 6- LOCA in containment/ EOP-5	
1. WEC informed of issue/status.	Acknowledge request. No further actions required.
2. RadCon/Chemistry informed of leak.	Acknowledge request. No further actions required.
3. Pull Alarm Cards for nuisance alarms.	Acknowledge request. • Override selected annunciator and report "Alarm Card for Window # has been pulled."
4. Verify SRW Pp Room Ventilation.	Acknowledge request. No further actions required.
5. Chem-Place CTMT Hydrogen Monitors in service.	Acknowledge request. No further actions required.
Event 7 – 13 HPSI Pump Trips	
1. WEC informed of issue/status.	Acknowledge request. No further actions required.

Event #1	Raise Rx Power	N-SRO, R-ATC

Time	Position	Applicant's Actions or Behavior
	SRO	Directs crew to raise power and stabilize at 8%. May provide specific reactivity control directions and stop criteria.
	ATC	Withdraws CEAs and/or performs RCS dilution to raise reactor power.
	ATC	May reset the VOPT setting every 2 to 4 percent increase in power.
	ATC	May periodically compare all indications of power. IF at any time an unexplained difference exists between NI, Delta-T or calorimetric power, then stop increasing Reactor power until the discrepancy is resolved.
	ATC	May periodically verify that Pressurizer Programmed Level is within the acceptable PZR level band per Figure (3). (Computer points for Tavg are 1T191 and 1T192).
	ATC	May periodically MONITOR ASI to ensure oscillations will not reach the ASI pre-trip value.
	ATC	Monitors Tc. If deviates greater than 2 °F from program Tc, TEMPERATURE PROGRAM CURVE, THEN: ● INFORM Control Room Supervisor. ● INITIATE necessary corrective actions. ● To lower Tc: ● RAISE steam demand. ● LOWER reactor power by inserting CEAs or raising RCS boron concentration. ● To raise Tc: ● REDUCE steam demand. ● RAISE reactor power by withdrawing CEAs or reducing RCS boron concentration.

Examiner notes:

Event concludes when alarms actuate for Channel C WRNI Failure.

NOTE TO EXAMINER

Cue Booth Operator to initiate Event #2, Channel C WRNI Failure.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #3**	OP-Test # **2020**

Event #2	**Channel C WRNI Failure**	**I-BOP/SRO, T-SRO**

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Notes NI CH INOPERATIVE alarm on 1C05. Informs the SRO.
	ATC/BOP	Refers to Alarm Manual for 1C05.
	BOP	Determines WRNI indications on RPS Channel C are lost.
	SRO	Refers to OP-CA-103-102-100, Tech Spec Implementation Matrix attachment.
	SRO	Evaluates Tech Spec 3.3.1. Determines LCO 3.3.1 Condition A and Condition D apply.
	SRO	Directs BOP to bypass RPS Trip Units 2, 3, and 7 on RPS Channel C per OI-6.
	BOP	Bypasses RPS Trip Units 2, 3, and 7 on RPS Channel C using OI-6.
	SRO	Notifies the WEC of plant conditions. Requests support.

Examiner notes:

Event concludes when CVC-516 Fails Shut. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction: Event #3, CVC-516 Fails Shut, when desired.

Event #3	CVC-516 Fails Shut	C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	ATC	Notes L/D PRESS and RAD MON FLOW LO alarms on 1C07. Informs the SRO.
	ATC	Refers to the 1C07 Alarm Manual and determines that 1-CVC-516 has failed shut and letdown has been lost.
	SRO	May direct the ATC to secure letdown per OI-2A.
	SRO	Directs ATC to place Charging Pumps in Pull-To-Lock as necessary maintain prevent PZR level from exceeding 225 inches.
	ATC	May shut letdown valve CVC-515-CV.
	ATC	Places Charging Pumps in Pull-To-Lock prior to PZR level exceeding 225 inches.
	SRO	May evaluate Tech Spec 3.4.9 if PZR level exceeds 225". Determines LCO 3.4.9 Condition A applies until PZR level is lowered below 225".
	SRO	May evaluate Technical Requirements Manual 15.1.2. Determines that Boration Flow Paths are still met.
	SRO	Notifies the WEC of plant conditions. Requests support.
	ATC/SRO	Notifies Chemistry of CVCS status.

Examiner notes:

Event concludes when alarms actuate for 11 CW Pump tripping. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Event #4, 11 CW Pump Trips, when desired.

Event #4	11 Circulating Water Pump Trip	C-BOP/SRO

Time	Position	Applicant's Actions or Behavior
	BOP	Notes that NON-ESSENTIAL/4KV/13KV MOTOR OVERLOAD alarm on 1C17 has flashed in and cleared. Informs the SRO.
	BOP/SRO	Determines that 11 CWP has tripped. May place handswitch in PTL.
	SRO	Implements AOP-7L for loss of 11 CWP. Distributes trip criteria associated with Condenser vacuum and CWP status.
	SRO	Notifies the WEC of plant conditions. Requests support.
	BOP	Notifies Chemistry to ensure Circulating Water Chemical Injection is secured to 11 CWP.
	BOP	Directs TBO to shut 11A Condenser Shell Stop, 1-CAR-101.
	BOP	May place CNDSR HOTWELL M/U & DUMP CONTROL, LIC-4405, in Manual.
	BOP	Shuts the 11A Waterbox Priming valve, WBP-1746-CV.
	BOP	Directs the TBO to secure the 11A Amertap per OI-14C.

Examiner notes:

Event concludes when RCS leak is recognized.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Event #5, RCS leak in CTMT.

Event #5	CTMT RCS Leak / AOP-2A / EOP-0	C-ALL, T-SRO

Time	Position	Applicant's Actions or Behavior
	ATC	Determines PZR level is lowering and reports to crew.
	SRO	Directs ATC to Monitor the Primary.
	ATC	May recognize and report start of backup Charging pump and notify SRO leakage exceed the capacity of the running pump.
	BOP	Reports CTMT Normal Sump Alarm and may respond per the ALM Manual.
	SRO	Directs implementation of AOP-2A for RCS exceeding capacity of one charging pump. Assign Trip Criteria.
	SRO	Direct Chemistry to perform qualitative samples on both SGs for activity per CY-CA-180-436.
	ATC	Shuts the L/D CNTMT ISOL valves, 1-CVC-515-CV and 1-CVC-516-CV.
	BOP	Performs AOP-2A VI.D to check for SG Tube Leakage. Evaluates RMSs and determines no tube leakage is indicated.
	BOP/ATC	Evaluates and determines **NO** PORV leakage.
	BOP/ATC	Evaluates Charging header leakage by securing all but one charging pump and observing Charging Header pressure remains higher than RCS Pressure. Determines no Charging Header leakage.
	BOP	Evaluates for CTMT leakage by observing Pressure/ Temp / Humidity trends and WRNG and Main Vent Gaseous RMS are not in alarm. Determines leak is in CTMT and reports to crew.
	BOP	Starts All available CNMT Air Coolers in High.
	BOP	Open the CNTMT CLR EMER OUT valves for the operating CNTMT AIR CLRs.
	BOP	May Evaluate Component Cooling for leakage.

Examiner notes:

Event #5 continues next page.

Event #5	CTMT RCS Leak / AOP-2A / EOP-0	C-ALL, T-SRO

Time	Position	Applicant's Actions or Behavior
	SRO	Determines Tech Spec LCO 3.4.13.A is applicable with a required action to reduce leakage to within limits of the LCO with a completion time of 4 hours. It is acceptable to enter LCO 3.4.13.B with the assumption that pressure boundary leakage exists.
	SRO	Determines Leak cannot be isolated and exceed one charging pump capacity. Directs ATC to trip the RX and Implementation of EOP-0.
	ATC	Trips the reactor.
	ATC	Determines Reactor is tripped and Reactivity Safety Function is met. Informs the SRO that Reactivity is complete.
	BOP	May access Turbine Trip. Informs the SRO that Turbine Trip is complete.
	BOP	Determines Vital Auxiliaries Safety Function is met. Informs the SRO that Vital Auxiliaries is complete.
	ATC	Determines Pressure and Inventory Control Safety Function is not met. Informs the SRO that Pressure and Inventory Control is not met due to low PZR level and lowering PZR pressure.
	BOP	Determines and reports Core and RCS Heat Removal Safety Function is met.
	ATC/BOP	Determines Containment Environment Safety Function is not met. Informs the SRO that Containment Environment is not met due to trends on pressure / Temp / and humidity.
	ATC/BOP	Determines Radiation Levels External to Containment Safety Function is met. Informs the SRO that Radiation Levels External to Containment is complete.

Examiner notes:

Event #5 continues next page.

Event #5		CTMT RCS Leak / AOP-2A / EOP-0	C-ALL, T-SRO
	BOP	May Align AFW per EOP-0 due to pending loss of Main Feedwater due to SIAS.	
	ATC	Verifies the SIAS actuation.	
	ATC	CRITICAL TASK - Trip 11A & 12B RCPs or 11B & 12A RCPs when RCS pressure decreases to <1725 PSIA prior to RCS subcooling being less than 20ºF for 4 minutes.	
	SRO	May implement AOP-2A, Excessive RCS Leakage after all EOP-0 panel actions are complete by directing actions for exceeding the capacity of a Charging Pump in Mode 3. • May direct open Main and Aux HPSI Header MOVs • May direct start 11 and 13 HPSI Pumps • May direct block SIAS PZR PRESS	
	ATC	If Mode 3 AOP-2A actions are assigned: • May open Main and Aux HPSI Header MOVs • May start 11 and 13 HPSI Pumps • May block SIAS PZR PRESS	
	SRO	Evaluates the EOP-0 flowchart and recommends the implementation of EOP-5.	

Examiner notes:

NOTE TO EXAMINER

Event concludes when EOP-5 is entered. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

Events #6 & 7	LOCA in CTMT / EOP-5 / 13 HPSI Pump Failure	6: M-ALL 7: C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	SRO	Directs implementation of EOP-5.
	ATC	Monitors RCS depressurization/Verifies SIAS: • Verifies open Main and Aux HPSI Header MOVs • Verifies 13 HPSI Pump and all Chg PPs are running • May block SIAS PZR PRESS if not actuated
	ATC	Determines that 13 HPSI Pump has tripped. Starts and aligns 12 HPSI pump to Main HPSI Header.
	ATC	CRITICAL TASK - Establishes at least one train of HPSI pump flow to the RCS within 15 minutes of the loss of HPSI flow.
	ATC	May Performs RCP Trip Strategy if not already done: • Determines RCS pressure is lowering and is not under Operator control • Trips 11A&12B or 11B&12A RCPs
	BOP	Maintains Containment Environment: • Verifies all CNTMT AIR CLRs are running • Verifies all CNTMT CLR EMERG OUT valves are open
	ATC	Monitors EOP Attachment 1 RCS Pressure Temperature Limits. **IF** RCS pressure drops below the minimum pump operating limits, **THEN** trip **ALL** RCPs.

Examiner notes:

Events #6 & 7 continue on next page.

Events #6 & 7	LOCA- CTMT / EOP-5 / 13 HPSI Pump Failure	6: M-ALL 7: C-ATC/SRO

Time	Position	Applicant's Actions or Behavior

	ATC/BOP	ATTEMPT LEAK ISOLATION by:
		• Verify L/D CNTMT ISOL valves are shut.
		• Check there is **NO** PORV leakage.
		• Shut RCS SAMPLE ISOL valve, 1-PS-5464-CV.
		• Shut RX VESS VENT valves: 1-RC-103-SV &1-RC-104-SV.
		• Shut PRZR VENT valves: 1-RC-105-SV & 1-RC-106-SV.
		• Verifies LOCA inside containment by:
		  ○ Rise in containment temperature, pressure, humidity or sump level.
		  ○ UNIT 1 WIDE RANGE NOBLE GAS MON and UNIT 1 MAIN VENT GASEOUS alarms clear.

	BOP	Ensures both CCHXs have cooling from the control room.
	BOP	Verifies SRW Pump Room Ventilation in service per OI-15.
	BOP	Ensures Chemistry has been directed to place H2 Monitors in service.
	ATC	Verify Boration: 1-CVC-514 is Open, 1-CVC-508 & 509 are Open, All BA PPs are running, 1-CVC-501 is Shut, All Chg PPs running.

Examiner notes:

Event #6 continues the next page

Events #6 & 7	LOCA- CTMT / EOP-5 / 13 HPSI Pump Failure	6: M-ALL 7: C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	SRO	Directs RCS cooldown to less than 300°F using TURB BYP valves or ADVs, maintain RCS cooldown less than 100°F in any one hour.
	BOP	Initiates Cooldown by Throttling Opening TBVs. • May Open ADVs if SGIS Actuated.
	BOP	CRITICAL TASK - Commences an RCS Cooldown not to exceed 100°F in any one hour.
	BOP	May Block SGIS A/B if they have not already actuated when the "SGIS A BLOCK PERMITTED" alarm is received.
	SRO	Directs RCS Depressurization to maintain RCS Subcooling between 30-140°F.
	ATC	Raise subcooling by any of: • Energize the Pressurizer HTR(s). • IF HPSI flow has been reduced, THEN raise HPSI flow by opening HPSI HDR valves which have been throttled or starting HPSI PPs which have been stopped. • Raise RCS cooldown rate, while NOT exceeding 100°F in any one hour.

Examiner notes:

NOTE TO EXAMINER

Scenario terminates when cooldown control is established and when Lead directs.

SHIFT TURNOVER INFORMATION SHEET [B0459]

Date: Today			
Station: Calvert Cliffs			
Unit: 1	**Mode:** Online	**% Rx Power:** 3	**MWE:** Offline
Days On-Line (or Outage): 0		**On-Line (or Outage) Risk Level:** Green	
Off Normal Trends:			
Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow 11 HPSI Pump OOS 13 CBP OOS			
Unit: 2	**Mode:** Online	**% Rx Power:** 100	**MWE:** 906
Days On-Line (or Outage): 230		**On-Line (or Outage) Risk Level:** Green	
Off Normal Trends:			
Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow			
Station Event-Free Days: 691 Reactivity Management Event-Free Days: 197 Configuration Control Event-Free Days: 206 Critical Component Failure Clock Days: 103 Clearance & Tagging Event-Free Days: 691		**Significant Event Reporting:** (on the first business day following a weekend or holiday include the events since the last business day): No Significant Events	
Station Duty Manager: Jake Smith			

SHIFT TURNOVER INFORMATION SHEET [B0459]

MISCELLANEOUS	UNIT 1	UNIT 2
S/G Blowdown Status	100 gpm to CW OI-8A Sect 6.7	100 gpm to CW OI-8A Sect 6.7
VCT Pressure Band	35 – 41 psig **H2**	33 – 39 psig **H2**

SPENT FUEL EQUIPMENT CHECKOUTS:		
SFHM PE 0-081-01-O-Q	New Fuel Elevator OI-25B App A	SF Insp. Elev. OI-25B App B
Last done Two Months Ago **{C93668376}** **PMC-18-107842 extended to semi -annually (DDD Next Year)**	**6 Months Ago**	**9 Months Ago**

COMMON

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. None.

SHIFT TURNOVER INFORMATION SHEET [B0459]

UNIT 1					
Max Header Pressure PE 1-12-21-O-M SW PUMP		OI-29 Value	STP O-73A Quarterly Value (Rolling past 3 quarters) (Date Format – MM/DD/YY)		
	11	32.9 psig Yesterday Sec 6.39	32.8 Yesterday	32.9 psig 3 Months Ago	33.2 psig 6 Months Ago
	12	30.7 psig Yesterday Sec 6.46	30.7 psig Yesterday	30.8 psig 3 Months Ago	30.6 psig 6 Months Ago
	13 (11 Hdr)	32.0 psig 2 Weeks Ago Sec 6.39			
	13 (12 Hdr)	30.2 psig Yesterday Sec 6.46	29.6 psig Yesterday	30.4 psig 3 Months Ago	30.6 psig 6 Months Ago

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. 13 CBP is OOS for scheduled maintenance, expected return in 48 hours.
2. 11 HPSI Pump is OOS for piping inspections, expected return in 16 hours.
3. Raise reactor power and stabilize at 8% per OP-2 Section 6.9.

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #4**	OP-Test # **2020**

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.

Turnover: 12 Boric Acid Pump is OOS, 0C DG is OOS.

Instructions to the crew: The Shift Manager has directed the crew to shift disconnects for 13 IRU to the 14B 480V Bus per OI-5B Section 6.2.

Critical Tasks

1. Establishes AFW flow to at least one S/G prior to S/G levels going below (-)350 inches.
2. Shuts MSIVs to stop cooldown prior to 432°F T_{COLD}.

Event #	Malfunction #	Event Type*	Event Description
1	N/A	N-BOP/SRO T-SRO	13 IRU Shift Disconnects
2	rcs027_02	C-ATC/SRO T-SRO	PORV-404 Leakage
3	480v001_04	C-BOP/SRO	Loss of 12B 480V Bus/AOP-7I
4	tg017 Downpower	C-BOP/SRO R-ATC	High Turbine Vibrations/AOP-7E
5	cvcs014_01	C-ATC/SRO	11 Boric Acid Pump Trips
6	swyd002	M-ALL	EOP-0 Loss of Offsite Power/EOP-2
7	dg001_02	C-ALL	1B EDG Trips
8	dg002_02	M-ALL	Station Blackout/EOP-7

* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec

Appendix D	Scenario Outline	Form ES-D-1
Calvert Cliffs Nuclear Power Plant	**Scenario #4**	OP-Test # **2020**

Scenario Overview

Initial Conditions:
Unit-1 at 100% power, MOC, Unit-2 at 100% power
Equipment OOS: 12 Boric Acid Pump. 0C DG.
Abnormal Conditions: None
Instructions for shift: The Shift Manager has directed the crew to shift disconnects for 13 IRU to the 14B 480V Bus per OI-5B Section 6.2.

Event 1 – The crew will shift disconnects for 13 IRU to the 14B 480V Bus per OI-5B. During the evolution, the crew will enter Tech Spec 3.6.8.A with a required action to restore the Iodine Removal System train to operable status with a completion time of 7 days.

Event 2 – Leakage from PORV-404 into the Quench Tank will occur. Alarm Response Manual 1C06 actions will have crew shut the Block Valve for PORV-404 and verify the leakage has been isolated. The crew is expected to enter Tech Spec 3.4.11.A for PORV-404 being declared inoperable with a required action to close and maintain power to associated block valve with a completion time of 1 hour.

Event 3 – After PORV-404 is isolated, a loss of 12B 480V Bus will occur. The crew will implement AOP-7I Section XV, Loss of 12B 480V Bus, which will direct their actions in protecting plant equipment and pursue tying MCCs 106 and 116.

Event 4 – The Main Turbine will begin to experience high vibrations on Bearing #4 ramping in from 6.5 mils to 11 mils over a 5-minute period. The crew will respond using AOP-7E, Main Turbine Malfunction, and will commence a reactor downpower in an attempt to lower turbine vibrations. The turbine vibrations will eventually reach trip criteria and EOP-0, Post-Trip Immediate Actions will be implemented.

Event 5 – When a rapid downpower is commenced, 11 Boric Acid Pump will immediately trip upon starting. The crew is expected to continue the downpower using one of the alternate boration steps of OP-3.

Event 6 – On the reactor trip in EOP-0, a Loss of Offsite Power will occur. The crew will verify the safety related buses are energized by their Emergency Diesel Generators and is expected to restart a Component Cooling Pump.

Event 7 – After the implementation of EOP-2, the 1B EDG will trip. The crew will pursue tying underlying MCCs and ensure proper operation of remaining equipment available.

Event 8 – Then, 5 minutes after the loss of the 1B EDG, the 1A EDG will trip causing Station Blackout conditions on Unit-1. The crew is expected to transition to EOP-7, Station Blackout. When the 1A EDG is repaired, the crew will re-energize 11 4KV Bus with 1A EDG.

Instructor Scenario Information

_____ 1. Reset to IC-34.

_____ 2. Place simulator in RUN.

_____ 3. Place simulator in FREEZE.

_____ 4. Enter Triggers:

_____ a. 11 Boric Acid Pump HS to Start (P1C07_1HS226X_SWCLOSE) on Event 5.

_____ b. Reactor Trip – CEAs on Bottom (CEA_ROD_POSITION(1) < 5) on Event 6.

_____ 5. Enter Malfunctions:

_____ a. rcs027_02, PORV-404 Leakage from 1% to 3%, 20 second ramp, on Event 2.

_____ b. 480v001_04, Loss of 12B 480V Bus, on Event 3.

_____ c. tg017 from 6.5 to 11 in 300, Turbine Vibrations, on Event 4.

_____ d. cvcs014_01, 11 Boric Acid Pump Trips, on Event 5.

_____ e. swyd002, Loss of Offsite Power, on Event 6.

_____ f. dg001_02, 1B EDG Trips, on Event 7.

_____ g. dg002_02, 1A EDG Trips, on Event 8.

_____ h. cvcs014_02, 12 Boric Acid Pump Fails, at time zero.

_____ i. dg002_01, 0C DG Start Failure, at time zero.

_____ j. afw004_01, AFAS Channel A Failure to Actuate, at time zero.

_____ k. afw004_02, AFAS Channel B Failure to Actuate, at time zero.

_____ l. dg001_01, 2A EDG Start Failure, at time zero.

_____ m. esfa012, ESFAS-SGIS Automatic Failure, at time zero.

_____ 6. Enter Remote Functions:

_____ a. 52-10601 to OPEN, MCC-106 Feeder Breaker, on Event 9.

_____ b. 52-10650 after 5 to CLOSED, Tie MCC-106 to MCC 116, on Event 9.

_____ c. 1-CAR-6717-MO to CLOSED, Breaker 52-11618, on Event 10.

_____ d. RESET_EMERG-J37 to RESET, Reset the 1A EDG, on Event 11.

_____ e. RESET-J031 to RESET, Reset the 1A EDG, on Event 11.

_____ 7. Enter Panel Overrides:

_____ a. P1C07_1HS226Y to PTL at time zero.

_____ b. P1C07_F38_LTON to Off at time zero.

_____ c. P1C19C_AC1_LTON to Off at time zero.

_____ d. P1C19C_AC3_LTON to Off at time zero.

_____ e. P1C19_R06_LTON to Off at time zero.

_____ 8. Administrative:

- _____ a. Place an "INFO" Tag on 0C DG Output Breaker HS, **0-CS-0703 in PTL**.
- _____ b. Place "INFO" Tags on 0C DG Start pushbuttons.
- _____ c. Place red dots on alarm windows AC1 and AC3 on 1C19C and R06 on 1C19.
- _____ d. Place a red dot on F38, 12 Boric Acid Pump, on 1C07.
- _____ e. Place an "INFO" Tag on 12 Boric Acid handswitch in the Pull to Lock position.
- _____ f. Verify CVCS integrators all read 0.
- _____ g. Verify ovation screens are reset and working.

