Facility: ANO-2 Date of Examination: 4/22/2019

Examination Level: RO ☒ SRO ☐ Operating Test Number: 2019-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A1. Conduct of Operations 2.1.25 RO (3.9)	R, N	Determine flow rate using 2103.011 Draining the Reactor Coolant System Attachment K, RCS level vs RWT level. A2JPM-NRC-ADMIN-RCS
A2. Conduct of Operations 2.1.23 RO (4.3)	R, D, P	Determine time to start CNTMT evacuation and closure A2JPM-NRC-ADMIN-CNTMT2
A3. Equipment Control 2.2.23 RO (3.1)	R, M	Determine any limits for CEA positions using the COLR ANO-2-JPM-NRC-ADMIN-PDIL
A4. Radiation Control 2.3.7 RO (3.5)	R, M	Review the RWP/Survey Maps and determine RWP limits, and Dose rate work location. A2JPM-NRC-ADMIN-RWP4
Emergency Plan		

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1, randomly selected)

Facility: ANO-2 Date of Examination: 4/22/2019

Examination Level: RO ☐ SRO ☒ Operating Test Number: 2019-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A5. Conduct of Operations 2.1.5 SRO (3.9)	R, M	Fatigue rule calculation. ANO-2-JPM-NRC-ADMIN-WORK2
A6. Conduct of Operations 2.1.25 SRO (4.2)	R, P	Verify RPS trip set point determination for inoperable MSSV ANO-2-JPM-NRC-MSSVINOP
A7. Equipment Control 2.2.37 SRO (4.6)	R, M	Determine operability of a safety related system. ANO-2-JPM-NRC-EFWTS2
A8. Radiation Control 2.3.6 SRO (3.8)	R, D	Review and approve Containment purge gaseous release ANO-2-JPM-NRC-ADMIN-PURGE
A9. Emergency Plan 2.4.41 SRO (4.6)	R, M	Classify an event, Time critical ANO-2-JPM-NRC-EAL16

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1, randomly selected)

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 001 **DATE:** _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine flow rate using 2103.011 Draining the Reactor Coolant System Attachment K, RCS Draindown Graph.

JTA#: ANO2-RO-EOPAOP-OFFNORM-186

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.9 **SRO:** 4.2 **KA REFERENCE:** 2.1.25

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** _____

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** _____ **Classroom:** Perform

POSITION EVALUATED: **RO:** X **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **Classroom:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): 2103.011 Draining the Reactor Coolant System Attachment K, RCS Draindown Graph.

EXAMINEE'S NAME: _____ **Badge #:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time	Stop Time	Total Time
_____	_____	_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured.

Shutdown Cooling is in service.

RCS draining from Head removal level to 24" above the hot leg is in progress to a Hold up tank.

Nozzle Dams are NOT installed.

SIT Outlet valves are closed

Time 0700 conditions are:

- RCS Level = 160"
- Holdup Tank level = 18%

Time 0800 conditions are:

- RCS Level = 65"
- Holdup Tank level = 25%

TASK STANDARD:

Determined Gallons Drained between 2800 and 3200 gallons and Drain Rate between 46.67 to 53.33 GPM.

Determined that the Online Holdup Tank can be used for the complete drain to 24"

TASK PERFORMANCE AIDS:

2103.011 Draining the Reactor Coolant System Attachment K, RCS Draindown Graph.

Calculator

SIMULATOR SETUP:

NA

EXAMINER'S NOTES:

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to determine Gallons Drained, and Average Drain Rate using 2103.011 Draining the Reactor Coolant System, Attachment K RCS Draindown Graph.

To complete the RCS drain to 24", Can the current Holdup tank **HOLD** the entire volume of the RCS drain **OR** will another Holdup tank have to be placed in service to complete the drain?

Start Time: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 1.1) (Step 1.1.1)	To obtain gallons drained, **PERFORM** the following: **DRAW** vertical lines through initial and final RCS Levels to intersect horizontal axis and tank curve.	Applicant drew lines on RCS levels to determine amount of level change in the first hour. **Examiner Note: Applicant may also draw lines on Holdup tank levels to determine amount of level change.**	N/A SAT UNSAT
(C)	2. (Step 1.1.2)	**SUBTRACT** initial value from final value on horizontal axis.	Applicant subtracts values from horizontal axis and determines gallons drained between 2800 and 3200.	N/A SAT UNSAT
(C)	3.	Determine drain rate	Applicant determines number of minutes draining by performing the following: 1 hours X 60 min/hr = 60 min. Determine drain rate by performing the following: 3000 gallons / 60 min = 50 gpm. Acceptable range = 46.67 to 53.33 GPM.	N/A SAT UNSAT
	4. (Step 1.1) (Step 1.1.1)	To obtain gallons drained, **PERFORM** the following: **DRAW** vertical lines through initial and final RCS Levels to intersect horizontal axis and tank curve.	Applicant drew lines on RCS levels to determine amount of level change to complete the RCS drain to 24". **Examiner Note: Level change in gallons is ~ 32,000 gallons**	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	5. (Step 1.2) (Step 1.2.1)	To obtain expected RWT or 2T-12 level change, **PERFORM** the following: **DRAW** horizontal lines from points on tank curve to right axis.	Applicant drew lines from Holdup tank initial level (18% or 8000 gallons) to tank level axis and drew point from total drain volume (8000 + 32000 = 40000) to tank axis 90%.	N/A SAT UNSAT
(C)	6. (Att. K page 4 and 2104.014)	Determine if the final level for the online holdup tank will exceed the tank capacity.	Applicant determines that the online holdup tank can be used for the entire drain evolution. **Examiner Note: The final tank level should be ~ 90%. The applicant may also refer to OP-2104.014 setpoints pg. 10 that states the high level alarm for Holdup tanks is > 94.5%.**	N/A SAT UNSAT
END				

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured.

Shutdown Cooling is in service.

RCS draining from Head removal level to 24" above the hot leg is in progress to a Hold up tank.

Nozzle Dams are NOT installed.

SIT Outlet valves are closed

Time 0700 conditions are:

- RCS Level = 160"
- Holdup Tank level = 18%

Time 0800 conditions are:

- RCS Level = 65"
- Holdup Tank level = 25%

INITIATING CUE:

The SM/CRS directs you to determine Gallons Drained, **AND** Average Drain Rate using 2103.011 Draining the Reactor Coolant System, Attachment K RCS Draindown Graph at 0800.

Gallons Drained: _____2800 to 3200_____ Gallons

Average Drain Rate (Average letdown flow): _____46.67 to 53.33_____ GPM

To complete the RCS drain to 24", Can the current Holdup tank **HOLD** the entire volume of the RCS drain **OR** will another Holdup tank have to be placed in service to complete the drain?

CAN USE CURRENT HOLDUP TANK for entire drain, **OR MUST PLACE ANOTHER TANK** in-service to complete drain:___Can use current Holdup tank for entire drain_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured.

Shutdown Cooling is in service.

RCS draining from Head removal level to 24" above the hot leg is in progress to a Hold up tank.

Nozzle Dams are NOT installed.

SIT Outlet valves are closed

Time 0700 conditions are:

- RCS Level = 160"
- Holdup Tank level = 18%

Time 0800 conditions are:

- RCS Level = 65"
- Holdup Tank level = 25%

INITIATING CUE:

The SM/CRS directs you to determine Gallons Drained, **AND** Average Drain Rate using 2103.011 Draining the Reactor Coolant System, Attachment K RCS Draindown Graph.

Gallons Drained: _____ Gallons

Average Drain Rate (Average letdown flow):_____ GPM

To complete the RCS drain to 24", Can the current Holdup tank **HOLD** the entire volume of the RCS drain **OR** will another Holdup tank have to be placed in service to complete the drain?

CAN USE CURRENT HOLDUP TANK for entire drain, **OR MUST PLACE ANOTHER TANK** inservice to complete
drain:_____

NAME:_____ START:_____ STOP: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 004 **DATE:** _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine time to start CNTMT evacuation and closure

JTA#: ANO2-RO-EOPAOP-OFFNORM-186

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 4.3 **SRO:** 4.4 **KA REFERENCE:** 2.1.23

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** _____

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** _____ **Classroom:** Perform

POSITION EVALUATED: **RO:** X **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **Classroom:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 10 Minutes

REFERENCE(S): OP-2202.010, Standard Attachment 32, Containment Evacuation Checklist

EXAMINEE'S NAME: _____ **Badge #:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured and not available.

Shutdown Cooling was lost at 0605 today.

CET's and RVLMS ATS are operable.

RCS conditions @ 0605 when SDC was lost:

- RCS CET temperature is 172 ^{0}F
- RCS pressure is 240 psia
- PZR level is 41%
- RCS heatup rate is 4.33 ^{0}F per minute.

TASK STANDARD:

Determined Saturation temperature the RCS pressure to be between 397 and 397.405 ^{0}F

Determined time to boil to be between 51.96 to 52.15 minutes.

Determined time to start containment evacuation between 0626 and 0627.1

TASK PERFORMANCE AIDS:

OP 2202.010 Standard Attachments, Attachment 32, Containment Evacuation Checklist.

Steam tables.

SIMULATOR SETUP:

NA

EXAMINER'S NOTES:

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to determine time to start CNTMT evacuation and closure using OP 2202.010, Standard Attachment 32, by performing step 2.

Start Time: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
Procedure Note: **CETs and ATS will NOT be operable with Reactor Vessel Head removed.**				
	1. (Step 2.A)	**DETERMINE** time to start CNTMT evacuation and closure as follows: A. **IF** RCS in Lowered Inventory **AND** CETs **NOT** available, **THEN GO TO** Step 4.B of this Attachment and **INITIATE** CNTMT evacuation and closure.	Examinee determined Step is not applicable.	N/A SAT UNSAT
	2. (Step 2.B.1)	**IF** CETs or RVLMS ATS operable, **THEN DETERMINE** time to boiling as follows: 1) **DETERMINE** and **RECORD** RCS heatup rate. _____ ^{0}F/min heatup rate	Examinee documented the heatup rate given in the initial conditions. (4.33 ^{0}F/min)	N/A SAT UNSAT
(C)	3. (Step 2.B.2)	**DETERMINE** and **RECORD** saturation temperature using steam tables and present RCS pressure. _____ ^{0}F saturation temperature (T_{SAT})	Using the steam tables and current RCS pressure Examinee determined that the staturation temperature for 240 psia is between 397^{0}F and 397.405 ^{0}F	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4. (Step 2.B.3)	**CALCULATE** for time to boiling: {TSAT} - {RCS temp} _____ = time to boiling {t3} {heatup rate} { F} - { F} = ____ minutes { F/min}	Examinee calculated the time to boiling to be between 51.96 to 52.15 minutes	N/A SAT UNSAT
	5. (Step 2.B.4)	**RECORD** time to boil (t3) in step 2.E.	Examinee recorded time calculated in step 2.B.3 in step 2.E.	N/A SAT UNSAT
	6. (Step 2.C)	**RECORD** time SDC was lost {t1}.	Examinee recorded time from initial conditions in step 2.E.	N/A SAT UNSAT
	7. (Step 2.D)	**IF** time to boiling can **NOT** be calculated, **THEN RECORD** time to boil (t3) from Control Room logs in Step 2.E.	Examinee determined step is not applicable.	N/A SAT UNSAT
(C)	8. (Step 2.E)	**CALCULATE** time to start CNTMT evacuation and closure as follows: { t1 } + [{ t3 } - 30 minutes] = { time to start Step 5 } _____ + [_____ - 30 minutes] = __ .	Examinee calculated to time to start CNTMT evacuation and closure to be between 0626 and 0627.1	N/A SAT UNSAT
END				

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured and not available.

Shutdown Cooling was lost at 0605.

CET's and RVLMS ATS are operable.

RCS conditions @ 0605 when SDC was lost:

- RCS temperature = 172 ^{0}F
- RCS pressure is 240 psia
- PZR level is 41%
- RCS heatup rate is 4.33 ^{0}F per minute.

INITIATING CUE:

The SM/CRS directs you to determine time to **START** CNTMT evacuation and closure using OP 2202.010, Standard Attachment 32, by performing step 2.

Time to **START** evacuation and closure:_____0626 to 0627.1_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

Plant is in Mode 5 in preps for a refueling outage.

RCPs are secured and not available.

Shutdown Cooling was lost at 0605.

CET's and RVLMS ATS are operable.

RCS conditions @ 0605 when SDC was lost:

- RCS temperature = 172 ^{0}F
- RCS pressure is 240 psia
- PZR level is 41%
- RCS heatup rate is 4.33 ^{0}F per minute.

INITIATING CUE:

The SM/CRS directs you to determine time to **START** CNTMT evacuation and closure using OP 2202.010, Standard Attachment 32, by performing step 2.

Time to **START** evacuation and closure: _____

NAME:_____ START:_____ STOP: _____

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 007 DATE: _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine limits for CEA positions using the COLR PDIL

JTA#: ANO2-RO-OPROC-NORM-62

KA VALUE RO: 3.1 SRO: 4.6 KA REFERENCE: 2.2.23

APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____

TASK LOCATION: INSIDE CR: _____ OUTSIDE CR: _____ BOTH: X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: _____ CLASSROOM X

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ CLASSROOM: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): OP-2102.004, Unit 2 Tech Specs, and Unit 2 COLR

EXAMINEE'S NAME: _____ Logon ID: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS

- Group 6 CEAs were inserted between Long-Term Steady State Insertion Limit and Transient Insertion Limit for a total of .5 EFPD from January 1st to January 10th.
- The plant has been at 100% power since January 10th of this year with CEAs at the program insertion limit
- The following conditions were established on 4-15-19 at 0600 which was 250 EFPD:
    - Plant power was lowered to 70% power due to 'A' MFWP outage for bearing replacement
    - Group P CEAs are inserted to 140" withdrawn
    - Group 6 CEAs are being used for ASI control and are 80" withdrawn
    - COLSS ASI is -.07
    - #1 CEAC is inoperable for Surveillance testing
    - #2 CEAC is operable

TASK STANDARD:

Determined that group 6 CEAs are inserted into the long term steady state insertion limits (LTSSIL)
Determined that group P CEAs are not inserted into any limits.
Calculated group 6 CEAs were in LTSSIL for 2.2 to 2.3 EFPD in the last 30 EFPD.
Calculated group 6 CEAs were in LTSSIL for 2.7 to 2.8 EFPD in the Calendar year.

TASK PERFORMANCE AIDS:

OP-2102.004, Unit 2 Tech Specs, and Unit 2 COLR

SIMULATOR SETUP:

N/A

EXAMINER NOTES:

None.

JOB PERFORMANCE MEASURE

Examiner Note: Give out CUE #2 after Cue #1 is complete.

INITIATING CUE #1:

SM/CRS directs determine applicable CEA insertion limits (if any) for Group 6 and Group P using Tech Specs and the COLR.

INITIATING CUE #2:

On 4-18-19 at 1200 CEA were full withdrawn for power escalation.
SM/CRS directs complete OP-2102.004A for the conditions stated above

START TIME: _____

PERFORMANCE CHECKLIST			**STANDARDS**	(Circle One)
(C)	1.	Using cycle 27 COLR figure 3 determines if Group 6 CEA's are inserted limits of operation.	Examinee correctly derived from graph based on given values that Group 6 CEAs are inserted into the long term steady state insertion limits (LTSSIL).	N/A SAT UNSAT
(C)	2.	Using cycle 27 COLR figure 3 determines if Group P CEA's are inserted limits of operation.	Examinee correctly derived from graph based on given values that Group P CEAs are not inserted into any insertion limits.	N/A SAT UNSAT
EXAMINER'S CUE: If asked by the applicant when CEA group 6 was above the LTSSIL, THEN answer "All applicable CEAs went above their applicable insertion limits at 1200 on 4-18-19."				
(C)	3.	Using OP-2102.004 Calculates EFPD CEA were inserted into the LTSSIL	Examinee determines the LTSSIL have been entered for 78 hours (3.25 days) @ 70% power which equals 2.275 EFPD. Acceptable band 2.2 to 2.3 EFPD.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	4. (Step 1)	**ENTER** time between Long-Term Steady State Insertion Limit and Transient Insertion Limit:	Examinee logged the following for LTSSIL • Entered EFPD • Exit EFPD • Total EFPD • Previous Occurrences • Enter Time and date • Exit time and date. See Key for acceptable answers.	N/A SAT UNSAT
(C)	5. (Step 2)	**CALCULATE** Total EFPD Last 30 EFPD as follows:	Examinee calculated total EFPD for last 30 EFPD to be 2.2 to 2.3.	N/A SAT UNSAT
(C)	6. (Step 3)	**CALCULATE** Total EFPD Calendar Year as follows:	Examinee calculated total EFPD for last calendar year to be 2.7 to 2.8.	N/A SAT UNSAT
	7. (Step 4)	**ENTER** time between Short Term Steady State Insertion Limit and Transient Insertion Limit:	Examinee determined Step 4 is NA due to not being inserted into the STSSIL.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

Examiner Note: Give out CUE #2 after Cue #1 is complete.

INITIAL CONDITIONS:

- Group 6 CEAs were inserted between Long-Term Steady State Insertion Limit and Transient Insertion Limit for a total of .5 EFPD from January 1st to January 10th.
- The plant has been at 100% power since January 10th of this year with CEAs at the program insertion limit
- The following conditions were established on 4-15-19 at 0600 which was 250 EFPD:
    - Plant power was lowered to 70% power due to 'A' MFWP outage for bearing replacement
    - Group P CEAs are inserted to 140" withdrawn
    - Group 6 CEAs are being used for ASI control and are 80" withdrawn
    - COLSS ASI is -.07
    - #1 CEAC is inoperable for Surveillance testing
    - #2 CEAC is operable

INITIATING CUE #1:

SM/CRS directs determine applicable CEA insertion limits (if any) for Group 6 and Group P using Tech Specs **AND** the COLR.

Group 6 CEA insertion limits applicable: (Circle One or More of the following)

(LTSSIL) / STSSIL / Transient Insertion limit / No limits

Group P CEA insertion limits applicable: (Circle One or More of the following)

LTSSIL / STSSIL / Transient Insertion limit / (No limits)

INITIATING CUE #2:

On 4-18-19 at 1200 CEAs were fully withdrawn for power escalation.
SM/CRS directs complete OP-2102.004A for the conditions stated above.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Group 6 CEAs were inserted between Long-Term Steady State Insertion Limit and Transient Insertion Limit for a total of .5 EFPD from January 1st to January 10th.
- The plant has been at 100% power since January 10th of this year with CEAs at the program insertion limit
- The following conditions were established on 4-15-19 at 0600 which was 250 EFPD:
    - Plant power was lowered to 70% power due to 'A' MFWP outage for bearing replacement
    - Group P CEAs are inserted to 140" withdrawn
    - Group 6 CEAs are being used for ASI control and are 80" withdrawn
    - COLSS ASI is -.07
    - #1 CEAC is inoperable for Surveillance testing
    - #2 CEAC is operable

INITIATING CUE #1:

SM/CRS directs determine applicable CEA insertion limits (if any) for Group 6 and Group P using Tech Specs **AND** the COLR.

Group 6 CEA insertion limits applicable: (Circle One or More of the following)

LTSSIL / STSSIL / Transient Insertion limit / No limits

Group P CEA insertion limits applicable: (Circle One or More of the following)

LTSSIL / STSSIL / Transient Insertion limit / No limits

NAME:_____ START TIME:_____

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Group 6 CEAs were inserted between Long-Term Steady State Insertion Limit and Transient Insertion Limit for a total of .5 EFPD from January 1st to January 10th.
- The plant has been at 100% power since January 10th of this year with CEAs at the program insertion limit
- The following conditions were established on 4-15-19 at 0600 which was 250 EFPD:
    - Plant power was lowered to 70% power due to 'A' MFWP outage for bearing replacement
    - Group P CEAs are inserted to 140" withdrawn
    - Group 6 CEAs are being used for ASI control and are 80" withdrawn
    - COLSS ASI is -.07
    - #1 CEAC is inoperable for Surveillance testing
    - #2 CEAC is operable

INITIATING CUE #2:

On 4-18-19 at 1200 CEAs were fully withdrawn for power escalation.
SM/CRS directs complete OP-2102.004A for the conditions stated above.

NAME:_____ STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 005 **DATE:** _____

SYSTEM/DUTY AREA: Radiation Control

TASK: Review RWP and apply RWP for evolution.

JTA#: _____

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.5 **SRO:** 3.6 **KA REFERENCE:** 2.3.7

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** _____

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** _____ **Classroom:** Perform

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **Classroom:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 25 Minutes

REFERENCE(S): EOP Standard Attachment 31 SDC Pump Venting; RWP 2019 2002 Operations Activities Unit 2; Survey Maps

EXAMINEE'S NAME: _____ **Badge #** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS

- Unit 2 Plant Shutdown and Cooldown have been competed for a refueling outage.
- Shutdown Cooling (SDC) is in service.
- RCPs have been secured.
- PZR bubble has been collapsed.
- Indications of LPSI pump cavitation is occurring.
- CRS entered Loss of Shutdown Cooling AOP

TASK STANDARD:

Using Operations Activities RWP:

- Identified appropriate RWP Task Number was Task 3
- Identified RWP Dose alarm is 20 mR
- Identified RWP Dose Rate alarm is 200 mR
- Identified Maximum Dose Rates encountered was 165 mr/hr
- Identified actions required if EAD dose rate alarm was received:
    - Secure work
    - Back out of immediate area until the alarm clears
    - Notify others in your work crew
    - Immediately notify RP for further instructions

TASK PERFORMANCE AIDS: OP-2202.010, EOP Standard Attachment 31 SDC Pump Venting; RWP 20192002 Operations Activities Unit 2; EN-RP-106 Radiological Survey documentation and Survey maps for Auxiliary building.

SIMULATOR SETUP: NA

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to perform SDC venting using Standard Attachment 31 for 2P-60A, steam binding is NOT expected.

Using RWP 20192002, Operations Activities Unit 2, and EN-RP-106 Radiological Survey documentation, identify the following items associated with venting in 'A' ESF room and Upper South Piping Penetration Room:

RWP Task Number:
Dose and Dose Rate alarm setpoints
Actions required if EAD Dose Rate alarm is received
Expected maximum Area Dose Rate (not contact) at venting locations

START TIME: _____

	PERFORMANCECHECKLIST		**STANDARD**	**CIRCLE ONE**
(C)	1.	Determine appropriate task for the evolution.	Determined that Task 3 was the appropriate RWP task for this evolution.	N/A SAT UNSAT
(C)	2.	Determine Dose alarm setpoint.	Determined Dose alarm setpoint is 20 mR.	N/A SAT UNSAT
(C)	3.	Determine Dose Rate alarm setpoint.	Determined Dose Rate alarm setpoint is 200 mR/hr.	N/A SAT UNSAT
(C)	4.	Determine actions required if EAD dose rate alarm is received.	Determined that the following actions should be performed if a dose rate alarm is received: o Secure work o Back out of immediate area until the alarm clears o Notify others in your work crew o Immediately notify RP for further instructions	N/A SAT UNSAT
(C)	5.	Determine maximum area dose rate encountered.	Determined maximum area dose rate is 165 mR/hr.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS

- Unit 2 Plant Shutdown and Cooldown have been competed for a refueling outage.
- Shutdown Cooling (SDC) is in service.
- RCPs have been secured.
- PZR bubble has been collapsed.
- Indications of LPSI pump cavitation is occurring.
- CRS entered Loss of Shutdown Cooling AOP

INITIATING CUE:

The SM/CRS directs you to perform SDC venting using Standard Attachment 31 for 2P-60A, steam binding is **NOT** expected.

Using RWP 20192002, Operations Activities Unit 2, and EN-RP-106 Radiological Survey documentation, identify the following items associated with venting in 'A' ESF room and Upper South Piping Penetration Room:

RWP Task Number
Dose and Dose Rate alarm setpoints
Actions required if EAD Dose Rate alarm is received
Expected **MAXIMUM** Area Dose Rate **(NOT CONTACT)** at venting locations

RWP Task Number: **3**

Dose alarm setpoint: **20 mR**

Dose Rate alarm setpoint: **200 mR/hr**

Actions required if EAD Dose Rate alarm is received: **Secure work**

Back out of immediate area until the alarm clears

Notify others in your work crew

Immediately notify RP for further instructions

Expected **MAXIMUM** General Area Dose Rate for the evolution: **165 mR/hr**

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS

- Unit 2 Plant Shutdown and Cooldown have been competed for a refueling outage.
- Shutdown Cooling (SDC) is in service.
- RCPs have been secured.
- PZR bubble has been collapsed.
- Indications of LPSI pump cavitation is occurring.
- CRS entered Loss of Shutdown Cooling AOP

INITIATING CUE:

The SM/CRS directs you to perform SDC venting using Standard Attachment 31 for 2P-60A, steam binding is **NOT** expected.

Using RWP 20192002, Operations Activities Unit 2, and EN-RP-106 Radiological Survey documentation, identify the following items associated with venting in 'A' ESF room and Upper South Piping Penetration Room:

RWP Task Number:
Dose and Dose Rate alarm setpoints
Actions required if EAD Dose Rate alarm is received
Expected **MAXIMUM** Area Dose Rate **(NOT CONTACT)** at venting locations

RWP Task Number: _____

Dose alarm setpoint: _____

Dose Rate alarm setpoint: _____

Actions required if EAD Dose Rate alarm is received: _____

_____

_____

_____

Expected **MAXIMUM** General Area Dose Rate for the evolution:_____

NAME:_____ START:_____ STOP: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 002 **DATE:** _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine which operators are available for call out.

JTA#: _____

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 2.9 **SRO:** 3.9 **KA REFERENCE:** 2.1.5

APPROVED FOR ADMINISTRATION TO: **RO:** _____ **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** _____ **Classroom:** Perform

POSITION EVALUATED: **RO:** _____ **SRO:** X

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **Classroom:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 20 Minutes

REFERENCE(S): EN-OM-123, Fatigue Management Program.

EXAMINEE'S NAME: _____ **Login ID #:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

THE EXAMINER SHALL VERIFY THE FOLLOWING WITH THE EXAMINEE:

Verify the examinee has reviewed and been briefed on NUREG 1021 APPENDIX E, Policies and Guidelines for Taking NRC Exams.

INITIAL CONDITIONS:
Today is April 27th.
Unit 2 has been online for 300 days.
An operator for the next shift has called in sick and coverage is required from 6 am to 6 pm on Sunday April 28th.
eSOMS PQ&S and any other work hour calculators are not available due to a network outage.
The Averaging period is set by the Watchbill coordinator to 6 weeks.
All scheduled hours are required to be worked.
Four Operators are available for the watch.
Operator A is an off-shift operator and working in night shift (12 hours) for a work to complete maintenance outage on the week of April 21st.

Operators have averaged the following hours per week over previous 4 weeks prior to April 21st:

- Operator A = 40.5
- Operator B = 53.2
- Operator C = 46
- Operator D = 51.5

N = Nights, 12 hours shift, 6 pm to 6 am.
D = Days, 12 hours shift, 6 am to 6 pm.
T = Training, 8.5 hour shift 7:30 am to 4 pm.
# = number of hours for off-shift operator who starts work at 7 am.

	Sun. April 21	Mon. April 22	Tue. April 23	Wed. April 24	Thu. April 25	Fri. April 26	Sat. April 27	Sun. April 28	Mon. April 29	Tue. April 30	Wed. May 1	Thu. May 2	Fri. May 3	Sat. May 4
Operator A		N	N	N	N	N			10	10	10	10		
Operator B	D		T	T	T	T			N	N	N	N		
Operator C		N	N	N					D	D	D	D		
Operator D	N	N	N	N	N				D	D	D	D	D	

TASK STANDARD:

Determined that operator B and C are available and operator A is not available due to <34 hour break in any 9-day period and operator D is not available due > 54 hour rolling average limit.

TASK PERFORMANCE AIDS:

EN-OP-123 Fatigue Management program.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

CRS/SM directs you to determine which operator(s) can cover without violating working hours using EN-OM-123 section 5.2, Fatigue Management Program.

If an operator(s) would violate working hours, then state how they would violate the working hour limits.

Start Time: _____

		PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
Procedure Note: Work hour tracking is accomplished using the eSOMS PQ&S software. Use of an alternate compliance tool, such as by contractors / vendors, requires approval of the site SME. Work hour limits for covered workers may only be exceeded during Exceptions (Section 5.3) or when evaluated and approved using the Waiver Process (Section 5.9).				
Procedure Step for Work hour limits: Work hour limits for individuals performing Covered Work consist of the following: (a) Maximum of 16 work hours in any 24-hour period. (b) Maximum of 26 work hours in any 48-hour period. (c) Maximum of 72 work hours in any 7-day period. (d) Minimum 10-hour break between successive work periods, except that an 8-hour break is allowed when necessary to accommodate a crew's scheduled transition between work schedules or shifts. (e) Minimum 34-hour break in any 9-day period. (f) 54-hour rolling average, as described in 5.2[3]. (g) Minimum Days Off (MDO), as described in 5.2[4] [2] Limits 5.2[1](a) through (e) apply for online and offline plant conditions. Limit 5.2[1](f) must be used when the plant is online and limit 5.2[1](g) is typically applied when the plant is offline, for individuals working on outage activities. However, limit 5.2[1](f) may also be used in lieu of limit 5.2[1](g) when the plant is offline. [3] The 54-hour rolling average limit (5.2[1](f)) is a maximum average of 54 work hours per week calculated using a rolling average period of up to 6 weeks. The requirements of the averaging calculation are modeled in the PQ&S software and include the following characteristics:				
	1. (Step 5.2	Review work hour limitations in EN-OM-123.	Examinee reviewed the limitation of section 5.2 of EN-OM-123.	N/A SAT UNSAT
(C)	2. (Step 5.2)	Using EN-OM-123 requirements review operator A schedule to determine if he can provide coverage without violating working hour limits.	Reviewed the schedule for operator A to determine if any work hour limitations would be violated. Critical: Determined that Operator A cannot cover the watch on April 28th without violating working hour limits due to not having a Minimum 34 hour break in any 9 day period.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	3. (Step 5.2)	Using EN-OM-123 requirements review operator B schedule to determine if he can provide coverage without violating working hour limits.	Reviewed the schedule for operator B to determine if any work hour limitations would be violated. Critical: Determined that Operator B can cover the watch on April 28th without violating working hour limits.	N/A SAT UNSAT
(C)	4. (Step 5.2)	Using EN-OM-123 requirements review operator C schedule to determine if he can provide coverage without violating working hour limits.	Reviewed the schedule for operator C to determine if any work hour limitations would be violated. Critical: Determined that Operator C can cover the watch on April 28th without violating working hour limits.	N/A SAT UNSAT
(C)	5. (Step 5.2)	Using EN-OM-123 requirements review operator D schedule to determine if he can provide coverage without violating working hour limits.	Reviewed the schedule for operator D to determine if any work hour limitations would be violated. Critical: Determined that Operator D cannot cover the watch on April 28th without violating working hour limits due to exceeding the 54 hour average.	N/A SAT UNSAT
END				

Stop Time:_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

Today is April 27th.
Unit 2 has been online for 300 days.
An operator for the next shift has called in sick **AND** coverage is required from 6 am to 6 pm on Sunday April 28th.
eSOMS PQ&S **AND** any other work hour calculators are **NOT** available due to a network outage.
The **AVERAGING** period is set by the Watchbill coordinator to 6 weeks.
All scheduled hours are required to be worked.
Four Operators are available for the watch.
Operator A is an off-shift operator **AND** working in night shift (12 hours) for a work to complete maintenance outage on the week of April 21st.

Operators have averaged the following hours per week over previous 4 weeks prior to April 21st:

- Operator A = 40.5
- Operator B = 53.2
- Operator C = 46
- Operator D = 51.5

N = Nights, 12 hours shift, 6 pm to 6 am.
D = Days, 12 hours shift, 6 am to 6 pm.
T = Training, 8.5 hour shift 7:30 am to 4 pm.
# = number of hours for off-shift operator who starts work at 7 am.

	Sun. April 21	Mon. April 22	Tue. April 23	Wed. April 24	Thu. April 25	Fri. April 26	Sat. April 27	Sun. April 28	Mon. April 29	Tue. April 30	Wed. May 1	Thu. May 2	Fri. May 3	Sat. May 4
Operator A		N	N	N	N	N			10	10	10	10		
Operator B	D		T	T	T	T			N	N	N	N		
Operator C		N	N	N					D	D	D	D		
Operator D	N	N	N	N	N				D	D	D	D	D	

INITIATING CUE:

CRS/SM directs you to determine which operator(s) **CAN** cover **WITHOUT** violating working hours using EN-OM-123 section 5.2, Fatigue Management Program.

Operator A: Can provide coverage without exceeding limits: Yes/(No.)
If **NO** what limit is exceeded: Minimum 34 hour break in a 9 day period.

Operator B: Can provide coverage without exceeding limits: (Yes)/No.
If **NO** what limit is exceeded: _____.

Operator C: Can provide coverage without exceeding limits: (Yes)/No.
If **NO** what limit is exceeded: _____.

Operator D: Can provide coverage without exceeding limits: Yes/(No.)
If **NO** what limit is exceeded: Exceeding the 54 hour average .

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

Today is April 27th.
Unit 2 has been online for 300 days.
An operator for the next shift has called in sick **AND** coverage is required from 6 am to 6 pm on Sunday April 28th.
eSOMS PQ&S **AND** any other work hour calculators are **NOT** available due to a network outage.
The **AVERAGING** period is set by the Watchbill coordinator to 6 weeks.
All scheduled hours are required to be worked.
Four Operators are available for the watch.
Operator A is an off-shift operator **AND** working in night shift (12 hours) for a work to complete maintenance outage on the week of April 21st.

Operators have averaged the following hours per week over previous 4 weeks prior to April 21st:

- Operator A = 40.5
- Operator B = 53.2
- Operator C = 46
- Operator D = 51.5

N = Nights, 12 hours shift, 6 pm to 6 am.
D = Days, 12 hours shift, 6 am to 6 pm.
T = Training, 8.5 hour shift 7:30 am to 4 pm.
# = number of hours for off-shift operator who starts work at 7 am.

	Sun. April 21	Mon. April 22	Tue. April 23	Wed. April 24	Thu. April 25	Fri. April 26	Sat. April 27	Sun. April 28	Mon. April 29	Tue. April 30	Wed. May 1	Thu. May 2	Fri. May 3	Sat. May 4
Operator A		N	N	N	N	N			10	10	10	10		
Operator B	D		T	T	T	T			N	N	N	N		
Operator C		N	N	N					D	D	D	D		
Operator D	N	N	N	N	N				D	D	D	D	D	

INITIATING CUE:

CRS/SM directs you to determine which operator(s) **CAN** cover **WITHOUT** violating working hours using EN-OM-123 section 5.2, Fatigue Management Program.

Operator A: Can provide coverage without exceeding limits: Yes/No.
If **NO** what limit is exceeded:_____.

Operator B: Can provide coverage without exceeding limits: Yes/No.
If **NO** what limit is exceeded:_____.

Operator C: Can provide coverage without exceeding limits: Yes/No.
If **NO** what limit is exceeded:_____.

Operator D: Can provide coverage without exceeding limits: Yes/No.
If **NO** what limit is exceeded:_____.

NAME:_____ START:_____ STOP: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 006 **DATE:** _____

SYSTEM/DUTY AREA: Equipment Control

TASK: Verify RPS trip set point determination for inoperable MSSV

JTA#: ANO-SRO-ADMIN-NORM-231

KA VALUE **RO:** 3.9 **SRO:** 4.2 **KA REFERENCE:** 2.1.25

APPROVED FOR ADMINISTRATION TO: **RO:** _____ **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **CLASSROOM:** Perform

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **CLASSROOM:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): Unit 2 Tech Specs

EXAMINEE'S NAME: _____ **Login ID#:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- The plant is at 90% power, 440 EFPD, Steady State.
- MSSV testing is in progress.
- The following are the MSSV as found lift pressure reported by maintenance:

MSSVs for 2E24A	As found lift pressure
2PSV-1002	1068 psig
2PSV-1003	1088 psig
2PSV-1004	1098 psig
2PSV-1005	1096 psig
2PSV-1006	1132 psig
MSSVs for 2E24B	As found lift pressure
2PSV-1052	1062 psig
2PSV-1053	1068 psig
2PSV-1054	1115 psig
2PSV-1055	1108 psig
2PSV-1056	1110 psig

TASK STANDARD:
Determined that 2PSV-1005 and 2PSV-1053 are inoperable (1 MSSV per header) and determined the maximum High Linear Power Level and RPS trip set point to be 87.0% to comply with Technical Specification 3.7.1.1.

TASK PERFORMANCE AIDS: Unit 2 Tech Specs

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Examiner Note: Give out CUE #2 after Cue #1 is complete.

INITIATING CUE #1 :

Determine operability of the MSSVs IAW with Tech Specs and OP-2306.006 Unit 2 Main Steam Safety valve test Attachment 1.

INITIATING CUE #2 :

Determine the Maximum High Linear Power Level and RPS Trip Set point per Tech Specs allowed for this condition to remain at power.

Reactor Engineering reports MTC for 440 EFPD is $-2.6E^{-4}\Delta k/k/°F$.

Start Time:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1.	Using Tech Spec 3.7.1.1 Table 3.7-5 or OP-2306.006 Att. 1 determines operability of MSSVs.	Examinee derived that one MSSV on each header is inoperable. (2PSV-1005 and 2PSV-1053)	N/A SAT UNSAT
(C)	2.	Using Tech Spec 3.7.1.1 figure 3.7-1 determines new maximum power and RPS linear power trip set point.	Examinee derived from graph based on MTC of $-2.6E^{-4}\Delta k/k/°F$ and knowing that one MSSV is inoperable on each header determined that maximum power and RPS linear power trip set point should be 87.0%.	N/A SAT UNSAT
END				

Stop Time:_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- The plant is at 90% power, 440 EFPD, Steady State.
- MSSV testing is in progress.
- The following are the MSSV as found lift pressure reported by maintenance:

MSSVs for 2E24A	As found lift pressure
2PSV-1002	1068 psig
2PSV-1003	1088 psig
2PSV-1004	1098 psig
2PSV-1005	1096 psig
2PSV-1006	1132 psig
MSSVs for 2E24B	As found lift pressure
2PSV-1052	1062 psig
2PSV-1053	1068 psig
2PSV-1054	1115 psig
2PSV-1055	1108 psig
2PSV-1056	1110 psig

Examiner Note: Give out CUE #2 after Cue #1 is complete.

INITIATING CUE #1:

Determine operability of the MSSVs IAW with Tech Specs. **2PSV-1005 and 2PSV-1053 are inoperable.**

INITIAL CONDITIONS FOR CUE 2: (same as previous initial conditions)

INITIATING CUE #2:

Determine the **MAXIMUM** High Linear Power Level and RPS Trip **SET POINT** per Tech Specs allowed for this condition to remain at power.

Reactor Engineering reports MTC for 440 EFPD is $-2.6E^{-4}\Delta k/k/°F$.

Maximum High Linear Power Level and RPS Trip Setpoint is 87% per Tech Spec figure 3.7-1

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- The plant is at 90% power, 440 EFPD, Steady State.
- MSSV testing is in progress.
- The following are the MSSV as found lift pressure reported by maintenance:

MSSVs for 2E24A	As found lift pressure
2PSV-1002	1068 psig
2PSV-1003	1088 psig
2PSV-1004	1098 psig
2PSV-1005	1096 psig
2PSV-1006	1132 psig
MSSVs for 2E24B	As found lift pressure
2PSV-1052	1062 psig
2PSV-1053	1068 psig
2PSV-1054	1115 psig
2PSV-1055	1108 psig
2PSV-1056	1110 psig

INITIATING CUE #1:

Determine operability of the MSSVs IAW with Tech Specs and OP-2306.006 Unit 2 Main Steam Safety valve test Attachment 1.

NAME:_____ START TIME:_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS: (same as previous initial conditions)

- The plant is at 90% power, 440 EFPD, Steady State.
- MSSV testing is in progress.
- The following are the MSSV as found lift pressure reported by maintenance:

MSSVs for 2E24A	As found lift pressure
2PSV-1002	1068 psig
2PSV-1003	1088 psig
2PSV-1004	1098 psig
2PSV-1005	1096 psig
2PSV-1006	1132 psig
MSSVs for 2E24B	As found lift pressure
2PSV-1052	1062 psig
2PSV-1053	1068 psig
2PSV-1054	1115 psig
2PSV-1055	1108 psig
2PSV-1056	1110 psig

INITIATING CUE #2:

Determine the **MAXIMUM** High Linear Power Level and RPS Trip **SET POINT** per Tech Specs allowed for this condition to remain at power.

Reactor Engineering reports MTC for 440 EFPD is $-2.6E^{-4}\Delta k/k/°F$.

NAME:_____ STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 1 **DATE:** _____

SYSTEM/DUTY AREA: Equipment controls

TASK: Determine EFW TS applicability.

JTA#: ANO2-RO-EFW-SURV-51

KA VALUE RO: 3.6 **SRO:** 4.6 **KA REFERENCE:** 2.2.37

APPROVED FOR ADMINISTRATION TO: RO: _____ **SRO:** X

TASK LOCATION: INSIDE CR: _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **CLASSROOM:** Perform

POSITION EVALUATED: RO: _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ **PLANT SITE:** _____ **CLASSROOM:** _____

TESTING METHOD: SIMULATE: _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): 2106.006, Emergency Feedwater System Operation, 2104.036 Emergency Diesel Operations, Unit 2 Tech Specs.

EXAMINEE'S NAME: _____ **Login ID #:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Plant is in Mode 3.
- Auxiliary Feedwater pump trips.
- EFAS actuates automatically to control SG level.
- All EFW valves cycle closed based on SG level.
- The Inside AO reports an oil leak on #2 EDG governor and the oil level is below indicating range.

TASK STANDARD:

Determined that #2 EDG is NOT operable and that TS 3.8.1.1 action b is applicable.

Determined that all PZR heaters are NOT operable and that TS 3.4.4 action b is applicable.

Determined that both trains of EFW are operable.

TASK PERFORMANCE AIDS:

OP 2106.006, Emergency Feedwater operations, OP-2104.036 Emergency Diesel operations, Unit 2 Tech Specs.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

Determine the operability of #2 EDG, Pressurizer Heaters, Red Train EFW and the Green Train of EFW for the given plant conditions using 2106.006 Emergency Feedwater operations, 2104.036 Emergency Diesel operations, and Unit 2 Tech Specs.

START TIME: _____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Review OP 2106.006, Emergency Feedwater System Operation, Attachment D, and Technical Specifications.	Examinee reviewed the Emergency feedwater System Operation and Tech Specs.	N/A SAT UNSAT
(C)	2. Using 2104.036 Limit and Precaution 5.23 determines #2 EDG operability. (OP 2104.036 Step 5.23 3rd bullet)	Examinee determined that #2 EDG is inoperable.	N/A SAT UNSAT
(C)	3. Using TS 3.4.4 determines PZR Heater availability.	Examinee determined that All Pressurizer Heaters are not operable due to the emergency power supply being inoperable.	N/A SAT UNSAT
Examiner note: Due to the note on page one OP-2106.006 Attachment D (EFW summary of Operability) "Both EFW trains remain operable in Mode 1, 2, and 3 in the event of a valid MSIS or EFAS closure of downstream valves, PPS matrix testing is not considered a valid closure signal". Since the initial conditions state the unit is in mode 3 and there is a valid EFAS signal, both trains of EFW remain operable even though the downstream valves are closed. Therefore TS 3.7.1.2 and TS 3.0.5 are not applicable for this condition.			
(C)	4. Using Attachment D of 2106.006 determines Red Train EFW operability. (2106.006 Att. D)	Examinee determined that the Red Train of EFW is operable because even though both downstream EFW valves are closed they were closed by a valid EFAS.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
(C)	5. Using Attachment D of 2106.006 determines Green Train EFW operability. (2106.006 Att. D)	Examinee determined that the Green Train of EFW is operable because even though both downstream EFW valves are closed they were closed by a valid EFAS.	N/A SAT UNSAT
(C)	6. Determine applicable Technical Specifications.	Determined the following Technical Specifications must be entered: TS 3.8.1.1 action b is applicable. And TS 3.4.4 action b is applicable.	N/A SAT UNSAT

STOP TIME: _____

EXAMINER'S COPY

INITIAL CONDITIONS:

- Plant is in Mode 3.
- Auxiliary Feedwater pump trips.
- EFAS actuates automatically to control SG level.
- All EFW valves cycle closed based on SG level.
- The Inside AO reports an oil leak on #2 EDG governor **AND** the oil level is below indicating range.

INITIATING CUE:

Determine the operability of #2 EDG, Pressurizer Heaters, Red Train EFW **AND** the Green Train of EFW for the given plant conditions using 2106.006 Emergency Feedwater operations, 2104.036 Emergency Diesel operations, **AND** Unit 2 Tech Specs.

#2 EDG Operable? YES/(NO) (Circle One)

All Pressurizer Heaters Operable? YES/(NO) (Circle One)

Red Train of EFW Operable? (YES)/NO (Circle One)

Green Train of EFW Operable? (YES)/NO (Circle One)

Applicable Tech Specs (**INCLUDE ACTIONS**): TS 3.8.1.1 action b, TS 3.4.4 action b (TS 3.7.1.2 and TS 3.0.5 are not applicable)

Examiner note: Due to the note on page one OP-2106.006 Attachment D (EFW summary of Operability) "Both EFW trains remain operable in Mode 1, 2, and 3 in the event of a valid MSIS or EFAS closure of downstream valves, PPS matrix testing is not considered a valid closure signal". Since the initial conditions state the unit is in mode 3 and there is a valid EFAS signal, both trains of EFW remain operable even though the downstream valves are closed. Therefore TS 3.7.1.2 and TS 3.0.5 are not applicable for this condition.

