

Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>2009-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A1. Conduct of Operations 2.1.23 RO (4.3)	P/R	Determine volume of Boric acid and DI water to makeup to RWT. ANO-2-JPM-NRC-ADMIN RWT
A2. Conduct of Operations 2.1.25 RO (3.9)	N/R	Determine limits for CEA positions using the COLR PDIL. ANO-2-JPM-NRC-ADMIN-PDIL
A3. Equipment Control 2.2.12 RO (3.7)	D/R	Surveillance review ANO-2-JPM-NRC-2P-35A REVIEW
A4. Radiation Control 2.3.7 RO (3.5)	D/R	Review RWP and determine requirements for tagging 'B' LPSI pump. ANO-2-JPM-NRC-RWP
Emergency Procedures/Plan		
<p>NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.</p>		
<p>* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)</p>		

Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>2009-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A5. Conduct of Operations 2.1.25 SRO (4.2)	N/R	Determine if COLR DNBR limit is being met during a loss of COLSS and what action is required. ANO-2-JPM-NRC-ADMIN-DNBRL
A6. Conduct of Operations 2.1.23 SRO (4.4)	D/R	Review and approve calculation of volume needed to raise SFP level. ANO-2-JPM-NRC-ADMIN-SFPMU
A7. Equipment Control 2.2.40 SRO (4.7)	P/R	Determine RPS trip set point due to inoperable MSSV is correct using Technical Specifications. Ability to apply technical specification for a system ANO-2-JPM-NRC-ADMIN-MSSVINOP
A8. Radiation Control 2.3.14 SRO (3.8)	D/R	Approve administration of Potassium Iodide ANO-2-JPM-NRC-KI
A9. Emergency Procedures/Plan 2.4.44 SRO (4.4)	D/R	Issue Protective Action Recommendation to Offsite Authorities (Time Critical) ANO-2-JPM-NRC-PAR3
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & 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 volume of boric acid and DI water to makeup to RWT

JTA#: ANO-2-RO-CHADD-NORM-110

KA VALUE RO: 4.3 SRO: _____ 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: Perform CLASSROOM: Perform

POSITION EVALUATED: RO: _____ SRO: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 30 Minutes

REFERENCE(S): OP 2104.003 Attachment E

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppm
- Final RWT level 95%
- Final RWT Concentration 2725 ppm
- 'A' BAMT concentration 5965 ppm

TASK STANDARD: Determine that the amount of Boric Acid needed is 8516 gallons \pm 85 gallons and the amount of DI water needed is 5848 gallons \pm 58 gallons

TASK PERFORMANCE AIDS: OP 2104.003 Attachment E.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

The CRS directs: Determine the boric acid and DI water feed volumes required to raise the RWT from 92% to 95% and change boron concentration to 2725 ppm using OP 2104.003 Attachment E Step 3.0.

START TIME: _____

		PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1	Enter initial RWT level.	Entered 92% as initial RWT level.	N/A SAT UNSAT
	2	Calculate initial RWT volume as 466262 gallons	Calculated initial RWT volume and entered 466262 gals.	N/A SAT UNSAT
	3	Enter final RWT level.	Entered 95% as final RWT level.	N/A SAT UNSAT
	4	Calculate final RWT volume as 480626 gallons	Calculated final RWT volume and entered 480626 gals.	N/A SAT UNSAT
(C)	5	Determine total feed volume needed.	Calculated feed volume required to be added and entered 14364 gallons. Entered 14364 gallons \pm 100 gallons.	N/A SAT UNSAT
(C)	6	Calculate concentration of feed volume.	Calculated concentration of feed volume and entered 3536.5 ppm boron. Entered 3536.5 ppm boron \pm 25ppm boron.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

		PERFORMANCE CHECKLIST	STANDARD	(Circle One)
(C)	7	Calculate boric acid feed volume.	Calculate boric acid feed volume. Entered 8516 gal. Entered 8516 gal ± 100 gal.	N/A SAT UNSAT
(C)	8	Calculate DI water feed volume. Entered total feed volume – boric acid feed volume.	Calculated DI water feed volume and entered 5846 gals. Entered 5848 gals ± 100 gal.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER'S COPY****JPM INITIAL TASK CONDITIONS:**

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppm
- Final RWT level 95%
- Final RWT Concentration 2725 ppm
- 'A' BAMT concentration 5965 ppm

INITIATING CUE:

Determine the boric acid and DI water feed volumes required to raise the RWT from 92% to 95% and change boron concentration to 2725 ppm using OP 2104.003 Attachment E Step 3.0.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****JPM INITIAL TASK CONDITIONS:**

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppm
- Final RWT level 95%
- Final RWT Concentration 2725 ppm
- 'A' BAMT concentration 5965 ppm

INITIATING CUE:

Determine the boric acid and DI water feed volumes required to raise the RWT from 92% to 95% and change boron concentration to 2725 ppm using OP 2104.003 Attachment E Step 3.0.

ATTACHMENT E

RWT MAKEUP AND CONCENTRATION ADJUSTMENT

NOTE

Any procedure change that affects calculations used in this attachment also affects attachments generated by Computer Support Group (CSG). Coordinate with CSG to make appropriate changes to computer generated attachment prior to any procedure change implementation affecting calculations.

1.0 RWT INFORMATION

Bottom of RWT to overflow pipe	44 ft, 9 in
Height of level taps from bottom	2 ft, 4 in
Level transmitter range	42 ft, 5 in (509 in)
1 inch inside diameter	940.7 gal
1 foot inside diameter	11,288.3 gal
509 inches inside diameter	478,814 gal
1% indicated level	4788 gal
Volume below level tap	25,766 gal

~~2.0~~
N/A

RWT BORATION (CONCENTRATION ADJUSTMENT)

Vi = Initial RWT volume

Vi = (Initial level N/A % x 4788 gal/%) + 25,766 gal. = N/A gal

Ci = Initial RWT concentration = N/A ppm

Cf = Final desired RWT concentration = N/A ppm

CF = BAM Tank (2T-6A/B) concentration = N/A ppm

VF = BAM Tank (2T-6A/B) feed volume required.

$$VF = \frac{Vi \times (CF - Ci)}{CF - Cf} - Vi$$

$$VF = \frac{(\underline{N/A}) \times (\underline{N/A} - \underline{N/A})}{(\underline{N/A} - \underline{N/A})} - (\underline{N/A})$$

VF = N/A gals (Amount of boric acid of concentration CF to add)

3.0 RWT MAKEUP AND CONCENTRATION ADJUSTMENT

Vi = Initial RWT volume

$$Vi = (\text{Initial level } \underline{\hspace{2cm}} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \underline{\hspace{2cm}} \text{ gal}$$

Vf = Final RWT volume

Final desired RWT level = %

$$Vf = (\text{Final level } \underline{\hspace{2cm}} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \underline{\hspace{2cm}} \text{ gal}$$

$$\text{Feed Volume (F)} = \text{Final Volume (Vf)} - \text{Initial Volume (Vi)} = \underline{\hspace{2cm}} \text{ gal}$$

Ci = Initial RWT Boron concentration = ppm

Cf = Final desired RWT Boron concentration = ppm

CF = Concentration of feed solution

$$CF = \frac{(Vf \times Cf) - (Vi \times Ci)}{F}$$

$$CF = \frac{(\underline{\hspace{2cm}} \times \underline{\hspace{2cm}}) - (\underline{\hspace{2cm}} \times \underline{\hspace{2cm}})}{(\underline{\hspace{2cm}})}$$

CF = ppm Boron

If feed solution will be combination of Boric Acid and DI water:

F = Feed volume (see above)

VB = Volume of Boric Acid to add

VW = Volume of DI water to add

CB = Boron concentration of boric acid volume VB = ppm

$$VB = \frac{(F)(CF)}{(CB)} = \frac{(\underline{\hspace{2cm}})(\underline{\hspace{2cm}})}{(\underline{\hspace{2cm}})}$$

VB = gal (Amount of Boric Acid of concentration CB to add)

$$VW = F - VB = (\underline{\hspace{2cm}}) - (\underline{\hspace{2cm}})$$

VW = gal (Amount of water to add)

ATTACHMENT E

RWT MAKEUP AND CONCENTRATION ADJUSTMENT

NOTE

Any procedure change that affects calculations used in this attachment also affects attachments generated by Computer Support Group (CSG). Coordinate with CSG to make appropriate changes to computer generated attachment prior to any procedure change implementation affecting calculations.

1.0 RWT INFORMATION

Bottom of RWT to overflow pipe	44 ft, 9 in
Height of level taps from bottom	2 ft, 4 in
Level transmitter range	42 ft, 5 in (509 in)
1 inch inside diameter	940.7 gal
1 foot inside diameter	11,288.3 gal
509 inches inside diameter	478,814 gal
1% indicated level	4788 gal
Volume below level tap	25,766 gal

2.0 RWT BORATION (CONCENTRATION ADJUSTMENT)

Vi = Initial RWT volume

Vi = (Initial level N/A % x 4788 gal/%) + 25,766 gal. = N/A gal

Ci = Initial RWT concentration = N/A ppm

Cf = Final desired RWT concentration = N/A ppm

CF = BAM Tank (2T-6A/B) concentration = N/A ppm

VF = BAM Tank (2T-6A/B) feed volume required.

$$VF = \frac{Vi \times (CF - Ci)}{CF - Cf} - Vi$$

$$VF = \frac{(\underline{N/A}) \times (\underline{N/A} - \underline{N/A})}{(\underline{N/A} - \underline{N/A})} - (\underline{N/A})$$

VF = N/A gals (Amount of boric acid of concentration CF to add)

PROC./WORK PLAN NO. 2104.003	PROCEDURE/WORK PLAN TITLE: CHEMICAL ADDITION	PAGE: 43 of 110 CHANGE: 046
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ATTACHMENT E

PAGE 2 OF 2

3.0 RWT MAKEUP AND CONCENTRATION ADJUSTMENT

Vi = Initial RWT volume

$$Vi = (\text{Initial level } \underline{92} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \boxed{466262} \text{ gal}$$

Vf = Final RWT volume

$$\text{Final desired RWT level} = \underline{95} \%$$

$$Vf = (\text{Final level } \underline{95} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \boxed{480626} \text{ gal}$$

$$\text{Feed Volume (F)} = \text{Final Volume (Vf)} - \text{Initial Volume (Vi)} = \boxed{14364} \text{ gal}$$

$$Ci = \text{Initial RWT Boron concentration} = \underline{2700} \text{ ppm}$$

$$Cf = \text{Final desired RWT Boron concentration} = \underline{2725} \text{ ppm}$$

CF = Concentration of feed solution

$$CF = \frac{(Vf \times Cf) - (Vi \times Ci)}{F}$$

$$CF = \frac{(\underline{480626} \times \underline{2725}) - (\underline{466262} \times \underline{2700})}{(\underline{14364})}$$

$$CF = \boxed{3536.5} \text{ ppm Boron}$$

If feed solution will be combination of Boric Acid and DI water:

F = Feed volume (see above)

VB = Volume of Boric Acid to add

VW = Volume of DI water to add

$$CB = \text{Boron concentration of boric acid volume VB} = \underline{5965} \text{ ppm}$$

$$VB = \frac{(F)(CF)}{(CB)} = \frac{(\underline{14364})(\underline{3536.5})}{(\underline{5965})}$$

$$VB = \boxed{8516} \text{ gal (Amount of Boric Acid of concentration CB to add)}$$

$$VW = F - VB = (\underline{14364}) - (\underline{8516})$$

$$VW = \boxed{5848} \text{ gal (Amount of water to add)}$$

ANO-2-JPM-NRC-ADMIN-PDIL
ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 003 DATE: _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine limits for CEA positions using the COLR PDIL.

JTA#: ANO-2-RO-OPROC-NORM-62

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

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- The plant has been at 100% since January 1st of this year with CEAs at the program insertion limit.
- The following conditions were established on 8-1-09 at 12:00 which was 250 EFPD:
 - Plant power was lowered to 85% power due to 'A' Main Feedwater pump outage for bearing replacement.
 - Group P CEAs are full out.
 - Group 6 CEAs are being used for ASI control and are 90" withdrawn.
 - COLSS ASI is -.07.
 - #1 CEAC is inoperable for Surveillance testing.
 - #2 CEAC is operable.

TASK STANDARD: Determine that CEAs are inserted into the long term steady state insertion limits and that the 5 EFPD limit has not been exceeded.

TASK PERFORMANCE AIDS: OP-2102.004, Unit 2 Tech Specs, and Unit 2 COLR

ANO-2-JPM-NRC-ADMIN-PDIL
ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

It is now 8-3-09 at 02:00 (251.35 EFPD) and the SM/CRS directs "Using OP-2102.004A for the conditions stated above determine applicable CEA insertion limits (if any) and if any time limits for the current configuration have been exceeded."

START TIME: _____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Using OP-2102.004 determines that the COLR must be referenced to determine if any limits are applicable.	Examinee correctly derived OP-2102.004 that the COLR must be referenced to determine if any limits apply.	N/A SAT UNSAT
(C)	2. Using cycle 20 COLR figure 3 determines that Group 6 CEA's are inserted into the long term steady state insertion limit 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)	3. Using Tech Spec 3.1.3.6 or OP-2102.004 determines the limits for present CEA configuration.	Examinee determines that the current CEA configuration is limited to ≤ 5 EFPD per 30 EFPD and ≤ 14 EFPD per calendar year.	N/A SAT UNSAT
(C)	4. Using Tech Spec 3.1.3.6 or OP-2102.004 determines if any time limits have been exceed for LTSSIL.	Examinee determines that 1.35 EFPD is less than 5 EFPD and no limits have been exceeded.	N/A SAT UNSAT
END			

STOP TIME: _____

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant has been at 100% since January 1st of this year with CEAs at the program insertion limit.
- The following conditions were established on 8-1-09 at 12:00 which was 250 EFPD:
 - Plant power was lowered to 85% power due to 'A' Main Feedwater pump outage for bearing replacement.
 - Group P CEAs are full out.
 - Group 6 CEAs are being used for ASI control and are 90" withdrawn.
 - COLSS ASI is -.07.
 - #1 CEAC is inoperable for Surveillance testing.
 - #2 CEAC is operable.

INITIATING CUE:

It is now 8-3-09 at 02:00 (251.35 EFPD) and the SM/CRS directs "Using OP-2102.004A for the conditions stated above determine applicable CEA insertion limits (if any) and if any time limits for the current configuration have been exceeded."

Applicable CEA insertion limits (If any) CEA Group 6 Long Term Steady State Insertion Limits

Have any time limits for the current configuration been exceeded? YES / NO
Circle One

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant has been at 100% since January 1st of this year with CEAs at the program insertion limit.
- The following conditions were established on 8-1-09 at 12:00 which was 250 EFPD:
 - Plant power was lowered to 85% power due to 'A' Main Feedwater pump outage for bearing replacement.
 - Group P CEAs are full out.
 - Group 6 CEAs are being used for ASI control and are 90" withdrawn.
 - COLSS ASI is -.07.
 - #1 CEAC is inoperable for Surveillance testing.
 - #2 CEAC is operable.

INITIATING CUE:

It is now 8-3-09 at 02:00 (251.35 EFPD) and the SM/CRS directs "Using OP-2102.004A for the conditions stated above determine applicable CEA insertion limits (if any) and if any time limits for the current configuration have been exceeded."

Applicable CEA insertion limits (If any) _____

Have any time limits for the current configuration been exceeded? _____ YES / NO
Circle One

This form shall be completed once per shift when $\geq 20\%$ power with Group 6 or Group P CEAs inserted below LTSSIL per TS 3.1.3.6. Refer to TS 3.1.3.6 and COLR for description of CEA limits. Forward completed form to Reactor Engineering.

Time Between Long-Term Steady State Insertion Limit and Transient Insertion Limit:

LATEST OCCURRENCE			PREVIOUS OCCURRENCES	
ENTER LTSSIL (EFPD)	EXIT LTSSIL (EFPD)	TOTAL (EFPD)	LAST 30 EFPD	CALENDAR YEAR
ENTER LTSSIL (TIME/DATE)	EXIT LTSSIL (TIME/DATE)			

Total EFPD Last 30 EFPD = Latest Occurrence + Last 30 EFPD Previous Occurrences

Total EFPD Last 30 EFPD = _____ + _____ = _____ (≤ 5 EFPD)

Total EFPD Calendar Year = Latest Occurrence + Calendar Year Previous Occurrences

Total EFPD Calendar Year = _____ + _____ = _____ (≤ 14 EFPD)

Time Between Short-Term Steady State Insertion Limit and Transient Insertion Limit:

ENTER STSSIL (TIME/DATE)	EXIT STSSIL (TIME/DATE)	TOTAL TIME FOR 24 HR INTERVAL (≤ 4 hrs)

Performed By _____ Date _____

Supervisor _____ Date _____

Reactor Engineer _____ Date _____

form title: UNIT 2 CEA INSERTION LOG	form no. 2102.004 A	change no. 041
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This form shall be completed once per shift when $\geq 20\%$ power with Group 6 or Group P CEAs inserted below LTSSIL per TS 3.1.3.6. Refer to TS 3.1.3.6 and COLR for description of CEA limits. Forward completed form to Reactor Engineering.

Time Between Long-Term Steady State Insertion Limit and Transient Insertion Limit:

LATEST OCCURRENCE			PREVIOUS OCCURRENCES	
ENTER LTSSIL (EFPD)	EXIT LTSSIL (EFPD)	TOTAL (EFPD)	LAST 30 EFPD	CALENDAR YEAR
250	251.35	1.35	0	0
ENTER LTSSIL (TIME/DATE)	EXIT LTSSIL (TIME/DATE)			
8/1/09 12:00	8/3/09 0200			

Total EFPD Last 30 EFPD = Latest Occurrence + Last 30 EFPD Previous Occurrences

Total EFPD Last 30 EFPD = $1.35 + 0 = 1.35$ (≤ 5 EFPD)

Total EFPD Calendar Year = Latest Occurrence + Calendar Year Previous Occurrences

Total EFPD Calendar Year = $1.35 + 0 = 1.35$ (≤ 14 EFPD)

Time Between Short-Term Steady State Insertion Limit and Transient Insertion Limit:

ENTER STSSIL (TIME/DATE)	EXIT STSSIL (TIME/DATE)	TOTAL TIME FOR 24 HR INTERVAL (≤ 4 hrs)
N/A	N/A	N/A

Performed By Joe Reactor Date 8/3/09

Supervisor Main Man Date 8/3/09

Reactor Engineer Reactor Man Date 8/3/09

ANO-2-JPM-NRC-ADMIN-2P-35A Review
ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 DATE: _____

SYSTEM/DUTY AREA: Equipment Control

TASK: Identify Errors in a completed surveillance.

JTA#: ANO-2-RO-SPRAY-SURV-22

KA VALUE RO: 3.7 SRO: 4.1 KA REFERENCE: 2.2.12

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: 15 Minutes

REFERENCE(S): OP-2104.005 Supplement 1 completed form

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The Containment Spray System 2P-35A QUARTERLY TEST WITH SDC SECURED has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

TASK STANDARD: Review the marked up copy of the surveillance and find 4 of the 5 errors in the surveillance data and two of the five must be the Pump D/P is incorrect and the Axial Vibration is above its acceptable limits.

TASK PERFORMANCE AIDS: Marked up Copy of OP-2104.005 Supplement 1.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE: The Control Room Supervisor/Shift Manager directs a review of the completed surveillance data for Train "A" Containment Spray System. Circle and list any errors found if any.

START TIME: _____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Perform review of the surveillance procedure results.	Reviews the surveillance data provided.	N/A SAT UNSAT
(C)	2. Measured values for Pump D/P is incorrect – should be 213 psid.	Measured values for Pump D/P is incorrect – should be 213 psid.	N/A SAT UNSAT
	3. Pump D/P is out of the limiting range for operability and YES has been circled instead of NO.	Pump D/P is out of the limiting range for operability and YES has been circled instead of NO.	N/A SAT UNSAT
(C)	4. Measured value for Upper Motor Brg Axial Vibes is above the acceptable limits.	Measured value for Upper Motor Brg Axial Vibes is above the acceptable limits.	N/A SAT UNSAT
	5. Upper Motor Brg Axial Vibes is out of limiting range for operability and YES has been circled instead of NO.	Upper Motor Brg Axial Vibes is out of limiting range for operability and YES has been circled instead of NO.	N/A SAT UNSAT
	6. Either 2BS-1A is not marked as full open "OR" YES is circled and should have been NO or N/A.	Either 2BS-1A is not marked as full open "OR" YES is circled and should have been NO or N/A.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
(C)	7. Discover errors.	Identification of four of the five errors in the performance checklist items 2 through 6 are required AND two of the five must be the incorrect Pump D/P and the Axial Vibration above acceptable limits)	N/A SAT UNSAT
END			

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER'S COPY****JPM INITIAL TASK CONDITIONS:**

The Containment Spray System 2P-35A QUARTERLY TEST WITH SDC SECURED has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

INITIATING CUE:

The Control Room Supervisor/Shift Manager directs a review of the completed surveillance data for Train "A" Containment Spray System. Circle and list any errors found if any.