_____ 9. Independently verify correct completion of the following:

- _____ a. Event Triggers correctly entered.
- _____ b. Malfunctions correctly entered.
- _____ c. Remote Functions correctly entered.
- _____ d. Panel Overrides correctly entered.
- _____ e. Administrative actions correctly performed.

_____ 10. Place simulator in RUN.

_____ 11. Ensure Schedule files and Trigger files are in RUN.

_____ 12. Ensure SBT Report is running with the SBT Insight file open.

_____ 13. Ensure all PPC screens selected to Main Menu, Alarms, or SPDS Summary page.

_____ 14. Select "Clock" and ensure "Horn On" for annunciators.

_____ 15. Allow crew to pre-brief the evolution for shifting 13 IRU disconnects.

_____ 16. Brief the Crew:

1. Present plant conditions:	Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.
2. Power history:	Reactor has been at steady state 100% power for the last 3 months.
3. Equipment out of service:	12 Boric Acid Pump is OOS for breaker work. 0C DG is OOS for scheduled maintenance.
4. Abnormal conditions:	None
5. Surveillances due:	None
6. Instructions for shift:	The Shift Manager has directed the crew to shift disconnects for 13 IRU to the 14B 480V Bus per OI-5B Section 6.2.

_____ 17. Allow crew 3-5 minutes to acclimate themselves with their positions.

_____ 18. Instructions for the Booth Operator:

_____ a. **Event 1:** Call in as WEC, request "13 IRU be shifted to the 14B 480V Bus to support EM breaker inspections."

_____ b. **Event 2:** Activate Event 2, rcs027_02, PORV-404 Leakage when directed by the Lead Examiner.

_____ c. **Event 3:** Activate Event 3, 480v001_04, Loss of 12B 480V Bus, when directed by the Lead Examiner.

_____ d. **Event 4:** Activate Event 4, tg017, Turbine Vibrations, when directed by the Lead Examiner. Adjust as needed to reach trip criteria, when directed by the Lead Examiner. (Booth direction – modify by matching initial value then raising to a final value greater than 12 with a short ramp).

_____ e. **Event 5:** Activate Event 5, cvcs014_01, 11 Boric Acid Pump Trips, when directed by the Lead Examiner.

_____ f. **Verify Event 6:** Loss of Offsite Power, activated on Rx Trip trigger.

_____ g. **Event 7:** Activate Event 7, dg001_02, 1B EDG Trips, when directed by the Lead Examiner.

_____ h. **Event 8:** Activate Event 8, dg002_02, 1A EDG Trips, 5 minutes after Event 7 AND when directed by the Lead Examiner.

Responses to Crew Requests

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
Event 1 – IRU Shift	
1. Notify WEC/EM 13 IRU on 14B bus.	Acknowledge report. No further actions are required.
Event 2 – PORV 404 leakage	
1. WEC/Maintenance - informed of issue/status.	Acknowledge request. No further actions are required.
2. Radiation Protection - Quench Tank Venting.	Acknowledge request. No further actions are required.
Event 3 – 12B 480V loss	
1. WEC/Maintenance informed of issue/status.	Acknowledge request. After 1 minute, report the feeder breaker is tripped. Wait 5 minutes then EM reports a failure of the breaker.
2. TBO investigate 12B 480V Bus.	3 minutes later report 12B 480V Bus feeder breaker has tripped open, unknown reason.
3. WEC/PPO/TBO tie MCC 106T to MCC-116T.	Acknowledge, wait 1 minute then Tie 106T to 116T by initiating **Event #9:** • FDR TO MCC 106T: 52-10601, to OPEN. • 52-10650, to CLOSED. Report MCC-106T and MCC-116T are tied with MCC-116T supplying.
4. WEC/E&C/TBO/take total amp reading on MCC-116T.	Acknowledge and report. 1 minute later, Report amp reading is 350 amps total using local (or clamp-on) ammeter.
5. TBO Verify 12 Gland Exhaust Blower	Acknowledge report. No further actions are required.

Event 4 – MT Vibrations	
1. PPO/TBO contacted to investigate turbine vibration on bearing #4.	Acknowledge. Wait 1 minute and report that you can feel vibration from bearing #4 and rumbling on the turbine deck.
2. WEC/System Engineer contacted for assistance on vibration.	Acknowledge request. No further actions are required.
3. PPO/TBO go standby breaker 52-11618 (Main Condenser Vacuum breaker).	Acknowledge request.
4. PPO/TBO Close Vacuum Breaker-Breaker.	If not pre-staged, Wait 2 Minutes, otherwise: **CLOSE** Main Condenser Vacuum breaker, **1-CAR-6717-MO** (52-11618 BREAKER POSITION) And Report "52-11618 breaker is closed".
5. PPO/TBO – Standby to operate MSR Panel Loaders during downpower.	Acknowledge request. Place 1-MS-4024-CV and 1-MS-4021-CV to AUTO if needed.
6. Chemistry - power change >15%.	Acknowledge request. No further actions are required.
7. SO/TSO – U1 power reduction due to MT vibrations.	Acknowledge request. No further actions are required.
Event 5 – 11 BA Pump trip	
1. WEC/Maintenance - informed of issue/status.	Acknowledge request. No further actions are required.
Event 6 – EOP-0 / LOOP	
1. WEC - informed of issue/status.	Acknowledge request. No further actions required.
2. WEC - Pull Alarm Cards for nuisance alarms.	Acknowledge request. After 1-minute override selected annunciator and report "Alarm Card for Window # has been pulled."
3. SO/TSO – estimate time until power is restored.	No determination yet, will let you know when determination is made.
4. ABO - Verify SWGR ventilation in service per OI-22H.	Acknowledge request, after 2 minutes report SWGR ventilation in service per OI-22H.

Event 7 – EOP-2 / DG Trips	
1. OSO – Investigate the 1B EDG.	Acknowledge request. After 2 minutes, report 1B EDG tripped and appears to be a generator electrical fault, there is an acrid odor at generator end, no smoke or fire evident.
2. WEC/EM – Investigate/repair 1B EDG.	Acknowledge request. No further actions required.
3. TBO – Verify AFW Pp ventilation in service.	Acknowledge request, after 2 minutes report AFW ventilation in service, Rm Temperature maintaining 101°F.
4. OSO – Verify 252-1106 breaker is open.	After 2 minutes, use remote to open breaker 252-1106 and report "breaker 252-1106 is open."
5. ABO - Take local control of ADVs and position as requested.	After 1 minute, report new position of ADVs. Use remotes for manual jacking open each ADV.
9. PPO/TBO tie 1Y10 to 1Y09.	Wait 1 minute then call the CR and report "Tying 1Y10 to 1Y09". Use remote function **1SY09** and select **TO 1Y09** to tie 1Y10 to 1Y09. Report to CR complete.
10. PPO/ABO – Tie MCC 104 to 114.	Acknowledge direction. Wait 1 minute, use remote function **52-10401** to open MCC-104 feeder and **52-10420** to **CLOSED** to tie MCC-104 to MCC-114 and report Buses are tied.

Event 8 – EOP-7 SBO	
1. ABO - Take local control of ADVs and position as requested.	After 1 minute, report new position of ADVs. Use remotes for manual jacking open each ADV.
2. WEC - Pull Alarm Cards for nuisance alarms.	Acknowledge request. After 2 minutes override selected annunciator and report "Alarm Card for Window # has been pulled."
3. SO-TSO – estimate time until power is restored.	No determination yet, will let you know when determination is made.
4. WEC/Gen Dispatch – SMECO Status.	Acknowledge request. No status update at this time. No Further actions.
5. OSO – Investigate the 1A EDG.	Report that you were outside bldg on EDG trip, 1A EDG tripped due small oil leak on pressure switch. Need Maintenance support.
6. WEC/Maintenance Priority. Maintenance on 1A EDG oil pressure switch fitting leak.	Acknowledge request. Wait 1 minute, report as WEC that MM says they think they can fix the 1A EDG in a few minutes. **On Lead Cue**, Remove malfunction dg002_02, 1A EDG fault and Reset the 1A EDG by initiating **Event 11** (RESET_EMERG-J37 to RESET and RESET-J031 to RESET).
7. OSO-pre-lube 1A EDG	Acknowledge request, report prelube was started 5 minutes ago.
8. TBO - Shut 11 B/D HX HDR ISOL valves 1-CD-410 and 1-CD-411.	Acknowledge request. After 4 minutes shut 1-CD-410 using Remotes and report "1-CD-410 and 1-CD-411 are both shut."
9. ABO - Verify SWGR ventilation in service per OI-22H.	Acknowledge request, after 2 minutes report SWGR ventilation in service per OI-22H.
10. TBO – Align N2 to AFW control valves and control AFW discharge pressure locally.	Report each task complete after about 2 minutes.

Event #1	13 IRU Shift Disconnects	N-BOP/SRO, T-SRO

Time	Position	Applicant's Actions or Behavior
	ATC	Refers to OI-5B, CTMT IRUs, Section 6.2.
	ATC	Places 13 IODINE FILT FAN HS 1-HS-5297 in PULL-TO-LOCK.
	ATC	Places 11 BUS DISC IODINE FILT 13 keyswitch 1-HS-5297A in OPEN, and removes key.
	ATC	May check 11 BUS green light is off above 13 IODINE FILT FAN HS.
	ATC	Inserts key in 14 BUS DISC IODINE FILT 13 keyswitch 1-HS-5297B, and places keyswitch in CLOSE.
	ATC	Places 13 IODINE FILT FAN HS in normal, and check the following: • 13 CNTMT FILT SIAS BLOCKED AUTO START alarm is clear • 14 BUS green light is on above 13 IODINE FILT FAN HS
	SRO	Evaluates the Tech Specs and Determines Tech Spec 3.6.8.A with a required action to restore the Iodine Removal System train to operable status with a completion time of 7 days.

Examiner notes:

Event concludes when IRU is on 14B 480V bus. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to initiate Event #2, PORV Leakage when desired.

Event #2	PORV-404 Leakage	C-ATC/SRO, T-SRO

Time	Position	Applicant's Actions or Behavior
	ATC	Responds to Acoustic Monitor Alarm per the Alarm Manual.
	ATC	Determines RCS pressure is lowering or Quench Tank parameters are rising. Informs the SRO taking alternate actions for lowering pressure.
	ATC	Notes elevated PRESSURIZER RV FLOW MONITOR indications for both PORV-404 and RV-201.
	ATC	May Shut PORV 404 Block Valve, RC-405-MOV or places PORV 404 OVERRIDE, HS-1404, in Override to Close.
	BOP	May monitor computer points 1T106, 1T107 and 1T108 for leak-off Temperatures.
	ATC	Determines: • RCS pressure is rising • Quench Tank parameters are no longer rising • PRESSURIZER RV FLOW MONITOR indications return to zero
	ATC	May restore Quench Tank parameters by cycling RC-401-CV per OI-1B.
	SRO	Evaluates the Tech Specs and Determines Tech Spec 3.4.11.A for PORV-404 being declared inoperable with a required action to close and maintain power to associated block valve with a completion time of 1 hour.

Examiner notes:

Event concludes when PORV isolated. If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Event #3, 12B 480V loss, when desired.

Event #3	Loss of 12B 480V Bus/AOP-7I	C-BOP/SRO

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	May recognize and call multiple alarms and reports to SRO.
	BOP	Acknowledges U-1 480V Alarm. Verifies no trip conditions exist on RPS. Notes multiple alarms and determines a loss of 12B 480V Bus.
	BOP	May report that RPS is not calling for a trip. Determines and reports 14B 480V Bus is deenergized.
	SRO	Implements AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power.
	SRO	May assign AOP 7I section IV, Preliminary, to the BOP.
	BOP	Determine loss of 12B 480V Bus. Verifies no indication of other bus faults.
	SRO	May inform WEC/Maintenance of the issue.
	BOP	Direct PPO/ABO to Tie MCC 106 to 116 per AOP-7I, page 100 Step XV.A.3.
	BOP	Verifies Emergency H2 Seal Oil Pump is running.
	BOP	May Place Cond Min Flow Controller in Manual, 1-FIC-4438.
	BOP	Places 11 and 12 CAR PPs in PTL and Starts 13 CAR.
	BOP	Verify that 12 CEDM CLG FAN is running.
	BOP	May direct TBO to verify that 12 Gland Exhaust Blower is running.
	ATC/BOP	May place Pink "off normal" tags of affected equipment controls.

Examiner notes:

Event concludes when MCC is Tied.

NOTE TO EXAMINER
Cue Booth Operator to insert next malfunction, Event #4, MT Vibration, when desired.

Event #4 & 5	High Turbine Vibrations/11 BA PP Trip	4: C-BOP/SRO, R-ATC 5: C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to Turbine Vibration alarm on 1C02 per Alarm Manual. Reports Bearing #4 elevated vibrations. Recognizes alarm is valid due to adjacent Bearing trends.
	SRO	Implements AOP-7E, Main Turbine Malfunction and directs a down-power to lower vibration or take turbine off line.
	SRO	Assigns trip criteria per AOP-7I.
	SRO	May inform WEC to make matrix notifications for down power required for high vibration on bearing #4 and for S-SO and SE assistance.
	BOP	May direct the PPO/TBO investigate high vibration on bearing #4.
	BOP	May Hold Mn Cond Vac breaker HS, 1-HS-6717, in Close and Direct PPO/TBO to CLOSE Mn Cond Vac breaker, 52-11618, Then release HS when Breaker reported closed by field.
	SRO	Directs ATC to commence down-power to lower vibration or take turbine off line.
	SRO/ATC	May notify Chemistry of power change >15%.

Examiner notes:

Event continued next page.

Event #4 & 5	High Turbine Vibrations/11 BA PP Trip	4: C-BOP/SRO, R-ATC 5: C-ATC/SRO

Time	Position	Applicant's Actions or Behavior
	BOP	May Directs PPO/TBO to standby the MSR Panel Loader for direction.
	ATC	When boration in initiated, Notes 11 BA Pump Trip. May place 11 BA PP HS in PTL.
	ATC	Notifies SRO of 11 BA fault and continue boration with alternate method per OP-3.
	ATC	Inserts CEAs consistent with Reactivity Placard.
	SRO	May Notify Bulk Power of required power reduction.
	SRO	May notify WEC to investigate 11 BA Pump Trip.
	BOP/ATC	Recognizes trip criteria (> 10 mils for 15 minutes or reaches 12 mils whichever occurs first) is met and reports to SRO.
	SRO	Directs a manual reactor trip. May direct BOP to monitor MT vibrations are lowing on trip or direct Cond Vacuum lowed to 24" by cycling Vacuum Breaker, HS-6717, if vibrations exceed 50 mils.

Examiner notes:

Event concludes when unit is Tripped.

NOTE TO EXAMINER

Event #6, Loss of Offsite Power, will initiate automatically 10 seconds after the reactor trip.

Event #6	EOP-0, LOOP	M-ALL

Time	Position	Applicant's Actions or Behavior
	ATC	Determines Reactor is tripped, and Reactivity Safety Function is met (may borate for loss of CEA indications). Informs the SRO that Reactivity is met.
	BOP	CRITICAL TASK - Shuts MSIVs to stop cooldown prior to 432°F T_{COLD}.
	BOP	Determines Turbine Trip is met and vibrations are lowering. Informs the SRO that Turbine Trip is complete.
	BOP	Determines Vital Auxiliaries Safety Function is met. Informs the SRO that Vital Auxiliaries is complete and indications of LOOP. • Starts a Component Cooling pump.
	ATC	Determines Pressure and Inventory Control Safety Function is met and reports as complete.
	BOP	Takes Alternates Actions for HR: • Initiates AFW flow to both S/Gs. • Operates ADVs to control T_{COLD}.
	BOP	CRITICAL TASK – Establishes AFW flow to at least one S/G prior to S/G levels going below (-)350 inches.
	BOP	Determines and reports Core and RCS Heat Removal Safety Function is not met. Informs the SRO that HR **Cannot Be Met** due to no RCPs.
	ATC/BOP	Determines Containment Environment Safety Function is not met. Informs the SRO that Containment Environment **Cannot Be Met** due to unable to assess, loss of power effects.
	ATC/BOP	Determines Radiation Levels External to Containment Safety Function is not met. Reports Containment Environment **Cannot Be Met**, unable to assess due to loss of power effects.
	SRO	Evaluates the EOP-0 flowchart and recommends the implementation of EOP-2. Directs implementation of EOP-2.

Examiner notes:

Event terminates when EOP-2 is initiated.

NOTE TO EXAMINER

Cue Booth Operator to insert next malfunction, Event #7, 1B EDG trips, when desired.

Event #7	EOP-2 /EDG Loss	C-ALL

Time	Position	Applicant's Actions or Behavior
	BOP	If 13 AFW PP in running, may ensure 11 or 12 AFW PP is operating, then secure 13 AFW PP.
	ATC/BOP	If CC not Started in EOP-0, Restores CC flow per EOP-2 IV.E
	BOP	If MSIVs are Open, Shuts MSIVs.
	ATC/BOP	Shuts S/G B/D valves and MS upstream drain, 1-HS-6622.
	BOP	Establish RCS Heat Sink by: • ADV to Manual, positioned to control Tc, 525 to 535 ˚F. • Stm driven AFW speed so AFW is 100PSIG > S/G Pressures. • S/G trending towards -24" to 30". • AFW Pp Rm ventilation maintaining < 130 ˚F.
	ATC	Maintains PZR level 101-180 inches: • If no letdown, Operates Chg PPs to maintain level.
	ATC	Maintains RCS Subcooling 30-140 ˚F: • Operates PZR Htrs and Spray. Resets 11 and 13 Backup Htrs • Adjust Cooldown Rate not to exceed 100 ˚F in any one hours
	ATC/BOP	Respond to Alarms, Recognize loss of B train buses due to 1B EDG trip.
	SRO	Prioritizes and assigns EOP-2 Block step M to tie MCC 104 to 114.
	ATC/BOP	Directs ABO to Ties MCC 104 to 114 per EOP-2 IV.M.1

Examiner notes:

Event concludes when Event #8, 1A EDG trips (5 minutes after 1B trip).

NOTE TO EXAMINER
Cue Booth Operator to insert next malfunction, Event #8, 1A EDG trips, when desired.

Event #8	1A EDG Trip / EOP-7, SBO	M-ALL

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Responds to Alarms and diagnosis 1A EDG trip and SBO condition.
	SRO	Recognizes SFSC in EOP-2 not met and transitions to EOP-7 within 30 minutes of Station Blackout conditions.
	ATC/BOP	Protects the condenser from overpressure and minimizes S/G inventory loss. Shuts both MSIVs, SGBD valves, and MS upstream drains.
	ATC/BOP	Establishes RCS Heat Sink: • Directs local operation of ADVs • Establishes AFW flow to at least one S/G • Secures the Main Feedwater System
	BOP	Aligns electrical system for power recovery.
	BOP	Restores power to 11 or 14 4KV Bus prior to 11 or 22 DC Bus voltages going below 106V or within 1 hour of the station blackout.

Examiner notes:

Scenario concludes when 11 4KV bus is restored per the Lead Evaluator.

Date: Today

Station: Calvert Cliffs

Unit: 1	**Mode:** Online	**% Rx Power:** 100	**MWE:** 920
Days On-Line (or Outage): 30		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

12 Boric Acid Pump
0C DG

Unit: 2	**Mode:** Online	**% Rx Power:** 100	**MWE:** 906
Days On-Line (or Outage): 230		**On-Line (or Outage) Risk Level:** Green	

Off Normal Trends:

Production: (include activities through 0900 hrs of next non-holiday business day, start and end times with dates (if not the current day), LCO if applicable, Identifier of step 4.2.4.2 if applicable, On-Line Risk if not Green. Example of desired format is: 'A' Isolation Condenser sensor calibration, 11/01 0700 -11/02 1500, 7 day LCO, (HT), OLR Yellow

Station Event-Free Days: 691 Reactivity Management Event-Free Days: 197 Configuration Control Event-Free Days: 206 Critical Component Failure Clock Days: 103 Clearance & Tagging Event-Free Days: 691	**Significant Event Reporting:** (on the first business day following a weekend or holiday include the events since the last business day): No Significant Events
Station Duty Manager: Jake Smith	

MISCELLANEOUS	UNIT 1	UNIT 2
S/G Blowdown Status	100 gpm to CW OI-8A Sect 6.7	100 gpm to CW OI-8A Sect 6.7
VCT Pressure Band	35 – 41 psig **H2**	33 – 39 psig **H2**

SPENT FUEL EQUIPMENT CHECKOUTS:		
SFHM PE 0-081-01-O-Q	New Fuel Elevator OI-25B App A	SF Insp. Elev. OI-25B App B
Last done Two Months Ago **{C93668376}** **PMC-18-107842 extended to semi -annually (DDD Next Year)**	**6 Months Ago**	**9 Months Ago**

COMMON

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. 0C DG is OOS for scheduled maintenance, expected return in 48 hours.

UNIT 1					
Max Header Pressure PE 1-12-21-O-M SW PUMP		OI-29 Value	STP O-73A Quarterly Value (Rolling past 3 quarters) (Date Format – MM/DD/YY)		
	11	32.9 psig Yesterday Sec 6.39	32.8 Yesterday	32.9 psig 3 Months Ago	33.2 psig 6 Months Ago
	12	30.7 psig Yesterday Sec 6.46	30.7 psig Yesterday	30.8 psig 3 Months Ago	30.6 psig 6 Months Ago
	13 (11 Hdr)	32.0 psig 2 Weeks Ago Sec 6.39			
	13 (12 Hdr)	30.2 psig Yesterday Sec 6.46	29.6 psig Yesterday	30.4 psig 3 Months Ago	30.6 psig 6 Months Ago

LONG TERM NOTES:

1. None.

SHORT TERM NOTES:

1. 12 Boric Acid Pump OOS for scheduled maintenance, expected return in 24 hours.
2. The Shift Manager has directed the crew to shift disconnects for 13 IRU to the 14B 480V Bus per OI-5B Section 6.2.