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Plant is in Mode 3.
- Auxiliary Feedwater pump trips.
- EFAS actuates automatically to control SG level.
- All EFW valves cycle closed based on SG level.
- The Inside AO reports an oil leak on #2 EDG governor **AND** the oil level is below indicating range.

INITIATING CUE:

Determine the operability of #2 EDG, Pressurizer Heaters, Red Train EFW **AND** the Green Train of EFW for the given plant conditions using 2106.006 Emergency Feedwater operations, 2104.036 Emergency Diesel operations, **AND** Unit 2 Tech Specs.

#2 EDG Operable? YES/NO (Circle One)

All Pressurizer Heaters Operable? YES/NO (Circle One)

Red Train of EFW Operable? YES/NO (Circle One)

Green Train of EFW Operable? YES/NO (Circle One)

Applicable Tech Specs (**INCLUDE ACTIONS**):

NAME:_____ START:_____ STOP: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 005 DATE: _____

SYSTEM/DUTY AREA: A.3: Radiation Control

TASK: Review and approve Containment Purge Gaseous Release

JTA#: ANO-SRO-ADMIN-NORM-189

KA VALUE RO: 2.0 SRO: 3.8 KA REFERENCE: 2.3.6

APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: X

TASK LOCATION: INSIDE CR: _____ OUTSIDE CR: _____ BOTH: X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: Perform CLASSROOM: Perform

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ CLR: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): OP 2104.033 Containment Atmosphere Control

EXAMINEE'S NAME: _____ Login ID: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Today's date is 9/24/2018.
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233 in section 1, Containment Purge, is 10.5 SCFM.
- Initial count rate on 2RITS-8233 in section 1, Containment Purge, is 50 cpm.
- Initial SPING 5 (2RX-9820) channel 5 activity in section 1 is 1^{e-7} µci/cc.
- Initial CNTMT building average pressure in section 1 is 14 psia
- Initial CAM's Gaseous reading in section 2 is 68 CPM.
- Current four hour average CAM's Gaseous reading is 139 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- Purge Exhaust Filter Unit doors have been verified closed and dogged.
- A reactor Operator has completed the request and containment purge verification section of OP 2104.033 Supplement 1.

TASK STANDARD:

ALL of the following errors must be identified:

- Step 1.4.4 was marked N/A incorrectly, the filter run-time should have been given to Engineering programs for evaluation.
- Step 4.3 calculated count rate limit is wrong.
- Step 4.4 since current CAMS radiation readings exceed the calculated limits, the permit should have been resubmitted to chemistry.
- Step 4.8 2RITS-8233 set point is recorded incorrectly.
- Step 4.8 Potentiometer dial set point circled is incorrect due to recording the set point incorrectly; this results in a non-conservative trip value for 2RITS-8233.

AND

Determined that the release permit must not be approved.

TASK PERFORMANCE AIDS: A marked-up copy of Supplement 1 Containment Purge Gaseous Release Permit through section 4 and chemistry release data.

SIMULATOR SETUP: NA

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:
The Shift Manager directs "Review and approve OP-2104.033 supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors (if any) in the supplement."

START TIME: _____

PERFORMANCECHECKLIST			STANDARD	CIRCLE ONE
EXAMINER'S NOTE: Provide a marked-up copy of OP 2104.033 Supplement 1.				
	1.	Perform supervisor review for approval of the Containment purge gaseous release permit and determine errors.	Reviews the containment purge gaseous release permit.	N/A
EXAMINER'S NOTE: The following list the errors in the supplement 1 provided. ALL of the following errors must be identified:				
(C)	2.	• Step 1.4.4 was marked N/A incorrectly, the filter run-time should have been given to Engineering programs for evaluation. • Step 4.3 calculated count rate limits are wrong. • Step 4.4 since current CAMS radiation readings exceed the allowable limits, the permit should have been resubmitted to chemistry. • Step 4.8 2RITS-8233 set point is recorded incorrectly. • Step 4.8 Potentiometer dial set point circled is incorrect due to recording the set point incorrectly; this results in a non-conservative trip value for 2RITS-8233.	• Filter run-time is beyond 720 hrs; this should be evaluated by engineering programs before proceeding with release. • Calculated count rate limits was given to be gaseous 126 CPM but should have been gaseous 136 CPM. • The Purge permit should be resubmitted to chemistry but the steps were marked as NA due current radiation readings exceeding calculated limits. • Set point for 2RITS-8233 is recorded as 10000 CPM (1E4) not 1000 CPM (1E3) as specified in Chemistry report. • Potentiometer dial set point should be 3.84, but 5.68 is circled.	N/A SAT UNSAT
EXAMINER'S NOTE: The Examinee should discuss that the release will be resubmitted to chemistry and Engineering programs should evaluate the runtime on the exhaust filter.				
(C)	3.	The release should not be approved and should be resubmitted to chemistry.	Would not approve the release to begin.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Today's date is 9/24/2018.
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233 in section 1, Containment Purge, is 10.5 SCFM.
- Initial count rate on 2RITS-8233 in section 1, Containment Purge, is 50 cpm.
- Initial SPING 5 (2RX-9820) channel 5 activity in section 1 is 1^{e-7} µci/cc.
- Initial CNTMT building average pressure in section 1 is 14 psia
- Initial CAM's Gaseous reading in section 2 is 68 CPM.
- Current four hour average CAM's Gaseous reading is 139 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- Purge Exhaust Filter Unit doors have been verified closed and dogged.
- A reactor Operator has completed the request and containment purge verification section of OP 2104.033 Supplement 1.

Initiating CUE:

The Shift Manager directs "Review and approve OP-2104.033 supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors (if any) in the supplement."

List the errors identified below:

ALL of the following errors must be identified:

- **Step 1.4.4 was marked N/A incorrectly, the filter run-time should have been given to Engineering programs for evaluation.**
- **Step 4.3 calculated count rate limit is wrong.**
- **Step 4.4 since current CAMS radiation readings exceed the calculated limits, the permit should have been resubmitted to chemistry.**
- **Step 4.8 2RITS-8233 set point is recorded incorrectly.**
- **Step 4.8 Potentiometer dial set point circled is incorrect due to recording the set point incorrectly; this results in a non-conservative trip value for 2RITS-8233.**

Can this release permit be approved based review of OP-2104.033 Supplement 1? _____

Determined that the release permit must not be approved.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Today's date is 9/24/2018.
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233 in section 1, Containment Purge, is 10.5 SCFM.
- Initial count rate on 2RITS-8233 in section 1, Containment Purge, is 50 cpm.
- Initial SPING 5 (2RX-9820) channel 5 activity in section 1 is 1^{e-7} µci/cc.
- Initial CNTMT building average pressure in section 1 is 14 psia
- Initial CAM's Gaseous reading in section 2 is 68 CPM.
- Current four hour average CAM's Gaseous reading is 139 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- Purge Exhaust Filter Unit doors have been verified closed and dogged.
- A reactor Operator has completed the request and containment purge verification section of OP 2104.033 Supplement 1.

Initiating CUE:

The Shift Manager directs "Review and approve OP-2104.033 Supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors (if any) in the supplement."

List the errors (if any) identified below:

_____

_____

_____

_____

_____

_____

_____

Can this release permit be approved based review of OP-2104.033 Supplement 1? _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 005 **DATE:** _____

SYSTEM/DUTY AREA: Emergency Plan

TASK: Determine Emergency Action Level/Protective Action Recommendation (Time Critical JPM)

JTA#: ANO-SRO-EPLAN-EMERG-278

KA VALUE **RO:** 2.9 **SRO:** 4.6 **KA REFERENCE:** 2.4.41

APPROVED FOR ADMINISTRATION TO: **RO:** _____ **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** _____ **Classroom:** Perform

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **CLASSROOM:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes – EAL Classification

REFERENCE(S): 1903.010 Emergency Action Level Classification

EXAMINEE'S NAME: _____ **Login ID:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL CONDITIONS: **(Time Critical JPM)**

- Unit 2 has experienced a Loss of Coolant Accident.
- Reactor was manually tripped
- SIAS, CCAS, CIAS, and CSAS have actuated.
- Currently all 3 charging pumps are running with normal flow.
- 2 HPSI pumps are running with 200 gpm per pump.
- Margin to Saturation is 31 degrees and stable.
- Containment High Range radiation monitors are reading 1200 R/hr

TASK STANDARD: Determined the following (Time Critical - 15 minutes to classify event):

Determined SAE (FS-1) is the appropriate EAL. (Time Critical)

Determined two or the three fission product barriers are lost or potentially lost. (Not Time Critical)

- RCB1: RCS leakage > 44 GPM and/or RCB3: Containment Radiation Monitoring
- FCB4: containment Radiation Monitoring

Determined that containment boundary is not lost. (Not Time Critical)

TASK PERFORMANCE AIDS: 1903.010, Emergency Action Level Classification

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Examiner Note: Give out Cue #2 after cue #1 is complete.

INITIATING CUE:

Determine the status of the fission product boundaries and the highest EAL classification from the given initial conditions (list EAL classification and event number).

Time Starts Now.

START:_____

		PERFORMANCE CHECKLIST	STANDARD	(Circle One)
(C)	1.	Determined "SAE" EAL classification.	Using OP 1903.010, determined "SAE" EAL classification FS1, Loss or potential loss of ANY two barriers. Stop Time:_____	N/A SAT UNSAT
(C)	2.	EAL determination made in 15 minutes.	EAL determined within 15 minutes.	N/A SAT UNSAT
(C)	3.	Determined RCS barrier status.	Determined RCS barrier Lost/Potentially Lost using given plant indications per OP 1903.010, Attachment 2, RCB1. RCS leak > 44 gpm with letdown isolated and/or RCB3: Containment Radiation Monitoring	N/A SAT UNSAT
(C)	4.	Determined Containment fission product barrier status.	Determined Containment barrier **NOT** Lost IAW per 1903.010, Attachment 2.	N/A SAT UNSAT
(C)	5.	Determined Fuel Clad barrier status.	Determined Fuel Clad barrier lost/potentially lost using plant indications per 1903.010, Attachment 2 FCB4.	N/A SAT UNSAT
END				

STOP:_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Examiner Note: Give out Cue #2 after cue #1 is complete.

Examiner's Copy

This JPM (Cue #1) is time critical

INITIAL CONDITIONS:

- Unit 2 has experienced a Loss of Coolant Accident.
- Reactor was manually tripped
- SIAS, CCAS, CIAS, and CSAS have actuated.
- Currently all 3 charging pumps are running with normal flow.
- 2 HPSI pumps are running with 200 gpm per pump.
- Margin to Saturation is 31 degrees and stable.
- Containment High Range radiation monitors are reading 1200 R/hr

INITIATING CUE #1:

Determine the status of the EAL classification and Event number/code from the given initial conditions.

Time Starts Now.

EAL Class	**Event number/code**
SAE	FS-1

INITIATING CUE #2:

Determine the status of the fission product boundaries:

	Fission product boundary status: (Lost/Potentially Lost or Intact)	**Barrier EAL number, code, etc. if applicable.**
Containment	Intact	N/A
RCS	Lost/Potentially Lost	RCB1 and/or RCB3
Fuel	Lost/Potentially Lost	FCB4

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Examinee's Copy

This JPM is time critical

INITIAL CONDITIONS:

- Unit 2 has experienced a Loss of Coolant Accident.
- Reactor was manually tripped
- SIAS, CCAS, CIAS, and CSAS have actuated.
- Currently all 3 charging pumps are running with normal flow.
- 2 HPSI pumps are running with 200 gpm per pump.
- Margin to Saturation is 31 degrees and stable.
- Containment High Range radiation monitors are reading 1200 R/hr

INITIATING CUE #1:

- Determine the status of the EAL classification from the given initial conditions.
- **Time Starts Now.**

EAL Classification	**Event number/code**

NAME:_____ START:_____ STOP: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Examinee's Copy

Not time critical

INITIAL CONDITIONS:

- Unit 2 has experienced a Loss of Coolant Accident.
- Reactor was manually tripped
- SIAS, CCAS, CIAS, and CSAS have actuated.
- Currently all 3 charging pumps are running with normal flow.
- 2 HPSI pumps are running with 200 gpm per pump.
- Margin to Saturation is 31 degrees and stable.
- Containment High Range radiation monitors are reading 1200 R/hr

INITIATING CUE #2:

Determine the status of the fission product boundaries:

	Fission product boundary status: (Lost/Potentially Lost or Intact)	**Barrier EAL number, code, etc. if applicable.**
Containment		
RCS		
Fuel		

NAME:_____ START:_____ STOP: _____

AN()2019

Facility: ANO-2 Date of Examination: 4/22/2019
Examination Level: RO ☒ SRO ☐ Operating Test Number: 2019-1

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System/JPM Title	Type Code*	Safety Function
S1. A2JPM-RO-VCTMU2 004 A4.07, RO-3.9 / SRO 3.7. Perform Manual Makeup to the VCT	A, M, S	1 Reactivity control
S2. A2JPM-RO-EOP08 002 A 2.01, RO-4.3 / SRO 4.4 Perform Standard Attachment 22 Isolating LOCA outside containment	A, EN, L, N, S	2 Inventory Control
S3. A2JPM-RO-PZR09 010 A4.02; RO-3.6 / SRO-3.4 Perform 2103.005 Pressurizer Operations, Attachment B, Red Train Proportional Heater Test	N, S	3 Pressure Control
S4. A2JPM-RO-RCP05 003 A2.02; RO-3.7 / SRO-3.9 Perform a normal RCP start (Alternate Path),	A, D, L, S	4 Heat Removal Primary
S5. ANO-2-JPM-NRC-CNTCL 022 A4.03 RO-3.2/SRO-3.2 Verify Containment Coolers in Emergency Mode	A, D, EN,L, S	5 Containment
S6. A2JPM-RO-AAC01 055 EA1.06; RO-4.1 / SRO-4.5 Perform an Emergency start of the AAC Diesel from 2C-14 and energize 2A3.	D, L, S	6 Electrical
S7. A2JPM-RO-AOP06 015 A2.02; RO-3.1 / SRO-3.5 Disable B channel Excore nuclear instrumentation.	D, L, P, S	7 Instrumentation
S8. A2JPM-RO-AOP7 A13 AA1.2; RO-3.1 / SRO-3.6 Shift Gland Seal Steam to Unit 1 during Natural Circ cool down.	N, S	8 Plant Service systems
In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
P1. A2JPM-RO-WGDTR 071 A2.02: RO-3.3 / SRO-3.6 Perform Waste Gas Decay Tank Release	A, D, R	9 Radioactivity Release
P2. A2JPM-RO-TLOF CE E06 EA2.2; RO-3.0 / SRO-4.2 Perform Local Actions to start 'A' Condensate pump during a Loss of Feedwater.	D, E, L, P	4 Heat Removal Secondary
P3. A2JPM-RO- SURV01 062 A4.04; RO-2.6 / SRO-2.7 Perform 2305.016 Remote Feature Periodic test for EDG exhaust fans	EN, N, R	6 Electrical

*	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO/SRO-I/SRO-U	
(A)lternate path	4–6/4–6 /2–3	5 / NA / 3
(C)ontrol room		
(D)irect from bank	≤ 9/≤ 8/≤ 4	6 / NA / 2
(E)mergency or abnormal in-plant	≥ 1/≥ 1/≥ 1	1 / NA / 1
(EN)gineered safety feature	≥ 1/≥ 1/≥ 1 (control room system)	2 / NA / 1
(L)ow-Power/Shutdown	≥ 1/≥ 1/≥ 1	6 / NA / 3
(N)ew or (M)odified from bank including 1(A)	≥ 2/≥ 2/≥ 1	5 / NA / 3
(P)revious 2 exams	≤ 3/≤ 3/≤ 2 (randomly selected)	2 / NA / 1
(R)CA	≥ 1/≥ 1/≥ 1	2 / NA / 1
(S)imulator		8 / NA / 3

AN

Facility: ANO-2 Date of Examination: 4/22/2019
Examination Level: RO ☐ SRO ☒ Operating Test Number: 2019-1

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System/JPM Title	Type Code*	Safety Function
S1. A2JPM-RO-VCTMU2 004 A4.07, RO-3.9 / SRO 3.7. Perform Manual Makeup to the VCT	A, M, S	1 Reactivity control
S2. A2JPM-RO-EOP08 002 A 2.01, RO-4.3 / SRO 4.4 Perform Standard Attachment 22 Isolating LOCA outside containment	A, EN, L, N, S	2 Inventory Control
S3.		
S4. A2JPM-RO-RCP05 003 A2.02; RO-3.7 / SRO-3.9 Perform a normal RCP start (Alternate Path),	A, D, L, S	4 Heat Removal Primary
S5.		
S6.		
S7.		
S8.		

In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U

P1.		
P2. A2JPM-RO-TLOF CE E06 EA2.2; RO-3.0 / SRO-4.2 Perform Local Actions to start 'D' Condensate pump during a Loss of Feedwater.	D, E, L, P	4 Heat Removal Secondary
P3. A2JPM-RO-SURV01 062 A4.04; RO-2.6 / SRO-2.7 Perform 2305.016 Remote Feature Periodic test for EDG exhaust fans	EN, N, R	6 Electrical

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO/SRO-I/SRO-U

(A)lternate path	4–6/4–6 /2–3	5 / NA / 3
(C)ontrol room		
(D)irect from bank	≤ 9/≤ 8/≤ 4	6 / NA / 2
(E)mergency or abnormal in-plant	≥ 1/≥ 1/≥ 1	1 / NA / 1
(EN)gineered safety feature	≥ 1/≥ 1/≥ 1 (control room system)	2 / NA / 1
(L)ow-Power/Shutdown	≥ 1/≥ 1/≥ 1	6 / NA / 3
(N)ew or (M)odified from bank including 1(A)	≥ 2/≥ 2/≥ 1	5 / NA / 3
(P)revious 2 exams	≤ 3/≤ 3/≤ 2 (randomly selected)	2 / NA / 1
(R)CA	≥ 1/≥ 1/≥ 1	2 / NA / 1
(S)imulator		8 / NA / 3

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 DATE: _____

SYSTEM/DUTY AREA: Chemical and Volume Control System

TASK: Perform Manual Makeup to the VCT

JTA#: ANO2-RO-CHADD-NORM-111

ALTERNATE PATH YES: X NO: _____ TIME CRITICAL YES: _____ NO: X

KA VALUE RO: 3.6 SRO: 3.7 KA REFERENCE: 004 A4.15

APPROVED FOR ADMINISTRATION TO: RO: X SRO: X

TASK LOCATION: INSIDE CR: X OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: Perform LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): OP 2104.003 Chemical Addition Rev. 57

EXAMINEE'S NAME: _____ LOGIN ID: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.2. Boron 2 PMS program has been completed.

'A' BAM Tank" boron concentration is 5964 ppm.

RCS boron Concentration is 746 ppm.

TASK STANDARD: Setup controller setpoints at the correct blend ratio, Commenced manual blend make-up to the VCT, recognized that the fluid transfer is not correct and secured the make-up alignment.

TASK PERFORMANCE AIDS:

Copy of OP 2104.003 Attachment L and Plant Monitoring System print out of required boric acid and water.

SIMULATOR SETUP:

VCT level at 60%.

2CVC-68 is closed and 2CVC-83 is closed.

2CVC-64 open. (value = .5)

K11-J04 (Spent Fuel Pool level Hi) = On, Delay = 1 min. trigger by 2CV-4926 red light HF4R492A.

EXAMINER NOTES:

The applicant will line up to make up to the VCT and not change boron concentration. When the make-up is started the VCT level will not rise as expected, the Spent Fuel Pool high level alarm will annunciate and the applicant should secure the lineup.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.3 using 'A' BAM Tank."

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
EXAMINER'S NOTE: **The Boric Acid and DI water flow rates should be set up to be approximately 1 to 6.2 ratio based on current boron concentrations in the RCS and BAMT A with 1 part Boric Acid and 6 parts DI water.** **The actual blend ratio to maintain RCS boron concentration is 1 to 7 but the last 50 gallons of addition should be DI water to flush the makeup line and this will equate to approximately 1 to 6.2 ratio make up rate.**				
	1. Step 2.3	**ADJUST** blend ratio to achieve desired shutdown rate and make-up rate. **EXAMINER NOTE:** **The blend ratio does not need to be adjusted for a shutdown or make-up rate but the applicant may adjust the blend ratio as stated in the note above.**	Determine that the blend ratio does not need to be adjusted for a shutdown or make-up rate.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST	STANDARDS	(Circle One)

Procedure Note:

The following chart and calculations are for operator aid only and are not required to be used or place kept. These tools may be modified as desired. (ie. periodic flow estimate can be used for any time interval desired)

EXAMPLE

Total volume**(V_T)** = (10%) ***** 33.8 gal/% = 338 gal

Acid volume**(V_A)** = $\frac{338 \text{ gal}}{(5.5 + 1)}$ = **52** gal

Flush volume**(V_F)** = 50 gal

Water volume**(V_W)** = (338 gal – 52 gal) – 50 gal = **236** gal

Periodic Flow Estimate	1	2	3	4	FLUSH
Water Volume(gal)	59	118	177	**236 (V_W)**	286 **(V_W+V_F)**
Acid Volume(gal)	13	26	39	**52 (V_A)**	N/A

Total volume**(V_T)** = (VCT level change) * 33.8 gal/%

(V_T) = (____15____) ***** 33.8 gal/% = ____507____ gal **(V_T)**

Acid volume**(V_A)** = $\frac{\text{Total volume}}{[\text{Initial blend ratio} + 1]}$

(V_A) = $\frac{(507)}{[(7) + 1]}$ = 63 gal **(V_A)**

Flush volume**(V_F)** = 50 gal ____50____ gal **(V_F)**

Water volume**(V_W)** = (Total volume – Acid volume) – Flush volume

(V_W) = (507 **(V_T)** – 64 **(V_A)**) – 50 gal **(V_F)** = 393 gal **(V_W)**

Periodic Flow Estimate	1	2	3	4	FLUSH
Water (gal)	93	186	279	**393 (V_W)**	443 **(V_W+V_F)**
Acid (gal)	15	30	45	**64 (V_A)**	N/A

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	2. Step 2.4	**IF** making up to Volume Control Tank, **THEN PERFORM** the following to align to VCT: 2.4.1 **OPEN** Manual Makeup to VCT (2CVC-68). 2.4.2 **CLOSE** Manual Makeup to Charging Pump Suction (2CVC-83). **EXAMINER CUE:** **WCO reports than 2CVC-68 is OPEN and 2CVC-83 is CLOSED.**	Contact WCO and direct OPENING of 2CVC-68 and CLOSING of 2CVC-83.	N/A SAT UNSAT
	3. Step 2.5	**IF** desired, **THEN RECORD** initial controller data: 2FIC-4926 Setpoint: _____ Demand: _____ 2FIC-4927 Setpoint: _____ Demand: _____	Recorded data or N/A	N/A SAT UNSAT
(C)	4. Step 2.6	**ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) set as follows: 2.6.1 Setpoint set to desired flow rate. 2.6.2 **IF** in MANUAL, **THEN** demand set to desired value.	On Panel 2C09, set Boric Acid Makeup Flow Controller (2FIC-4926) set point to desired flow rate. And adjusted output to desired value. **Examiner note: It is critical to setup the controller setpoint at ~ 1 / 6.2 of water flow rate. Acceptable range is 1 / (5.7 to 6.7). It is not critical to have the output at the correct value due to the output being an estimate.**	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	5. Step 2.7	**ENSURE** Reactor Makeup Water Flow controller (2FIC-4927) set as follows: 2.7.1 Setpoint set to desired flow rate. 2.7.2 **IF** in MANUAL, **THEN** demand set to desired value. 2.7.3 **IF** aligned to Charging Pump Suction, **THEN** demand set less than Charging flow	On Panel 2C09, set Reactor Makeup Water Flow Controller (2FIC-4927) setpoint to desired flow rate. And adjusted output to desired value. **Examiner note: It is critical to setup the controller setpoint** at **~ 6.2 times acid flow rate. Acceptable range is 5.7 to 6.7. It is not critical to have the output at the correct value due to the output being an estimate.**	N/A SAT UNSAT
	6. Step 2.8	**RESET** Boric Acid Makeup Flow Totalizer (2FQI-4926) to zero.	On Panel 2C09, on (2FQI-4926) depressed the reset pushbutton. (Function pushbutton F3) Observed 2FQI-4926 indicating zero.	N/A SAT UNSAT
	7. Step 2.8	**RESET** Reactor Makeup Water Flow Totalizer (2FQI-4927) to zero.	On Panel 2C09, on (2FQI-4927) depressed the reset pushbutton. (Function pushbutton F3) Observed 2FQI-4927 indicating zero.	N/A SAT UNSAT
(C)	8. Step 2.9	**OPEN** VCT Makeup Isolation (2CV-4941-2) (2HS-4941-2).	On Panel 2C09, placed handswitch for VCT Makeup Isol Valve (2CV-4941-2) to OPEN. Observed red light ON, green light OFF above handswitch for 2CV-4941-2.	N/A SAT UNSAT
	9. Step 2.10	**ENSURE** EITHER Reactor Makeup pump running: 2P-109A (2HS-4965) 2P-109B (2HS-4966)	On Panel 2C09, verified handswitch for one Reactor Makeup Pump (either 2P109A or 2P109B) in START. Observed red light ON and green light OFF above handswitch for selected pump.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	10. Step 2.11	**ENSURE** at least ONE BAM pump running: 2P-39A (2HS-4919-2) 2P-39B (2HS-4910-2)	On Panel 2C09, placed handswitch for 2P-39A OR 2P-39B BAM Pump to START. Observed red light ON and green light OFF above handswitch for selected pump	N/A SAT UNSAT
	11. Step 2.12	**ENSURE** BAM Tank Recirc valve open for running pump: 2T-6A recirc (2HS-4903-2) 2T-6B recirc (2HS-4915-2)	On Panel 2C09, opened the BAM Pump recirc valve associated with the running BAM pump (2CV-4903-2) OR (2CV-4915). Observed red light ON and green light OFF for valve opened.	N/A SAT UNSAT
	12 Step 2.13	**ENSURE** running BAM pump selected for automatic operation using BAM Pump Select Switch (2HS-4911-2).	Verified BAM Pump Select Switch (2HS-4911-2) selected for automatic operation for the running BAM pump.	N/A SAT UNSAT
(C)	13. Step 2.14	**PLACE** Boric Acid Makeup Mode Selector switch (2HS-4928) to MANUAL.	On Panel 2C09, placed 2HS-4928 to MANUAL.	N/A SAT UNSAT
	14. Step 2.15	**ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) indicates desired flow rate.	On Panel 2C09, verified 2CV-4926 opens to control flow at ~ 1 / 6.2 of water flow rate. Observed flow indicated on 2FIC-4926.	N/A SAT UNSAT
	15. Step 2.16	**ENSURE** Reactor Makeup Water Flow controller (2FIC-4927) indicates desired flow rate.	On Panel 2C09, verified 2CV-4927 opens to control flow at ~ 6.2 times acid flow rate. Observed flow indicated on 2FIC-4927.	N/A SAT UNSAT

Examiner Note: The following step is the alternate path portion of this JPM. When the Manual Makeup (Blend) to the VCT is commence. VCT level will not respond due to a lineup error by NLOs and the Spent Fuel Pool level HI/LO alarm will annunciate. This will clue the operator that the lineup is incorrect and they need to secure the lineup using step 2.17.

JOB PERFORMANCE MEASURE

(C)	15. Step 2.17	**IF** ANY of the following occur during RCS Makeup: • FUEL POOL LEVEL HIGH (2K11-J4) alarm • Expected VCT level change **NOT** observed • CRS/SM directs securing RCS Dilution, **THEN PERFORM** ANY of the following as necessary: • **PLACE** Mode Select switch (2HS-4928) in DILUTE. • **ENSURE** Boric Acid Makeup Flow Control 2CV-4926 closed (2FIC-4926). • **ENSURE** RMW Flow Control 2CV-4927 closed (2FIC-4927). • **ENSURE** running BAM pumps secured: - 2P-39A (2HS-4919-2) - 2P-39B (2HS-4910-2) • **ENSURE** running Reactor Makeup pump secured: - 2P-109A (2HS-4965) - 2P-109B (2HS-4966)	Stopped Chemical addition flow on 2FIC-4926 and 2FIC-4927 by any of the following: • **PLACE** Mode Select switch (2HS-4928) in DILUTE. **OR** • **ENSURE** Boric Acid Makeup Flow Control 2CV 4926 closed (2FIC-4926). • **ENSURE** RMW Flow Control 2CV 4927 closed (2FIC-4927). **OR** • **ENSURE** running BAM pumps secured: - 2P-39A (2HS-4919-2) - 2P-39B (2HS-4910-2) • **ENSURE** running Reactor Makeup pump secured: - 2P-109A (2HS-4965) - 2P-109B (2HS-4966)	N/A SAT UNSAT
EXAMINER'S NOTE: JPM may be terminated when above step is complete.				
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.2.

Boron2 program has been used to determine the correct amounts of Boric acid and water.

'A' BAM Tank" boron concentration is 5975 ppm.

RCS boron Concentration is 746 ppm.

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.3 using 'A' BAM Tank."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.2.

Boron2 program has been used to determine the correct amounts of Boric acid and water.

'A' BAM Tank" boron concentration is 5975 ppm.

RCS boron Concentration is 746 ppm.

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.3 using 'A' BAM Tank."

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 1 **DATE:** _____

SYSTEM/DUTY AREA: Inventory Control

TASK: Perform Standard Attachment 22 Isolating LOCA outside containment

JTA#: ANO-RO-EOPAOP-EMERG-13

Alternate Path Yes: X **No:** _____ **Time Critical Yes:** _____ **No:** X

KA VALUE RO: 4.3 **SRO:** 4.4 **KA REFERENCE:** 002 A2.01

APPROVED FOR ADMINISTRATION TO: RO: X **SRO:** X

TASK LOCATION: INSIDE CR: X **OUTSIDE CR:** _____ **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **LAB:** _____

POSITION EVALUATED: RO: _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: SIMULATE: _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 Minutes

REFERENCE(S): OP-2202.010, Standard Attachments, Attachment 22

EXAMINEE'S NAME: _____ **Login ID:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Reactor trip due to a Loss of Offsite power.
- The plant is in mode 3.
- A RCS Leak is occurring outside CNTMT.
- 2203.003, Loss of Coolant Accident has been entered.
- Power restored to 2A-1 from AAC.

TASK STANDARD:

Isolated the LOCA outside containment by determining the leak was into CCW and then, aligned surge tank vents to 2VEF-8A/B exhaust fan suction, isolated CCW to the RCPs, and isolated controlled bleed off.

TASK PERFORMANCE AIDS:

OP-2202.010 Standard Attachments, Attachment 22.

SIMULATOR SETUP:

Unit 2 reactor tripped due to Loss of Offsite power.
Loss Of Coolant Accident procedure complete up to the step to perform Standard Attachment 22.
RCS sample valves open.

Intersystem LOCA in progress. Malfunction RCP2P32BSLK value = 10 gpm.

Examiner Note: This is an Alternate Path JPM. The applicant is tasked isolating a LOCA that is leaving containment. The applicant will determine that the leak is into component cooling water and they must transition to standard attachment 18. They will use attachment 18 to isolate the leak to the containment building.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to perform OP-2202.010 Attachment 22 to isolate the RCS leakage leaving containment.

START TIME:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1 (Step 1)	CHECK Aux Building Radiation monitors to determine break location.	Monitored Aux Building radiation to determine leak location.	N/A SAT UNSAT
	2 (Step 2)	**IF** Charging pumps running, **AND** "HEADER FLOW LO" annunciator (2K12-B3) in alarm, **THEN**:	Determined that charging Header flow low annunciator not in alarm.	N/A SAT UNSAT
Procedure Note: The following step addresses LPSI header check valve leakage which causes LPSI Header Relief valve (2PSV 5089) to lift.				
	3 (Step 3)	**IF** in service BMS Holdup Tank level rising, **THEN PERFORM** the following to isolate leaking check valve:	Monitored BMS holdup tank level and determined levels were not rising.	N/A SAT UNSAT
(C)	4 (Step 4)	**IF** indications of RCS leakage into CCW exist, **THEN** perform Attachment 18, RCS to CCW Leak Isolation in conjunction with this attachment. **Examiner Cue:** **If applicant tries to continue and do both attachments then state another operator will continue with Att. 22**	Monitored CCW surge tank level or CCW radiation and determined levels were rising and RCS leak was into CCW. Transitioned to Attachment 18.	N/A SAT UNSAT
	5 (Step 1)	**Isolate** Letdown by closing Letdown Isolation valve (2CV-4820-2).	Observed 2CV-4820 green light on and Red light off.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
	6 (Step 2)	**Cycle** Charging pumps as needed to maintain PZR level within 5% of setpoint.	Observed PZR level is acceptable and charging pump operation was adequate.	N/A SAT UNSAT
(C)	7 (Step 3)	**ALIGN** CCW Surge Tank vents to 2VEF-8A/B suction: • Loop 1 CCW Surge Tank Vent (2CV-5217) • Loop 2 CCW Surge Tank Vent (2CV-5218)	Placed Handswitches for 2CV-5217 and 2CV-5218 to 2VEF8A/B suction. Observed valves repositioned to red light on above 2VEF8A/B suction position and red light off above Atmosphere position.	N/A SAT UNSAT
	8 (Step 4)	**IF** CCW Surge Tank levels stop rising, **OR** RCS leak isolated, **THEN ISOLATE** CCW to Letdown Heat Exchanger as follows:	Determined CCW Surge Tank levels were still rising.	N/A SAT UNSAT
	Procedure Note: Maximum CCW Surge tank drain rate through 2CCW-5030 is approximately 80 gpm.			
	9 (Step 5)	Locally **MAINTAIN** CCW Surge Tank levels 40% to 50% as follows: A. **ENSURE** the following valves open: • A SURGE TANK DRN (2CCW-1022) • B SURGE TANK DRN (2CCW 1023) B. **THROTTLE** "2T 37A/B DRN TO LRW" valve (2CCW 5030). **Examiner Cue: Respond as NLO and report that will maintain surge tank level 40 to 50%.**	Directed NLO to control surge tank levels.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	10 (Step 6)	**ENSURE** ANY CCW feed and bleed/side stream filter operation for chemistry control secured. **Examiner Cue: Respond as chemistry/NLO and report feed and bleed/side stream filter ops secured.**	Directed Chemistry/NLO to secure any feed and bleed and/or side stream filter.	N/A SAT UNSAT
	11 (Step 7)	**IF** RCS leak to CCW still exists, **THEN ENSURE** RCS Sample Isolation valves closed: A. 2SV-5833-1 B. 2SV-5843-2	Placed 2SV-5833-1 and 2SV-5843-2 handswitches in closed. Observed Green light on, Red light off.	N/A SAT UNSAT
	12 (Step 8A)	IF RCS leak to CCW from RCPs, THEN: A. **ENSURE** ALL RCPs stopped.	Observed RCP secured 2P-32A, 2P-32B, 2P-32C, and 2P-32D. Observed Green light on, Red light off.	N/A SAT UNSAT
	13 (Step 8B)	B. **ENSURE** BOTH PZR Spray valves in MANUAL and closed.	Observed PZR spray valve **(2CV-4651/2CV-4652)** HS in Manual and PZR spray valves closed **(2CV-4651/2CV-4652)** Observed Green light on, Red light off.	N/A SAT UNSAT
(C)	14 (Step 8C)	**Close** RCP CCW Supply valve (2CV-5236-1).	Placed HS for 2CV-5236-1 in close. Observed Green light on, Red light off.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	15 (Step 8D)	**Close** RCP CCW Return Isolation valves: • 2CV-5254-2 • 2CV-5255-1 Examiner Note: 2CV-5255-1 is a throttle valve and must be held in the close position.	Placed HS for 2CV-5254-2 and 2CV-5255-1 in close. Observed Green light on, Red light off. Examiner Note: It is only critical to close one of the return isolation valves.	N/A SAT UNSAT
	16 (Step 8E)	**Close** RCP Bleedoff to VCT Isolation valve (2CV-4847-2). Examiner Note: Step Not Critical because other containment isolation valve is closed.	Placed HS for 2CV-4847-2 in close. Observed Green light on, Red light off.	N/A SAT UNSAT
(C)	17 (Step 8F)	**Close** RCP Bleedoff Relief to Quench Tank Isolation valve (2CV-4856).	Placed HS for 2CV-4856 in close. Observed Green light on, Red light off.	N/A SAT UNSAT
Examiner note: When the applicant has isolated Controlled Bleedoff this JPM is complete.				
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- Reactor trip due to a Loss of Offsite power.
- The plant is in mode 3.
- A RCS Leak is occurring outside CNTMT.
- 2203.003, Loss of Coolant Accident has been entered.
- Power restored to 2A-1 from AAC.

INITIATING CUE:

The SM/CRS directs you to perform OP-2202.010 Attachment 22 to isolate the RCS leakage leaving containment.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Reactor trip due to a Loss of Offsite power.
- The plant is in mode 3.
- A RCS Leak is occurring outside CNTMT.
- 2203.003, Loss of Coolant Accident has been entered.
- Power restored to 2A-1 from AAC.

INITIATING CUE:

The SM/CRS directs you to perform OP-2202.010 Attachment 22 to isolate the RCS leakage leaving containment.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 1 **DATE:** _____

SYSTEM/DUTY AREA: Pressurizer Pressure Control

TASK: Perform 2103.005 Pressurizer Operations, Attachment B, Red Train Proportional Heater Test

JTA#: ANO-RO-PZR-NORM-13

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.6 **SRO:** 3.4 **KA REFERENCE:** 010 A4.02

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** X **OUTSIDE CR:** _____ **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 10 Minutes

REFERENCE(S): OP-2103.005, Pressurizer Operations, Attachment B

EXAMINEE'S NAME: _____ **Login ID:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Mode 3
- Reactivity Management Brief complete.
- Initial conditions of 2103.005 Pressurizer operations Att. B complete

TASK STANDARD:

Tested the Red train proportional heater test by de-energizing the green train proportional heaters, raised heater output to full fire, restored heater control to automatic and determined adjusted heater output is between 190 KW and 197 KW.

TASK PERFORMANCE AIDS:

OP 2103.005 Pressurizer Operations, Att. B.

SIMULATOR SETUP:

Mode 3

Examiner Note: The applicant will perform a red train proportional heater test. The applicant will place the green train proportional heaters in off, ensure they read 0KW on SPDS and then manually raise the output of the red train heater to maximum. They will then record the heater output then restore the system to normal.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to complete 2103.005 Pressurizer Operations Att. B starting with step 2.0

START TIME:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1 (Step 2.1)	**IF** Pressurizer pressure deviating/responding unexpectedly, **THEN RESTORE** BOTH banks of Proportional Heaters to AUTO.	Applicant read step and will continue to monitor for pressure response during test.	N/A SAT UNSAT
	2 (Step 2.2)	**IF** plant in Mode 1, 2, or 3, **THEN MAINTAIN** Dedicated Operator to restore heater control as necessary.	Applicant determined that they were the dedicated operator and they would restore heater control if necessary	N/A SAT UNSAT
(C)	3 (Step 2.3)	**PLACE** PZR Prop Heater 2SCR-2 switch (2HS-4641) in OFF. (Spring return to AUTO)	Placed 2HS-4641 to off. Checked Green light on and Red light off	N/A SAT UNSAT
	4 (Step 2.4)	**ENSURE** Proportional Heater Bank #2 approximately 0 KW on SPDS (J2C118).	Checked SPDS point J2C118 indicated ~ 0 KW.	N/A SAT UNSAT
(C)	5 (Step 2.5) (Step 2.5.1)	**TAKE** manual control of ONLINE PZR Pressure controller (2PIC-4626A or 2PIC-4626B) as follows: Using the F2 button, **SELECT** Page 3 for Pressurizer Proportional Heaters.	Pressed the F2 button on the pressurizer proportional controller 2PIC-4626A until Prop HTR displayed at top of controller.	N/A SAT UNSAT
(C)	6 (Step 2.5.2)	**PLACE** controller in MANUAL.	Depressed the A/M button until M was display on 2PIC-4626A faceplate.	N/A SAT UNSAT
(C)	7 (Step 2.6)	**ADJUST** ONLINE PZR Pressure Controller output to zero (Full On).	Depressed the lower arrow near the bottom of the controller until output was less than or equal to zero	N/A SAT UNSAT
	8 (Step 2.7)	**RECORD** Proportional Heater Bank #1 power (J2C117): _____ KW **Examiner Note: Bank #1 power is ~ 205 KW**	Recorded J2C117 value	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	9 (Step 4.8)	**PLACE** ONLINE PZR Pressure Controller in AUTO.	Depressed the A/M button until A was display on 2PIC-4626A faceplate.	N/A SAT UNSAT
(C)	10 (Step 2.9)	**PLACE** PZR Prop Heater 2SCR-2 switch (2HS-4641) in ON. (Spring return to AUTO)	Placed 2HS-4641 to on. Checked green light off and Red light on	N/A SAT UNSAT
	11 (Step 2.10)	**ENSURE** pressurizer heaters controlling pressure at setpoint. **Examiner Note: The applicants may delay continuing to monitor pressure response if desired provide them with the following cue.** **Examiner Cue: Tell applicant that another operator will monitor RCS pressure and they can continue.**	Monitored PZR pressure and determined that pressurizer heaters were in control.	N/A SAT UNSAT
	12 (Step 2.11)	**RECORD** 2B5 Bus Voltage from SPDS SFD Screen: _____ volts **Examiner Note: 2B5 Bus Voltage is ~ 489 KW**	Recorded 2B5 bus voltage.	N/A SAT UNSAT
(C)	13 (Step 2.12)	**CALCULATE** Proportional Heater Bank #1 Adjusted Power: Htr Power * (480 / 2B5 voltage)^2 * .964 = Adjusted Power _____ * (480 / _____)^2 * .964 = _____ KW (step 2.7) (step 2.11)	Calculated Bank #1 adjusted power to be between the values of 188 KW and 193 KW	N/A SAT UNSAT
Examiner note: When the applicant has calculated adjusted power JPM can be completed however if they calculate wrong you may allow them to review the acceptance criteria and determine their error.				

JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST		**STANDARDS**	(Circle One)
	14 (Step 3)	ACCEPTANCE CRITERIA 3.1 Is Proportional Heater Bank #1 Adjusted Power greater than 150 KW? YES NO 3.2 IF NO answered in 3.1, THEN: • NOTIFY Shift Manager. • REFER TO Tech Spec 3.4.4. • INITIATE Condition Report.	Determined that Proportional Heater Bank #1 Adjusted Power greater than 150 KW.	N/A SAT UNSAT
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- Mode 3
- Reactivity Management Brief complete.
- Initial conditions of 2103.005 Pressurizer operations Att. B complete

INITIATING CUE:

The SM/CRS directs you to complete 2103.005 Pressurizer Operations Att. B starting with step 2.0

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Mode 3
- Reactivity Management Brief complete.
- Initial conditions of 2103.005 Pressurizer operations Att. B complete

INITIATING CUE:

The SM/CRS directs you to complete 2103.005 Pressurizer Operations Att. B starting with step 2.0

JOB PERFORMANCE MEASURE

Unit: 2 **Rev #:** 2 **Date:** _____

System/Duty Area: Reactor Coolant Pumps

Task: Perform a normal RCP start

JTA# ANO2-RO-RCP-NORM-5

Alternate Path Yes: X **No:** _____ **Time Critical Yes:** _____ **No:** X

KA Value RO: 3.7 **SRO:** 3.9 **KA Reference:** 003 A2.02

Approved For Administration To: RO: X **SRO:** X

Task Location: Inside CR: X **Outside CR:** _____ **Both:** _____

Suggested Testing Environment And Method (Perform Or Simulate):

Plant Site: _____ **Simulator:** Perform **Lab:** _____

Position Evaluated: RO: _____ **SRO:** _____

Actual Testing Environment: Simulator: _____ **Plant Site:** _____ **Lab:** _____

Testing Method: Simulate: _____ **Perform:** _____

Approximate Completion Time In Minutes: 10 minutes

References(s): 2103.006 Reactor Coolant Pump Operations

Examinee's Name: _____ **Login ID:** _____

Evaluator's Name: _____

The Examinee's performance was evaluated against the standards contained in this JPM and is determined to be:

Satisfactory: _____ **Unsatisfactory:** _____

Performance Checklist Comments:

_____

_____

Start Time: _____ **Stop Time:** _____ **Total Time:** _____

Signed: _____ **Date:** _____

Signature indicates this JPM has been compared to its applicable procedure by a qualified individual (not the examinee) and is current with that revision.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Reactor trip occurred then SU3 locked out due to a relay failure.
- The plant is in mode 3.
- Power has been restored to all Non-vital busses from Start-up 3 after relay replacement.
- 2203.013, Natural Circulation Operations has been entered.
- The crew is on step 17 which directs the start of one RCP in each loop using 2103.006, RCP Operations.
- Steps 7.1, 7.2, and 7.3 of 2103.006 are complete.
- Unit 1 is aligned to SU2 and NOT SU1

SIMULATOR SETUP:

Insert malfunction RCP-2P32BREV. Trigger it 10 seconds after event gh4r4620 (RCP A red light)

TASK STANDARD:

Applicant started 'A' RCP lift oil pump, started 'A' RCP, Determined reverse rotation valid for 'B' RCP and then secured 'A' RCP.

TASK PERFORMANCE AIDS:

EXAMINER'S NOTE: The applicant will monitor RCP oil level trends on PMS. Start the RCP lift pump for 'A' RCP. Next, they will monitor for oil leakage and proper lift pump discharge pressure. They will start the RCP. After the RCP is started, another RCP will show indications of reverse rotation. The applicant will then refer to the ACA and secure all RCPs.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs you to start RCP A using 2103.006, Reactor Coolant Pump Operations, using section 7.0 starting at step 7.4.