1. Measured values for Pump D/P is incorrect – should be 213 psid.
2. Pump D/P is out of the limiting range for operability and YES has been circled instead of NO.
3. Measured value for Upper Motor Brg Axial Vibes is above the acceptable limits.
4. Upper Motor Brg Axial Vibes is out of limiting range for operability and YES has been circled instead of NO.
5. Either 2BS-1A is not marked as full open "OR" YES is circled and should have been NO or N/A.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

The Containment Spray System 2P-35A QUARTERLY TEST WITH SDC SECURED has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

INITIATING CUE:

The Control Room Supervisor/Shift Manager directs a review of the completed surveillance data for Train "A" Containment Spray System. Circle and list any errors found if any.

PROC./WORK PLAN NO. 2104.005	PROCEDURE/WORK PLAN TITLE: CONTAINMENT SPRAY	PAGE: 70 of 106 CHANGE 56
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SUPPLEMENT 1

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-35A operation AND compare against limiting range of values for operability.

TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST.)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suction Pressure	2PI-5677 (local)	32.5 psig	N/A	> 6 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5678 (local)	245.5 psig	N/A	N/A	N/A
	2PI-5622 (2C17)	247.5 psig	N/A	N/A	N/A
Pump ΔP	2PI-5678 - 2PI-5677	215 psid	N/A	214 to 245.8 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO
Flow (1)	2FIS-5610 (2C17)	2430.00 gpm	N/A	≥ 2225 gpm	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-304	∅A <u>49</u> Amps ∅B <u>50</u> Amps ∅C <u>48</u> Amps	N/A	N/A	N/A
Upper Motor Brg Radial #1 (North) Vibes	VIB001	0.105 in/sec	≤ 0.155 in/sec	≤ 0.372 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Upper Motor Brg Radial #2 (West) Vibes	VIB001	0.135 in/sec	≤ 0.162 in/sec	≤ 0.390 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Upper Motor Brg Axial Vibes	VIB001	0.321 in/sec	≤ 0.107 in/sec	≤ 0.258 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
2BS-4A	N/A	√(√) if closed	N/A	Closed	<input checked="" type="radio"/> YES <input type="radio"/> NO
2BS-1A (2)	N/A	√() if Full Open per Component Engineer	N/A	Full Open per Component Engineer	<input checked="" type="radio"/> YES <input type="radio"/> NO N/A
2BS-1B Closure {4.3.4}	Initial P5058	34.5	N/A	N/A	N/A
	Final P5058	41.2	N/A	N/A	N/A
	Final - Initial	6.7	N/A	> 4 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO

{4.3.2}

- (1) ≥ 2225 gpm verifies partial stroke of 2BS-1A AND full stroke of 2BS-3A AND 2BS-4A
- (2) N/A if test not performed

Vibration Instrument Number VIB001 Cal Due Date 09/30/2009

Vibration Data Collected By Joe STA

FOR TRAINING PURPOSES ONLY

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-35A operation AND compare against limiting range of values for operability.

TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST.)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suction Pressure	2PI-5677 (local)	32.5 psig	N/A	> 6 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5678 (local)	245.5 psig	N/A	N/A	N/A
	2PI-5622 (2C17)	247.5 psig	N/A	N/A	N/A
Pump ΔP	2PI-5678 - 2PI-5677	* <input checked="" type="radio"/> 215 psid	N/A	214 to 245.8 psid	<input checked="" type="radio"/> YES <input checked="" type="radio"/> NO
Flow (1)	2FIS-5610 (2C17)	2430.00 gpm	N/A	≥ 2225 gpm	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-304	∅A <u>49</u> Amps	N/A	N/A	N/A
		∅B <u>50</u> Amps			
		∅C <u>48</u> Amps			
Upper Motor Brg Radial #1 (North) Vibes	VIB001	0.105 in/sec	≤ 0.155 in/sec	≤ 0.372 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Upper Motor Brg Radial #2 (West) Vibes	VIB001	0.135 in/sec	≤ 0.162 in/sec	≤ 0.390 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Upper Motor Brg Axial Vibes	VIB001	* <input checked="" type="radio"/> 0.321 in/sec	≤ 0.107 in/sec	≤ 0.258 in/sec	<input checked="" type="radio"/> YES <input checked="" type="radio"/> NO
2BS-4A	N/A	√(√) if closed	N/A	Closed	<input checked="" type="radio"/> YES <input type="radio"/> NO
2BS-1A (2)	N/A	<input checked="" type="radio"/> (1) √() if Full Open per Component Engineer	N/A	Full Open per Component Engineer	<input checked="" type="radio"/> YES <input type="radio"/> NO <input checked="" type="radio"/> (1) N/A
2BS-1B Closure {4.3.4}	Initial P5058	34.5	N/A	N/A	N/A
	Final P5058	41.2	N/A	N/A	N/A
	Final - Initial	6.7	N/A	> 4 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO

* Should be 213
245.5
- 32.5
213

** Should be NO

* Exceeds Limits

** Should be NO

{4.3.2}

(1) ≥ 2225 gpm verifies partial stroke of 2BS-1A AND full stroke of 2BS-3A AND 2BS-4A

(2) N/A if test not performed

Vibration Instrument Number VIB001 Cal Due Date 09/30/2009

Vibration Data Collected By Joe STA

FOR TRAINING PURPOSES ONLY

(1) Either 2BS-1A should be marked as Full open or YES is circled and should have been NO

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 003 DATE: _____

SYSTEM/DUTY AREA: Radiation Control

TASK: Review RWP and determine requirements for tagging 'B' LPSI pump.

JTA#: ANO-2-RO-ADMIN-NORM-62

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

APPROVED FOR ADMINISTRATION TO: RO: X SRO: X

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

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: Perform SIMULATOR: _____ LAB: Perform

POSITION EVALUATED: RO: _____ SRO: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 10 Minutes

REFERENCE(S): 2009-2002; RWP and survey form for 'B' HPSI pump room.

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 PLANT CONDITIONS**

1. 100% power steady state.
2. 'B' LPSI pump must be tagged out for repair of mechanical seal.

TASK STANDARD:

Using RWP and attached 'B' HPSI pump room survey map identify 8 of the 12 following requirements to control contamination:

1. All materials are required to be surveyed in a small articles monitor or hand frisked by RP (with RP Supervisor approval) PRIOR TO unconditional release from a Radiologically Controlled Area.
2. Prior to draining or venting any potentially contaminated system or known contaminated systems, notify RP.
Or
Notify RP when performing activities which could change plant radiological conditions. This includes venting/draining radioactive systems, performing degas or decay heat/shutdown cooling operations, or other non-routine system functions
3. Use non-porous mats or pads when kneeling, sitting or laying in contaminated areas.
4. All joints between Anti-C gloves and sleeves must be taped.
5. The 'B' LPSI area is a contamination area which requires a single set of anti-C's per the RWP.
6. Notify RP prior to reaching across Contamination Area boundaries.
7. Once gloves have made contact with any surface inside a Contamination Area boundary, the gloves are considered contaminated and must be removed PRIOR to crossing back into the clean area.
8. When venting or draining, monitor the rate of system drain to ensure the rate of drain does NOT exceed the capacity of the floor drain.
9. When using temporary hoses to vent or drain a radioactive system, ensure the hose is labeled for radioactive system use only. Contact RP to verify that radiological controls are adequate.
10. When work involves reaching across a Contamination Area boundary, and the only portion of the body that will make contact with a contaminated surface is the hands, THEN the use of cotton liners with rubber gloves or surgeon's gloves is permitted.
11. Upon exiting areas posted as "Contamination Area", perform a hand and foot frisk at the designated frisker location.
12. Access to the overhead >8 feet is allowed with provisions specified by RP. When accessing overheads, then wear rubber gloves while operating valves but remove them prior to descending the ladder.

TASK PERFORMANCE AIDS: RWP 2009-2002 and survey map.

SIMULATOR SETUP: N/A

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Initiating CUE:

The Shift Manager directs "Using the provided RWP, 2009-2002 and the survey map for 'B' HPSI room, determine only the radiological requirements to minimize the spread of contamination while hanging tags for maintenance on 'B' LPSI pump mechanical seal which will require draining the pump." (Highlight the requirements on the provided RWP)

START TIME: _____

PERFORMANCE CHECKLIST		STANDARD	CIRCLE ONE
NOTE: Provide RWP and survey sheet.			
1.	Review RWP.	Reviews attached RWP for requirements.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

(C)	2.	Identified 8 of 12 requirements listed in RWP 2009-2002 to minimize the spread of contamination.	<p>Using the survey map and RWP identified the following :</p> <ol style="list-style-type: none"> 1. All materials are required to be surveyed in a small articles monitor or hand frisked by RP (with RP Supervisor approval) PRIOR TO unconditional release from a Radiologically Controlled Area. 2. Prior to draining or venting any potentially contaminated system or known contaminated systems, notify RP. <p>Or</p> <p>Notify RP when performing activities which could change plant radiological conditions. This includes venting/draining radioactive systems, performing degas or decay heat/shutdown cooling operations, or other non-routine system functions</p> <ol style="list-style-type: none"> 3. Use non-porous mats or pads when kneeling, sitting or laying in contaminated areas. 4. All joints between Anti-C gloves and sleeves must be taped. 5. The 'B' LPSI area is a contamination area which requires a single set of anti-C's per the RWP. 6. Notify RP prior to reaching across Contamination Area boundaries. 7. Once gloves have made contact with any surface inside a Contamination Area boundary, the gloves are considered contaminated and must be removed PRIOR to crossing back into the clean area. 8. When venting or draining, monitor the rate of system drain to ensure the rate of drain does NOT exceed the capacity of the floor drain. 9. When using temporary hoses to vent or drain a radioactive system, ensure the hose is labeled for radioactive system use only. Contact RP to verify that radiological controls are adequate. 10. When work involves reaching across a Contamination Area boundary, and the only portion of the body that will make contact with a contaminated surface is the hands, THEN the use of cotton liners with rubber gloves or surgeon's gloves is permitted. 11. Upon exiting areas posted as "Contamination Area", perform a hand and foot frisk at the designated frisker location. 12. Access to the overhead >8 feet is allowed with provisions specified by RP. When accessing overheads, then wear rubber gloves while operating valves but remove them prior to descending the ladder. 	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER'S COPY****INITIAL PLANT CONDITIONS**

1. 100% power steady state.
2. 'B' LPSI pump must be tagged out for repair of mechanical seal.

Initiating CUE:

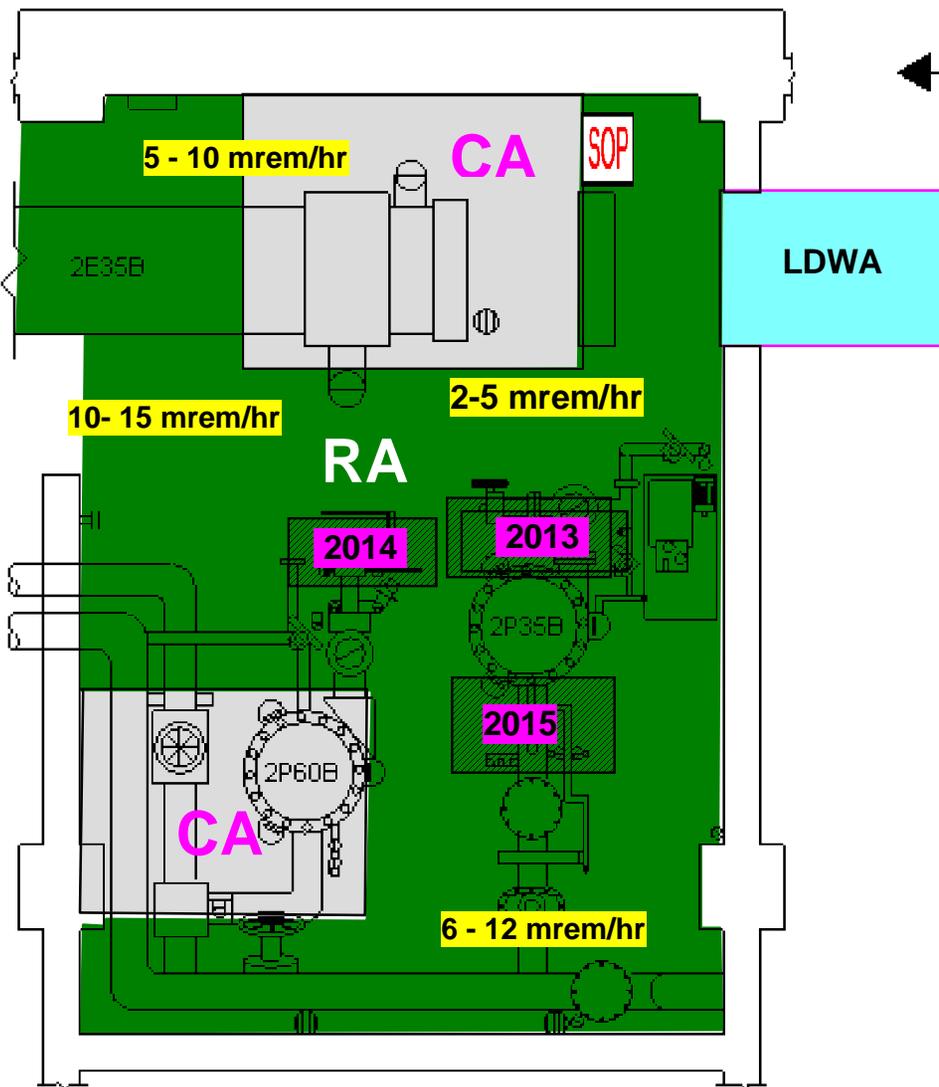
The Shift Manager directs "Using the provided RWP, 2009-2002 and the survey map for 'B' HPSI room, determine only the radiological requirements to minimize the spread of contamination while hanging tags for maintenance on 'B' LPSI pump mechanical seal which will require draining the pump." (Highlight the requirements on the provided RWP)

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****INITIAL PLANT CONDITIONS**

1. 100% power steady state.
2. 'B' LPSI pump must be tagged out for repair of mechanical seal.

Initiating CUE:

The Shift Manager directs "Using the provided RWP, 2009-2002 and the survey map for 'B' HPSI room, determine only the radiological requirements to minimize the spread of contamination while hanging tags for maintenance on 'B' LPSI pump mechanical seal which will require draining the pump." (Highlight the requirements on the provided RWP)



Radiation Area (RA)

High Radiation Area (HRA)

Locked High Radiation Area (LHRA)

Low Dose Waiting Area (LDWA)

RADS Telemetry Device
Dose Rates may change due to current conditions.

This map is for your information only. Contact a Radiation Protection Technician for answers to questions.



RADIOLOGICAL WORK PERMIT

RWP Title: OPERATIONS ACTIVITIES UNIT-2		RWP No.: 20092002 Rev. 00	
1.16 Task: REACTOR OPERATION + SURVEIL		*20092002*	
Comments:			
RWP Type: GENERAL	RWP Status: ACTIVE	Begin Date: 1/1/2009	Close On Date: 12/31/2009
Prepared By: LACY, RUSSELL S		Job Supervisor: Randall Walters	
ALARA ID:		Stay Time Alarm(hh:mm):	
Estimated Dose: 880 mrem	Estimated Hours: 20,512.00	Chirp Rate:	
Actual Dose: 66 mrem	Actual Hours: 3,563.88		
Locations			
Buildings	Elevations	Rooms	
LOW LEVEL RADWASTE BUILDING	354	NON-LOCKED HIGH RADIATION AREA	
OLD RADWASTE BUILDING	354	OUTSIDE CONTROLLED ACCESS	
OUTSIDE CONTROLLED ACCESS	ALL	OUTSIDE CONTROLLED ACCESS	
UNIT 2 AUXILIARY BUILDING	ALL	NON-LOCKED HIGH RADIATION AREA	
Radiological Conditions			
Description	Value	Unit	
Smear data is in dpm/100 cm2 unless otherwise noted.	<1-40K	DPM/100CM2	
General area gamma dose rates are in mrem/hour unless otherwise	<1-200	MILLIREM/HOUR	
Tasks			
Task	Description	Status	
1	OPERATIONS ACTIVITIES ANO-2	Active	
Requirements			
Requirement Groups	Requirement Descriptions		
N/A			
Additional Instructions			
Instructions 1:			
Instructions 2:			
Instructions 3:			
Approvals			
Approver Title	Name	Date	
ALARA REVIEW	NICKELS, THOMAS W	12/10/2008	
RWP PREPARER	NICKELS, THOMAS W	12/10/2008	
RP SUPERVISOR	MARVEL JR, STANLEY D	12/11/2008	
Attachments			
N/A			



RADIOLOGICAL WORK PERMIT

Task Number: 1		RWP No.: 20092002 Rev.: 00	
Task Description: OPERATIONS ACTIVITIES ANO-2		Task Status: Active	
1.16 Task: REACTOR OPERATION + SURVEIL			
ALARA ID:		Stay Time Alarm(hh:mm): 16:00	
Estimate Dose: 880.00		Estimate Hours: 20,512.00	Chirp Rate:
Hi-Rad: Yes	Hot Particle: No	Locked Hi-Rad: No	Hi-Contamination: No
Alarm Settings			
Low Gamma Dose (mrem)	Low Gamma Rate (mrem/hr)	High Gamma Dose (mrem)	High Gamma Rate (mrem/hr)
		20.00	200.00
Low Beta Dose	Low Beta Dose	High Beta Dose	High Beta Rate
Low Neutron Dose	Low Neutron Dose	High Neutron Dose	High Neutron Rate



RADIOLOGICAL WORK PERMIT

Task Number: 1		RWP No.: 20092002 Rev.: 00
Requirements		
Requirement Groups	Requirement Descriptions	
Contamination Control	All materials are required to be surveyed in a small articles monitor or hand frisked by RP (with RP Supervisor approval) PRIOR TO unconditional release from a Radiologically Controlled Area.	
	Prior to draining or venting any potentially contaminated system or known contaminated systems, notify RP.	
	Use non-porous mats or pads when kneeling, sitting or laying in contaminated areas.	
Dosimetry Requirements	A blue dot on your Dosimeter of Legal Record (DLR) is used to identify a hearing impairment with regards to Electronic Alarming Dosimeter (EAD). IF you are designated as having a hearing impairment, THEN you must have an alarm amplifying device	
	FOR WORK IN HIGH RADIATION AREAS- If your work conditions are in OR will cause hearing impairment (such as work in a high noise area, use of a communications headset, etc.) THEN the use of an EAD amplifying device (PAM) is required	
	If an EAD dose alarm occurs: Secure Work, Immediately leave the RCA, Notify RP.	
	If an EAD dose rate alarm occurs: Secure Work, Back out of the immediate area until the alarm clears, Notify others in your work crew, Immediately notify RP for further instructions.	
	Periodically check your EAD. This check should be performed more frequently in areas where your ability to hear is diminished.	
	Whole body DLR and EAD required for entry	
Exposure Reduction	Use Low Dose Waiting Areas whenever possible to minimize exposure.	
Protective Requirements	All joints between Anti-C gloves and sleeves must be taped.	
	Entry into Contamination Areas require Single Anti-Cs.	
	Entry into High Contamination Areas require Double Anti-Cs .	
	Notify RP prior to reaching across Contamination Area boundaries.	
	Once gloves have made contact with any surface inside a Contamination Area boundary, the gloves are considered contaminated and must be removed PRIOR to crossing back into the clean area	
	Operations personnel may reach across a Contamination Area boundary without gloves ONLY for the purpose of using a flashlight to illuminate an item or using a mirror to enhance the ability to inspect PROVIDED that nothing is touched.	
	When using temporary hoses to vent or drain a radioactive system, ensure the hose is labeled for radioactive system use only. Contact RP to verify that radiological controls are adequate.	
	When venting or draining, monitor the rate of system drain to ensure the rate of drain does NOT exceed the capacity of the floor drain.	
RP Coverage	When work involves reaching across a Contamination Area boundary, and the only portion of the body that will make contact with a contaminated surface is the hands, THEN the use of cotton liners with rubber gloves or surgeon's gloves is permitted.	
	A "Cat 3 Advanced Radworker" may enter posted High Radiation Areas IF he/she is using a gamma sensitive RP instrument to monitor dose rates. (NOTE: An EAD is NOT an appropriate survey instrument).	
	Initial / Intermittent RP coverage is required for entry in to High Radiation Areas.	
	Notify RP when performing activities which could change plant radiological conditions. This includes venting/draining radioactive systems, performing degas or decay heat/shutdown cooling operations, or other non-routine system functions	



RADIOLOGICAL WORK PERMIT

Task Number: 1	RWP No.: 20092002 Rev.: 00
	<p>Notify the Zone coverage RP or the on-duty shift RP of areas to be entered and work to be performed. RP is not required to be notified for entries to the Auxiliary Building to perform routine activities that do not involve HRA, CA, overhead entry or system breach.</p> <p>Tech Spec monitoring is required for entry into High Radiation Areas and is accomplished by meeting the following criteria: A radiological brief from RP, AND an electronic alarming dosimeter (EAD).</p>
Radiological Conditions	<p>Radiological conditions should be reviewed to ensure awareness of conditions in your work area. This information can be obtained from either a Status Board OR RP personnel</p> <p>Upon exit of an RCA, whole body monitoring is required utilizing a whole body contamination monitor. A whole body gamma monitor must also be cleared. IF the RCA is a satellite RCA with no whole body contamination monitor available, THEN the radworker should: a) perform a hand and foot frisk. b) IF the frisk indicates contamination is present, THEN contact RP. c) IF the frisk DOES NOT indicate the presence of contamination, THEN proceed to the nearest whole body contamination monitor</p> <p>Upon exiting areas posted as "Contamination Area" , perform a hand and foot frisk at the designated frisker location.</p>
Respiratory Protection	Based on historical and current data, the airborne radioactivity is less than 30 percent of a DAC. Respiratory protection is not required unless otherwise directed by RP Supervision.
Special Radiological Requirements	<p>Access to the overhead >8 feet is allowed with provisions specified by RP. When accessing overheads, then wear rubber gloves while operating valves but remove them prior to descending the ladder. Use a ladder to climb directly to the valve to be operated. DO NOT touch any interferences or components in the overhead without explicit permission by RP. Upon completion, perform a large area masslin survey of the ladder to determine if any cross contamination has occurred. Notify RP immediately if the ladder is contaminated. Use your survey meter to obtain dose rates of all areas entered.</p> <p>Access to the top of partial walls separating Radiation/High Radiation areas from Locked High Radiation Areas or Very High Radiation Areas is NOT permitted on this RWP.</p> <p>Prerequisites for a secondary resin transfer: A berm sufficient to contain the material being transferred is required. The resin transfer fill head is to be secured such that changes in pressure will not cause a spill. Pre-transfer walkdowns must be done to ensure that hose connections and leak integrity is satisfactory. A resin sample must be taken and analyzed. If the total activity to be transferred is less than 5.389E02 microcuries, no further review is required.</p>
Stop Work Criteria	<p>Work involving alpha contamination greater than or equal to 100 dpm/100cm² cannot be worked on a General RWP</p> <p>Work involving beta/gamma contamination greater than 5 mrad/hour/100cm² must have controls in place to eliminate the potential of creating an airborne radioactivity area or the potential to cause "clean area" contamination</p>
Additional Instructions	
Instructions 1:	
Instructions 2:	
Instructions 3:	



RADIOLOGICAL WORK PERMIT

Task Number: 1	RWP No.: 20092002 Rev.: 00
Attachments	
N/A	

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 DATE: _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Determine if COLR DNBR limit is being met during a loss of COLSS.