Examinee: _____

Calvert Cliffs
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Operator Exam

JPM-Plant1

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Plant1

Alternate Path: No

Task Number: 036.013

Task Title: Align AFW Pump Flow Control to 1C43

Task Standard: This JPM is complete when AFW flow control is aligned to 1C43 per AOP-9A Step AJ.

Time Critical Task: No

K/A Reference: 061 2.1.30 (4.4, 4.0) Ability to locate and operate components, including local controls.

Method of Testing: Simulated-Plant

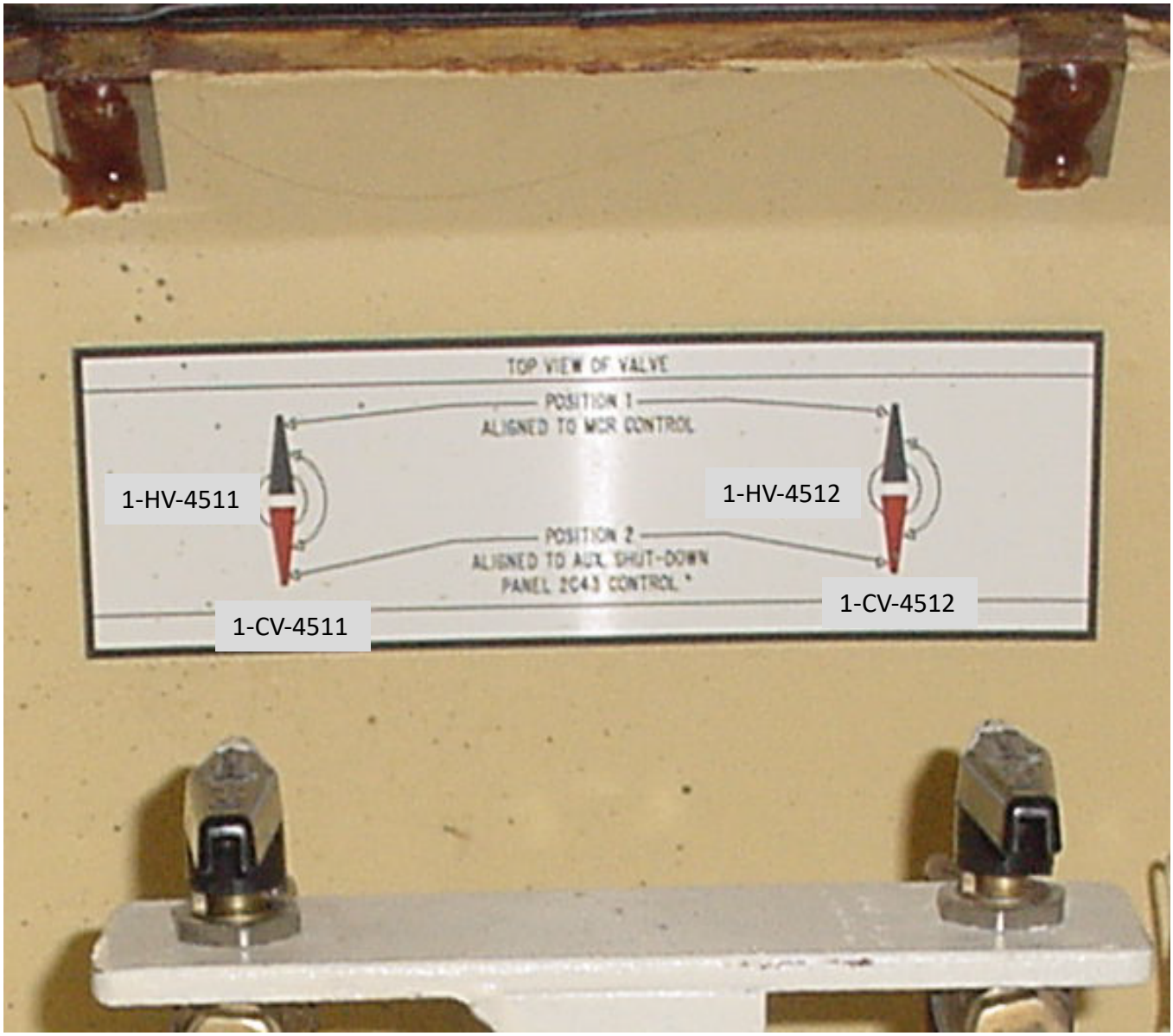
Validation Time: 15 minutes

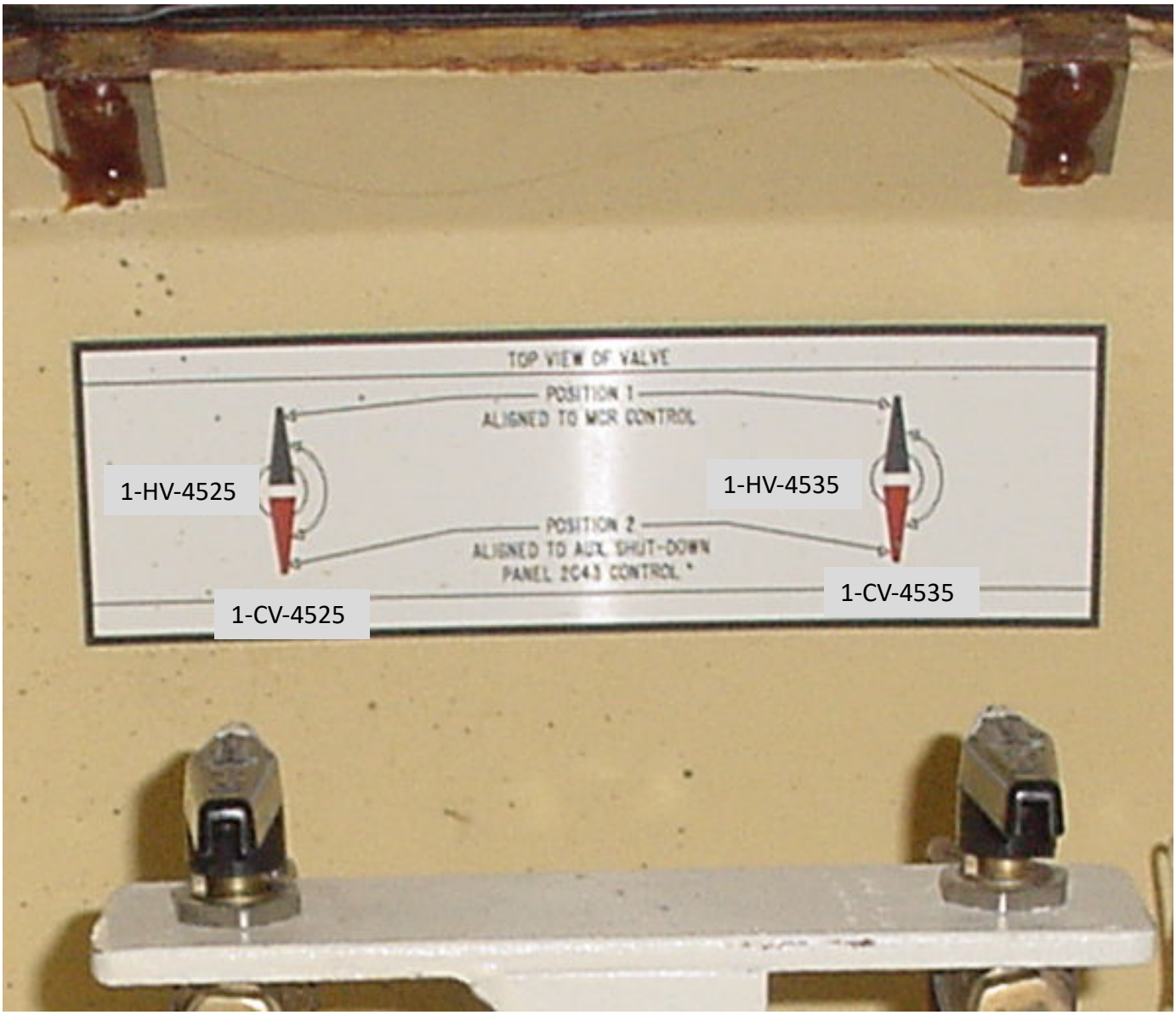
References and Tools Required:

1. AOP-9A-1 Rev 01901, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire.

JPM Setup Instructions:

1. Consumable copy of AOP-9A-1 Step AJ.
2. Pictures inside hand transfer box.


TOP VIEW OF VALVE
POSITION 1
ALIGNED TO MCR CONTROL
1-HV-4511
1-HV-4512
POSITION 2
ALIGNED TO AUX SHUT-DOWN
PANEL 2043 CONTROL
1-CV-4511
1-CV-4512


TOP VIEW OF VALVE
POSITION 1
ALIGNED TO MCR CONTROL
1-HV-4525
1-HV-4535
POSITION 2
ALIGNED TO AUX SHUT-DOWN
PANEL 2C43 CONTROL *
1-CV-4525
1-CV-4535

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. The Control Room has been evacuated due to a severe fire.
2. AOP-9A, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire, has been implemented.
3. You are performing the duties of the Unit-1 TBO.

Initiating Cue:

1. You have just completed Block Step Y and are directed by AOP-9A to go to the SRW Room Upper Level and perform Block Step AJ.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the operator with AOP-9A-1 Block Step AJ.			
AOP-9A-1 Step AJ. Align AFW Flow Control to 1C43				
1	**WHEN** notified to align AFW Flow Control to 1C43, **THEN:**	Determines step is applicable	—	—
1.a	In the SRW Room Upper Level, Place in POSITION 2 **ALL** AFW System Valves listed below:	Proceeds with component manipulation as specified	—	—
Evaluator Comment				
NORTH WALL (Left to Right)				
EVALUATOR NOTE: • 1-IA- 4511-HV and 4512-HV are located in a Hand Transfer Box. **IF** opened, this will cause an alarm at panel 1C04. • All actions are to be simulated when opening the box and placing 4511-HV and 4512-HV to **Position 2**.				
1a NOTE	1-IA- 4511-HV and 4512-HV are located in Hand Transfer Box.			
CUE	As examinee simulates operation of selected hand transfer valves inform them that - the component you identified is in the position you described.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 1a 1st Bullet	❑ 1-IA-4511-HV ❑ 1-IA-4512-HV ❑ 1-IA-4531-HV ❑ 1-IA-4521-HV ❑ 1-IA-4530-HV ❑ 1-IA-4520-HV ❑ 1-IA-4532-HV ❑ 1-IA-4522-HV ❑ 1-IA-4533-HV ❑ 1-IA-4523-HV	**Critical Step*** ***Simulates placing the following valves in the "Position 2" position.** ❑ **1-IA-4511-HV by rotating the valve clockwise** ❑ **1-IA-4512-HV by rotating the valve clockwise** ❑ **1-IA-4531-HV (after unclipping and removing bump hazard locking device)** ❑ **1-IA-4521-HV (after unclipping and removing bump hazard locking device)** ❑ **1-IA-4530-HV** ❑ **1-IA-4520-HV** ❑ **1-IA-4532-HV** ❑ **1-IA-4522-HV** ❑ **1-IA-4533-HV** ❑ **1-IA-4523-HV**	—	—
Evaluator Comment				
Stanchion L.O.9 between 1-AFW-4525-CV and 1-AFW-4535-CV (In Hand transfer Box)				
EVALUATOR NOTE: • 1-IA-4525-HV and 4535-HV are located in a Hand Transfer Box. **IF** opened, this will cause an alarm at panel 1C04. • All actions are to be simulated when opening the box and placing 4525-HV and 4535-HV to **Position 2**.				

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	As examinee simulates operation of selected hand transfer valves inform them that - the component you identified is in the position you described.			
* 1a 2nd Bullet	❑ 1-IA-4525-HV ❑ 1-IA-4535-HV	**Critical Step*** ***Simulates placing the following valves in the "Position 2" position.** ❑ **1-IA-4525-HV by rotating the valve clockwise** ❑ **1-IA-4535-HV by rotating the valve clockwise**	—	—
Evaluator Comment				
Southwest Corner next to U-1 to U-2 AFW X-conn CV, 1-AFW-4550-CV (Left to right)				
CUE	As examinee simulates operation of selected hand transfer valves inform them that - the component you identified is in the position you described.			
* 1a 3rd Bullet	❑ 1-IA-4070-HV ❑ 1-IA-4071-HV ❑ 1-IA-4550-HV	**Critical Step*** ***Simulates placing** ❑ **1-IA-4070-HV** ❑ **1-IA-4071-HV** ❑ **1-IA-4550-HV** **in the "Position 2" position.**	—	—
Evaluator Comment				
1b NOTE	SWAC TO IA AMP STA ISOL, 1-IA-728 is located directly above the AFW Air Amplifier in the Unit 1 SRW Room Lower Level.			
CUE	As examinee simulates operation of valve inform them that - the component you identified is in the position you described.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 1b	Open SWAC TO IA AMP STA ISOL, 1-IA-728.	**Critical Step*** ***Simulates opening 1-IA-728.**	—	—
Evaluator Comment				
2	Notify 1C43 that AFW flow control is aligned to 1C43 and SWAC air is aligned to the AFW CVs.	Notifies 1C43 that AFW flow control is aligned to 1C43 and SWAC air is aligned to the AFW CVs.	—	—
Evaluator Comment				
3	**GO TO** the AFW Pump Room to perform step AK.	Informs evaluator that Step AJ is complete and their next step is to perform Step AK.	—	—
TERMINATING CUE: This JPM is complete when AFW flow control is aligned to 1C43 per AOP-9A Step AJ. No further actions are required. The operator is expected to end this JPM unless they continue proceeding to Step AK, then the evaluator should end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Plant1

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

_____

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_____

_____

_____

Examinee Response:

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. The Control Room has been evacuated due to a severe fire.
2. AOP-9A, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire, has been implemented.
3. You are performing the duties of the Unit-1 TBO.

Initiating Cue:

1. You have just completed Block Step Y and are directed by AOP-9A to go to the SRW Room Upper Level and perform Block Step AJ.
2. Are there any questions? You may begin.

Examinee: _____

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JPM-Plant2

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Plant2

Alternate Path: No

Task Number: 005/006.013

Task Title: Operate MCC Load Breakers

Task Standard:

This JPM is complete when MCC-214 breakers are stripped per AOP-9A-2 Block Step AG.

Time Critical Task: No

K/A Reference: 068 AA1.10 (3.7/3.9) Ability to operate and/or monitor the following as they apply to the Control Room Evacuation: Power Distribution – AC and DC.

Method of Testing: Simulated-Plant

Validation Time: 15 minutes

References and Tools Required:

1. AOP-9A-2 Rev 02000 Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire.
2. SA-CA-129-1001 Rev 002 Electrical Safety Task Matrices/PPE Requirements.

JPM Setup Instructions:

1. Consumable copy of AOP-9A-2 Step AG.
2. Copy of Electrical Safety PPE procedure, SA-CA-129-1001.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. The Control Room has been evacuated due to a severe fire.
2. AOP-9A, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire, has been implemented.
3. Both the 21 and 24 4KV Buses are energized.
4. You are performing the duties of the Unit-2 ABO.

Initiating Cue:

1. You have just completed Block Step AB and are directed by AOP-9A-2 to go to the 69 Ft West Electrical Pen Room and perform Block Step AG.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the operator with AOP-9A-2 Block Step AG.			
AOP-9A-2 BLOCK STEP AG, DE-ENERGIZE PZR PORV 402 AND OPEN BREAKERS AT MCC 214R				
CUE	If asked or if candidate is donning PPE, report Electrical Safety PPE is met			
CUE	After each breaker is simulated open: The component you identified is in the position you described.			
* 1	At Reactor MCC 214R, perform the following: • Open Pressurizer Relief 2-ERV-402, 52-21449.	**Critical Step*** ***Simulates placing breaker 52-21449 in the OFF position.**	—	—
Evaluator Comment				
CUE	The component you identified is in the position you described.			
* 1	At Reactor MCC 214R, perform the following: • Open Cntmt Sump to Misc Wst Rcvr Tk 2-MOV-5462, 52-21457.	**Critical Step*** ***Simulates placing breaker 52-21457 in the OFF position.**	—	—
Evaluator Comment				
CUE	The component you identified is in the position you described.			
* 1	At Reactor MCC 214R, perform the following: • Open Volume Control Tank Isolation 2-MOV-501, 52-21431.	**Critical Step*** ***Simulates placing breaker 52-21431 in the OFF position.**	—	—
Evaluator Comment				
CUE	The component you identified is in the position you described.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 1	At Reactor MCC 214R, perform the following: • Open Boric Acid Gravity Feed 2-MOV-508, 52-21430.	**Critical Step*** ***Simulates placing breaker 52-21430 in the OFF position.**	—	—
Evaluator Comment				
CUE	The component you identified is in the position you described.			
* 1	At Reactor MCC 214R, perform the following: • Open Boric Acid Gravity Feed 2-MOV-509, 52-21424.	**Critical Step*** ***Simulates placing breaker 52-21424 in the OFF position.**		
Evaluator Comment				
CUE	The component you identified is in the position you described.			
* 1	At Reactor MCC 214R, perform the following: • Open Refueling Water Tank Stop 2-MOV-504, 52-21423.	**Critical Step*** ***Simulates placing breaker 52-21423 in the OFF position.**		
Evaluator Comment				
CUE	2C43 acknowledges report that Block Step AG is complete.			
2	Notify 2C43 that Step AG is complete.	Simulates contacting 2C43 to report that Step AG is complete.	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when Step AG is complete. The evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Plant2

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

_____

_____

_____

_____

_____

Examinee Response:

_____

_____

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_____

_____

_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. The Control Room has been evacuated due to a severe fire.
2. AOP-9A, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire, has been implemented.
3. Both the 21 and 24 4KV Buses are energized.
4. You are performing the duties of the Unit-2 ABO.

Initiating Cue:

1. You have just completed Block Step AB and are directed by AOP-9A-2 to go to the 69 Ft West Electrical Pen Room and perform Block Step AG.
2. Are there any questions? You may begin.

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JPM-Plant3

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Plant3

Alternate Path: No

Task Number: 202.070

Task Title: Respond to a Loss of Instrument Air in Modes 3,4,5,6 or Defueled.

Task Standard: This JPM is complete when the operator has started the standby IA Compressor and bypassed and then isolated the in-service IA Dryer.

Time Critical Task: No

K/A Reference: 065 AA1.04 (3.5/3.4) Ability to operate and/or monitor the following as they apply to the Loss of Instrument Air: Emergency air compressor.

Method of Testing: Simulated-Plant

Validation Time: 20 minutes

References and Tools Required:

1. AOP-7D-2 Rev 01400 Loss of Instrument Air

JPM Setup Instructions:

1. Consumable copy of AOP-7D-2 Step VI.A.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-2 is in Mode 6 performing a core offload.
2. 21 Instrument Air Compressor is in service.
3. 21 IA Dryer is in service.
4. A Loss of Instrument Air is occurring and AOP-7D has been implemented.
5. There are no temporary air compressors available due to a manifold leak.
6. The IA Dryer light is brightly lit in the Control Room.
7. You are performing the duties of the Unit-2 TBO.

Initiating Cue:

1. You have been directed by the Unit-2 Unit Supervisor to perform AOP-7D-2, Section VI, Block Step A while the cause of lowering Instrument Air header pressure is investigated.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
AOP-7D-2, SECTION VI, BLOCK STEP A, ATTEMPT TO MAINTAIN PRESSURE WHILE LOCATING THE PROBLEM				
CUE	Provide the operator with AOP-7D-2, Section VI, Block Step A.			
Step	Locates AOP-7D-2 Block Step A.	Determines step is applicable.	__	__
Evaluator Comment				
CUE	If asked: The temporary air compressors are currently shutdown to repair a large manifold air leak near the temporary compressors. The compressors are not currently available.			
1	IF Temporary Air Compressor is supplying air system, THEN contact Work Control Center to adjust system pressure OR start Standby Compressor PER OI-18A, PLANT AIR SYSTEM	Determines step is N/A.	__	__
Evaluator Comment				
CUE	If asked: The Instrument Air problem is not due to a power loss.			
2	IF both instrument air compressors were lost due to power loss …	Determines step is N/A.	__	__
Evaluator Comment				
3 NOTE	ATTACHMENT (1), CRITICAL VALVES CONTROLLED BY IA, lists the pressure required to control the critical valves.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	If asked: IA header pressure is 82 PSIG and slowly lowering, 21 IA Compressor is running as the lead compressor (2-HS-2062 in SPEED) and 22 IA Compressor is the standby compressor (2-HS-2064 in AUTO) but **NOT** running.			
3	WHEN IA header pressure lowers to 93 PSIG, THEN ensure that the standby Instrument Air Compressor is running.	Determines that only the lead IA Compressor (21) is running.	—	—
Evaluator Comment				
CUE	After 22 IAC is placed in SPEED: You see the compressor pistons moving up and down and now hear noise from the air compressor.			
* 3.1	IF the standby IA Compressor fails to auto start, THEN place the standby Compressor handswitch to the SPEED position.	**Critical Step*** ***Simulates placing 2-HS-2064 for 22 IA Compressor in SPEED.**	—	—
Evaluator Comment				
4 NOTE	ATTACHMENT (2), VALVES SUPPLIED BY SALTWATER AIR, lists Saltwater Air loads.			
CUE	If the Control Room is contacted: IA header pressure is 81 PSIG and very slowly lowering. The Control Room has started the SWACs. If a local air pressure gauge (2-PI-6301C) is checked: Point to 81 psig and show a very slowly lowering indication.			
4	IF IA pressure is less than 90 PSIG and lowering, THEN start 21 and 22 SW AIR COMPRs.	Determines step has been completed by the Control Room.	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Evaluator Comment				
5 NOTE	The IA Dryer malfunction light will be brightly lit for the in-service IA Dryer and the dryer will de-energize with both chambers in service if IA Pressure has lowered to 93 ± 1 PSIG.			
CUE	21 IA Dryer's handswitch (2-HS-2003) is in start, the panel lights are illuminated and you hear and feel air blowing from the bottom of the dryer towers. If requested, the control room reports that 21 IA dryer light bulb is brightly lit.			
5	IF IA Dryer is the cause of the lowering IA pressure, THEN bypass the in service IA Dryer.	Determines step is applicable.	__	__
Evaluator Comment				
CUE	The component you have identified is in the position you described.			
* 5.a	Open the IA Dryer Bypass Valve, 2-IA-134.	**Critical Step*** ***Simulates opening 2-IA-134.**	__	__
Evaluator Comment				
CUE	The component you have identified is in the position you described.			
* 5.b	IF 21 Dryer is in service, THEN shut 21 Dryer Inlet and Outlet valves: • (Inlet valve) 2-IA-133 • (Outlet/FI-BYP valve) 2-IA-142	**Critical Step*** ***Simulates shutting 2-IA-133 and 2-IA-142.**	__	__
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	If asked: 22 IA Dryer's handswitch is in OFF and the panel lights are not illuminated.			
5.c	IF 22 Dryer is in service, …	Determines step is N/A.	__	__
Evaluator Comment				
CUE	If the Control Room is contacted: IA header pressure is rising and the Unit Supervisor does not wish to place the standby IA Dryer in service at this time. If a local IA pressure gauge (2-PI-6301C) is checked: Point to 95 psig and rising to 100 psig and then steady.			
5.d	Shift to the standby Air Dryer …	Determines step is N/A.	__	__
Evaluator Comment				
TERMINATING CUE: This JPM is complete when 22 IA Compressor is running and 21 IA Dryer is bypassed and isolated. No further actions are required. The evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Plant3

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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_____

_____

_____

_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-2 is in Mode 6 performing a core offload.
2. 21 Instrument Air Compressor is in service.
3. 21 IA Dryer is in service.
4. A Loss of Instrument Air is occurring and AOP-7D has been implemented.
5. There are no temporary air compressors available due to a manifold leak.
6. The IA Dryer light is brightly lit in the Control Room.
7. You are performing the duties of the Unit-2 TBO.