START TIME: _____

	PERFORMANCE CHECKLISTS		STANDARDS	(Circle One)
	1 (Step 7.4)	**MONITOR** RCP oil level trends on PMS.	Monitored RCP oil level trends on PMS/PDS.	N/A SAT UNSAT
	2 (Step 7.5)	**IF** start is first start after pump or motor maintenance, **THEN STATION** operator locally to monitor pump start.	Determined not the first start after pump or motor maintenance	N/A SAT UNSAT
(C)	3 (Step 7.6)	**PLACE** associated Lift Pump handswitch in START: • 2P-32A Lift pump 2P-63A (2HS-6084) • 2P-32B Lift pump 2P-63B (2HS-6094) • 2P-32C Lift pump 2P-63C (2HS-6104) • 2P-32D Lift pump 2P-63D (2HS-6114)	Examinee placed 2P-32A Lift Pump handswitch (2HS-6084) in START	N/A SAT UNSAT
	4 (Step 7.7)	**IF** oil leakage indicated on PMS, **THEN STOP** lift pump.	Monitored for oil leakage via PMS.	N/A SAT UNSAT
	5 (Step 7.8)	**IF** HP lift pump discharge pressure in alarm, **THEN PERFORM** Attachment C, Verification of HP Lift Pump Pressure.	Determined lift oil pump discharge pressure alarm clear.	N/A SAT UNSAT
	6 (Step 7.9)	**IF** required to install T-Mod for CCW Flow Interlock, **THEN PERFORM** Attachment D, T-Mod for CCW Flow Interlock.	Determined T-Mod for CCW flow interlock not required.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

		PERFORMANCE CHECKLISTS	STANDARDS	(Circle One)
	7 (Step 7.10)	**CHECK** Reverse Rotation alarm clear for ALL RCPs: • 2P-32A REVERSE ROTATION (2K11-C2) • 2P-32B REVERSE ROTATION (2K11-C4) • 2P-32C REVERSE ROTATION (2K11-C6) • 2P-32D REVERSE ROTATION (2K11-C8)	Verified Reverse Rotation alarm clear for all RCPs.	N/A SAT UNSAT
	8 (Step 7.11)	WHEN oil lift system has been operating at least three minutes, THEN start Reactor Coolant pump as follows: **Examiner Cue:** **Report 3 minutes has elapsed.**	Determined 3 minutes have elapsed.	N/A SAT UNSAT
Procedure Note • Normal starting current duration is less than 10 seconds, however, bus voltage may require up to 1 minute to return to nominal. • During heatup and startup, VLPM will occasionally alarm due to high frequency, high amplitude flow noises associated with 1 and 2 RCP operations. In this condition, alarms may be disregarded, but audio monitoring is still warranted.				
	9 (Step 7.11.1)	**IF** on SU3 Transformer, **THEN MONITOR** starting amps on SU3 Amp meter. **Examiner Cue:** **Another operator will monitor amps.**	Ensured starting amps on SU3 Amp meter were being monitored.	N/A SAT UNSAT
	10 (Step 7.11.2)	**IF** Unit 1 on SU1 **AND** Unit 2 on SU3, **THEN ENSURE** Unit 1 480V Vital Bus voltage greater than 470V prior to RCP start (Millstone relay actuation concerns). **Examiner Cue:** **If asked about Unit 1 tell them to refer to the initial conditions.**	Determined Step is not applicable.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLISTS			STANDARDS	(Circle One)
(C)	11 (Step 7.11.3)	**START** desired RCPs using applicable handswitch: ▪ 2P-32A (2HS-4620)	Examinee starts 2P-32A RCPs using applicable handswitch (2HS-4620).	N/A SAT UNSAT
	12 (Step 7.11.4A)	**PERFORM** the following after start of each RCP: **PERFORM** OPS-B2, V&LPM Channel Check. **Examiner Cue:** **Another operator will perform the channel check.**	Checks to see if someone is performing V&LPM channel check (OPS-B2).	N/A SAT UNSAT
	13 (Step 7.11.4B)	**ENSURE** Reverse Rotation alarm for IDLE RCPs clear: • 2P 32A REVERSE ROTATION (2K11 C2) • 2P 32B REVERSE ROTATION (2K11 C4) • 2P 32C REVERSE ROTATION (2K11 C6) • 2P 32D REVERSE ROTATION (2K11 C8)	Determined Reverse rotation alarm is in for B RCP	N/A SAT UNSAT
ALTERNATE PATH STEP The examinee should notice the alarm is not clear for RCP B. The Examinee should refer to the ARP for the alarm.				
Procedure Note: Relays associated with 2FS-6081 (2P-32A) and 2FS-6091 (2P-32B) are protected by single fuse F23 in cabinet 2C-21. Blown fuse is probable cause if both annunciators C-2 and C-4 in alarm. (reference E-2181-2 and CALC-85-E-0118-01)				
	14 (ACA Step 2.2)	IF 2P-32A REVERSE ROTATION (2K11-C2) also in alarm, THEN check status of fuse F23 in cabinet 2C-21.	Determined 2K11-C2 clear.	N/A SAT UNSAT
	15 (ACA Step 2.3)	IF EITHER of the following conditions exist: • RCP (2P-32B) operating • Fuse F23 in cabinet 2C-21 blown, THEN alarm is NOT valid.	Determined Alarm is valid.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLISTS			STANDARDS	(Circle One)
(C)	16 ACA (Step 2.4 and Step 2.4.1)	IF 2P 32B Reverse Rotation alarm valid, THEN: Secure ALL operating RCPs: • 2P 32A (2HS 4620) • 2P 32C (2HS 4720) • 2P 32D (2HS 4721)	Secured RCP A (2P-32A) by taking 2HS-4620 to stop or PTL	N/A SAT UNSAT
	17 ACA (Step 2.4.2)	IF RCP (2P-32A) was stopped, THEN ensure A Spray valve (2CV-4651) in MANUAL and closed.	Ensured 2CV-4651 in manual with green light on Red light off.	N/A SAT UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- A loss of offsite power has occurred.
- The plant is in mode 3
- Power has been restored to the 6.9 KV busses.
- 2203.013, Natural Circulation Operations has been entered.
- The crew is on step 17 which directs the start of one RCP in each loop using 2103.006, RCP Operations.
- Steps 7.1, 7.2, and 7.3 of 2103.006 are complete.
- Unit 1 is aligned to SU2 and NOT SU1

INITIATING CUE:

The CRS directs you to start RCP A using 2103.006, Reactor Coolant Pump Operations, using section 7.0 starting at step 7.4.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- A loss of offsite power has occurred.
- The plant is in mode 3
- Power has been restored to the 6.9 KV busses.
- 2203.013, Natural Circulation Operations has been entered.
- The crew is on step 17 which directs the start of one RCP in each loop using 2103.006, RCP Operations.
- Steps 7.1, 7.2, and 7.3 of 2103.006 are complete.
- Unit 1 is aligned to SU2 and NOT SU1

INITIATING CUE:

The CRS directs you to start RCP A using 2103.006, Reactor Coolant Pump Operations, using section 7.0 starting at step 7.4.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 8 **DATE:** _____

SYSTEM/DUTY AREA: Containment Cooling System

TASK: Verify Containment Coolers in Emergency Mode

JTA#: ANO2SROEOPAOPEMER12/ANO2ROEOPAOPEMERG13

Alternate Path **Yes:** X **No:** _____ **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.2 **SRO:** 3.2 **KA REFERENCE:** 022 A4.03

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** X **OUTSIDE CR:** _____ **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 5 Minutes

REFERENCE(S): OP 2202.010 Standard Attachments, OP 2202.003 Loss of Coolant Accident.

EXAMINEE'S NAME: _____ **Badge #** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS

- Reactor has tripped due to a LOCA
- CCAS has failed to actuate automatically

TASK STANDARD:

Containment Coolers were placed in Emergency Mode by manually actuating the Red Train using the actuation pushbuttons and then opened all green train Service Water valves, opened all green train bypass dampers and started the idle cooler.

OR

Containment Coolers were placed in Emergency Mode by opening all Service water valves, opening all bypass dampers and starting the idle cooler.

TASK PERFORMANCE AIDS:

OP-2202.010 Exhibit 9.

SIMULATOR SETUP:

Verify 2VSF-1C is the standby fan.
400 gpm LOCA.
CCAS fails to actuate.
Load the following malfunctions:

- ESFCCASA
- ESFCCAS2

EXAMINER NOTES:

This is an alternate success path JPM.

JOB PERFORMANCE MEASURE

INITIATING CUE:
Crew is performing OP 2202.003, Loss of Coolant Accident, Section 1, Step 5. The SM/CRS directs you to actuate CCAS.

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
Examiner's Note: The examinee may elect to start desired CCAS components manually rather than actuating the components from the PPS inserts. If step 1 is not completed, then steps 2, 3, and 4 become critical steps and step 1 is not critical.				
(C)	1.	Procedure Step: OP-2202.003 Step 5. Verify CCAS actuated on PPS inserts.	**Examinee depressed CCAS push buttons on 2C03 or 2C14.** Examinee observed CCAS actuated on PPS inserts on 2C03: Trip paths 1&2 if actuated from 2C03 OR trip paths 3&4 if actuated from 2C14.	N/A SAT UNSAT
	2.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, first block. Verify RED train CNTMT coolers in service.	On panel 2C17, examinee observed red light ON and green light OFF for CNTMT cooling fans: • 2VSF-1A • 2VSF-1B	N/A SAT UNSAT
	3.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, second block. Verify Service Water Aligned to RED train CNTMT coolers:	On panel 2C17, examinee observed red light ON and green light OFF for Service Water to RED train CNTMT coolers: • 2CV-1511-1 (Inlet) • 2CV-1519-1 (Outlet)	N/A SAT UNSAT
	4.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, third block. Verify RED train Bypass Dampers open.	On panels 2C17, examinee observed red lights ON for dampers: • 2UCD-8209-1 • 2UCD-8203-1	N/A SAT UNSAT
Examiner's Note: The following steps have the faulted components.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	5.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, fourth block. Verify GREEN train CNTMT coolers in service.	On panel 2C16, examinee observed red light ON and green light OFF for CNTMT cooling fan: • 2VSF-1D On panel 2C16, examinee observed red light Off and green light On for CNTMT cooling fan: • 2VSF-1C **Critical portion: On panel 2C16, examinee manually started 2VSF-1C.**	N/A SAT UNSAT
(C)	6.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, fifth block. Verify Service Water aligned to GREEN train CNTMT Coolers:	On panel 2C16, examinee observed red light OFF and green light ON for Service Water to GREEN train CNTMT coolers: • 2CV-1510-2 (Inlet) • 2CV-1513-2 (Outlet) **Critical portion: On panel 2C16, examinee opened the following valves:** • 2CV-1510-2 (Inlet) • 2CV-1513-2 (Outlet)	N/A SAT UNSAT
(C)	7.	Procedure Step: OP-2202.010 Exhibit 9, Step 4, sixth block. Verify GREEN train Bypass dampers open.	On panel 2C16, examinee observed red light OFF and green light ON for CNTMT cooling dampers: • 2UCD-8216-2 • 2UCD-8222-2 **Critical portion: On panel 2C16, examinee opened the following dampers:** • 2UCD-8216-2 • 2UCD-8222-2	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

- Reactor has tripped due to a LOCA
- CCAS has failed to actuate automatically

INITIATING CUE:

Crew is performing OP 2202.003, Loss of Coolant Accident, Section 1, Step 5. The SM/CRS directs you to actuate CCAS.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

- Reactor has tripped due to a LOCA
- CCAS has failed to actuate automatically

INITIATING CUE:

Crew is performing OP 2202.003, Loss of Coolant Accident, Section 1, Step 5. The SM/CRS directs you to actuate CCAS.

JOB PERFORMANCE MEASURE

2 REV #: 06 DATE: _____

SYSTEM/DUTY AREA: Alternate AC Diesel Generator System

TASK: Perform an Emergency start of the AAC Diesel from 2C-14 and energize 2A3

JTA#: ANO2-RO-AACDG-OFFNORM-14

Alternate Path: Yes: _____ No: X Time Critical Yes: _____ No: X

KA VALUE RO: 4.1 SRO: 4.5 KA REFERENCE: 055 EA1.06

APPROVED FOR ADMINISTRATION TO: RO: X SRO: X

TASK LOCATION: INSIDE CR: X OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: Perform LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 12 Minutes

REFERENCE(S): OP-2104.037, Alternate AC Diesel Generator Operations

EXAMINEE'S NAME: _____ Login ID: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

A loss of Offsite Power has occurred.

2EDG-01 has a lockout due to a large lube oil leak. Unit 1 does not need the AACG to energize any bus.

TASK STANDARD: AACG (2K-9) running with normal voltage and frequency *and* 2A3 energized from the AACG.

TASK PERFORMANCE AIDS: OP 2104.037 Attachment E,

SIMULATOR SETUP: #1 EDG has a loss of lube oil malfunction. 2A3 deenergized. AACG not in service.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Start AAC Generator and energize 2A-3 using OP 2104.037 Attachment E."

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 1.0)	**IF** PLC-A available, **THEN RESET** PLC using EITHER of the following: • AACG Annunciator Screen • Handswitch on 2C435	Touched PLC Reset on PC.	N/A SAT UNSAT
Procedure: AACG can be started and tied to buses from either of the PCs (2C14 or 2C435) as long as both Network PLCs (PLC-A and PLC-C) are functional.				
	2. (Step 2.0)	**IF** EITHER AACG network PLC (PLC-A or PLC-C) failed, **OR** BOTH PCs failed, **THEN PERFORM** a local start using Exhibit 1, AAC Generator Local Start and Stop.	Determined step is NA	N/A SAT UNSAT
	3. (Step 3.0 and 3.1))	**PERFORM** the following to start AAC Generator: **TOUCH** ELECTRICAL BUS CONTROL.	Touched Electrical Bus Control on PC.	N/A SAT UNSAT
	4. (Step 3.2)	**TOUCH** 4160 V BREAKERS.	Touched 4160V Breakers on PC.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	5. (Step 3.3)	**ENSURE** the following breakers open: • 2A-901, AAC to 4.16KV Switchgear A3 • 2A-902, AAC to 4.16KV Switchgear 2A4 • 2A-903, AAC to 4.16KV Switchgear A1 • 2A-904, AAC to 4.16KV Switchgear 2A1	Check breakers 2A-901, 2A-902, 2A-903, and 2A-904 open by checking breakers on green button indication on the PC.	N/A SAT UNSAT
(C)	6. (Step 3.4)	**TOUCH** ENGINE START/STOP.	Touched Engine Start/Stop button PC.	N/A SAT UNSAT
(C)	7. (Step 3.5)	**TOUCH** START SCREEN.	Touched Start Screen button PC.	N/A SAT UNSAT
(C)	8. (Step 3.6)	**TOUCH** START button.	Touched Start button PC.	N/A SAT UNSAT
	9. (Step 3.7)	**IF** engine does **NOT** start in 35 seconds due to pre-lube interlock, **THEN TOUCH** and **HOLD** EMERGENCY START until engine speed is 180 RPM.	Determined step is NA	N/A SAT UNSAT
	10. (Step 3.8)	**ENSURE** the following generator parameters: • Frequency approximately 60 Hz (900 RPM) • Voltage approximately 4160 volts	Checked frequency ~60 Hz and voltage ~4160 V. Adjusted frequency or voltage if necessary by: Touched [Electrical Bus Control], touched [Synchronize] may use the [Switch To Sync Window] if on different screen, used speed [↑] and/or [↓] to adjust frequency, used voltage [↑] and/or [↓] to adjust voltage.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	11. (Step 4 and 4.1 and 4.2)	**PERFORM** the following to ensure proper AAC Electrical System alignment: **TOUCH** ELECTRICAL BUS CONTROL. **TOUCH** 4160V BREAKERS.	Touched Electrical Bus Control button on PC. Touched 4160V Breakers.	N/A SAT UNSAT
	12. (Step 4.3)	**ENSURE** AAC Generator Output breaker (2A-1001) closed.	Checked 2A-1001 output breaker closed by Red button indication on 2A-1001.	N/A SAT UNSAT
	13. (Step 4.4 and 4.5)	**TOUCH** ELECTRICAL BUS CONTROL. **TOUCH** 480V BREAKERS.	Touched Electrical Bus Control button on PC. Touched 480V Breakers.	N/A SAT UNSAT
	14. (Step 4.6)	**ENSURE** Offsite Main Breaker M1 (2B16-A1) open.	Checked 2B16-A1 open by green button indication.	N/A SAT UNSAT
	15. (Step 4.7)	**ENSURE** Generator Main Breaker M2 (2B16-B1) closed.	Checked 2B16-B1 closed by red button indication.	N/A SAT UNSAT
	16. (Step 4.8 and 4.9)	**TOUCH** MONITOR **TOUCH** ANNUNCIATOR SCREEN	Touched monitor button on PC. Touched annunciator screen Breakers.	N/A SAT UNSAT
	17. (Step 4.10)	**ENSURE** the following alarms clear: • Loss of 480 VAC POWER • 120 VAC UPS TROUBLE	Checked alarms clear by depressing alarm acknowledge button and checking annunciators not in.	N/A SAT UNSAT
	18. (Step 5)	**COORDINATE** with Unit 1 to determine electrical power status. **Examiner Cue: State Unit 1 does not require AAC diesel generator.**	Contacted Unit 1 to check bus status.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
Procedure Note: 2A3 and 2A4 are not supplied at the same time in Modes 1-4 except to satisfy a safety function.				
	19. (Step 6 and 6.1)	**IF** desired to energize 2A3 from the AACG (Dead-bus transfer only), **THEN:** **IF** powering Safety Related loads on BOTH Unit 1 and Unit 2, **THEN ENSURE** efforts are being pursued to restore normal offsite power or EDGs to minimize the vulnerability of total reliance upon the AACG by both units.	Determined that Step 6.1 is NA.	N/A SAT UNSAT
	20. (Step 6.2)	**ENSURE** 2A3 - 2A4 Tie breaker (2A-310) open.	Verified that 2A-310 open by green light indication.	N/A SAT UNSAT
	21. (Step 6.3)	**ENSURE** 2A3 Supply breaker (2A-309) in PULL-TO-LOCK.	Placed 2A-309 handswitches in PTL and check open by green light indication.	N/A SAT UNSAT
	22. (Step 6.4)	**ENSURE** 2DG1 Output breaker (2A-308) in PULL-TO-LOCK.	Placed 2A-308 handswitches in PTL and check open by green light indication.	N/A SAT UNSAT
	23. (Step 6.5 and 6.5.1)	**IF** 2A4 **NOT** energized from AAC Generator, **THEN**: **ENSURE** 2A3 - 2A4 Tie breaker (2A-410) open.	Verified that 2A-410 open by green light indication.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	24. (Step 6.5.2)	**IF** PLC available, **THEN**: **TOUCH** ELECTRICAL BUS CONTROL. **TOUCH** 4160 V BREAKERS. **TOUCH** 2A-902.	Touched electrical bus control button, 4160V button, and 2A-902 button on PC	N/A SAT UNSAT
(C)	25. (Step 6.5.3)	6.5.3 **PERFORM** the following as needed to close 2A-902: • **TOUCH** CLOSE on PLC. • **USE** 2A-902 Control switch (2HS-7101). • Locally **OPERATE** 2A-902 using Exhibit 4, AAC Generator 4160 V Breaker Operation Without DC.	Touched CLOSE on 2A-902 breaker control sub-screen, **or** Placed 2HS-7101 to close on 2C-14 (may have to hold in close for ~1-2 seconds) then, verified 2A-902 indicated red.	N/A SAT UNSAT
(C)	26. (Step 6.6)	**CLOSE** and **HOLD** 2A3 - 2A4 Tie (2A-310) in CLOSE position for 3 seconds.	Placed 2A-310 handswitch to close and held for ~3 seconds.	N/A SAT UNSAT
	11.	**ENSURE** 2A3 voltage indicates approximately 4160 volts.	Checked 2A-3 voltage indicated ~4160 V.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

A loss of Offsite Power has occurred.

2EDG-01 has a lockout due to a large lube oil leak. Unit 1 does not need the AACG to energize any bus.

INITIATING CUE:

The SM/CRS directs, "Start AAC Generator and energize 2A-3 using OP 2104.037 Attachment E."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

A loss of Offsite Power has occurred.

2EDG-01 has a lockout due to a large lube oil leak. Unit 1 does not need the AACG to energize any bus.

INITIATING CUE:

The SM/CRS directs, "Start AAC Generator and energize 2A-3 using OP 2104.037 Attachment E."

(S7)

JOB PERFORMANCE MEASURE

Unit: 2 **Rev #:** 2 **Date:** _____

SYSTEM/DUTY AREA: Emergency & Abnormal Operations

TASK: Disable B channel excore nuclear instrumentation.

JTA# ANO2-RO-EOPAOP-OFFNORM-172

ALTENATE PATH **YES:** _____ **NO:** X **TIME CRITICAL** **YES:** _____ **NO:** X

KA VALUE **RO:** 3.1 **SRO:** 3.5 **KA REFERENCE:** 015 A2.02

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** X **OUTSIDE CR:** _____ **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** perform **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

Testing Method: **Simulate:** _____ **Perform:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 8 minutes

REFERENCES(S): OP 2203.026 Nuclear Instrument Malfunction Rev. 7

EXAMINEE'S NAME: _____ **LOGON ID:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

START TIME: _____ **STOP TIME:** _____ **TOTAL TIME:** _____

(S7)

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- The plant is in mode 3.
- CEAs are capable of withdrawal.
- Shutdown bank CEAs are withdrawn for cocked rod protection
- Channel “A” Nuclear Instrument had previously failed and associated RPS channels were placed in bypass.
- Channel “B” Nuclear Instrument has just failed.

SIMULATOR SETUP:

Mode 3, CEAs capable of withdrawal, and SD banks withdrawn for cocked rod protection.
SDBCS in AL 1000# setpoint
Insert malfunction: NIALINEPWR with a value = 0
Bypass bistables 1 thru 4 on RPS channel A.
Insert malfunction: NIBLINEPWR with a value = 200

TASK STANDARD:

Channel B RPS bistables 2 thru 4 are tripped.

TASK PERFORMANCE AIDS:

OP-2203.026 Nuclear Instrument Malfunction Rev. 7

EXAMINER NOTES:

Disable B channel excore nuclear instrumentation. With a NI channel failed and already bypassed, a second NI channel failure will require the examinee to take contingency actions to place the second NI channel in the trip condition placing the RPS trip logic in a one out of two channels to trip the reactor.

(S7)

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs you to disable Nuclear Instrument B Log channel using Nuclear Instrument Malfunction OP-2203.026 step 6.

START TIME: _____

Examiner Note: Ensure applicant avoids the other applicant during the administration of this JPM. The other applicant will be near the ATC area computer during their JPM.

		CHECKLISTS	STANDARDS	(Circle One)
	1. (Step 6/6A)	Disable affected log channel as follows: If Three or more channels failed Then enter Tech Spec 3.0.3.	Examinee determined only two Channels are failed and marks step 6.A as N/A.	N/A SAT UNSAT
	2. (Step 6.B)	Ensure affected Log Power channel NOT in Trip Channel Bypass at 2C23.	On the PPS 'B' Channel. Examinee verified Log Power channel NOT in Trip Channel Bypass at 2C23	N/A SAT UNSAT
PROCEDURE CAUTION Removing "LOG CALIBRATE" switch from operate will initiate Power Trip Test Interlock (PTTI).				
(C)	3. (Step 6.C)	Place associated LOG CALIBRATE switch at 2C23 to position #1.	Examinee placed LOG CALIBRATE switch at 2C23 to position #1 for the 'B' Channel.	N/A SAT UNSAT
	4. (Step 6.D)	Check associated High Log Power Operating Bypass OFF light at 2C03 is ON.	Examinee checked High Log Power Operating Bypass OFF light at 2C03 is ON for the 'B' Channel.	N/A SAT UNSAT
(C)	5. (Step 6.E)	Place associated LOG CALIBRATE switch at 2C23 to position #6.	Examinee placed LOG CALIBRATE switch at 2C23 to position #6 for the 'B' Channel.	N/A SAT UNSAT
	6. (Step 6.F)	Ensure High Log Power Operating Bypass maintained in OFF.	On Panel 2C03, examinee verified High Log Power Operating Bypass maintained in OFF on the 'B' Channel by verifying High Log Power Operating Bypass OFF light at 2C03 is ON for the 'B' Channel.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

		CHECKLISTS	STANDARDS	(Circle One)
	7. (Step 6.G)	Check following PPS Bistable Relay Indicating lamps at 2C23 are ON: ・Log power {2} ・LPD {3} ・DNBR {4} **Examiner Note: the Bistable Relay Indicating lamps are the small red lights located below the associated points.**	Examinee checked following PPS Bistable Relay Indicating lamps at 2C23 are ON for the 'B' Channel: ・Log power {2} ・LPD {3} ・DNBR {4}	N/A SAT UNSAT
	8. (Step 6.H)	Install caution tag on High Log Power Operating Bypass switch at 2C03 to maintain switch in OFF. **Examiner Cue:** **Another operator will take care of this.**	Examinee asked SM/CRS to install clearance on High Log Power Operating Bypass switch at 2C03 to maintain switch in OFF.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

- The plant is in mode 3.
- CEAs are capable of withdrawal.
- Shutdown bank CEAs are withdrawn for cocked rod protection
- Channel "A" Nuclear Instrument had previously failed and associated RPS channels were placed in bypass.
- Channel "B" Nuclear Instrument has just failed.

INITIATING CUE:

The CRS directs you to disable Nuclear Instrument B Log channel using Nuclear Instrument Malfunction OP-2203.026 step 6.

(S7)

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

You are responsible for any applicable annunciators during the performance of this task. All annunciators that are not applicable to this task will be performed by another operator.

- The plant is in mode 3.
- CEAs are capable of withdrawal.
- Shutdown bank CEAs are withdrawn for cocked rod protection
- Channel "A" Nuclear Instrument had previously failed and associated RPS channels were placed in bypass.
- Channel "B" Nuclear Instrument has just failed.

INITIATING CUE:

The CRS directs you to disable Nuclear Instrument B Log channel using Nuclear Instrument Malfunction OP-2203.026 step 6.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 1 **DATE:** _____

SYSTEM/DUTY AREA: Natural Circulation Cooldown

TASK: Shift Gland Seal Steam to Unit 1 during a Natural Circ Cooldown.

JTA#: ANO-RO-EOPAOP-OFFNORM-123

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.1 **SRO:** 3.6 **KA REFERENCE:** 013 AA 1.2

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** X **OUTSIDE CR:** _____ **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 10 Minutes

REFERENCE(S): OP-2202.010, Standard Attachments, Attachment 60

EXAMINEE'S NAME: _____ **Login ID:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Reactor trip occurred then SU3 locked out due to a relay failure.
- The plant is in mode 3.
- Power has been restored to all Non-vital busses from Start-up 3 after relay replacement.
- 2203.013, Natural Circulation Operations has been entered.
- Unit 1 Startup boiler is available and in operation.
- Aux Steam Pressure controller 2PC-2102 available set to 70 psig and aligned.
- Seal Steam Pressure Regulator 2PCV-0231 is in automatic.

TASK STANDARD:

Gland Seal steam aligned from Unit 1 start-up boiler with Seal steam pressure 2.5 to 4.5 psig.

TASK PERFORMANCE AIDS:

OP-2202.010 Standard Attachments, Attachment 60.

SIMULATOR SETUP:

Unit 2 reactor tripped SU3 lockout and then restored.
Power has been restored to all Non-vital busses from Start-up 3.

Following Malfunctions on a trigger:
CV0231 =.1, ramp = 1 min.
DO_CI_0231_G, value = off
MS2GS1 = 0, ramp = 1 min.

Examiner Note: The applicant will use standard attachment 60 to shift gland seal steam from Unit 2 to Unit 1 main steam. They will direct NLO to align the control valves and manual valve in the field. Next, they will place the standby steam packing exhauster in PTL and open the steam seal aux feed valve. They will monitor seal steam pressure and direct a NLO to manually close the Unit 2 MS supply to gland seal.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to transfer Gland Seal to Unit 1 Startup Boiler using op-2202.010 Standard Attachments, Attachment 60 starting with step 3.C. Ensure Seal Steam pressure is between 2.5 and 4.5 psig.

START TIME:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1 (Step 3.C)	**ENSURE** the following valves open: • Unit 2 Startup Boiler Isolation (SU-69) • Unit 2 Startup Boiler Isolation (2AS-45) **Examiner Cue:** **Report SU-69 and 2AS-45 are open**	Contacted NLO to open SU-69 and 2AS-45.	N/A SAT UNSAT
Examiner Note: Step 4 is NA.				
	2 (Step 5)	**ENSURE** STANDBY Steam Packing Exhauster in PULL TO LOCK: • 2C-1A (2HS-0996) • 2C-1B (2HS-0997)	Placed non-running steam packing exhauster in PTL	N/A SAT UNSAT
(C)	3 (Step 6)	**OPEN** Steam Seal Aux Feed Valve (2CV-0230).	Placed handswitch for 2CV-0230 to open. Checked Green light off and Red light on	N/A SAT UNSAT
Procedure Note: Normally both 2PCV-0231 Bypass (2CV-0233) and Seal Steam Pressure Regulator (2PCV-0231) are required to be fully open to maintain adequate seal steam pressure.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4 (Step 7 A, B, & C)	**PERFORM** the following concurrently to maintain Gland Seal Steam pressure 2.5 to 4.5 psig: A. Closely **MONITOR** Gland Seal Steam pressure (2PI-0220). B. **CLOSE** MS Supply to Gland Seal System (2GS-1). **Examiner Cue:** **Report NLO is closing 2GS-1. After 1 min report 2GS-1 is fully closed.** **Examiner Note: Booth Operator will close 2GS-1 over 1 min when you report you are close 2GS-1.** **Booth operator will trigger remote for 2GS-1 to close.** C. **IF** required to maintain gland seal steam pressure, **THEN:** 1) **ENSURE** Seal Steam Pressure Regulator (2PCV-0231) in automatic. 2) **THROTTLE** open 2PCV-0231 Bypass (2CV-0233).	Monitored 2PI-220 and directed NLO to close 2GS-1. **Examiner Note:** **Closing 2GS-1 is critical.** Determined 2PCV-0231 is in automatic by initial conditions. And Throttled 2CV-0233 to maintain gland seal pressure. **Examiner Note:** **2PCV-0231 is normally in automatic.** **It is critical to throttle open 2CV-0233 to restore gland seal pressure to 2.5 to 4.5 psig.** **It is acceptable for gland seal pressure to go out of the band but final pressure must be in the band.**	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	5 (Step 8)	**IF** using Unit 1 Main Steam, **THEN THROTTLE** 2AS-95 as needed to maintain Auxiliary steam header pressure less than 115 psig (2PI-2165).	Determined step N/A.	N/A SAT UNSAT
	6 (Step 9)	**ENSURE** 2C-1A or 2C-1B maintaining Steam Packing Exhauster vacuum 5 to 15" H_2O (2PI-0998).	Monitored 2PI-0998 and determined pressure 5 to 15" vacuum.	N/A SAT UNSAT
	7 (Step 10)	**IF** Steam Packing Exhauster pressure adjustment is needed, **THEN:**	Determined step NA	N/A SAT UNSAT
Examiner note: When the applicant has determined Steam Packing exhauster pressure adjustment not needed JPM is complete.				
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- Reactor trip occurred then SU3 locked out due to a relay failure.
- The plant is in mode 3.
- Power has been restored to all Non-vital busses from Start-up 3 after relay replacement.
- 2203.013, Natural Circulation Operations has been entered.
- Unit 1 Startup boiler is available and in operation.
- Aux Steam Pressure controller 2PC-2102 available set to 70 psig and aligned.
- Seal Steam Pressure Regulator 2PCV-0231 is in automatic.

INITIATING CUE:

The SM/CRS directs you to transfer Gland Seal to Unit 1 Startup Boiler using op-2202.010 Standard Attachments, Attachment 60 starting with step 3.C. Ensure Seal Steam pressure is between 2.5 and 4.5 psig.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Reactor trip occurred then SU3 locked out due to a relay failure.
- The plant is in mode 3.
- Power has been restored to all Non-vital busses from Start-up 3 after relay replacement.
- 2203.013, Natural Circulation Operations has been entered.
- Unit 1 Startup boiler is available and in operation.
- Aux Steam Pressure controller 2PC-2102 available set to 70 psig and aligned.
- Seal Steam Pressure Regulator 2PCV-0231 is in automatic.

INITIATING CUE:

The SM/CRS directs you to transfer Gland Seal to Unit 1 Startup Boiler using op-2202.010 Standard Attachments, Attachment 60 starting with step 3.C. Ensure Seal Steam pressure is between 2.5 and 4.5 psig.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 4 **DATE:** _____

SYSTEM/DUTY AREA: Gaseous Radwaste System

TASK: Perform Waste Gas Decay Tank Release

JTA#: ANO2-WCO-GRW-NORM-9

Alternate Path **Yes:** X **No:** _____ **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.3 **SRO:** 3.6 **KA REFERENCE:** 071 A2.02

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** X **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: Simulate **SIMULATOR:** _____ **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 20 Minutes

REFERENCE(S): OP-2104.022, Gaseous Radwaste System Operations, Sup. 1, Unit 2
Gaseous Release Permit

EXAMINEE'S NAME: _____ **Logon ID#:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 2T-18A Waste Gas Decay Tank pressure is 205 psig
- 2T-18A has been held for 200 days
- OP 2104.022, Gaseous Radwaste System, Sup. 1, UNIT 2 GASEOUS RELEASE PERMIT, submitted and returned for tank release
- 2RITS-2429 Gas Decay Tank radiation monitor is OPERABLE
- CAMS 2RITS-8231-1 is in service
- Pre-release report indicates a maximum of 30 CFM

TASK STANDARD:

Properly positioned the required valves to commence a Gaseous Rad Waste Tank release and when the pressure control valve did not function properly, aligned alternate flow control method at less than 30 SCFM.

TASK PERFORMANCE AIDS:

OP 2104.022 Gaseous Rad Waste System.

SIMULATOR SETUP:

N/A

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to commence a 2T-18A Waste Gas Decay Tank release using OP-2104.022 Sup. 1 starting with step 4.3.

START TIME:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1 (Step 4.3)	**ENSURE** following valves CLOSED: • 2RITS-2429 Outlet Loop Seal Drain (2GZ-37) • 2FIT-2430 Outlet Loop Seal Drain (2GZ-2473) • WG Decay Tank Disch 2FIT-2430 Isol (2GZ-15) **Examiner Cue:** **Indicate that the valves are closed after appropriate simulation.** **Examiner Note:** **2GZ-37 is located on 354' elevation in the aux building.** **Examiner Note:** **2GZ-15 is above 7' off the floor. The applicant would need to locate a ladder and contact RP to go above 7'.**	Rotated valve HW clockwise until hard resistance was felt: • 2RITS-2429 Outlet Loop Seal Drain (2GZ-37) (normally open) • 2FIT-2430 Outlet Loop Seal Drain (2GZ-2473) (normally open) • WG Decay Tank Disch 2FIT-2430 Isol (2GZ-15) (normally closed, not critical)	N/A SAT UNSAT
(C)	2 (Step 4.4)	**ENSURE** following valves OPEN: • 2CV-2428 Inlet Isol (2GZ-2428A) • 2CV-2428 Outlet Isol (2GZ-2428B) **Examiner Cue:** **Indicate that the valves are open after appropriate simulation.**	Aligned the valve handle inline with the piping: • 2CV-2428 Inlet Isol (2GZ-2428A) (normally closed) • 2CV-2428 Outlet Isol (2GZ-2428B) (normally closed)	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	3 (Step 4.5) (Step 4.5.1)	**IF** releasing WG Decay tank (2T-18A), **THEN** proceed as follows: **REMOVE** Placard from 2T-18A Isol (2GZ-12A). **Examiner Cue:** **Indicate that placard was installed but is removed after appropriate simulation.**	Removed placard from 2GZ-12A	N/A SAT UNSAT
(C)	4 (Step 4.5.2)	**OPEN** 2T-18A Isol (2GZ-12A). **Examiner Cue:** **Indicate that 2GZ-12A is open after appropriate simulation.**	Rotated 2GZ-12A by HW counter clockwise until hard resistance is felt.	N/A SAT UNSAT
	5 (Step 4.5.3)	**REMOVE** Placard from 2T-18A Isol (2GZ-74A). **Examiner Cue:** **Indicate that placard was installed but is removed after appropriate simulation.**	Removed placard from 2GZ-74A	N/A SAT UNSAT
(C)	6 (Step 4.5.4)	**OPEN** 2T-18A Isol (2GZ-74A). **Examiner Cue:** **Indicate that 2GZ-12A is open after appropriate simulation.**	Positioned 2GZ-74A handle in line with the piping.	N/A SAT UNSAT
	7 (Step 4.6)	**IF** releasing WG Decay tank (2T-18B), **THEN** proceed as follows:	Determined step was N/A.	N/A SAT UNSAT
	8 (Step 4.7)	**IF** releasing WG Decay tank (2T-18C), **THEN** proceed as follows:	Determined step was N/A	N/A SAT UNSAT
	9 (Step 4.8)	**IF** GRW Gas Decay Tank Vent Line Rad Monitor 2RITS-2429 NOT operable, **THEN** independently verify the following:	Determined step was N/A	N/A SAT UNSAT
	10 (Step 4.9)	**ENSURE** GRW Release Header Pressure Isolation (2GZ-2430) OPEN.	Verified 2GZ-2430 handle in line with piping.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	11 (Step 4.10)	**ENSURE** GRW Release Hdr Pressure Control valve (2PCV-2417) set to 0 psig by rotating pressure adjustment handwheel counter clockwise until very little resistance felt. **Examiner Cue:** **Indicate that 2PCV-2417 has very little resistance in the counter clockwise direction.**	Rotated 2PCV-2417 handwheel counter clockwise until little resistance felt.	N/A SAT UNSAT
(C)	12 (Step 4.11)	**IF** releasing WG Decay tank 2T-18A, **THEN OPEN** 2T-18A Release valve (2GZ-46A). **Examiner Cue:** **Indicate that 2GZ-46A is open after appropriate simulation.**	Rotated 2GZ-46A handle to align with piping to open the valve.	N/A SAT UNSAT
	13 (Step 4.12)	**IF** releasing WG Decay tank 2T-18B, **THEN OPEN** 2T-18B Release valve (2GZ-46B).	Determined step was N/A	N/A SAT UNSAT
	14 (Step 4.13)	**IF** releasing WG Decay tank 2T-18C, **THEN OPEN** 2T-18C Release valve (2GZ-46C).	Determined step was N/A	N/A SAT UNSAT
	15 (Step 4.14)	**NOTIFY** Control Room of intent to begin release. **Examiner Cue:** **When contacted as Control Room, inform them to continue.**	Contacted Control Room and informed them of intent to start the release.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	16 (Step 4.15.1)	**Document** release start as follows: **Enter** the following information: Release Permit Number _____ Release Start Time _____ Release Start Date _____ Tank being released _____	Documented the required items. Permit Number 2019-1 Start Time Start Date Tank being released 2T-18A.	N/A SAT UNSAT
	17 (Step 4.15.2)	**RECORD** information from step 4.15.1 on the following: • GRW Gas Radiation recorder (2FR/2RR 2431) on 2C14 • Process Gas Radiation Recorder (2RR 0645) on 2C25 **Examiner Cue:** **When contacted as Control Room, inform them that all data has been record IAW step 4.15.**	Informed CR to record the required information on 2FR/2RR-2431. **Examiner Note: Both chart recorders are located in the control room.**	N/A SAT UNSAT
	18 (Step 4.16)	**OPEN** WG Decay Tank Discharge to Vent Plenum 2CV-2428 (2HS-2428). **Examiner Cue:** **When contacted as Control Room, inform them that 2CV-2428 is open.**	Contacted CR to open 2CV-2428.	N/A SAT UNSAT
	19 (Step 4.17) (Step 4.17.1)	**IF** GRW Gas Decay Tanks Vent (2PCV-2417) functional, **THEN**: Slowly **OPEN** 2PCV-2417 Inlet (2GZ-2417A)	Opened 2PCV-2417A inlet by aligning the handle with the piping.	N/A SAT UNSAT
The following step is the alternate path portion of this JPM. The failure mechanism is a failed bushing in 2PCV-2417.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	20 (Step 4.17.2)	**INITIATE** release by concurrently performing the following: • Slowly **ADJUST** GRW Release Hdr Pressure Control valve (2PCV-2417) clockwise to obtain a maximum of 30 psig on 2PI-2430. • Slowly **THROTTLE OPEN** WG Decay Tank Disch 2FIT-2430 Isol (2GZ-15) while monitoring flow on 2FIT-2430. **Examiner Cue:** **When 2PCV-2417 is rotated clockwise report that the hand wheel spins freely and NO resistance is felt, 2PI-2430 reads zero, and 2FIT-2430 reads zero. If the applicant continues to rotate 2PCV-2417 clockwise report that the hand wheel spins freely and NO resistance is felt, 2PI-2430 is reading zero, and 2FIT-2430 reads zero.** **Examiner Cue:** **If the applicant informs the Control Room that 2PCV-2417 is not working, inform them to continue with the release.**	Rotated 2PCV-2417 clockwise to raise pressure. Recognized that 2PI-2430 and 2FIT-2430 are reading zero indicating no flow. Rotated 2GZ-15 counter clockwise to commence flow. Determined that 2PCV-2417 is not function properly and that step 4.17 is N/A. **Examiner Note: Applicant may elect to close 2PCV-2417 Inlet 2GZ-2417A (Not Critical)**	N/A SAT UNSAT
(C)	21 (Step 4.18) (Step 4.18.1)	**IF** GRW Gas Decay Tanks Vent (2PCV-2417) **NOT** functional, **THEN** perform the following: **OPEN** 2PCV-2417 Bypass (2GZ-2417C). **Examiner Cue:** **Indicate that 2GZ-2417C is open.**	Opened 2PCV-2417C by aligning the handle with the piping to open the valve.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	22 (Step 4.18.2)	Slowly **THROTTLE OPEN** 2FIT-2430 Isol (2GZ-15) to obtain release rate less than or equal to _____ CFM (Listed on Pre-release Report). **Examiner Cue:** **Report flow is 10 SCFM.**	Rotated 2GZ-15 counter-clockwise to start flow. Observed flow on 2FIT-2430.	N/A SAT UNSAT
Examiner note: When the applicant has commenced flow the JPM is complete.				
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- 2T-18A Waste Gas Decay Tank pressure is 205 psig
- 2T-18A has been held for 200 days
- OP 2104.022, Gaseous Radwaste System, Sup. 1 UNIT 2 GASEOUS RELEASE PERMIT submitted and returned for tank release
- 2RITS-2429 Gas Decay Tank radiation monitor is OPERABLE
- CAMS 2RITS-8231-1 is in service
- Pre-release report indicates a maximum of 30 CFM
- Release Permit Number is 2019-1

INITIATING CUE:

The SM/CRS directs you to commence a 2T-18A Waste Gas Decay Tank release using OP-2104.022, Gaseous Radwaste System, Sup. 1, Unit 2 Gaseous Release Permit, starting with step 4.3.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- 2T-18A Waste Gas Decay Tank pressure is 205 psig
- 2T-18A has been held for 200 days
- OP 2104.022, Gaseous Radwaste System, Sup. 1 UNIT 2 GASEOUS RELEASE PERMIT submitted and returned for tank release
- 2RITS-2429 Gas Decay Tank radiation monitor is OPERABLE
- CAMS 2RITS-8231-1 is in service
- Pre-release report indicates a maximum of 30 CFM
- Release Permit Number is 2019-1

INITIATING CUE:

The SM/CRS directs you to commence a 2T-18A Waste Gas Decay Tank release using OP-2104.022, Gaseous Radwaste System, Sup. 1, Unit 2 Gaseous Release Permit, starting with step 4.3.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 005 **DATE:** _____

SYSTEM/DUTY AREA: Condensate and Feedwater System

TASK: Perform Local Actions to start 'A' Condensate pump during a Loss of Feedwater.

JTA#: ANO2-RO-EOPAOP-EMER-28

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 3.0 **SRO:** 4.2 **KA REFERENCE:** CE E06 EA2.2

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** X **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: Simulate **SIMULATOR:** _____ **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 20 Minutes

REFERENCE(S): OP 2202.010, Standard Attachments, Attachment 50 Condensate pump start.

EXAMINEE'S NAME: _____ **Badge #** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time	Stop Time	Total Time
_____	_____	_____

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 2P-7A Outboard Pump Bearing Replacement in-progress.
- The plant has tripped from 100% power due to an inadvertent CSAS.
- Bus 2A3 is locked out and not available.

TASK STANDARD:

Established 'A' Condensate pump as a feedwater source to steam generators by performing the following actions:

- Opened DC control power breakers in 2A-106 and 2A-205 to defeat the trip signal.
- Isolated side stream flow path by closing valves 2CS-57 and 2CS-59.
- Opened 'A' condensate pump discharge valve.

TASK PERFORMANCE AIDS:

OP 2202.010, Standard Attachments, Attachment 50 Condensate pump start.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to perform local actions to start 2P-2A Condensate Pump using OP-2202.010 attachment 50 starting with step 3.