JTA#: ANO-2-SRO-EOPAOP-OFFNORM-233

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: 20 Minutes

REFERENCE(S): Unit 2 Tech Specs and Unit 2 COLR

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- The plant is at 85% power, Steady State due to 2P-1A Feedwater pump is out of service for maintenance.
- COLSS has been declared inoperable due to failed power supplies.
- All CPC channel DNBR readings are 2.35.
- The CPC average ASI is 0.0001.
- Both CEACs are operable.

TASK STANDARD: Determine that Technical Specifications LCO 3.2.4.c is applicable and ACTION b is required.

TASK PERFORMANCE AIDS: Unit 2 Tech Specs and Unit 2 COLR

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

Determine if any Tech Specs LCOs are applicable and/or actions that are required for this condition.

START TIME: _____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Using Tech Spec 3.2.4 determines that the COLR must be referenced to determine if TS are satisfied.	Examinee correctly derived from Tech Spec 3.2.4 that since COLSS is inoperable, the COLR graph must be referenced to determine if Tech Spec 3.2.4 is met.	N/A SAT UNSAT
(C)	2. Using cycle 20 COLR figure determines DNBR is not in the acceptable region for operation and that Tech Spec LCO 3.2.4.c should be entered.	Examinee correctly derived from graph based on given values that DNBR is not in the acceptable region of operation and determined that LCO 3.2.4.c is applicable for the current condition.	N/A SAT UNSAT
(C)	3. Using Tech 3.2.4 determine that DNBR must meet the requirements of T.S 3.2.4 action b	Examinee correctly determines the DNBR must be restored to meet the requirements of the COLR graph within 2 hours to comply with Tech Spec 3.2.4 action b.	N/A SAT UNSAT
EXAMINER's NOTE: Examinee may discuss the Tech Spec applicability at this point stating that Tech Spec 3.2.4 LCO requires power to be lowered so that DNBR is restored to the acceptable region within 2 hours.			
END			

STOP TIME: _____

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 85% power, Steady State due to 2P-1A Feedwater pump is out of service for maintenance.
- COLSS has been declared inoperable due to failed power supplies.
- All CPC channel DNBR readings are 2.35.
- The CPC average ASI is 0.0001.
- Both CEACs are operable.

INITIATING CUE:

Determine if any Tech Specs LCOs are applicable and/or actions that are required for this condition.

Applicable Tech Spec LCOs (if any)

T.S. LCO 3.2.4.c

Actions required to comply with Tech Specs (if any)

T.S. LCO 3.2.4. Action b

Tech Spec 3.2.4 LCO Action b requires power to be lowered so that DNBR is restored to the acceptable region within 2 hours.

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 85% power, Steady State due to 2P-1A Feedwater pump is out of service for maintenance.
- COLSS has been declared inoperable due to failed power supplies.
- All CPC channel DNBR readings are 2.35.
- The CPC average ASI is 0.0001.
- Both CEACs are operable.

INITIATING CUE:

Determine if any Tech Specs LCOs are applicable and/or actions that are required for this condition.

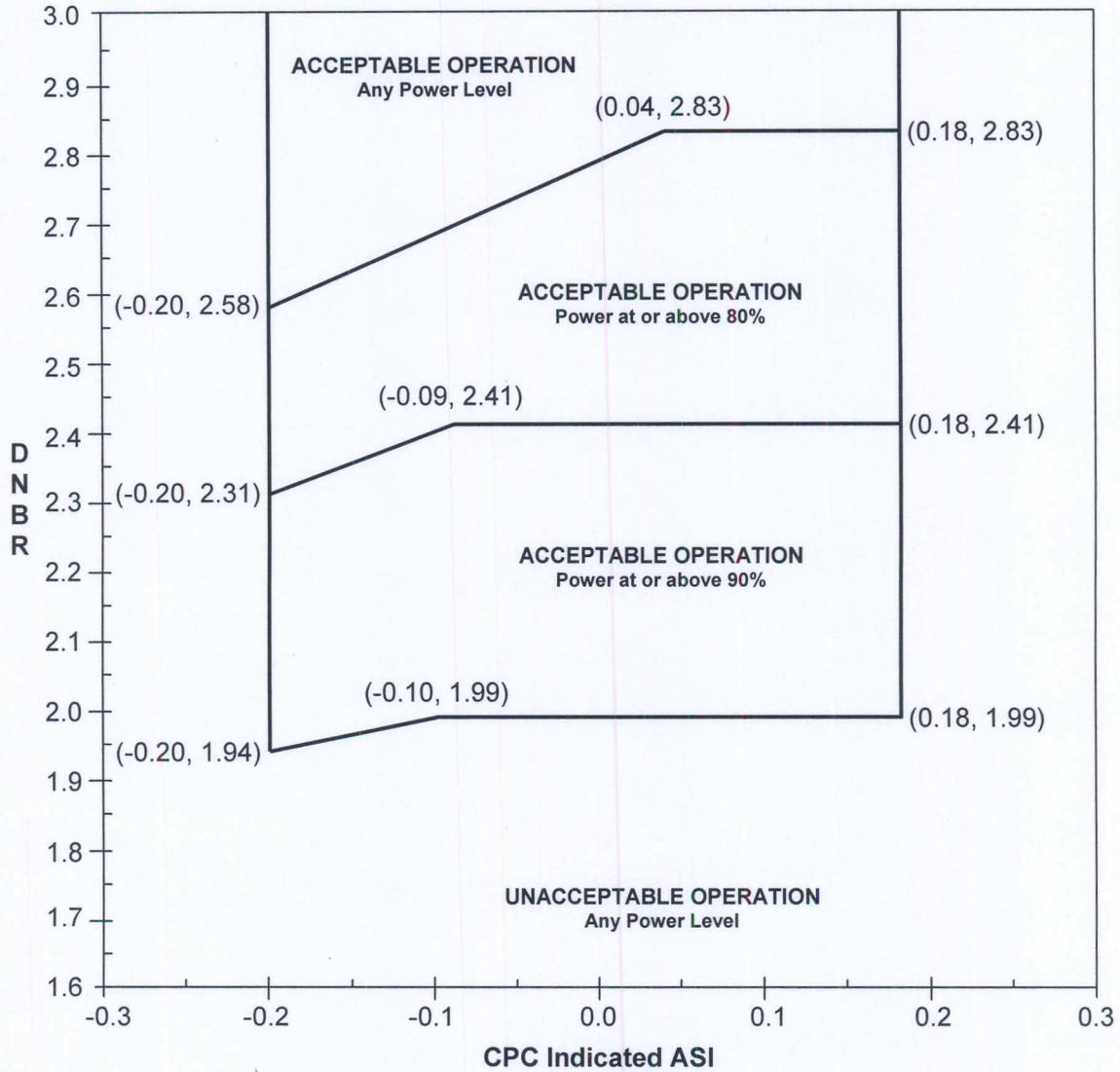
Applicable Tech Spec LCOs (if any) _____

Actions required to comply with Tech Specs (if any) _____

FIGURE 4

**DNBR MARGIN OPERATING LIMIT BASED
ON CORE PROTECTION CALCULATORS**

**ANO-2 Cycle Independent COLSS OOS Limit Lines
Minimum One CEAC Operable**



NOTE: DNBR greater than that indicated at the top of the figure is acceptable, provided the indicated ASI limits remain between the bounds that are shown for lower DNBR.

POWER DISTRIBUTION LIMITS

DNBR MARGIN

LIMITING CONDITION FOR OPERATION

- 3.2.4 The DNBR limit shall be maintained by one of the following methods:
- a. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR (when COLSS is in service, and at least one CEAC is operable); or
 - b. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR decreased by the value specified in the CORE OPERATING LIMITS REPORT (when COLSS is in service and neither CEAC is operable); or
 - c. Operating within the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT using any operable CPC channel (when COLSS is out of service and at least one CEAC is operable); or
 - d. Operating within the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT using any operable CPC channel (when COLSS is out of service and neither CEAC is operable).

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.

ACTION:

- a. With COLSS in service and the DNBR limit not being maintained as indicated by COLSS calculated core power exceeding the COLSS calculated core power operating limit based on DNBR, within 15 minutes initiate corrective action to reduce the DNBR to within the limits and either:
 1. Restore the DNBR to within its limits within 1 hour of the initiating event, or
 2. Reduce THERMAL POWER to less than or equal to 20% of RATED THERMAL POWER within the next 6 hours.
- b. With COLSS out of service and the DNBR limit not being maintained as indicated by operation outside the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT, either:
 1. Restore the DNBR to within its limits within 2 hours of the initiating event, or
 2. Reduce THERMAL POWER to less than or equal to 20% of RATED THERMAL POWER within the next 6 hours.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 001 DATE: _____

SYSTEM/DUTY AREA: Conduct of Operations

TASK: Review Spent Fuel Pool Makeup Calculation for Errors

JTA#: ANO-SRO-SRO-ADMIN-NORM-197

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

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 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 2104.006, Attachment F

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- Plant is at 100% power
- PMS computer is out of service
- Initial Spent Fuel Pool Level = 401' 0"
- Initial Spent Fuel pool Volume is 215,255 gallons
- Tilt Pit Gate is installed
- Cask Loading Pit Gate is installed
- 'A' BAM tank concentration is 5950 ppmb
- SFP boron concentration is 2964 ppmb
- Cask loading pit operations has lowered the SFP level
- CBOT has performed actions per OP 2104.006 step 10.3
- Final Spent Fuel Pool Level = 401' 4"

TASK STANDARD:

SRO applicants should identify the following:

- 1) Boron Concentration of the feed source should be 5950 NOT 4950. (C_B)
- 2) The Feed volume (F) calculated previously was transposed into the feed volumes calc as 1788 gallons not the 1878 gallons correctly calculated. Therefore both the calculated boric acid and DI water volumes are wrong.

And calculate the following correct feed volumes:

- 3) Boric acid volume calculated to be within 910 gallons to 960 gallons. (v_B)
- 4) Determine DI water volume to be within 918 gallons to 968 gallons. (v_w)

TASK PERFORMANCE AIDS:

OP 2104.006, Attachment F

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

Chemistry has just notified the Control Room that when SFP level is raised, we need to make a single feed solution using a combination of boric acid from the 'A' BAM tank and DI water maintaining SFP boron concentration 2964 PPM. The SM directs, "Review for accuracy and correct any errors in the completed OP 2104.006, Attachment F."

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
	1. Reviewed the completed form OP 2104.006, Attachment F.	Reviewed the completed form OP 2104.006, Attachment F.	N/A SAT UNSAT
	2. Determined the calculated volume of solution to be correct.	Calculated the feed volume to be added to the SFP, F, to be 1878 gallons.	N/A SAT UNSAT
(C)	3. Determined that the boron concentration of the feed source was in error.	Recognized the boron concentration of the feed source was recorded as 4950 ppm instead of the given value of 5950 ppm.	N/A SAT UNSAT
(C)	4. Determined the calculated volume of solution used in the calculation of the feed volumes of boric acid	Recognized that the feed volume (F) to be added to the SFP was recorded in error as 1788 gallons NOT the 1878 gallons calculated on the previous page.	N/A SAT UNSAT
Examiner's Note: the candidate may need to be prompted to calculate the volume of Boric acid and DI water.			
(C)	5. Determined the Boron volume to be added as calculated was in error and determined the correct volume to be 910 gallons to 960 gallons.	Recognized the Boron volume to be added as calculated was in error and determined the correct volume to be 935.5 gallons instead of the 1070.6 gallons.	N/A SAT UNSAT
(C)	6. Determined the DI water volume to be added as calculated was in error and determined the correct volume to be within 918 gallons to 968 gallons.	Recognized the DI water volume to be added as calculated was in error and determined the correct volume to be 942.5 gallons instead of 717.4 gallons.	N/A SAT UNSAT
END			

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- Plant is at 100% power
- PMS computer is out of service
- Initial Spent Fuel Pool Level = 401' 0"
- Initial Spent Fuel pool Volume is 215,255 gallons
- Tilt Pit Gate is installed
- Cask Loading Pit Gate is installed
- 'A' BAM tank concentration is 5950 ppmb
- SFP boron concentration is 2964 ppmb
- Cask loading pit operations has lowered the SFP level
- CBOT has performed actions per OP 2104.006 step 10.3
- Final Spent Fuel Pool Level = 401' 4"

INITIATING CUE:

Chemistry has just notified the Control Room that when SFP level is raised, we need to make a single feed solution using a combination of boric acid from the 'A' BAM tank and DI water maintaining SFP boron concentration 2964 PPM. The SM directs, "Review for accuracy and correct any errors in the completed OP 2104.006, Attachment F."

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- Plant is at 100% power
- PMS computer is out of service
- Initial Spent Fuel Pool Level = 401' 0"
- Initial Spent Fuel pool Volume is 215,255 gallons
- Tilt Pit Gate is installed
- Cask Loading Pit Gate is installed
- 'A' BAM tank concentration is 5950 ppmb
- SFP boron concentration is 2964 ppmb
- Cask loading pit operations has lowered the SFP level
- CBOT has performed actions per OP 2104.006 step 10.3
- Final Spent Fuel Pool Level = 401' 4"

INITIATING CUE:

Chemistry has just notified the Control Room that when SFP level is raised, we need to make a single feed solution using a combination of boric acid from the 'A' BAM tank and DI water maintaining SFP boron concentration 2964 PPM. The SM directs, "Review for accuracy and correct any errors in the completed OP 2104.006, Attachment F."

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 1 of 9 CHANGE:
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ATTACHMENT F

BORIC ACID CONCENTRATION ADJUSTMENT

VOLUME DATA REFERENCE

NOTE

If filling **Tilt Pit**, this attachment should only be used to estimate time needed to complete evolution because the Tilt Pit does NOT have installed level indication. Initial level is only estimated and can result in inaccurate calculation.

	<u>Gal/Ft.</u>	<u>Total Volume (Gal)</u>
CASK LOADING PIT (CLP)		
- Elev 358' to bottom of gate	722.4	13,726
- Bottom of gate to Elev 401'6"	795.6	19,493
FUEL TILT PIT (FTP)		
- Elev 362' to bottom of gate	1,196.8 (1)	17,952 (1)
- Bottom of gate to Elev 401'6"	1,275.3	31,244
SPENT FUEL POOL (SFP)		
- Elev 362' to top of racks	5,349.5 (2)	84,255 (2)
- Top of racks to Elev 401'6"	5,634.4	133,817

NOTES

1. Does NOT include volume occupied by tilt machine.
2. Does NOT include fuel. Includes ~ 600 ft³ allowance for fuel racks.

Fuel Pool Makeup Volume Calculation (N/A areas NOT hydraulically connected to SFP)

F = Feed Volume

L_I = Level Change (in inches)

$$F = \left[\frac{(L_I)(\text{SFP Level gal})(1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right] + \left[\frac{(L_I)(\text{CLP Level gal})(1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right] + \left[\frac{(L_I)(\text{FTP Level gal})(1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right]$$

$$F = \left[\frac{(4 \text{ in.})(5634.4 \text{ gal})}{12 \text{ in.}} \right] + \left[\frac{(N/A \text{ in.})(795.6 \text{ gal})}{12 \text{ in.}} \right] + \left[\frac{(N/A \text{ in.})(1275.3 \text{ gal})}{12 \text{ in.}} \right]$$

$$F = \underline{\underline{1878}} \text{ gallons}$$

Cask Loading Pit Makeup/Fill Volume Calculation (Gate installed, N/A elevation NOT filled)

F = Feed Volume

L_B = Level change (in feet) below bottom of gate

L_A = Level change (in feet) above bottom of gate

$$F = [(L_B)(\text{Volume below bottom of gate in gal/ft})] + [(L_A)(\text{Volume above bottom of gate in gal/ft})]$$

$$F = [(\underline{\underline{N/A}} \text{ ft.})(722.4 \text{ gal/ft})] + [(\underline{\underline{N/A}} \text{ ft.})(795.6 \text{ gal/ft})]$$

$$F = \underline{\underline{N/A}} \text{ gallons}$$

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 2 of 9 CHANGE:
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ATTACHMENT F

PAGE 2 of 4

Fuel Tilt Pit Makeup/Fill Volume Calculation (Gate installed, N/A elevation NOT filled)

F = Feed Volume

L_B = Level change (in feet) below bottom of gate

L_A = Level change (in feet) above bottom of gate

$F = [(L_B)(\text{Volume below bottom of gate in gal/ft})] + [(L_A)(\text{Volume above bottom of gate in gal/ft})]$

$F = [\underline{N/A} \text{ ft.}] (1196.8 \text{ gal/ft}) + [(\underline{N/A} \text{ ft.}) (1275.3 \text{ gal/ft})]$

F = N/A gallons

Required Feed Solution Concentration Calculation

C_I = Initial Fuel Pool Boron Concentration = 2964 ppm

C_F = Final Desired Boron Concentration = 2964 ppm

$C_W = \text{Feed Solution Concentration} = \frac{(V_F \times C_F) - (V_I \times C_I)}{F}$

$C_W = \frac{(\underline{217,133} \text{ gal} \times \underline{2964} \text{ ppm}) - (\underline{215255} \text{ gal} \times \underline{2964} \text{ ppm})}{(\underline{1878} \text{ gal})}$

C_W = 2964 ppm

IF Feed Solution will be a combination of Boric Acid and demineralized water,
THEN calculate feed volume as follows:

F = Feed Volume (from volume calculation)

V_B = Volume of Boric Acid to Add

V_W = Volume of DI Water to Add

C_B = Boron Concentration of feed source = 4950 ppm

Calculate Feed Volumes

$V_B = \frac{(F) \times (C_F)}{C_B} = \frac{(\underline{1788} \text{ gal}) \times (\underline{2964} \text{ ppm})}{(\underline{4950} \text{ ppm})}$

V_B = 1070.6 gal Amount of Boric Acid to add

V_W = F - V_B = (1788 gal) - (1070.6 gal)

V_W = 717.4 gal Amount of DI Water to add

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 3 of 9 CHANGE:
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ATTACHMENT F

IF Feed Solution will be a combination of two Boric Acid solutions,
THEN calculate feed volumes as follows:

- F = Feed Volume (from volume calculation)
- V_{B1} = Volume of 1st Boric Acid Solution to add
- V_{B2} = Volume of 2nd boric Acid Solution to add
- C_{B1} = Boron Concentration of 1st Boric Acid Solution = **N/A** ppm
- C_{B2} = Boron Concentration of 2nd Boric Acid Solution = **N/A** ppm
- C_F = Boron Concentration of Feed Volume (F) = **N/A** ppm

Calculate Feed Volumes

$$V_{B1} = \frac{F \times (C_F - C_{B2})}{(C_{B1} - C_{B2})}$$

$$V_{B1} = \left(\frac{\underline{\quad \mathbf{N/A} \quad} \text{ gal} \times \left(\underline{\quad \mathbf{N/A} \quad} \text{ ppm} - \underline{\quad \mathbf{N/A} \quad} \text{ ppm} \right)}{\left(\underline{\quad \mathbf{N/A} \quad} \text{ ppm} - \underline{\quad \mathbf{N/A} \quad} \text{ ppm} \right)} \right)$$

$$V_{B1} = \underline{\quad \mathbf{N/A} \quad} \text{ gal Volume of Boric Acid of Concentration } C_{B1} \text{ to add}$$

$$V_{B2} = F - V_{B1} = \left(\underline{\quad \mathbf{N/A} \quad} \text{ gal} \right) - \left(\underline{\quad \mathbf{N/A} \quad} \text{ gal} \right)$$

$$V_{B2} = \underline{\quad \mathbf{N/A} \quad} \text{ gal Volume of Boric Acid of Concentration } C_{B2} \text{ to add}$$

Definition of terms:

- I = Boron Concentration of Feed Solution desired
- V_B = Boric Acid Volume
- C_B = Boron Concentration of Boric Acid in BAM tank
- V_W = Demineralized Water Volume

To determine ratio of volumes of Demineralized Water and Boric Acid for makeup to maintain Specified Boron concentration:

$$\frac{V_W}{V_B} = \frac{C_B - C_F}{C_F} = \text{Ratio of demineralized water to Boric Acid to obtain desired feed concentration } C_F.$$

This ratio may be used to adjust the flowrate settings on Boric Acid Flow Controller (2FIC-4926) and RMW Flow Controller (2FIC-4927) to provide a Feed Solution of the desired concentration.