Initiating Cue:

1. You have been directed by the Unit-2 Unit Supervisor to perform AOP-7D-2, Section VI, Block Step A while the cause of lowering Instrument Air header pressure is investigated.
2. Are there any questions? You may begin.

Examinee: _____

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JPM-Simulator1

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator1

Alternate Path: Yes

Task Number: 055.012

Task Title: Exercise Regulating CEAs

Task Standard: This JPM is complete when Regulating CEA #54 in Group 1 has been inserted 7.5 inches per STP O-29-1, the reactor tripped per AOP-1B, and RCS boration commenced due to stuck CEAs.

K/A Reference: 001 A4.03 (4.0, 3.7)

Method of Testing: Actual Performance - Simulator

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. STP O-29-1, CEA Free Movement Test, Revision 01504
2. AOP-1B, CEA Malfunction, Revision 03005
3. EOP-0-1, Post-Trip Immediate Actions, Revision 01300

JPM Setup Instructions:

1. Reset to IC-34 or the previously saved Exam IC with all CEAs at 133.5 inches.
2. Insert the following overrides/malfunctions or open saved schedule file:
    a. P1C05_MANINDSEL to ON on Event 1
    b. P1C05_MTNINBBYP to ON on Event 1
    c. P1C05_CEAOFF to OFF on Event 1
    d. P1C05_CEDSMANUAL after 2 to LOWER on Event 1
    e. P1C05_REGGRP1SEL to ON on Event 1
    f. P1C05_REGGRP1INB to ON on Event 1
    g. ceds010_22 at time zero
    h. ceds010_49 at time zero
    i. ceds010_61 at time zero
3. Select Shutdown Group C on the CEDS Control Panel.
4. Select CEA #53 in Shutdown Group C and CEA #65 in Regulating Group 1 on the CEDS Control Panel.
5. CEAPDS selected to monitor Shutdown Group C.
6. Secondary CEA Position indication, 1-ZI-5501A, set to read CEA #53.
7. PPC Monitor on 1C05 monitoring CEA Position Ladder.

8. A PPC Monitor on 1C04 set to monitor Regulating Group 1 position indications.
9. Raise Charging and Letdown and start a second Charging Pump per OI-2A.
10. STP O-29-1 marked with placekeeping and initials, including Shutdown Group attachments, indicating that Section 6.2 Step C is ready to be performed.
11. RO Cart placed by 1C05 to support STP O-29-1.
12. Black dots placed on 1C05 Alarm windows D-29, D-30, D-31, D-32, D-34, D-36.
13. Obtain Independent Verification for completion of steps 1 through 12.
14. Acknowledge all panel alarms and ensure “Horn Off” for annunciators.
15. Select “Clock” time.
16. Place simulator in FREEZE.
17. If desired, Save conditions into available Exam IC slot for continued use.
18. The Operator is allowed to prepare for this JPM prior to its administration.
19. When the JPM is ready to commence, place simulator in RUN.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is at 100% power.
2. STP O-29-1, CEA Free Movement Test, is in progress.
3. Electrical Maintenance was not required to connect any test equipment for the STP.
4. Chemistry has been informed to ensure requirements of CP-204 related to Co-58 are met.
5. All Shutdown CEA Free Movement Testing has been completed per Step 6.1.
6. The pre-job brief has been completed including a review of OI-42, CEDM System Operation, and the pre-identification of all expected alarms.
7. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to continue with STP O-29-1. You are to begin the Regulating CEA Free Movement Test per Step 6.2, starting with Regulating Group 1 CEA #54.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with the prepared copy of STP O-29-1.			
STP O-29-1 CEA FREE MOVEMENT TEST, Section 6.2 Regulating CEA Free Movement Test				
* C	VERIFY that the Regulating Group to be tested (1, 2, 3, 4, OR 5) is the only GROUP SELECTED on the CEDS control panel at 1C05.	**CRITICAL STEP*** **Selects Group 1 by depressing 1 pushbutton on the CEDS Control Panel on 1C05.**	—	—
Comment				
* D	ENSURE MANUAL INDIVIDUAL MODE of control is SELECTED.	**CRITICAL STEP*** **Selects Manual Individual by depressing MI pushbutton on the CEDS Control Panel on 1C05.**	—	—
Comment				
Evaluator Note If asked, an additional operator will silence expected alarms.				
NOTE	Steps E through L will annunciate the following alarms: …			
* E	VERIFY the INHIBIT BYPASS pushbutton for the Regulating Group being tested is the only INHIBIT BYPASS pushbutton SELECTED on the CEDS control panel at 1C05.	**CRITICAL STEP*** **Selects Group 1 by depressing Group 1 Inhibit Bypass pushbutton** and verifies no other Group Inhibit Bypass pushbuttons are lit on the CEDS Control Panel on 1C05.	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
* F	SELECT the desired CEA in the Regulating Group being tested.	**CRITICAL STEP*** **Selects CEA #54 by depressing 54 pushbutton on the CEDS Control Panel on 1C05.**	—	—
Comment				
G	IF required, THEN CHECK that the Electricians are recording the selected CEA.	Determines step is N/A based on initiating cues.	—	—
Comment				
* H	DEPRESS and HOLD the master CEA MOTION INHIBIT BYPASS pushbutton.	**CRITICAL STEP*** **Depresses and holds CEA MOTION INHIBIT BYPASS pushbutton on the CEDS Control Panel on 1C05.**	—	—
Comment				
CUE	If referenced or asked: The Unit Supervisor will enter Tech Spec 3.1.4 if required.			
CAUTION	The following step inserts negative reactivity into the Core. Reactor power shall be closely monitored. Insertion of CEAs greater than 7.5 inches causes entry into T.S. 3.1.4, as applicable.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
* I	WAIT at least five seconds, THEN LOWER the selected CEA 7.5 inches using CEDS MANUAL CONTR, 1-HS-5502 as required.	**CRITICAL STEP*** Waits at least five seconds, then **places 1-HS-5502 on 1C05 to LOWER and inserts CEA #54 at least 7.5 inches and not more than 15 inches. (126-118.5 inches)**	—	—
Comment				
BEGIN ALTERNATE PATH				
Evaluator Note As the Operator is withdrawing CEA #54 to its normal All Rods Out position, instruct the Simulator Driver to initiate Event #1. This will start an uncontrolled insertion of CEA #54.				
CAUTION	The following step inserts positive reactivity into the Core. Reactor power shall be closely monitored.			
* J	WAIT at least five seconds to allow CEDS coil cycling to complete, THEN RAISE the selected CEA into alignment with its group as show on both CEA position systems, using CEDS MANUAL CONTR, 1-HS-5502 as required.	**CRITICAL STEP*** Waits at least five seconds, then **places 1-HS-5502 on 1C05 to RAISE and commences withdrawal of CEA #54.** **After Director Event #1 is inserted by the Simulator Driver, recognizes that CEA #54 is now inserting without Operator action using 1C05 CEA position indications.**	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	After stating/reporting that a CEA is continuously moving: The Unit Supervisor is implementing AOP-1B. Provide the operator with AOP-1B. Direct the candidate to begin at Block Step IV.A on Page 7.			
AOP-1B CEA MALFUNCTION, Section IV.A Control CEA Movement and Stabilize the Unit.				
1	IF the CEAs are moving without operator action, THEN ensure the CEDS Control System is turned OFF.	Pushes the OFF pushbutton and determines the CEDS CONTROL PANEL has not turned off on 1C05.	—	—
Comment				
1.1	IF the CEAs continue to move without operator action, THEN perform the following actions:	Determines step is applicable based on the continuous insertion of CEA #54.	—	—
Comment				
CUE	If the candidate states/recommends the need to trip the reactor: The Unit Supervisor directs tripping Unit-1 reactor.			
* 1.1.a	Trip the Reactor.	**CRITICAL STEP*** **Depresses both 1-HS-5835 and 1-HS-5836 REACTOR TRIP pushbuttons on 1C05.**	—	—
Comment				
CUE	The Unit Supervisor directs implementation of EOP-0.			
EOP-0 POST-TRIP IMMEDIATE ACTIONS **STEP IV.A Verify the Reactivity Control Safety Function is Satisfied**				

STEP	ELEMENT	STANDARD	SAT	UNSAT
1	Depress ONE set of Manual REACTOR TRIP buttons.	Candidate may again depress both 1-HS-5835 and 1-HS-5836 REACTOR TRIP pushbuttons on 1C05.	—	—
Comment				
2	Check the Reactor has tripped by the following: • Prompt drop in NI power • Negative SUR	Verifies the Reactor has tripped and Start-Up Rate is negative using indications on 1C05.	—	—
Comment				
3	Check that NO more than ONE CEA is NOT fully inserted.	Determines more than one CEA did not fully insert based on CEA mimic and secondary indications on 1C05.	—	—
Comment				
NOTE	When Boration has been commenced, the Immediate Action for this step is considered complete.			
3.1	IF more than ONE CEA fails to fully insert, THEN borate the RCS to at least 2300 ppm as follows:	Determines step is applicable.	—	—
Comment				
3.1.a	Shut the VCT M/U valve, 1-CVC-512-CV.	Verifies 1-HS-2512 on 1C07 is in the CLOSE position.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
EVALUATOR NOTE Successful completion of 3.1.b AND 3.1.e -OR- 3.1.c AND 3.1.f accomplishes the critical step of boration.				
* 3.1.b	Open the BA DIRECT M/U valve, 1-CVC-514-MOV.	**CRITICAL STEP*** **Opens 1-CVC-514-MOV by momentarily rotating 1-HS-2514 to OPEN.**	—	—
Comment				
* 3.1.c	Open the BAST GRAVITY FD valves: • 1-CVC-508-MOV • 1-CVC-509-MOV	**CRITICAL STEP*** **Momentarily rotates 1-HS-2508 and 1-HS-2509 to OPEN.**	—	—
Comment				
3.1.d	Verify the M/U MODE SEL SW, 1-HS-210, is in MANUAL.	Verifies 1-HS-210 is in the MANUAL position.	—	—
Comment				
* 3.1.e	Start a BA PP.	**CRITICAL STEP*** **Starts at least one Boric Acid by momentarily rotating 1-HS-226X and/or 1-HS-226Y to the START position.**	—	—
Comment				
* 3.1.f	Shut the VCT OUT valve, 1-CVC-501-MOV.	**CRITICAL STEP*** **Places 1-HS-2501 in the CLOSE position.**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
3.1.g	Start ALL available CHG PPs.	Verifies all 3 Charging Pumps are running. May match 13 Charging Pump handswitch by rotating to the Start position.	—	—
Comment				
TERMINATING CUE: This JPM is complete when the reactor has been tripped and RCS boration commenced. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator1

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

_____

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_____

_____

Examinee Response:

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_____

_____

_____

_____

_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is at 100% power.
2. STP O-29-1, CEA Free Movement Test, is in progress.
3. Electrical Maintenance was not required to connect any test equipment for the STP.
4. Chemistry has been informed to ensure requirements of CP-204 related to Co-58 are met.
5. All Shutdown CEA Free Movement Testing has been completed per Step 6.1.
6. The pre-job brief has been completed including a review of OI-42, CEDM System Operation, and the pre-identification of all expected alarms.
7. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to continue with STP O-29-1. You are to begin the Regulating CEA Free Movement Test per Step 6.2, starting with Regulating Group 1 CEA #54.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator2

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator2

Alternate Path: No

Task Number: 048.023

Task Title: Verify Validity of CIS actuation.

Task Standard: This JPM is complete when Component Cooling is restored to the Reactor Coolant Pumps.

K/A Reference: 013 A3.01 (3.7, 3.9)

Method of Testing: Actual Performance - Simulator

Validation Time: 10 minutes

Time Critical Task: No

References and Tools Required:

1. 1C08 Alarm Manual, Revision 03600

JPM Setup Instructions:

1. Reset to IC-34 or the previously saved Exam IC with Unit-1 at 100% power.
2. Place simulator in run.
3. Initiate a CIS Channel B, esfa009_002 on Event 1 and delete in 20 seconds.
4. Freeze simulator.
5. If desired, Save conditions into available Exam IC slot for continued use.
6. Obtain Independent Verification for completion of steps 1 through 4.
7. Acknowledge all panel alarms and ensure “Horn On” for annunciators.
8. When the JPM is ready to commence, place simulator in RUN.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is at 100% power.
2. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to respond to alarm(s).
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Direct Driver to insert Event 1			
1C08 Alarm Manual, Window G-06				
1	CIS A or B actuation.	Determines step is applicable.	__	__
Comment				
1.a	DETERMINE the validity of the CIS by observing alternate channels of indication for the same parameter.	Observes multiple indications: • Narrow Range pressure • Wide Range pressure • RPS Containment pressure trip units • Plant Computer indications Determines CIS is invalid based on actual containment pressure.	__	__
Comment				
1.b	IF the CIS is valid, THEN: …	Determines step is N/A.	__	__
Comment				
CUE	If candidate focuses on alarms on 1C06, inform candidate that the RO will monitor RCP temperatures and perform step 1.c.1 if necessary.			
1.c	IF the CIS is invalid, THEN MONITOR the RCPs Controlled Bleed-off and bearing temperatures while performing the following: …	Determines RO will monitor RCP temperatures based on cue provided.	__	__
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	When asked by candidate, grant approval to reset CIS.			
1.c.2	With Shift Manager or Control Room Supervisor approval, RESET the CIS, by performing the following:	Obtains Shift Manager or Unit Supervisor approval to reset CIS.	—	—
Comment				
1.c.2.a	ENSURE CC CNTMT SUPPLY VLV, 1-CC-3832-CV handswitch in CLOSE.	Places handswitch for 1-CC-3832-CV in CLOSE.	—	—
Comment				
* 1.c.2.b	ENSURE CC CNTMT RETURN VLV, 1-CC-3833-CV handswitch in CLOSE.	**CRITICAL STEP*** **Places handswitch for 1-CC-3833-in CLOSE.**	—	—
Comment				
1.c.2.c	ENSURE IA CNTMT ISOL 1-IA-2080-MOV handswitch in CLOSE.	Places handswitch for 1-IA-2080-MOV in CLOSE.	—	—
Comment				
1.c.2.d	ENSURE 1-IA-2080-MOV CIS OVERRIDE, 1-HS-2080A handswitch in NORMAL.	Ensures 1-HS-2080A keyswitch is in NORMAL.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 1.c.2.e	DEPRESS BOTH CIS RESET pushbuttons.	**CRITICAL STEP*** Depresses both CIS RESET pushbuttons. **(Only CIS Channel B Reset needs to be depressed to meet critical task)**	—	—
Comment				
* 1.c.2.f	IF CIS is reset, THEN RETURN components to their normal status.	**CRITICAL STEP*** Operator may reference EOP-ATT or the ESFAS Plaque to determine components to realign. Places handswitch for 1-CC-3832-CV in OPEN. **Places handswitch for 1-CC-3833-CV in OPEN.** Places handswitch for 1-IA-2080-MOV in OPEN. (Not Critical)	—	—
Comment				
1.c.3	IF CIS did NOT RESET from Control Room, …	Determines step is N/A.	—	—
Comment				
TERMINATING CUE: This JPM is complete when CIS is reset and Component Cooling flow is restored to the RCPs. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator2

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is at 100% power.
2. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to respond to alarm(s).
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator3

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator3

Alternate Path: Yes

Task Number: 201.059

Task Title: Monitor RCS Depressurization

Task Standard: This JPM is complete when 12 HPSI Pump is placed in service and proper flow path is established.

K/A Reference: 006 A4.07 (4.4, 4.4)

Method of Testing: Actual Performance - Simulator

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. EOP-5-1, Loss of Coolant Accident, Revision 03001

JPM Setup Instructions:

1. Reset to IC-34 with both Units at 100% power or the previously saved Exam IC.
2. Place Simulator in FREEZE.
3. Open Event file to trigger Event 3 on the SIAS actuation: **P1C08_G05_LTON.**
4. Insert Malfunction 200 gpm RCS Controlled Leak: **rcs002 to 300 at time zero**.
5. Insert Malfunction 13 HPSI Pump Breaker Failure: **si002_03 on Event 3**.
6. Insert Remote 11 HPSI Pump Breaker: **152-1108_A to RACKED_OUT**.
7. Insert Override Alarm Window H-17 11 HPSI Pump SIAS Blocked/Auto Start: **P1C09_H17_LTON to Off**.
8. Insert Remote 1-SI-656-MOV Breaker Open: **1-SI-656-MOV to OPEN.**
9. Insert Malfunction 10000 gpm RCS Controlled Leak: **rcs002 to 1000 on Event 1**.
10. Insert Override to prevent SIAS A Block: **P1C09_1HS5 to NORMAL.**
11. Insert Override to prevent SIAS B Block: **P1C10_1HS6 to NORMAL.**
12. Caution tag 11 HPSI Pump handswitch in Pull-To-Lock.
13. Shut 1-SI-656-MOV and place a Caution tag on the keyswitch.
14. Place a red dot on annunciator window H-17.
15. Place simulator in RUN.
16. Trip Unit-1 Reactor.
17. Isolate Letdown by placing 1-CVC-515-CV and 1-CVC-516-CV in CLOSE.
18. Start all Containment Air Coolers in High speed and Open all CAC SRW Emergency Outlet Valves.

19. Obtain Independent Verification for completion of steps 1 through 18.
20. Acknowledge all panel alarms and ensure “Horn On” for annunciators.
21. Place simulator in FREEZE.
22. If desired, Save conditions into available Exam IC slot for continued use.
23. When the JPM is ready to commence, place simulator in RUN.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. 11 HPSI Pump is tagged out for discharge valve maintenance.
2. 1-SI-656-MOV, HPSI Aux header Isolation valve, is tagged shut to support the maintenance.
3. A LOCA occurred on Unit-1 approximately 15 minutes ago.
4. EOP-5 has been implemented.
5. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform EOP-5, Block Step D, Monitor RCS Depressurization.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with EOP-5 Block Step D.			
EOP-5 BLOCK STEP D, MONITOR RCS DEPRESSURIZATION				
1	IF pressurizer pressure is less than or equal to 1725 PSIA OR containment pressure is greater than or equal to 2.8 PSIG, THEN verify SIAS actuation.	Determines step is not applicable based on the current pressurizer pressure and containment pressure not reaching the SIAS setpoints.	—	—
Comment				
2	IF pressurizer pressure is greater than 1725 PSIA AND containment pressure is less than 2.8 PSIG, THEN perform the following actions to block SIAS:	Determines step is applicable based on the current pressurizer pressure and containment pressure not reaching the SIAS setpoints.	—	—
Comment				
* 2.a	Open MAIN and AUX HPSI HDR valves: MAIN • 1-SI-616-MOV • 1-SI-626-MOV • 1-SI-636-MOV • 1-SI-646-MOV AUX • 1-SI-617-MOV • 1-SI-627-MOV • 1-SI-637-MOV • 1-SI-647-MOV	**CRITICAL STEP*** **Opens the 8 Main and Aux HPSI Header MOVs.** (Handswitches spring return to the Normal position)	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
CUE	If asked about starting 12 HPSI pump, acknowledge request and inform operator to continue with block step and not pursue 12 HPSI pump at this time.			
* 2.b	Start 11 and 13 HPSI PPs.	**CRITICAL STEP*** **Rotates 13 HPSI Pump handswitch to START.**	—	—
Comment				
2.c	Start ALL available CHG PPs.	Ensures all three Charging Pumps are running and/or rotates Charging Pump handswitches to START.	—	—
Comment				
Evaluator Note The candidate may perform Steps 2.d and 2.e simultaneously using 2 handed operation. It is also acceptable to perform these steps prior to the alarm actuation. The Simulator Driver will insert Event 1 to control the timing of the SIAS actuation.				
CUE	If notified that SIAS PZR Pressure failed to Block, acknowledge report.			
2.d	WHEN the "PZR PRESS BLOCK A PERMITTED" alarm is received, THEN block SIAS A.	Rotates SIAS PRZR PRESS BLOCK CH-A keyswitch to the BLOCK position. (Keyswitch spring returns to the Normal position) May notify the US that SIAS failed to Block.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
2.e	WHEN the "PZR PRESS BLOCK B PERMITTED" alarm is received, THEN block SIAS B.	Rotates SIAS PRZR PRESS BLOCK CH-B keyswitch to the BLOCK position. (Keyswitch spring returns to the Normal position) May notify the US that SIAS failed to Block.	—	—
Comment				
BEGIN ALTERNATE PATH				
3	IF SIAS has actuated, THEN perform the following actions:	Determines step is applicable.	—	—
Comment				
3.a	Verify the following pumps are running: • 11 HPSI PP • 13 HPSI PP • 11 LPSI PP • 12 LPSI PP • ALL available CHG PPs	Determines 13 HPSI Pump tripped. May note "U-1 4KV ESF MOTOR OVERLOAD" alarm on 1C18. Verifies both LPSI Pumps running at 1C08 and 1C09. Verifies all three Charging Pumps running at 1C07.	—	—
Comment				
3.b	Verify safety injection flow: • HPSI flow PER ATTACHMENT (10), HIGH PRESSURE SAFETY INJECTION FLOW, when pressure is below 1270 PSIA	Determines no HPSI Pump is operating and that HPSI flow is insufficient.	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
3.b.1	Perform the following actions as necessary: • IF 11 HPSI PP failed, THEN start 12 HPSI PP.	Determines step is not applicable.	—	—
Comment				
3.b.1	• IF 13 HPSI PP failed, THEN align 12 HPSI PP as follows:	Determines step is applicable.	—	—
Comment				
* (1)	Start 12 HPSI PP.	**CRITICAL STEP*** **Starts 12 HPSI Pump.**	—	—
Comment				
* (2)	Open HPSI HDR XCONN valve, 1-SI-653-MOV.	**CRITICAL STEP*** **Places 1-SI-653-MOV keyswitch in OPEN.**	—	—
Comment				
(3)	Shut HPSI HDR XCONN valve, 1-SI-655-MOV.	Places 1-SI-655-MOV keyswitch in CLOSE.	—	—
Comment				
TERMINATING CUE: This JPM is complete when 12 HPSI Pump is started and flow established by opening 1-SI-653-MOV. The Evaluator is expected to end the JPM.				