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
TRANSITION NOTE: Go to elevation 370' Turbine Building, east of the elevator, to the 2A-1 / 2 Bus area.				
(C)	1. (Step 3)	**IF** MSIS **AND** CSAS **NOT** reset, **THEN** locally **OPEN** "DC control power" breaker in the following breaker cubicles: • "CONDENSATE PUMP 2P-2C" 2A106 • "CONDENSATE PUMP 2P-2B" 2A205 **Examiner Cue:** **When the applicant finds the correct breaker cubicle ask them the general location of the DC control power breaker once they describe it then Show Picture #1. If the applicant wants a closer picture to read the placard Show Picture #2.**	The DC Control Power Breakers located in 2A106 AND 2A205 are positioned down (open).	N/A SAT UNSAT
TRANSITION NOTE: The applicant may go to elevation 330' Turbine Building, east of the Main Condenser if checking level locally, use the level gauge above the 'B' Condensate pump or contact the control room.				
	2. (Step 4)	**ENSURE** Hotwell level greater than 38%. **Examiner Cue:** **Describe that Hotwell level indicates >38% by indicating the approximate reading. (Normal level at power is greater than 38%).**	Hotwell is checked > 38% by contacting a Control Room Operator, checking the local level instrument east of the Main Condenser in the Turbine Building Basement, or the gauge above the 'B' Condensate pump (2A-205).	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	3. (Step 5)	**ENSURE** the following Recirc valves closed AND Flow Indicating Controllers in MANUAL at 0% demand: • Condensate Pump Recirc 2CV-0662 (2FIC-0662) • Condensate Pump Recirc 2CV-0663 (2FIC-0663) • "A" MFP Recirc 2CV-0741 (2FIC-0735) (R/L then M/A and close) • "B" MFP Recirc 2CV-0749 (2FIC-0742) (R/L then M/A and close) **Examiner Cue:** **Report as a control room operator that all recirc valves listed in the above step are closed with flow indicating controllers in manual at 0% demand.**	2CV-0662, 2CV-0663, 2CV-0741, and 2CV-0749 are checked closed by contacting a Control Room Operator to determine valve position and demand.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

TRANSITION NOTE: Go to elevation 330' Turbine Building, near southwest stairwell to check valve position locally.				
	5. (Step 6 first bullet.)	Locally **ENSURE** the following valves closed: • "INLET TO 2PCV-4505 ISOL" (2CS-57) **Examiner Cue:** **Describe that 2CS-57 is closed. (stem inserted, resistance felt in the closed direction.)**	Examinee verified closed 2CS-57 by turning handwheel clockwise and noting resistance to motion.	N/A SAT UNSAT
(C)	6. (Step 6 second bullet.)	Locally **ENSURE** the following valves closed: • "2PCV-4505 BYPASS" (2CS-59) **Examiner Cue:** **Describe that 2CS-59 is closed. (stem inserted, resistance felt in the closed direction.)**	Examinee closed 2CS-59 by turning handwheel clockwise until resistance to motion occurs.	N/A SAT UNSAT
Procedure Note: Condensate pump 2P-2C is least preferred to start due the location of its discharge valve (2CS-2C)				
	7. (Step 7)	Locally **OPEN** selected Condensate Pump Discharge valve 10 turns: • "2P-2A DISCHARGE" (2CS-2A) **Examiner Cue:** **Describe that 2CS-2A is closed. (stem inserted, resistance felt in the closed direction.) Then describe that 2CS-2A is reopened 10 turns. (Normally open valve.)**	Examinee closed 2CS-2A by turning the handwheel clockwise until resistance is felt and then reopened the valve 10 turns by turning the handwheel counter clockwise.	N/A SAT UNSAT
Procedure Caution: Maintaining Condensate pump discharge pressure greater than 753 psig for three minutes or greater will result in pump trip.				

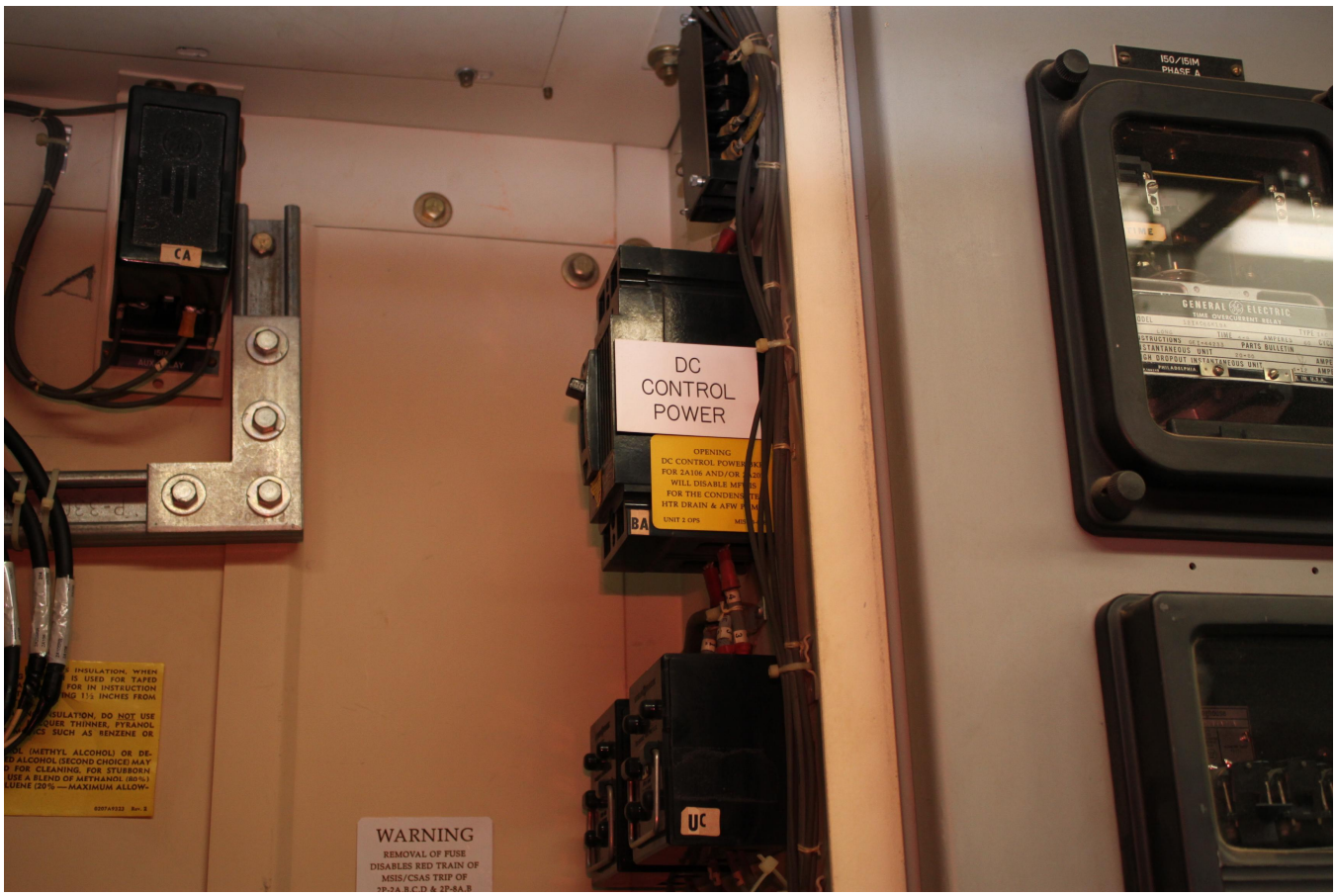
JOB PERFORMANCE MEASURE

	8. (Step 8)	Start selected Condensate pump. **Examiner Cue:** **Acknowledge communication from the applicant. Then report 2P-2A condensate pump is running and direct the applicant to perform step 9**	Examinee contacted the control room to start 2P-2A condensate pump.	N/A SAT UNSAT
(C)	9. (Step 9)	Locally **OPEN** selected Condensate Pump Discharge valve: • "2P-2A DISCHARGE" (2CS-2A) • "2P-2B DISCHARGE" (2CS-2B) • "2P-2C DISCHARGE" (2CS-2C) • "2P-2D DISCHARGE" (2CS-2D) **Examiner Cue:** **Describe that 2CS-2A is open. (stem extended, resistance felt in the open direction.)**	Examinee opened 2CS-2A by turning handwheel counter clockwise	N/A SAT UNSAT
END				

STOP TIME:_____

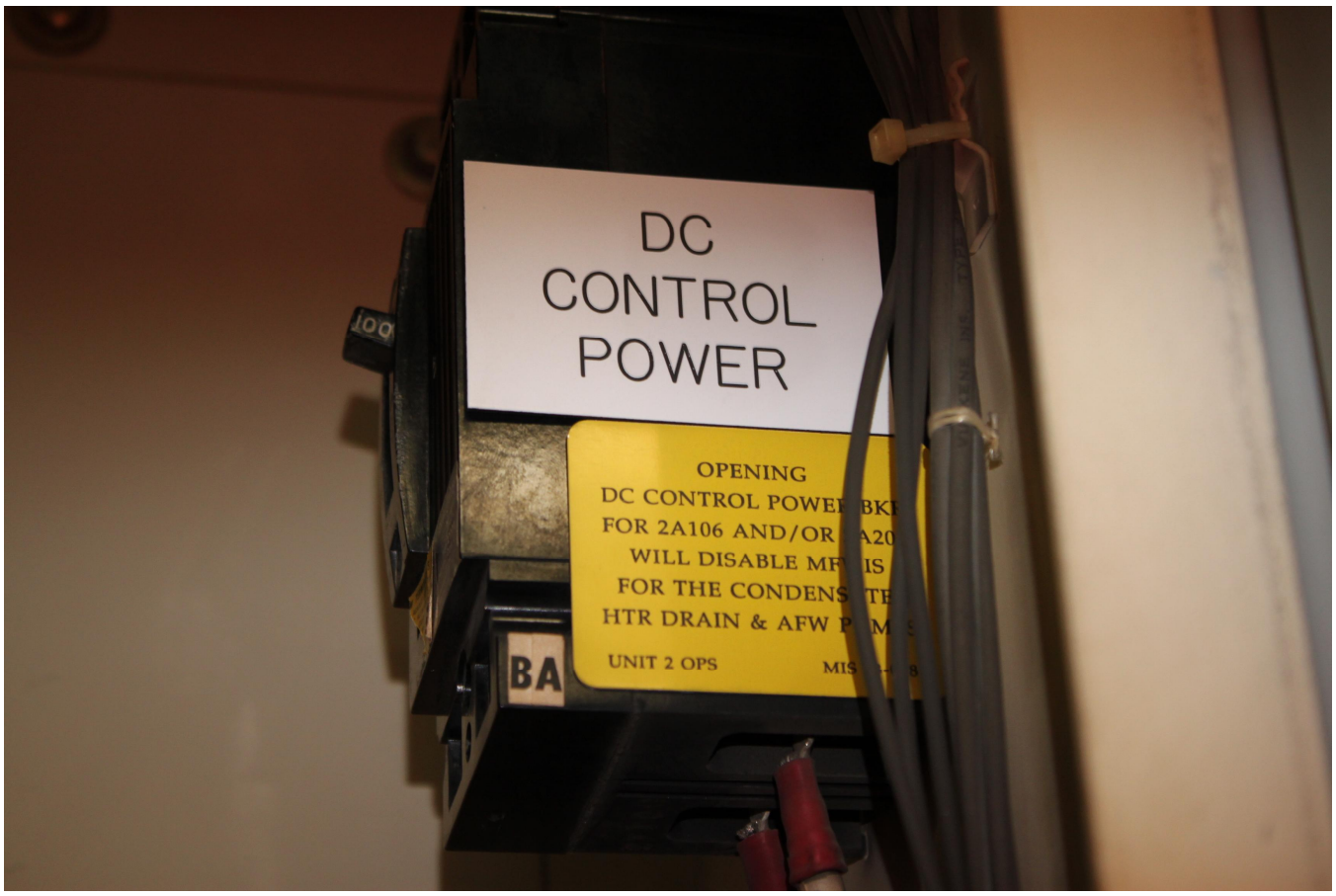
JOB PERFORMANCE MEASURE

Picture #1



JOB PERFORMANCE MEASURE

Picture #2



JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- 2P-7A Outboard Pump Bearing Replacement in-progress.
- The plant has tripped from 100% power due to an inadvertent CSAS.
- Bus 2A3 is locked out and not available.

INITIATING CUE:

The SM/CRS directs you to perform local actions to start 2P-2A Condensate Pump using OP-2202.010 attachment 50 starting with step 3.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- 2P-7A Outboard Pump Bearing Replacement in-progress.
- The plant has tripped from 100% power due to an inadvertent CSAS.
- Bus 2A3 is locked out and not available.

INITIATING CUE:

The SM/CRS directs you to perform local actions to start 2P-2A Condensate Pump using OP-2202.010 attachment 50 starting with step 3.

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 1 **DATE:** _____

SYSTEM/DUTY AREA: Electrical

TASK: Perform 2305.016 Remote Feature Periodic test for EDG exhaust fans

JTA#: ANO2-RO-OPROC SURV-106

Alternate Path **Yes:** _____ **No:** X **Time Critical** **Yes:** _____ **No:** X

KA VALUE **RO:** 2.6 **SRO:** 2.7 **KA REFERENCE:** 062 A4.04

APPROVED FOR ADMINISTRATION TO: **RO:** X **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** X **BOTH:** _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: Simulate **SIMULATOR:** _____ **LAB:** _____

POSITION EVALUATED: **RO:** _____ **SRO:** _____

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **LAB:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** _____

APPROXIMATE COMPLETION TIME IN MINUTES: 20 Minutes

REFERENCE(S): OP-2305.016, Remote Features Periodic Testing Supplement 2.

EXAMINEE'S NAME: _____ **Logon ID#:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS: _____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 2DG2 Exhaust fan 2VEF-24C has had Maintenance performed.
- Emergency Diesel generator (2DG2) secured.
- 2DG2 Exhaust fans 2VEF-24C & 2VEF-24D secured with control room handswitches in AUTO.
- Communications have been established with Control Room.
- NLO is standing by in the #2 EDG room

TASK STANDARD:

Applicant tested the remote functions of #2 EDG exhaust fan by:

- **Testing the fan would NOT start from the breaker with the local HS in Remote.**
- **Testing the fan would start from the breaker with the local HS in Local.**
- **Testing the fan would NOT start from the control room with the local HS in Local.**
- **Restored the local HS to Remote.**

TASK PERFORMANCE AIDS:

OP 2305.016 Remote Features Periodic Testing.

SIMULATOR SETUP:

N/A

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs you to commence a 2DG2 Room exhaust fans 18 month test OP-2305.016 Supplement 2 for 2VEF-24C starting with step 2.1.

START TIME:_____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1 (Step 2.1)	**PLACE** 2B62-C6 Start switch (2HS-8638-2A) to ON. **Examiner Cue:** **Indicate that 2HS-8638-2A is in ON.**	Rotated HS (2HS-8638-2A) clockwise to ON.	N/A SAT UNSAT
	2 (Step 2.2)	**WHEN** 70 seconds have elapsed, **THEN CHECK** 2VEF-24C remains secured. **Examiner Cue:** **70 seconds have elapsed.** **Indicate 2B62-C6 Green Light On, Red light Off.**	Observed Green Light on; Red light off	N/A SAT UNSAT
	3 (Step 2.3)	**PLACE** 2VEF-24C handswitch (2HS-8638-2) to START on 2C33. **Examiner Cue:** **CR reports that 2HS-8638-2 on 2C33 in start.**	Contacted CR to place 2VEF-24C HS in start.	N/A SAT UNSAT
	4 (Step 2.4.1)	**WHEN** 70 seconds have elapsed, **THEN**: **CHECK** 2VEF-24C starts. **Examiner Cue:** **70 seconds have elapsed.** **Indicate 2B62-C6 Green Light Off, Red light On.**	Observed Green Light off; Red light on.	N/A SAT UNSAT
	5 (Step 2.4.2)	**IF** 2VEF-24C fails to start, **THEN**: (CR-ANO-2-95-0051)	Determined Step is NA	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	6 (Step 2.4.3)	**CHECK** 2VEF-24C Suction dampers open. (determined by EITHER of the following:) • Locally: - 2TCD-8690-2 - 2TCD-8692-2 • 2DG2 RM INTAKE DAMPER FAIL TO OPEN (2K09-K2) annunciator clear. (3 minute 20 second time delay) **Examiner Cue:** **Indicate that 2VEF-24C Suction dampers open by local indication or control alarm clear.**	Contacted Local operator or Control Room to determine if 2VEF-24C suction dampers were open.	N/A SAT UNSAT
(C)	7 (Step 2.5)	**PLACE** 2B62-C6 Start switch (2HS-8638-2A) to OFF. **Examiner Cue:** **Indicate that 2HS-8638-2A is in OFF.**	Rotated HS (2HS-8638-2A) counter-clockwise to OFF.	N/A SAT UNSAT
	8 (Step 2.6)	**CHECK** 2VEF-24C continues to run. **Examiner Cue:** **Indicate 2B62-C6 Green Light Off, Red light On.**	Observed Green Light off; Red light on.	N/A SAT UNSAT
	9 (Step 2.7)	**PLACE** 2VEF-24C handswitch (2HS-8638-2) to AUTO. **Examiner Cue:** **CR reports that 2HS-8638-2 on 2C33 in auto.**	Contacted CR to place 2VEF-24C HS in auto.	N/A SAT UNSAT
	10 (Step 2.8)	**CHECK** 2VEF-24C stops. **Examiner Cue:** **Indicate 2B62-C6 Green Light On, Red light Off.**	Observed Green Light on; Red light off	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	11 (Step 2.9)	Locally **CHECK** Dampers close: - 2TCD-8690-2 - 2TCD-8692-2 **Examiner Cue:** **Indicate that 2VEF-24C Suctions Dampers are closed by local observation.**	Contacted Local operator to determine if 2VEF-24C suction dampers were closed.	N/A SAT UNSAT
(C)	12 (Step 2.10)	**PLACE** 2B62-C6 Local/Remote switch (2HS-8638-2S) to LOCAL. **Examiner Cue:** **Indicate that 2HS-8638-2S is in Local.**	Rotated 2HS-8638-2S to local.	N/A SAT UNSAT
	13 (Step 2.11)	**PLACE** 2VEF-24C handswitch (2HS-8638-2) to START. **Examiner Cue:** **CR reports that 2HS-8638-2 on 2C33 in start.**	Contacted CR to place 2VEF-24C HS in start.	N/A SAT UNSAT
	14 (Step 2.12)	**WHEN** 70 seconds have elapsed, **THEN CHECK** 2VEF-24C remains secured. **Examiner Cue:** **70 seconds have elapsed.** **Indicate 2B62-C6 Green Light On, Red light Off.**	Observed Green Light on; Red light off	N/A SAT UNSAT
(C)	15 (Step 2.13)	**PLACE** 2B62-C6 Start switch (2HS-8638-2A) to ON. **Examiner Cue:** **Indicate that 2HS-8638-2A is in ON.**	Rotated HS (2HS-8638-2A) clockwise to ON.	N/A SAT UNSAT
	16 (Step 2.14.1)	**WHEN** 70 seconds have elapsed, **THEN**: **CHECK** 2VEF-24C starts. **Examiner Cue:** **70 seconds have elapsed.** **Indicate 2B62-C6 Green Light Off, Red light On.**	Observed Green Light off; Red light on	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
	17 (Step 2.14.2)	**IF** 2VEF-24C fails to start, **THEN**: (CR-ANO-2-95-0051)	Determined Step is NA	N/A SAT UNSAT
	18 (Step 2.14.3)	**CHECK** 2VEF-24C Suction dampers open. (determined by EITHER of the following:) • Locally: - 2TCD-8690-2 - 2TCD-8692-2 • 2DG2 RM INTAKE DAMPER FAIL TO OPEN (2K09-K2) annunciator clear. (3 minute 20 second time delay) **Examiner Cue:** **Indicate that 2VEF-24C Suction dampers open by local indication or control alarm clear.**	Contacted Local operator or Control Room to determine if 2VEF-24C suction dampers were open.	N/A SAT UNSAT
	19 (Step 2.15)	**PLACE** 2VEF-24C handswitch (2HS-8638-2) to AUTO. **Examiner Cue:** **CR reports that 2HS-8638-2 on 2C33 in auto.**	Contacted CR to place 2VEF-24C HS in auto.	N/A SAT UNSAT
	20 (Step 2.16)	**CHECK** 2VEF-24C continues to run. **Examiner Cue:** **Indicate 2B62-C6 Green Light Off, Red light On.**	Observed Green Light off; Red light on.	N/A SAT UNSAT
(C)	21 (Step 2.17)	**PLACE** 2B62-C6 Start switch (2HS-8638-2A) to OFF. **Examiner Cue:** **Indicate that 2HS-8638-2A is in OFF.**	Rotated HS (2HS-8638-2A) clockwise to OFF.	N/A SAT UNSAT
	22 (Step 2.18)	**CHECK** 2VEF-24C stops. **Examiner Cue:** **Indicate 2B62-C6 Green Light On, Red light Off.**	Observed Green Light on; Red light off	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	23 (Step 2.19)	Locally **CHECK** Dampers close: - 2TCD-8690-2 - 2TCD-8692-2 **Examiner Cue:** **Indicate that 2VEF-24C Suctions Dampers are closed by local observation.**	Contacted Local operator to determine if 2VEF-24C suction dampers were closed.	N/A SAT UNSAT
(C)	24 (Step 2.20)	**PLACE** 2B62-C6 Local/Remote switch (2HS-8638-2S) to REMOTE. **Examiner Cue:** **Indicate that 2HS-8638-2S is in Remote.**	Rotated 2HS-8638-2S to remote.	N/A SAT UNSAT
	25 (Step 2.21)	**ENSURE** 2VEF-24C handswitch (2HS-8638-2) in AUTO. **Examiner Cue:** **CR reports that 2HS-8638-2 on 2C33 in auto.**	Contacted CR to ensure 2VEF-24C HS in auto.	N/A SAT UNSAT
Examiner note: When the applicant has completed with step 2.21 this JPM is complete.				
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

- 2DG2 Exhaust fan 2VEF-24C has had Maintenance performed.
- Emergency Diesel generator (2DG2) secured.
- 2DG2 Exhaust fans 2VEF-24C & 2VEF-24D secured with control room handswitches in AUTO.
- Communications have been established with Control Room.
- NLO is standing by in the #2 EDG room

INITIATING CUE:

The SM/CRS directs you to commence a 2DG2 Room exhaust fans 18 month test OP-2305.016 Supplement 2 for 2VEF-24C starting with step 2.1.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

- Emergency Diesel generator (2DG2) secured.
- 2DG2 Exhaust fans 2VEF-24C & 2VEF-24D secured with control room handswitches in AUTO.
- Communications have been established with Control Room.
- NLO is standing by in the #2 EDG room

INITIATING CUE:

The SM/CRS directs you to commence a 2DG2 Room exhaust fans 18 month test OP-2305.016 Supplement 2 for 2VEF-24C starting with step 2.1.

Facility: ANO-2 Scenario No.: 1 Op-Test No.: 2019-1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: ~100%, MOL, RED Train Maintenance Week.

Turnover: ~100%. 260 EFPD. EOOS indicates 'Minimal Risk'. Red Train Maintenance Week. Scheduled evolution: Shift Lead Charging pumps from 2P-36C to 2P-36B using 2104.002 Chemical and Volume control section 8.1 starting with step 8.1.4.

Critical Tasks: Commence Emergency boration IAW 2202.010 Standard Attachment Exhibit 1 by the completion of SPTAs. Restore Feedwater prior to both SG levels reaching 70" wide range.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP) N (SRO)	Shift Lead Charging pumps from 2P-36C to 2P-36B. **OP-2104.002, CVCS Operations.**
2	CV4651	C (ATC) C (SRO)	'A' RCP normal spray valve drifts partially open. **OP-2203.028, Pressurizer System Malfunction AOP**
3	ESF2C40B73	C (BOP) C (SRO) TS (SRO)	Inadvertent Green Train Recirculation Actuation Signal (RAS). **OP-2203.040, Inadvertent RAS AOP.**
4	CEA43DROP	C (ATC) C (BOP) C (SRO) TS (SRO)	CEA 43 fully inserts. **OP-2203.003, CEA Malfunction AOP**
5	DI_HS_4930_1 CVC2P39ANAS CVC2P39BNAS	C (ATC) C (SRO)	2CV-4930 boration valve fails to automatically open and 2P-39A and 2P-39B boric acid makeup pumps fail to start automatically. **OP-2104.003, Chemical Addition**
6	MTGTRIPLOCKO	M (ALL)	Turbine trip causing a reactor trip. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
7	MFWPMPBTRP EFW2P7BFLT EFWROOMB CV0340	M (ALL)	2P-1B Main Feedwater (MFW) pump trip, 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. **CT-2** **OP-2202.006, Loss of Feedwater EOP**
8	CEA02STUCK CEA07STUCK CV4873	C (ATC) C (SRO)	Control Element Assemblies (CEA's) 2 and 7 will remain withdrawn requiring emergency boration. The Volume Control Tank (VCT) outlet valve will not close. **CT-1** **OP-2202.010 Standard Attachments.**
9	AFW2P75LO	C (BOP) C (SRO)	2P-75 AFW pump trips due loss of lube oil. **OP-2202.006, Loss of Feedwater EOP**
End Point		Feedwater is restored to at least one Steam Generator	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Target Quantitative Attributes (Section D.5.d)	Actual Attributes
Malfunctions after EOP entry (1-2)	2
Abnormal Events (2-4)	3
Major Transients (1-2)	2
EOPs entered requiring substantive actions (1-2)	1
EOP contingencies requiring substantive actions (≥ 1per scenario set)	1
Critical Tasks (≥2)	2

Critical Task	Justification	
Commence Emergency Boration IAW 2202.010 Standard Attachment Exhibit 1 by the completion of SPTAs.	Meeting the SFSCs prevents core damage and minimizes radiological releases to the environment, ultimately protecting the health and safety of the public. The SFSCs assume that all but one CEA is fully inserted and that the reactor is subcritical by a certain amount (required shutdown margin or SDM).	• CE EPGB Simulator CTs: CT-01, Establish Reactivity Control (SPTA-01) • TS 3.1.1.1 Shutdown margin.
Restore Feedwater prior to both SG levels reaching 70" wide range.	Without feedwater, the SG being steamed will eventually boil dry, RCS heat removal will cease, and the reactor core will begin overheating (core melt potential). Thus, it is essential to steam and feed at least one SG to continue to remove RCS decay heat.	• CE EPGB Simulator CTs: CT-08, Establish RCS Heat Removal (LOAF-02) • EOP 2202.006 Loss of Feedwater EOP • EOP 2202.006 Loss of Feedwater EOP Tech Guide
Causing an unnecessary plant trip or ESF actuation may constitute a CT failure.	Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021.	NUREG-1021 Appendix D

Scenario #1 Objectives

1) Evaluate individual ability to shift lead Charging pumps
2) Evaluate individual response to a pressurizer spray valve failing partially open.
3) Evaluate individual response to an Inadvertent Recirculation Actuation Signal (RAS).
4) Evaluate individual response to a drop Control Element Assembly (CEA)
5) Evaluate individual response to failure of interlocks for boration control.
6) Evaluate individual and crew's response to a turbine trip.
7) Evaluate individual and crew's ability to restore feedwater using Loss of Feedwater EOP.
8) Evaluate individual response to Control Element Assemblies (CEAs) failing to insert.
9) Evaluate individual response to 2P-75 Auxiliary Feedwater (AFW) pump trips.

Scenario #1 NARRATIVE

Simulator session begins with the plant at ~100% power steady state.

When the crew has completed their control room walk down and brief, the BOP should shift lead Charging pumps from 2P-36C to 2P-36B.

After the Charging pumps have been shifted, and cued by lead examiner, 2CV-4652 RCP spray valve will open to ~40%. The ATC should recognize RCS pressure lowering and 2CV-4652 intermediate indication. The SRO will enter the Pressurizer Malfunctions AOP OP-2203.028 and direct actions to attempt to close 2CV-4652 Spray valve and then isolate 2CV-4652 using the PZR spray block valves. [Industry OE: SER 4-93 RCS pressure transients caused by failed open pressurizer spray valves.].

When the crew has isolated the failed Pressurizer Spray valve, an inadvertent Green Train Recirculation Actuation Signal (RAS) will occur. The SRO should enter and commence taking action of the Inadvertent RAS AOP. The BOP will override and close the inside CNTMT sump suction isolation valve. The crew will check that Service Water is still aligned to Component Cooling Water (CCW) and Auxiliary Cooling Water (ACW). The BOP will place green train ECCS pumps in PTL. The SRO should also enter Tech Spec 3.6.2.1 for CNTMT spray and 3.5.2 for ECCS components. The SRO may have to enter Tech Spec 3.5.4 and TRM 3.1.8 for RWT level. [Industry OE: SEN 268 Invalid Safety Injection with Failure to Reset, Site OE: CR-ANO-2-2013-005 Inadvertent SIAS, CCAS, And CIAS.]

Scenario #1 NARRATIVE (continued)

When the crew has closed the CNTMT sump suction valve and entered the appropriate Tech Specs or at the lead examiner's cue, CEA 43 will drop into the core due to faulty timing card. The SRO will enter OP-2203.003, CEA malfunction AOP. The SRO should check that less than 2 CEAs are inserted and then commence a down power within 15 minutes. The BOP should complete attachment C DNBR/LPD log. The SRO will enter Tech Specs for CEA position (3.1.3.1 Action d) and Aztilt (3.2.3). When the ATC starts boration, 2CV-4930 boration valve will fail to automatically open and 2P-39A boric acid makeup (BAM) pump will fail to automatically start. The ATC will manually start the BAM pump and open 2CV-4930 boration valve. [Site and industry OE: CR-ANO-2-2007-0127 dropped CEA, and NRC Event # 49601 Palo Verde dropped CEA.]

When the crew has commenced a plant shutdown, entered the appropriate Tech Spec or cued by the lead examiner, the turbine will trip. The SRO will direct the reactor to be tripped, due to RCS pressure rising. The Reactor may trip automatically prior to the crew manually tripping the reactor. The SRO should enter and direct the actions of SPTAs. Two CEAs will remain withdrawn and the ATC will commence emergency boration to maintain Shutdown Margin. When the ATC attempt gravity feed boration the VCT outlet will fail to close requiring use of the Boric Acid Make-up pumps. When EFAS is actuated 2P-7B EFW pump flange will wet the motor and cause a motor fault. 2P-7A steam driven EFW pump steam admission valve 2CV-0340-2 will be bound and not open. 2P-1A MFW pump will trip due to being interlocked with the turbine trip. Also, 2P-1B MFW pump will trip causing a loss of feedwater. The SRO should diagnose and enter Loss of Feedwater EOP. [Site OE: CR-ANO-2-2002-2173, Reactor Trip due to turbine trip. Industry OE: SEN134 Failure of Control Rods to Fully insert.]

The SRO will complete the initial actions of the Loss of Feedwater EOP to conserve inventory, then determine that AFW is the highest prioritized source of feedwater. The BOP will start the AFW pump and it will trip based on a loss of Lube Oil. The crew will transition to the next highest prioritized source of feedwater Common Feedwater (CFW) and restore feedwater using a CFW pump. [Industry OE: SOER 86-01 Reliability of PWR Auxiliary Feedwater systems][PSA Action of failure to establish flow from auxiliary feedwater pump and PRA action to align CFW to the SGs. PSA-ANO2-06-05, PRA-A2-05-004 Rev. 3]

Simulator Instructions for Scenario 1

Reset simulator to MOL ~100% power IC steady state.

Ensure 2P-1A Main Feedwater pump select to trip on Turbine trip.

CV0340 value = 0

T5 = Reactor Trip

T6 = OE4R10A1.

T7 = E14R0763

Event No.	Malf. No. / Trigger Number	Value/ Ramp/Time	Event Description
1			Shift Lead Charging pumps from 2P-36C to 2P-36B. **OP-2104.002, CVCS Operations.**
2	CV4651 Trigger = T1	.4	'A' RCP normal spray valve drifts partially open. **OP-2203.028, Pressurizer System Malfunction AOP**
3	ESF2C40B73 Trigger T2	active	Inadvertent Green Train Recirculation Actuation Signal (RAS). **OP-2203.040, Inadvertent RAS AOP.**
4	CEA43DROP Trigger = T3	0	CEA 43 fully inserts. **OP-2203.003, CEA Malfunction AOP**
5	DI_HS_4930_1 CVC2P39ANAS CVC2P39BNAS	true active active	2CV-4930 boration valve fails to automatically open and 2P-39A and 2P-39B boric acid makeup pumps fail to start automatically. **OP-2104.003, Chemical Addition**
6	MTGTRIPLOCKO Trigger T4	active	Turbine trip causing a reactor trip. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
7	MFWPMPBTRP Trigger T5 EFWROOMB EFW2P7BFLT Trigger T6	active / delay = 1 min. active active / delay = 1 min.	2P-1B Main Feedwater (MFW) pump trip, 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. **OP-2202.006, Loss of Feedwater.**
8	CEA02STUCK CEA07STUCK CV4873 Trigger T5	0% 0% 1	CEA's 2 and 7 will remain withdrawn requiring emergency boration. **OP-2202.010 Standard Attachments.**
9	AFW2P75LO Trigger T7	active delay 20 sec.	2P-75 AFW pump trips due loss of lube oil. **OP-2202.006, Loss of Feedwater EOP**

Simulator Instructions for Scenario 1		
At T=0		Shift Lead Charging pumps from 2P-36C to 2P-36B.
Cue: If requested as the NLO, report that prestart checks are sat for 2P-36B. **Cue: ~15 sec after 2P-36B start, report that post start are sat.** **Cue: ~ 30 sec after 2P-36C is stopped, report that post stop checks are sat for 2P-36C** **Cue: If requested as the NLO to place 2P-36C Seal water pump in auto after 1 min, report that 2P-36C seal water pump handswitch 2HS-4882 is in auto.**		
CUED by Lead Examiner	Trigger = T1	'A' RCP normal spray valve drifts partially open.
CUED by Lead Examiner	Trigger = T2	Inadvertent Recirculation Actuation Signal (RAS).
Cue: If requested by the crew to de-energize the RWT outlet valves, then respond as requested. 1 min to open breaker and 5 min. to open the RWT outlet valves. **Cue: When contacted as the WWM, then report that I&C maintenance will investigate the RAS actuation.**		
CUED by Lead Examiner	Trigger = T3	CEA 43 fully inserts.
Cue: When contacted as the work management or I&C to troubleshoot, wait 15 minutes and then call and report that you are going to commence troubleshooting. **Cue: If requested as Reactor Engineering, after 10 minutes report that SDM is met.** **Cue: If contacted as Chemistry to sample the RCS, then state you will comply with the request.** **Cue: If contacted as Plant Management or Reactor Engineering, then state you will comply with the request.** **Cue: If contacted as a NLO and/or chemistry, report that you will secure Zinc injection and monitor secondary chemistry.** **Cue: If contacted as chemistry, report that you will obtain an RCS sample for Iodine at the time requested.** **Cue: If requested as WWM, Communicator or Off shift operator, then perform Attachment B Notifications.** **Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.**		
		2CV-4930 boration valve fails to automatically open and 2P-39A and 2P-39B boric acid makeup pumps fail to start automatically.

Simulator Instructions for Scenario 1		
CUED by Lead Examiner	Trigger = T4	Turbine trip causing a reactor trip.
Cue: If contacted as the STA to report to the control room, acknowledge the request. **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.**		
	Reactor Trip and EFW pump start	2P-1B Main Feedwater (MFW) pump trip, 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A will overspeed trip causing a loss of Feedwater
Cue: If contacted as the WCO to investigate 2P-7B, report that 2P-7B discharge flange has a small leak that appears to have sprayed on the motor and the motor has black flash mark near the motor vents. Breaker has overcurrent drop flags. If requested, to quantify the leak report that it is a small trickle. **Cue: If requested to isolate the leak after 5 min report the leak was isolated by closing. 2EFW-4B and 2EFW-3B, after an additional five min remove the malfunction EFWROOMB for 2P-7B room level alarm.** **Cue: If contacted as a NLO to investigate 2P-7A report it is running at ~ 1100 rpm no issues noted.** **Cue: If contacted as a NLO to investigate 2P-7A steam admission valve 2CV-0340 then report the motor for the MOV is running but the valve indicates closed and is not moving. Suspect gear failure.** **Cue: If contacted as a NLO to investigate 2P-1B, report that the thrust bearing is extremely hot.** **Cue: If contacted as a NLO to investigate 2P-1A, report that 'A' Main Feedwater pump has no abnormal indications.** **Cue: When contacted as a NLO to close the LTOP relief isolation valves, after 2 min have the booth operator close the LTOP breakers, then report the 2B51-E4, and 2B51-K2 are closed.**		
	Reactor Trip	CEA's 2 and 7 will remain withdrawn requiring emergency boration.
	AFW pump start	2P-75 AFW pump trips due loss of lube oil.
Cue: If contacted as a NLO to investigate 2P-75, report that there is a lube oil leak and 2P-75 is no longer running. All the oil is being contained in the berm around the pump skid. **Cue: If requested investigate CFW pumps, then report CFW pumps are normal no issues noted.**		

Op-Test No.: 2019-1 Scenario No.: 1 Event No.: 1

Event Description: Shift Lead Charging pumps from 2P-36C to 2P-36B.

Time	Position	Applicant's Actions or Behavior
	BOP	8.1.4 IF shifting from 2P-36B to 2P-36C OR shifting from 2P-36C to 2P-36B, THEN Place 2P-36A handswitch (2HS-4832-1) to STOP.
Cue: If requested as the NLO, report that prestart checks are sat for 2P-36B.		
	BOP RAP	8.1.5 Place selected CCP handswitch in START: • 2P-36A handswitch (2HS-4832-1) • 2P-36B handswitch (2HS-4842-2) • 2P-36C handswitch (2HS-4852-1 OR 2HS-4853-2)
Cue: ~15 sec after 2P-36B start, report that post start are sat.		
	BOP	8.1.6 Check Charging Flow goes up 43 to 45 gpm (2FIS-4863).
	BOP	8.1.7 Place CCP Select switch (2HS-4868) to position corresponding to selected lead pump: • 2P-36A (PMP B&C) • 2P-36B (PMP C&A) • 2P-36C (PMP A&B)
Cue: ~ 30 sec after 2P-36C is stopped, report that post stop checks are sat for 2P-36C		
	BOP	8.1.8 Ensure previous lead pump stops:
	BOP	8.1.9 Check Charging flow lowers 43 to 45 gpm (2FIS-4863).
	BOP	8.1.10 IF 2P-36A previously placed in STOP, THEN place 2P-36A handswitch (2HS-4832-1) in AUTO.
	BOP	8.1.11 Place selected lead pump handswitch in AUTO: • 2P-36A handswitch (2HS-4832-1) • 2P-36B handswitch (2HS-4842-2) • 2P-36C handswitch (2HS-4852-1 OR 2HS-4853-2)

Op-Test No.: 2019-1	Scenario No.: 1	Event No.: 1
Event Description: Shift Lead Charging pumps from 2P-36C to 2P-36B.		
	BOP	8.1.12 Perform the following for proper room cooler alignment: A. Stop off-going pump Room cooler: • 2P-36A Room cooler 2VUC-7A (2HS-8461-1) • 2P-36B Room cooler 2VUC-7B (2HS-8462-2) • 2P-36C Room cooler 2VUC-7C (2HS-8463-1) OR (2HS-8464-2)
	BOP	B. Close off-going pump Room cooler Service Water Inlet valve: • 2VUC-7A SW Inlet 2CV-1500-1 (2HS-1500-1) • 2VUC-7B SW Inlet 2CV-1502-2 (2HS-1502-2) • 2VUC-7C SW Inlet 2CV-1501-5 (2HS-1501-1) OR (2HS-1501-2)
	BOP	C. Ensure on-coming pump Room cooler in Normal-After-Start: • 2P-36A Rm Cooler 2VUC-7A (2HS-8461-1) • 2P-36B Rm Cooler 2VUC-7B (2HS-8462-2) • 2P-36C Rm Cooler 2VUC-7C (2HS-8463-1) OR (2HS-8464-2)
	BOP	D. Ensure on-coming pump Room cooler Service Water Inlet valve open: • 2VUC-7A SW Inlet 2CV-1500-1 (2HS-1500-1) • 2VUC-7B SW Inlet 2CV-1502-2 (2HS-1502-2) • 2VUC-7C SW Inlet 2CV-1501-5 (2HS-1501-1) OR (2HS-1501-2)
	ANY	8.1.13 Record current RCS boron concentration on Plant Status Board for Charging pump that was secured.
Examiner Note: **The following steps do not have to be completed to move to the next malfunction.**		

Op-Test No.: 2019-1	Scenario No.: 1	Event No.: 1
Event Description: Shift Lead Charging pumps from 2P-36C to 2P-36B.		
	ANY	8.1.14 WHEN CCP secured > 10 minutes, THEN perform the following: A. IF desired to secure Seal Water Pump, THEN place applicable Seal Water Pump handswitch in AUTO: • 2P-36A Seal Water pump 2P-64A (2HS-4862) • 2P-36B Seal Water pump 2P-64B (2HS-4872) • 2P-36C Seal Water pump 2P-64C (2HS-4882) B. IF desired to keep associated Seal Water Pump in service, THEN place applicable handswitch in HAND: • 2P-36A Seal Water pump 2P-64A (2HS-4862) • 2P-36B Seal Water pump 2P-64B (2HS-4872) • 2P-36C Seal Water pump 2P-64C (2HS-4882) C. **IF** Seal Water Pump for a secured Charging Pump remains in HAND, **THEN REFER TO** EN-OP-115-07, Configuration Control.
Cue: If requested as the NLO to place 2P-36C Seal water pump in auto after 1 min, report that 2P-36C seal water pump handswitch 2HS-4882 is in auto.		
Termination criteria: When 2P-36B has been placed in service or at the discretion of the lead examiner.		

Op-Test No.: 2019-1	Scenario #1	Event No: 2
Event Description: 'A' RCP normal spray valve drifts partially open.		

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Recognize RCS pressure lowering and 2CV-4651 indicates intermediate.
Enter and implement AOP 2203.028, PZR Systems Malfunction		
	ATC	**1. Check the following criteria:** A. IF any PZR spray valve failed open, THEN **GO TO** Step 2. **Examiner Note: The CRS will transition to step 2**
NOTE Partial opening of PZR Spray Valves may be indicated by abnormal trend on Spray Line Temperature indication (T4607/T4608).		
	ATC	**2. IF** ANY PZR Spray valve failed open. **THEN PERFORM** the following: A. **PLACE** affected PZR Spray valve in MANUAL and close: • 2CV-4651 • 2CV-4652
	ATC	B. **IF** affected PZR Spray valve did **NOT** close, **THEN PERFORM** the following: 1) **PLACE** associated PZR Spray valve handswitch to OPEN for 1 second: • 2CV-4651 • 2CV-4652 2) **WHEN** 5 seconds have elapsed, **THEN PLACE** handswitch in CLOSE until green indicating light flashes.

Op-Test No.: 2019-1	Scenario #1	Event No: 2
Event Description: 'A' RCP normal spray valve drifts partially open.		

Time	Position	Applicant's Actions or Behavior
	ATC	C. **IF** affected PZR Spray valve is 2CV-4651 **AND** it will **NOT** close, **THEN CLOSE** associated energized Block valves: • 2CV-4655 • 2CV-4656

Termination criteria: After 2CV-4651 PZR spray valve has been isolated by 2CV-4656 block valve or at the discretion of the lead examiner.

Op-Test No.: 2019-1 Scenario #1 Event No: 3

Event Description: Inadvertent Green Train Recirculation Actuation Signal (RAS).

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Announce alarms: • "RAS ACT" (2K04-H1) in alarm. • CNTMT SUMP LEVEL HI (2K10-B7)
Enter and implement AOP 2203.040, Inadvertent RAS		
		NOTE Steps marked with (*) are continuous steps.
	ANY	*1. **CHECK** Reactor NOT tripped.
	ANY	2. **CHECK** SIAS NOT present.
	ANY	3. **CHECK** CSAS NOT present.
	BOP	■4. **CLOSE** the following CNTMT Sump Suction valves by placing handswitch in RAS OVRD: TRAIN A: 2CV-5647-1 TRAIN B: 2CV-5648-2
	SRO	A. **REFER TO** the following: • TS 3.5.2 or 3.5.3 for HPSI/LPSI • TS 3.6.2.1 or 3.0.3 for Containment Spray • TS 3.5.4 for RWT **Examiner Note: SRO must enter TS 3.5.2, action B. for HPSI and LPSI and TS 3.6.2.1 action a for Containment Spray.** **Examiner Note: SRO may enter TS 3.5.4 if RWT level lowers below 91.7% and TS 3.4.6.1 for RCS leak detection if water overflows the containment sump.**
	BOP	5. **PERFORM** the following for ESF pumps: **Examiner's Note: Step 'A' is NA.**

Op-Test No.: 2019-1	Scenario #1	Event No: 3
Event Description: Inadvertent Green Train Recirculation Actuation Signal (RAS).		
Time	Position	Applicant's Actions or Behavior
	BOP	B. **IF** suction sources isolated for Green Train ESF pumps (RWT AND CNTMT Sump), **THEN ENSURE** the following in PTL: • HPSI pump 2P89B • HPSI pump 2P89C (Green Train) **(Already in PTL)** • LPSI pump 2P60B • CNTMT Spray pump 2P35B
	SRO	C. **REFER TO** the following Tech Specs: • 3.5.2 • 3.5.3 • 3.6.2.1 • 3.0.3 **Examiner Note: SRO must enter TS 3.5.2, action b. for HPSI and LPSI and TS 3.6.2.1 action a for Containment Spray.**
Examiner Note: TS 3.5.4 and TRM 3.1.8 are applicable if RWT level lowers below 91.7%.		
	ANY	6. **CHECK** the following: A. SW aligned to CCW. B. SW aligned to ACW.