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 1 of 9 CHANGE:
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ATTACHMENT F

IF Feed solution boron concentration AND Feed volume is known,
THEN calculate Final Spent Fuel Pool boron concentration as follows:

Definition of Terms

CI = Initial Fuel Pool Boron Concentration

CW = Feed Solution Concentration

VF = Final Volume

VI = Initial Volume

F = Feed Volume

Final Concentration Calculation

$$CF = \text{Final Boron Concentration} = \frac{(CW \times F) + (VI \times CI)}{VF}$$

$$CF = (CW \underline{2964} \text{ ppm} \times F \underline{1788} \text{ gal}) + (VI \underline{215,255} \text{ gal} \times CI \underline{2964} \text{ ppm})$$

$$VF \underline{217,133} \text{ gal}$$

$$CF = \underline{2964} \text{ ppm}$$

Performed By Joe_Ro Date Today's Date

Supervisor _____ Date _____

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 1 of 9 CHANGE:
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ATTACHMENT F

BORIC ACID CONCENTRATION ADJUSTMENT

VOLUME DATA REFERENCE

NOTE

If filling **Tilt Pit**, this attachment should only be used to estimate time needed to complete evolution because the Tilt Pit does NOT have installed level indication. Initial level is only estimated and can result in inaccurate calculation.

	<u>Gal/Ft.</u>	<u>Total Volume (Gal)</u>
CASK LOADING PIT (CLP)		
- Elev 358' to bottom of gate	722.4	13,726
- Bottom of gate to Elev 401'6"	795.6	19,493
FUEL TILT PIT (FTP)		
- Elev 362' to bottom of gate	1,196.8 (1)	17,952 (1)
- Bottom of gate to Elev 401'6"	1,275.3	31,244
SPENT FUEL POOL (SFP)		
- Elev 362' to top of racks	5,349.5 (2)	84,255 (2)
- Top of racks to Elev 401'6"	5,634.4	133,817

NOTES

1. Does NOT include volume occupied by tilt machine.
2. Does NOT include fuel. Includes ~ 600 ft³ allowance for fuel racks.

Pool Makeup Volume Calculation (N/A areas NOT hydraulically connected to SFP)

F = Feed Volume

L_I = Level Change (in inches)

$$F = \left[\frac{(L_I) (\text{SFP Level gal}) (1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right] + \left[\frac{(L_I) (\text{CLP Level gal}) (1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right] + \left[\frac{(L_I) (\text{FTP Level gal}) (1 \text{ ft})}{(1 \text{ ft}) (12 \text{ in.})} \right]$$

$$F = \left[\frac{(4 \text{ in.}) (5634.4 \text{ gal})}{12 \text{ in.}} \right] + \left[\frac{(N/A \text{ in.}) (795.6 \text{ gal})}{12 \text{ in.}} \right] + \left[\frac{(N/A \text{ in.}) (1275.3 \text{ gal})}{12 \text{ in.}} \right]$$

$$F = \underline{1878} \text{ gallons}$$

Cask Loading Pit Makeup/Fill Volume Calculation (Gate installed, N/A elevation NOT filled)

F = Feed Volume

L_B = Level change (in feet) below bottom of gate

L_A = Level change (in feet) above bottom of gate

$$F = [(L_B) (\text{Volume below bottom of gate in gal/ft})] + [(L_A) (\text{Volume above bottom of gate in gal/ft})]$$

$$F = [\underline{N/A} \text{ ft.} (722.4 \text{ gal/ft})] + [\underline{N/A} \text{ ft.} (795.6 \text{ gal/ft})]$$

$$F = \underline{N/A} \text{ gallons}$$

ATTACHMENT F

PAGE 2 of 4

Fuel Tilt Pit Makeup/Fill Volume Calculation (Gate installed, N/A elevation NOT filled)

F = Feed Volume
 L_B = Level change (in feet) below bottom of gate
 L_A = Level change (in feet) above bottom of gate

$$F = [(L_B) (\text{Volume below bottom of gate in gal/ft})] + [(L_A) (\text{Volume above bottom of gate in gal/ft})]$$

$$F = [\underline{N/A} \text{ ft.} (1196.8 \text{ gal/ft})] + [(\underline{N/A} \text{ ft}) (1275.3 \text{ gal/ft})]$$

$$F = \underline{N/A} \text{ gallons}$$

Required Feed Solution Concentration Calculation

$$C_I = \text{Initial Fuel Pool Boron Concentration} = \underline{2964} \text{ ppm}$$

$$C_F = \text{Final Desired Boron Concentration} = \underline{2964} \text{ ppm}$$

$$C_W = \text{Feed Solution Concentration} = \frac{(V_F \times C_F) - (V_I \times C_I)}{F}$$

$$C_W = \frac{(\underline{217,133} \text{ gal} \times \underline{2964} \text{ ppm}) - (\underline{215255} \text{ gal} \times \underline{2964} \text{ ppm})}{(\underline{1878} \text{ gal})}$$

$$C_W = \underline{2964} \text{ ppm}$$

IF Feed Solution will be a combination of Boric Acid and demineralized water, THEN calculate feed volume as follows:

F = Feed Volume (from volume calculation)

V_B = Volume of Boric Acid to Add

V_W = Volume of DI Water to Add

$$C_B = \text{Boron Concentration of feed source} = \underline{4950} \text{ ppm} \quad 5950$$

Calculate Feed Volumes

$$V_B = \frac{(F) \times (C_F)}{C_B} = \frac{(\underline{1788} \text{ gal}) \times (\underline{2964} \text{ ppm})}{(\underline{4950} \text{ ppm})} \quad 5950$$

$$V_B = \underline{935.5} \text{ gal} \quad \underline{1070.6} \text{ gal} \quad \text{Amount of Boric Acid to add}$$

$$V_W = F - V_B = (\underline{1788} \text{ gal}) - (\underline{1070.6} \text{ gal}) \quad 935.5$$

$$V_W = \underline{942.5} \text{ gal} \quad \underline{717.4} \text{ gal} \quad \text{Amount of DI Water to add}$$

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 3 of 9 CHANGE:
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ATTACHMENT F

PAGE 3 of 4

IF Feed Solution will be a combination of two Boric Acid solutions,
THEN calculate feed volumes as follows:

- F = Feed Volume (from volume calculation)
- V_{B1} = Volume of 1st Boric Acid Solution to add
- V_{B2} = Volume of 2nd Boric Acid Solution to add
- C_{B1} = Boron Concentration of 1st Boric Acid Solution = N/A ppm
- C_{B2} = Boron Concentration of 2nd Boric Acid Solution = N/A ppm
- C_F = Boron Concentration of Feed Volume (F) = N/A ppm

Calculate Feed Volumes

$$V_{B1} = \frac{F \times (C_F - C_{B2})}{(C_{B1} - C_{B2})}$$

$$V_{B1} = \frac{(\text{N/A gal}) \times (\text{N/A ppm} - \text{N/A ppm})}{(\text{N/A ppm} - \text{N/A ppm})}$$

V_{B1} = N/A gal Volume of Boric Acid of Concentration C_{B1} to add

V_{B2} = F - V_{B1} = (N/A gal) - (N/A gal)

V_{B2} = N/A gal Volume of Boric Acid of Concentration C_{B2} to add

Definition of terms:

- I = Boron Concentration of Feed Solution desired
- V_B = Boric Acid Volume
- C_B = Boron Concentration of Boric Acid in BAM tank
- V_W = Demineralized Water Volume

To determine ratio of volumes of Demineralized Water and Boric Acid for makeup to maintain Specified Boron concentration:

$$\frac{V_W}{V_B} = \frac{C_B - C_F}{C_F} = \text{Ratio of demineralized water to Boric Acid to obtain desired feed concentration } C_F.$$

This ratio may be used to adjust the flowrate settings on Boric Acid Flow Controller (2FIC-4926) and RMW Flow Controller (2FIC-4927) to provide a Feed Solution of the desired concentration.

PROC./WORK PLAN NO. 2104.006	PROCEDURE/WORK PLAN TITLE: FUEL POOL SYSTEMS	PAGE: 1 of 9 CHANGE:
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ATTACHMENT F

IF Feed solution boron concentration AND Feed volume is known,
THEN calculate Final Spent Fuel Pool boron concentration as follows:

Definition of Terms

- CI = Initial Fuel Pool Boron Concentration
- CW = Feed Solution Concentration
- VF = Final Volume
- VI = Initial Volume
- F = Feed Volume

Final Concentration Calculation

$$CF = \text{Final Boron Concentration} = \frac{(CW \times F) + (VI \times CI)}{VF}$$

$$CF = (CW \text{ 2964 ppm} \times F \text{ 1788 gal}) + (VI \text{ 215,255 gal} \times CI \text{ 2964 ppm})$$

$$VF \text{ 217,133 gal}$$

$$CF = \text{2964 ppm}$$

Performed By Joe_Ro Date Today's Date

Supervisor _____ Date _____

ANO-2-JPM-NRC-ADMIN MSSVINOP
ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 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: 3.4 SRO: 4.7 KA REFERENCE: 2.2.40

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 Spec 3.7.1.1

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- The plant is at 95% power, 440 EFPD, Steady State
- MSSV testing is in progress
- One MSSV, 2PSV-1054 has been declared inoperable
- The value for MTC provide by Reactor Engineering for 440 EFPD is $-2.6 \text{ E-04 } \Delta k/k/^{\circ}\text{F}$

TASK STANDARD: Determine the maximum High Linear Power Level and RPS trip set point to be 91.0% to comply with Technical Specification 3.7.1.1.

TASK PERFORMANCE AIDS: Unit 2 Tech Specs

ANO-2-JPM-NRC-ADMIN MSSVINOP
ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:

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

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Using Tech Spec 3.7.1 Table 3.7-1 determines new maximum power and RPS linear power trip set point to be ≤79%.	Examinee correctly derived from table based on 1 MSSV inoperable, the maximum allowable linear power level and RPS trip setpoint to be 79%.	N/A SAT UNSAT
(C)	2. Using Tech Spec 3.7.1 figure 3.7-1 determines new maximum power and RPS linear power trip set point to be ≤91%.	Examinee correctly derived from graph based on MTC of $-2.6 \text{ E-}04 \Delta k/k/^{\circ}\text{F}$ and knowing that one MSSV is inoperable determined that maximum power and RPS linear power trip set point should be 91.0%.	N/A SAT UNSAT
<p>EXAMINER's NOTE: Examinee should discuss the Tech Spec applicability at this point stating that Tech Spec 3.7.1.1 LCO allows power operations to continue provided that within 4 hours power is reduced to the maximum power of 79% or as allowed by figure 3.7-1 (91%) and within 12 hours, the RPS trip set point adjusted to be less than the value of 79% or as allowed in figure 3.7-1 (91%).</p>			
END			

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 95% power, 440 EFPD, Steady State
- MSSV testing is in progress
- One MSSV, 2PSV-1054 has been declared inoperable
- The value for MTC provide by Reactor Engineering for 440 EFPD is $-2.6 \text{ E-04 } \Delta k/k/^{\circ}\text{F}$

INITIATING CUE:

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

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 95% power, 440 EFPD, Steady State
- MSSV testing is in progress
- One MSSV, 2PSV-1054 has been declared inoperable
- The value for MTC provide by Reactor Engineering for 440 EFPD is $-2.6 \text{ E-}04 \Delta k/k/^{\circ}\text{F}$

INITIATING CUE:

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

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.1 All main steam line code safety valves shall be OPERABLE with lift settings as specified in Table 3.7-5.

APPLICABILITY: MODES 1, 2 and 3*

ACTION:

MODES 1 and 2

With one or more main steam line code safety valves inoperable, operation in MODES 1 and 2 may proceed provided that within 4 hours, power is reduced to less than or equal to the applicable percent of RATED THERMAL POWER as listed in Table 3.7-1 and within 12 hours, the Linear Power Level – High trip setpoint is reduced per Table 3.7-1; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.

MODE 3

With one or more main steam line code safety valves inoperable, operation in MODE 3 may proceed provided that at least 2 main steam line code safety valves are OPERABLE on each steam generator; otherwise, be in at least HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.1 No additional Surveillance Requirements other than those required by the Inservice Testing Program.

* Except that during hydrostatic testing in Mode 3, eight of the main steam line code safety valves may be gagged and two (one on each header) may be reset for the duration of the test to allow the required pressure for the test to be attained. The Reactor Trip Breakers shall be open for the duration of the test.

TABLE 3.7-1

MAXIMUM ALLOWABLE LINEAR POWER LEVEL AND HIGH TRIP SETPOINT WITH INOPERABLE
STEAM LINE SAFETY VALVES DURING OPERATION WITH BOTH STEAM GENERATORS

<u>Number of Inoperable Safety Valves</u>	<u>Maximum Allowable Linear Power Level And High Trip Setpoint (Percent of RATED THERMAL POWER)</u>
1 Valve Inoperable	79% (except as allowed by Figure 3.7-1)
1 Valve Inoperable on Each Header	71% (except as allowed by Figure 3.7-1)
Maximum of 2 Valves Inoperable on Each Header	43.0
Maximum of 3 Valves Inoperable on Each Header	25.0

FIGURE 3.7-1

Maximum High Linear Power Level And Trip Setpoint Versus MTC

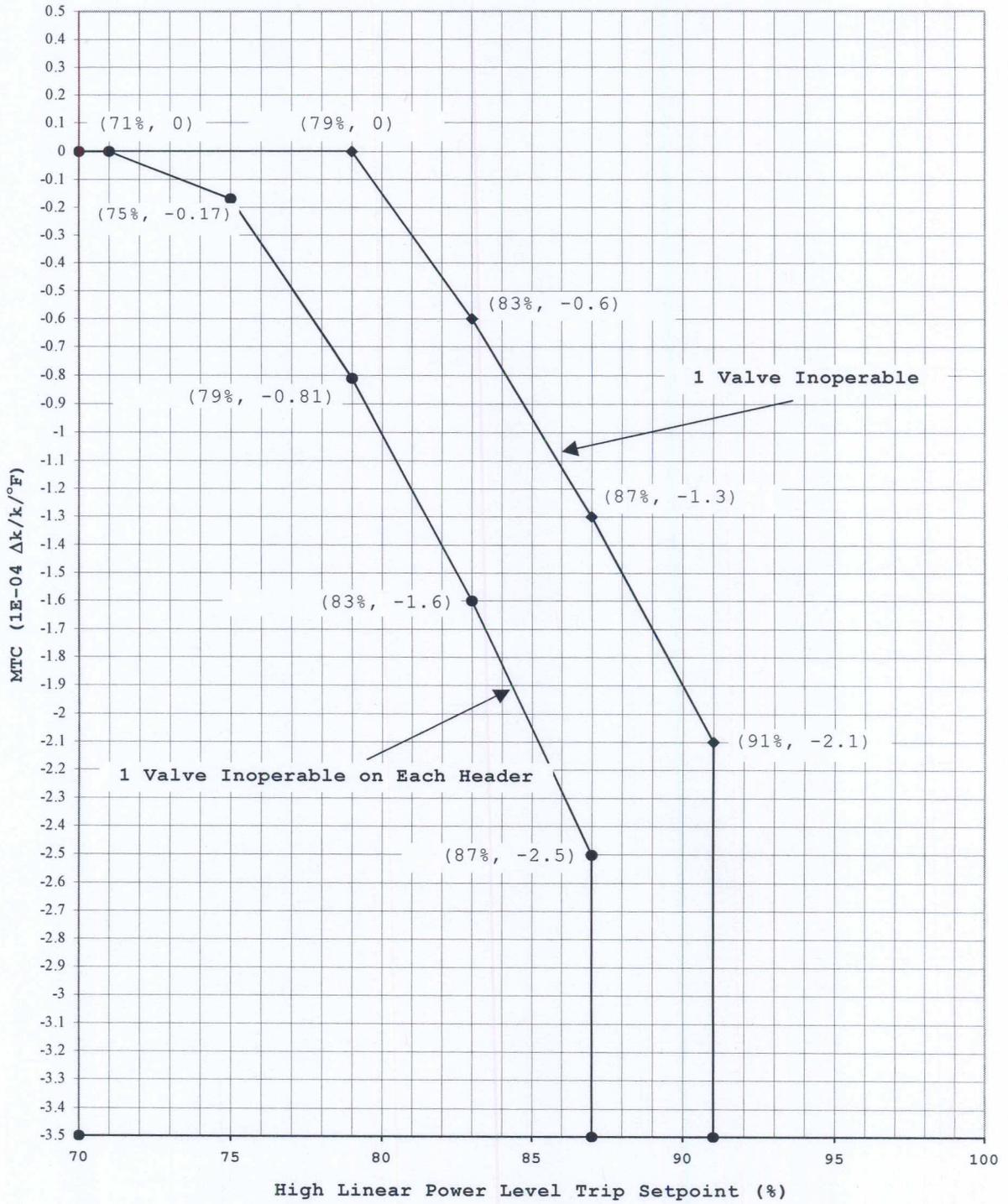


TABLE 3.7-5

STEAM LINE SAFETY VALVES

<u>VALVE NUMBER</u>		<u>LIFT SETTING ($\pm 3\%$) *</u>
<u>Line No. 1</u>	<u>Line No. 2</u>	
a. 2PSV-1002	2PSV-1052	1078 psig
b. 2PSV-1003	2PSV-1053	1105 psig
c. 2PSV-1004	2PSV-1054	1105 psig
d. 2PSV-1005	2PSV-1055	1132 psig
e. 2PSV-1006	2PSV-1056	1132 psig

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. If found outside of a $\pm 1\%$ tolerance band, the setting shall be adjusted to within $\pm 1\%$ of the lift setting shown.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 DATE: _____

SYSTEM/DUTY AREA: Radiation Controls (A.3)

TASK: Approve administration of Potassium Iodide.

JTA#: ANO-SRO-EPLAN-EMERG-292

KA VALUE RO: 3.4 SRO: 3.8 KA REFERENCE: 2.3.14

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: 20 Minutes

REFERENCE(S): 1903.035, Administration of Potassium Iodide

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- The plant is tripped from 100% power
- 300 gpm LOCA in progress
- Loss of Offsite power is in progress
- LOCA EOP is being implemented
- RDACS indicates an off site release in progress
- Data indicates I-131 concentration of 5.0 E-04 μ ci/cc in area of work in Upper South Piping Penetration room
- Whole body dose rates in area of work are 1Rem/hr
- General Emergency has just been declared
- Joe Mechanic has completed 1903.035C form, ANO Medical Questionnaire-Iodine Sensitivity
- RP estimates that it will take approximately 15 minutes to complete emergency actions and stop the release and all RP required controls/authorizations are complete
- Air Purifying Respirator with Iodine Canister having a protection factor of 1.0 will be used in place of a SCBA due to piping interference
- EOF, OSC and TSC have NOT been staffed

TASK STANDARD: Determine that KI should be administered.

TASK PERFORMANCE AIDS: OP 1903.0035, Potassium Iodide Administration, completed form 1903.035C, ANO Medical Questionnaire-Iodine Sensitivity and 1903.035A, Potassium Iodide Administration.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

Determine the need to issue KI, Potassium Iodide, and complete necessary paperwork using OP 1903.035.