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator3

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. 11 HPSI Pump is tagged out for discharge valve maintenance.
2. 1-SI-656-MOV, HPSI Aux header Isolation valve, is tagged shut to support the maintenance.
3. A LOCA occurred on Unit-1 approximately 15 minutes ago.
4. EOP-5 has been implemented.
5. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform EOP-5, Block Step D, Monitor RCS Depressurization.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator4

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator4

Alternate Path: Yes

Task Number: 202.026

Task Title: Attempt to Correct the Abnormal SDC Condition

Task Standard: This JPM is complete when SDC flow of 1500-2000 gpm is restored using a Containment Spray Pump per AOP-3B.

K/A Reference: 005 A4.01 (3.6, 3.4)

Method of Testing: Actual Performance - Simulator

Validation Time: 20 minutes

Time Critical Task: No

References and Tools Required:

1. AOP-3B-1, Abnormal Shutdown Cooling Conditions, Revision 03001

JPM Setup Instructions:

1. Reset to IC-07 with Unit-1 is Mode 5 with a PZR Manway removed with the RCS at 110°F and 14.7 PSIA, or the previously saved Exam IC.
2. Set Event Trigger 11 LPSI Pump Start for Event 3: **P1C08_1HS302X_SWSTART.**
3. Insert Malfunction 11 LPSI Pump Breaker Failure: **si003_01 on Event 3**.
4. Insert Malfunction 12 LPSI Pump Breaker Failure: **si003_02 on Event 1**.
5. Insert Remote 11 CS Pump Discharge valve open: **1-SI-314 to 1.0 on Event 2**.
6. Insert Remote 11 LPSI Pump RWT Suction valve open: **1-SI-444 to 1.0 on Event 2**.
7. Place 12 CS Pump in PTL with an INFO tag.
8. Place a red dot on 1C09 Alarm Window H30, 12 CS Pump SIAS Blocked Auto Start.
9. Insert Override 12 CS Pump in PTL: **P1C09_1HS4147 to PTL at time zero.**
10. Insert Remote 12 CS Pump breaker racked out: **152-1407_B to RACKED_OUT at time zero.**
11. Insert Override Alarm Window H30: **P1C09_H30_LTON to Off at time zero.**
12. Insert Override Alarm Window E30: **P1C06_E30_LTON to Off at time zero.**
13. Insert Override Alarm Window E31: **P1C06_E31_LTON to Off at time zero.**
14. Place Simulator in RUN.
15. Bypass CVCS IXs by placing 1-HS-2520 in the BYP position.
16. Activate Event 1.
17. Place Simulator in FREEZE.

18. Obtain Independent Verification for completion of steps 1 through 15.
19. If desired, Save conditions into available Exam IC slot for continued use.
20. Acknowledge all panel and plant computer alarms.
21. Select “Horn On” for annunciators.
22. Select “Clock” time.
23. When cued by the Examiner, place simulator in RUN.
24. When directed, activate Event 2 to open 1-SI-314 and 1-SI-444. Report complete after agreed upon delay.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 has been shut down for 5 days and is presently in Mode 5 to repair RCS instrumentation sensing lines.
2. Shutdown Cooling is in service, using 12 LPSI Pump, and RCS temperature is 110°F.
3. RCS pressure is 14.7 PSIA with the Pressurizer Manway removed.
4. The ABO reported smoke coming from 12 LPSI Pump motor.
5. 12 LPSI Pump Breaker has just tripped.
6. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to respond to the Loss of Shutdown Cooling per AOP-3B, Abnormal Shutdown Cooling Conditions, starting in Section IV, Step A.6.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with AOP-3B-1.			
AOP-3B, SECTION IV, PRELIMINARY				
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. Determines 12 LPSI Pump failure will not result in a common mode failure.	—	—
Comment				
A.6.a	Placed the failed PP handswitch in PULL TO LOCK.	Places 12 LPSI in PTL.	—	—
Comment				
A.6.b	IF RCS purification is in service, THEN place IX BYP valve handswitch 1-HS-2520 in the BYP position.	Determines step is not applicable. May verify 1-HS-2520 is in the BYP position.	—	—
Comment				
* A.6.c	Shut S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	**CRITICAL STEP*** **Lowers output of 1-HIC-3657 on 1C09 to 0%** **and/or** **Places 1-HS-3657 keyswitch on 1C09 to CLOSE.**	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* A.6.d	Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	**CRITICAL STEP*** **Depresses the A/M pushbutton until M is displayed to shift 1-FIC-306 on 1C08 to MANUAL (ML).**	—	—
Comment				
* A.6.e	Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	**CRITICAL STEP*** **Adjusts output of 1-FIC-306 to between 93% and 97%.**	—	—
Comment				
A.6.f	Verify BOTH RAS OVERRIDE switches in OVERRIDE: • 11 LPSI PP RAS OVERRIDE, 1-HS-302XA • 12 LPSI PP RAS OVERRIDE, 1-HS-302YA	Verifies 1-HS-302XA and 1-HS-302YA keyswitches are in the OVERRIDE position.	—	—
Comment				
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 asked, report it has been evaluated and the failure is not a common mode failure.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
* A.6.g	Start the standby LPSI PP.	**CRITICAL STEP*** **Rotates 11 LPSI Pump handswitch to the START position.** Determines that 11 LPSI Pump failed to start and alternate actions are required. May place 11 LPSI Pump in PTL.	—	—
Comment				
BEGIN ALTERNATE PATH				
A.6.g.1	IF the standby LPSI PP does NOT start, THEN assign an operator to perform B (Page 18), AND concurrently PROCEED to Step C (Page 21).	Determines step is applicable and Step C is the next required step based on cues provided.	—	—
CUE	After candidate evaluates that A.6.g.1 is applicable: Unit Supervisor has assigned an extra operator to perform Step B, Page 18. Unit Supervisor reports Steps C.1 through C.4 have been completed and directs you to begin at Step C.5.			
Comment				
C.5	IF NO LPSI PPS are available, THEN align the CS PPs for cooling.	Determines step is applicable.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
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.			
CUE	ECCS Pump Room Air Coolers are functional.			
C.5.a	Verify RCS temperature less than 120°F OR the associated ECCS PP Room Air Cooler is functional.	Verifies that ECCS Pump Room Air Coolers are not Out of Service.	—	—
Comment				
CAUTION	To prevent over pressurization of the ECCS PP suction headers, RCS pressure shall be less than 170 PSIA.			
C.5.b	Check that RCS pressure is less than 170 PSIA.	Verifies RCS pressure is less than 170 PSIA.	—	—
Comment				
C.5.c	Check that the SDC HDR RETURN ISOL valves are open: • 1-SI-651-MOV • 1-SI-652-MOV	Verifies that 1-SI-651-MOV and 1-SI-652-MOV are open.	—	—
Comment				
* C.5.d	Shut the 11 RWT OUT valves: • 1-SI-4142-MOV • 1-SI-4143-MOV	**CRITICAL STEP*** **Places the following handswitches in CLOSE:** • **1-SI-4142-MOV** • **1-SI-4143-MOV**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
* C.5.e.1	Isolate CS PP Min Flow to the RWT: Place the SI PP RECIRC LOCKOUT handswitches to ON • 1-HS-3659A • 1-HS-3660A	**CRITICAL STEP*** **Places the following handswitches to ON:** • **1-HS-3659A** • **1-HS-3660A**	—	—
Comment				
* C.5.e.2	Shut the MINI FLOW RETURN TO RWT ISOL valves: • 1-SI-659-MOV • 1-SI-660-MOV	**CRITICAL STEP*** **Places the following handswitches to CLOSE:** • **1-SI-659-MOV** • **1-SI-660-MOV**	—	—
Comment				
CUE	When the candidate directs an Equipment Operator to perform this step: Direct the simulator driver to activate Event 2 to open 1-SI-314 and 1-SI-444.			
C.5.f	IF 11 CS PP is desired for SDC, THEN open the following valves: • 11 CS PP Discharge valve, 1-SI-314 • 11 LPSI PP NORM SUCT ISOL valve, 1-SI-444	Directs an operator to open 1-SI-314 and 1-SI-444.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
C.5.g	IF 12 CS PP is desired …	Determines step is N/A.	—	—
Comment				
C.5.h	Shut the S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	Verifies the output of 1-HIC-3657 on 1C09 is 0% and/or 1-HS-3657 keyswitch on 1C09 is in CLOSE.	—	—
Comment				
C.5.i	Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	Verifies 1-FIC-306 on 1C08 is in MANUAL (ML).	—	—
Comment				
C.5.j	Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	Verifies the output of 1-FIC-306 is set to between 93% and 97%.	—	—
Comment				
* C.5.k	Start the selected CS PP.	**CRITICAL STEP*** **Starts 11 CS Pump.**	—	—
Comment				
* C.5.l	Slowly adjust the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to raise SDC flow to 1500 – 2000 GPM.	**CRITICAL STEP*** **Adjusts the output of 1-FIC-306 and raises SDC flow to between 1500 and 2000 gpm.**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
CUE	The Unit Supervisor desires Shutdown Cooling Flow Controller, 1-FIC-306, be placed in auto.			
C.5.m	IF desired to place SHUTDOWN CLG FLOW CONTR, 1-FIC-306 in AUTO, THEN perform the following:	Determines step is applicable based on the cue provided.	—	—
Comment				
C.5.m.1	Adjust the setpoint on 1-FIC-306 to match SDC flow.	Adjust the setpoint of 1-FIC-306 to between 1500 and 2000 gpm.	—	—
Comment				
C.5.m.2	Place 1-FIC-306 in AUTO.	Depresses the A/M pushbutton to shift 1-FIC-306 on 1C08 to AUTO (AL).		
Comment				
CAUTION	Do NOT exceed the following cooldown limits in any one hour: … Do NOT exceed a heatup rate of 14°F/MIN for the Shutdown Cooling Heat Exchanger as indicated on TI-303X and TI-303Y.			
C.5.n	Adjust the S/D COOLING TEMP CONTR VALVE, 1-SI-657-CV, as desired.	Establishes SDC flow through the SDC Heat Exchangers by adjusting output of 1-HIC-3657 on 1C09 greater than 0% and taking 1-HS-3657 keyswitch on 1C09 to AUTO.	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
TERMINATING CUE: This JPM is complete when SDC flow has been restored using 11 Containment Spray Pump to between 1500 and 2000 gpm. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator4

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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_____

Examinee Response:

_____

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_____

_____

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 has been shut down for 5 days and is presently in Mode 5 to repair RCS instrumentation sensing lines.
2. Shutdown Cooling is in service, using 12 LPSI Pump, and RCS temperature is 110°F.
3. RCS pressure is 14.7 PSIA with the Pressurizer Manway removed.
4. The ABO reported smoke coming from 12 LPSI Pump motor.
5. 12 LPSI Pump Breaker has just tripped.
6. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to respond to the Loss of Shutdown Cooling per AOP-3B, Abnormal Shutdown Cooling Conditions, starting in Section IV, Step A.6.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator5

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator5

Alternate Path: No

Task Number: 012.007

Task Title: Placing Emergency SW Discharge Header in Service

Task Standard: This JPM is complete when 12 Saltwater Header has been aligned to the SW Emergency Overboard Discharge Header per AOP-7A.

K/A Reference: 076 A4.04 (3.5, 3.5)

Method of Testing: Actual Performance - Simulator

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. AOP-7A, Loss of Saltwater Cooling, Revision 15

JPM Setup Instructions:

1. Reset to IC-34 or the previously saved Exam IC.
2. Place Simulator in RUN.
3. Insert SW Rupture, sw004_02 at 50% at time zero.
4. Reduce MVARs to 0.
5. Ensure handswitches 1-HS-5150, 1-HS-5209, 1-HS-5210, 1-HS-5152, 1-HS-5211, 1-HS-5212, 1-HS-5153 are in CLOSE as directed by Section V.D, Step 4.
6. Place Simulator in FREEZE.
7. Obtain Independent Verification for completion of steps 1 through 5.
8. If desired, Save conditions into available Exam IC slot for continued use.
9. Acknowledge all panel and plant computer alarms.
10. Select “Horn On” for annunciators.
11. Select “Clock” time.
12. When cued by the Examiner, place simulator in RUN.
13. Have AOP-7A, Attachment 2 ready.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is at 100% power
2. AOP-7A, Loss of Saltwater Cooling, has been implemented.
3. A rupture downstream of 1-SW-5153-CV, 12A/B SRW HX SW OUT, has been diagnosed.
4. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform AOP-7A, Attachment 2, Use of the Emergency Return Discharge Header.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with AOP-7A, Attachment 2.			
AOP-7A, Attachment 2, Use of the Emergency Return Discharge Header				
CUE	When requested, TS 3.0.3 has been entered and the US is handling all the required actions.			
NOTE The use of the Emergency Return Discharge Header renders both SW Headers inoperable. Therefore, TS 3.0.3 applies, and the Unit must be in Hot Standby within 7 hours.				
NOTE This attachment establishes 12 SRW HX, 12 CC HX and 12 ECCS Cooler in service with 11 SW Supply Header as a discharge path via the Emergency Discharge valve 1-SW-5149-CV. Expedite restoration of the cooling to 12 SRW HX and 12 CC HX while shifting discharge path.				
CAUTION When using the Emergency Discharge Return Header, there is NO temperature control of 12 CC HX.				
1	Ensure open 12 CC HX CC OUT valve, 1-CC-3826-CV	Verifies that 1-CC-3826 is open	__	__
Comment				
2	Ensure open 11 CC HX CC OUT valve, 1-CC-3824-CV	Verifies that 1-CC-3824 is open	__	__
Comment				
* 3	Shut 11 CCHX SW OUT valve, 1-SW-5206-CV.	**CRITICAL STEP*** **Places controller for 1-SW-5206 to 100% which is full closed.**	__	__

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
CUE	When requested, report that an operator is securing SWCA injection to 11 and 12 SW headers per OI-29A.			
4	IF in service, THEN DISPATCH an operator to secure SWCA injection to 11 AND 12 SW HDR's, PER OI-29A, SALT WATER CHEMICAL ADDITION SYSTEM.	Directs an operator to secure SWCA injection to 11 and 12 SW headers per OI-29A.	—	—
Comment				
NOTE Step 5 should be performed concurrently with the remaining steps in this attachment.				
CUE	When requested, report that an operator is removing 11 SRW HX from service per attachment 1.			
5	Remove 11 SRW HX from service PER ATTACHMENT (1), REMOVING SRW HXs FROM SERVICE, Step 1 (Page 45).	Directs an operator to remove 11 SRW HX from service per attachment 1.	—	—
Comment				
* 6	Verify the operating SW PP on 11 SW Header is stopped.	**CRITICAL STEP*** **Places handswitch 1-HS-5199 in stop.**	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 7	Open the Emergency Outlet valves, on panel 2C24A: ● (12 ECCS AIR CLR) 1-SW-5177-CV and 1-SW-5178-CV using 1-HS-5179 ● (12 CC HX) 1-SW-5165-CV and 1-SW-5166-CV using 1-HS-5167 ● (12 SRW HX), 1-SW-5155-CV and 1-SW-5156-CV using 1-HS-5155	**CRITICAL STEP*** **Places the following handswitches to OPEN:** • **1-HS-5179** • **1-HS-5167** • **1-HS-5155**	—	—
Comment				
CUE	If asked, report 1-SW-5149 is open locally.			
* 8	WHEN the Emergency SW Discharge Valve, 1-SW-5149, is open, THEN shut the following valves on 12 SW HDR: ● (12 ECCS AIR CLR) 1-SW-5174-CV and 1-SW-5175-CV using 1-HS-5176 ● (12 CC HX) 1-SW-5163-CV and 1-SW-5208-CV using 1-HS-5164 ● (12 SRW HX) 1-SW-5153-CV using 1-HS-5153	**CRITICAL STEP*** **Places the following handswitches to CLOSE:** • **1-HS-5176** • **1-HS-5164** • 1-HS-5153	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 9	Shut the following valves on 11 SW HDR: ● (11 ECCS AIR CLR) 1-SW-5170-CV and 1-SW-5171-CV using 1-HS-5172 ● (11 CC HX) 1-SW-5160-CV and 1-SW-5206-CV using 1-HS-5161 ● (11 SRW HX) 1-SW-5150-CV and 1-SW-5154-CV using 1-HS-5150	**CRITICAL STEP*** **Places the following handswitches to CLOSE:** • **1-HS-5172** • **1-HS-5161** • 1-HS-5150		
Comment				
10	IF a SW PP is NOT running on 12 SW header, THEN start a SW PP on 12 SW header as follows:	Determines that step is not applicable		
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 11	11. Verify the following valves are OPEN OR in AUTO: ● EMERGENCY SW DISCH, 1-SW-5149-CV ● (12 SRW HX) 1-SW-5152-CV 1-SW-5211-CV 1-SW-5212-CV 1-SW-5155-CV 1-SW-5156-CV ● (12 CC HX) 1-SW-5162-CV 1-SW-5165-CV 1-SW-5166-CV ● (12 ECCS AIR CLR) 1-SW-5173-CV 1-SW-5177-CV	**CRITICAL STEP*** **Verifies the following valves are Open** or in Auto: • 1-SW-5149-CV • **1-SW-5152-CV** • **1-SW-5211-CV** • **1-SW-5212-CV** • 1-SW-5155-CV • 1-SW-5156-CV • 1-SW-5162-CV • 1-SW-5165-CV • 1-SW-5166-CV • 1-SW-5173-CV • 1-SW-5177-CV		
Comment				
12	Verify adequate SW flow to SRW HXs. a. Check "12A/12B SRW HX TROUBLE" alarm clear.	Verifies that the 12A/12B SRW HX TROUBLE alarm is clear on 1C13.		
Comment				
TERMINATING CUE: This JPM is complete when 12 Saltwater System has been aligned to the Emergency SW Discharge Header. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator5

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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_____

Examinee Response:

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_____

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is at 100% power
2. AOP-7A, Loss of Saltwater Cooling, has been implemented.
3. A rupture downstream of 1-SW-5153-CV, 12A/B SRW HX SW OUT, has been diagnosed.
4. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform AOP-7A, Attachment 2, Use of the Emergency Return Discharge Header.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator6

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator6

Alternate Path: No

Task Number: 064.023

Task Title: Verify Reactor and Pressurizer Vent Valve Operability

Task Standard: This JPM is complete when the Reactor Vessel Vent Valves are cycled per STP-O-66L-1.