Op-Test No.: 2019-1	Scenario #1	Event No: 3
Event Description**:** Inadvertent Green Train Recirculation Actuation Signal (RAS).		
NOTE IF SW MOVs are overridden after an actuation, then the associated SW loop is considered inoperable. If MOVs are overridden on both SW loops, then both SW loops are considered inoperable.		
	SRO	7. **IF** SW MOVs were overridden, **THEN EVALUTE** SW operability as follows: A. **IF** SW MOVs on BOTH SW headers overridden, **THEN PERFORM** the following: B. **IF** SW MOVs on only ONE SW header overridden, **THEN PERFORM** the following: C. **REFER TO** Attachment B, Tech Spec and TRM Evaluation due to inoperable SW loop(s). **Examiner Note: No service water valves were overridden.**
	ANY	8. **CHECK** SIAS or MSIS actuated.
	SRO	8. **IF** MSIS or SIAS **NOT** actuated, **THEN GO TO** Step 10.
	SRO	10. **ENSURE** TS/TRM reviewed for applicability per Attachment B, Tech Spec and TRM Evaluation.
	ANY	11. **NOTIFY** I&C to determine and correct problem.
Cue: If requested by the crew to de-energize the RWT outlet valves, then respond as requested. 1 min to open breaker and 5 min. to open the RWT outlet valves.		
Cue: When contacted as the WWM, then report that I&C maintenance will investigate the RAS actuation.		
Termination Criteria: When the sump valves are overridden and the SRO has entered the appropriate TS or at the discretion of the Lead Examiner.		

Op-Test No.: 2019-1 Scenario #1 Event No: 4 & 5

Event Description: CEA 43 fully inserts. 2CV-4930 boration valve fails to automatically open and 2P-39A and 2P-39B boric acid makeup pumps fail to start automatically.

Time	Position	Applicant's Actions or Behavior
Cued by lead examiner	ANY	Assess multiple alarms on panels 2K04 and 2K10 Recognize CEA 43 has dropped into the core. **Time:**_____
	SRO	Enter OP-2203.003, CEA malfunction AOP.
Examiner Note: For Events 4 and 5 the ES-D-2 is broken down into steps for each applicant due to many procedure steps/sections being performed in parallel. This is to aid the examiners' ability to follow along. The section starts with SRO steps, then the ATC steps (page 21), and the BOP steps (page 26) are last.		
Procedure Note: • Attachment D provides trip and shutdown criteria. • Attachment E provides a list of possible Tech Spec actions to be taken within two hours of procedure entry. • Steps marked with (*) are continuous action steps. • Steps marked with (■) are floating steps.		
	SRO	1. Open Placekeeping page.
	SRO	2. Stop ALL CEA movement.
	SRO	3. Notify Control Board Operators to monitor floating steps.

Procedure Note:

- CEA misalignment is defined as a CEA misaligned from its associated Group by outward deviation more than 5 inches or inward deviation more than 7 inches.
- For the purpose of defining CEA operability to satisfy TS LCO requirements, a CEA is inoperable under the following conditions:
  1. CEA is known to be untrippable or immovable as a result of excessive friction or mechanical interference (TS 3.1.3.1.a).
  2. CEA is known to be immovable as a result of CEDMCS malfunction (TS 3.1.3.1.b and 3.1.3.1.c).
  3. CEA is misaligned from ANY other CEA in its group by greater than 7 inches and can NOT be aligned (TS 3.1.3.1.d).
  4. CEA can NOT be exercised within the maximum TS surveillance time requirements of TS 4.1.3.1.2.
  5. Shutdown Bank CEA withdrawn to less than its full out position except for surveillance testing (TS 3.1.3.5).

	SRO	4. Refer to the following: • Tech Specs • Attachment E, Tech Spec Two Hour Actions **Examiner Note: The SRO will inform the SM to Refer to Tech Specs and Attachment E.**
	SRO	*5. IF ANY CEAs immovable AND aligned, THEN GO TO Step 37. **Examiner Note: This step is N/A.**
	SRO	*6. IF TWO or MORE CEAs misaligned by greater than 19 inches, THEN perform the following: A. Trip Reactor. B. GO TO 2202.001, Standard Post Trip Actions. **Examiner Note: This step is N/A.**
	SRO	*7. IF TWO or MORE CEAs misaligned by greater than 7 inches, THEN perform the following: A. **Commence** Plant shutdown at greater than 14 %/hr using EITHER of the following: • 2102.004, Power Operation • 2203.053, Rapid Power Reduction B. Refer to TS 3.1.3.1.e., CEA Position. **Examiner Note: This step is N/A.**
Procedure Note: TAVE computer point numbers that may be used include T-AVG and T4617-B.		
	ANY	8. Record the following: • Start time _____ • Pre-misalignment Rx power _____ • TAVE change _____
	SRO	9. Check Reactor startup in progress. **(Not Met, perform contingency)**
	SRO	9. IF Reactor startup NOT in progress, THEN GO TO Step 17.

	ANY	17. Check inward CEA misalignment exists.
	SRO	Direct the following: ■18. Adjust Turbine load to match TAVE within 2°F of TREF.
	ANY	*19. Check RCS TC 542 to 554.7°F using CPC PID 5, 6, 160, or 161.
	ANY	*20. Check RCS pressure 2025 to 2275 psia.
Procedure Note: If available, the reactivity plan for a dropped CEA reduces power at a rate that will maintain plant power within the acceptable region of Attachment A and is the preferred plan for CEA misalignment from 100% power.		
Examiner Note: The crew should select the 70% reactivity plan which starts with dilution at 9 gpm and a total boration of 520 gallons.		
	SRO	■21. **Commence** power reduction within 15 minutes of misalignment to maintain within ACCEPTABLE region of Attachment A, Required Power Reduction After CEA Deviation using EITHER of the following: • 2102.004, Power Operation • 2203.053, Rapid Power Reduction
Examiner Note: The SRO may implement a floating step to log LPD and DNBR limits (step 27) it is on page 27 of this guide.		
Enters 2203.053, Rapid Power Reduction		
Procedure Note: • Use of this procedure may be terminated at any point if a complete shutdown is not required. • Shutdown rate shall be based on plant conditions and safety considerations. Rate may be raised or lowered as plant conditions warrant.		
	SRO	*1. **IF** at any time, it is determined that significant manual actions are required to EITHER maintain the plant online, **OR** maintain the desired maneuvering rate, **THEN PERFORM** the following: A. **TRIP** the Reactor. B. **GO TO** 2202.001, Standard Post Trip Actions.

Procedure Note: If Emergency Boration in progress, changing the number of running Charging pumps will change boration rate.		
	SRO	Direct the following step. 3. **IF** Letdown available, **THEN COMMENCE** Power reduction using appropriate reactivity plan in conjunction with EITHER of the following: • Chemical Addition, 2104.003, Exhibit 3, Normal RCS Boration At Power • Chemical Addition, 2104.003, Attachment R, RCS Boration From The RWT Or BAMT
	SRO	Direct the following step. *6. **LOWER** Turbine load as necessary to hold Tave within ± 3°F of program Tref.
	SRO	*8 **IF** desired to transfer unit auxiliaries from Unit Aux transformer to SU #3, **THEN PERFORM** Attachment A, Transferring Loads to SU #3. **Examiner's Note: This step is not applicable.**
	SRO	Direct the following step. 10. **PERFORM** notifications of power reduction using Attachment B, Notifications.
Cue: If requested as WWM, Communicator, or Off shift operator, then perform Attachment B Notifications.		
	SRO	Direct the following step. *11. **Monitor** Secondary chemistry and adjust chemical feed as needed using 2106.028, Secondary System Chemical Addition.
Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.		
	SRO	**Implement remaining OP-2203.003, CEA malfunction AOP.**

	SRO	*22. Commence CEA troubleshooting as follows: A. Notify I&C to commence CEA troubleshooting. Refer to TS 3.1.3.1.c, CEA Position. B. IF CEA withdrawal required during CEA troubleshooting, THEN CEA may be withdrawn up to 5 inches using 2105.009, CEDM Control System Operation.
Cue: When contacted as the work management or I&C to troubleshoot, wait 15 minutes and then call and report that you are going to commence troubleshooting.		
	SRO	23. Perform SDM checks as follows: A. Notify Reactor Engineering of CEA misalignment or inoperability and request assistance in determining SDM. B. Ensure SDM satisfied within 1 hour using 2103.015, Reactivity Balance Calculation. Refer to TS 3.1.1.1, Shutdown Margin, Tavg > 200ºF and TS 3.1.3.1.d, CEA Position **Examiner Note: SRO must enter TS 3.1.3.1 Action d.**
Cue: If requested as Reactor Engineering, after 10 minutes report that SDM is met.		
	ANY	■26. Check CEA pulse counter and CEAC position indication agree within 5 inches for ALL CEAs.
	SRO	■27. IF CEA fully inserted, THEN declare COLSS Power Operating Limits for LPD and DNBR inoperable, refer to TS 3.2.1.b, Linear Heat Rate and 3.2.4.c, DNBR Margin. **Examiner Note: SRO must enter TS 3.2.1. Action b when LPD is greater than 13.7 KW/ft. The SRO must enter Spec 3.2.4. Action c if DNBR is not met for the COLR. This may be a follow-up question.** **Ensure that at least the first set of data is taken on Attachment C is complete including ASI.**
Procedure Note: Consider tripped or failed CPCs inoperable for determining DNBR or LPD Limits.		
Examiner Note: 'D' CPC is tripped and should be considered inoperable.		
	SRO	*28. Check CPC LPD less than TS 3.2.1 (Linear Heat Rate) limits using an average of ALL operable CPC channels.

Procedure Caution: DNBR operating limits will shift during ASI swings with COLSS out of service.		
	SRO	*29. Check CPC DNBR greater than TS 3.2.4 (DNBR Margin) limits using an average of ALL operable CPC channels.
	SRO	30. Notify Chemistry to sample RCS for Iodine within 2 to 6 hours following Reactor power change greater than 15% in 1 hour, refer to TS 3.4.8, Specific Activity.
Cue: If contacted as Chemistry, then state you will comply with the request.		
	ANY	31. Notify appropriate Plant Management and Reactor Engineering to evaluate core power distribution.
Cue: If contacted as Plant Management or Reactor Engineering, then state you will comply with the request.		
Examiner's Note: The following are the ATC steps for Events 4 and 5.		
	ATC	Implement OP 2104.003 Chemical Addition, Exhibit 3, Normal RCS Boration at Power.
CAUTION This section has a Reactivity Addition Potential (RAP) and is classified as Normal Risk Level.		
2104.003, Exhibit 3	ATC	1.0 **IF** a Reactivity Management Brief has **NOT** been conducted, **THEN PERFORM** a Reactivity Management Brief IAW EN-OP-115-14, Reactivity Management with an SRO. 2.0 **IF** this is the first Boration of the shift, **THEN ENSURE** BAM Flow totalizer (2FQI-4926) reset. 3.0 **IF** desired, **THEN RECORD** initial controller data: 2FIC-4926 Setpoint: _____ Demand: _____ 4.0 **ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) set as follows: • Setpoint set to desired flow rate. • **IF** in MANUAL, **THEN** demand set to desired value.

2104.003, Exhibit 3	ATC	5.0 **ENSURE** desired BAM pump (2P-39A OR 2P-39B) selected for automatic operation using BAM pump Select switch (2HS-4911-2). 6.0 **PLACE** Mode Select switch (2HS-4928) to BORATE.
2104.003, Exhibit 3	ATC	7.0 **ENSURE** Charging Pump Suction From Boric Acid (2CV-4930) opens (2HS-4930). **(2CV-4930 will not automatically open and the applicant should open it using the HS)** 8.0 **ENSURE** selected BAM pump running: **(The BAM pump(s) will not automatically start and the applicant should start it using the HS)** • 2P-39A (2HS-4919-2) • 2P-39B (2HS-4910-2) ***9.0 ENSURE** BAM Tank Recirc open for running pumps: • 2T-6A recirc (2HS-4903-2) • 2T-6B recirc (2HS-4915-2) ***10.0 IF** additional boric acid flow required, **THEN START** additional BAM pump: • 2P-39A (2HS-4919-2) • 2P-39B (2HS-4910-2)
	ATC	**CRITICAL STEP** 11.0 **OPERATE** Boric Acid Makeup Flow Batch controller (2FQIS-4926) as follows: 11.1 **DEPRESS** AND **HOLD** red pushbutton. 11.2 **ENSURE** Boric Acid Makeup Flow Batch controller (2FQIS-4926) set for desired quantity. 11.3 **RELEASE** Red pushbutton. 12.0 **ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) indicates desired flow rate.

2104.003, Exhibit 3	ATC	*13.0 **PERFORM** the following to Start/Stop additional Charging pumps: 13.1 **IF** desired to raise flow, **THEN**: A. **START** additional charging pumps as necessary. B. **ADJUST** Boric Acid Makeup Flow controller (2FIC-4926) to desired flow rate. 13.2 **IF** desired to lower flow, **THEN**: A. **ADJUST** Boric Acid Makeup Flow controller (2FIC-4926) to desired flow rate. B. **SECURE** additional Charging Pumps as necessary. **Examiner Note: This step should be NA.**
2104.003, Exhibit 3	ATC	*14.0 **MONITOR** the following parameters: • RCS T_{AVE} • Axial Shape Index • Reactor power **CRITICAL STEP** 16.0 **WHEN** Boric Acid Makeup Flow Batch controller (2FQIS-4926) at zero, **THEN ENSURE** the following: • Boric Acid Makeup Flow Control (2CV-4926) closes. • No flow indicated on Boric Acid Makeup Flow controller (2FIC-4926).
Enter 2105.009, CEDM Control System Operation (CEDMCs Operations, Exhibit 3)		

NOTE

- "CEA SELECTED" indicates selected CEA position.
- "GROUP SELECTED" indicates average position of selected group.
- Rod motion is inhibited by PMS CEA sequencing program if a deviation of six inches occurs in any regulating group.
- CEAC CH1 and CH2 annunciators on 2K04 and CEDMCS annunciators on 2K10 should be checked for applicability prior to moving CEAs.

CAUTION

R A P

The following section has a Reactivity Addition Potential (RAP) and is classified as Risk Level R2.
For an Unplanned Reactivity Manipulation, the required controls for planned reactivity evolutions are not applicable during AOP (including ACA response) or EOP conditions IAW COPD-030, Reactivity Management Program.

	ATC	1.0	**IF** time allows **AND** Reactivity Management Brief has **NOT** been conducted, **THEN PERFORM** a Reactivity Management Brief per COPD-030 with an SRO.
	ATC	2.0	CHECK CEAC CH1 and CH2 annunciators on 2K04 and CEDMCS annunciators on 2K10 for applicability prior to moving CEAs.

	ATC	3.0 **IF** moving CEAs in group, **THEN**: 3.1 **ENSURE** Group Select switch to desired group position. 3.2 **IF** moving Group P CEAs, **THEN PLACE** P Group Select switch to P. 3.3 **ENSURE** Individual CEA Selection switches aligned to CEA in group selected to move. 3.4 **PLACE** Mode Select switch to MANUAL GROUP (MG) or MANUAL SEQUENTIAL (MS). * 3.5 **OBSERVE** CEAC and Pulse Counter CEA position indications to ensure CEA motion and alignment as CEAs are moved. RAP 3.6 **POSITION** groups as desired using Manual Control lever. 3.7 **PLACE Mode** Select switch to OFF. 3.8 **ENSURE Pulse** Counter and CEAC indications match.

OP-2203.053, Rapid Power reduction AOP.

Procedure Note:

- ASI would tend to shift back to the top of the core if CEAs are inserted below 80 inches withdrawn when the Reactor is at power and the CPC Aux trip is active.
- At higher power levels, larger (more aggressive) CEA insertions may be required (6 to 8 inches recommended initially). (CR-ANO-C-2015-1383 CA 2)
- ASI response to power changes at the end of core life is more severe, at times significantly so. The effects of ASI may not be seen until well into the power change.
- Proactively driving ASI more positive than ESI (up to +0.05 deviation) will improve the ability to control ASI at lower power levels. (CR-ANO-C-2015-1383 CA 2)
- Exceeding COLR ASI limit will challenge CPC QASI Aux Trip setpoint and may result in automatic trip. CPC QASI Aux Trip occurs at ±0.45 (PID 187).

	ATC	*7. **PERFORM** the following for ASI: • **MAINTAIN** ASI within Core Operating Limits Report (COLR) limits using CEA Group 6 or Group P. • **USE** ONE of the following to monitor ASI closely: - COLSS (CV9198) - **IF** COLSS inoperable, **THEN USE** CPC channel ASI (PID 268) that most closely agreed with COLSS when it was operable. • Periodically **MONITOR** QASI (PID 187). • **INSERT** Group 6 (preferred at higher power) OR Group P CEAS (preferred at lower power) using Exhibit 3 of 2105.009, CEDM Control System Operation, as necessary. • **MAINTAIN** CEAs greater than 80 inches withdrawn. • **IF** CEAs are inserted beyond the Long Term Steady State Insertion Limit, **THEN PERFORM** 2102.004A, Unit 2 CEA Insertion Log.
Examiner's Note: The following are the BOP steps for Events 4 and 5.		
BOP actions from Rapid Power Reduction AOP		
	BOP	*6. **LOWER** Turbine load as necessary to hold Tave within ± 3°F of program Tref.
	BOP	*9 **THROTTLE** Condensate recircs as necessary to maintain 650-750 psig Condensate Pump Discharge pressure: • 2CV-0662 (2FIC-0662) • 2CV-0663 (2FIC-0663)
BOP actions from CEA Malfunctions AOP		
	BOP	From CEA Malfunctions AOP. ■18. Adjust Turbine load to match TAVE within 2°F of TREF.
	BOP	A. Perform ATTACHMENT C, DNBR/LPD TECH SPEC LOG every 15 minutes until COLSS Power Operating Limits for LPD and DNBR are operable.
OP-2203.003, CEA malfunction AOP, Attachment C DNBR/LPD TECH SPEC LOG.		

Procedure Note: Consider tripped or failed CPCs inoperable for determining DNBR or LPD Limits.		
Examiner Note: 'D' CPC is tripped and should be considered inoperable.		
Attach. C	BOP	1. Determine DNBR Limit as follows. A. Add operable CPC channel values (PID 169 or 406) and divide by number of channels. Ch A_____+ Ch B_____+ Ch C_____ + Ch D___ = Total_____ Total_____ ÷ operable channels_____ = DNBR average DNBR average _____ B. Subtract 0.12 from DNBR average to determine DNBR Limit. DNBR average _____ - 0.12 = DNBR Limit Calculated DNBR Limit_____
Attach. C	BOP	2. Determine LPD Limit as follows. A. Add operable CPC channel values (PID 179) and divide by number of channels. Ch A_____ + Ch B_____ + Ch C_____ + Ch D___ = Total Total_____ ÷ operable channels_____ = LPD average LPD average _____ B. Add 0.16 to LPD average to determine LPD Limit. LPD average_____ + 0.16 = LPD Limit Calculated LPD Limit _____
Attach. C	BOP	3. Perform the following every 15 minutes until COLSS calculated DNBR and LPD POLs are returned to service: A. Record DNBR and LPD values from ALL operable CPCs. B. Determine DNBR and LPD average.

Procedure Note:

If the below listed step becomes applicable, power reduction to less than 20% is required even if the dropped CEA is recovered prior to going below 20% power.

Attach. C	BOP	*4. IF ANY DNBR 15 minute average less than calculated DNBR limit OR ANY LPD 15 minute average greater than calculated LPD Limit, THEN immediately commence power reduction to less than 20% using EITHER of the following: • 2102.004, Power Operation • 2203.053, Rapid Power Reduction
Attach. C	BOP	5. IF plant power being changed, THEN perform recalculation of DNBR and LPD limits using steps 1 and 2 of this attachment when steady-state power level achieved.

	DNBR (PID 406)					LPD (PID 179)				
TIME	CPC A	CPC B	CPC C	CPC D	DNBR AVE	CPC A	CPC B	CPC C	CPC D	LPD AVE

Examiner Note: Ensure that at least one set of data is taken on attachment C prior to the next malfunction.

Termination criteria: When the required reactivity manipulation is complete or at lead examiner's discretion.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Numerous alarms indicating a Main Turbine trip. **Examiner Note: Reactor will trip in seconds on High Pressurizer pressure if the crew does not manually trip the reactor.**
	SRO	Direct tripping the reactor due to the loss of the Main Turbine.
Enter and implement EOP 2202.001, Standard Post Trip Actions.		
	SRO	1. Notify Control Board Operators to perform the following: A. Monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist. B. Perform post trip contingencies as required. 2. Open Safety Function Tracking page.
Reactivity Control Safety Function	ATC	3. Check Reactivity Control established as follows: A. Reactor power lowering. B. Check startup rate is negative. C. ALL CEAs fully inserted by observing ANY of the following: **(CEAs 2 & 7 do not insert - perform contingency)** 1) CEA Rod bottom lights illuminated. 2) CEAC 1 indicates ALL CEAs fully inserted. 3) CEAC 2 indicates ALL CEAs fully inserted. **C. Ensure emergency boration in progress using Exhibit 1, Emergency Boration**

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Performs 2202.010, Standard Attachments (Exhibit 1) Emergency Boration		
Exhibit 1 Boration	ATC	1. Select ONE of the following Emergency Boration flowpaths: **FLOWPATH** — **ACTIONS REQUIRED** A. Gravity Feed — A. Ensure at least ONE BAM Tank Gravity Feed valve open: • 2CV-4920-1 • 2CV-4921-1 B. BAM pumps — B. 1) Start at least ONE BAM pump. 2) Open Emergency Borate valve (2CV-4916-2). 3) Ensure Boric Acid Makeup Flow Control valve (2CV-4926) closed.
		CAUTION Aligning Charging pump suction to RWT during RWT purification with ALL Charging pumps running may cause Charging pumps to trip due to low suction pressure.
		C. RWT to Charging pumps — C. Open Charging Pump Suction Source from RWT valve (2CV-4950-2).
		2. Close VCT Outlet valve (2CV-4873-1). **Examiner Note: VCT Outlet valve (2CV-4873-1) does not close, flowpath B (BAM pumps) must be selected.**
		3. IF VCT Outlet valve does NOT close, THEN Ensure BAM Pumps Emergency Boration flowpath selected.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Exhibit 1 Boration	ATC	4. Ensure Reactor Makeup Water Flow Control valve (2CV-4927) closed.
		5. Ensure at least ONE Charging pump running.
		6. Ensure charging header flow greater than 40 gpm by either of the following: • 2FIS-4863 Disch Flow (2C09) • Computer Point F4863 (PDS, PMS or SPDS)

Critical Task: Commence Emergency boration IAW 2202.010 Standard Attachment Exhibit 1 by the completion of SPTAs.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Vital Auxiliaries Safety Function	BOP	4. Check Maintenance of Vital Auxiliaries satisfied: A. Check Main Turbine tripped by BOTH of the following: • ALL Main Stop Valves closed. • Generator megawatts indicate zero. B. Generator Output breakers open. C. Exciter Field Breaker open. D. Perform EITHER of the following as required: 1) Check the following valves closed: • MSR 2E-12A Steam Supply From SG A (2CV-0400) • MSR 2E-12B Steam Supply From SG B (2CV-0460) 2) No flow indicated on the following MSR second stage flow instruments: • 2FI-0402 • 2FI-0462 E. At least ONE 6900v AC bus energized. F. At least ONE 4160v Non-vital AC bus energized. G. BOTH 4160v Vital AC buses energized H. BOTH DGs secured. I. At least ONE 125v Vital DC bus energized: • 2D01 - SPDS point E2D01 • 2D02 - SPDS point E2D02

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
RCS Inventory Control Safety Function	ATC	5. Check RCS Inventory Control established as follows: A. PZR level: • 10 to 80%. • Trending to setpoint. B. RCS MTS 30°F or greater.
RCS Pressure Control Safety Function	ATC	6. Check RCS Pressure Control: • 1800 to 2250 psia. • Trending to setpoint. • Normal PZR Spray and heaters controlling pressure. • Valid CNTMT Spray NOT in progress.
Core Heat Removal safety Function.	ATC	7. Check Core Heat Removal by forced circulation: A. At least ONE RCP running. B. CCW flow aligned to RCPs. C. Loop delta T less than 10°F. D. RCS MTS 30°F or greater. E. Check SW aligned to CCW. F. IF SIAS or MSIS actuated, THEN maintain SW header pressure greater than 85 psig.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	8. Check RCS Heat Removal: A. Check SG available by BOTH of the following: • At least ONE SG level 10 to 90%. • FW maintaining SG level. **(NOT met)** **A. Contingency Actions** **1) IF SG level lowering THEN Ensure EFAS actuated.** **2) IF SG level less than 10% THEN Ensure total flow greater than 485 gpm** **4) IF FW NOT maintaining SG level, THEN manually control FW flow rate.** **5) IF FW NOT available THEN perform the following:** **a) Ensure maximum of ONE RCP running in each loop.** **b) IF RCP 2P32A or 2P32B stopped, THEN Ensure associated PZR Spray valve in MANUAL and closed.** • **RCP A Spray Valve (2CV-4651)** • **RCP B Spray Valve (2CV-4652)** **c) Close SG Blowdown Isolation valves** • **2CV-1016-1** • **2CV-1066-1** **d) GO TO Step 8.C** **Examiner Note: 2K12-H9 "EFWP ROOM(S) LEVEL HI alarms due to the flange leak on 2P-7B EFW pump resulting in the motor fault.**

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	C. Check Feedwater line intact by the following: • SG level stable or rising. • NO unexplained step changes or erratic FW flow. • NO unexplained step changes or erratic Condensate flow. D. Check RCS TC 540°F to 555°F E. Check SG pressure 950 psia to 1050 psia. F. IF MSIVs open, AND desired, THEN place SDBCS Master Controller in Auto/Local with setpoint of 960 psia using 2105.008 Exhibit 3, SDBCS Emergency Operation. **Examiner Note: EFAS is actuated but NO EFW pumps are available. SRO may discuss TS 3.7.1.2 for no EFW trains.**

Cue: If contacted as the WCO to investigate 2P-7B, report that 2P-7B discharge flange has a small leak that appears to have sprayed on the motor and the motor has black flash mark near the motor vents. Breaker has overcurrent drop flags. If requested, to quantify the leak report that it is a small trickle.

Cue: If requested to isolate the leak after 5 min report the leak was isolated by closing. 2EFW-4B and 2EFW-3B, after an additional five min remove the malfunction EFWROOMB for 2P-7B room level alarm.

Cue: If contacted as a NLO to investigate 2P-7A report it is running at ~ 1100 rpm no issues noted.

Cue: If contacted as a NLO to investigate 2P-7A steam admission valve 2CV-0340 then report the motor for the MOV is running but the valve indicates closed and is not moving. Suspect gear failure.

Cue: If contacted as a NLO to investigate 2P-1B, report that the thrust bearing is extremely hot.

Cue: If contacted as a NLO to investigate 2P-1A, report that 'A' Main Feedwater pump has no abnormal indications.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Cntmt Safety Function	ANY	9. Check CNTMT parameters: A. Temperature and Pressure: • Temperature less than 140°F. • Pressure less than 16 psia. B. Check CNTMT Spray pumps secured. C. NO CNTMT radiation alarms or unexplained rise in activity. 1) CAMS alarms • “CNTMT PART/GAS RAD HI/LO annunciator (2K10-B6) clear. 2) RCS leakage alarms: • "AREA RADIATION HI/LO" annunciator (2K11-B10) clear. • "PROC LIQUID RADIATION HI/LO" annunciator (2K11-C10) clear. 3) Check the following radiation monitors trend stable: • CNTNT Area • CAMS • Process Liquid D. NO secondary system radiation alarms or unexplained rise in activity 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 2) Secondary Systems Radiation monitors trend stable: • Main Steam lines • SG Sample • Condenser Off Gas

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
	SRO	10. Notify STA to report to control room.
	SRO	11. Direct NLOs to perform Attachment 47, Field Operator Post Trip Actions.
Cue: If contacted as the STA to report to the control room, acknowledge the request. **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.**		
	SRO	12. Ensure Reactor trip announced on Plant page.
	SRO	13. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	SRO	14. Direct control board operators to acknowledge ALL annunciators and announce ALL critical alarms.
	SRO	15. Check ALL safety function acceptance criteria satisfied. **15 Contingency actions** IF ANY safety function acceptance criteria NOT satisfied, THEN perform the following: A. Notify control room staff of safety functions NOT satisfied. B. **GO TO** Exhibit 8, Diagnostic Actions.
	SRO	**Diagnose Loss of Feedwater EOP 2202.006.**

Op-Test No.: 2019-1	Scenario #1	Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
		Enter and implement Loss of Feedwater EOP 2202.006.
		CAUTION Failure to use average CETs to monitor MTS with ALL RCPs stopped may result in misleading evaluation of core conditions
	SRO	Direct STA to perform the following: *1. Confirm diagnosis of Loss Of Feedwater by checking SFSC acceptance criteria satisfied every 15 minutes.
	SRO	*2. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	SRO	3. Open Placekeeping page.
	SRO	4. Notify Control Board Operators to monitor floating steps.
	ATC	5. Reduce RCS heat input as follows: A. Stop ALL RCPs. B. Ensure BOTH PZR Spray valves in MANUAL and closed.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
	BOP	6. Conserve SG inventory as follows: A. Ensure SG Blowdown Isolation valves closed: • 2CV-1016-1 • 2CV-1066-1 B. Ensure SG Sample valves closed. • 2CV-5850 • 2CV-5858 • 2CV-5852-2 • 2CV-5859-2 **Examiner Note: SRO may bring forward step 12 to establish a feed source. Step 12 is on page 42.**
	BOP	■ 7. Check ALL AC and Vital DC buses energized.
	ATC	*8. Maintain RCS pressure 1800 psia to 2250 psia using 2202.010 Attachment 48, RCS Pressure Control.
Crew performs Attachment 48, RCS Pressure Control		
		NOTE Once method of pressure control is established, this attachment is not required in hand or continuous use. A change to the method of pressure control will require in hand or continuous use until the new pressure control method is established.
Attach 48	ATC	1. **IF** loss of power or failed indication prevents automatic operation of heaters and spray, **THEN PLACE** the following handswitches to the unaffected channel as necessary: • PZR Low Level Cutoff Select (2HS-4642) • PZR Pressure Channel Select (2HS-4626) • PZR Level Channel Select (2HS-4628)

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Attach 48	ATC	*2. Maintain RCS pressure with heaters and spray using one or more of the following: A. IF desired to use PZR Pressure controller (2PIC-4626A/B), THEN perform the following: * 1) Ensure RCS MTS greater than 30 degrees. 2) Adjust PZR Pressure controller (2PIC-4626A/B) setpoint to desired pressure. * 3) RESET Low PZR Pressure setpoints during depressurization. B. IF desired to use PZR Heaters, THEN perform the following: 1) Cycle available PZR Backup heaters as necessary. 2) Cycle available PZR Proportional heaters as necessary. D. IF desired to use AUXILIARY Spray, THEN perform the following: * 1) Ensure RCS MTS greater than 30 degrees. 2) Ensure at least ONE Charging pump running. 3) Close Regen HX to RCP B/C valves: • 2CV-4827-2 • 2CV-4831-2
NOTE PZR Spray Block valves 2CV-4653 and 2CV-4655 are de-energized due to degraded power supply cables.		
Attach 48	ATC	4) Ensure PZR Spray (2CV-4651/2CV-4652) or PZR Spray Isolation valves (2HS-4655/2HS-4653) closed.
Caution • Securing Charging pumps will secure/change Aux Spray flow. • Securing all Charging pumps will terminate emergency Boration, if in progress.		

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Attach 48	ATC	5) Perform EITHER of the following to control RCS pressure: • Throttle Aux Spray valve (2CV-4824-2) as necessary. • Start and stop Charging pump(s) as necessary. • Reset Low PZR Pressure setpoints during depressurization.
		6) IF Regen HX to RCS temperature (2TI-4825) can NOT be reduced to less than 275°F, THEN perform ONE of the following: a) Isolate Letdown to reduce temperature. b) Complete Table 1 of this attachment.
		7) IF Regen HX to RCS (2TI-4825) AND PZR water phase (2TI-4627) differential temperature greater than 200°F AND PMS is unavailable, THEN complete Table 1 of this attachment.
Attach 48	ATC	8) **IF** desired to COMPLETELY secure Aux Spray, **THEN**: a) **ENSURE** Aux Spray valve (2CV-4824-2) closed. b) **ENSURE** open at least ONE Regen HX to RCP B/C valves: • 2CV-4827-2 • 2CV-4831-2

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Return to LOAF	SRO	The SRO should direct the following action to be completed. 9. Locally remove danger tags and close the following breakers: • 2B51-E4 "LTOP RELIEF ISOL 2CV-4730-1" • 2B51-K2 "LTOP RELIEF ISOL 2CV-4741-1"
Cue: When contacted as a NLO to close the LTOP relief isolation valves, after 2 min have the booth operator close the LTOP breakers, then report the 2B51-E4, and 2B51-K2 are closed.		
LOAF	ANY	■10. Check IA pressure greater than 65 psig.
LOAF	SRO	11. IF FW established to at least ONE SG, THEN GO TO Step 15. **Examiner note: FW will not be established.**
LOAF	SRO	■12. Establish a SG feed source from at least one of the following (listed in preferred order): A. EFW Pump 2P7B using 2202.010 Attachment 53, Recovery From Loss of Feed With 2P7B. B. EFW Pump 2P7A using 2202.010 Attachment 54, Recovery From Loss of Feed With 2P7A. C. AFW Pump 2P75 using 2202.010 Attachment 55, Recovery From Loss of Feed With 2P75. D. Common Feedwater using 1106.007, Common Feedwater System. E. MFW Pumps using 2202.010 Attachment 56, Recovery From Loss of Feed With Main Feed Pumps. F. Condensate Pumps using 2202.010 Attachment 57, Recovery From Loss of Feed With Condensate Pumps. **Examiner note: AFW pump 2P75 is the first option available.**

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Transition to Attachment 55, Recovery From Loss of Feed With 2P75.		
	SRO	1. IF 2P7A or 2P7B EFW pumps running, THEN Ensure 2P75 suction aligned to an alternate source using 2106.006, Emergency Feedwater System Operations. **Examiner Note: This step is NA, no EFW pumps are running.**
Attach 55	ANY	2. IF 4160VAC Bus 2A1 is energized from SU XFMR #2, THEN perform the following: **Examiner Note: This step is NA.**
		4. IF MSIS or CSAS actuated, THEN locally open "DC CONTROL POWER" breaker in the following breaker cubicles: **Examiner Note: This step is NA.**
Attach 55	ANY	5. Perform the following to start AFW Lube Oil pump (2P225): A. Place 2HS-0766 in ON. B. Check 2P225 amber light OFF. C. IF 2P225 NOT available, THEN RETURN TO procedure in effect.
		6. Ensure following valves closed: • AFW to 2P7A DISCH (2CV-0761) • AFW to 2P7B DISCH (2CV-0760)
		7. Start 2P75. **Examiner Note: AFW pump 2P75 will trip on low Lube Oil pressure approximately 20 seconds after start, SRO will return to step 12 and choose Common Feedwater.**
		8. Perform the following to secure 2P225: A. Place 2HS-0766 in OFF. B. Place 2HS-0766 in AUTO.

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
Cue: If contacted as a NLO to investigate 2P-75, report that there is a lube oil leak and 2P-75 is no longer running. All the oil is being contained in the berm around the pump skid.		
Transition to 1106.007, Common Feedwater Operations. Attachment F		
	BOP	1.0 **ENSURE** CFW power available by performing the following: 1.1 **SELECT** 4160V Electrical Screen.
	BOP	1.2 **IF** P-805A to be used, **THEN**: 1.2.1 **CHECK** ONE of the following supply breakers closed: • A1512, London Line Feed to A15 • A1532, A1 Feed to A15
	ANY	1.3 **IF** P-805B to be used, **THEN**: 1.3.1 **CHECK** ONE of the following supply breakers closed: • A1912, London Line Feed to A19 • A1932, A1 Feed to A19
	BOP	2.0 Starting CFW: 2.1 **SELECT** Injection Screen Display on HMI 2QC-7100.
Procedure Note If CFW powered from A1 and EFW Pump P-7B receives an automatic start signal or its supply breaker (A-311) is closed, the CFW Pump will not run due to load shed.		
	BOP	2.2 **IF** starting CFW Pump A (P-805A), **THEN**:

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
		Procedure Note P-805A pump icon will be a gray hue if load shed is enabled.
	BOP	2.2.1 **SELECT** P-805A by pressing P-805A symbol.
	BOP	2.2.3 **SELECT** START button in pop-up box.
	BOP	2.3 **IF** starting CFW Pump B (P-805B), **THEN**: 2.3.1 **SELECT** P-805B by pressing P-805B symbol. 2.3.3 **SELECT** START button in pop-up box.
	BOP	2.4 CHECK selected pump icon changes from green to red. 2.5 CHECK selected pump discharge pressure greater than or equal to 1350 psig.
	BOP	3.0 **IF** feedwater will be aligned to SG A, **THEN**: 3.1 **REFER TO** Tech Spec 3.6.3.1, Containment Isolation Valves. 3.2 **UNLOCK** and **CLOSE** Disconnect Switch for 2CV-1070A (2S-1070A2). 3.3 At HMI, ENSURE 2CV-1070A operation selected to manual.
		Procedure Note Time for 2CV-1070A from full closed to full open is 26 seconds.
	BOP	3.4 **IF** SG A level is less than 49% [60%], **THEN THROTTLE OPEN** 2CV-1070A to achieve less than 150 gpm until ONE of the following conditions is met: • SG level rises • Flow has been maintained for greater than 5 minutes

Op-Test No.: 2019-1 Scenario #1 Event No: 6, 7, 8 & 9

Event Description: (6) Main Turbine trip causing a Reactor trip (7) Main Feedwater pump trip / 2P-7B Emergency Feedwater (EFW) motor fault, and 2P-7A steam admission valve will not open. (8) 2 CEAs remain withdrawn (9) AFW pump 2P-75 trips on loss of lube oil.

Time	Position	Applicant's Actions or Behavior
	BOP	4.0 **IF** feedwater will be aligned to SG B, **THEN**: 4.1 **REFER TO** Tech Spec 3.6.3.1, Containment Isolation Valves. 4.2 **UNLOCK** and **CLOSE** Disconnect Switch for 2CV-1070B (2S-1070B2). 4.3 At HMI, ENSURE 2CV-1070B operation selected to manual.
		Procedure Note Time for 2CV-1070B from full closed to full open is 26 seconds.
	BOP	4.4 **IF** SG B level is less than 49% [60%], **THEN THROTTLE OPEN** 2CV-1070B to achieve less than 150 gpm until ONE of the following conditions is met: • SG level rises • Flow has been maintained for greater than 5 minutes
Critical Task: Restore Feedwater prior to both SG levels reaching 70" wide range.		
Termination criteria: When feedwater restored or at Lead Examiner's discretion.		

Facility: ANO-2 Scenario No.: 2 Op-Test No.: 2019-1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: ~100%, MOL, RED Train Maintenance Week.

Turnover: ~100%. 260 EFPD. EOOS indicates 'Minimal Risk'. Red Train Maintenance Week.

Scheduled evolution: None

Critical Tasks: Manually trip the reactor within 1 minute of 'A' RCP trip. All RCPs must be secured within 10 min of RCS margin to saturation remaining below minimum NPSH for RCPs (<30 degrees MTS). And Safety injection flow must be restored prior to RVLMS level 4.

Event No.	Malf. No.	Event Type*	Event Description
1	NIBUPPER	C (BOP) C (SRO) TS (SRO)	'B' channel Excore upper chamber fails high. **OP-2203.026, NI malfunction AOP.**
2	XCVLDNHXOU	I (ATC) I (SRO)	The temperature input to the letdown HX temperature controller (2TIC-4815) fails low. **OP-2203.012L, Annunciator 2K-12 Corrective Action (ACA)**
3	SGBTUBE	C (ATC) C (BOP) C (SRO) TS (SRO)	'B' SG tube leak. **OP-2203.038, Primary to Secondary leakage AOP.**
4	IAINSTAIR K12-B08	C (BOP) C (SRO)	Loss of Instrument Air. **OP-2203.021, Loss of Instrument Air AOP**
5	RCP2P32AGRN RPSRXAUTO RPSRXMAN	C (ATC) C (SRO)	'A' RCP Trip and RPS will not auto or manually trip the reactor. **CT-2** **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
6	RCSLOCATCA	M (All)	Loss of Coolant accident. **CT-3** **OP-2202.009, Functional Recovery EOP.**
7	HPI2P89AFAL ESFK409BAF	C (BOP) C (SRO)	2P89A HPSI pump fails to start on SIAS. 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open. **CT-1** **OP-2202.010 Standard Attachments EOP.**
End Point		After the crew has completed the entry section of Functional Recovery and restored Safety injection flow	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Target Quantitative Attributes (Section D.5.d)	Actual Attributes
Malfunctions after EOP entry (1-2)	1
Abnormal Events (2-4)	4
Major Transients (1-2)	1
EOPs entered requiring substantive actions (1-2)	1
EOP contingencies requiring substantive actions (≥ 1per scenario set)	1
Critical Tasks (≥2)	3

Critical Task	Justification	References
Perform one or more of the following to establish minimum design safety injection flow. • Start 'A' or 'C' HPSI pump. • Open Green train HPSI valve 2CV-5076-2. Safety injection flow must be restored prior to RVLMS level 4.	During a loss of inventory, SI flow keeps the core covered, cooled, and borated. The inability to maintain minimum required SI flow could result in a net loss of RCS inventory, pressure control, and sub-cooling. Once sub-cooling is lost, pressurizer level is no longer a valid indication of RCS mass inventory, and a reactor head void can form, both of which complicate the event recovery. RVLMS level 3 or higher has to be maintained to ensure Natural Circulation.	• CE EPGB Simulator CTs: CT-16, Establish required SI flow (IC-03)
Manually trip the reactor within 1 minute of 'A' RCP trip.	Following a reactor trip, safety systems are designed to keep the plant in a safe state by meeting specified critical safety function criteria (SFSC). If the heat being generated by the reactor is greater than normal decay heat levels, then the heat removal capacity of the safety systems may be inadequate resulting in core damage.	• CE EPGB Simulator CTs: CT-01, Establish reactivity control (SPTA-01) • CR-ANO-2-2010-948, Critical task criteria
All RCPs must be secured within 10 min of RCS margin to saturation remaining below minimum NPSH for RCPs (<30 degrees MTS).	The out-of-limits condition could result in shaft seal damage, and then shaft seal failure could result in increased RCS leakage out the seal to the containment atmosphere, which would worsen the event severity.	• EN-OP-123 Time Critical Action/Time sensitive action program Attachment 4. • CE EPGB Simulator CTs: CT-23, Trip any RCP exceeding operating limits. (FRG-04) • CR-ANO-2-2010-948, Critical task criteria
Causing an unnecessary plant trip or ESF actuation may constitute a CT failure.	Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021.	NUREG-1021 Appendix D

Scenario #2 Objectives

1) Evaluate individual response to a failure of a Nuclear Instrument.
2) Evaluate individual response to the Letdown temperature controller.
3) Evaluate individual response to a Steam Generator Tube leak.
4) Evaluate individual response to a Loss of Instrument air.
5) Evaluate individual and crew's response to Reactor Coolant Pump trip without a reactor trip.
6) Evaluate crew's ability to mitigate a Loss of Coolant Accident.
7) Evaluate individual response to ECCS component failures.

Scenario #2 NARRATIVE

When the crew has completed their control room walk down and brief, B Excore upper chamber will fail high. The SRO will enter the OP-2203.026, NI Malfunction AOP and the crew should determine that B channel linear power is failed but log power is still functional by monitoring output for the three chambers. The SRO will also enter Tech Spec 3.3.1.1 Action 2 for Reactor Protection System. The BOP will bypass points 1, 3, and 4 on channel 'B' channel PPS. [Site OE: CR-ANO-2-2002-693, D Excore failure.]

After the 'B' channel PPS points are placed in bypass or cued by lead examiner, the Letdown heat exchanger temperature input will fail low. The ATC will report that 2K12-C1 LETDOWN HX 2E29 OUTLET TEMP HI alarm is in and the letdown heat exchanger temperature is reading low on the hand indicating controller but the computer point and control board indication are reading higher than normal. The SRO will direct the ATC to take manual control of the Letdown heat exchanger temperature control valve and manually control temperature. The SRO will also refer to the ACA for letdown radiation monitor flow low 2K12 J1 RADMONITOR FLOW LO and restore letdown radiation monitor flow. [Site OE: CR-ANO-2-2018-0812, 2TIC-4815 letdown temperature controller failed to 50 degrees.]

After the ATC has taken manual control of the letdown temperature control valve, or at the lead examiner's cue, a Steam Generator (SG) Tube Leak will occur on 'A' Steam Generator. The SRO will enter OP 2203.038, Primary to Secondary Leakage AOP. The SRO will direct the ATC to perform power reduction to take the unit offline. He will also direct the BOP to isolate steam to 'A' EFW pump from the 'A' steam generator. The SRO will enter TS 3.4.6.2 Action a, RCS leakage, 3.4.5 SG tube integrity, and TS 3.7.1.2 for EFW action a when steam is isolated to 2P-7A EFW pump. [Industry OE: SOER 83-2, Steam Generator Tube Ruptures.]