START TIME: _____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Review OP 1903.035, Administration of Potassium Iodide to determine criteria for administering KI.	Examinee determined the criteria for administration of KI is 25 REM exposure to Thyroid committed dose equivalent or if concentration is unknown, the possibility exists for receiving large amounts of radioactive airborne iodine.	N/A SAT UNSAT
(C)	2. Using graph on 1903.035 Attachment 1 and information provided in initial conditions, determine that Joe Mechanic will exceed 25 REM during the maintenance evolution.	Determined that expected exposure will exceed 25 REM threshold.	N/A SAT UNSAT
(C)	3. Determine that Joe Mechanic is not sensitive to nor experienced an allergic reaction to Iodide.	Reviewed 1903.035C form and determined that Joe Mechanic was not sensitive to nor experienced an allergic reaction to Iodide.	N/A SAT UNSAT
	4. Partially complete form 1903.035A.	Partially complete parts of form 1903.035A, Potassium Iodide Administration, from initial conditions: <ul style="list-style-type: none"> • Estimated Thyroid dose commitment. • Date. • Respiratory protection. 	N/A SAT UNSAT
END			

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER'S COPY****JPM INITIAL TASK CONDITIONS:**

- The plant is tripped from 100% power
- 300 gpm LOCA in progress
- Loss of Offsite power is in progress
- LOCA EOP is being implemented
- RDACS indicates an off site release in progress
- Data indicates I-131 concentration of $5.0 \text{ E-}04 \mu \text{ ci/cc}$ in area of work in Upper South Piping Penetration room
- Whole body dose rates in area of work are 1Rem/hr
- General Emergency has just been declared
- Joe Mechanic has completed 1903.035C form, ANO Medical Questionnaire-Iodine Sensitivity
- RP estimates that it will take approximately 15 minutes to complete emergency actions and stop the release and all RP required controls/authorizations are complete
- Air Purifying Respirator with Iodine Canister having a protection factor of 1.0 will be used in place of a SCBA due to piping interference
- EOF, OSC and TSC have NOT been staffed

INITIATING CUE:

Determine the need to issue KI, Potassium Iodide, and complete necessary paperwork using OP 1903.035.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****JPM INITIAL TASK CONDITIONS:**

- The plant is tripped from 100% power
- 300 gpm LOCA in progress
- Loss of Offsite power is in progress
- LOCA EOP is being implemented
- RDACS indicates an off site release in progress
- Data indicates I-131 concentration of $5.0 \text{ E-}04 \mu \text{ ci/cc}$ in area of work in Upper South Piping Penetration room
- Whole body dose rates in area of work are 1Rem/hr
- General Emergency has just been declared
- Joe Mechanic has completed 1903.035C form, ANO Medical Questionnaire-Iodine Sensitivity
- RP estimates that it will take approximately 15 minutes to complete emergency actions and stop the release and all RP required controls/authorizations are complete
- Air Purifying Respirator with Iodine Canister having a protection factor of 1.0 will be used in place of a SCBA due to piping interference
- EOF, OSC and TSC have NOT been staffed

INITIATING CUE:

Determine the need to issue KI, Potassium Iodide, and complete necessary paperwork using OP 1903.035.

MEDICAL QUESTIONNAIRE: IODINE SENSITIVITY

Name: Mechanic, Joe, Robert SS No: 431-00-0002
LAST FIRST MIDDLE

Badge Number: 2572 Company: ENTERGY Dept: Mech Maint.

Please answer the following questions. Mark the appropriate box.

- | <u>NO.</u> | <u>QUESTION</u> | | |
|------------|---|------------------------------|--|
| 1. | When eating seafood or shellfish, do you suffer from symptoms of stomach or bowel upset or skin eruption? If so, explain below. | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 2. | Has any physician told you that you have sensitivity to iodine? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 3. | Have you ever had a gallbladder dye test, kidney x-ray requiring dye injection or a thyroid isotope scan? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| | If so, any reactions? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Please explain any yes answers: _____

Signature: Joe Robert Mechanic Date: 8-13-2009

FORM TITLE: ANO MEDICAL QUESTIONNAIRE-IODINE SENSITIVITY	CHANGE: 1903.035C	REV. 008
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Potassium Iodide (KI) Administration Form

Name of Exposed Individual: _____
Last First Middle

Social Security Number: _____ Badge Number: _____

Duration of Exposure: _____ I-131 Concentration: _____
Minutes μCi/cc in air

Estimated Thyroid Dose Commitment: < 25 Rem ≥ 25 Rem
 Unknown, large exposure possible

Date of Exposure: _____

Respiratory Protection Worn During Exposure: Yes No

Respirator Protection Factor: _____

Known Iodide Allergy/Previous Allergic Reaction to iodide: Yes No

CAUTION
 If the above box is checked yes, then do not administer KI.

I verify that I have read and understand the precaution leaflet and I understand that taking thyroid blocking agent (KI) is strictly voluntary.

I choose do not choose to take KI.

 Signature of Exposed Individual Date

Approved: _____
 Shift Manager/EOF Director/TSC Director Date
 Check if approval is via telecom.

KI Issued By: _____
Signature Date

Notes: _____

FORM TITLE: POTASSIUM IODIDE ADMINISTRATION	CHANGE:. 1903.035A	REV. 008
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Potassium Iodide (KI) Administration Form

Name of Exposed Individual: Mechanic , Joe , Robert
Last First Middle

Social Security Number: 431-00-0002 Badge Number: 2572

Duration of Exposure: 15 Minutes I-131 Concentration: 5.0 E-04 $\mu\text{Ci/cc}$ in air

Estimated Thyroid Dose Commitment: < 25 Rem \geq 25 Rem
 Unknown, large exposure possible

Date of Exposure: 8-13-2009

Respiratory Protection Worn During Exposure: Yes No

Respirator Protection Factor: 1.0

Known Iodide Allergy/Previous Allergic Reaction to iodide: Yes No

CAUTION
If the above box is checked yes, then do not administer KI.

I verify that I have read and understand the precaution leaflet and I understand that taking thyroid blocking agent (KI) is strictly voluntary.

I choose do not choose to take KI.

Signature of Exposed Individual Date

Approved: _____ Date
Shift Manager/EOF Director/TSC Director
 Check if approval is via telecom.

KI Issued By: _____ Date
Signature

Notes: _____

FORM TITLE: POTASSIUM IODIDE ADMINISTRATION	CHANGE:. 1903.035A	REV. 008
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THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: (Time Critical JPM)

- Unit 2 has experienced a LOCA
- A General Emergency has been declared and an Alert was previously declared
- Unit 2 had been at full power for 215 days
- Containment Building Pressure is 28 psia
- Containment Radiation Monitors 2RY-8925-1 and 2RY-8925-2 both read 1092 R/hr
- The reactor has been subcritical for 30 minutes
- Off site dose estimates are projected to be 1200 mRem TEDE and 4800 mRem Child Thyroid
- RDACS projects EPA Protective Action Guidelines will be exceeded in zones G and K
- Wind direction is from 190
- There are no known impediments to evacuation

TASK STANDARD: (Time Critical 5 minutes for reading conditions 15 minutes for determining protective action recommendations)

- A PAR 1 was declared
- A PAR 2 was declared
- Recommend evacuating Zones G H K M N O P R U
- Recommend zones I J L Q S T to go indoors and listen to the emergency broadcast for this event or remainder of the 10 mile EPZ to go indoors and listen to the Emergency Broadcasts for this event

TASK PERFORMANCE AIDS: 1903.011; Attachment 6

INITIATING CUE:

The Shift Manager directs

1. Determine the appropriate PAR for the given conditions.
2. Determine the zones to be recommended for evacuation/sheltering to the State Health Department for the given conditions.
3. Determine the zones to be recommended to go indoors to the State Health Department for the given conditions.

START TIME: _____

EXAMINER'S NOTE:				
Inform applicants that they have five (5) minutes to read the plant conditions then the JPM becomes time critical.				
PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1. (flowchart)	Determine the correct PAR for the given conditions	Using 1903.011 Attachments 6, PAR 1 and 2 were determined.	N/A SAT UNSAT
(C)	2. (PAR1 Table)	Determine the zones that should be recommended for evacuation to the State Health Department.	Using 1903.011 Attachment 6 Recommend evacuating Zones G, H, K, M, N, O, P, R, and U.	N/A SAT UNSAT
(C)	3. (PAR1 Table)	Determine the zones that should be recommended to go indoors to the State health Department. <u>POSITIVE CUE:</u> None	Recommend zones I, J, L, Q, S, and T to go indoors and listen to the emergency broadcasts for this event. OR recommends remainder of the 10 mile EPZ to go indoors and listen to the Emergency Broadcasts	N/A SAT UNSAT
(C)	4.	JPM complete in 15 minutes.	JPM complete in 15 minutes with 5 minutes to read conditions.	N/A SAT UNSAT
END				

STOP TIME: _____

Examiner's Copy

This is a time critical JPM

Initial Conditions:

- Unit 2 has experienced a LOCA
- A General Emergency has been declared and an Alert was previously declared
- Unit 2 had been at full power for 215 days
- Containment Building Pressure is 28 psia
- Containment Radiation Monitors 2RY-8925-1 and 2RY-8925-2 both read 1092 R/hr
- The reactor has been subcritical for 30 minutes
- Off site dose estimates are projected to be 1200 mRem TEDE and 4800 mRem Child Thyroid
- RDACS projects EPA Protective Action Guidelines will be exceeded in zones G and K
- Wind direction is from 190
- There are no known impediments to evacuation

INITIATING CUE:

The Shift Manager directs:

1. Determine the appropriate PAR for the given conditions.
2. Determine the zones to be recommended for evacuation/sheltering to the State Health Department for the given conditions.
3. Determine the zones to be recommended to go indoors to the State Health Department for the given conditions.

Write Answer below:

- | | |
|---|--|
| 1) PAR(s) declared | <ul style="list-style-type: none"> • A PAR 1 was declared • A PAR 2 was declared <hr/> |
| 2. Zones to be evacuated or sheltered (specify) | <ul style="list-style-type: none"> • Recommend evacuating Zones G H K M N O P R U <hr/> |
| 3) Zones to go indoors | <ul style="list-style-type: none"> • Recommend zones I J L Q S T to go indoors and listen to the emergency broadcast for this event or remainder of the 10 mile EPZ to go indoors and listen to the Emergency Broadcasts for this event <hr/> |

Examinee's Copy

This is a time critical JPM

Initial Conditions:

- Unit 2 has experienced a LOCA
- A General Emergency has been declared and an Alert was previously declared
- Unit 2 had been at full power for 215 days
- Containment Building Pressure is 28 psia
- Containment Radiation Monitors 2RY-8925-1 and 2RY-8925-2 both read 1092 R/hr
- The reactor has been subcritical for 30 minutes
- Off site dose estimates are projected to be 1200 mRem TEDE and 4800 mRem Child Thyroid
- RDACS projects EPA Protective Action Guidelines will be exceeded in zones G and K
- Wind direction is from 190
- There are no known impediments to evacuation

INITIATING CUE:

The Shift Manager directs:

1. Determine the appropriate PAR for the given conditions.
2. Determine the zones to be recommended for evacuation/sheltering to the State Health Department for the given conditions.
3. Determine the zones to be recommended to go indoors to the State Health Department for the given conditions.

Write Answer below:

1. PAR(s) declared

2. Zones to be evacuated or sheltered (specify)

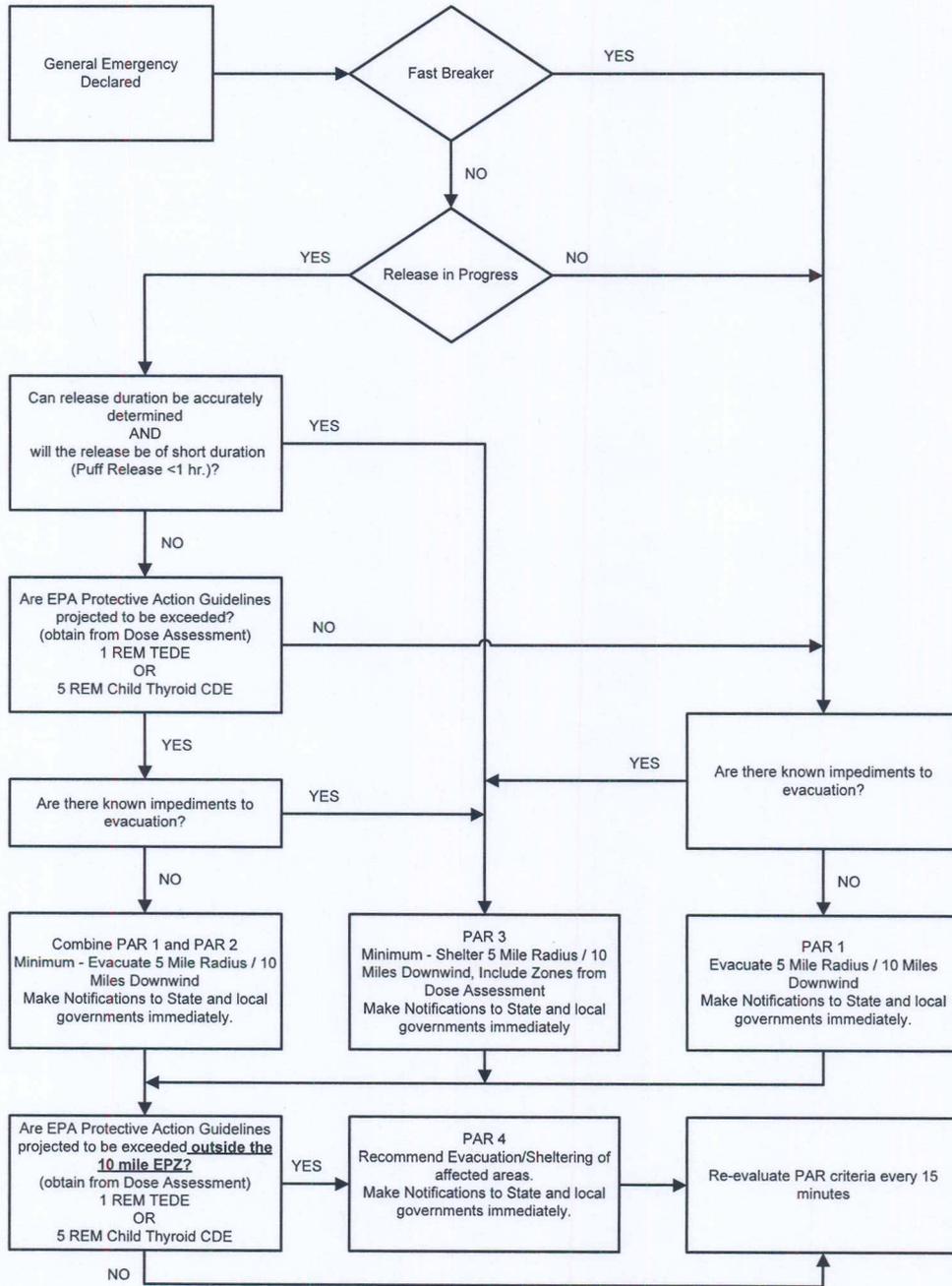
3. Zones to go indoors

PROC./WORK PLAN NO. 1903.011	PROCEDURE/WORK PLAN TITLE: EMERGENCY RESPONSE/NOTIFICATIONS	PAGE: 45 of 58 CHANGE: 031
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ATTACHMENT 6

PROTECTIVE ACTION RECOMMENDATIONS (PAR) FOR GENERAL EMERGENCY

This flowchart is to be used as a guide for determining PAR's. Actual PAR's are listed on the following pages of Attachment 6.



PROC./WORK PLAN NO. 1903.011	PROCEDURE/WORK PLAN TITLE: EMERGENCY RESPONSE/NOTIFICATIONS	PAGE: 46 of 58 CHANGE: 031
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ATTACHMENT 6

PROTECTIVE ACTION RECOMMENDATIONS (PAR)
FOR
GENERAL EMERGENCY

PAR No. 1
EVACUATE

NOTE

The State and local governments must be notified within 15 minutes of Protective Action Recommendations or changes to Protective Action Recommendations using Form 1903.011-Y.

1. General Emergency Declared
2. Recommend evacuating a 5 mile radius and 10 miles downwind. Recommend the remainder of the 10 mile EPZ to go indoors and listen to the emergency broadcast for this event. Determine the affected zones for the PAR from the chart given below.
3. **IF** there are known impediments to evacuation,
THEN go to PAR 3.

Wind Direction (from)	Evacuate Zones	Zones "to go indoors"
348.75 to 11.25	G H K N O R S T U	I J L M P Q
11.25 to 33.75	G H K N O Q R S U	I J L M P T
33.75 to 56.25	G H K N O Q R S U	I J L M P T
56.25 to 78.75	G H K N O Q R S U	I J L M P T
78.75 to 101.25	G H K N O P Q R U	I J L M S T
101.25 to 123.75	G H K N O P Q R U	I J L M S T
123.75 to 146.25	G H K M N O P R U	I J L Q S T
146.25 to 168.75	G H K M N O P R U	I J L Q S T
168.75 to 191.25	G H K M N O P R U	I J L Q S T
191.25 to 213.75	G H K L M N O R U	I J P Q S T
213.75 to 236.25	G H J K L M N O R U	I P Q S T
236.25 to 258.75	G H I J K L M N O R U	P Q S T
258.75 to 281.25	G H I J K L N O R U	M P Q S T
281.25 to 303.75	G H I J K N O R U	L M P Q S T
303.75 to 326.25	G H I J K N O R S T U	L M P Q
326.25 to 348.75	G H I K N O R S T U	J L M P Q

4. **IF** there is a radiological release associated with this event and EPA Protective Action Guidelines are projected to be exceeded (1REM TEDE, 5 REM Child Thyroid), **THEN** combine zones of PAR 1 with applicable zones of PAR 2.
5. Include any previously evacuated zones on the current PAR. **DO NOT** change any previously evacuated zones to "shelter" or "go indoors" on the current PAR.
6. Protective Action Recommendations must be reassessed every 15 minutes until downgrade or recovery phase is entered.

PROC./WORK PLAN NO. 1903.011	PROCEDURE/WORK PLAN TITLE: EMERGENCY RESPONSE/NOTIFICATIONS	PAGE: 47 of 58 CHANGE: 031
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ATTACHMENT 6

PROTECTIVE ACTION RECOMMENDATIONS (PAR)
FOR
GENERAL EMERGENCY

PAR No. 2
EVACUATE

NOTE

The State and local governments must be notified within 15 minutes of Protective Action Recommendations or changes to Protective Action Recommendations using Form 1903.011-Y.

1. **IF** plant conditions meet the following criteria:

- * General Emergency declared
AND
 - * EPA Protective Action Guidelines are projected to be exceeded.
- 1 Rem TEDE
OR
5 Rem Child Thyroid CDE

THEN Recommend the following Protective Action Recommendation.

2. **IF** there are known impediments to evacuation,
THEN go to PAR 3.

EVACUATE: *Zones projected to exceed the EPA Protective Action Guidelines (obtain from dose assessment)

AND

Zones from **PAR 1**

RECOMMEND: Remainder of the 10 mile EPZ to go indoors and listen to the Emergency Broadcasts

* Dose assessment PAR's will be initially provided by the Initial Dose Assessor in the Control Room. When the Dose Assessment Team becomes operational in the EOF, the Dose Assessment team will provide this information.

- 3. Include any previously evacuated zones on the current PAR. **DO NOT** change any previously evacuated zones to "shelter" or "go indoors" on the current PAR.
- 4. Protective Action Recommendations must be reassessed every 15 minutes until downgrade or recovery phase is entered.

PROC./WORK PLAN NO. 1903.011	PROCEDURE/WORK PLAN TITLE: EMERGENCY RESPONSE/NOTIFICATIONS	PAGE: 48 of 58 CHANGE: 031
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PAR No. 3 Shelter

NOTE

The State and local governments must be notified within 15 minutes of Protective Action Recommendations or changes to Protective Action Recommendations using Form 1903.011-Y.

1. **IF** Emergency Conditions meet the following criteria:

- * General Emergency declared
- AND**
- * Known Impediments to Evacuation exist.
- OR**
- * Offsite Release is a Puff Release (< 1 hour in duration)

THEN Recommend sheltering a 5 mile radius and 10 miles downwind. Recommend the remainder of the 10 mile EPZ to go indoors and listen to the emergency broadcast for this event. Determine the affected zones for the PAR from the chart given below. **Include any zones recommended for evacuation by Dose Assessment.**

Wind Direction (from)	Shelter Zones	Zones "to go indoors"
348.75 to 11.25	G H K N O R S T U	I J L M P Q
11.25 to 33.75	G H K N O Q R S U	I J L M P T
33.75 to 56.25	G H K N O Q R S U	I J L M P T
56.25 to 78.75	G H K N O Q R S U	I J L M P T
78.75 to 101.25	G H K N O P Q R U	I J L M S T
101.25 to 123.75	G H K N O P Q R U	I J L M S T
123.75 to 146.25	G H K M N O P R U	I J L Q S T
146.25 to 168.75	G H K M N O P R U	I J L Q S T
168.75 to 191.25	G H K M N O P R U	I J L Q S T
191.25 to 213.75	G H K L M N O R U	I J P Q S T
213.75 to 236.25	G H J K L M N O R U	I P Q S T
236.25 to 258.75	G H I J K L M N O R U	P Q S T
258.75 to 281.25	G H I J K L N O R U	M P Q S T
281.25 to 303.75	G H I J K N O R U	L M P Q S T
303.75 to 326.25	G H I J K N O R S T U	L M P Q
326.25 to 348.75	G H I K N O R S T U	J L M P Q

2. Protective Action recommendations must be reassessed every 15 minutes until downgrade or recovery phase is entered.

PROC./WORK PLAN NO. 1903.011	PROCEDURE/WORK PLAN TITLE: EMERGENCY RESPONSE/NOTIFICATIONS	PAGE: 49 of 58 CHANGE: 031
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ATTACHMENT 6

PROTECTIVE ACTION RECOMMENDATIONS (PAR)
FOR
GENERAL EMERGENCY

PAR No. 4
Beyond 10 Mile EPZ

IF plant conditions meet the following criteria:

- * General Emergency declared
AND
 - * EPA Protective Action Guidelines are projected to be exceeded **beyond the 10 mile EPZ.**
- 1 Rem TEDE
OR
5 Rem Child Thyroid CDE

THEN recommend evacuation of the affected area. If known impediments to evacuation exist consider sheltering of the affected area.