K/A Reference: 007 A4.04 (2.6, 2.6)

Method of Testing: Actual Performance - Simulator

Validation Time: 10 minutes

Time Critical Task: No

References and Tools Required:

1. STP O-66L-1, Reactor Vessel and Pressurizer Vent Valves Operability Test, Revision 00701

JPM Setup Instructions:

1. Reset to the previously saved IC with Unit-1 in Mode 4 with RCS Pressure between 400 and 1200 PSIA.
2. Place Simulator in FREEZE.
3. Obtain Independent Verification for completion of steps 1 through 2.
4. Obtain and insert keys in PZR to Quench Tank Vent Valve keyswitches, 1-HS-105 and 1-HS-106.
5. Place 1P116 Quench Tank Pressure, 1T116 Quench Tank Temperature, and 1L116 Quench Tank Level on trend on the 1C05 PPC screen.
6. Ensure the starting Quench Tank parameters match the completed STP O-66L-1 Section 6.4 initial parameters recorded. (TIA-102 – 80, Press - 1.5, Temp – 95, Level – 29)
7. Acknowledge all panel and plant computer alarms.
8. Select “Horn On” for annunciators.
9. Select “Clock” time.
10. When cued by the Examiner, place simulator in RUN.
11. Have STP O-66L-1 Section 6.4 ready for use with initial Quench Tank parameters recorded and placekeeping performed to start with Step 6.4.3.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is in the process of shutting down for a scheduled Refueling Outage and is currently in Mode 4.
2. The Control Room is performing STP O-66L-1, Reactor Vessel and Pressurizer Vent Valves Operability Test, and Sections 6.1, 6.2, and 6.3 have just been completed.
3. The initial Quench Tank parameters have been recorded in Section 6.4.
4. The pre-job brief is complete, all precautions reviewed, and prerequisites met.
5. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform STP O-66L-1, Section 6.4, starting with Step 6.4.3.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with the prepared copy of STP O-66L-1 Section 6.4.			
STP O-66L-1, Section 6.4, PZR Vapor Space Vent Valves Position Indication and Vent Path Operability Tests				
NOTE	Fluid buildup in the valve control chamber could cause the open stroke of the valve to take as long as 8 seconds.			
* 6.4.3	OPEN PZR TO QT VENT, 1-RC-105-SV by placing 1-HS-105 keyswitch to OPEN.	**CRITICAL STEP*** **Places keyswitch 1-HS-105 to OPEN.**	—	—
Comment				
NOTE	Fluid buildup in the valve control chamber could cause the open stroke of the valve to take as long as 8 seconds.			
* 6.4.4	OPEN PZR TO QT VENT B/U, 1-RC-106-SV by placing 1-HS-106 keyswitch to OPEN.	**CRITICAL STEP*** ***Places keyswitch 1-HS-106 to OPEN.**	—	—
Comment				
NOTE	The following step will demonstrate the Operability of the PZR Vapor Space Vent Valves as a RCS Vent Path AND satisfy the open Position Indication Test for the PZR Vapor Space Vent Valves.			
6.4.5	VERIFY flow through 1-RC-105-SV AND 1-RC-106-SV by observing an increase in TIA-102 temperature AND/OR Quench Tank parameters.	Determines there is flow through the PZR Vent Valves by observing an increase in TIA-102 and/or Quench Tank parameters.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 6.4.6.1.a	PERFORM the shut Position Indication Test for the PZR Vapor Space Vent Valves as follows: 1. Shut Position Indication Test for 1-RC-105-SV: a. SHUT PZR TO QT VENT, 1-RC-105-SV.	**CRITICAL STEP*** **Places keyswitch 1-HS-105 to CLOSE.**	—	—
Comment				
6.4.6.1.b	VERIFY there is no flow through 1-RC-105-SV by observing a decrease in TIA-102 temperature AND/OR Quench Tank parameters.	Determines there is no flow through the PZR Vent Valves by observing a decrease in TIA-102 and/or Quench Tank parameters.	—	—
Comment				
* 6.4.6.2	OPEN 1-RC-105-SV.	**CRITICAL STEP*** ***Places keyswitch 1-HS-105 to OPEN.**	—	—
Comment				
6.4.6.3	VERIFY flow through 1-RC-105-SV AND 1-RC-106-SV by observing an increase in TIA-102 temperature AND/OR Quench Tank parameters.	Determines there is flow through the PZR Vent Valves by observing an increase in TIA-102 and/or Quench Tank parameters.	—	—
Comment				
* 6.4.6.4.a	2. Shut Position Indication Test for 1-RC-106-SV: a. SHUT PZR TO QT VENT B/U, 1-RC-106-SV.	**CRITICAL STEP*** **Places keyswitch 1-HS-106 to CLOSE.**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
6.4.6.4.b	VERIFY there is no flow through 1-RC-106-SV by observing a decrease in TIA-102 temperature AND/OR Quench Tank parameters.	Determines there is no flow through the PZR Vent Valves by observing a decrease in TIA-102 and/or Quench Tank parameters.	___	___
Comment				
* 6.4.6.5	SHUT 1-RC-105-SV.	**CRITICAL STEP*** **Places keyswitch 1-HS-105 to CLOSE.**	___	___
Comment				
NOTE	Steps 6.4.6.6 and 6.4.6.7 are necessary to eliminate a hydraulic lock between 1-RC-105 and 1-RC-106.			
* 6.4.6.6	OPEN 1-RC-106-SV.	**CRITICAL STEP*** **Places keyswitch 1-HS-106 to OPEN.**	___	___
Comment				
* 6.4.6.7	SHUT 1-RC-106-SV.	**CRITICAL STEP*** **Places keyswitch 1-HS-106 to CLOSE.**	___	___
Comment				
TERMINATING CUE: This JPM is complete when Section 6.4 has been completed to test the PZR Vapor Space Vent Valves. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator6

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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_____

Examinee Response:

_____

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_____

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is in the process of shutting down for a scheduled Refueling Outage and is currently in Mode 4.
2. The Control Room is performing STP O-66L-1, Reactor Vessel and Pressurizer Vent Valves Operability Test, and Sections 6.1, 6.2, and 6.3 have just been completed.
3. The initial Quench Tank parameters have been recorded in Section 6.4.
4. The pre-job brief is complete, all precautions reviewed, and prerequisites met.
5. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform STP O-66L-1, Section 6.4, starting with Step 6.4.3.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator7

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator7

Alternate Path: No

Task Number: 024.005

Task Title: Shutdown a Diesel Generator

Task Standard: This JPM is complete when 1A EDG has been shutdown and removed from the 11 4KV bus per OI-21A.

K/A Reference: 064 A4.06 (3.9/3.9)

Method of Testing: Actual Performance - Simulator

Validation Time: 10 minutes

Time Critical Task: No

References and Tools Required:

1. OI-21A-1, Rev 02401

JPM Setup Instructions:

1. Reset to IC-34 with both Units at 100% power or the previously saved Exam IC.
2. Insert the following malfunctions:
    a. 1A DG alarm window M-06 on 1C18: P1C18_M06_LTON to ON at time zero.
    b. 1A DG alarm window AA01 on 1C18A: P1C18A_AA1_LTON to ON at time zero.
3. 0C DG 4KV Bus 11 Disconnect: 189-1106 to CLOSED at time zero.
4. Place a PINK off normal component tag near the Control Room indication for Disconnect 189-1106.
5. Place 0C DG Bus Feeder Breakers, 1-CS-152-1406, 2-CS-152-2106, and 2-CS-152-2406 in PTL with PINK off normal component tag.
6. Place RMS alarm for 0-RI-5350 in bypass on 1C22H.
7. Start 11 and 12 Post LOCI filter fans, ensure 12 CR HVAC in service, and shift 13 IRU to 14 480V bus.
8. Place the 1A DG on 11 4KV Bus at 5.0 MW, 500 MVAR (Depress emergency start, depress slow start, insert sync stick, momentarily raise speed, parallel, remove sync stick and return to home base, raise speed to 5 MW, adjust voltage)
9. Provide a copy of STP O-8A-1 completed up to Step 6.8.E.
10. Provide OI-21A Section 6.5.4 open with the STP for rapid shutdown preps for the 1A DG.
11. Place Simulator in Run.
12. Obtain Independent Verification for completion of steps 1 through 10.

13. Acknowledge all panel alarms and ensure “Horn Off” for annunciators.
14. If desired, Save conditions into available Exam IC slot for continued use.
15. Place Simulator in Freeze.
16. When the JPM is ready to commence, place simulator in RUN.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is operating at 100% power.
2. 1A DG was removed from service for cylinder inspections.
3. STP O-008A-1 is being performed to return the EDG to service.
4. 1A DG has been loaded to 5 MWe for the last 20 minutes.
5. 1 minute ago, the 1A DG CONTR BOARD 1C18A and the 1A DG alarms were received.
6. The local EDG operator has reported a lube oil leak and recommended a rapid shutdown of the 1A EDG.
7. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform a rapid shutdown of the 1A EDG per OI-21A, Section 6.5.4.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
OI-21A, Section 6.5.4 Rapid Shutdown of the 1A Diesel				
A.1	1A DG is operating in parallel operation with the 11/17 4KV Bus OR unloaded AND a condition exists that requires a rapid shutdown.	Determines the initial condition is met from the initial conditions.	—	—
Comment				
CUE	If requested, report the 1A DG is not in Local.			
A.2	The 1A DG is NOT in Local.	Determines the initial conditions is met from the initial conditions or the above cue.	—	—
Comment				
NOTE Steps 1 and 2 may be worked in parallel				
B.1	IF 1A DG is running with a SIAS signal present, THEN ENSURE actuation modules are reset locally (at the ESFAS cabinets) prior to 1A DG shutdown.	Determines step is not applicable due to no SIAS alarm on 1C08.	—	—
Comment				
B.2	IF 1A DG is in parallel operation with the 11/17 4KV Bus, THEN PERFORM the following:	Determines that step is applicable.	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
NOTE Load may be lowered as rapidly as necessary.				
* B.2.a.1	LOWER MW AND KVAR loads concurrently to approximately 0.70 MW AND zero KVARs PER the following: LOWER MW load using 1A DG SPEED CONTR, 1-CS-1705.	**CRITICAL STEP*** **Lowers MW load** to approximately 0.7 MW **using 1-CS-1705.**		
Comment				
* B.2.a.2	LOWER MW AND KVAR loads concurrently to approximately 0.70 MW AND zero KVARs PER the following: MAINTAIN 0 to 500 KVARs using 1A DG AUTO VOLT CONTR, 1-CS-1704 AND FIGURE 1, 1A DIESEL GENERATOR ELECTRICAL LIMITS.	**CRITICAL STEP*** **Lowers KVARs** to approximately 0 KVARS **using 1-CS-1704.**	__	__
Comment				
B.2.a.3	LOWER MW AND KVAR loads concurrently to approximately 0.70 MW AND zero KVARs PER the following: MONITOR 11/17 4KV Bus voltage between 4.1KV and 4.35KV.	Monitors 11/17 Bus voltages and verifies voltage is between 4.1 and 4.35 KV.	__	__

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
* B.2.b	WHEN D/G load is approximately 0.7 MW, THEN PLACE 1A DG OUT BKR, 1-CS-152-1703, to TRIP.	**CRITICAL STEP*** **Places 1-CS-152-1703 to TRIP.**	—	—
Comment				
B.3.a	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: VERIFY 1A DG voltage is 4.16KV (4.16KV to 4.30KV) on 1A DG VOLTS, 1-EI-1701.	Verifies that 1A DG voltage is between 4.16KV to 4.30KV.	—	—
Comment				
CUE	Acknowledge report for alternate actions			
B.3.b	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: CHECK 1A DG frequency is approximately 60 Hz on 1A DG FREQUENCY, 1-SI-1701.	Checks that 1A DG frequency is ~ 60 Hz.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
B.3.c	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: CHECK the following alarms are clear: • "11, 17 BUS DIESEL BKRS CLOSE BLOCKED" • "1A DG ●POT VOLT ●FREQ LO"	Verifies both alarms are clear.	__	__
Comment				
* B.3.d	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: DEPRESS 1A DG STOP, 1-HS-1709, pushbutton.	**CRITICAL STEP*** **Presses 1-HS-1709 pushbutton.**	__	__
Comment				
B.3.e	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: VERIFY exciter shutdown as indicated by zero volts on 1A DG VOLTS, 1-EI-1701.	Verifies exciter is shutdown as indicated by zero volts on 1-EI-1701.	__	__
Comment				
CUE	Acknowledge request for an operator to continue with the procedure with step B.3.f.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
B.3.f-o	IF 1A DG output breaker 152-1703 is open, THEN PERFORM the following: VERIFY the following equipment RUNNING by observing the associated red indicating light is illuminated on 1C188:	Directs an operator to perform steps B.3.f-o.	—	—
Comment				
TERMINATING CUE: This JPM is complete when the 1A EDG has been shutdown and removed from the 11 4KV Bus per OI-21A. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator7

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is operating at 100% power.
2. 1A DG was removed from service for cylinder inspections.
3. STP O-008A-1 is being performed to return the EDG to service.
4. 1A DG has been loaded to 5 MWe for the last 20 minutes.
5. 1 minute ago, the 1A DG CONTR BOARD 1C18A and the 1A DG alarms were received.
6. The local EDG operator has reported a lube oil leak and recommended a rapid shutdown of the 1A EDG.
7. You are performing the duties of the Unit-1 Control Room Operator.

Initiating Cue:

1. The Unit Supervisor directs you to perform a rapid shutdown of the 1A EDG per OI-21A, Section 6.5.4.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-Simulator8

Facility: Calvert Cliffs 1 & 2 **JPM Number:** Simulator8

Alternate Path: Yes

Task Number: 202.015

Task Title: Respond to RCS leakage exceeding capacity of one Charging Pump

Task Standard: This JPM is complete when the RCS leak has been identified as leakage into the Component Cooling system and candidate trips the reactor, trips the RCPs, and isolates component cooling per AOP-2A-1.

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

Method of Testing: Actual Performance - Simulator

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. AOP-2A-1, Excessive Reactor Coolant Leakage, Revision 02701

JPM Setup Instructions:

1. Reset to IC-34 with both units at 100% power or the previously saved Exam IC.
2. Place Simulator in RUN.
3. Insert Malfunction 12A RCP Leak to CC: **rcs035_03 to 100 on Event 1.**
4. Insert Malfunction 12B RCP Leak to CC: **rcs035_04 to 100 on Event 1.**
5. Activate Event 1.
6. Isolate Letdown by shutting 1-CVC-515-CV and 1-CVC-516-CV.
7. Place Simulator in FREEZE.
8. Obtain Independent Verification for completion of steps 1 through 7.
9. If desired, Save conditions into available Exam IC slot for continued use.
10. Acknowledge all panel and plant computer alarms.
11. Select “Horn On” for annunciators.
12. Select “Clock” time.
13. When cued by the Examiner, place simulator in RUN.
14. Have AOP-2A-1 ready for use with placekeeping performed to start with Section VI, Block Step E, Step 8.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is operating at 100% power.
2. The Control Room has implemented AOP-2A-1 for RCS leakage that just occurred.
3. The Control Room Operator has isolated Letdown, determined a Steam Generator Tube Leak does not exist, and determined a leak on the Charging header does not exist.
4. The Control Room Operator is monitoring the AOP-2A trip criteria.
5. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to continue AOP-2A-1, Section VI, Block Step E, Attempt to Isolate the Leak, starting with Step 8.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	After Examinee reviews Cue Sheet, provide the examinee with the prepared copy of AOP-2A-1, Section VI, Block Step E.			
AOP-2A-1, Section VI, Block Step E, Attempt to Isolate the Leak				
CUE	If candidate directs operators to investigate or attempt to locate the leak: Inform candidate that the operators have not found any leakage in the Aux Building.			
CUE	If candidate asks if the crew or STA has quantified the RCS leakage: Inform candidate the crew has not calculated the RCS leakage at this time.			
8	IF the leak is determined to be occurring inside Containment …	Determines step is N/A.	—	—
Comment				
9	IF the leak is NOT occurring inside of Containment, THEN perform the following actions: a. Place both Penetration Room Exhaust Fans in service.	Starts 11 Penetration Room Vent Fan by momentarily placing 1-HS-5283 to Start. Starts 12 Penetration Room Vent Fan by momentarily placing 1-HS-5284 to Start.	—	—
Comment				
NOTE	Leakage location may be indicated by sump alarms, room level alarms, or area RMS alarms.			
9.b	Attempt to locate and isolate the leak.	The candidate may investigate: • RMS indications • Head Tank levels	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Comment				
10	Determine that NO leakage into the Component Cooling System is indicated by: • NO rising trends on Component Cooling Radiation Monitor, 1-RI-3819 • "CC HEAD TK LVL" high alarm clear	Determines leakage is into the component cooling system and alternate actions are required.	—	—
Comment				
BEGIN ALTERNATE PATH				
CAUTION	Once Letdown is isolated with a Component Cooling to Letdown leak occurring, dilution of the VCT will occur until Component Cooling to the Letdown Heat Exchanger is isolated.			
10.1	IF leakage into the Component Cooling System is indicated, AND shutting the Letdown CNTMT Isolation valves stopped the leak, THEN perform the following actions:	Determines step is N/A based on Pressurizer level or Component Cooling head tank level trends.	—	—
Comment				
CUE	If candidate requests approval of the Shift Manager or Unit Supervisor: Ask what the candidate recommends and then acknowledge the recommendation.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
10.2	IF leakage into the CC System is indicated, AND shutting the Letdown CNTMT Isolation valves did NOT stop the leak, THEN, with the approval of the SM/CRS, perform the following actions:	Determines step is applicable based on available indications.	—	—
Comment				
CUE	If US notified: acknowledge report to trip the reactor. After notified the reactor is tripped: Unit-1 reactor trip, implement EOP-0.			
* 10.2.a	Trip the Reactor.	**CRITICAL STEP*** May notify the US of the need to trip the reactor. **Trips the Reactor using the pushbuttons on 1C05 or 1C15.**	—	—
Comment				
CUE	If candidate provides a report to the Unit Supervisor upon completing Reactivity Control: Acknowledge report given.			
10.2.b	Perform Reactivity Control immediate actions of EOP-0, POST TRIP IMMEDIATE ACTIONS.	Performs the Reactivity Control safety function of EOP-0.	—	—
Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 10.2.c	Stop ALL RCPs.	**CRITICAL STEP*** **Places the following in the Stop or Pull To Lock position:** • **1-HS-151** • **1-HS-161** • **1-HS-171** • **1-HS-181**	—	—
Comment				
* 10.2.d	Shut the CC CNTMT SUPPLY and RETURN valves: • 1-CC-3832-CV • 1-CC-3833-CV	**CRITICAL STEP*** **Places the following in the Close position:** • **1-HS-3832** • **1-HS-3833**	—	—
Comment				
CUE	If the candidate continues with the remaining EOP-0 block steps: Inform candidate that the crew will complete the remaining EOP-0 steps.			
10.2.e	IMPLEMENT EOP-0, POST TRIP IMMEDIATE ACTIONS.	The candidate may continue with the EOP-0 block steps.	—	—
Comment				
TERMINATING CUE: This JPM is complete when the reactor is tripped, all RCPs are secured and Component Cooling supply and return isolation valves are closed. The Evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: Simulator8

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is operating at 100% power.
2. The Control Room has implemented AOP-2A-1 for RCS leakage that just occurred.
3. The Control Room Operator has isolated Letdown, determined a Steam Generator Tube Leak does not exist, and determined a leak on the Charging header does not exist.
4. The Control Room Operator is monitoring the AOP-2A trip criteria.
5. You are performing the duties of the Unit-1 Reactor Operator.

Initiating Cue:

1. The Unit Supervisor directs you to continue AOP-2A-1, Section VI, Block Step E, starting with Step 8.
2. Are there any questions? You may begin.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-RO Admin1

Facility: Calvert Cliffs 1 & 2 **JPM Number:** RO Admin1

Alternate Path: No

Task Number: 202.023

Task Title: Respond to a complete loss of SDC (Estimate Time to Boiling & Core Uncovery)

Task Standard: Candidate determines Time to Boil and Time to Core Uncovery within the bands specified per the JPM.

K/A Reference: 2.1.25 (3.9) Ability to interpret reference materials, such as graphs, curves, tables, etc.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. AOP-3B, Revision 03001 Abnormal Shutdown Cooling Conditions

JPM Setup Instructions:

1. Consumable copy of AOP-3B, Abnormal Shutdown Cooling Conditions

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 RCS is drained to 38.6 feet in preparation for Vacuum Fill of the RCS.
2. RCS temperature is 100˚ F.
3. The reactor was shut down 25 days ago after an extended period of full power operation.
4. Refueling operations have been completed. 88 fresh fuel assemblies were loaded in the core.
5. A loss of shutdown cooling has occurred.
6. You are performing the duties of an extra CRO.

Initiating Cue:

1. The Shift Manager directs you to calculate the time to boiling AND core uncovery per AOP-3B Attachment (14) steps 2 and 3 (attached).
2. The Unit Supervisor will independently verify both calculation after both have been calculated.
3. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
EVALUATOR NOTE Completion of this JPM requires interpreting graphs that have the potential to induce minor variations in calculated results. For that reason, calculated results are given an "acceptable" band.				
AOP-3B Attachment 14, Calculation of Time to 200°F, Boil or Core Uncovery Section 2. Calculate Time to Boil				
* 2a	Determine the Time to Boil at 24 hours after shutdown from the appropriate figure, based on RCS level and RCS temperature	**CRITICAL STEP*** **Using Attachment (10), determines TTB @ 24 hrs is approximately 13.25 minutes.**	—	—
Evaluator Comment				
* 2b	Obtain the multiplier from Attachment (13), Multiplier on Time to 200°F, Start Boiling or Core Uncovery, based on time after shutdown.	**CRITICAL STEP*** **Using attachment (13) records multiplier of 3.39 and post refueling multiplier of 1.36 on attachment (14) step 2.c.**	—	—
Evaluator Comment				
* 2c	Multiply the Time to Boil at 24 hours after shutdown by the multiplier.	**CRITICAL STEP*** **Performs TTB calculation and records on attachment (14) step 2.c** **13.25 X 3.39 X 1.36 = 61.1** **(Answers in the range of 59 to 64 minutes are acceptable)**	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
AOP-3B Attachment 14, Calculation of Time to 200°F, Boil or Core Uncovery Section 3. Calculate Time to Core Uncovery				
* 3a	Determine the Time to Core Uncovery at 24 hours after shutdown from the appropriate figure, based on RCS level and RCS temperature	**CRITICAL STEP*** **Using Attachment (15), determines Time to Core Uncovery @ 24 hrs is approximately 128 minutes.**	—	—
Evaluator Comment				
* 3b	Obtain the multiplier from Attachment (13), Multiplier on Time to 200°F, Start Boiling or Core Uncovery, based on time after shutdown.	**CRITICAL STEP*** **Using attachment (13) records multiplier of 3.39 and post refueling multiplier of 1.36 on attachment (14) step 3.c.**	—	—
Evaluator Comment				
* 3c	Multiply the Time to Boil at 24 hours after shutdown by the multiplier.	**CRITICAL STEP*** **Performs TTB calculation and records on attachment (14) step 3.c** **128 X 3.39 X 1.36 = 590.1** **(Answers in the range of 582 to 600 minutes are acceptable)**	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when the candidate completes Attachment 14, steps 2 and 3. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: RO Admin1

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 RCS is drained to 38.6 feet in preparation for Vacuum Fill of the RCS.
2. RCS temperature is 100˚ F.
3. The reactor was shut down 25 days ago after an extended period of full power operation.
4. Refueling operations have been completed. 88 fresh fuel assemblies were loaded in the core.
5. A loss of shutdown cooling has occurred.
6. You are performing the duties of an extra CRO.

Initiating Cue:

1. The Shift Manager directs you to calculate the time to boiling AND core uncovery per AOP-3B Attachment (14) steps 2 and 3 (attached).
2. The Unit Supervisor will independently verify both calculation after both have been calculated.
3. Are there any questions? You may begin.