After the crew has started the down power, or cued by the lead examiner, an Instrument Air (IA) dryer will malfunction. This will cause a lowering of IA header pressure. The SRO should enter the OP-2203.021, Loss of Instrument Air AOP. The BOP will check IA crosstie with Unit 1 2CV-3015 open and will open IA crosstie with Unit 1 2CV-3004. The crew should dispatch the NLO to the IA compressors, air dryers, and to look for a leak. After the NLO report the crew should bypass the air dryer. . [Industry OE: Loss of IA, SOER 88-1 Instrument Air system failures, Braidwood Unit1 poor solder joint INPO OE# 287448. Site OE: CR-ANO-2-2014-02501 Instrument air dryer malfunction.]

After the crew has cross tied IA with Unit 1, 'A' Reactor Coolant Pump (RCP) will trip which should cause an automatic reactor trip. RPS will not function requiring a manual reactor trip from the Diverse Scram System (DSS). The crew will trip the reactor. After the reactor is tripped, a Large Break LOCA will occur. The SRO will enter OP 2202.001, Standard Post Trip Actions (SPTAs). The crew should recognize the signs of LOCA and ensure Safety Injection Actuation Signal (SIAS) and Containment Cooling Actuation Signal (CCAS) actuated. The SRO should diagnose and enter OP-2202.009, Functional Recovery EOP due to the Steam Generator Tube leak and the Large Break LOCA. The BOP should recognize that two Safety Injection valves failed to open and open them. The 'A' High Pressure Safety Injection (HPSI) pump will fail to start and the BOP should start the 'A' or 'C' HPSI pump. After the crew has entered the Functional Recovery EOP, the crew will commence mitigating actions. [Industry OE: SEN-220, SEN-216, & SEN-182, RCS leakage events.]

Simulator Instructions for Scenario 2

Reset simulator to MOL 100% power IC steady state.
Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.
RPSRXAUTO, Value = active
RPSRXMAN, Value = active
T6 set to reactor trip.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	NIBUPPER Trigger 1	200	'B' channel Excore upper chamber fails high. TS for SRO. **OP-2203.026, NI malfunction AOP.**
2	XCVLDNHXOU Trigger 2	50	The temperature input to the letdown HX temperature controller (2TIC-4815) fails low. **OP-2203.012L, Annunciator 2K-12 Corrective Action (ACA)**
3	SGBTUBE Trigger 3	5	'B' SG tube leak. **OP-2203.038, Primary to Secondary leakage AOP.**
4	IAINSTAIR K12-B08 Trigger 4	8 on	Loss of Instrument Air. **OP-2203.021, Loss of Instrument Air AOP**
5	RCP2P32AGRN Trigger 5	active	'A' RCP Trip and RPS will not auto or manually trip the reactor. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
6	RCSLOCATCA Trigger 6	2200 10 min.	Loss of Coolant accident. **OP-2202.009, Functional Recovery EOP.**
7	HPI2P89AFAL ESFK409BAF	Active Active	2P89A HPSI pump fails to start on SIAS. 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open. **OP-2202.010 Standard Attachments EOP.**

Simulator Operator CUEs		
At T=0	Trigger 1	'B' channel Excore upper chamber fails high.
Cue: When contacted as the WWM, then report that I&C will start planning a work package to repair the failed nuclear instrument.		
Cued by lead examiner	Trigger 2	The temperature input to the letdown HX temperature controller (2TIC-4815) fails low.
Cue: When contacted as the WCO and requested then, If crew has taken manual control of 2TIC-4815 then WCO reports that CCW flow on 2FIS-5261 is indicating normal which is less than 200 gpm but not on the low peg. If the crew has not taken manual control of 2TIC-4815 then report there is no flow indicated on 2FIS-5261. **Cue: If contacted as work management, state that you will contact I&C to investigate the failure.**		
Cued by lead examiner	Trigger 3	'B' SG tube leak.
Cue: When contacted as Chemistry, respond that you will implement 2602.001 Primary to Secondary leakage. **Cue: If contacted as the above people, acknowledge the information concerning the power reduction. If requested as Communicator state you will inform groups listed in 12.13 of power ops procedure.** **Cue: If contacted as a NLO and/or chemistry, report that you will secure Zinc injection and monitor secondary chemistry.** **Cue: If contacted as chemistry, report that you will obtain an RCS sample for Iodine at the time requested.** **Cue: If requested as WWM, Communicator, or Off shift operator, then perform Attachment B Notifications.** **Cue: If contacted as a NLO to commences Att. 19, then report you will commence standard att. 19 Control of Secondary Contamination.** **Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.**		
Cued by lead examiner	Trigger 4	Loss of Instrument Air.

Cue: When contacted as Unit 1, report that IA pressure is lowering on Unit 1 and pressure is ~ 5 psi higher than what is currently displayed in the Unit 2 simulator. **Cue: If asked about EC-28743 being installed, report that it is not installed.** **Cue: If requested as Unit 1 for assistance looking for IA leak report that the Unit 1 NLO will assist looking for leaks.** **Cue: If requested as NLO to assess the IA system, the wait 2 min. and report the following: 'A' IA compressors are running normally, receiver pressure is ~ 98 psi, Coalescing filter DP ~ 0, IA header flow is ~ 100 scfm, After filter DP ~ 0 zero, IA header pressure is ~ the same pressure as indicated in simulator.**		
Cue: If requested as NLO to assess the INSTR AIR SYSTEM TROUBLE alarm, report 2M-76 Valve Malfunction alarm is in. **Cue: If contacted to open 2IA-8, then after 1 min delete the IA malfunction (IAINSTAIR).** **Cue: If contacted to place standby IA dryer in service after 10 min return K12-B08 to normal.** **Cue: If contacted as NLO, report that SFP purification pump is aligned to the Spent Fuel Pool.**		
Cued by lead examiner	Trigger 5	'A' RCP Trip and RPS will not auto or manually trip the reactor.
Cue: If contacted as a NLO to check A RCP breaker then after ~ 1 min., then report that overcurrent flags are dropped. **Cue: If contacted as the STA to report to the control room, acknowledge the request.** **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.** **Cue: If contacted as a NLO to secure HPS, after 3 min. use the remotes (HPI252A and HPI252B) turn HPS off and then report HPS is secured.**		
Cued by lead examiner	Reactor Trip	Loss of Coolant accident.
Cue: If contacted as NLO to investigate 2P-89A HPSI pump, then after 2 min. report the breaker indications are normal and 2P-89A HPSI pump has no issues locally. **Cue: If contacted to clear tags on LTOPS, after 3 min. use the remotes (RCSB51E4 and RCSB51K2) to energize LTOPs and then report LTOPs energized.**		
Cued by lead examiner	SIAS actuation	2P89A HPSI pump fails to start on SIAS. 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 1
Event Description: 'B' channel Excore upper chamber fails high. TS for SRO.		

Time	Position	Applicant's Actions or Behavior
Cued by lead examiner	ANY	Announce annunciators: 2K04-A5 CH B RPS/ESF/PRETRIP/TRIP 2K04-B3 PPS CHANNEL TRIP 2K04 H4 CPC CHANNEL SENSOR FAILURE 2K09 J5 Protect Cabinet Trouble.
	ANY	Crew will recognize that 'B' excore upper chamber has failed High.
Enter OP-2203.026, NI Malfunction AOP.		
	ANY	1. **CHECK** at least TWO Linear Safety channels operable.
	ANY	2. **CHECK** ALL Linear Safety channels operable. **(Channel 'B' and will not be operable)**
	SRO	2. **IF** ALL Linear Safety channels **NOT** operable, **THEN** perform the following: A. Refer to TS 3.3.1.1, Reactor Protective Instrumentation. **Examiner Note: SRO must enter Tech Spec 3.3.1.1 Action 2**
Procedure Caution: With one Linear Safety channel in trip, anything that initiates Power Trip Test Interlock (PTTI) in second channel will cause Reactor trip.		
	SRO	B. **IF** ONE Linear Safety channel previously bypassed, **THEN GO TO** Step 3 AND **DISABLE** affected channel. **Examiner Note: Step is NA**
	BOP	C. **IF** ONLY ONE channel failed, **THEN ENSURE** the following trip functions bypassed within ONE hour: • Hi Linear Power {1} • High LPD {3} • Low DNBR {4} **Examiner Note: BOP will use 2105.001 to bypass points 1, 3, & 4.**
Transition to procedure OP-2105.001 CPC/CEAC Operations, section 11.		

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 1

Event Description: 'B' channel Excore upper chamber fails high. TS for SRO.

Time	Position	Applicant's Actions or Behavior
	BOP	Bypass the points 1, 3 and 4 on Channel B: 11.1 **REFER TO** Tech Spec 3.3.1.1, 3.3.2.1, 3.3.3.5, 3.3.3.6 and TRM 3.3.1. 11.2 **CIRCLE** channel and functional units (points) to be bypassed below: Channel to be bypassed: A (B) C D Points to be bypassed: (1) 2 (3) (4) 5 6 7 8 9 10 11 12 13 16 17 18 19 20 11.3 **ENTER** appropriate Tech Spec/TRM actions. 11.4 **ENSURE** points to be bypassed NOT bypassed in ANY other channel. 11.5 **PLACE** desired points in BYPASS for selected channel on 2C23. **Examiner Note: SRO must enter LCO 3.3.1.1 action 2.**
Transition back to procedure OP-2203.026, NI Malfunction AOP.		
	SRO	D. **GO TO** Step 4.
	SRO	4. **CHECK** ALL Log Power channels operable. **Examiner Note: All Log channels are operable.**
	SRO	5. **GO TO** Step 8.
	SRO	8. **NOTIFY** I&C of Nuclear Instrument malfunctions.
Cue: When contacted as the WWM, then report that I&C will start planning a work package to repair the failed nuclear instrument.		
Termination criteria: Affected channel points placed in bypass or at lead examiner's discretion.		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 2
Event Description: The temperature input to the letdown HX temperature controller fails low.		

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ATC	Announce alarm 2K12-C1, LETDOWN HX 2E29 OUTLET TEMP HI.
	ANY	Implement Annunciator Corrective Action 2203.012L.
	ANY	2.1 **CHECK** the following indications: • LD Temp CNTRL (2TIC-4815) • Computer Point C&VCS HIGH LETDOWN TEMP (T4805) **Examiners Note: Temperature is reading accurately on 2C-09 and the computer point but the temperature instrument input to 2TIC-4815 is failed.**
	ATC	2.2 **ENSURE** letdown flow (2FIS-4801) within 10 gpm of charging flow (2FIS-4863) per 2104.002, Chemical and Volume Control.
	ANY	Direct WCO to locally perform the following: 2.3 Locally **ENSURE** CCW flow through Letdown Heat Exchanger (2FIS-526I).
Cue: When contacted as the WCO and requested then, If crew has taken manual control of 2TIC-4815 then WCO reports that CCW flow on 2FIS-5261 is indicating normal which is less than 200 gpm but not on the low peg. If the crew has not taken manual control of 2TIC-4815 then report there is no flow indicated on 2FIS-5261.		
	ATC	2.4 **IF** Loop 2 CCW temperature high, **THEN REDUCE** temperature using 2104.028, Component Cooling Water System Operation. **Examiners Note: Loop 2 CCW temperature is not expected to be high.**
	ATC	2.5 **IF** Letdown HX Temperature controller (2TIC-48I5) **NOT** controlling in AUTOMATIC, **THEN**: 2.5.1 **Place** Letdown HX Temperature controller (2TIC-4815) in MANUAL. 2.5.2 **Raise** CCW flow.
	SRO	Establish a control band for letdown heat exchanger outlet.

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 2
Event Description: The temperature input to the letdown HX temperature controller fails low.		

Time	Position	Applicant's Actions or Behavior
	ANY	Report 2K12 J1 RADMONITOR FLOW LO
	ATC	2.2 **IF** flow isolated due to Letdown temperature out of Letdown Heat Exchanger (2TC-4805) greater than 145°F, **THEN**: 2.2.1 **ENSURE** letdown temperature out of Letdown HX lowered to less than 140°F IAW response to LETDOWN HX 2E29 OUTLET TEMP HI (2K12-C1) of this procedure. 2.2.2 **ENSURE** letdown flow (2FIS-4801) greater than 28 gpm per 2104.002, Chemical and Volume Control.
	ATC	2.2.3 **PERFORM** the following to open L/D to Rad monitor (2CV-4804): A. **PLACE** handswitch for L/D to Rad monitor 2CV-4804 (2HS-4804) to CLOSE. B. **PLACE** handswitch for L/D to Rad monitor 2CV-4804 (2HS-4804) to EITHER of the following: • AUTO (preferred) • OPEN
Cue: If contacted as work management, state that you will contact I&C to investigate the failure.		
Termination Criteria: When the letdown temperature controller has been placed in manual and temperature is in the directed band or at discretion of lead examiner.		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Cued by lead examiner	ANY	Announce alarm 2K11-A10 SEC SYS RADIATION HI.
	SRO	Enter OP-2203.038, Primary to Secondary leakage AOP.
	SRO	1. **OPEN** Placekeeping page. 2. **NOTIFY** Control Board Operators to monitor floating steps.
Procedure Note: N-16 monitors only calculate SG leak rates with plant power (CV-9000) greater than 20%.		
	ANY	*3. Determine Primary to Secondary leakrate by ANY of the following: • Computer RCS LKRT programs. • **CHECK** PZR level stable and **USE** Charging and Letdown mismatch minus Controlled Bleed Off. • **CHECK** Letdown isolated and **PERFORM** of estimate RCS leak rate by total Charging flow minus Controlled Bleed Off. • Chemistry leakrate calculation using 1604.013, Measurement of Primary to Secondary Leakage. • SG Tube Leak N-16 monitors. • Manual leakrate calculation.

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
	ANY	4. **DETERMINE** leaking SG by ANY of the following: A. Secondary Systems Radiation Trend recorder: • 2RR-1057 B. SG Sample Radiation monitors: • 2RITS-5854 • 2RITS-5864 C. Main Steam Line Radiation monitors: • 2RI-1007 • 2RI-1057 D. SG water sample results. E. SG Tube Leak N-16 monitors.
	ATC	*5. **CONTROL** Charging and Letdown to maintain PZR level within 5% of setpoint.
	ANY	■6. **CHECK** BOTH of the following are true: • RCS leakage LESS than 44 gpm • PZR level maintained within 10% of setpoint
	ANY	7. **NOTIFY** Chemistry to implement 2602.001, Primary to Secondary Leakage.

Cue: When contacted as Chemistry, respond that you will implement 2602.001 Primary to Secondary leakage.

Procedure Note:

- Leakage (including leakage spike) is confirmed if TWO independent radiation monitors trending upward.
- The probability of locating a tube leak after plant shutdown with leakrates less than 50 gpd (.035 gpm) is low.

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
	SRO	8. **WHEN** confirmed primary to secondary leakrate determined, **THEN PERFORM** the applicable action per the table below:

Parameter	Value	Action
ANY SG OR TOTAL (BOTH SGs)	≥ 44 gpm	**RETURN TO** Step 6.
ANY SG	> 100 gpd (> 0.069 gpm)	**PERFORM** ACTION LEVEL THREE section of Attachment A while continuing with this procedure.
ANY SG	≥ 75 gpd (0.052 gpm)	**PERFORM** ACTION LEVEL TWO section of Attachment A while continuing with this procedure.
ANY SG	≥ 30 gpd (.021 gpm)	**PERFORM** ACTION LEVEL ONE section of Attachment A while continuing with this procedure.
TOTAL (both SGs)	≥ 5 gpd (.0035 gpm)	**PERFORM** RAISED MONITORING section of Attachment A while continuing with this procedure.
TOTAL (both SGs)	< 5 gpd (.0035 gpm)	**PERFORM** ACTION PLAN of Attachment A while continuing with this procedure.

Examiner Note: SRO may perform step 9 which is a floating step then transition to Attachment A.

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
	ANY	■9. **IF** plant shutdown required, **THEN ISOLATE** EFW pump 2P7A Steam supply as follows: A. **CLOSE** Main Steam Supply valve to 2P7A from leaking SG: • SG "A" TO EMER FW PUMP TURBINE (2CV-1000-1) • SG "B" TO EMER FW PUMP TURBINE (2CV-1050-2) B. **REFER TO** TS 3.7.1.2, Emergency Feedwater System. **Examiner Note: The SRO must enter TS 3.7.1.2 action a.**
Examiner Note: Several procedures may be performed in parallel the following are the location in the exam. Attachment A of the Primary to Secondary AOP is on this page. The Rapid Power Reduction AOP starts on page 16 and then continues after the boration steps on page 20. The Power Operations procedure starts on page 22. The steps for boration are on pages 17 -20. The continuation of the primary secondary AOP is on page 29.		
	SRO	The SRO will transition to Action Level Three of Attachment A.
Action Level Three	SRO	1. ACTION LEVEL THREE (> 100 gpd) A. **RECORD** current time: _____ *B. **IF** ANY SG leakrate rises to ≥44 gpm **THEN GO TO** Step 6 in the body of this procedure.
	ATC/SRO	C. **IF** at power, **THEN** perform the following: 1) **REFER TO** applicable reactivity plan.

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
	SRO	2) **INITIATE** the following using 2102.004, Power Operations OR 2203.053, Rapid Power Reduction as necessary to be < 50% power within one hour of time recorded above, AND in Mode 3 in the following two hours: *****a) **IF** RCS leakage greater than or equal to 10 gpm, **THEN PERFORM** RCS boration using2104.003, Chemical Addition, Attachment R, RCS Boration From the RWT OR BAMT. b) **IF** leakage less than 10 gpm, **THEN PERFORM** EITHER of the following: • RCS boration using 2104.003, Chemical Addition, Attachment R, RCS Boration from the RWT or BAMT. • RCS boration using 2104.003, Chemical Addition, Exhibit 3, Normal RCS Boration at Power. **Examiner Note: The SRO will direct a power reduction using either power operations procedure or Rapid Power Reduction AOP.**
	SRO	The SRO will transition to OP-2203.053 Rapid Power Reduction AOP or OP-2102.004 Power Operations emergent power reduction section. **Examiner Note: Power operations procedure steps start on page 21.**
OP-2203.053 Rapid Power Reduction AOP		
Procedure Note: • Use of this procedure may be terminated at any point if a complete shutdown is not required. • Shutdown rate shall be based on plant conditions and safety considerations. Rate may be raised or lowered as plant conditions warrant.		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Rapid Power Reduction AOP	ANY	*1. **IF** at any time, it is determined that significant manual actions are required to EITHER maintain the plant online, **OR** maintain the desired maneuvering rate, **THEN PERFORM** the following: A. **TRIP** the Reactor. B. **GO TO** 2202.001, Standard Post Trip Actions.
	Procedure Note: If Emergency Boration in progress, changing the number of running Charging pumps will change boration rate.	
	ATC	3. **IF** Letdown available, **THEN COMMENCE** Power reduction using appropriate reactivity plan in conjunction with EITHER of the following: • Chemical Addition, 2104.003, Exhibit 3, Normal RCS Boration At Power • Chemical Addition, 2104.003, Attachment R, RCS Boration From The RWT Or BAMT **Examiner Note: The crew can select either 2104.003, Normal boration or 2104.003 Att. R boration. It is anticipated that the crew will select The steps for Att. R with suction from RWT to lower power to less than 50% in 1 hour.**
	ATC	The ATC will transition to OP-2104.003, Chemical Addition, Attachment R to commence boration.

Procedure Caution:

- Do NOT use BAMT and RWT as boration sources at same time.
- Additional CCP starts while aligned to RWT or BAMT suction will result in more boration.
- With VCT isolated (Outlet closed and divert flow aligned to BMS), CBO flow will result in VCT level rise with no control process in place to limit level rise. (CR-ANO-2-2009-01786)

Procedure Caution:

This section has a Reactivity Addition Potential (RAP) and is classified as Low Risk Level.

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
2104.003 Att. R boration steps.	ANY	1.0 **IF** a Reactivity Management Brief has **NOT** been conducted, **AND** this a planned reactivity manipulation (not, EOP, AOP, or ACA) **THEN PERFORM** a Reactivity Management Brief IAW EN-OP-115-14, Reactivity Management with an SRO. **Examiner Note: This step in N/A when an AOP has been entered.**
	ATC	2.0 **DETERMINE** desired boration rate, dilution flow, and number of required charging pumps from Reactivity Plans located in Plant Data Book or by manual calculation. **Examiner Note: The crew will run 2 charging pumps with suction from the RWT. They will dilute at ~22 gpm and insert group 6 CEA's 13" for ASI control during the first 15 min.**
	ATC	3.0 **ENSURE** the following: • Blending Tee aligned to CCP Suction • "CVCS - Secure Attachment R lineup" added to Standard Attachments Exhibit 7, CBO Reactor Trip Checklist as a contingency.
Procedure Note: Placing VCT Inlet/Divert valve 2CV-4826 in BMS position will change RCS leakage indications.		
2104.003 Att. R boration steps.	ATC	4.0 **IF** VCT level greater than 62 percent, **THEN PLACE** 2HS-4826 (VCT Inlet/Divert valve 2CV-4826) to BMS position. 5.0 **IF** desired, **THEN RECORD** initial controller data: 2FIC-4926 Setpoint: _____ Demand: _____ 2FIC-4927 Setpoint: _____ Demand:_____

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
2104.003 Att. R boration steps.	ATC	6.0 **PERFORM** the following to align for dilution: 6.1 **ENSURE** the following on Boric Acid MU Flow controller (2FIC-4926): • In MANUAL • Demand set to MINIMUM 6.2 **ENSURE** EITHER Reactor Makeup pump running: • 2P-109A (2HS-4965) • 2P-109B (2HS-4966) 6.3 **ENSURE** Reactor Makeup Water Flow controller (2FIC-4927) set as follows: 6.3.1 Setpoint set to desired flow rate. 6.3.2 **IF** in MANUAL,**THEN** demand set to desired value. 6.4 **OPEN** VCT Makeup Isolation (2CV-4941-2) (2HS-4941-2). 7.0 **OPEN** one of the following valves from a boric acid source: • Charging Pump Suction from RWT (2CV-4950-2) (2HS-4950-2) • BAMT (2T-6A) Gravity Feed (2CV-4920-1) (2HS-4920-1) • BAMT (2T-6B) Gravity Feed (2CV-4921-1) (2HS-4921-1)
	ATC	8.0 **CLOSE** VCT Outlet (2CV-4873-1) (2HS-4873-1). **Examiner Note: Step 8 starts the down power.**

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
2104.003 Att. R boration steps.	ATC	9.0 **ENSURE** VCT Inlet/ Divert valve 2CV-4826 (2HS-4826) in BMS position. *10.0 **PERFORM** the following to Start/Stop additional Charging pumps: 10.1 **IF** desired to raise flow, **THEN** perform the following: A. **START** additional charging pumps as necessary. B. **ADJUST** Reactor Makeup Water flow as necessary to maintain desired shutdown rate (2FIC-4927). 10.2 **IF** desired to lower flow, **THEN** perform the following: A. **ADJUST** Reactor Makeup Water flow as necessary to maintain desired shutdown rate (2FIC-4927). B. **SECURE** additional Charging Pumps as necessary.
	ATC	11.0 **PERFORM** the following to initiate dilution flow: 11.1 **PLACE** Mode Select switch (2HS-4928) in MANUAL. 11.2 **ENSURE** Boric Acid MU Flow controller (2FIC-4926) indicates zero. *11.3 **ENSURE** Reactor Makeup Water Flow controller (2FIC-4927) indicates desired flow rate. 11.4 **ENSURE** BAM Tank Recirc valve open for running pump: • 2T-6A recirc (2HS-4903-2) • 2T-6B recirc (2HS-4915-2)
Continue with OP-2203.053, Rapid Power reduction AOP.		
Procedure Note: • The CBOT is the preferred RO to lower turbine load so that the ATC can focus on primary plant control. However, either individual can operate the turbine as plant conditions dictate. • PMS/PDS point CV0223 displays Unit 2 net generation in MWe.		
	BOP	*6. **LOWER** Turbine load as necessary to hold Tave within ± 3°F of program Tref.

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Procedure Note: • ASI would tend to shift back to the top of the core if CEAs are inserted below 80 inches withdrawn when the Reactor is at power and the CPC Aux trip is active. • At higher power levels, larger (more aggressive) CEA insertions may be required (6 to 8 inches recommended initially). (CR-ANO-C-2015-1383 CA 2) • ASI response to power changes at the end of core life is more severe, at times significantly so. The effects of ASI may not be seen until well into the power change. • Proactively driving ASI more positive than ESI (up to +0.05 deviation) will improve the ability to control ASI at lower power levels. (CR-ANO-C-2015-1383 CA 2) • Exceeding COLR ASI limit will challenge CPC QASI Aux Trip setpoint and may result in automatic trip. CPC QASI Aux Trip occurs at ±0.45 (PID 187).		
	ATC	*7. **PERFORM** the following for ASI: • **MAINTAIN** ASI within Core Operating Limits Report (COLR) limits using CEA Group 6 or Group P. • **USE** ONE of the following to monitor ASI closely: - COLSS (CV9198) - **IF** COLSS inoperable, **THEN USE** CPC channel ASI (PID 268) that most closely agreed with COLSS when it was operable. • Periodically **MONITOR** QASI (PID 187). • **INSERT** Group 6 (preferred at higher power) OR Group P CEAS (preferred at lower power) using Exhibit 3 of 2105.009, CEDM Control System Operation, as necessary. • **MAINTAIN** CEAs greater than 80 inches withdrawn. • **IF** CEAs are inserted beyond the Long Term Steady State Insertion Limit, **THEN PERFORM** 2102.004A, Unit 2 CEA Insertion Log.
Enter 2105.009, CEDM Control System Operation (CEDMCs Operations, Exhibit 3)		

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
		NOTE • "CEA SELECTED" indicates selected CEA position. • "GROUP SELECTED" indicates average position of selected group. • Rod motion is inhibited by PMS CEA sequencing program if a deviation of six inches occurs in any regulating group.
		R A P **CAUTION** The following section has a Reactivity Addition Potential (RAP) and is classified as Risk Level R2. For an Unplanned Reactivity Manipulation, the required controls for planned reactivity evolutions are not applicable during AOP (including ACA response) or EOP conditions IAW COPD-030, Reactivity Management Program.
	ATC	2.0 **IF** moving CEAs in group, **THEN**: 2.1 **ENSURE** Group Select switch to desired group position. 2.2 **IF** moving Group P CEAs, **THEN PLACE** P Group Select switch to P. 2.3 **ENSURE** Individual CEA Selection switches aligned to CEA in group selected to move. 2.4 **PLACE** Mode Select switch to MANUAL GROUP (MG) or MANUAL SEQUENTIAL (MS). * 2.5 **OBSERVE** CEAC and Pulse Counter CEA position indications to ensure CEA motion and alignment as CEAs are moved. **R A P** 2.6 **POSITION** groups as desired using Manual Control lever. 2.7 **PLACE** Mode Select switch to OFF. 2.8 **ENSURE** Pulse Counter and CEAC indications match.
		Continue with OP-2203.053, Rapid Power reduction AOP.

Op-Test No.: 2019-1 Scenario No.: 2 Event No.: 3

Event Description: 'B' SG tube leak.

Time	Position	Applicant's Actions or Behavior
	BOP	*8 **IF** desired to transfer unit auxiliaries from Unit Aux transformer to SU #3, **THEN PERFORM** Attachment A, Transferring Loads to SU #3.
	BOP	*9 **THROTTLE** Condensate recircs as necessary to maintain 650-750 psig Condensate Pump Discharge pressure: • 2CV-0662 (2FIC-0662) • 2CV-0663 (2FIC-0663)
	ANY	10. **PERFORM** notifications of power reduction using Attachment B, Notifications.
Cue: If requested as WWM, Communicator, or Off shift operator, then perform Attachment B Notifications.		
	ANY	***11. **MONITOR** Secondary chemistry and adjust chemical feed as needed using 2106.028, Secondary System Chemical Addition.
Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.		
	ANY	12. **WHEN** at ~ 80% power, **THEN PERFORM** the following: A. **INITIATE** action to perform channel calibration within 24 hours of last successful channel check (OPS-B6). B. **IF** MSR Stage 2 Hi Load valves (2CV-0404/0464) have NOT closed automatically, **THEN ENSURE** the following valves closed (2HS-0404): • 2CV-0404 • 2CV-0464
Examiner Note: OP-22013.038 Primary to Secondary Leakage AOP steps are continued on Page 28.		
OP-2102.004 Power Operations emergent power reduction section.		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Procedure Caution: This section has a Reactivity Addition Potential (RAP) and is classified High Risk. For an Unplanned Reactivity Manipulation, the required controls for planned reactivity evolutions are not applicable during AOP (including ACA response) or EOP conditions.		
Power Operation power reduction.	SRO	12.2 **IF** time allows **AND** Reactivity Management Brief has **NOT** been conducted, **THEN PERFORM** a Reactivity Management Brief per EN-OP-115-14, Reactivity Management with an SRO. **Examiner Note: Formal Reactivity Brief is not required per due to AOP implementation.**
Power Operation power reduction.	Procedure Note: • Plant parameters may be monitored using Exhibit 2, Various Parameters Vs Reactor Power. • Boron adjustment data for power change may be obtained from Reactivity curves located in Plant Data book.	
	SRO	12.3 **IF** plant must be off-line within one hour, **THEN REFER TO** Attachment H, Rapid Power Reduction.
	Procedure Note: • Initially, only enough boric acid should be added to reduce power by a few percent (less than 5%). As power lowers, Xenon will start to peak causing power to drop faster. Dilution may be required to slow power reduction rate. • If one BAM Tank is out of service for Acid Reducing Chemistry, depletion of on-line BAMT during power reduction may result in TRM 3.1.8 entry.	

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
	ATC	12.4 **COMMENCE** Power reduction by performing the following as necessary: • Boration using Normal Borate Mode to Charging pump suction (unless directed otherwise by Abnormal Operating Procedure). Refer to Chemical Addition (2104.003), Exhibit 3, Normal RCS Boration at Power. • Boration from RWT or BAMT using Chemical Addition (2104.003), Attachment R, RCS Boration From The RWT or BAMT. • CEA insertion using CEDMCS Control System Operation (2105.009), Exhibit 3 CEDMCS Operations (normally for ASI control).
	ATC	**The ATC will transition to OP-2104.003, Chemical Addition, Attachment R to commence boration. See page 17**
	SRO	**The SRO will continue to OP-2102.004, Power Operations emergent power reduction.**
2102.004 Power Operation	BOP	12.5 **LOWER** Turbine load as necessary to hold Tave within ± 2°F of program Tref using Exhibit 1, TAVE VS TREF.
	SRO	12.8 **IF** plant shutdown/power reduction directed by Tech Specs, **THEN**: 12.8.1 **INITIATE** Attachment L, Tech Spec Required Shutdown Time Limitations to determine mode specific time limits. 12.8.2 **CONTINUE** with shutdown. **Examiner Note: The SRO should give attachment L to the Shift Manager to perform.**

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Procedure Note: • CEAs should not be inserted below 80 inches withdrawn when the Reactor is at power and the CPC Aux trip is active. ASI would tend to shift back to the top of the core if CEAs are inserted more than halfway. • ASI response to power changes at the end of core life is more severe, at times significantly so. The effects of ASI may not be seen until well into the power change. • QASI (PID 187) provides the CPC Aux Trip function (trip setpoint ± 0.45). • The Reactivity Plan provides information on CEA positioning to minimize the undesired ASI response.		
	ATC	*12.9 **PERFORM** the following for ASI: • **MAINTAIN** ASI (CV9198 with COLSS in service, PID 268 with COLSS out of service) within Core Operating Limits Report (COLR) limits using CEA Group 6 or Group P. • Periodically **MONITOR** QASI (PID 187, trip setpoint ± 0.45). • **MAINTAIN** CEAs above 80 inches withdrawn when CPC Aux trip is active.
	SRO	12.11 **IF** unit auxiliaries powered from Unit Aux transformer **AND** desired to transfer electrical loads to SU #3, **THEN**: 12.11.1 **ENSURE** SU #3 available. 12.11.2 **WHEN** desired to transfer electrical loads, **THEN TRANSFER** to SU #3 Transformer using 2107.001, Electrical System Operations.
	BOP	12.12 **THROTTLE** Condensate recircs as necessary to maintain 650-750 psig Condensate Pump Discharge pressure: • 2CV-0662 (2FIC-0662) • 2CV-0663 (2FIC-0663)

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Procedure Note: • The Woodlands (SPO/EMO) (Power Marketing Corp) is only informed of the current status of the unit (e.g. we are going off-line). (EN-FAP-WM-015, Unit Generation Forecasting for EMO/MISO (Woodlands) section 3.2) • The TOC and SOC are the Entergy Transmission Organization and are responsible for monitoring the Grid System; this includes ensuring the adequacy of the ONLINE monitoring tool. Therefore, they can be given more specific information regarding the reason for the shutdown. (ENS-DC-201, ENS Transmission Grid Monitoring)		
	ANY	12.13 Notify the following of power reduction: • Chemistry • Reactor Engineering • Radiation Protection • Little Rock Dispatcher (TOC) • Woodlands Dispatcher (SPO/EMO)
Cue: If contacted as the above people, acknowledge the information concerning the power reduction. If requested as Communicator state you will inform groups listed in 12.13		
	SRO	12.14 **PERFORM** the following for Chemistry Control: • **MONITOR** Secondary chemistry and **ADJUST** chemical feed as needed using Secondary System Chemical Addition (2106.028). • **IF** reducing power less than 90%, **THEN ENSURE** Primary Zinc Injection secured per ONE of the following: − **REQUEST** Chemistry secure Zinc Injection per Unit 2 Reactor Coolant System (RCS) Zinc Control (1052.037) − **PERFORM** 2104.003, Chemical Addition, Securing Zinc Injection section.
Cue: If contacted as a NLO and/or chemistry, report that you will secure Zinc injection and monitor secondary chemistry.		
	ANY	12.15 **ENSURE** FWBSCAL selected for COLSS Secondary Calorimetric at ~ 95% (PID 177).
	SRO	12.14 **IF** power change exceeds 15% within a one hour period, **THEN NOTIFY** Chemistry to obtain an RCS sample for Iodine between2 and 6 hours following power change (TS 3.4.8).

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 3
Event Description: 'B' SG tube leak.		

Time	Position	Applicant's Actions or Behavior
Cue: If contacted as chemistry, report that you will obtain an RCS sample for Iodine at the time requested.		
		OP-2203.038 Primary to Secondary Leakage AOP.
	ANY	10. **INITIATE** secondary contamination control using 2202.010 Attachment 19, Control of Secondary Contamination.
Cue: If contacted as a NLO to commences Att. 19, then report you will commence standard att. 19 Control of Secondary Contamination.		
	ANY	*11. **CHECK** VCT level 60 to 75%.
	SRO	*12. **NOTIFY** SM to refer to the following: • Tech Specs: – 3.4.5, SG Tube Integrity – 3.4.6.2, Reactor Coolant System Leakage – 3.7.1.4, Secondary Activity • 1903.010, Emergency Action Level Classification **Examiner Note: SRO must enter 3.4.6.2 action a, and must enter TS 3.4.5. TS 3.4.5 may require a follow up question because the basis needs to be reviewed to determine if it is applicable based on the size of the leak.**
Termination criteria: When the required reactivity manipulation is complete and the appropriate TS have been entered or at lead examiner's discretion.		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 4
Event Description: Loss of Instrument Air.		

Time	Position	Applicant's Actions or Behavior
Cued by lead examiner	ANY	Announce annunciators: 2K12-A8 INSTR AIR PRESS HI/LO 2K12-B8 INSTR AIR SYSTEM TROUBLE
Enter OP-2203.021, Loss of Instrument Air AOP.		
	SRO	1. **OPEN** Placekeeping Page.
	SRO	2. **NOTIFY** Control Board operators to monitor Floating Steps.
	ATC/BOP	3. **ENSURE** IA cross-connected with Unit 1 as follows: A. **ENSURE** IA Cross-connect valves open: • 2CV-3004 • 2CV-3015 B. **INFORM** Unit 1 of IA cross-connect status. C. **IF** EC-28743 installed on Breathing Air System for Unit 1 Main Turbine, **THEN REQUEST** Unit 1 locally verify "BA OUTLET ISOL" (ISOL-1) closed. **(N/A)**
Cue: When contacted as Unit 1, report that IA pressure is lowering on Unit 1 and pressure is ~ 5 psi higher than what is currently displayed in the Unit 2 simulator. **Cue: If asked about EC-28743 being installed, report that it is not installed.** **Cue: If requested as Unit 1 for assistance looking for IA leak report that the Unit 1 NLO will assist looking for leaks.**		
	SRO	*4. **IF** event on Unit 1, AND Unit 2 IA header pressure drops below 60 psig, **THEN SECURE** cross connect as follows: **Examiner Note: This step is not applicable.**
Cue: If requested as NLO to assess the IA system, the wait 2 min. and report the following: 'A' IA compressors are running normally, receiver pressure is ~ 98 psi, Coalescing filter DP ~ 0, IA header flow is ~ 100 scfm, After filter DP ~ 0 zero, IA header pressure is ~ the same pressure as indicated in simulator. **Cue: If requested as NLO to assess the INSTR AIR SYSTEM TROUBLE alarm, report 2M-76 Valve Malfunction alarm is in.**		

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 4
Event Description: Loss of Instrument Air.		

Time	Position	Applicant's Actions or Behavior
	BOP	*5. **IF** event on Unit 2, **AND** Unit 1 IA header pressure drops below 60 psig, **THEN SECURE** cross-connect with Unit 1 as follows: A. **CLOSE** IA Cross-connect valves: • 2CV-3004 • 2CV-3015 B. Locally **ENSURE** the following valves closed: • MANUAL X-CONNECT TO UNIT 1 (2IA-47) • MANUAL X-CONNECT TO UNIT 1 (2IA-48) • 2F-37 INLET FROM DRY HDR (2IA-192)
	ANY	■6. **CHECK** IA header pressure greater than 35 psig.
Procedure Note: Symptoms checked by the following two steps may be masked with IA cross-connected. Consider closing IA cross-connect valves.		
	ANY	7. **PERFORM** the following: • **DISPATCH** local operator to investigate. • **INFORM** local operator to refer to local Exhibit 1, Loss of Instrument Air Local Checks.
Procedure Note: Symptoms checked by the following TWO steps may be masked with IA cross-connected. Consider closing IA cross-connect valves.		
	ANY	8. Locally **CHECK** BOTH IA receivers pressure greater than 85 psig. • "2T88A PRESS IND" 2PI-3033 • "2T88B PRESS IND" 2PI-3019

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 4
Event Description: Loss of Instrument Air.		

Time	Position	Applicant's Actions or Behavior
	ANY	9. Locally **CHECK** IA header pressure and air receivers pressure within 10 psid. • "IA MAIN SUPPLY HEADER" (2PIT-3013) • "2T88A PRESS IND" 2PI-3033 • "2T88B PRESS IND" 2PI-3019 **Examiner Note:** Using the report from NLO the crew should determine that IA header pressure and receiver pressure is greater than 10 psid.
	ANY	9. **IF** IA header and receivers pressure greater than 10 psid, **THEN** locally **PERFORM** the following as necessary: A. **OPEN** "COALESCING PREFILTER BYPASS" valve (2IA-186C). **(will not correct condition, dryer issue)** B. **OPEN** "AIR DRYER BYPASS" valve (2IA-8). **(action crew should take)** C. **WHEN** time allows, **THEN PLACE** standby IA Dryer in service (refer to 2104.024, Instrument Air System). **(action crew should take as time allows)** D. **PLACE** standby IA Filter in service, refer to 2104.024, Instrument Air System. **(will not correct condition, dryer issue)** E. Locally **CHECK** IA header pressure and air receivers pressure within 10 psid. • "IA MAIN SUPPLY HEADER" (2PIT-3013) • "2T88A PRESS IND" 2PI-3033 • "2T88B PRESS IND" 2PI-3019

Cue: If contacted to open 2IA-8, then after 1 min delete the IA malfunction (IAINSTAIR).

Cue: If contacted to place standby IA dryer in service after 10 min return K12-B08 to normal.

Cue: If contacted to check IA header pressure and air receivers' pressure are approximately the same.

Op-Test No.: 2019-1	Scenario No.: 2	Event No.: 4
Event Description: Loss of Instrument Air.		

Time	Position	Applicant's Actions or Behavior
		Procedure Note: Attachment B aligns critical components to their “fail safe” position to prevent inadvertent repositioning as IA pressure restores.
	ANY	■10. **IF** AOVs have repositioned or are repositioning due to degraded IA pressure, **THEN PERFORM** Attachment B, Valve Switch Safe Positions, as required to prevent inadvertent repositioning.
		Procedure Note: A loss of instrument air can cause a trip of normal Control Room chillers (2VCH-2A/2B).
	ANY	■ 11. **IF** desired to start Emergency Control Room chiller(s) (2VE-1A/1B), **THEN START** desired Emergency Control Room chiller(s) (2VE-1A/1B) using appropriate section of 2104.007, Control Room Emergency Air Conditioning and Ventilation.
		Procedure Note: Estimated normal Unit 2 air demand indicated by 2FI-3001 is approximately 100 to 200 scfm with compressor unloaded and approximately 275 to 375 scfm with compressor loaded.
	ANY	12. **Check** indication of IA header rupture does NOT exist by locally checking “IA HEADER FLOW IND” (2FI-3001) less than 400 SCFM.
	ANY	13. **CHECK** SDC secured.
	ANY	12. **CHECK** SFP Purification pump (2P66) NOT aligned for RWT purification.
Cue: If contacted as NLO, report that SFP purification pump is aligned to the Spent Fuel Pool.		
Termination criteria: When the crew has bypass the IA dryer or at lead examiner’s discretion.		