Use dose assessment personnel to determine affected sector(s) and downwind distances.

Affected Sector(s)	Evacuate/Shelter Sectors	Distance from Site
1	16, 1, 2	10 miles to (Determined by Dose Assessment)
2	1, 2, 3	10 miles to (Determined by Dose Assessment)
3	2, 3, 4	10 miles to (Determined by Dose Assessment)
4	3, 4, 5	10 miles to (Determined by Dose Assessment)
5	4, 5, 6	10 miles to (Determined by Dose Assessment)
6	5, 6, 7	10 miles to (Determined by Dose Assessment)
7	6, 7, 8	10 miles to (Determined by Dose Assessment)
8	7, 8, 9	10 miles to (Determined by Dose Assessment)
9	8, 9, 10	10 miles to (Determined by Dose Assessment)
10	9, 10, 11	10 miles to (Determined by Dose Assessment)
11	10, 11, 12	10 miles to (Determined by Dose Assessment)
12	11, 12, 13	10 miles to (Determined by Dose Assessment)
13	12, 13, 14	10 miles to (Determined by Dose Assessment)
14	13, 14, 15	10 miles to (Determined by Dose Assessment)
15	14, 15, 16	10 miles to (Determined by Dose Assessment)
16	15, 16, 1	10 miles to (Determined by Dose Assessment)

Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>2009-1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
S2. ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/L/M/S	4 Heat Removal
S3. ANO-2-JPM-NRC-SIT01 006 A2.03 RO-3.3 SRO-3.7 High pressure fill of Safety Injection Tank	A/P/S	2 RCS Inventory
S4. ANO-2-JPM-NRC-PZR01 010 A4.01 RO-3.7/SRO-3.5 Equalize Pressurizer boron	D/S	3 Pressure Control
S5. ANO-2-JPM-NRC- VCTMU 004 A4.15 RO-3.6 SRO-3.7 Perform Manual Makeup to the VCT	D/S	1 Reactivity control
S6. ANO-2-JPM-NRC-ELECXT 062 A4.01 RO-3.3/SRO-3.1 Cross connect 2B-1 and 2B-2.	A/M/S	6 Electrical
S7. ANO-2-JPM-NRC-CCW02 008 A4.01 RO 3.3/SRO 3.1 Shift running CCW pumps	M/S	8 Plant service systems
S8. ANO-2-JPM-NRC-CPC02 015 A3.03 RO-3.9/SRO-3.9 DNBR/LPD limits with COLSS out of service	D/S	7 Instrumentation
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
P1. A2JPM-RO-RSD 062 A2.01 RO-3.4/SRO-3.9 Perform a remote shutdown as an CBOT	A//D/E/L	6 Electrical
P2. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
P3. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / ≥1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>2009-1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
S2. ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/L/M/S	4 Heat Removal
S3. ANO-2-JPM-NRC-SIT01 006 A2.03 RO-3.3 SRO-3.7 High pressure fill of Safety Injection Tank	A/D/P/S	2 RCS Inventory
S4. ANO-2-JPM-NRC-PZR01 010 A4.01 RO-3.7/SRO-3.5 Equalize Pressurizer boron	D/S	3 Pressure Control
S5. ANO-2-JPM-NRC- VCTMU 004 A4.15 RO-3.6 SRO-3.7 Perform Manual Makeup to the VCT	D/S	1 Reactivity control
S6. ANO-2-JPM-NRC-ELECXT 062 A4.01 RO-3.3/SRO-3.1 Cross connect 2B-1 and 2B-2.	A/M/S	6 Electrical
S7. ANO-2-JPM-NRC-CCW02 008 A4.01 RO 3.3/SRO 3.1 Shift running CCW pumps	M/S	8 Plant service systems
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
P1. A2JPM-RO-RSD 062 A2.01 RO-3.4/SRO-3.9 Perform a remote shutdown as an CBOT	A/D/E/L	6 Electrical
P2. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
P3. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release
<p>[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / - ≥ 1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <u>2009-1</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
S1. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
S2. ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/L/M/S	4 Heat Removal
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
P1. A2JPM-RO-RSD 062 A2.01 RO-3.4/SRO-3.9 Perform a remote shutdown as an CBOT	A/D/E/L	6 Electrical
P2. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
P3. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release
<p>[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	<p style="text-align: center;">4-6 / 4-6 / 2-3</p> <p style="text-align: center;">≤ 9 / ≤ 8 / ≤ 4</p> <p style="text-align: center;">≥ 1 / ≥ 1 / ≥ 1</p> <p style="text-align: center;">- / - / ≥ 1 (control room system)</p> <p style="text-align: center;">≥ 1 / ≥ 1 / ≥ 1</p> <p style="text-align: center;">≥ 2 / ≥ 2 / ≥ 1</p> <p style="text-align: center;">≤ 3 / ≤ 3 / ≤ 2 (randomly selected)</p> <p style="text-align: center;">≥ 1 / ≥ 1 / ≥ 1</p>	

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 10 DATE: _____

SYSTEM/DUTY AREA: Abnormal/Emergency Operations

TASK: Secure Containment Spray

JTA#: ANO2-RO-EOPAOP-EMERG-13

KA VALUE RO: 3.2 SRO: 3.7 KA REFERENCE: 026 A2.03

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: 15 Minutes

REFERENCE(S): OP 2203.012D 2K-04 ACA

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**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: Containment spray actuation signal has actuated inadvertently and 2K04 D-1, CSAS ACT, is in Alarm. I&C has corrected the problem. No testing is currently in progress.

TASK STANDARD: CSAS is reset and CSAS actuated components are secured.

TASK PERFORMANCE AIDS: EOP 2203.012D Annunciator 2K04 D1, CSAS ACT

SIMULATOR SETUP: Inadvertent containment spray actuated. Containment Temperature. < 140 ° F,
Pressure < 22.5 psia.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Reset CSAS and secure Containment Spray using ACA 2203.012D for annunciator 2D1, CSAS ACT.

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
1. Step 2.1	Verify CSAS NOT valid.	Determined that Containment pressure less than 22.5 PSIA (PMS, SPDS or control board indication).	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>			
There is only one channel available on the simulator. Resetting 'B' trip path will reset all the other channels			
2. Step 2.3	Place Spray Pumps in PTL. Examiner's CUE: CRS acknowledges that the time has been recorded in the station log and TS entry into 3.0.3.	On panels' 2C16/17, placed handswitches for Containment Spray Pumps (2P35A and 2P35B) in Pull To Lock (PTL). Observed green lights ON above handswitches. Enter TS 3.0.3.	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>			
There is only one channel available on the simulator. Resetting 2C23B actuation path will reset all the other channels also.			
(C) 3. Step 2.6.1 2.6.2 2.6.3 2.6.4	Reset CSAS on 2C23. <u>Examiner's Note:</u> Give examinee Key #15 when asked.	On panel 2C23B, obtained key and placed it in trip path to be reset. Placed trip path key switch to UNLK. Depressed CSAS pushbutton for trip path. Verified Trip Path lights reset (on 2C03) (Not a critical item) Placed trip path key switch to I K	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
<u>EXAMINERS NOTE:</u>				
There is only one channel available on the simulator. Resetting 2C40 actuation path will reset all the other channels also.				
(C)	4. Step 2.6.6 2.6.7	Reset CSAS on 2C40	On 2C40, depressed CSAS lockout reset pushbutton. On 2C40 verify reset lights are ON.	N/A SAT UNSAT
(C)	5. Step 2.6.8	Close Containment Spray Header Isolation Valves.	On panels' 2C16/17, placed handswitches for Containment Spray Header Isolation valves (2CV-5612-1 and 2CV-5613-2) in CLOSE. Observed green lights ON above handswitches.	N/A SAT UNSAT
(C)	6. Step 2.6.9	Remove CNTMT Spray pumps from PTL:	On panels' 2C16/17, removed handswitches for Containment Spray Pumps (2P35A and 2P35B) from PTL and placed in normal after stop. Observed green lights ON above handswitches.	N/A SAT UNSAT
	7. Step 2.6.10	Exit Tech Spec 3.0.3. EXAMINER's CUE: Exiting Tech Spec 3.0.3 has been entered into the station log.	Notify CRS to exit tech spec 3.0.3 when both spray pumps are taken out of PTL.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

Containment spray actuation signal has actuated inadvertently.
2K04 D-1, CSAS ACT, is in alarm.
I&C has corrected the problem.
No Testing is currently in progress.

INITIATING CUE:

The CRS directs, "Reset CSAS and secure Containment Spray using ACA 2203.012D for annunciator D1, CSAS ACT.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

Containment spray actuation signal has actuated inadvertently.
2K04 D-1, CSAS ACT, is in alarm.
I&C has corrected the problem.
No Testing is currently in progress.

INITIATING CUE:

The CRS directs, "Reset CSAS and secure Containment Spray using ACA 2203.012D for annunciator D1, CSAS ACT.

PROC./WORK PLAN NO. 2203.012D	PROCEDURE/WORK PLAN TITLE: ANNUNCIATOR 2K04 CORRECTIVE ACTION	PAGE: 7 of 91 CHANGE: 032
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ANNUNCIATOR 2K04

D-1

CSAS ACT

1.0 CAUSES

1.1 CSAS Channel 2 actuated due to one of the following:

- CNTMT Pressure \geq 23.3 psia (2 out of 4)
- PPS Testing
- PPS Relay failure

2.0 ACTION REQUIRED

2.1 Determine validity of alarm by checking CNTMT pressure.

2.2 IF CSAS valid,
THEN GO TO appropriate Emergency Operating Procedure.

2.3 IF CSAS inadvertent,
THEN perform the following:

- Verify both CNTMT Spray pumps (2P35A/B) in PTL
- Record time CNTMT Spray pumps placed PTL in Station log
- Refer to TS 3.0.3

2.4 IF authorized testing in progress,
THEN no action required.

2.5 IF failed relay is the cause,
THEN refer to Tech Spec 3.3.2.1 and submit WR.

2.6 WHEN CNTMT pressure < 22.5 psia,
THEN reset CSAS trip path as follows:

- 2.6.1 Place LK/UNLK switch to UNLK (key No. 15).
- 2.6.2 Depress CSAS pushbutton on 2C23.
- 2.6.3 Verify Trip Path lights reset on local PPS Status panels.
- 2.6.4 Place LK/UNLK switch to LK and remove key.
- 2.6.5 Repeat above steps to reset remaining Actuation Trip Paths.
- 2.6.6 Depress either CSAS Lockout Reset pushbutton on 2C40 AND verify both Reset lights ON.
- 2.6.7 Depress either CSAS Lockout Reset pushbutton on 2C39 AND verify both Reset lights ON.

(D-1 Continued on next page)

PROC./WORK PLAN NO.
2203.012D

PROCEDURE/WORK PLAN TITLE:
ANNUNCIATOR 2K04 CORRECTIVE ACTION

PAGE: 8 of 91
CHANGE: 032

Page 2 of 2

ANNUNCIATOR 2K04

D-1

CSAS ACT
(Continued)

2.6.8 Close CNTMT Spray Header Isolation valves:

- 2CV-5612-1
- 2CV-5613-2

2.6.9 Remove CNTMT Spray pumps from PTL:

- 2P-35A
- 2P-35B

2.6.10 Exit TS 3.0.3 as applicable.

3.0 TO CLEAR ALARM

3.1 Reset CSAS trip path in 2C40.

3.2 Replace failed relay.

4.0 REFERENCES

4.1 E-2454-1

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 1 DATE: _____

SYSTEM/DUTY AREA: Reactor Coolant Pump

TASK: Perform a normal RCP shutdown. (Alternate Path)

JTA#: ANO-2-RO-RCP-NORM-3

KA VALUE RO: 3.3 SRO: 3.1 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: 8 Minutes

REFERENCE(S): OP 2103.006 Reactor Coolant Pump Operations

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 Stop Total
Time Time 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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023

Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The unit is in Mode 3.

TASK STANDARD:

All RCP's secured due to 'A' RCP reverse rotation alarm within 5 minutes of receiving the reverse rotation alarm.

TASK PERFORMANCE AIDS:

OP 2103.006 Section 8.0, OP-2203.012K for 2K11-C2

SIMULATOR SETUP:

Mode 3 all RCPs running.

Insert Malfunction RCP2P32AREV the reverse rotation alarm will annunciate when the RCP is stopped.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Shut down RCP "A" using OP 2103.006 Section 8.0."

Start Time: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1. (Step 8.1)	Start RCP "A" bearing oil lift pump (2P63A). Examiner Cue: Local lift pump discharge pressure is adequate.	On panel 2C04, placed 2HS-6084 for 2P63A to START. Observed red light on; green light OFF above 2HS-6084.	N/A SAT UNSAT
(C)	2. (Step 8.2)	Stop reactor coolant pump (2P32A).	On panel 2C04, placed 2HS-4620 for 2P32A to STOP. Observed green light ON; red light OFF above 2HS-4620.	N/A SAT UNSAT
	3	Acknowledges 2K11-C2 'A' RCP reverse rotation alarm Time: _____ Examiner Cue: If examinee tells the CRS of the reverse rotation alarm, then inform the examinee as the CRS to take the appropriate action.	On panel 2K11 recognizes 'A' RCP reverse rotation alarm	N/A SAT UNSAT
(C)	4. (Step 2.2 of ACA)	IF RCP 2P-32A NOT operating, THEN trip all RCPs.	On panel 2C04, placed the handswitches for the following RCP's in STOP: 2P-32B Time: _____ 2P-32C Time: _____ 2P-32D Time: _____ All RCPs must be stopped within 5 minutes of receiving reverse rotation alarm.	N/A SAT UNSAT
END				

Stop Time: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

The unit is in Mode 3

INITIATING CUE:

The SM/CRS directs, "Shut down RCP "A" using OP 2103.006 Section 8.0."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

The unit is in Mode 3

INITIATING CUE:

The SM/CRS directs, "Shut down RCP "A" using OP 2103.006 Section 8.0."

PROC./WORK PLAN NO. 2103.006	PROCEDURE/WORK PLAN TITLE: REACTOR COOLANT PUMP OPERATIONS	PAGE: 8 of 12 CHANGE: 018
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8.0 REACTOR COOLANT PUMP SHUTDOWN

NOTE

If the last two RCPs will be secured simultaneously, Operations management has determined a local operator is not required to be stationed when securing these pumps.

- 8.1 Place associated Lift Pump handswitch in START:
- 2HS-6084 (2P-32A)
 - 2HS-6094 (2P-32B)
 - 2HS-6104 (2P-32C)
 - 2HS-6114 (2P-32D)
- 8.2 Stop SELECTED Reactor Coolant pump.
- 8.2.1 IF RCP 2P32A or 2P32B stopped,
THEN verify associated PZR Spray valve in MANUAL
AND closed.
- 8.3 WHEN RCP reaches zero speed as indicated on PMS or CPCs,
THEN place associated Lift Pump handswitch in STOP.
- 8.4 IF RCP Vibration Monitor nuisance alarms occur after RCP secured,
THEN associated Vibration Monitors may be defeated using Annunciator
2K11 Corrective Action (2203.012K) or Conduct of Operations
(1015.001).
- 8.5 Maintain CCW flow to RCPs until BOTH of the following conditions are
obtained:
- RCS temperature less than 175°F
 - RCS pressure less than 200 psia.

ANNUNCIATOR 2K11

C-2

REVERSE ROTATION

1.0 CAUSES

- 1.1 Reverse oil flow that corresponds to rotational speed of 75 to 200 RPM in reverse direction (2FS-6081).

2.0 ACTION REQUIRED

- 2.1 IF RCP 2P-32A operating,
THEN alarm is NOT valid.
- 2.2 IF RCP 2P-32A NOT operating,
THEN trip all RCPs.
- 2.3 IF alarm assumed valid,
THEN perform the following:
- 2.3.1 Locally verify 2P-32A stopped.
- 2.3.2 Contact System Engineering and Management for assistance.
- 2.3.3 Attempt to hand rotate 2P-32A in forward and reverse direction.
- 2.3.4 Monitor 2P-32A locally and start another RCP using Reactor Coolant Pump Operations (2103.006).
- 2.3.5 IF pump rotates backwards,
THEN secure all RCPs and submit WR/WO.
- 2.3.6 IF pump remains stationary,
THEN start 2P-32A using Reactor Coolant Pump Operations (2103.006) and monitor noise, vibration and temperature.
- 2.4 IF alarm malfunctioning,
THEN submit WR/WO.

3.0 TO CLEAR ALARM

- 3.1 Reduce oil flow to value corresponding to reverse speed < 75 RPM.

4.0 REFERENCES

- 4.1 E-2457-1

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 011 DATE: _____

SYSTEM/DUTY AREA: Safety Injection System

TASK: Perform a high pressure fill of a SIT (SIT "A") (Alternate Success Path)

JTA#: ANO2-RO-ECCS-NORM-2

KA VALUE RO: 3.3 SRO: 3.7 KA REFERENCE: 006 A2.03

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: 12 Minutes

REFERENCE(S): OP-2104.001 Safety Injection Tank operations

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023

Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

HPSI pump (2P89A) is running on minimum recirculation

TASK STANDARD:

Safety Injection Tank (2T2A) fill is secured prior to

2T-2A pressure exceeding 624 psig (Hi Hi pressure) or level exceeding 89.5% (Hi Hi level)

TASK PERFORMANCE AIDS:

OP 2104.001 Section 8.0

SIMULATOR SETUP:

SIT 'A' level low enough to accept a 0.3% water addition and Safety Injection Tank (2T2A) pressure is <608 psig.

Setup overrides to deenergize the red and green lights for 2CV 5015-1 when the handswitch is is taken to the open position and have the valve open 1%.

HPSI pump (2P89A) is running on minimum recirculation. RCS PRESSURE > 1500psia.

Set trigger T4= 'of4r0151' (triggered when 2HS5015-1 red light is energized).

T4 - CV50151 = 0.1; fail HPSI injection MOV partially open.

T4 - DO_HS_5015_G = OFF; HPSI injection MOV green light off.

T4 - DO_HS_5015_R = OFF; HPSI injection MOV red light off.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Raise Safety Injection Tank (2T2A) level 0.2% using OP 2104.001, beginning with step 8.3."

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
	1. Step 8.3	Monitor SIT level and pressure during fill.	N/A SAT UNSAT
(C)	2. Step 8.4.1	Open SIT (2T2A) Drain Valve (2SV-5001-1).	N/A SAT UNSAT
(C)	3. Step 8.4.1	Open SIT (2T2A) Check Valve Bypass (2SV-5004).	N/A SAT UNSAT
(C)	4. Step 8.4.2	Throttle open HPSI Header 1 Injection to RCP A Discharge (2CV-5015-1).	N/A SAT UNSAT

Examiners note:

The following step is the Alternate path portion of this JPM

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)	
	5. Step 8.4.3.A	Attempts to close HPSI Header 1 Injection to RCP A Discharge valve.	Recognized that 2CV-5015-1 would NOT close and both red and green lights are de-energized.	N/A SAT UNSAT
(C)	6. Step 8.4.3.B Step 8.4.3.C	Stop the level increase in 2T2A SIT.	On panel 2C17, placed handswitch for A HPSI pump (2P-89A) in stop Observed 2P89A stopped. OR On panel 2C17 placed handswitch for SIT A Drain Valve (2SV-5001-1) to CLOSED. Observed green light ON above handswitch. OR On panel 2C33, placed handswitch for SIT A Check Valve Bypass (2SV-5004) to CLOSED. Observed green light ON above handswitch.	N/A SAT UNSAT
	7.	Inform CRS of failure of 2CV-5015-1 to close. <u>Examiner's Cue:</u> Acknowledge communication as CRS. Direct Examinee to secure from filling A SIT.	Informed CRS that 2CV-5015-1 failed to close.	N/A SAT UNSAT
	8. Step 8.4.3.B	Close SIT (2T2A) Drain Valve. (if not closed previously.)	On panel 2C17, placed handswitch for SIT A Drain Valve (2SV-5001-1) to CLOSE. Observed green light ON above handswitch.	N/A SAT UNSAT
	9. Step 8.4.3.C	Close SIT (2T2A) Check Valve Bypass. (if not closed previously.)	On panel 2C33, placed handswitch for SIT A Check Valve Bypass (2SV-5004) to CLOSE. Observed green light ON above handswitch.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	10.	On panel 2K07, Alarms C3, SIT Press Hi Hi or C4 Level Hi Hi NOT received.	2T2A SIT High High Pressure alarm NOT received (SIT pressure > 624 psig) or High High level alarm NOT received (87.5%).	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

HPSI pump (2P89A) is running on minimum recirculation.