AOP-3B
Rev 30/Unit 1

ATTACHMENT (14)
Page 2 of 2

CALCULATION OF TIME TO 200°F, BOIL OR CORE UNCOVERY

2. Calculate Time To Boil:

   a. Determine the Time To Boil at 24 hours after shutdown from the appropriate figure, based on RCS level and RCS temperature:

      - ATTACHMENT (10), TIME TO START BOILING AFTER LOSDC 24 HOURS AFTER SHUTDOWN
      - ATTACHMENT (11), TIME TO START BOILING AFTER LOSDC 24 HOURS AFTER SHUTDOWN SG U-TUBES FULL
      - ATTACHMENT (12), RFP TIME TO START BOILING AFTER LOSDC 24 HOURS AFTER SHUTDOWN

   b. Obtain the multiplier from ATTACHMENT (13), MULTIPLIER ON TIME TO 200°F, START BOILING OR CORE UNCOVERY, based on time after shutdown.

   c. Multiply the Time To Boil at 24 hours after shutdown by the multiplier.

_____	X	_____	X	_____	=	_____
TTB at 24 hrs		multiplier		post refueling multiplier (IF applicable)		Time To Boil

   d. Independently verify the calculation.

3. Calculate Time To Core Uncovery:

   a. Determine the Time To Core Uncovery at 24 hours after shutdown from the appropriate figure, based on RCS level and RCS temperature:

      - ATTACHMENT (15), TIME TO CORE UNCOVERY AFTER LOSDC 24 HOURS AFTER SHUTDOWN NO NOZZLE D AMS, NO INJECTION, NO COLD LEG HOLE
      - ATTACHMENT (16), TIME TO CORE UNCOVERY AFTER LOSDC 24 HOURS AFTER SHUTDOWN WITH NOZZLE DAMS, NO INJECTION, NO COLD LEG HOLE

   b. Obtain the multiplier from ATTACHMENT (13), MULTIPLIER ON TIME TO 200°F, START BOILING OR CORE UNCOVERY, based on time after shutdown.

   c. Multiply the Time To Boil at 24 hours after shutdown by the multiplier.

_____	X	_____	X	_____	=	_____
Time to Core Uncovery at 24 hrs		multiplier		post refueling multiplier (IF applicable)		Time To Core Uncovery

   d. Independently verify the calculation.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-RO Admin2

Facility: Calvert Cliffs 1 & 2 **JPM Number:** RO Admin2

Alternate Path: No

Task Number: 201.072

Task Title: Ensure adequate shutdown margin exists with all CEAs operable, in Mode 3

Task Standard: Adequate shutdown margin is verified, using the figure method, for the stated core conditions, with all CEAs operable, in Mode 3

K/A Reference: 2.1.37 (4.3) Knowledge procedures, guidelines, or limitations associated with reactivity management.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. NEOP-301, Revision 01600
2. NEOP-23, Revision 035

JPM Setup Instructions:

1. Consumable copy of NEOP-301, Revision 01600
2. Consumable copy of NEOP-23, Revision 035

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0800 this morning Unit-2 experienced an uncomplicated reactor trip
3. T_{AVG} is stable at 532°F
4. RCS boron concentration is 1400 PPM per a grab sample obtained at 1100
5. Current time, for purposes of this JPM, is 1130
6. Core Burnup is 11,500 MWD/MTU
7. Start-up is anticipated to occur in approximately 36 hours
8. The B_{10} Correction Factor is 0.93
9. A Xenon report has yet to be provided by Reactor Engineering
10. POWERTRAX is currently unavailable
11. You are performing the duties of an extra RO

Initiating Cue:

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRS directs you to verify and document (on the attached attachment 2) that shutdown margin is adequate, using the figure method, for the present plant conditions, per NEOP-301

Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
	Locates NEOP-301, Operator Surveillance Procedure and proceeds to step 4.1	Locates NEOP-301, Operator Surveillance Procedure and proceeds to step 4.1	__	__
Evaluator Comment				
NEOP-301, Operator Surveillance Procedure, Section 4.1				
CAUTION Step 4.1.1 allowable times to verify SDM are applicable for T_{AVG} greater than or equal to 515°F with a steady or increasing soluble Boron concentration, when the SDM will be acceptable for a minimum of 4 hours under all non-accident conditions. SDM shall be verified before decreasing T_{AVG} below 515°F or reducing boron concentration, both of which will invalidate the times to verify SDM in step 4.1.1 and may lead to a loss of adequate shutdown margin.				
1.1	Determine the allowable time to verify SDM by performing Step 4.1.1.1 or Step 4.1.1.2:	Selects 4.1.1.1 based on information provided in the Cue	__	__
Evaluator Comment				
1.1.1	Reference the following table:	References the table and determines SDM must be verified within 6 hours	__	__
Evaluator Comment				
1.2	Model the trip using the XENON code (or Powertrax)	Determines the step is N/A	__	__
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
2.1	Determine the shutdown boron concentration using one of the following methods:	Selects 2.1.A based on the information provided in the Cue	—	—
Evaluator Comment				
* 2.1.A	Refer to NEOP-23, Figure 2-II.A.3	**CRITICAL STEP*** Refers to NEOP-23, Figure 2-II.A.3. **Determines required shutdown boron concentration is 1375 PPM and records on Attachment 2.**	—	—
Evaluator Comment				
2.1.B	Determine using Powertrax.	Determines the step is N/A	—	—
Evaluator Comment				
2.2	If needed, then Borate the RCS to at least the shutdown boron concentration	Determines the step is N/A	—	—
Evaluator Comment				
2.3	Perform the following within the time determines in Step 4.1.1 and at least once per 24 hours thereafter:	Verifies the current time is within the time determined in Step 4.1.1	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 2.3.A	Document the following conditions on Attachment 2, Shutdown Margin Verification. • RCS T_{AVG} is acceptable for the current operating Mode • A boron concentration sample from the RCS has been obtained • RCS boron concentration is at least the shutdown boron concentration	**CRITICAL STEP*** -Logs Sequence #: 1 -Logs Unit#: 2 -Logs Cycle #: 23 -Logs Method: Figure -Logs Reference: 2-II.A.3 -Logs Mode: 3 -Logs T_{AVG}: 532˚F -Logs Actual Burnup: 11,500 MWD/MTU -Determines and Logs CEA position: IN -Logs date/time of sample: Today at 1100 -Logs boron Sample: 1400 PPM -Logs shutdown boron conc: 1375 PPM -Determines from NEOP and **Logs SDM valid until: a time less than or equal to 24 hours from preparer time on attachment.**	—	—
Evaluator Comment				
* Att 2	Compares RCS boron concentration is equal to or greater than the required shutdown boron concentration.	**CRITICAL STEP*** **-Enters initials/date/time: as preparer (today's date/1130)**	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when the status of core shutdown margin has been determined and recorded. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: RO Admin2

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0800 this morning Unit-2 experienced an uncomplicated reactor trip
3. T_{AVG} is stable at 532°F
4. RCS boron concentration is 1400 PPM per a grab sample obtained at 1100
5. Current time, for purposes of this JPM, is 1130
6. Core Burnup is 11,500 MWD/MTU
7. Start-up is anticipated to occur in approximately 36 hours
8. The B_{10} Correction Factor is 0.93
9. A Xenon report has yet to be provided by Reactor Engineering
10. POWERTRAX is currently unavailable
11. You are performing the duties of an extra RO

Initiating Cue:

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRS directs you to verify and document (on the attached attachment 2) that shutdown margin is adequate, using the figure method, for the present plant conditions, per NEOP-301

Are there any questions? You may begin.

Attachment 2, Shutdown Margin Verification

Sequence # 3

Unit _____ Cycle _____

Method (PDIL+Bias, Figure, Basis)	Reference (NEOP Figure #, Att. and Seq. #, B09680)	Mode	T_{AVG} (°F)	Actual Burnup (MWD/MTU)	CEA Position*	Date/Time Of Sample	Boron Sample (ppm)**	Shutdown Boron Conc (ppm)	SDM Valid Until (Date/Time)	Preparer (Init/Date/Time)	SRO Review (Init/Date/Time)

* Enter IN, OUT, PDIL, or Group Withdrawn (if applicable, during STP O-029R-1(2), e.g. A, 1, etc.). Enter N/A if in Mode 6.
** During Mode 6, the Boron Sample is the minimum value of Refueling Pool or filled portion of the RCS.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-RO Admin3

Facility: Calvert Cliffs 1 & 2 **JPM Number:** RO Admin3

Alternate Path: No

Task Number: 052/061.028

Task Title: Verify SIS valve operability (operating)

Task Standard: Candidate documents the required isolations and technical specification LCO on the Examinee's Cue Sheet.

K/A Reference: 2.2.41 (3.5) Ability to obtain and interpret station electrical and mechanical drawings.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. Print 60731SH0003, Rev 0033, Operations DWG Safety Injection and Containment Spray
2. Print 60711, Rev 15, Charcoal Filter Spray System
3. Technical Specification 3.6.6, Amendment No. 326

JPM Setup Instructions:

1. Consumable copy of print 60731SH0003, Rev 0033, Operations DWG Safety Injection and Containment Spray
2. Consumable copy of print 60711, Rev 15, Charcoal Filter Spray System
3. Consumable copy of Technical Specifications

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is in Mode 3 at NOP following an uncomplicated Reactor Scram.
2. During a Containment walk through a water leak is observed on 1-CV-4150, 11 CS HDR ISOL CV that requires isolation.
3. 1-CV-4150 is not a Containment Isolation Valve.
4. You are performing the duties of an extra Control Room Operator.

Initiating Cue:

Using the above plant conditions:

1. List the normally open upstream and downstream mechanical isolation points required to be shut to isolate 1-CV-4150, 11 CS HDR ISOL CV.

_____
_____
_____
_____

2. After 1-CV-4150 is isolated, is Unit 1 in any Technical Specification LCOs (Circle one)?

YES NO

3. If applicable, list any required Technical Specification LCO(s).

_____
_____
_____
_____

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the Examinee with required prints and Technical Specifications.			
	Candidate identifies 1-CV-4150 is on print 60731SH0003	Candidate correctly locates identifies 1-CV-4150 is on print 60731SH0003	—	—
Evaluator Comment				
* 1	Candidate determines the required mechanical isolation points: 1-SI-317 1-SI-315	**CRITICAL STEP*** **Candidate determines and documents the following valves are the necessary mechanical isolation points:** **1-SI-317** **1-SI-315** May also add 1-SI-331, 1-SI-377, or 1-SI-378	—	—
Evaluator Comment				
* 2	Candidate determines if Unit-1 is in any Technical Specification LCOs.	**CRITICAL STEP*** **After isolating 1-CV-4150 a TS LCO would be applicable. Candidate circles YES.**	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 3	Candidate determines the required technical specification LCOs: 3.6.6	**CRITICAL STEP*** **Candidate determines and documents the required Technical Specification LCO: 3.6.6.A**	—	—
Evaluator Comment				

TERMINATING CUE:

This JPM is complete when candidate documents the required isolations and technical specification LCO on the Examinee's Cue Sheet.

The Examinee is expected to end the JPM.

TIME STOP: _____

Verification of Completion

Job Performance Measure Number: RO Admin3

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

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Examinee Response:

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is in Mode 3 at NOP following an uncomplicated Reactor Scram.
2. During a Containment walk through a water leak is observed on 1-CV-4150, 11 CS HDR ISOL CV that requires isolation.
3. 1-CV-4150 is not a Containment Isolation Valve.
4. You are performing the duties of an extra Control Room Operator.

Initiating Cue:

Using the above plant conditions:

1. List the normally open upstream and downstream mechanical isolation points required to be shut to isolate 1-CV-4150, 11 CS HDR ISOL CV.

_____
_____
_____
_____

2. After 1-CV-4150 is isolated, is Unit 1 in any Technical Specification LCOs (Circle one)?

YES NO

3. If applicable, list any required Technical Specification LCO(s).

_____
_____
_____
_____

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-RO Admin4

Facility: Calvert Cliffs 1 & 2 **JPM Number:** RO Admin4

Alternate Path: No

Task Number: 204.138

Task Title: Maintain situational awareness of the plant during Normal, Abnormal, Emergency and ERPIP operations.

Task Standard: This JPM is complete when the Operator has determined the required attachments, announcements, and onsite people/facilities contacted.

K/A Reference: 2.4.27 (3.4) Knowledge of “fire in the plant” procedures.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. OP-CA-108-3.0, Revision 00301, Immediate Actions

JPM Setup Instructions:

1. Consumable copy of OP-CA-108-3.0, Revision 00301, Immediate Actions

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Both Unit-1 and Unit-2 are at 100% power.
2. The control room has just received a 911 phone call about a fire in the U-1 VCT Room.
3. The caller has identified a potentially contaminated badly burned employee.
4. You are performing the duties of an extra Control Room Operator.

Initiating Cue:

The Unit Supervisor directs you to perform the following and document on the provided cue sheet:

1. Determine the required attachments from OP-CA-108-3.0, Immediate Actions, to implement.
2. Determine the required announcements, as closely as possible, to notify plant personnel per the applicable attachments from OP-CA-108-3.0. Repeating the announcement is not necessary. (The SM will handle all Emergency Classification announcements, if applicable)
3. Determine the required people/facilities that need to be contacted per the applicable attachments from OP-CA-108-3.0. (The SM will handle all Emergency Classification notifications, if applicable)
4. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the Operator with a copy of OP-CA-108-3.0, Immediate Actions			
	Review OP-CA-108-3.0, Immediate Actions	Reviews OP-CA-108-3.0, Immediate Actions	—	—
Evaluator Comment				
* 1	Determines the required attachments from OP-CA-108-3.0, Immediate Actions, to implement.	**CRITICAL STEP*** **Determines and documents that Attachment 15, Personnel Emergency, and Attachment 16, Fire in the Protected Area, ISFSI, Or MPF are required.**	—	—
Evaluator Comment				
* 2	Determine the required announcements, as closely as possible, to notify plant personnel per the applicable attachments from OP-CA-108-3.0. Repeating the announcement is not necessary.	**CRITICAL STEP*** Determines and documents the following announcements: (Critical wording is Bolded) "A personnel emergency exists. A **badly burned individual** is in the **U-1 VCT Room**. First Aid Team and **Radiation Protection Technician** Respond." "There is a **fire** in the **U-1 VCT Room**. Fire Brigade and **Radiation Protection Technician** respond."	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 3	Determines the required people/facilities that need to be contacted per the applicable attachments from OP-CA-108-3.0	**CRITICAL STEP*** Determines and documents the following people/facilities: **Site Medical** **CAS/SAS** **Calvert Memorial Hospital Emergency Room or Switchboard** Site Safety – (not critical at the time of the event, fills in paperwork afterwards) Fire and Safety Watch – will respond when any emergency announcement is made Radiation Protection Tech - will respond when announcement is made in step 2	___	___
Evaluator Comment				
TERMINATING CUE: This JPM is complete when the Operator has determined and documented the required attachments, announcements, and people/facilities contacted. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: RO Admin4

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Both Unit-1 and Unit-2 are at 100% power.
2. The control room has just received a 911 phone call about a fire in the U-1 VCT Room.
3. The caller has identified a potentially contaminated badly burned employee.
4. You are performing the duties of an extra Control Room Operator.

Initiating Cue:

The Unit Supervisor directs you to perform the following and document on the provided cue sheet:

1. Determine the required attachments from OP-CA-108-3.0, Immediate Actions, to implement.
2. Determine the required announcements, as closely as possible, to notify plant personnel per the applicable attachments from OP-CA-108-3.0. Repeating the announcement is not necessary. (The SM will handle all Emergency Classification announcements, if applicable)
3. Determine the required people/facilities that need to be contacted per the applicable attachments from OP-CA-108-3.0. (The SM will handle all Emergency Classification notifications, if applicable)
4. Are there any questions? You may begin.

1. Required attachments	1.
2. Required announcements	2.
3. Required people/facilities	3.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-SRO Admin1

Facility: Calvert Cliffs 1 & 2 **JPM Number:** SRO Admin1

Alternate Path: No

Task Number: 204.028

Task Title: Verify shift personnel are fit for duty through discussions of the fitness for duty requirements.

Task Standard:

Satisfactory task completion is indicated when the candidate successfully assesses the work hour limits and documents findings on the cue sheet.

K/A Reference: 2.1.5 (3.9) Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. LS-AA-119, Revision 13

JPM Setup Instructions:

1. Consumable copy of LS-AA-119, Revision 13, (Pages 11-17 (Section 5.1, 5.1.1, and 5.1.2)).

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. The present time/date is 0300 hours on 1/26
2. In accordance with LS-AA-119, Fatigue Management and Work Hour Limits, the Shift Manager has directed the WEC to review the availability of RO #1 to work Dayshift 1/26 for coverage for a downpower for waterbox cleaning.
3. RO #1 was on vacation for two weeks, returning to work on Monday 1/13.
4. RO #1 work history for the previous two weeks is as follows, with all hours having been in posted Licensed Reactor Operator positions.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1/13	1/14	1/15	1/16	1/17	1/18	1/19
1800-0600	1800-0600	OFF	1800-1000	1900-0600	OFF	OFF
1/20	1/21	1/22	1/23	1/24	1/25	1/26
0600-1800	0600-1800	0600-1800	0600-1800	0600-1800	0600-1800	**Request** 0600-1800

Initiating Cue:

Using the work history provided:

1. Determine whether RO #1 is able to cover the required shift.

   Circle one: Can / Cannot

2. If applicable, document all work hour limits that would be exceeded if RO #1 works Sunday 1/26.

   _____
   _____
   _____
   _____

3. Determine whether RO #1 has already violated any work hour limits.

   Circle one: Yes / No

4. If applicable, document all work hour limits that have already been exceeded.

   _____
   _____
   _____
   _____

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the Examinee with a copy of procedure LS-AA-119, Fatigue Management and Work Hour Limits, sections 5.1, 5.1.1, and 5.1.2.			
	Review work history and LS-AA-119 to determine if able to work requested shift.	Candidate reviews procedures for Work Hour limits and reviews work history provided.	—	—
Evaluator Comment				
* 1	Determines that working the requested future shift will result in exceeding work hour limits. Working the 1/26 0600-1800 shift would result in the operator exceeding 72 hours in any 7-day period. • Monday, 1/20 though Saturday, 1/25 shows 72 hours worked. • Working Sunday would result in exceeding 72 hours in the 7-day period.	**CRITICAL STEP*** **Circles "Cannot" on the cue sheet for question #1.**	—	—
Evaluator Comment				
* 2	Identifies work hour limits exceeded if RO #1 works on Sunday 1/26,	**CRITICAL STEP*** **Documents that working the requested shift would result in exceeding work hour limits: 72 hours in any 7-day period** (Working Sunday would result in exceeding 72 hours in the 7-day period).	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 3	Determines that RO #1 has already violated any work hour limits. • The break between shifts from Thursday 1/16 to Friday 1/17 was less than the required 10 hours • The hours worked Thursday 1/16 to Friday 1/17 were greater than 26 hours worked in a 48-hour period	**CRITICAL STEP*** **Circles "Yes" on the cue sheet for question #3.**	—	—
Evaluator Comment				
* 4a	Identifies work hour limits exceeded due to break length.	**CRITICAL STEP*** **Determines and documents less than a 10-hour break between 1/16 and 1/17 on the cue sheet for question #4.**	—	—
Evaluator Comment				
* 4b	Identifies work hour limits exceeded due to total work hours.	**CRITICAL STEP*** **Determines and documents greater than 26 hours worked (actual of 27 hours) in the 48-hour period over 1/16 to 1/17.**	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when the review is complete, and the cue sheet has been completed. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: SRO Admin1

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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_____

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_____

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Examinee Response:

_____

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_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. The present time/date is 0300 hours on 1/26
2. In accordance with LS-AA-119, Fatigue Management and Work Hour Limits, the Shift Manager has directed the WEC to review the availability of RO #1 to work Dayshift 1/26 for coverage for a downpower for waterbox cleaning.
3. RO #1 was on vacation for two weeks, returning to work on Monday 1/13.
4. RO #1 work history for the previous two weeks is as follows, with all hours having been in posted Licensed Reactor Operator positions.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1/13	1/14	1/15	1/16	1/17	1/18	1/19
1800-0600	1800-0600	OFF	1800-1000	1900-0600	OFF	OFF
1/20	1/21	1/22	1/23	1/24	1/25	1/26
0600-1800	0600-1800	0600-1800	0600-1800	0600-1800	0600-1800	**Request** 0600-1800

Initiating Cue:

Using the work history provided:

1. Determine whether RO #1 is able to cover the required shift.

   Circle one: Can / Cannot

2. If applicable, document all work hour limits that would be exceeded if RO #1 works Sunday 1/26.

   _____
   _____
   _____
   _____

3. Determine whether RO #1 has already violated any work hour limits.

   Circle one: Yes / No

4. If applicable, document all work hour limits that have already been exceeded.

   _____
   _____
   _____
   _____

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-SRO Admin2

Facility: Calvert Cliffs 1 & 2 **JPM Number:** SRO Admin2

Alternate Path: No

Task Number: 201.072

Task Title: Ensure adequate shutdown margin exists with all CEAs operable, in Mode 3

Task Standard: Satisfactory task completion is indicated when the candidate reviews the shutdown margin on attachment 2 and documents findings on the cue sheet.

K/A Reference: 2.1.37 (4.6) Knowledge procedures, guidelines, or limitations associated with reactivity management.

Method of Testing: Actual Performance-Classroom

Validation Time: 15 minutes

Time Critical Task: No

References and Tools Required:

1. NEOP-301, Revision 01600
2. NEOP-23, Revision 035

JPM Setup Instructions:

1. Consumable copy of NEOP-301, Revision 01600
2. Consumable copy of NEOP-23, Revision 035

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0900 this morning Unit-2 experienced an uncomplicated reactor trip
3. T_{AVG} is stable at 532°F
4. RCS boron concentration is 1225 PPM per a grab sample obtained at 1400
5. Current time, for purposes of this JPM, is 1500
6. Core Burnup is 13,500 MWD/MTU
7. Start-up is anticipated to occur in approximately 36 hours
8. POWERTRAX is currently unavailable
9. You are performing the duties of the Unit-2 CRS

Initiating Cue:

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRO has performed the required calculation, using the figure method, and has asked you to perform the SRO Review of the Shutdown Margin verification.