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	Recognize 'A' RCP trip and/or need to trip the reactor any of the following indications: RCP trip alarm, Green light on for 'A' RCP breaker. RPS trip alarm. RPS LPD or DNBR trip lights on 2C-03.
Examiner Note: The following steps are immediate actions of SPTAs.		
Critical Task: Manually trip the reactor within 1 minute of 'A' RCP trip. **'A' RCP trip time: _____**		
	ATC	Depress BOTH Reactor Trip pushbuttons on 2C03.
	ATC	Depress DSS Emergency Reactor Trip pushbutton on 2C03. Reactor trip time: _____
Enter EOP 2202.001, Standard Post Trip Actions.		
	SRO	**1. Notify Control Board Operators to perform the following:** A. Monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist. B. Perform post trip contingencies as required **2. Open Safety Function Tracking page.**
Reactivity control safety function	ATC	**3. Check Reactivity Control established as follows:** _____A. Reactor power lowering. Examiner Note: Step A is currently met but it was not met when 'A' RCP tripped. The ATC will have already taken the actions of the contingency column. The SRO may go to the contingency column and placekeep the actions taken.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Step 'A' contingency actions	SRO	A. Perform the following: 1) Perform the following as needed to manually trip CEAs: • Depress BOTH Reactor Trip pushbuttons on 2C03. • Depress DSS Emergency Reactor Trip pushbutton on 2C03. • Depress BOTH Manual Reactor Trip pushbuttons on 2C14. 2) IF ANY CEDMCS bus remains ENERGIZED THEN perform the following: a) Open the following breakers on 2C10 to de-energize MG sets: • 2B712 • 2B812 b) WHEN breakers have been open 10 seconds, THEN close 2B712 and 2B812. _____ 3) Check reactor power lowering.
Reactivity control safety function	ATC	B. Check startup rate is negative. _____C. ALL CEAs fully inserted by observing ANY of the following: 1) CEA Rod bottom lights illuminated. 2) CEAC 1 indicates ALL CEAs fully inserted. 3) CEAC 2 indicates ALL CEAs fully inserted.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Vital Auxiliaries safety function	BOP	**4. Check Maintenance of Vital Auxiliaries satisfied:** A. Check Main Turbine tripped by BOTH of the following: • ALL Main Stop Valves closed. • Generator megawatts indicate zero. B. Generator Output breakers open.
Vital Auxiliaries safety function	BOP	C. Exciter Field Breaker open. D. Perform EITHER of the following as required: 1) Check the following valves closed: • MSR 2E-12A Steam Supply From SG A (2CV-0400) • MSR 2E-12B Steam Supply From SG B (2CV-0460) 2) No flow indicated on the following MSR second stage flow instruments: • 2FI-0402 • 2FI-0462 E. At least ONE 6900v AC bus energized. F. At least ONE 4160v Non-vital AC bus energized. G. BOTH 4160v Vital AC buses energized H. BOTH DGs secured. I. At least ONE 125v Vital DC bus energized: • 2D01 - SPDS point E2D01 • 2D02 - SPDS point E2D02

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
RCS Inventory Control Safety function	ATC	**5. Check RCS Inventory Control established as follows:** A. PZR level: ___ • 10 to 80%. ___ • Trending to setpoint. **(Will not be met due to LOCA Event #6, perform contingency)** ____B. RCS MTS 30°F or greater.
RCS Inventory Control Safety function	SRO	Direct the following as necessary: A. Perform as necessary: 1) IF SIAS actuated on PPS inserts, THEN GO TO Step 6. 2) Verify PZR Level Control system restoring level to setpoint. (Not Met)
RCS Pressure Control Safety function	BOP	**6. Check RCS Pressure Control:** ___ • 1800 to 2250 psia. ___ • Trending to setpoint. **(Will not be met due to LOCA Event #6, perform contingency)** • Normal PZR Spray and heaters controlling pressure. • Valid CNTMT Spray NOT in progress.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
RCS Pressure Control Safety function	SRO	Direct the following actions as necessary: **6. Perform as necessary:** A. IF RCS pressure lowers to less than 1400 psia, THEN trip ONE RCP in EACH loop. B. IF NPSH requirements violated OR RCS MTS less than 30°F, THEN verify ALL RCPs tripped. D. IF RCP 2P32A or 2P32B stopped, THEN verify associated PZR Spray valve in MANUAL and closed. • RCP A Spray Valve (2CV-4651) • RCP B Spray Valve (2CV-4652) E. IF ALL RCPs stopped AND RCS pressure control required, THEN initiate Aux spray using Attachment 48, RCS Pressure Control. F. IF RCS pressure lowers to 1650 psia or less, THEN perform the following: 1) Verify SIAS actuated on PPS inserts. 2) GO TO Step 7. G. Verify PZR Pressure Control system restoring pressure to setpoint.
Critical Task: All RCPs must be secured within 10 min of RCS margin to saturation remaining below minimum NPSH for RCPs (<30 degrees MTS).		
Core Heat Removal safety function.	ATC	**7. Check Core Heat Removal by forced circulation:** ___A. At least ONE RCP running. (**Not Met, Secure due to low MTS)**

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	SRO	**Direct the contingency for step 7. A** A. IF ALL RCPs stopped, THEN perform the following: 1) Verify BOTH PZR Spray valves in MANUAL and closed. • 2CV-4651 • 2CV-4652 2) **GO TO** Step 8.
RCS Heat Removal Safety Function	BOP/ATC	8. **Check RCS Heat Removal:** A. Check SG available by BOTH of the following: • At least ONE SG level 10 to 90%. • FW maintaining SG level B. Check MFW in RTO C. Check Feedwater line intact by the following: • SG level stable or rising. • NO unexplained step changes or erratic FW flow. • NO unexplained step changes or erratic Condensate flow. D. Check RCS T_C 540°F to 555°F E. Check SG pressure 950 to 1050 psia. F. IF MSIVs open, AND desired, THEN place SDBCS Master Controller in Auto/Local with setpoint of 960 psia using 2105.008 Exhibit 3, SDBCS Emergency Operation. **Examiner Note: Due to the RCS mass loss the crew may lower the SDBCS setpoint to gain additional margin to saturation.**
Perform 2105.008, Exhibit 3 (SDBCS Emergency Operation)		

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	1.0 **IF** BOTH MSIV's closed, **THEN GO TO** step 5.0. **Examiner Note: This step is NA.**
Exhibit 3	BOP/ATC	2.0 **PERFORM** the following to determine availability of SDBCS valves: 2.1 **IF** the following conditions satisfied, **THEN** SDBCS Master controller (2PIC-0300) available: • SDBCS controlling S/G pressure at setpoint in automatic • EMERGENCY OFF (2K02-A14) annunciator clear • Instrument air available • **IF** using Turbine Bypass valves, **THEN** CONDENSER INTERLOCK (2K02-B14) clear 2.2 **IF** the following conditions satisfied, **THEN** SDBCS Downstream ADV/Turbine Bypass valves available: • Instrument air available • EMERGENCY OFF (2K02-A14) annunciator clear • Power available to selected controllers/valves • **IF** using Turbine Bypass valves, **THEN** CONDENSER INTERLOCK (2K02-B14) clear

NOTE

- The SDBCS Master controller cannot be set less than 650 psi.
- Computer points FR1030 and FR1130 can be useful to monitor steam flow.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Exhibit 3	BOP/ATC	3.0 **IF** SDBCS Master controller (2PIC-0300) available per step 2.0 **AND** use desired, **THEN** perform the following: 3.1 **PLACE** permissive handswitch for desired SDBCS Downstream ADV/Turbine Bypass valves in MANUAL: • 2CV-0301 Permissive (2HS-0301) • 2CV-0302 Permissive (2HS-0302) • 2CV-0303 Permissive (2HS-0303) • 2CV-0306 Permissive (2HS-0306) • 2CV-0305 Permissive (2HS-0305) 3.2 **ENSURE** SDBCS Master controller (2PIC-0300) in LOCAL using R/L button. 3.3 **ADJUST** SDBCS Master controller (2PIC-0300) to desired setpoint
EOP 2202.001, Standard Post Trip Actions.		
Containment Safety Function	ANY	**9. Check CNTMT parameters:** A. Temperature and Pressure: • Temperature less than 140°F. • Pressure less than 16 psia. **(Not met due to LOCA Event #6)**

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Containment Safety Function	ANY	9.A Contingency Actions A. Perform the following: 1) IF CNTMT pressure less than 18.3 psia, THEN verify ALL available CNTMT Cooling fans running with cooling water aligned. 2) IF CNTMT pressure 18.3 psia or greater, THEN verify the following: • CIAS, CCAS, and SIAS actuated on PPS inserts. • At least ONE Emergency Penetration Room Vent Fan running. • CNTMT Cooling fans running in Emergency Mode.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Containment Safety Function	ANY	B. Check CNTMT Spray pumps secured. C. NO CNTMT radiation alarms or unexplained rise in activity: 1) CAMS alarms: • "CNTMT PART/GAS RAD HI/LO" annunciator (2K10-B6) clear. 2) RCS leakage alarms: • "AREA RADIATION HI/LO" annunciator (2K11-B10) clear. **(Not met due to LOCA Event #6)** • "PROC LIQUID RADIATION HI/LO" annunciator (2K11-C10) clear. 3) Check the following radiation monitors trend stable: **(Not met due to LOCA Event #6)** • CNTMT Area • CAMS • Process Liquid D. NO secondary system radiation alarms or unexplained rise in activity: 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. **(Not Met)** 2) Secondary Systems Radiation monitors trend stable: **(Not Met)** • Main Steam lines • SG Sample • Condenser Off Gas
	SRO	10. Notify STA to report to control room. 11. Direct NLOs to perform 2202.010 Attachment 47, Field Operator Post Trip Actions. 12. Verify Reactor trip announced on Plant page. 13. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Cue: If contacted as the STA to report to the control room, acknowledge the request. **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.** **Cue: If contacted as a NLO to secure HPS, after 3 min. use the remotes (HPI252A and HPI252B) turn HPS off and then report HPS is secured.**		
	SRO	14. Direct control board operators to acknowledge ALL annunciators and announce ALL critical alarms.
	SRO	15. Check ALL safety function acceptance criteria satisfied. **(All safety functions are not satisfied, perform contingency)** 15. IF ANY safety function acceptance criteria NOT satisfied, THEN perform the following: A. Notify control room staff of safety functions NOT satisfied. B. GO TO Exhibit 8, Diagnostic Actions.
Enter and implement Functional Recovery EOP 2202.009		
	SRO	*****1. **NOTIFY** Shift Technical Advisor to perform Safety Function Status Checks for appropriate success paths at the following times: • Initially after appropriate success paths identified • Every 15 minutes thereafter.
Cue: When contacted as Chemistry, then report you will sample both S/G for activity.		
	SRO	2. **RECORD** present time: • Time _____.
	SRO	*3. **NOTIFY** SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	SRO	*4. **CHECK** RCS pressure greater than 1400 psia.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	Step 4. Contingency Actions **(RCPs should have been secured in SPTAs)** ***4.** **PERFORM** the following: A. **IF** RCS pressure less than 1400 psia, **THEN:** 1) **ENSURE** maximum of ONE RCP running in EACH loop. 2) **IF** RCP 2P32A or 2P32B stopped, **THEN ENSURE** associated PZR Spray valve in MANUAL and closed. B. **IF** NPSH requirements violated **OR** RCS MTS less than 30°F, **THEN:** 1) **STOP** ALL RCPs. 2) **ENSURE** BOTH PZR Spray valves in MANUAL and closed. 3) **GO TO** Step 6.
	ANY	***5.** **ENSURE** the following for any operating RCP: **Examiner Note:** No RCP are operating due to CNTMT spray.
		*6. **IF** SIAS or MSIS actuated, **THEN**: A. **ENSURE** at least ONE SW pump running on EACH loop. B. **CHECK** EITHER DG running.
CAUTION **Operation of loaded DG without SW flow for greater than 3 minutes may cause engine damage.**		

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	BOP	C. **ENSURE** running DG SW Outlet valve open: • 2CV-1503-1 • 2CV-1504-2 D. **ENSURE** SW pump suction aligned to Lake. E. **CHECK** 4160v Non-vital bus 2A1 or 2A2 energized from offsite power. F. **CHECK** 4160v Vital buses 2A3 and 2A4 energized from offsite power. G. **START** SW pumps as needed to maintain SW header pressure.
	ANY	H. **CHECK** SW to CCW restored. **(May not be Met)**
	BOP	Step H. Contingency Actions H. **IF** CCW available, **THEN RESTORE** SW to CCW, refer to 2202.010 Exhibit 5, CCW/ACW/SW Alignment.
	BOP	I. **CHECK** ACW restored.
	BOP	Step I. Contingency Actions I. **RESTORE** SW to ACW, refer to 2202.010 Exhibit 5, CCW/ACW/SW Alignment.
Perform 2202.010, Exhibit 5 (CCW/ACW/SW Alignment)		
	BOP	1. **IF** SW suction **NOT** aligned to lake, **THEN RETURN TO** procedure in effect.
	BOP	2. **IF** SW **NOT** aligned to CCW **AND** CCW available, **THEN**: A. **IF** RCP seal temperatures less than 180°F, **THEN RESTORE** SW to CCW by performing the following: 1). **OVERRIDE** and **OPEN** at least ONE SW to CCW/ACW Return valve: • 2CV-1543-1 • 2CV-1542-2

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
CAUTION Supplying ACW flow and CCW cooling from a single SW pump may result in low SW header pressure.		
	BOP	2). **OVERRIDE** and **THROTTLE** open at least ONE SW to CCW /Main Chillers Supply valve: • 2CV-1530-1 • 2CV-1531-2 3). **Maintain** SW header pressure greater than 85 psig.
	BOP	4. **IF** SW **NOT** aligned to ACW, **THEN**: A. **ENSURE** at least ONE SW to CCW/ACW Return valve open: • 2CV-1543-1 • 2CV-1542-2 B. **OVERRIDE** and **THROTTLE** open ACW Supply valves: • 2CV-1425-1 • 2CV-1427-2 C. **MAINTAIN** SW header pressure greater than 85 psig.
Implement Functional Recovery EOP 2202.009		

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	BOP	7. **IF** CCW in service to provide SG Sample Cooler cooling, **THEN:** A. **IF** SG "A" has indicated water level, **THEN ENSURE** the following SG 'A' Sample Valves open: • 2CV-5850 • 2CV-5852-2 B. **IF** SG "B" has indicated water level, **THEN ENSURE** the following SG 'B' Sample Valves open: • 2CV-5858 • 2CV-5859-2 C. **NOTIFY** Chemistry to sample available SGs for activity.
	ANY	8. **CHECK** ALL available Hydrogen Analyzers in service using 2104.044, Containment Hydrogen Control Operations.
	ANY	Step 8. Contingency Actions 8. **ENSURE** ALL available Hydrogen Analyzers in service within 70 minutes from start of event. • Record time from Entry Section step 2: Time_____ **Examiners Note: SRO may elect to wait for the 70 minutes to place Hydrogen Analyzers in service.**
	SRO	9. **OPEN** Functional Recovery Success Path Tracking page.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	SRO	10. **NOTIFY** Control Board Operators to perform the following: A. **MONITOR** floating steps. B. **ENSURE** actuated ESFAS components using 2202.010, Exhibit 9, ESFAS Actuation.

2202.010, Exhibit 9, ESFAS Actuation

Critical Task:
Perform one or more of the following to establish minimum design safety injection flow degrees F.

- **Start 'A' or 'C' HPSI pump.**
- **Open Green train HPSI valve 2CV-5077-2.**

Safety injection flow must be restored prior to RVLMS level 4.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Exhibit 9 ESFAS actuation.	BOP/ATC	*1.0 IF any abnormalities noted for affected ESFAS actuation, THEN notify CRS. 2.0 IF SIAS, THEN verify the following: ☐ Red Train RWT Outlet (2CV-5630-1) open. ☐ Red Train HPSI Pump in service with proper discharge pressure and flow. **(2P-89A will fail to auto start the crew may elect to start 2P-89C or direct NLO to investigate 2P-89A then start the pump)** ☐ Red Train HPSI Injection MOVs open. ☐ Red Train Service Water Pump in service with proper discharge pressure. ☐ Red Train LPSI Pump (2P60A) in service with proper discharge pressure and flow. ☐ Red Train LPSI Injection MOVs open. ☐ Green Train RWT Outlet (2CV-5631-2) open. ☐ Green Train HPSI Pump in service with proper discharge pressure and flow. ☐ Green Train HPSI Injection MOVs open. **(2CV-5076-2 will not be open and should be opened.)** ☐ Green Train Service Water Pump in service with proper discharge pressure. ☐ Green Train LPSI Pump (2P60B) in service with proper discharge pressure and flow. ☐ Green Train LPSI Injection MOVs open. **(2CV-5077-2 will not be open and should be opened.)** ☐ Available Charging Pumps in service with proper discharge pressure and flow. ☐ Service Water Outlet Valves open for #1 and #2 EDGs. 3.0 IF CCAS, THEN verify the following: ☐ Red Train CNTMT Coolers in service. ☐ Service Water aligned to Red Train CNTMT Coolers. ☐ Red Train Bypass Dampers open. ☐ Green Train CNTMT Coolers in service. ☐ Service Water aligned to Green Train CNTMT Coolers. ☐ Green Train Bypass Dampers open.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
Cue: If contacted as NLO to investigate 2P-89A HPSI pump, then after 2 min. report the breaker indications are normal and 2P-89A HPSI pump has no issues locally.		
Exhibit 9 ESFAS actuation	BOP	4.0 IF CSAS, THEN verify the following: ☐ Red Train CSS Pump (2P35A) in service with proper discharge pressure and flow. ☐ Red Train CSS Header Isolation (2CV-5612-1) open. ☐ Green Train CSS Pump (2P35B) in service with proper discharge pressure and flow. ☐ Green Train CSS Header Isolation (2CV-5613-2) open. ☐ Main Feedwater Block valves closed. ☐ MSIVs closed. ☐ Main Feed pumps tripped. ☐ Condensate pumps secured. ☐ Heater Drain pumps secured. 5.0 IF MSIS, THEN verify the following: ☐ MSIVs closed. ☐ Main Feedwater Block valves closed. ☐ Red Train Service Water Pump in service with proper discharge pressure. ☐ Green Train Service Water Pump in service with proper discharge pressure. ☐ Main Feed pumps tripped. ☐ Condensate pumps secured. ☐ Heater Drain pumps secured.
Implement Functional Recovery EOP 2202.009		

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	11. **DETERMINE** safety function status as follows: A. **CHECK** Reactivity Control satisfied by EITHER of the following: **(Will be Sat.)** • Maximum of ONE CEA NOT fully inserted and Reactor power lowering. • Reactor power less than 10^{-1}% and stable or lowering. B. **CHECK** Vital DC Auxiliaries satisfied: **(Will be Sat.)** 1) At least ONE 125v Vital DC bus energized: • 2D01-SPDS point E2D01 • 2D02-SPDS point E2D02 2) At least ONE 120v Vital AC bus energized: • 2RS1 - SPDS point E2RS1 or E2RS1RS3 • 2RS2 - SPDS point E2RS2 or E2RS2RS4 • 2RS3 - SPDS point E2RS3 or E2RS1RS3 • 2RS4 - SPDS point E2RS4 or E2RS2RS4 C. **CHECK** Vital AC Auxiliaries satisfied: **(Will be Sat.)** 1) At least ONE 4160v Vital AC bus (2A3/2A4) energized.
	ANY	D. **CHECK** RCS Inventory Control satisfied: **(Will NOT be Sat.)** 1) CVCS maintaining PZR level 10% to 80% [40% to 70%] and level stable or trending to setpoint. 2) RCS MTS 30°F or greater. 3) RVLMS LVL 03 or higher elevation indicates WET.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	E. **CHECK** RCS Pressure Control satisfied: **(Will <u>NOT</u> be Sat.)** 1) RCS pressure maintained within P-T limits, refer to 2202.010 Attachment 1, P-T Limits.
	ANY	F. **CHECK** RCS and Core Heat Removal satisfied: **(Will be Sat.)** 1) At least ONE intact SG available for Heat Removal by EITHER of the following: • Level 10% to 90% [20% to 90%] and FW available. • Level being restored AND total FW flow of 485 gpm or greater. 2) Uncontrolled SG depressurization **NOT** in progress. 3) **<u>IF</u>** ANY RCP operating, **<u>THEN</u>** RCS ΔT less than 10°F **<u>AND</u> <u>NOT</u>** rising. 4) **<u>IF</u>** ALL RCPs secured, **<u>THEN</u>** RCS ΔT less than 50°F **<u>AND</u> <u>NOT</u>** rising. 5) RCS T_C less than 555°F and **NOT** rising. 6) RCS MTS 30°F or greater. 7) RVLMS LVL 01 indicates WET.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	G. **CHECK** CNTMT Isolation satisfied: **(Will <u>NOT</u> be Sat.)** 1) CNTMT parameters normal: a) "CNTMT RADIATION HI" annunciator (2K10-A6) clear. b) NO unexplained rise in CNTMT radiation. c) CNTMT pressure less than 18.3 psia.
	ANY	Step G.1 Contingency Action. 1) **ENSURE** CNTMT isolation as follows: • CIAS actuated components are properly aligned, using 2202.010 Attachment 5, CIAS Verification. • ONE Emergency Penetration Room Vent fan running. • EACH penetration <u>NOT</u> required to be open has at least ONE isolation valve closed. **Examiners Note: SRO will direct actions as time allows.**
<u>NOTE</u> During a loss of 120v Instrument AC Bus 2Y1, Secondary System Radiation recorder 2RR 1057 and annunciator 2K11 A10, "SEC SYS RADIATION HI" will NOT be available.		
	ANY	2) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 3) NO unexplained rise in Secondary Systems Radiation monitor trends: **(Will <u>NOT</u> be Sat.)** • Main Steam lines • SG Sample • Condenser Off Gas

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	H. **CHECK** CNTMT Temperature and Pressure Control satisfied: **(Will NOT be Sat.)** 1) CNTMT pressure less than 16 psia. 2) CNTMT temperature less than 140°F.
	ANY	12. Locally **REMOVE** danger tags and **CLOSE** the following breakers. • 2B51-E4, "LTOP RELIEF ISOL 2CV-4730-1" • 2B51-K2, "LTOP RELIEF ISOL 2CV-4741-1"
Cue: If contacted to clear tags on LTOPS, after 3 min. use the remotes (RCSB51E4 and RCSB51K2) to energize LTOPs and then report LTOPs energized.		
	SRO	***13. **CHECK** ALL Safety Function acceptance criteria satisfied.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	SRO	Step G.1 Contingency Action. ***13.** **PERFORM** the following: A. **DETERMINE** appropriate success paths using Success Path Decision Trees. B. **INITIATE** success paths for ALL Safety Functions in the following order: 1) Jeopardized. 2) Challenged. 3) Satisfied. C. **IF** higher priority Safety Function jeopardized **AND** lower priority safety function success path in progress, **THEN GO TO** appropriate success path for highest priority safety function in jeopardy. D. **IF** it is determined that a de-energized electrical bus is needed to satisfy a SAFETY FUNCTION, **THEN RESTORE** power to affected bus using 2202.010 Attachment 11, Degraded Power E. **WHEN** success path implemented for EACH Safety Function, **THEN GO TO** Step 14.
Diagnose and implement IC-2		
	ANY	1. **ENSURE** SIAS and CCAS actuated on PPS inserts.

Op-Test No.: 2019-1 Scenario #2 Event No.: 5, 6, & 7

Event Description:

- 'A' RCP Trip and RPS will not auto or manually trip the reactor,
- Loss of Coolant accident
- 2P89A HPSI pump fails to start on SIAS and 2CV-5076-2 High pressure safety injection and 2CV-5077-2 Low pressure safety injection valves fail to open.

Time	Position	Applicant's Actions or Behavior
	ANY	*2. **ENSURE** Safety Injection flow to RCS as follows: A. **ENSURE** at least ONE HPSI pump running. B. **ENSURE** running HPSI Injection MOVs open. C. **ENSURE** ALL available Charging pumps running. D. **CHECK** RCS pressure less than 1390 psia. E. **CHECK** total HPSI flow acceptable using 2202.010 Exhibit 2, HPSI Flow Curve. F. **CHECK** total LPSI flow acceptable using 2202.010 Exhibit 3, LPSI Flow Curve.

Examiner Note: The SRO may elect to implement the floating steps to isolate the leaking SG however it is not critical due to the RCS depressurization lower the leakrate and will cause backflow from the SG to the RCS. Therefore the steps to isolate the SG are not in the guide.

Termination criteria: When the crew has completed functional entry section and transitioned to IC-2 and restored one full train of HPSI or at the discretion of the lead examiner.

Facility: ANO-2 Scenario No.: 3 Op-Test No.: 2019-1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: ~50%, MOL, Green Train Maintenance Week.

Turnover: 49 to 51% due 500KV line maintenance (Pleasant Hills). 260 EFPD. EOOS indicates 'Minimal Risk'. Red Train Maintenance Week.

Scheduled evolution: Perform Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2 section 2.8.3.

Critical Tasks: RCS CETs must be limited to less than 80 degree F heatup. EFW must be isolated to 'A' SG to prevent MTS exceeding 200 °F. Restore CCW to RCPs within 10 min of the loss of CCW cooling or secure the RCPs within the next 10 min.

Event No.	Malf. No.	Event Type*	Event Description
1	CV22012	N (BOP) N (SRO) TS (SRO)	Complete Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2. **OP-2305.005, Valve Stroke and position verification.**
2	XCV2LT4861	I (ATC) I (SRO)	Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction. **OP-2203.012L Annunciator 2K12 Corrective Action.**
3	CT2VSF1B	C (BOP) C (SRO) TS (SRO)	Containment Cooler 2VSF-1B trips. **OP-2203.012F Annunciator 2K06 Corrective Action** **OP-2104.033 Containment Atmosphere control**
4	XRRPZRLSP	I (ATC) I (SRO)	Reactor Reg. output to PZR level control program fails to 41%. **OP-2203.028, Pressurizer System Malfunction AOP**
5	CNDAIRLEAKHI CND2C5	C (ATC) C (BOP) C (SRO)	Condenser Air in leakage and backup vacuum pump fails to auto start. **OP-2203.019, Loss of Condenser Vacuum AOP**
6	CNDAIRLEAKHI	M (ALL)	Condenser Air-in-leakage degrades requiring a trip. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
7	FW2FW5AAFT	M (ALL)	Excess Steam Demand (ESD) on 'A' SG inside containment due to Feedwater line break. **CT-1, CT-3** **OP-2202.005, Excess Steam Demand.**
8	CV10251 CV10382	C (BOP) C (SRO)	Emergency Feedwater (EFW) valves to A SG fail to close. **CT-2** **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP or OP-2202.005, Excess Steam Demand.**
End Point		Post blow down RCS conditions have be stabilized.	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Target Quantitative Attributes (Section D.5.d)	Actual Attributes
Malfunctions after EOP entry (1-2)	1
Abnormal Events (2-4)	3
Major Transients (1-2)	2
EOPs entered requiring substantive actions (1-2)	1
EOP contingencies requiring substantive actions (≥ 1per scenario set)	0
Critical Tasks (≥2)	3

Critical Task	Justification	
Stabilize and control RCS temperature after the ESD blowdown terminates. RCS CETs must be limited to less than 80 degree F heatup.	Rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates do not exceed the design assumptions and satisfy the stress limits for cyclic operation. Also, If RCS heatup is allowed after SG blowdown, the RCS could over pressurize and result in lifting PZR and SG safeties. These pressure stresses added to thermal stresses of rapid cooldown could present PTS concerns.	• CE EPGB Simulator CTs: CT-07, Establish RCS temperature Control (SPTA-07, ESDE-05) • TS 3.4.9.1 RCS Pressure/Temperature Limits
Maintain RCS pressure within the Pressure-Temperature limits of 200°F and 30°F Margin to Saturation (MTS) throughout implementation of SPTAs and Excess Steam Demand EOP. EFW must be isolated to 'A' SG to prevent MTS exceeding 200 °F	RCS pressure must be maintained in these limits to allow natural circulation of the RCS and prevent over pressurizing the RCS boundary.	• CE EPGB Simulator CTs: CT-06, Establish RCS Pressure Control (SPTA-05, ESDE-07) • EOP 2202.005 Excess Steam Demand EOP.
Restore CCW to RCPs within 10 min of the loss of CCW cooling or secure the RCPs within the next 10 min.	Exceeding operating limits has the potential to degrade the RCS pressure boundary. RCPs should be maintained in an available condition for last-resort use if needed.	• EN-OP-123 Time Critical Action/Time Sensitive Action Program. • CE EPGB Simulator CTs: CT-23, Trip any RCP exceeding operating limits (ESDE-03)
Causing an unnecessary plant trip or ESF actuation may constitute a CT failure.	Actions taken by the applicant(s) will be validated using the methodology for critical tasks in Appendix D to NUREG-1021.	NUREG-1021 Appendix D

Scenario #3 Objectives

1) Evaluate individual ability to perform quarterly valve stroke surveillance.
2) Evaluate individual response to a failure of Reactor Regulating system input to PZR level setpoint failing low.
3) Evaluate individual response to a trip of the Containment Cooler.
4) Evaluate individual response to failure of a VCT level transmitter.
5) Evaluate individual response to Condenser Air in-leakage.
6) Evaluate individual ability to perform a power reduction.
7) Evaluate crew's and individual ability to perform standard post trip actions.
8) Evaluate crew's ability to respond to an Excess Steam Demand.
9) Evaluate individual response to a failure of EFW.

Scenario #3 NARRATIVE

Simulator session begins with the plant at 49-51% power steady state due to 500KV line maintenance.

When the crew has completed their control room walk down and brief, the BOP will commence the stroke test of 2CV-2201-2. The valve will fall outside of the required stroke time and this will require the SRO to enter TS 3.6.3.1 Containment isolation valves.

When the crew has performed the completed the valve stroke and enter TS 3.6.3.1 or at the lead examiner's cue, one of the Volume Control Tank level transmitters, 2LT-4861, will fail low. The crew will respond to VCT low low level alarm, 2K12 G5. This will result in the VCT outlet valve to the charging pump suction closing and the Refueling Water tank (RWT) suction to the charging pumps opening. RCS temperature and pressure will lower due to boration until the ATC opens VCT outlet valve manually and closes the RWT valve manually. [Site OE: CR-ANO-2-2000-0199, VCT level transmitter spiking]

After the Crew has realigned Charging pump suction to the VCT or at the lead examiner's cue, 2VSF-1B containment cooler will trip. The BOP will determine that 2VSF-1B containment cooler has tripped and refer to OP-2203.012F/G, 2K06 and 2K07 Annunciator Corrective Actions. The BOP will start the idle containment cooler to maintain containment temperature and pressure in the acceptable region of operation. The SRO will enter Tech Spec 3.6.2.3 Action a. [Site OE: CR-ANO-2-2006-2444, 2VSF-1A motor failure and breaker trip.]

SCENARIO #3 NARRATIVE (continued)

When the crew has placed the idle Containment cooler in service or at the lead examiner's cue, the Reactor Regulating system pressurizer level program output will fail to minimum (41%). The SRO will enter the OP-2203.028, PZR System Malfunctions AOP. The ATC will take manual control of letdown to control pressurizer level. The ATC must take control of PZR heaters to control RCS pressure (All heaters will be energized) The ATC should place the PZR level controller to Auto and Local then adjust the setpoint to programmed setpoint. Then Letdown should be placed back in automatic. This failure will also prevent manual start of back up charging pumps if needed to control PZR level.

When the ATC has placed letdown in automatic or at the lead examiner's cue, a condenser air leak will start. The crew will recognize the degrading condenser vacuum and enter the Loss of Condenser Vacuum AOP. The BOP will ensure both vacuum pumps are running. The crew will direct a NLO to locally investigate both Vacuum pumps and place the Vacuum pumps in the hogging mode (raising vacuum pump air removal capacity). The crew will investigate for the source of leakage into the condenser. When it is determined that condenser pressure is continuing to slowly degrade the crew will commence a power reduction. [Site OE: CR-ANO-2-2008-1350, Loss of Condenser Vacuum due to manway leak, CR-ANO-2-2003-1916 Loss of Condenser Vacuum due to dog bone seal leak.]

After the crew has commenced a power reduction, or at the lead examiner's discretion, the condenser air leakage will degrade causing the crew to manual trip the reactor. The crew will commence SPTAs. After the Reactor trips, an Excess Steam Demand (ESD) will occur due to an 'A' Main Feedwater line break inside containment. The Crew will recognize the ESD and manually actuate Main Steam Isolation Signal (MSIS) or verify that a Main Steam Isolation signal automatically actuates. The ATC will secure all RCPs when Containment Spray Actuation Signal (CSAS) actuates. This will cause the crew to respond to a natural circulation ESD. The SRO will diagnose Excess Steam Demand (ESD) EOP 2202.005. The SRO will direct the BOP to maintain post blowdown temperature and the ATC to maintain post blowdown RCS pressure. The crew will restore Service Water to Component Cooling Water. [PRA item # 9 restore Service Water to CCW] [Industry OE for Excess Steam Demand, SOER 82-7, Reactor Vessel Pressurized Thermal Shock.][PSA action to restore SW to CCW. PSA-ANO2-06-05]

When EFAS actuates to the 'A' SG the EFW block valves will fail to close. This will make the overcooling event more severe and could lead to the crew exceeding the PT limits of 200 degrees Margin to Saturation (MTS). The crew should recognize that EFW is feeding the faulted SG and secure feeding 2P-7B EFW pump.

Simulator Instructions for Scenario 3

Reset simulator to MOL 50% power IC steady state.
Ensure Pleasant Hills line out of service BKR5122 and BKR5148 open.
Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.
T9 = NE4R2012 & !NE3O2012
T5 = CE4R0696
T7 = Reactor Trip
T8 = OE4R0251

Event No.	Malf. No. / Trigger Number	Value/ Ramp/Time	Event Description
1	CV22012 Trigger = T9	0 / 6 sec.	Complete Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2. **OP-2305.005, Valve Stroke and position verification.**
2	XCV2LT4861 Trigger = T1	0	Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction. **OP-2203.012L Annunciator 2K12 Corrective Action.**
3	CT2VSF1B Trigger = T2	active	Containment Cooler 2VSF-1B trips. **OP-2203.012F Annunciator 2K06 Corrective Action** **OP-2104.033 Containment Atmosphere control**
4	XRRPZRLSP Trigger = T3	41%	Reactor Reg. output to PZR level control program fails to 41%. **OP-2203.028, Pressurizer System Malfunction AOP**
5	CNDAIRLEAKHI CND2C5 Trigger = T4 CNDAIRLEAKHI Trigger = T5	800/ 3 min. Active 1510/ 3 min.	Condenser Air in leakage and backup vacuum pump fails to auto start. **OP-2203.019, Loss of Condenser Vacuum AOP**
6	CNDAIRLEAKHI Trigger = T6	5000 / 10 min.	Condenser Air-in-leakage degrades requiring a trip. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP**
7	FW2FW5AAFT Trigger = T7	10000 / 10 min.	Excess Steam Demand (ESD) on 'A' SG inside containment due to Feedwater line break. **OP-2202.005, Excess Steam Demand.**
8	CV10251 Trigger = T8 CV10382	1 / Ramp = 25 sec. 1	Emergency Feedwater (EFW) valves to A SG fail to auto close. **OP-2202.001, Standard Post Trip Actions (SPTAs) EOP or OP-2202.005, Excess Steam Demand.**

Simulator Instructions for Scenario 3		
Triggered by valve closure.	Trigger 9	Complete Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2.
Cue: If contacted as NLO or Work Management to open breaker for 2CV-2202-1 (RDT drain valve) and lock the valve respond as requested. Use Malfunction CV2202 and overrides DO_HS_2202_G and DO_HS_2202_R to simulator removing power and to 2CV-2202-1. **Cue: If contacted as NLO or Work Management to fail 2CV-2201-2 (RDT drain valve) closed and lock 2CV2201-2 respond as request and after 10 minutes report that it is failed closed.**		
CUED by Lead Examiner	Trigger 1	Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction.
Cue: When contacted as the WWM, then report that I&C will troubleshoot the level transmitter. **Cue: If contacted as NLO to investigate the transmitter locally, report nothing is abnormal locally.** **Cue: If asked to investigate VCT level at 2C-80 then report VCT level instrument is 2LI-4857A and is reading the ~ VCT level in the simulator.**		
CUED by Lead Examiner	Trigger 2	Containment Cooler 2VSF-1B trips.
Cue: If requested the AO needs to report that 2B-53 L2 is tripped. **Cue: Report that electrical planner will begin planning work on failed containment cooler.**		
CUED by Lead Examiner	Trigger 3	Reactor Reg. output to PZR level control program fails to 41%.
Examiner Note: If applicant goes to EWS to check the alarm, give them the following cue. **Cue: EWS alarm is Internal Card Failure.** **Cue: If contacted as the WWM/engineering, then report that a planner will begin planning work on the Reactor Reg and/or engineering will investigate Reactor Reg.**		
CUED by Lead Examiner	Trigger 4	Condenser Air in leakage and backup vacuum pump fails to auto start.

Simulator Instructions for Scenario 3		
Cue: If requested as NLO to look for condenser air leaks wait approximately 5 min. and report you can hear an air leak into the condenser but you cannot locate it. **Cue: If requested as NLO to perform pre-start or post-start checks, then after approximately 1 min report the checks are complete and sat.** **Cue: If contacted as NLO to check the Vacuum pumps, then report the following: Seal water pumps running sat., Seal Water Cooler outlet temperature ~ 85 degrees, and Separator tank level normal.** **Cue: If requested as NLO to place the vacuum pump AUTO-HOG switch to HOG then after approximately 1 min. use the remote (CONDENSER to on) to place the Vacuum pumps in Hogging and report that both vacuum pumps are in Hogging mode of operation.** **Cue: If requested as WWM, Communicator, or Off shift operator, then perform Attachment B Notifications.** **Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.** **Cue: If contacted as NLO to perform step 25 locally, then after 5 min. report that the steam inlet expansion joint sight glasses indicate flow, 2GS-2001 is closed and you have not found source of in-leakage yet but you will continue walk down.** **Cue: If contacted as Operations Management as to direction for a plant shutdown or Maintain plant stable, ask for the SRO's opinion and agree with their opinion.**		
Cued by Lead Examiner power should be > 40 when cued.	Trigger 6	Condenser Air-in-leakage degrades causing a trip.
Cue: If contacted as NLO to investigate air in leakage, then report that the air leak sound is louder than before. **Cue: If contacted as the STA to report to the control room, acknowledge the request.** **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.**		
Reactor Trip		Excess Steam Demand (ESD) on 'A' SG inside containment due to Feedwater line break.
EFAS actuation		Emergency Feedwater (EFW) valves to A SG fail to auto close.

Op-Test No.: 2019-1 Scenario #3 Event No: 1

Event Description: Complete Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2.

<table>
<tr><th>Time</th><th>Position</th><th>Applicant's Actions or Behavior</th></tr>
<tr><td></td><td>BOP</td><td>2.8.3 MEASURING closed stroke time for Reactor Drain Tank Outlet (2CV-2201-2):
A. ENSURE 2CV-2201-2 (2HS-2201-2) open.</td></tr>
<tr><td></td><td>BOP</td><td>B. MEASURE stroke time and CLOSE 2CV-2201-2 (2HS-2201-2).</td></tr>
<tr><td></td><td>BOP</td><td>C. RECORD 2CV-2201-2 closed stroke time in Table 1.</td></tr>
<tr><td></td><td>BOP</td><td>3.1 COMPARE measured stroke time with “Limiting Value” and “Acceptable Normal Range” to determine operability.
<table>
<tr><td>2CV-2201-2</td><td>RDT Outlet</td><td>CLOSED</td><td>(1,2)</td><td>0.9-2.7</td><td>3.6</td><td>YES NO</td></tr>
</table>
NOTES: 1. Stroke testing this valve also tests its Fail Safe Function.
2. TS 3.6.3.1 is applicable to these Containment Isolation valves.
3. Closing 2CV-4827-2 demonstrates a partial open stroke of 2CVC-28C.
4. Closing 2CV-4831-2 demonstrates a partial open stroke of 2CVC-28B.
Examiner note: The stroke will fall outside of the limiting value.</td></tr>
<tr><td></td><td>BOP/SRO</td><td>3.7 <u>IF</u> stroke time was greater than Limiting value, <u>THEN</u>:
• NOTIFY Shift Manager.
• DECLARE valve inoperable.
• ENSURE Condition Report initiated.
• <u>IF</u> Containment Isolation valve in Table 1 (NOTE 2), <u>THEN</u> REFER TO Tech Spec 3.6.3.1.
Examiner Note: SRO must enter Tech Spec 3.6.3.1</td></tr>
</table>

Op-Test No.: 2019-1	Scenario #3	Event No: 1
Event Description: Complete Quarterly Red Train Containment isolation valve stroke test for 2CV-2201-2.		
Time	Position	Applicant's Actions or Behavior
Cue: If contacted as NLO or Work Management to open breaker for 2CV-2202-1 (RDT drain valve) and lock the valve respond as requested. Use Malfunction CV2202 and overrides DO_HS_2202_G and DO_HS_2202_R to simulate removing power and to 2CV-2202-1.		
Cue: If contacted as NLO or Work Management to fail 2CV-2201-2 (RDT drain valve) closed and lock 2CV2201-2 respond as request and after 10 minutes report that it is failed closed.		
Termination criteria: When the stroke time test of 2CV-2201-2 is complete and SRO has entered TS 3.6.3.1 or at lead examiner's discretion.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 2

Event Description: Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction.

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Announce alarm: • 2K12-G5, VCT 2T4 level LO LO
Enter 2203.012L, Annunciator 2K12 Corrective Actions.		
	ATC	1.0 CAUSES 1.1 VCT level (2LS-486lB) ≤ 9.6%
	ATC	2.1 **CHECK** the following indications: • VCT level (2LIS-4857) • Computer Point C&VCS VOLUME CONT TK2T4 LVL (L4857) **~ 72%** • Computer Point C&VCS VOLUME CONT TK2T4 LVL (L4861) **- 0%**
	ATC	2.2 **IF** VCT level lowers to 5%, **THEN ENSURE** Charging Pump suction shifts to RWT: • CCPs Suction From RWT (2CV-4950-2) open • VCT Outlet (2CV-4873-1) closed **Examiner Note: This step is NA.**
Cue: If asked to investigate VCT level at 2C-80 then report VCT level instrument is 2LI-4857A and is reading the ~ VCT level in the simulator. **Cue: If contacted as NLO to investigate the transmitter locally, report nothing is abnormal locally.**		

	ATC	2.3 **IF** diverse indications reveal LO LO Level is false (e.g. instrument failure) **AND** Charging pump suction has shifted to RWT, **THEN PERFORM** the following as necessary: 2.3.1 **OPEN** VCT Outlet (2CV-4873-1) (2HS-4873-1). 2.3.2 **CLOSE** CCPs Suction From RWT (2CV-4950-2) (2HS-4950-2). 2.3.3 **MATCH** Tave within 2°F of Tref per Power Operation (2102.004). 2.3.4 **SUBMIT** CR/WR as necessary. **Examiner Note: It will take approximately 4 minutes to see a change in RCS temperature. The BOP/ATC should lower main turbine load to maintain Tave constant.**
Cue: When contacted as the WWM, then report that I&C will troubleshoot the level transmitter.		
Termination criteria: When Charging pump suction has been aligned to the VCT or at lead examiner's discretion.		

Op-Test No.: 2019-1	Scenario No.: Scenario # 3	Event No.: 3
Event Description: 2VSF-1B Containment Cooler trips.		

Time	Position	Applicant's Actions or Behavior
	ANY	Announce annunciator 2K07-B2 CCAS inop. Announce annunciator 2K06-J7 CTMT BLDG CLG FANS A/B TROUBLE.
	ANY	Implement Annunciator Corrective Action 2203.012G AND 2203.012F.
Annunciator Corrective Action 2203.012G		
	ANY	2.1 IF NOT out of service for maintenance, THEN verify ALL the following breakers closed: • CNTMT Clg fan 2VSF-1A Byp Dmpr, 2UCD 8203-1 (2B53-G1) • Series Bkr for 2B53-G1, 2UCD-8203-1 (2B53-A5) • CNTMT Clg fan 2VSF-1B Byp Dmpr, 2UCD-8209-1 (2B53-G2) • Series Bkr for 2B53-G2, 2UCD-8209-1 (2B53-A6) • CNTMT Cooling fan, 2VSF-1A (2B53-L1) • Series Bkr for 2B53-L1, 2VSF-1A (2B53-K5) • CNTMT Cooling fan 2VSF-1B (2B53-L2) • Series Bkr for 2B53-L2, 2VSF-1B (2B53-K6)
Cue: If requested the AO needs to report that 2B-53 L2 is tripped.		
	SRO	2.2 IF any equipment must remain out of service, THEN refer to Tech Spec 3.6.2.3. **Examiner note: SRO must enter Tech Spec 3.6.2.3 action a.**
Annunciator Corrective Action 2203.012F		
	BOP	2.1 Determine affected CNTMT Cooling Fan: • 2VSF-1A • 2VSF-1B

Op-Test No.: 2019-1	Scenario No.: Scenario # 3	Event No.: 3
Event Description: 2VSF-1B Containment Cooler trips.		
Time	Position	Applicant's Actions or Behavior
	BOP	2.2 IF CCAS NOT actuated, THEN perform the following: 2.2.1 Stop affected CNTMT Cooling Fan: • 2VSF-1A (2HS-8201-1) • 2VSF-1B (2HS-8207-1) 2.2.2 IF Containment Building accessible, THEN check affected Cooler for dirty filters or blocked intake. **Examiner Note: The applicant may place 2VSF-1B HS in PTL.**
	BOP	2.3 IF CCAS actuated, THEN continue running Cooler AND verify associated Bypass Damper open: **Examiner Note: CCAS is not actuated and this step is NA.**
	ANY	2.4 Monitor Containment temperature and pressure using 2104.033 Containment Atmosphere Control. **Examiner Note: Containment temperature and pressure will be slowly rising and the crew should start the standby Containment cooler using 2104.033.**
	SRO	2.5 Refer to Tech Spec 3.6.2.3. **Examiner note: SRO must enter Tech Spec 3.6.2.3 action a.**
2104.033 Containment Atmosphere Control L&P		
	BOP	Verify three containment cooler in service. IAW the following L&P. 5.7 Both cooling units in Containment Cooling Group must be operable (service water flow > 1250 gpm with two operable fans) for that group to be operable. During normal operations it is expected that three of four units will be required to maintain building pressure and temperature within region of acceptable operations as specified by Technical Specifications. (TS 4.6.2.3)
2104.033 Containment Atmosphere Control		

Op-Test No.: 2019-1	Scenario No.: Scenario # 3	Event No.: 3
Event Description: 2VSF-1B Containment Cooler trips.		

Time	Position	Applicant's Actions or Behavior
		NOTE Containment Cooling Coil chilled water inlet valves are normally opened after initial startup of the Containment Cooling system and remain open until the next scheduled outage.
	BOP	18.1 **ENSURE** selected CNTMT Cooler Chilled Water Inlet valve Open: • Chilled WTR to 2VCC-1A 2CV-3846 (2HS-3846) • Chilled WTR to 2VCC-1B 2CV-3858 (2HS-3858) • Chilled WTR to 2VCC-1C 2CV-3862 (2HS-3862) • Chilled WTR to 2VCC-1D 2CV-3863 (2HS-3863)
	BOP	18.2 **START** selected on-coming Containment Cooling fan(s): • 2VSF-1A (2HS-8201-1) • 2VSF-1B (2HS-8207-1) • 2VSF-1C (2HS-8214-2) • 2VSF-1D (2HS-8220-2)
	BOP	18.3 **SECURE** selected off-going Containment Cooling fan(s): • 2VSF-1A (2HS-8201-1) • 2VSF-1B (2HS-8207-1) • 2VSF-1C (2HS-8214-2) • 2VSF-1D (2HS-8220-2)
	BOP	18.4 **CHECK** CNTMT Building Cooling Fan Trouble alarms clear: • CNTMT BLDG CLG FANS C/D TROUBLE (2K05-J7) • CNTMT BLDG CLG FANS A/B TROUBLE (2K06-J7)
	SRO	18.5 **ENSURE** EOOS updated as necessary for Containment Cooling fans. Examiner Note: The SRO may request the Admin SRO at work management update EOOS.
Cue: Report that electrical planner will begin planning work on failed containment cooler.		
Termination criteria: When SRO has entered the appropriate TS, three containment coolers are running or at lead examiner's discretion.		

Op-Test No.: 2019-1	Scenario No.: 3	Event No.: 4
Event Description: Reactor Reg output to PZR level control program fails to 41%.		

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Report the following alarms: 2K-10 H2 RRS TROUBLE 2K-10 H6 CNTRL CH 1 LEVEL HI HI 2K-10 H7 CNTRL CH 2 LEVEL HI HI
Enter OP-2203.028, PZR System Malfunctions AOP		
	SRO	1. **CHECK** the following criteria satisfied: A. **IF** any PZR spray valve failed open, **THEN GO TO** Step 2. B. **IF** any PZR spray valve failed closed, **THEN GO TO** Step 4. C. **CHECK** "RRS TROUBLE" annunciator (2K10-H2) clear. **(Not met perform contingency)**
	SRO	Perform Step 1.C Contingency Actions. C. **GO TO** Step 5.
	SRO	5. **CHECK** "RRS TROUBLE" annunciator (2K10-H2) clear. **(Not met)**
	SRO	Perform Step 5 Contingency Actions. 5. **IF** malfunction caused PZR level setpoint to change, **THEN PERFORM** the following:
	ATC	A. **PERFORM** the following for Letdown Flow controller (2HIC-4817): 1) **PLACE** controller in MANUAL. 2) **ADJUST** output to control PZR level within 5% of setpoint.