INITIATING CUE:

The CRS directs, "Raise Safety Injection Tank (2T2A) level 0.2% using OP 2104.001, beginning with step 8.3."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

HPSI pump (2P89A) is running on minimum recirculation.

INITIATING CUE:

The CRS directs, "Raise Safety Injection Tank (2T2A) level 0.2% using OP 2104.001, beginning with step 8.3."

8.0 FILLING SITS (RCS PRESSURE \geq 1500 PSIA)

N/A 8.1

IF pressure > 650 psig indicated on any of the following:

- SIS Injection to Loop 2P-32A (2PIS-5000)
- SIS Injection to Loop 2P-32B (2PIS-5020)
- SIS Injection to Loop 2P-32C (2PIS-5040)
- SIS Injection to Loop 2P-32D (2PIS-5060)

AND injection header flush desired,
THEN GO TO Attachment C of this procedure to fill SITS.

NOTE

The HPSI Pressurization System is the preferred method for SIT fill to minimize damage to SIT system check valves.

8.2 Perform ONE of the following:

N/A Verify HPSI Pressurization System (HPS) in service per applicable section of HPSI System Operation (2104.039).

Verify HPSI pump (2P-89A/B/C) in service on minimum recirculation mode using applicable section of HPSI System Operation (2104.039).

* 8.3 Monitor SIT levels and pressures as SIT pressure because they rise rapidly during fill operations.

NOTE

- SIT pressure will rapidly drop 2-5 psi when opening drain valve if SIT drain header has been depressurized.
- If SIT drain header pressurized, then SIT Drain valves and Check Valve Bypass valves may be slow to open and close due to no DP. (CR-ANO-2-2004-0802)

8.4 IF filling A SIT,
THEN perform the following:

8.4.1 Verify open:

- SIT A Drain valve (2SV-5001-1)
- SIT A Check Valve Bypass (2SV-5004)

8.4.2 Throttle open selected HPSI Pump Injection MOV:

- HPSI Header 1 Injection to RCP A Discharge (2CV-5015-1)
- HPSI Header 2 Injection to RCP A Discharge (2CV-5016-2)

8.4.3 WHEN desired level reached,
THEN close the following:

- A. HPSI valve opened in step 8.4.2 (maintain handswitch in CLOSE for \geq 2 seconds after red light out).
- B. 2SV-5001-1
- C. 2SV-5004

- 8.5 IF filling B SIT,
THEN perform the following:
- 8.5.1 Verify open:
- SIT B Drain valve (2SV-5021-1)
 - SIT B Check Valve Bypass (2SV-5024)
- 8.5.2 Throttle open selected HPSI Pump Injection MOV:
- HPSI Header 1 Injection to RCP B Discharge (2CV-5035-1)
 - HPSI Header 2 Injection to RCP B Discharge (2CV-5036-2)
- 8.5.3 WHEN desired level reached,
THEN close the following:
- A. HPSI valve opened in step 8.5.2 (maintain handswitch in CLOSE for \geq 2 seconds after red light out).
 - B. 2SV-5021-1
 - C. 2SV-5024
- 8.6 IF filling C SIT,
THEN perform the following:
- 8.6.1 Verify open:
- SIT C Drain valve (2SV-5041-2)
 - SIT C Check Valve Bypass (2SV-5044)
- 8.6.2 Throttle open selected HPSI Pump Injection MOV:
- HPSI Header 1 Injection to RCP C Discharge (2CV-5055-1)
 - HPSI Header 2 Injection to RCP C Discharge (2CV-5056-2)
- 8.6.3 WHEN desired level reached,
THEN close the following:
- A. HPSI valve opened in step 8.6.2 (maintain handswitch in CLOSE for \geq 2 seconds after red light out).
 - B. 2SV-5041-2
 - C. 2SV-5044

- 8.7 IF filling D SIT,
THEN perform the following:
- 8.7.1 Verify open:
- SIT D Drain valve (2SV-5061-2)
 - SIT D Check Valve Bypass (2SV-5064)
- 8.7.2 Throttle open selected HPSI Pump Injection MOV:
- HPSI Header 1 Injection to RCP D Discharge (2CV-5075-1)
 - HPSI Header 2 Injection to RCP D Discharge (2CV-5076-2)
- 8.7.3 WHEN desired level reached,
THEN close the following:
- A. HPSI valve opened in step 8.7.2 (maintain handswitch in CLOSE for ≥ 2 seconds after red light out).
 - B. 2SV-5061-2
 - C. 2SV-5064
- 8.8 WHEN all SIT filling operations complete,
THEN perform the following:
- IF HPSI pump used,
THEN secure using applicable section of HPSI System Operation (2104.039).
 - IF desired to secure HPSI Pressurization System (HPS),
THEN use applicable section of HPSI System Operation (2104.039).

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 002 DATE: _____

SYSTEM/DUTY AREA: Pressurizer Pressure control Operations

TASK: Equalize RCS and Pressurizer Boron

JTA#: ANO2-RO-PZR-NORM-3

KA VALUE RO: 3.7 SRO: 3.5 KA REFERENCE: 010 A4.01

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: 10 Minutes

REFERENCE(S): OP 2103.005 Pressurizer Operations

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.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Commence equalizing RCS and PZR boron concentration using OP 2103.005 section 7.1, 'A' RCP spray valve, 2CV-4651."

Start Time: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)	
	1. (Step 7.1.1)	Verify spray valve, 2CV-4651, isolation valves 2CV-4655 AND 2CV-4656 are OPEN.	On panel 2C04 verified red lights ON, green lights OFF for 2CV-4656. On panel 2C04 verified 2CV-4655 has de-energized placard next to the valve lights.	N/A SAT UNSAT
(C)	2. (Step 7.1.2)	Place 'A' RCP spray valve MAN/AUTO select switch (2HS-4651B) to MANUAL.	On panel 2C04, rotated 2HS-4651B in the CCW direction to MANUAL.	N/A SAT UNSAT
(C)	3. (Step 7.1.3)	Energize all available Backup Heaters: Place 2HS-4643 to ON Place 2HS-4644 to ON Place 2HS-4645 to ON Place 2HS-4646 to ON	On panel 2C04 placed the following handswitches to ON: Place 2HS-4643 to ON Place 2HS-4644 to ON Place 2HS-4645 to ON Place 2HS-4646 to ON <u>AND</u> Observed the red light ON and green light OFF above each of the above backup heater handswitches.	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>				
<p>The following action may take several attempts (cycling the spray valve open and then closed) until the proper valve position is obtained. When the handswitch is taken to the closed direction, 2CV-4651 will go completely closed.</p> <p>Maintaining RCS pressure 2200 ± 10 psia may also be accomplished by placing one backup heater to Auto.</p> <p>The Critical portion of step 4 below is to maintain RCS pressure 2200 ± 10 psia and this can be accomplished by either step 4 or 5.</p> <p>This JPM should be stopped by examiner when determined satisfactory or unsatisfactory.</p>				
(C)	4. (Step 7.1.4)	When PZR pressure begins increasing, Throttle open 'A' RCP spray valve (2CV-4651) enough to stabilize pressure <u>2200 ± 10 psia</u>	On panel 2C 04, placed handswitch for 2CV-4651 to the open position momentarily and then watched PZR pressure stabilize at <u>2200 ± 10 psia.</u>	N/A SAT UNSAT
	5. (Step 7.1.5)	IF necessary to maintain pressure ± 10 psia of setpoint, THEN place one Backup Heater bank in AUTO .	On panel 2C 04, placed handswitch for one backup heater to auto as necessary to maintain RCS pressure <u>2200 ± 10 psia.</u>	N/A SAT UNSAT
END				

Stop Time: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL CONDITIONS:

Chemistry reports that RCS Boron is 750 PPM and the PZR Boron is 805 PPM.

INITIATING CUE:

The CRS directs, "Commence equalizing RCS and PZR boron concentration using OP 2103.005 section 7.1, 'A' RCP spray valve, 2CV-4651."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL CONDITIONS:

Chemistry reports that RCS Boron is 750 PPM and the PZR Boron is 805 PPM.

INITIATING CUE:

The CRS directs, "Commence equalizing RCS and PZR boron concentration using OP 2103.005 section 7.1, 'A' RCP spray valve, 2CV-4651."

PROC./WORK PLAN NO. 2103.005	PROCEDURE/WORK PLAN TITLE: PRESSURIZER OPERATIONS	PAGE: 9 of 28 CHANGE: 029
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7.0 EQUALIZING BORON CONCENTRATION

NOTE

- Spray Valves throttle open and seal in closed.
- One Backup Heater Bank is normally maintained in ON with the other three banks in AUTO.

7.1 Boron Equalization Using RCP A Spray Valve (2CV-4651).

- 7.1.1 Verify open Spray Valve Isolation (2CV-4655 AND 2CV-4656).
- 7.1.2 Place RCP A Spray Valve Man/Auto Select switch (2HS-4651B) to MANUAL.
- 7.1.3 Energize ALL available Backup heaters by placing the following handswitches to ON:
- Backup Heater 1 (2HS-4643)
 - Backup Heater 2 (2HS-4644)
 - Backup Heater 3 (2HS-4645)
 - Backup Heater 4 (2HS-4646)
- 7.1.4 WHEN RCS pressure starts rising,
THEN throttle open RCP A Spray valve (2CV-4651) enough to stabilize pressure \pm 10 psia of setpoint.
- 7.1.5 IF necessary to maintain pressure \pm 10 psia of setpoint,
THEN place one Backup Heater bank in AUTO.
- 7.1.6 WHEN desired to secure equalization,
THEN perform the following:
- A. Close 2CV-4651.
 - B. Place necessary Backup heaters to AUTO to allow pressure to stabilize at setpoint.
 - C. Place 2HS-4651B to AUTO.

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 012 DATE: _____

SYSTEM/DUTY AREA: Chemical and Volume Control System

TASK: Perform Manual Makeup to the VCT

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

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: 20 Minutes

REFERENCE(S): OP 2104.003 Chemical Addition

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 Stop Total Time
Time 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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.1. Boron 2 PMS program has been completed.

TASK STANDARD: Manual blended make-up to the VCT at the correct blend ratio has been established.

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 throttled open(0.65) and 2CVC-83 is closed

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.2 using 'A' BAM Tank."

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
Examiner's note:			
<p>The Boric Acid and DI water flow rates should be set up to be approximately 1 to 5 ratio with 1 part Boric Acid and 5 parts DI water.</p> <p>The actual blend ratio to maintain RCS boron concentration is 1 to 5.6 but the last 50 gallons of addition should be DI water to flush the makeup line and this will equate to a 1 to 5 ratio make up rate.</p>			
1. Step 2.2	Adjust blend ratio to achieve desired shutdown rate and make-up rate. <u>Examiner Note:</u> 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
2. Step 2.3	Verify 2CVC-68 is open and 2CVC-83 is closed. <u>Examiner Cue:</u> 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 2.4	Set Boric Acid Makeup Flow Controller (2FIC-4926) to desired flow rate.	On Panel 2C09, set Boric Acid Makeup Flow Controller (2FIC-4926) to desired flow rate. Flow rate adjusted to ~ 1 / 5 blend ratio.	N/A SAT UNSAT
4. Step 2.4	Place 2FIC-4926 in either MANUAL or AUTOMATIC mode.	On Panel 2C09, placed 2FIC-4926 to either MANUAL at desired value or AUTOMATIC mode.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	5. Step 2.5	Set Reactor Makeup Water Flow controller (2FIC-4927) to desired flow rate.	On Panel 2C09, set Reactor Makeup Water Flow Controller (2FIC-4927) to desired flow rate. Flow rate adjusted to ~ 1 / 5 blend ratio.	N/A SAT UNSAT
	6. Step 2.5	Place 2FIC-4927 in either MANUAL or AUTOMATIC mode.	On Panel 2C09, placed 2FIC-4927 in either MANUAL at desired value or AUTOMATIC mode.	N/A SAT UNSAT
	7. Step 2.6	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
	8. Step 2.6	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)	9. Step 2.7	Open VCT Makeup Isol Valve.	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
	10. Step 2.8	Verify a Reactor Makeup Pump running.	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
(C)	11. Step 2.9	Start one BAM pump.	On Panel 2C09, placed handswitch for 2P-39A BAM Pump to 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)
	12. Step 2.10	Open the associated BAM pump recirc valve.	On Panel 2C09, opened the BAM Pump recirc valve associated with the running BAM pump (2CV-4903-2). Observed red light ON and green light OFF for valve opened.	N/A SAT UNSAT
(C)	13. Step 2.11	Place Boric Acid Makeup Mode Selector switch (2HS-4928) to MANUAL.	On Panel 2C09, placed 2HS-4928 to MANUAL.	N/A SAT UNSAT
(C)	14. Step 2.12	Verify Boric Acid Makeup Flow Control Valve (2CV-4926) opens to maintain desired flow rate.	On Panel 2C09, verified 2CV-4926 opens to control flow at ~ 1 / 5 of water flow rate. Observed flow indicated on 2FIC-4926. Critical portion is a steady flow rate sufficient to achieve 77 gallons of boric acid when approximately 380 gallons of water have been added to the VCT.	N/A SAT UNSAT
(C)	15. Step 2.13	Verify Reactor Makeup Water Flow Control Valve (2CV-4927) opens to maintain desired flow rate.	On Panel 2C09, verified 2CV-4927 opens to control flow at ~ 5 times acid flow rate. Observed flow indicated on 2FIC-4927. Critical portion is the steady flow rate sufficient to achieve 380 gallons of water when approximately 77 gallons of boric acid have been added to the VCT.	N/A SAT UNSAT
EXAMINER'S NOTE: JPM may be terminated when above step is complete.				
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.1. Boron2 program has been used to determine the correct amounts of Boric acid and water.

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.2 using 'A' BAM Tank."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

Plant is operating at 100%.

OP 2104.003 Attachment L is completed through step 2.1. Boron2 program has been used to determine the correct amounts of Boric acid and water.

INITIATING CUE:

The SM/CRS directs, "Raise VCT level to 75% using OP 2104.003 Attachment L beginning with step 2.2 using 'A' BAM Tank."

PROC./WORK PLAN NO. 2104.003	PROCEDURE/WORK PLAN TITLE: CHEMICAL ADDITION	PAGE: 55 of 110 CHANGE: 046
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ATTACHMENT L

PAGE 1 OF 3

MANUAL MAKEUP TO THE RCS

~~1.0~~ INITIAL CONDITIONS

- ~~1.0~~ Boric Acid Makeup System aligned per System Alignment Verification section of 1015.001, Conduct of Operations.
- ~~1.0~~ Reactor Makeup Water System aligned per System Alignment Verification section of 1015.001, Conduct of Operations.
- ~~1.0~~ CVCS in service per Chemical And Volume Control (2104.002).
- (4.3.2) ~~1.0~~ Samples from RCS, BAM Tanks (2T-6A and 2T-6B) and RWT (2T-3) are current if used for boration per this attachment.
- ~~1.0~~ BAM Tanks and RWT contain sufficient boric acid at proper concentration to meet requirements of TRM 3.1.2.7 OR 3.1.2.8 if used for boration per this attachment. (Use Supplement 4 Figure 1 to verify TRM requirements met.)

~~NOTE~~

- ~~1.0~~ Volume of Blending Tee to VCT piping is \cong 34 gallons. Completing each blend with \cong 50 gallons of water will ensure complete acid addition to VCT.
- ~~1.0~~ This section can be used to makeup to VCT/RCS during plant shutdown.

~~2.0~~ INSTRUCTIONS

- ~~2.1~~ Determine initial blending ratio using Attachment F OR BORON 2 program.
- 2.2 Adjust blend ratio to achieve desired shutdown rate and make-up rate.
- 2.3 IF making up to Volume Control Tank,
THEN perform the following to align to VCT:
 - 2.3.1 Open Manual Makeup to VCT valve (2CVC-68).
 - 2.3.2 Close Manual Makeup to Charging Pump Suction (2CVC-83).
- 2.4 Verify Boric Acid Makeup Flow controller (2FIC-4926) set as follows:
 - 2.4.1 Setpoint set to desired flowrate determined above.
 - 2.4.2 IF controller in MANUAL,
THEN controller demand set to desired value.
- 2.5 Verify Reactor Makeup Water Flow controller (2FIC-4927) set as follows:
 - 2.5.1 Setpoint set to desired flowrate determined above.
 - 2.5.2 IF controller in MANUAL,
THEN controller demand set to desired value.
- 2.6 Reset flow totalizers as follows:
 - Boric Acid Makeup Flow (2FQI-4926) to zero.
 - Reactor Makeup Water Flow (2FQI-4927) to zero.
- 2.7 Open VCT Makeup Isolation valve (2CV-4941-2).

PROC./WORK PLAN NO. 2104.003	PROCEDURE/WORK PLAN TITLE: CHEMICAL ADDITION	PAGE: 56 of 110 CHANGE: 046
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ATTACHMENT L

PAGE 2 OF 3

- 2.8 Verify EITHER Reactor Makeup pump (2P-109A OR 2P-109B) running.
- 2.9 Manually start BAM pumps (2P-39A AND/OR 2P-39B).
- 2.10 Open BAM Tank Recirc valve (2CV-4903-2 OR 2CV-4915-2) for running pumps.
- 2.11 Place Mode Select switch (2HS-4928) in MANUAL.
- 2.12 Verify 2FIC-4926 indicates desired flow rate.
- * 2.13 Verify 2FIC-4927 indicates desired flow rate.
- * 2.14 IF expected VCT level change NOT observed,
THEN perform the following:
 - 2.14.1 Secure running Reactor Makeup pump.
 - 2.14.2 Secure running BAM pump.
 - 2.14.3 Correct any problems prior to recommencing makeup.
- 2.15 WHEN desired amount of boric acid added,
THEN set 2FIC-4926 to minimum.
- 2.16 WHEN desired boric acid AND water quantities added,
THEN place Mode Select switch (2HS-4928) to DILUTE.
- 2.17 Stop operating BAM pumps:
 - 2P-39A
 - 2P-39B
- 2.18 Close BAM Tank Recirc valves for pumps placed in service:
 - 2CV-4903-2 for 2P-39A
 - 2CV-4915-2 for 2P-39B
- 2.19 IF desired,
THEN stop the operating Reactor Makeup pump.
- 2.20 IF aligned to VCT,
THEN perform the following to realign to Charging pump suction:
 - 2.20.1 Open 2CVC-83.
 - 2.20.2 Close 2CVC-68.
- 2.21 Close 2CV-4941-2.
- * 2.22 Monitor the following parameters for adverse trends:
 - RCS Tave (2TI-4650)
 - Axial Shape Index
 - Reactor power
- 2.23 IF BAM Tank used to supply acid approaching minimum level requirements of TRM 3.1.2.7 OR 3.1.2.8, (Use Supplement 4 Figure 1)
THEN initiate batching to BAM Tank.

PROC./WORK PLAN NO. 2104.003	PROCEDURE/WORK PLAN TITLE: CHEMICAL ADDITION	PAGE: 57 of 110 CHANGE: 046
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ATTACHMENT L

PAGE 3 OF 3

- 2.24 Verify 2FIC-4927 set to less than Charging Pump capacity.
- 2.25 Verify Boric Acid Makeup Flow controller (2FIC-4926) set as follows:
- 2.25.1 Setpoint set to pre-makeup flowrate.
- 2.25.2 IF controller in MANUAL,
THEN controller demand set to pre-makeup value.
- 2.26 Reset flow totalizers to zero:
- Boric Acid Makeup Flow (2FQI-4926)
 - Reactor Makeup Water Flow (2FQI-4927)

BORON2Q

ARKANSAS NUCLEAR ONE UNIT 2 BORON2 OPTION OUTPUT

*** OPTION 9 ***

MAKEUP TO VCT WITHOUT A RCS BORON CONC. CHANGE

INPUT PARAMETERS

INITIAL VCT LEVEL = 60.00 (%)

FINAL VCT LEVEL = 75.00 (%)

BAMT BORON CONC. = 5964.00 (PPM)

VCT BORON CONC. = 903.00 (PPM)

OUTPUT PARAMETERS

DI WATER FEED VOLUME REQUIRED = 430.363 (GALS)

BORIC ACID FEED VOLUME REQUIRED = 76.787 (GALS)

INPUT PARAMETERS CORRECT.

Joe RO Joe RO
LICENSED OPERATOR

INPUT PARAMETERS VERIFIED.

Bill SRO Bill SRO
SRO

RECORD RETENTION NOT REQUIRED

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 003 DATE: _____

SYSTEM/DUTY AREA: A. C. Electrical Distribution

TASK: Perform Synchronized Cross Connect of 480 VAC load-centers 2B1 and 2B2 (Alternate Path)

JTA#: ANO2-RO-480VAC-NORM-15

KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 062 A4.01

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: 12 Minutes

REFERENCE(S): OP 2107.001 Electrical System Operation

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023

Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

Unit 2 is in Mode 1. Non-Vital 4160VAC busses energized. 2B1 and 2B2 are energized.