Are there any questions? You may begin.

1. Can Attachment 2 be signed? (Circle one)

YES NO

2. If No, List the reason(s) why.

_____

_____

_____

_____

3. What Actions, if any, are required, based on your review of the Shutdown Margin Verification worksheet?

_____

_____

_____

_____

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
	Locates NEOP-301, Operator Surveillance Procedure and proceeds to step 4.1.2.3.B	Locates NEOP-301, Operator Surveillance Procedure and proceeds to step 4.1.2.3.B	—	—
Evaluator Comment				
NEOP-301, Operator Surveillance Procedure, Section 4.1.2				
3.B	Independently verify the information in Attachment 2	Using NEOP-301 and NEOP-23	—	—
Evaluator Comment				
* 1	Conducts review of completed Attachment 2, Shutdown Margin Verification	**CRITICAL STEP*** **Circles "NO" on the cue sheet for question #1.**	—	—
Evaluator Comment				
* 2	Conducts review and documents the reasons why attachment 2 cannot be signed	**CRITICAL STEP*** **Refers to Figure 2-II.A.3 of NEOP-23. Determines required shutdown boron concentration is 1256 PPM. Notes required boron concentration listed on Att. 2 is in error (value for Mode 5 was used).**	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 3	Conducts SDM calculation using correct data and determines that SDM is not met	**CRITICAL STEP*** **Determines and documents that boration at greater than or equal to 40 gpm of borated water at or above required Shutdown Boron Concentration is required.**	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when the review is complete, and the cue sheet has been completed. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: SRO Admin2

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0900 this morning Unit-2 experienced an uncomplicated reactor trip
3. T_{AVG} is stable at 532°F
4. RCS boron concentration is 1225 PPM per a grab sample obtained at 1400
5. Current time, for purposes of this JPM, is 1500
6. Core Burnup is 13,500 MWD/MTU
7. Start-up is anticipated to occur in approximately 36 hours
8. POWERTRAX is currently unavailable
9. You are performing the duties of the Unit-2 CRS

Initiating Cue:

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRO has performed the required calculation, using the figure method, and has asked you to perform the SRO Review of the Shutdown Margin verification.

Are there any questions? You may begin.

1. Can Attachment 2 be signed? (Circle one)

YES NO

2. If No, List the reason(s) why.

_____
_____
_____
_____

3. What actions, if any, are required, based on your review of the Shutdown Margin Verification worksheet?

_____
_____
_____
_____

Attachment 2, Shutdown Margin Verification

Sequence # 1

Unit 2 Cycle 23

Method (PDIL+ BIAS, Figure, Basis)	Reference (NEOP Figure #, Att. And Seq.#, B09680)	Mode	Tavg (°F)	Actual Burnup (MWD/MTU)	CEA Position*	Date/Time Of Sample	Boron Sample (ppm)**	Shutdown Boron Conc (ppm)	SDM Valid Until (Date/Time)	Preparer (Init/Date/Time)	SRO Review (Init/Date/Time)
Figure	2.II.A.3	3	532	13,500	IN	Today @ 1400	1225	1202	Tomorrow @ 1400	$\mathcal{DFL}$ today @ 1430	

* Enter IN, OUT, or PDIL, or Group Enter N/A if in MODE 6
** During MODE 6, this Boron Grab Sample is the minimum value of Refueling Pool or filled portion of the RCS.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-SRO Admin3

Facility: Calvert Cliffs 1 & 2 **JPM Number:** SRO Admin3

Alternate Path: No

Task Number: 204.094

Task Title: Determine and apply Tech Spec requirements

Task Standard: Candidate documents the required isolations, technical specification LCO and actions, and post maintenance testing on the Examinee's Cue Sheet.

K/A Reference: 2.2.41 (3.9) Ability to obtain and interpret station electrical and mechanical drawings.

Method of Testing: Actual Performance-Classroom

Validation Time: 20 minutes

Time Critical Task: No

References and Tools Required:

1. Print 60731SH0003, Rev 0033, Operations DWG Safety Injection and Containment Spray
2. Print 60711, Rev 15, Charcoal Filter Spray System
3. Technical Specification 3.6.6, Amendment No. 326
4. MA-AA-716-012, Rev 23, Post Maintenance Testing

JPM Setup Instructions:

1. Consumable copy of print 60731SH0003, Rev 0033, Operations DWG Safety Injection and Containment Spray
2. Consumable copy of print 60711, Rev 15, Charcoal Filter Spray System
3. Consumable copy of Technical Specifications
4. Consumable copy of MA-AA-716-012, Rev 24, Post Maintenance Testing

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is in Mode 3 at NOP following an uncomplicated Reactor Scram.
2. During a Containment walk through a water leak is observed on 1-CV-4150, 11 CS HDR ISOL CV that requires isolation.
3. 1-CV-4150 is not a Containment Isolation Valve.
4. You are performing the duties of an extra Unit Supervisor.

Initiating Cue:

Using the above plant conditions:

1. List the normally open upstream and downstream mechanical isolation points required to be shut to isolate 1-CV-4150, 11 CS HDR ISOL CV.

_____
_____
_____
_____

2. After 1-CV-4150 is isolated, is Unit 1 in any Technical Specification LCOs (Circle one)?

YES NO

3. If applicable, list any required Technical Specification LCO(s).

_____
_____
_____
_____

4. If applicable, list the required action(s) and time(s) (assume RICT cannot be implemented).

_____
_____
_____
_____

5. Mechanical maintenance reports that the packing was adjusted back to previous torque to correct the water leak. What post maintenance testing is required per MA-AA-716-012?

_____
_____
_____
_____

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the Examinee with required prints and Technical Specifications.			
	Candidate identifies 1-CV-4150 is on print 60731SH0003	Candidate correctly locates identifies 1-CV-4150 is on print 60731SH0003	—	—
Evaluator Comment				
* 1	Candidate determines the required mechanical isolation points	**CRITICAL STEP*** **Candidate determines and documents the following valves are the necessary mechanical isolation points:** **1-SI-317** **1-SI-315** May also add 1-SI-331, 1-SI-377, or 1-SI-378	—	—
Evaluator Comment				
* 2	Candidate determines if Unit-1 is in any Technical Specification LCOs.	**CRITICAL STEP*** **After isolating 1-CV-4150 a TS LCO would be applicable. Candidate circles YES.**	—	—
Evaluator Comment				
* 3	Candidate determines the required technical specification LCOs	**CRITICAL STEP*** **Candidate determines and documents the required Technical Specification LCO: 3.6.6.A**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Evaluator Comment				
* 4	Candidate determines the required technical specification LCO actions and times	**CRITICAL STEP*** **Candidate determines and documents the required Technical Specification LCO actions and times:** **Restore containment spray train to operable status in 72 hours.**	—	—
Evaluator Comment				
* 5	Candidate determines the required post maintenance testing	**CRITICAL STEP*** **Candidate determines and documents the required Post Maintenance Testing:** **Functional Stroke Test** **Stroke Time Test**	—	—
Evaluator Comment				
TERMINATING CUE: This JPM is complete when candidate documents the required isolations, technical specification LCO and actions, and post maintenance testing on the Examinee's Cue Sheet. The Examinee is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: SRO Admin3

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

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Examinee Response:

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Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is in Mode 3 at NOP following an uncomplicated Reactor Scram.
2. During a Containment walk through a water leak is observed on 1-CV-4150, 11 CS HDR ISOL CV that requires isolation.
3. 1-CV-4150 is not a Containment Isolation Valve.
4. You are performing the duties of an extra Unit Supervisor.

Initiating Cue:

Using the above plant conditions:

1. List the normally open upstream and downstream mechanical isolation points required to be shut to isolate 1-CV-4150, 11 CS HDR ISOL CV.

_____
_____
_____
_____

2. After 1-CV-4150 is isolated, is Unit 1 in any Technical Specification LCOs (Circle one)?

YES NO

3. If applicable, list any required Technical Specification LCO(s).

_____
_____
_____
_____

4. If applicable, list the required action(s) and time(s) (assume RICT cannot be implemented).

_____
_____
_____
_____

5. Mechanical maintenance reports that the packing was adjusted back to previous torque to correct the water leak. What post maintenance testing is required per MA-AA-716-012?

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-SRO Admin4

Facility: Calvert Cliffs 1 & 2 **JPM Number:** SRO Admin4

Alternate Path: No

Task Number: 079.009

Task Title: Administrative actions for RMS inoperability

Task Standard: Candidate documents that TS are not applicable and documents the required actions from CY-CA-170-301 (ODCM) and OP-CA-TRM-100 on the Examinee's Cue Sheet.

K/A Reference: 2.3.15 (3.1) Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Method of Testing: Actual Performance-Classroom

Validation Time: 20 minutes

Time Critical Task: No

References and Tools Required:

1. OI-35, Revision 04501, Radiation Monitoring System
2. CY-CA-170-301, Revision 3, Offsite Does Calculation Manual (ODCM)
3. OP-CA-TRM-100, Revision 00300, Technical Requirements Manual (TRM)
4. RP-CA-300-1004, Revision 1, Response to Unavailable Installed Radiation Monitors

JPM Setup Instructions:

1. Consumable copy of OI-35, Radiation Monitoring System
2. Consumable copy of OI-35 pages 67-68.
3. Consumable copy of CY-CA-170-301, ODCM
4. Consumable copy of OP-CA-TRM-100, Technical Requirements Manual (TRM)
5. Consumable copy of RP-CA-300-1004, Response to Unavailable Installed Radiation Monitors – have available but do not give to students unless requested.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit 1 is at 100% power.
2. The U-1 Main Vent RMS is out of service for I&C Maintenance.
3. The "U-1 Wide Range Noble Gas Mon" Alarm window J-08 on 1C10 has alarmed.
4. The CRO reports that the U-1 Wide Range Noble Gas Monitor has failed.
5. You are performing the duties of the Unit-1 Unit Supervisor.

Initiating Cue:

1. The Shift Manager has directed you to determine the actions required per OI-35 Section 6.10 steps 1a-1d and document on this cue sheet.
2. Are there any questions? You may begin.

Technical Specifications Applicability	Circle one: YES NO
	If Yes, List Technical Specification and required actions.
TRM Applicability	Circle one: YES NO
	If Yes, List TRM and required actions.
ODCM Applicability	Circle one: YES NO
	If Yes, List ODCM and required actions.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
CUE	Provide the Examinee a copy of OI-35, Radiation Monitoring System, Section 6.10.			
	Review OI-35 Section 6.10.	Reviews OI-35 Section 6.10.	__	__
Evaluator Comment				
NOTE Area RMS when de-energized with alarm locally.				
1	When radiation monitoring equipment is declared out of service or is to be taken out of service for maintenance or testing. Then perform the following:	Determines below steps are applicable	—	—
Evaluator Comment				
NOTE Containment entry is necessary for air samples when BOTH Containment RMS Pumps are OOS, due to the inability of portable equipment to obtain a representative sample.				
1a	Check Table (1) for applicability	Notes Table (1) page 180 is applicable	—	—
Evaluator Comment				
* 1b	Check Technical Specifications for applicability	**CRITICAL STEP*** **Determines that no Technical Specifications apply. Circles NO on the cue sheet.**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Evaluator Comment				
CUE	If asked, provide candidate a copy of RP-CA-300-1004.			
* 1c	Check TRM for applicability	**CRITICAL STEP*** **Determines that the TRM is applicable. Circles YES on the Examinee's Cue Sheet.** **TRM: 15.3.1.B** **Actions:** **Initiate the preplanned alternate method of monitoring the appropriate parameter within 72 hours.** **Restore the inoperable channel to operable status within 7 days** or perform 15.0.3 evaluation. Inform the Shift Chem Tech and RP Tech to pursue the pre-planned alternate method of monitoring the appropriate parameter per RP-CA-300-1004.	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
* 1d	Check ODCM for applicability	**CRITICAL STEP*** **Determines that ODCM is applicable. Circles YES on the Examinee's Cue Sheet.** **ODCM: 3.3.3.9** **Actions: Action 37.** **With the number of channels Operable less than required by the minimum channels Operable requirement, effluent releases via this pathway may continue provided either (1) grab samples are taken and analyzed for gross activity at least once per 24 hours, or (2) an equivalent monitor is provided.** Inform Shift RP Tech to use Alt Pre-planned method of monitoring PER RP-CA-300-1004.	—	—
Evaluator Comment				

TERMINATING CUE:

This JPM is complete when the Candidate documents that TS are not applicable and documents the required actions from CY-CA-170-301 (ODCM) and OP-CA-TRM-100 on the Examinee's Cue Sheet.

The Examinee is expected to end the JPM.

TIME STOP: _____

Verification of Completion

Job Performance Measure Number: SRO Admin4

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

_____

_____

_____

_____

_____

Examinee Response:

_____

_____

_____

_____

_____

_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit 1 is at 100% power.
2. The U-1 Main Vent RMS is out of service for I&C Maintenance.
3. The "U-1 Wide Range Noble Gas Mon" Alarm window J-08 on 1C10 has alarmed.
4. The CRO reports that the U-1 Wide Range Noble Gas Monitor has failed.
5. You are performing the duties of the Unit-1 Unit Supervisor.

Initiating Cue:

1. The Shift Manager has directed you to determine the actions required per OI-35 Section 6.10 steps 1a-1d and document on this cue sheet.
2. Are there any questions? You may begin.

Technical Specifications Applicability	Circle one: YES NO
	If Yes, List Technical Specification and required actions.
TRM Applicability	Circle one: YES NO
	If Yes, List TRM and required actions.
ODCM Applicability	Circle one: YES NO
	If Yes, List ODCM and required actions.

Examinee: _____

Calvert Cliffs
Nuclear Power Plant

2020 NRC
Initial Licensed
Operator Exam

JPM-SRO Admin5

Facility: Calvert Cliffs 1 & 2 **JPM Number:** SRO Admin5

Alternate Path: No

Task Number: 204.097

Task Title: Determine appropriate emergency response actions per the Emergency Plan while maintaining an overview of plant conditions.

Task Standard: The Operator will implement the Shift Emergency Director Checklist and determine the EAL classification within the Time Critical limit.

K/A Reference: 2.4.41 (4.6) Knowledge of emergency action level thresholds and classifications.

Method of Testing: Actual Performance-Classroom

Validation Time: 20 minutes

Time Critical Task: Yes

References and Tools Required:

1. EP-CE-111 Rev 008 Emergency Classification and PAR.
2. EP-AA-112-F-57 Rev D Emergency PA Announcements.
3. EP-AA-112-100-F-50 Rev J Shift Emergency Director Checklist.
4. EP-AA-112-100-F-57 Rev H ERONS Notification Details.
5. EP-AA-113-F-53 Rev B Onsite Protective Measures Flowchart.
6. EP-CE-114-100 Rev 08 Emergency Notifications.
7. EP-CE-114-100-F-01 Rev E CCNPP Initial Notification Form.
8. EP-AA-1011 Addendum 3, Rev 5 CCNPP Emergency Action Levels
9. Technical Specifications

JPM Setup Instructions:

1. Ensure the references and tools required are available to the operator (Shift Manager Director Binder and a copy of the Technical Specifications.

Directions to the Examinee:

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

Hand Examinee's Cue Sheet to Examinee at this time.

Initial Conditions:

1. Unit-1 is operating at 100% power MOC.
2. Chemistry sampled the Reactor Coolant System and has confirmed that RCS Coolant Activity is 180 µCi/gm Dose Equivalent I-131.
3. There are no changes to and no rise on the indicating trends of all effluent radiation monitors.
4. You are performing the duties of the Shift Manager.
5. **This JPM is Time Critical.**

Initiating Cue:

1. You have been called to the Control Room to review the Emergency Action Levels against the current plant conditions and implement EP-AA-112-100-F-50, Shift Emergency Director Checklist, as necessary.
2. Are there any questions? You may begin.

STEP	ELEMENT	STANDARD	SAT	UNSAT
TIME START: _____				
EVALUATOR NOTE 1. Steps from the Shift Manager's checklist may be performed in any order other than listed or they may be omitted if not applicable. The steps of this JPM follow the SM checklist in numerical order. 2. The "EAL CLOCK" starts after candidate reads "Initial Conditions" CUE sheet.				
EAL CLOCK TIME START: _____				
EP-AA-112-100-F-50 SHIFT EMERGENCY DIRECTOR CHECKLIST				
Step	Identify and locate Shift Emergency Director Checklist, EP-AA-112-100-F-50.	Locates copy of Shift Emergency Director Checklist EP-AA-112-100-F-50.	__	__
Evaluator Comment				
1	INITIAL ACTIONS	Determines step is applicable.	__	__
Evaluator Comment				
CUE	**WHEN** requested, acknowledge that the Shift Communicator and Dose Assessor are available in the Control Room.			
1.1	CALL or DIRECT an available individual to call the Shift Communicator(s) and Shift Dose Assessor(s) to the Control Room.	Contacts Shift Communicator(s) and Shift Dose Assessor(s) to report to Control Room.	—	—
Evaluator Comment				
1.2	If the event is classified as an UNUSUAL EVENT, then PERFORM the following:	Determines step is applicable.	__	__

STEP	ELEMENT	STANDARD	SAT	UNSAT
Evaluator Comment				
* 1.2.A	RECORD the EAL and declaration time.	**CRITICAL STEP*** **Writes down RU3 and the time declared.**	—	—
Evaluator Comment				
* 1.2.B	ANNOUNCE the event classification, possible escalation paths, and declaration time to the Control Room staff.	**CRITICAL STEP*** **Announces declaration of an UNUSUAL EVENT** per RU3 at (time declared) for (the reason) and assumes role of Shift Emergency Director. Upgrade Criteria is the following … **Time declared _____ minus EAL Clock Start Time _____ = ≤ 15 minutes**	—	—
Evaluator Comment				
1.2.C	If the classification is for a Security Event, then GO to Step 4.1 Security Related Events.	Determines step is N/A.	—	—
Evaluator Comment				
CUE	If operator elects to perform PA Announcements, inform operator the Unit-2 Unit Supervisor will implement PA announcements, using form EP-AA-112-F-57, Emergency PA Announcement, as necessary.			

STEP	ELEMENT	STANDARD	SAT	UNSAT
1.2.D	**SELECT** the Emergency Public Address Announcements from the form **and DIRECT** performance of the public address announcement within 15 minutes of event classification using EP-AA-112-F-57.	Operator will not perform PA announcements per above CUE.	—	—
Evaluator Comment				
* 1.2.E	DIRECT activation of the ERO using EP-AA-112-100-F-57.	**CRITICAL STEP*** Selects ERONS notification details form. **Circles "Calvert Cliffs" and "Unusual Event"** Directs Shift Communicator to Only Notify ERO.	—	—
Evaluator Comment				
1.2.G NOTE	If a higher classification is made prior to transmitting an event notification, the notification for the higher classification can supersede the previous event notification, provided that it can be performed within the 15 minute timeframe of the previous Event. If the notification of a higher classification cannot be performed within the 15 minute timeframe of the previous event, the previous event notification is required within its 15 minute timeframe, and the subsequent event notification is required within its 15 minute timeframe.			
1.2.G	DIRECT performance of State/Local notifications within 15 minutes of the event classification as required per the Notifications procedure.	Fills out Initial Notification Form as shown in the following steps, and direct Shift Communicator to transmit.	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
EP-CE-114-100-F-01 INITIAL NOTIFICATION FORM				
A	Completes items 1 through 7	Complete items 1 through 7 as follows:	—	—
Evaluator Comment				
* A.1	Drill or Actual Event:	**CRITICAL STEP*** **Checks "is a drill"**	—	—
Evaluator Comment				
* A.2	Facility:	**CRITICAL STEP*** **Checks "Unit - 1"**	—	—
Evaluator Comment				
* A.3	Classification:	**CRITICAL STEP*** **Checks "Unusual Event"**	—	—
Evaluator Comment				
* A.4	EAL Number:	**CRITICAL STEP*** **Enters "RU3"**	—	—
Evaluator Comment				
* A.5	Classification Declared at:	**CRITICAL STEP*** **Time entered is time UE declared, not current time. Date is current date.**	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT
Evaluator Comment				
* A.6	Radiological Release Status:	**CRITICAL STEP*** **Checks box for "A.6.a", "NO radiological release in-progress"**	—	—
Evaluator Comment				
* A.7	Protective Action Recommendation:	**CRITICAL STEP*** **Checks box for "A.7.a", "None"**	—	—
Evaluator Comment				
* Step	Shift ED/Corporate Name:	**CRITICAL STEP*** **Prints name and signs form**	—	—
Evaluator Comment				
* Step	PROVIDE completed form to Shift Communicator and DIRECT him/her to notify State and Local.	**CRITICAL STEP*** Hands completed form to Shift Communicator and directs to notify State and Local agencies. **Time to Shift Communicator _____ minus time EAL declared _____ = _____ (≤ 15 minutes)**	—	—
Evaluator Comment				

STEP	ELEMENT	STANDARD	SAT	UNSAT
TERMINATING CUE: This JPM is complete when an EAL classification is determined based on given plant conditions, the initial notification form is completed and the CR Communicator has been requested to recall the ERO and to notify offsite agencies. No further actions are required. The evaluator is expected to end the JPM.				
TIME STOP: _____				

Verification of Completion

Job Performance Measure Number: SRO Admin5

Examinee: _____

NRC Examiner: _____

Date Performed: _____

Facility Evaluator: _____

Number of Attempts: _____

Time to Complete: _____

Follow up Question(s):

_____

_____

_____

_____

_____

_____

Examinee Response:

_____

_____

_____

_____

_____

_____

Result: SATISFACTORY _____ UNSATISFACTORY _____

Examiner's Signature and Date:

_____

EXAMINEE'S CUE SHEET

Initial Conditions:

1. Unit-1 is operating at 100% power MOC.
2. Chemistry sampled the Reactor Coolant System and has confirmed that RCS Coolant Activity is 180 µCi/gm Dose Equivalent I-131.
3. There are no changes to and no rise on the indicating trends of all effluent radiation monitors.
4. You are performing the duties of the Shift Manager.
5. **This JPM is Time Critical.**

Initiating Cue:

1. You have been called to the Control Room to review the Emergency Action Levels against the current plant conditions and implement EP-AA-112-100-F-50, Shift Emergency Director Checklist, as necessary.
2. Are there any questions? You may begin.