Op-Test No.: 2019-1	Scenario No.: 3	Event No.: 4

Event Description: Reactor Reg output to PZR level control program fails to 41%.

Time	Position	Applicant's Actions or Behavior
	ATC	B. Manually **CONTROL** Charging pumps. **Examiner note: Charging pumps cannot be started due to the interlocks with PZR level HI HI alarms.** C. Manually **OPERATE** PZR heaters. **Examiner note: All PZR heaters will be energized and some should be secured as needed to control pressure.**
	ATC	D. **IF** Remote Auto PZR Level setpoint incorrect, **THEN PLACE** PZR Level controller in LOCAL AUTO and adjust setpoint based on TAVE refer to 2102.004 Attachment E, Pressurizer Level Program.
Examiner Note: If applicant goes to EWS to check the alarm, give them the following cue. **Cue: EWS alarm is Internal Card Failure.**		
	ATC	E. **WHEN** Letdown Flow controller (2HIC-4817) Automatic and Manual signals matched, **THEN RESTORE** controller to AUTO using 2104.002, Chemical and Volume Control.
	SRO	F. **IF** failure prevents backup Charging pump operation, **AND** backup Charging pump required, **THEN DEFEAT** stop interlock using 2103.005, Pressurizer Operations. **Examiner note: This failure does prevent starting backup charging pumps but no backup charging pumps are required.**
OP-2103.005 Pressurizer Operations, step for defeating stop interlock.		
	ANY	11.1 **IF** desired to defeat ALL Backup Charging Pumps Stop Interlock, **THEN**: 11.1.1 **PLACE** ALL Backup Charging Pump handswitches in STOP: • 2P-36A (2HS-4832-1) • 2P-36B (2HS-4842-2) • 2P-36C (2HS-4852-1 or 2HS-4853-2)

Op-Test No.: 2019-1 Scenario No.: 3 Event No.: 4

Event Description: Reactor Reg output to PZR level control program fails to 41%.

Time	Position	Applicant's Actions or Behavior
	ANY	11.1.2 **SHIFT** Pressurizer Level controller (2LIC-4627) to MANUAL and LOCAL.
	ANY	11.1.3 On 2LIC-4627, **DEPRESS** F3.
	ANY	11.1.4 **ENSURE** 2LIC-4627 displays the following: • ALARM flashes at top of controller screen • CCP CONTROL BYPASSED appears just below setpoint indication
	ANY	11.1.5 **IF** desired to restore ANY Backup Charging pump, **THEN PLACE** selected Backup Charging pump HS in START or AUTO: • 2P-36A (2HS-4832-1) • 2P-36B (2HS-4842-2) • 2P-36C (2HS-4852-1 or 2HS-4853-2)
	ANY	11.1.6 **IF** Backup Charging pump started, **THEN CHECK** Charging flow goes up 43 to 45 gpm (2FIS-4863).
	ANY	11.1.7 **IF** desired to restore 2LIC-4627 to auto, **THEN PLACE** 2LIC-4627 to AUTO. 11.1.8 **IF** desired to restore 2LIC-4627 to remote, **THEN PLACE** 2LIC-4627 to REMOTE **Examiner Note: The applicant should restore 2LIC-4627 to auto but not remote.**
OP-2203.028, PZR System Malfunctions AOP		
Examiner Note: The next malfunction will take a couple minutes to be visible and should not be delayed.		

Op-Test No.: 2019-1	Scenario No.: 3	Event No.: 4

Event Description: Reactor Reg output to PZR level control program fails to 41%.

Time	Position	Applicant's Actions or Behavior
	ANY	G. **IF** Letdown Radiation monitor isolated due to high temperature **AND** Letdown HX Outlet temperature lowered to less than 140°F, **THEN RESTORE** Letdown Radiation Monitor flow by opening Letdown Rad Monitor Isolation, 2CV-4804 (2HS-4804).
Cue: If contacted as the WWM/engineering, then report that a planner will begin planning work on the Reactor Reg and/or engineering will investigate Reactor Reg.		
Termination Criteria: When letdown has been restored to Automatic or at the discretion of the Lead Examiner.		

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner	ANY	Determine that condenser pressure is degrading or announce condenser pressure hi alarms.
AOP, OP-2203.019 Loss of Condenser Vacuum		
NOTE **Steps marked with (*) are continuous action steps.** **Steps marked with (■) are floating steps.**		
	SRO	Enter and direct the actions of: 1. **OPEN** Placekeeping page.
	SRO	2. **NOTIFY** Control Board Operators to monitor floating steps.
	ANY	3. **CHECK** procedure entered due to loss of or reduced Circulating Water flow. **(Not met)**
	SRO	3. **GO TO** Step 15.
Note • Main Feedwater pumps trip at Condenser vacuum of 13.4 inches HG Abs. • Turbine Generator trips at Condenser vacuum of 7.8 inches HG Abs. • SDBCS Condenser interlock automatically resets at 5.15 inches HG Abs with controllers in automatic.		
	ANY	*15. **CHECK** Condenser vacuum less than 7 inches HG Abs.
Cue: If requested as NLO to look for condenser air leaks wait approximately 5 min. and report you can hear an air leak into the condenser but you cannot locate it.		
	BOP	16. **CHECK** BOTH Condenser Vacuum pumps running. (Both Vacuum pumps will not be running.)

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	BOP	16. **PERFORM** the following: A. **START** standby Vacuum pump (2C5A/B). B. **IF** NEITHER Vacuum pump can be started, **THEN** locally **CLOSE** "N_2 TO 2E-11A ISOL" valve (2GS-2001). (Valve located SW corner of Condenser approximately 15 feet North of Condensate pump 2P-2D).
Cue: If requested as NLO to perform pre-start or post-start checks, then after approximately 1 min report the checks are complete and sat.		
	ANY	*17. **IF** desired to align for Manual Hogging operation, **THEN PERFORM** the following: • Locally **PLACE** "2C-5A AUTO-HOG" switch (2HS-0687) to HOG. • Locally **PLACE** "2C-5B AUTO-HOG" switch (2HS-0688) to HOG. **Examiner Note:** The crew should align for manual hogging operation. The Vacuum pumps will auto transition between hogging and holding mode if left in auto.
Cue: If requested as NLO to place the vacuum pump AUTO-HOG switch to HOG then after approximately 1 min. use the remote (CONDENSER to on) to place the Vacuum pumps in Hogging and report that both vacuum pumps are in Hogging mode of operation.		
	BOP	18. **ENSURE** BOTH Condenser Vacuum breakers closed: • 2CV-0637 • 2CV-0600
	BOP	19. **CHECK** Seal Header pressure (2PI-0220) greater than 1.5 psig.
	BOP	20. **IF** desired, **THEN ISOLATE** SG Blowdown: • **CLOSE** S/G A Flow Control 2CV-1017 (2HIC-1017). • **CLOSE** S/G B Flow Control 2CV-1067 (2HIC-1067).

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	ANY	21. **IF** Vacuum Pump 2C5A running, **THEN** locally **CHECK** 2C5A as follows: A. Seal Water pump running. B. Seal Water Cooler Outlet temperature less than 120°F. C. Separator Tank level normal. D. **REFER TO** 2106.010, Condenser Vacuum System.
	ANY	22. **IF** Vacuum Pump 2C5B running, **THEN** locally **CHECK** 2C5B as follows: A. Seal Water pump running. B. Seal Water Cooler Outlet temperature less than 120°F. C. Separator Tank level normal. D. **REFER TO** 2106.010, Condenser Vacuum System.
Cue: If contacted as NLO to check the Vacuum pumps, then report the following: Seal water pumps running sat., Seal Water Cooler outlet temperature ~ 85 degrees, and Separator tank level normal.		
	ANY	■23. **CHECK** MFWP Seal Drn Tank (2T-79) Level HI/LO annunciator (2K03-E10) clear.
	ANY	24. **CHECK** BOTH of the following are satisfied: • Condenser vacuum stable or improving. • Condenser vacuum in acceptable region of Attachment A, Backpressure and Temperature Limits. Examiner Note: these conditions will not be met.

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	ATC	24. **COMMENCE** power reduction using EITHER of the following to maintain vacuum in acceptable region of Attachment A, Backpressure and Temperature Limits: • 2102.004, Power Operations • 2203.053, Rapid Power Reduction
Enters 2203.053, Rapid Power Reduction		
Procedure Note: • Use of this procedure may be terminated at any point if a complete shutdown is not required. • Shutdown rate shall be based on plant conditions and safety considerations. Rate may be raised or lowered as plant conditions warrant.		
	SRO	*1. **IF** at any time, it is determined that significant manual actions are required to EITHER maintain the plant online, **OR** maintain the desired maneuvering rate, **THEN PERFORM** the following: A. **TRIP** the Reactor. B. **GO TO** 2202.001, Standard Post Trip Actions.
Procedure Note: If Emergency Boration in progress, changing the number of running Charging pumps will change boration rate.		

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	SRO	3. **IF** Letdown available, **THEN COMMENCE** Power reduction using appropriate reactivity plan in conjunction with EITHER of the following: • Chemical Addition, 2104.003, Exhibit 3, Normal RCS Boration At Power • Chemical Addition, 2104.003, Attachment R, RCS Boration From The RWT Or BAMT
Implement OP 2104.003 Chemical Addition, Exhibit 3, Normal RCS Boration at Power.		
CAUTION This section has a Reactivity Addition Potential (RAP) and is classified as Normal Risk Level.		
2104.003, Exhibit 3	ATC	1.0 **IF** a Reactivity Management Brief has **NOT** been conducted, **THEN PERFORM** a Reactivity Management Brief IAW EN-OP-115-14, Reactivity Management with an SRO. 2.0 **IF** this is the first Boration of the shift, **THEN ENSURE** BAM Flow totalizer (2FQI-4926) reset. 3.0 **IF** desired, **THEN RECORD** initial controller data: 2FIC-4926 Setpoint: _____ Demand: _____ 4.0 **ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) set as follows: • Setpoint set to desired flow rate. • **IF** in MANUAL, **THEN** demand set to desired value.

Op-Test No.: 2019-1	Scenario #3	Event No: 5

Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
2104.003, Exhibit 3	ATC	5.0 **ENSURE** desired BAM pump (2P-39A OR 2P-39B) selected for automatic operation using BAM pump Select switch (2HS-4911-2). 6.0 **PLACE** Mode Select switch (2HS-4928) to BORATE. 7.0 Ensure Charging Pump Suction From Boric Acid (2CV-4930) opens (2HS-4930). 8.0 **ENSURE** selected BAM pump running: • 2P-39A (2HS-4919-2) • 2P-39B (2HS-4910-2) ***9.0 **ENSURE** BAM Tank Recirc open for running pumps: • 2T-6A recirc (2HS-4903-2) • 2T-6B recirc (2HS-4915-2) ***10.0 **IF** additional boric acid flow required, **THEN START** additional BAM pump: • 2P-39A (2HS-4919-2) • 2P-39B (2HS-4910-2)
	ATC	**CRITICAL STEP** 11.0 **OPERATE** Boric Acid Makeup Flow Batch controller (2FQIS-4926) as follows: 11.1 **DEPRESS** AND **HOLD** red pushbutton. 11.2 **ENSURE** Boric Acid Makeup Flow Batch controller (2FQIS-4926) set for desired quantity. 11.3 **RELEASE** Red pushbutton. 12.0 **ENSURE** Boric Acid Makeup Flow controller (2FIC-4926) indicates desired flow rate.

Op-Test No.: 2019-1	Scenario #3	Event No: 5

Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	ATC	***13.0 PERFORM** the following to Start/Stop additional Charging pumps: 13.1 **IF** desired to raise flow, **THEN** perform the following: A. **START** additional charging pumps as necessary. B. **ADJUST** Boric Acid Makeup Flow controller (2FIC-4926) to desired flow rate. 13.2 **IF** desired to lower flow, **THEN** perform the following: A. **ADJUST** Boric Acid Makeup Flow controller (2FIC-4926) to desired flow rate. B. **SECURE** additional Charging Pumps as necessary.
	ATC	***14.0 MONITOR** the following parameters: • RCS T_{AVE} • Axial Shape Index • Reactor power **CRITICAL STEP** 16.0 **WHEN** Boric Acid Makeup Flow Batch controller (2FQIS-4926) at zero, **THEN ENSURE** the following: • Boric Acid Makeup Flow Control (2CV-4926) closes. • No flow indicated on Boric Acid Makeup Flow controller (2FIC-4926).

Op-Test No.: 2019-1	Scenario #3	Event No: 5

Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
		2203.053 Rapid Power Reduction.
		NOTE • The CBOT is the preferred RO to lower turbine load so that the ATC can focus on primary plant control. However, either individual can operate the turbine as plant conditions dictate. • PMS/PDS point CV0223 displays Unit 2 net generation in MWe.
	BOP	***** 6. **LOWER** Turbine load as necessary to hold Tave within ± 3°F of program Tref.
		NOTE • ASI would tend to shift back to the top of the core if CEAs are inserted below 80 inches withdrawn when the Reactor is at power and the CPC Aux trip is active. • At higher power levels, larger (more aggressive) CEA insertions may be required (6 to 8 inches recommended initially). (CR-ANO-C-2015-1383 CA 2) • ASI response to power changes at the end of core life is more severe, at times significantly so. The effects of ASI may not be seen until well into the power change. • Proactively driving ASI more positive than ESI (up to +0.05 deviation) will improve the ability to control ASI at lower power levels. (CR-ANO-C-2015-1383 CA 2) • Exceeding COLR ASI limit will challenge CPC QASI Aux Trip setpoint and may result in automatic trip. CPC QASI Aux Trip occurs at ±0.45 (PID 187).

Op-Test No.: 2019-1 Scenario #3 Event No: 5

Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	ATC	*7. **PERFORM** the following for ASI and CEAs: • **MAINTAIN** ASI within Core Operating Limits Report (COLR) limits using CEA Group 6 or Group P. • **USE** ONE of the following to monitor ASI closely: - COLSS (CV9198) - **IF** COLSS inoperable, **THEN USE** CPC channel ASI (PID 268) that most closely agreed with COLSS when it was operable. • Periodically **MONITOR** QASI (PID 187). • **INSERT** Group 6 (preferred at higher power) OR Group P CEAS (preferred at lower power) using Exhibit 3 of 2105.009, CEDM Control System Operation, as necessary. • **MAINTAIN** CEAs greater than 80 inches withdrawn. • **IF** CEAs are inserted beyond the Long Term Steady State Insertion Limit, **THEN PERFORM** 2102.004A, Unit 2 CEA Insertion Log.
	BOP	* 8. **IF** desired to transfer unit auxiliaries from Unit Aux transformer to SU #3, **THEN PERFORM** Attachment A, Transferring Loads to SU #3.
	BOP	*9 **THROTTLE** Condensate recircs as necessary to maintain 650-750 psig Condensate Pump Discharge pressure: • 2CV-0662 (2FIC-0662) • 2CV-0663 (2FIC-0663)
	ANY	10. **PERFORM** notifications of power reduction using Attachment B, Notifications.
Cue: If requested as WWM, Communicator, or Off shift operator, then perform Attachment B Notifications.		

Op-Test No.: 2019-1 Scenario #3 Event No: 5

Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	ANY	*11. **MONITOR** Secondary chemistry and adjust chemical feed as needed using 2106.028, Secondary System Chemical Addition.
Cue: If requested as NLO to monitor and adjust chemical feed respond as requested.		
Enter 2105.009, CEDM Control System Operation (CEDMCs Operations, Exhibit 3)		
NOTE • "CEA SELECTED" indicates selected CEA position. • "GROUP SELECTED" indicates average position of selected group. • Rod motion is inhibited by PMS CEA sequencing program if a deviation of six inches occurs in any regulating group. • CEAC CH1 and CH2 annunciators on 2K04 and CEDMCS annunciators on 2K10 should be checked for applicability prior to moving CEAs.		
CAUTION R A P The following section has a Reactivity Addition Potential (RAP) and is classified as Risk Level R2. For an Unplanned Reactivity Manipulation, the required controls for planned reactivity evolutions are not applicable during AOP (including ACA response) or EOP conditions IAW COPD-030, Reactivity Management Program.		
	ATC	1.0 **IF** time allows **AND** Reactivity Management Brief has **NOT** been conducted, **THEN PERFORM** a Reactivity Management Brief per COPD-030 with an SRO.
	ATC	2.0 **CHECK** CEAC CH1 and CH2 annunciators on 2K04 and CEDMCS annunciators on 2K10 for applicability prior to moving CEAs.

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	ATC	3.0 **IF** moving CEAs in group, **THEN**: 3.1 **ENSURE** Group Select switch to desired group position. 3.2 **IF** moving Group P CEAs, **THEN PLACE** P Group Select switch to P. 3.3 **ENSURE** Individual CEA Selection switches aligned to CEA in group selected to move. 3.4 **PLACE** Mode Select switch to MANUAL GROUP (MG) or MANUAL SEQUENTIAL (MS). * 3.5 **OBSERVE** CEAC and Pulse Counter CEA position indications to ensure CEA motion and alignment as CEAs are moved. R A P 3.6 **POSITION** groups as desired using Manual Control lever. 3.7 **PLACE** Mode Select switch to OFF. 3.8 **ENSURE** Pulse Counter and CEAC indications match.
Implement remaining OP-2203.019, Loss of Condenser Vacuum AOP.		
Note Condenser air intrusion event will cause hotwell level indication to show false lowering trend.		
	ANY	■25. **CHECK** cause of loss of vacuum identified. (Not Met)

Op-Test No.: 2019-1	Scenario #3	Event No: 5
Event Description: Condenser Air in leakage and backup vacuum pump fails to auto start.		

Time	Position	Applicant's Actions or Behavior
	ANY	■25. **PERFORM** walk down of Condenser as follows: A. Locally **ENSURE** Steam Inlet Expansion Joint sight glasses indicate flow. B. Locally **CLOSE** "N_2 TO 2E-11A ISOL" valve (2GS-2001). (Valve located SW corner of Condenser approximately 15 feet North of Condensate pump 2P-2D.) C. **PERFORM** walkdown of connected piping to locate and isolate air inleakage (refer to 2106.018, Unit 2 Condenser Air In-leakage Testing).
Cue: If contacted as NLO to perform step 25 locally, then after 5 min. report that the steam inlet expansion joint sight glasses indicate flow, 2GS-2001 is closed and you have not found source of in-leakage yet but you will continue walk down.		
	ANY	26. **Perform** EITHER of the following as directed by Operations Management: A. **MAINTAIN** Plant conditions using 2102.004, Power Operation. B. **IF** plant shutdown to be performed, **THEN** perform the following: 1) **REFER TO** applicable reactivity plan. 2) **PERFORM** Plant Shutdown using 2102.004, Power Operation.
Cue: If contacted as Operations Management as to direction for a plant shutdown or Maintain plant stable, ask for the SRO's opinion and agree with their opinion.		
Termination Criteria: When the required reactivity manipulation or at the discretion of the lead examiner.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Cued by Lead Examiner power should be > 40 when cued.	ANY	Recognize Condenser Vacuum is leak is degrading.
AOP, OP-2203.019 Loss of Condenser Vacuum		
	ANY	*15. **CHECK** Condenser vacuum less than 7 inches HG Abs.
	ATC	*15. **PERFORM** the following: A. **IF** Reactor power less than available Downstream ADV capacity, **THEN PERFORM** the following: **Examiner Note:** Reactor Power is not less than Downstream ADV capacity (~23%) B. **TRIP** Reactor. C. **GO TO** 2202.001, Standard Post Trip Actions.
Cue: If contacted as NLO to investigate air in leakage, then report that the air leak sound is louder than before.		
Enter EOP 2202.001, Standard Post Trip Actions.		
	SRO	**1. Notify Control Board Operators to perform the following:** A. Monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist. B. Perform post trip contingencies as required. **2. Open Safety Function Tracking page.**
Examiner Note: Crew may actuate MSIS during SPTAs due to the ESD inside containment.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Reactivity Control Safety Function	ATC	**3. Check Reactivity Control established as follows:** _____A. Reactor power lowering. B. Check startup rate is negative. _____C. ALL CEAs fully inserted by observing ANY of the following: 1) CEA Rod bottom lights illuminated. 2) CEAC 1 indicates ALL CEAs fully inserted. 3) CEAC 2 indicates ALL CEAs fully inserted.

Examiner Note: Document time of CIAS for critical task tracking.

Time of CIAS:_____

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Vital Auxiliaries Safety Function	BOP	**4. Check Maintenance of Vital Auxiliaries satisfied:** A. Check Main Turbine tripped by BOTH of the following: • ALL Main Stop Valves closed. • Generator megawatts indicate zero. B. Generator Output breakers open. C. Exciter Field Breaker open. D. Perform EITHER of the following as required: 1) Check the following valves closed: • MSR 2E-12A Steam Supply From SG A (2CV-0400) • MSR 2E-12B Steam Supply From SG B (2CV-0460) 2) No flow indicated on the following MSR second stage flow instruments: • 2FI-0402 • 2FI-0462 E. At least ONE 6900v AC bus energized. F. At least ONE 4160v Non-vital AC bus energized. G. BOTH 4160v Vital AC buses energized H. BOTH DGs secured. **(DGs running unloaded, contingency satisfied)** I. At least ONE 125v Vital DC bus energized: • 2D01 - SPDS point E2D01 • 2D02 - SPDS point E2D02

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
RCS Inventory Control Safety Function	ATC	**5. Check RCS Inventory Control established as follows:** A. PZR level: • 10 to 80%. • Trending to setpoint. **(Not Met due to the ESD, contingency actions may have to be performed.)** B. RCS MTS 30°F or greater. 5.A Contingency actions A. Perform as necessary: 1) IF SIAS actuated on PPS inserts, THEN **GO TO** Step 6. 2) Verify PZR Level Control system restoring level to setpoint.
RCS Pressure Control Safety Function	ATC	**6. Check RCS Pressure Control:** • 1800 to 2250 psia. **(Not Met due to the ESD, contingency actions may have to be performed.)** • Trending to setpoint. **(Not Met due to the ESD, contingency actions may have to be performed.)** • Normal PZR Spray and heaters controlling pressure. • Valid CNTMT Spray NOT in progress. **(Will not be Met due to the ESD, contingency actions may have to be performed.)**

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
RCS Pressure Control Safety Function	ATC	**Examiners Note:** Contingency actions may have to be performed depending on the PZR pressure trend at the time this safety function is assessed. **6. Perform as necessary:** C. IF valid CNTMT Spray in progress, THEN verify ALL RCPs tripped. D. IF RCP 2P32A or 2P32B stopped, THEN verify associated PZR Spray valve in MANUAL and closed. • RCP A Spray Valve (2CV-4651) • RCP B Spray Valve (2CV-4652) F. IF RCS pressure lowers to 1650 psia or less, THEN perform the following: 1) Verify SIAS actuated on PPS inserts. 2) GO TO Step 7.

Critical Task: Restore CCW to RCPs within 10 min of the loss of CCW cooling or secure the RCPs within the next 10 min.

Examiner Note: The crew will also be directed to secure the RCPs due to the CNTMT spray.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Core Heat Removal Safety Function.	ATC	**7. Check Core Heat Removal by forced circulation:** A. At least ONE RCP running. **(May not be met due to securing RCPs for CNTMT spray)** **If RCPs secured, then Direct the contingency for step 7. E** A. IF ALL RCPs stopped, THEN perform the following: 1) Verify BOTH PZR Spray valves in MANUAL and closed. • 2CV-4651 • 2CV-4652 2) **GO TO** Step 8.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	BOP	**8. Check RCS Heat Removal:** A. Check SG available by BOTH of the following: * At least ONE SG level 10 to 90%. * FW maintaining SG level. **(Not met due to MSIS, perform contingency as necessary)** B. Check MFW in RTO. **(Not met due to MSIS, perform contingency as necessary)** C. Check Feedwater line intact by the following: * SG level stable or rising. * NO unexplained step changes or erratic FW flow. * NO unexplained step changes or erratic Condensate flow. D. Check RCS T_C 540°F to 555°F **(NOT met)** E. Check SG pressure 950 to 1050 psia. **(NOT met)** F. IF MSIVs open, AND desired, THEN place SDBCS Master Controller in Auto/Local with setpoint of 960 psia using 2105.008 Exhibit 3, SDBCS Emergency Operation.
	BOP	**Perform step 8 contingency actions that are applicable:** A. Perform the following: 1) IF SG level lowering, THEN verify EFAS actuated.
	BOP	B. Verify EITHER of the following: • BOTH MFW pumps tripped. • SG levels controlling at setpoint

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	BOP	D. Perform as necessary: 2) IF T_C less than 540°F, THEN perform the following: a) Verify Feedwater flow rate (MFW OR EFW) NOT causing T_C to lower. **(EFW flow to A SG will be aligned, crew should secure 2P-7B)** b) Verify SDBCS restoring T_C 540°F to 555°F using 2105.008 Exhibit 3, SDBCS Emergency Operation.
RCS Heat Removal Safety Function	BOP	E. Perform as necessary: 1) IF SG pressure 751 psia or less, THEN perform the following: a) Verify MSIS actuated on PPS inserts. b) Verify feed secured to the affected SG. c) Maintain SG to RCS Δp less than 1600 psid. d) Maintain RCS post-cooldown conditions as follows: • Maintain RCS pressure within P-T limits with PZR heaters and spray using Attachment 48, RCS Pressure Control. • Maintain RCS temperature by steaming intact SG using Upstream ADV or Upstream ADV Isolation MOV using 2105.008 Exhibit 3, SDBCS Emergency Operation. e) **GO TO** Step 9.

Critical Task:

Stabilize and control RCS temperature after the ESD blowdown terminates. RCS CETs must be limited to less than 80 degree F heatup.

Op-Test No.: 2019-1	Scenario #3	Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
		Critical Task: **Maintain RCS pressure within the Pressure-Temperature limits of 200°F and 30°F Margin to Saturation throughout implementation of SPTAs and Excess Steam Demand EOP.**
		Perform Attachment 48, RCS Pressure Control
		NOTE Once method of pressure control is established, this attachment is not required in hand or continuous use. A change to the method of pressure control will require in hand or continuous use until the new pressure method is established.
Attach. 48	ATC	1. **IF** loss of power or failed indication prevents automatic operation of heaters and spray, **THEN PLACE** the following handswitches to the unaffected channel as necessary: • PZR Low Level Cutoff Select (2HS-4642) • PZR Pressure Channel Select (2HS-4626) • PZR Level Channel Select (2HS-4628) **Examiner Note: Step is NA.**
	ATC	D. **IF** desired to use AUXILIARY Spray, **THEN**: ***** 1) **ENSURE** RCS MTS greater than 30 degrees. 2) **ENSURE** at least ONE Charging pump running. 3) **CLOSE** Regen HX to RCP B/C valves: • 2CV-4827-2 • 2CV-4831-2

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
		NOTE PZR Spray Block valves 2CV-4653 and 2CV-4655 are de-energized due to degraded power supply cables.
	ATC	4) **ENSURE** PZR Spray (2CV-4651/2CV-4652) or PZR Spray Isolation valves (2HS-4655/2HS-4653) closed.
		NOTE • Securing Charging pumps will secure/change Aux Spray flow. • Securing all Charging pumps will terminate emergency boration if in progress.
Attach. 48	ATC	5) **PERFORM** EITHER of the following to control RCS pressure: • **THROTTLE** Aux Spray valve (2CV-4824-2) as necessary. • **START** and **STOP** Charging pumps as necessary * • **RESET** Low PZR Pressure setpoints during depressurization.
Perform 2105.008, Exhibit 3, SDBCS Emergency Operation		
Exhibit 3	BOP	1.0 **IF** BOTH MSIV's closed, **THEN GO TO** step 5.0.
	BOP	5.0 **PERFORM** the following to determine availability of Upstream SDBCS valves: 5.1 **IF** the following conditions satisfied: **THEN** Upstream ADVs are available. • Instrument air available • EMERGENCY OFF (2K02-A14) annunciator clear • Power available to selected controllers/valves

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	BOP	5.2 **IF** the following conditions satisfied: **THEN** ADV Upstream Isolation valve(s) are available. • EMERGENCY OFF (2K02-A14) clear or Upstream ADV locally failed open • Power available
Exhibit 3	BOP	6.0 **IF** operation of Upstream Atmospheric Dump valve from the Control Room desired, **THEN**: 6.1 **ENSURE** selected HIC in MANUAL with ZERO output demand: • Hdr #1 UPSTM ADV 2CV-1001 (2HIC-1001) • Hdr #2 UPSTM ADV 2CV-1051 (2HIC-1051)
	BOP	6.2 **PLACE** selected valve(s) permissive handswitch in MANUAL: • 2CV-1001 Permissive (2HS-1001) • 2CV-1051 Permissive (2HS-1051)
Exhibit 3	BOP	6.3 **IF** MSIS actuated, **THEN** override "MSIS CLOSE" actuation for selected MOV isolation: • ADV Upstream Isolation valve (2CV-1002) • ADV Upstream Isolation valve (2CV-1052)
	BOP	6.4 **IF** in Modes 1-4, **THEN ENTER** TS 3.6.3.1 as applicable.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	BOP	*6.5 **THROTTLE OPEN** selected MOV as desired: • ADV Upstream Isolation valve (2CV-1002) • ADV Upstream Isolation valve (2CV-1052)
	BOP	*6.6 **PLACE** selected HICs to desired demand: • Hdr #1 UPSTM ADV 2CV-1001 (2HIC-1001) • Hdr #2 UPSTM ADV 2CV-1051 (2HIC-1051)
Continue with SPTAs		
CNTMT Safety Function	ANY	9. Check CNTMT parameters: A. Temperature and Pressure: • Temperature less than 140°F. • Pressure less than 16 psia. **(Not met due to ESD Event #7)**

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	ANY	9.A Contingency Actions A. Perform the following: 1) IF CNTMT pressure less than 18.3 psia, THEN verify ALL available CNTMT Cooling fans running with cooling water aligned. 2) IF CNTMT pressure 18.3 psia or greater, THEN verify the following: • CIAS, CCAS, and SIAS actuated on PPS inserts. • At least ONE Emergency Penetration Room Vent Fan running. • CNTMT Cooling fans running in Emergency Mode. 3) IF CNTMT pressure 23.3 psia or greater, THEN verify the following: • CSAS actuated on PPS inserts. • Spray flow greater than 1875 gpm per header. • ALL RCPs stopped AND BOTH PZR Spray valves in MANUAL and closed.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
		B. Check CNTMT Spray pumps secured. **(Not met, Contingency NA)** C. NO CNTMT radiation alarms or unexplained rise in activity: 1) CAMS alarms: • "CNTMT PART/GAS RAD HI/LO" annunciator (2K10-B6) clear. 2) RCS leakage alarms: • "AREA RADIATION HI/LO" annunciator (2K11-B10) clear. • "PROC LIQUID RADIATION HI/LO" annunciator (2K11-C10) clear. 3) Check the following radiation monitors trend stable: • CNTMT Area • CAMS • Process Liquid D. NO secondary system radiation alarms or unexplained rise in activity: 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 2) Secondary Systems Radiation monitors trend stable: • Main Steam lines • SG Sample • Condenser Off Gas

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	SRO	10. Notify STA to report to control room. 11. Direct NLOs to perform Attachment 47, Field Operator Post Trip Actions 12. Verify Reactor trip announced on Plant page. 13. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
Cue: If contacted as the STA to report to the control room, acknowledge the request. **Cue: If contacted as a NLO to perform Attachment 47 Field Operator Post Trip Actions, acknowledge request.**		
	SRO	14. Direct control board operators to acknowledge ALL annunciators and announce ALL significant alarms.
	SRO	15. Check ALL safety function acceptance criteria satisfied. **(All safety functions are not satisfied, perform contingency)** **15. <u>IF</u> ANY safety function acceptance criteria <u>NOT</u> satisfied, <u>THEN</u> perform the following:** A. Notify control room staff of safety functions <u>NOT</u> satisfied. B. GO TO Exhibit 8, Diagnostic Actions.
	SRO	Diagnose Excess Steam Demand, EOP 2202.005.
Enter and implement Excess Steam Demand EOP 2202.005.		
<u>CAUTION</u> Failure to use average CETs to monitor MTS with ALL RCPs stopped may result in misleading evaluation of core conditions.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
		NOTE Parameters in brackets [ ] reflect normal values corrected for harsh CNTMT environment with CNTMT temperature greater than 200°F or CNTMT radiation greater than 10^5 R/hr.
	SRO	***1. Confirm diagnosis of Excess Steam Demand as follows:** A. Check SFSC acceptance criteria satisfied every 15 minutes. B. IF CCW in service to provide SG Sample Cooler cooling, THEN perform the following: 1) IF SG "A" has indicated water level, THEN verify the following SG 'A' Sample Valves open: • 2CV-5850 • 2CV-5852-2 2) IF SG "B" has indicated water level, THEN verify the following SG 'B' Sample Valves open: • 2CV-5858 • 2CV-5859-2 C. Notify Chemistry to sample available SGs for activity.
	SRO	2. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	SRO	3. Open Placekeeping page.
	SRO	4. Notify Control Board Operators to monitor floating steps.
Examiner Note: The SRO may implement the floating step to Maintain RCS post-cooldown conditions if not direct from SPTAs.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
		■**21. Maintain RCS post-cooldown conditions as follows:** A. Maintain RCS temperature by steaming intact SG using EITHER of the following: • Upstream ADV • Upstream ADV Isolation MOV B. Control feedwater flow to intact SG using 2202.010 Attachment 46, Establishing EFW Flow. C. Maintain RCS pressure within P-T limits using 2202.010 Attachment 48,RCS Pressure Control.
	ANY	**5. Verify the following:** • MSIS actuated on PPS inserts • MSIVs closed
	ANY	***6. <u>IF</u> SIAS setpoints exceeded by EITHER of the following:** • RCS pressure 1650 psia or less • CNTMT pressure 18.3 psia or greater **<u>THEN</u> verify SIAS and CCAS actuated on PPS inserts.**
	ANY	*7. Verify actuated ESFAS components using 2202.010, Exhibit 9, ESFAS Actuation. **Examiner Note:** Exhibit 9 is a checklist of actuated components w be in the expected alignment.
	ANY	■ 8. Restore ESF/Non-ESF systems post-MSIS using 2202.010 Attachment 51, Post ESFAS Actuation System Restoration.
Attachment 51, Post ESFAS Actuation System Restoration		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	BOP	1. **ENSURE** at least ONE SW pump running on EACH loop. 2. **IF** ANY EDG in operation, **THEN**:.
		CAUTION Operation of loaded DG without Service Water for greater than three minutes may cause engine damage.
Attach. 51	BOP	A. Check running EDG SW Outlet valve open: • 2DG-1 SW Outlet (2CV-1503-1) • 2DG-2 SW Outlet (2CV-1504-2)
	BOP	3. **IF** Lake available, **THEN ENSURE** SW pump suction aligned to Lake.
	Examiner Note: Steps 4 and 5 are NA.	
	BOP	*6. **IF** BOTH 4160v Vital buses 2A3 **AND** 2A4 energized from offsite power, **THEN START** SW pumps as needed to maintain SW header pressure.
	BOP	**Examiner Note: Steps 7, 8 and 9 are NA.**
Attach. 51	BOP	*10. **MAINTAIN** Service Water header pressure greater than 85 psig while performing the following using 2202.010 Exhibit 5, CCW/ACW/SW Alignment: A. IF Loop 2 CCW available, THEN restore Service Water to Component Cooling Water. B. Restore Service Water to Auxiliary Cooling Water.
Perform 2202.010, Exhibit 5 (CCW/ACW/SW Alignment)		
Examiner Note: Steps 1 and 3 are NA.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Exhibit 5	BOP	2. **IF** SW **NOT** aligned to CCW **AND** CCW available, **THEN**: A. **IF** RCP seal temperatures less than 180°F, **THEN RESTORE** SW to CCW by performing the following: 1). **OVERRIDE** and **OPEN** at least ONE SW to CCW/ACW Return valve: • 2CV-1543-1 • 2CV-1542-2
CAUTION Supplying ACW flow and CCW cooling from a single SW pump may result in low SW header pressure.		
	BOP	2). **OVERRIDE** and **THROTTLE** open at least ONE SW to CCW /Main Chillers Supply valve: • 2CV-1530-1 • 2CV-1531-2 3). **Maintain** SW header pressure greater than 85 psig.
	ANY	4. **IF** SW **NOT** aligned to ACW, **THEN**: A. **ENSURE** at least ONE SW to CCW/ACW Return valve open: • 2CV-1543-1 • 2CV-1542-2 B. **OVERRIDE** and **THROTTLE** open ACW Supply valves: • 2CV-1425-1 • 2CV-1427-2 C. **MAINTAIN** SW header pressure greater than 85 psig.
Return to Excess Steam Demand		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	ANY	***9.** **IF SIAS actuated, THEN verify Safety Injection flow to RCS as follows:** A. Check total HPSI flow acceptable using Exhibit 2, HPSI Flow Curve. B. Check total LPSI flow acceptable using Exhibit 3, LPSI Flow Curve.
	ANY	***10.** **Verify the following for any operating RCP:** A. CSAS NOT actuated. B. Proper seal staging.
	ANY	■**11. Check CCW flow aligned to RCPs. (Not Met)**
	ANY	■ **11. Perform the following: (Contingency Actions)** A. IF CCW system available, THEN restore CCW to RCPs using 2202.010 Attachment 21, Restoration of CCW to RCPs.
2202.010 Standard Attachment 21		
	BOP	2. **ALIGN** Controlled Bleedoff as follows: A. **IF** SIAS **OR** CIAS **NOT** actuated, **THEN ENSURE** RCP Bleedoff to VCT valves open: • 2CV-4846-1 • 2CV-4847-2 B. **ENSURE** RCP Bleedoff Relief Isolation to Quench Tank valve (2CV-4856) open.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	BOP	3. **IF** RCP seal temperatures less than 180°F, **THEN RESTORE** CCW to RCPs by performing the following: A. **ENSURE** ANY CCW pump in service. B. **ENSURE** open RCP CCW Supply valve (2CV-5236-1). C. **ENSURE** open RCP CCW Return valve (2CV-5254-2). D. **ENSURE** open RCP CCW Return valve (2CV-5255-1). E. **IF** unexplained CCW Surge Tank level changes observed, **THEN**: 1) **ENSURE** ALL RCPs stopped. 2) **ISOLATE** CCW to RCPs. 3) **ENSURE** RCP Bleedoff to VCT valves closed: • 2CV-4846-1 • 2CV-4847-2 4) **ENSURE** RCP Bleedoff Relief Isolation to Quench Tank valve (2CV-4856) closed.
Return to Excess Steam Demand		
	ANY	■**12. IF Circ Water flow lost to the Main condenser, THEN perform the following:** **Examiner Note: This step should be NA**
	ANY	■**13. Check RCS pressure greater than 1400 psia.**
	ANY	■**13. Perform the following: (Contingency Actions)** A. IF RCS pressure less than 1400 psia, THEN perform the following: 1) Verify maximum of ONE RCP running in EACH loop. 2) IF RCP 2P32A or 2P32B stopped, THEN verify associated PZR Spray valve in MANUAL and closed.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
	ANY	■**14. <u>WHEN</u> RCS T_C less than 510°F, <u>THEN</u> reduce number of running RCPs as follows:** A. Verify maximum of ONE RCP running in EACH loop. B. <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed.
	ANY	**15. Determine most affected SG by comparing the following:** • SG steam flows • SG pressures • SG levels • RCS T_C
	ANY	**16. Check MSIS stopped Excess Steam Demand event.**
	ANY	**16. Perform the following: (Contingency Actions)** A. Commence MSIS verification using 2202.010 Attachment 4, MSIS Verification. B. **GO TO** Step 18. **Examiner Note: Attachment 4, MSIS Verification, is a checklist of actuated components which will all be in the expected condition.**
	ANY	■**18. <u>IF</u> BOTH SGs equally affected, <u>THEN</u> close Main Steam to EFW Pump Turbine valves:** • 2CV-1000-1 • 2CV-1050-2 **Examiner Note: This step is NA.**
	ANY	■**19. Isolate most affected SG using 2202.010 Attachment 10, SG Isolation.** • <u>IF</u> affected SG still pressurized, <u>THEN</u> check MSSVs for affected SG closed by locally checking individual valve tail pipes for leakage.

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
2202.010 - Attachment 10, SG Isolation		
		STEAM GENERATOR A
NOTE Goal is to isolate the SG within 30 minutes of procedure entry to limit off-site release.		
	BOP	1. IF SG B to be isolated, THEN **GO TO** Step 4. **Examiner Note: This step is NA.**
NOTE • Steps two and three may be performed in any order. • Valves in Table 1 and Table 2 may be positioned in any order.		

Op-Test No.: 2019-1 Scenario #3 Event No.: 6, 7, & 8

Event Description:

- (6) Condenser Air-in-leakage degrades requiring a trip.
- (7) ESD on 'A' SG inside containment.
- (8) Emergency Feedwater (EFW) valves to A SG fail to auto close.

Time	Position	Applicant's Actions or Behavior
Attach. 10	BOP	2. Verify each component in the following table in the indicated position:

TABLE 1

COMPONENT DESCRIPTION	NUMBER	LOCATION	POSITION	√
ADV UPSTRM ISOL	2CV-1002*	2C02	CLOSED (1)	
2CV-1001 PERMISSIVE	2CV-1001	2C02	OFF (1)	
MSIV HEADER #1	2SV-1010-1A	2C17	CLOSED	
MSIV HEADER #1	2SV-1010-2A	2C16	CLOSED	
MSIV HEADER #1 BYP	2CV-1040-1	2C17	CLOSED (1)	
MAIN STEAM TO EFWP TURB 2K03	2CV-1000-1	2C17	CLOSED	
FEEDWATER BLOCK VALVE TO SG-A	2CV-1024-1	2C17	CLOSED	
FEEDWATER BLOCK VALVE TO SG-A	2CV-1023-2	2C16	CLOSED	
SG BLOWDOWN ISOLATION	2CV-1016-1	2C17	CLOSED (1)	
2P7B DISCHARGE TO SG-A	2CV-1038-2*	2C17	CLOSED (1)	
FLOW CONTROL VALVE TO SG-A	2CV-1025-1*	2C17	CLOSED (1)	
SAMPLE ISOLATION VALVE SG-A	2CV-5850	2C17	CLOSED (1)	
2P7A DISCHARGE TO SG-A	2CV-1026-2*	2C16	CLOSED (1)	
2P7A DISCHARGE TO SG-A	2CV-1037-1*	2C16	CLOSED (1)	
SAMPLE ISOLATION VALVE STEAM GEN A	2CV-5852-2*	2C16	CLOSED (1)	

* Denotes override capability.

NOTE #1: Valves may be open at SM/CRS discretion.

Termination criteria: When post-cooldown conditions have been stabilized or at examiner's discretion.

Facility: ANO-2		Date of Exam: 4/22/2019															
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2 (spare not counted in total)			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO **X** SRO-I ☐ SRO-U ☐	RX													0*	1	1	0
	NOR			1										1	1	1	1
	I/C			3,4,9		2,3,5			2,4,5					6	4	4	2
	MAJ			6,7		6			6,7					4	2	2	1
	TS													0	0	2	2
RO **X** SRO-I ☐ SRO-U ☐	RX													0*	1	1	0
	NOR									1				1	1	1	1
	I/C		2,4,5,8				1,3,4,7			3,5,8				7	4	4	2
	MAJ		6,7				6			6,7				4	2	2	1
	TS													0	0	2	2
RO ☐ SRO-I ☐ SRO-U **X**	RX													0	1	1	0
	NOR	1						1						2	1	1	1
	I/C	2,3,4,5,8,9			1,2,3,4,5,7			2,3,4,5,8						11	4	4	2
	MAJ	6,7			6			6,7						4	2	2	1
	TS	3,4			1,3			1,3						4	0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the at-the-controls (ATC) and balance-of-plant (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional I/C malfunctions on a one-for-one basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

4. For new reactor facility licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

ES-301 **Competencies Checklist** **Form ES-301-6**

Facility: ANO-2 Date of Examination: 4/22/19 Operating Test No.: 2019-1

Competencies	APPLICANTS															
	RO X SRO-I ☐ SRO-U ☐				RO X SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U X				RO ☐ SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1 BOP	2 ATC	3 ATC	4	1 ATC	2 BOP	3 BOP	4	1 SRO	2 SRO	3 SRO	4	1	2	3	4
Interpret/Diagnose Events and Conditions	3,4,6,7,9	1,2,3,5,6	2,4,5,6,7		2,3,4,5,6,7,8	1,3,4,6,7	3,5,6,7,8		2,3,4,5,6,7,8,9	1,2,3,4,5,6,7	2,3,4,5,6,7,8					
Comply with and Use Procedures (1)	1,3,4,6,7,9	2,3,5,6	2,4,5,6,7		4,5,6,7,8	1,3,4,6,7	1,3,5,6,7,8		2,3,4,6,7,8,9	1,3,4,5,6	2,4,5,6,7,8					
Operate Control Boards (2)	1,3,4,7,9	2,3,5,6	2,4,5,6,7		2,4,5,6,7,8	1,3,4,6,7	1,3,5,6,7,8		NA	NA	NA					
Communicate and Interact	1,3,4,6,7,9	1,2,3,4,5,6,7	2,3,4,5,6,7,8		1,2,3,4,5,6,7,8	1,3,4,5,6,7,	1,3,4,5,6,7,8		1,2,3,4,5,6,7,8,9	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8					
Demonstrate Supervisory Ability (3)	NA	NA	NA		NA	NA	NA		1,2,3,4,5,6,7,8,9	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8					
Comply with and Use TS (3)	NA	NA	NA		NA	NA	NA		3,4	1,3	1,3					

Notes:
(1) Includes TS compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES 303 1 and ES 303 3 describe the competency rating factors.)