Scheduled maintenance must be performed on 2B2 transformer.

The Operations Manager has given permission to perform Cross Connect of 2B1 and 2B2.

TASK STANDARD:

Cross connect 480VAC non-vital busses 2B1 and 2B2 with 2B1 supplying and 2B2 supply breakers open. Maintain 2B1 amperage less than 130 amps.

TASK PERFORMANCE AIDS:

OP 2107.001 Section 12.0.

SIMULATOR SETUP:

Mode 1.

All Non-Vital 4160VAC and 480VAC Busses energized.

REMOTE malfunction 480CURR2B2 value = 15

REMOTE malfunctions 480CURR2B1 (value = 25) and 480CURR2B2 (value = 35) are set for trigger 2.

Conditional triggerT2 should be set for the handswitch to 2A-202 Normal after open (IC4G02CS)

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and separate 2B2 from 2A2 using OP 2107.001 section 12.0."

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
<p>Examiner's note: If the initial plant conditions are in Mode 3, 4 or 5, then the first step is N/A.</p>				
	1. (Step 12.1)	Check that Operations Manager approval obtained.	Determine that Operations Manager has given approval to cross connect 2B1 and 2B2 at power.	N/A SAT UNSAT
(C)	2. (Step 12.2)	Determine combined load of 2B1 and 2B2 is less than 130 amps when cross connected.	On Panel 2C10, summed the current reading of 2B1 and 2B2. Observed that the summed load is less than 130 amps.	N/A SAT UNSAT
<p>Examiner's Note Step 12.3 in procedure is not applicable for this JPM as both busses remained energized.</p>				
(C)	3. (Step 12.4)	Synchroscope switch inserted in 2B1/2B2 cross-tie slot and placed in ON.	On Panel 2C10, Placed Synchroscope switch into 2B1/2B2 cross-tie slot and rotated clockwise to the ON position.	N/A SAT UNSAT
	4. (Step 12.5)	Observed that the Synchroscope is at the 12 o'clock position.	On Panel 2C10, Observed that the Synchroscope is at the 12 o'clock position with the Synchroscope switch in the ON position.	N/A SAT UNSAT
(C)	5. (Step 12.6)	Close the 2B1/2B2 Cross Tie breaker.	On panel 2C10, rotate the Cross Tie handswitch for 2B1/2B2 clockwise. Observed that the Green light turns OFF and the Red light turns ON above the Cross Tie handswitch.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Step 12.7.1)	Open normal supply breaker on 2B2, 480VAC bus.	On Panel 2C10, rotate the normal feeder supply breaker on 2B2 counter clockwise to the open position. (2B212) Observed that the RED light went OFF and the GREEN light went ON.	N/A SAT UNSAT
(C)	7. (Step 12.7.2)	Open Transformer feeder breaker from 2A2 to 2B2.	On Panel 2C10, rotate the transformer feeder breaker on 2A2 to 2B2 counter clockwise to the open position. (2A202) Observed that the RED light went OFF and the GREEN light went ON.	N/A SAT UNSAT
Examiners Note:				
The following is the Alternate path portion of this JPM				
(C)	7. (Step 12.8)	Verify that the amperage indicated on 2B1 is less than 130 amps. EXAMINERS CUE: “AO has been directed to secure non-essential loads on 2B1 and 2B2 to reduce loading on 2B1 and 2B2 to less than 130 amps.” EXAMINERS NOTE: Direct operator in simulator instructor’s station to reduce loading on 2B1 and 2B2 so that loading is less than 130 amps (use REMOTE malfunctions 480CURR2B1 and 480CURR2B2).	Observed that the summed load is greater than 130 amps. Direct the AO or inform CRS of need to reduce non-essential loads on 2B1 and 2B2 so that combined loading is less than 130 amps. OR Un-crosstie 2B1 and 2B2 using the appropriate section of 2107.001.	N/A SAT UNSAT
	8. (Step 12.9)	Turn sync switch to OFF.	On Panel 2C10, turn sync switch counter clockwise to the OFF position.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
Examiner's Note:				
Step 12.10 in procedure is not applicable for this JPM as both busses remained energized and the loads removed to reduce amperage on 2B1 will remain deenergized.				
	9. (Step 12.11)	Notified AO to monitor 2B1 transformer during cross connected operation and maintain temperature less than 220°C. EXAMINER'S CUE: "AO has been notified to monitor 2B1 transformer and notify the control room if temperature exceeds 220°C during cross connected operations."	Notify AO to monitor 2B1 transformer during cross connected operation and maintain temperature less than 220°C.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

Unit 2 is in Mode 1.

Non-Vital 4160VAC busses energized. 2B1 and 2B2 are energized.

Scheduled maintenance must be performed on 2B2 transformer.

The Operations Manager has given permission to perform Cross Connect of 2B1 and 2B2.

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and separate 2B2 from 2A2 using OP 2107.001 section 12.0."

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

Unit 2 is in Mode 1.

Non-Vital 4160VAC busses energized. 2B1 and 2B2 are energized.

Scheduled maintenance must be performed on 2B2 transformer.

The Operations Manager has given permission to perform Cross Connect of 2B1 and 2B2.

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and separate 2B2 from 2A2 using OP 2107.001 section 12.0."

PROC./WORK PLAN NO. 2107.001	PROCEDURE/WORK PLAN TITLE: ELECTRICAL SYSTEM OPERATIONS	PAGE: 30 of 188 CHANGE: 071
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12.0 CROSS CONNECTING 480V NON-ESF BUSES

CAUTION

- Time dependent overcurrent relays exist on all 480V Load Center feeder breakers. They are set at 1600 amps (equates to 185 amps on 4160V AC side). Bus load should not exceed 173 amps (including 7% tolerance)
- Transformer continuous amperage rating at 4160V is 139 amps. Continuous operation > 139 amps will eventually degrade transformer (130 amp limit based on 7% instrument error).

- 12.1 IF in Modes 1 or 2
AND cross connecting for non-emergency conditions,
THEN obtain Operations Manager concurrence.
- 12.2 IF BOTH buses energized
AND combined load > 130 amps,
THEN adjust load as necessary to achieve < 130 amps combined load.
- 12.3 IF cross connecting to energize a de-energized bus,
THEN strip all loads from de-energized Load Center.
- 12.4 Place Synchroscope switch for appropriate Cross Tie breaker to ON.
- 12.5 IF cross connecting energized buses,
THEN check synchroscope at 12 o'clock position.
- 12.6 Close selected Cross Tie breaker.
- 12.7 IF desired to separate 480V bus from 4160V AC bus,
THEN open the following breakers:
- 12.7.1 Normal Supply breaker on 480V bus.
- 12.7.2 Transformer Feeder breaker on 2A1 OR 2A2.
- 12.8 Verify < 130 amps on supplying transformer.
- 12.9 Turn Sync switch to OFF.
- 12.10 IF EITHER Load center has been stripped,
THEN energize loads as directed by SM.
- * 12.11 Maintain supplying transformer temperature < 220°C while buses are cross-connected.
- * 12.12 Maintain < 130 amps on supplying transformer while buses are cross-connected.

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 012 DATE: _____

SYSTEM/DUTY AREA: Component Cooling Water System

TASK: Shift Running CCW pumps

JTA#: ANO-2-RO-CCW-NORM-10

KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 008 A4.01

APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____

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-2104.028 Component Cooling Water System Operations

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023

Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

2P-33B running in a normal configuration. Component Cooling water loops are cross tied.

Maintenance requests that 2P-33A be started and ran in single pump operation for PMT after pump rebuild.

TASK STANDARD:

2P33A running supplying CCW and 2P33B & 2P-33C in PULL-TO-LOCK.

TASK PERFORMANCE AIDS:

OP 2104.028 Section 18.2.5

SIMULATOR SETUP:

Any power level or mode.

2P-33B CCW pump in service with CCW loops cross tied.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Start 2P-33A and secure 2P-33B for PMT run following maintenance using OP 2104.028 Step 18.2.5."

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 18.2.5 A & B)	Contact AO to vent 2P-33A. Examiner CUE: AO reports casing vented and 2CCW-1001 closed.	Using telephone or radio, contacted AO and directed him to vent 2P-33A Casing, using 2CCW-1001.	N/A SAT UNSAT
(C)	2. (Step 18.2.5 C)	Verify 2P-33C handswitch (2HS-5234) in PTL.	On panel 2C14, placed 2P-33C handswitch (2HS-5234) in Pull-To-Lock.	N/A SAT UNSAT
(C)	3. (Step 18.2.5 D)	Start 2P-33A. Examiner CUE: If requested 2P-33A is running satisfactory.	On panel 2C14, took 2P-33A handswitch (2HS-5225) to START and released handswitch. Observed red light ON above handswitch.	N/A SAT UNSAT
(C)	4. (Step 18.2.5 E)	Place 2P-33B handswitch (2HS-5228) to PTL.	On panel 2C14, placed 2P-33B handswitch (2HS-5228) in Pull-To-Lock. Observed 2K-12 PUMP 2P-33A/B/C LOCKED alarm. (Not Critical)	N/A SAT UNSAT
	5. (Step 18.2.5 F)	Observe normal flow and discharge pressure. Examiner CUE: Local operator reports discharge pressure 110 psig locally.	On panel 2C14, observed CCW flow between 1000 to 3000 gpm. Directed operator to observe discharge pressure between 100 to 120 psig locally.	N/A SAT UNSAT
END				

STOP TIME: _____

EXAMINER's COPY

JPM INITIAL TASK CONDITIONS:

2P-33B is running in a normal configuration.

Maintenance requests that 2P-33A be started and ran in single pump operation for PMT after pump rebuild.

INITIATING CUE:

The CRS directs, "Start 2P-33A and secure 2P-33B for PMT run following maintenance using OP 2104.028 Step 18.2.5."

JOB PERFORMANCE MEASURE

EXAMINEE's COPY

JPM INITIAL TASK CONDITIONS:

2P-33B is running in a normal configuration.

Maintenance requests that 2P-33A be started and ran in single pump operation for PMT after pump rebuild.

INITIATING CUE:

The CRS directs, "Start 2P-33A and secure 2P-33B for PMT run following maintenance using OP 2104.028 Step 18.2.5."

PROC./WORK PLAN NO. 2104.028	PROCEDURE/WORK PLAN TITLE: COMPONENT COOLING WATER SYSTEM OPERATIONS	PAGE: 43 of 99 CHANGE: 037
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NOTE

2P-33A is the least preferred pump to run due to Cross Over valve interlocks. 2P-33B/C handswitches should be placed in PTL whenever 2P-33A is in service.

- 18.2.5 Perform the following to start 2P-33A AND secure 2P-33B:
- A. Throttle open 2P-33A Casing Vent (2CCW-1001).
 - B. WHEN solid stream of water appears,
THEN close 2CCW-1001.
 - C. Verify 2P-33C handswitch (2HS-5234) in PTL.
 - D. Place 2P-33A handswitch (2HS-5225) to START.
 - E. Place 2P-33B handswitch (2HS-5228) to PTL.
 - F. Observe the following:
 - Normal flow 1000 to 3000 gpm (2FIS-5202)
 - 2P-33A discharge pressure 100 to 120 psig (2PI-5225)

NOTE

2P-33A is the least preferred pump to run due to Cross Over valve interlocks. 2P-33B/C handswitches should be placed in PTL whenever 2P-33A is in service.

- 18.2.6 Perform the following to start 2P-33A AND secure 2P-33C:
- A. Throttle open 2P-33A Casing Vent (2CCW-1001).
 - B. WHEN solid stream of water appears,
THEN close 2CCW-1001.
 - C. Verify 2P-33B handswitch (2HS-5228) in PTL.
 - D. Place 2P-33A handswitch (2HS-5225) to START.
 - E. Place 2P-33C handswitch (2HS-5234) to PTL.
 - F. Observe the following:
 - Normal flow 1000 to 3000 gpm (2FIS-5200)
 - 2P-33A discharge pressure 100 to 120 psig (2PI-5225)

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 4 DATE: _____

SYSTEM/DUTY AREA: Core Protection Calculators/COLSS

TASK: Determine DNBR/LPD limits with COLSS out of service

JTA#: ANO2-RO-EOPAOP-OFFNORM-234

KA VALUE RO: 3.9 SRO: 3.9 KA REFERENCE: 015 A3.03

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: 10 Minutes

REFERENCE(S): OP-2203.043 Loss of COLSS

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

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the “Briefing Checklist – System Walkthrough” portion of OP 1064.023

Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The plant is at 100%. COLSS has been declared inoperable due to MUX ‘C’ and ‘D’ failures.

TASK STANDARD:

DNBR/LPD limits have been calculated to within limits established.

TASK PERFORMANCE AIDS:

OP-2203.043 ATT A

SIMULATOR SETUP:

Fail the COLSS program. Insert malfunction XSPCOLSSMXD (‘D’ MUX failure) and XSPCOLSSMXC (‘C’ MUX failure)

JOB PERFORMANCE MEASURE

INITIATING CUE: The CRS directs you to determine DNBR/LPD within limits by completing AOP 2203.043, Loss of COLSS, ATT A.

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
NOTES:				
1. Steps may be performed in various orders. Examinee will				
A. Obtain data				
B. Derive average				
C. derive limit				
2. To obtain readings on CPC "B" and "C" the CPC/CEAC selector button must be selected to CPC (backlit)				
	1. (Step 1 A.)	Obtain operable CPC channel values (PID 406)	At operable CPC modules on 2C03 obtained CPC channel values (PID 406) by MAIN MENU <ENTER> (3) CHANNEL CHECK <ENTER> <u>OR</u> MAIN MENU <ENTER> (1) STANDARD O.M. <ENTER> (P) POINT ID <ENTER> 4 <ENTER> 0 <ENTER> 6 <ENTER> <u>AND</u> Entered the 406 values for operable channels A-D on pg 1 step 1.A. of ATT A	N/A SAT UNSAT
(C)	2. (Step 1 A)	Determine DNBR Average	On ATT A step 1.A. determined DNBR Average by adding the operable channel DNBR readings previously obtained and dividing by # operable channels. DNBR average calculated to be 1.7 to 1.8	N/A SAT UNSAT
(C)	3. (Step 1 B)	Determine DNBR Limit	On ATT A step 1.B. determined DNBR limit by subtracting 0.12 from average obtained in step 1.A. DNBR limit calculated to be 0.12 less than the average.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
	4. (Step 2 A) Obtain operable CPC channel values (PID 179) EXAMINER NOTE: Approximate 100% value for LPD A-14.69 B-14.41 C-14.37 D-14.26	At operable CPC modules on 2C03 obtained CPC channel values (PID 179) by MAIN MENU <ENTER> (3) CHANNEL CHECK <ENTER> <u>OR</u> MAIN MENU <ENTER> (1) STANDARD O.M. <ENTER> (P) POINT ID <ENTER> 1 <ENTER 7 <ENTER> 9 <ENTER> <u>AND</u> Entered the 179 values for operable channels A-D on page 1 step 2.A. of ATT A	N/A SAT UNSAT
(C)	5. (Step 2 A) Determine LPD average	On ATT A step 2.A, determined LPD Average by adding the operable channel LPD readings previously obtained and dividing by # operable channels. LPD average calculated to be 14.3 to 14.6	N/A SAT UNSAT
(C)	6. (Step 2 B) Determine LPD limit	On ATT A step 2.B. determined LPD limit by adding 0.16 to average obtained in step 2.A. LPD limit calculated to be 0.16 greater than the average.	N/A SAT UNSAT
END			

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

The plant is at 100%. COLSS has been declared inoperable due to MUX 'C' and 'D' failures.

INITIATING CUE:

The CRS directs you to determine DNBR/LPD within limits by completing AOP 2203.043, Loss of COLSS, ATT A.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

The plant is at 100%. COLSS has been declared inoperable due to MUX 'C' and 'D' failures.

INITIATING CUE:

The CRS directs you to determine DNBR/LPD within limits by completing AOP 2203.043, Loss of COLSS, ATT A.

ATTACHMENT A

DNBR/LPD TECH SPEC LOG

NOTE

Consider tripped or failed CPCs inoperable for determining DNBR, LPD and ASI Limits.

1. Determine DNBR Limit as follows.
 - A. Add operable CPC channel values (PID 406) and divide by number of channels.

Ch A _____ + Ch B _____ + Ch C _____ + Ch D _____ = Total _____

Total _____ ÷ operable channels _____ = DNBR average _____
 - B. Subtract 0.12 from DNBR average to determine DNBR Limit.

DNBR average _____ - 0.12 = DNBR Limit _____

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 _____
 - B. Add 0.16 to LPD average to determine LPD Limit.

LPD average _____ + 0.16 = LPD Limit _____

3. Determine DNBR, LPD and ASI average every 15 minutes until COLSS calculated DNBR and LPD POLs are returned to service.

- *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 2102.004,
 Power Operation.

5. IF plant power being changed,
THEN re-calculate DNBR and LPD limits using steps 1 and 2 of this attachment when
 steady-state power level achieved.

PROC NO	TITLE	REV	PAGE
2203.043	LOSS OF COLSS	004	8 of 10

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-RSD

PAGE 2 of 8

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: A fire is in progress in Unit 1 Control Room. Unit 2 is forced to evacuate the Unit 2 Control Room and perform AOP 2203.030, "Remote Shutdown.." (ALTERNATE SUCCESS PATH).

TASK STANDARD: The CBOT functions of AOP 2203.030, Section 5 Steps 1-8 have been performed. Main turbine generator has been tripped locally, the exciter field breaker has been manually opened and 'B' MFP has been locally tripped.

TASK PERFORMANCE AIDS: AOP 2203.030, Section 5 CBOT Actions

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-RSD

PAGE 3 of 8

INITIATING CUE:

The SM/CRS directs, "Perform actions directed in AOP 2203.030, Section 5, 'CBOT Actions,' for "Remote Shutdown." Steps 1 through 8

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
<u>TRANSITION NOTE:</u>				
Go to Alternate Shutdown Locker located just outside U2 CR Extension				
	1.	Obtain emergency equipment. <u>POSITIVE CUE:</u> Equipment obtained.	At Alternate Shutdown locker, obtained hand held radio and flashlight.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u>				
Go to turbine building elevation 386', north of MTG Front Standard.				
(C)	2.	Locally trip Main Turbine. <u>Examiner's Cue:</u> Main turbine is at 1800 RPM and running noises are heard. <u>POSITIVE CUE:</u> MTG tripped speed is lowering. <u>NEGATIVE CUE:</u> MTG speed is 1800rpm and steady.	In front of MTG front standard, pull MTG trip handle and verified MTG speed lowering.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u>				
Go to turbine building elevation 372' behind Door 340.				
	3.	Check 2A3 and 2A4 energized. <u>POSITIVE CUE:</u> Voltage is 4200VAC on 2A309. Amperage is 40 amps on 2A309. <u>POSITIVE CUE:</u> Voltage is 4200VAC on 2A409. Amperage is 40 amps on 2A409.	At 2A3, checked voltage and amperage on 2A309. At 2A4, checked voltage and amperage on 2A309.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-RSD

PAGE 4 of 8

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
<p><u>TRANSITION NOTE:</u> Go to turbine building elevation 372' 2A1/2 2H1/2switchgear.</p>			
4.	<p>Check 2A1 and 2A2 energized.</p> <p><u>POSITIVE CUE:</u> Voltage is 4200VAC on 2A112.</p> <p><u>POSITIVE CUE:</u> Voltage is 4200VAC on 2A212.</p>	<p>At 2A1, checked voltage on 2A112.</p> <p>At 2A2, checked voltage on 2A212</p>	N/A SAT UNSAT
5.	<p>Check 2H1 and 2H2 energized.</p> <p><u>POSITIVE CUE:</u> Voltage is 7000VAC on 2H14</p> <p><u>POSITIVE CUE:</u> Voltage is 7000VAC on 2H24.</p>	<p>At 2H1, checked voltage on 2H14.</p> <p>At 2H2, checked voltage on 2H24</p>	N/A SAT UNSAT
6.	<p>Check Heater Drain Pump Breakers OPEN.</p> <p><u>POSITIVE CUE:</u> Green light ON red light OFF for breaker 2A107.</p> <p><u>POSITIVE CUE:</u> Green light ON red light OFF for breaker 2A207.</p>	<p>At 2A1 Breaker 2A107 2P8A, verified breaker green light ON red light OFF.</p> <p>At 2A2 Breaker 2A207 2P8B, verified breaker green light ON red light OFF.</p>	N/A SAT UNSAT
7.	<p>Verify at least one Condensate Pump Breaker Closed.</p> <p><u>CUE:</u> Red light ON Green light OFF for breaker 2A105 and amps indicate ~ 400.</p> <p><u>CUE:</u> Green light ON red light OFF for breakers 2A205, 2A106 and 2A206 and no amps are indicated.</p>	<p>At 2A1 Breaker 2A105 2P2A, verified breaker Red light ON Green light OFF.</p> <p>For rest of Breakers 2A205, 2A106 and 2A206 verified breaker green light ON red light OFF.</p>	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-RSD

PAGE 5 of 8

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
<p><u>TRANSITION NOTE:</u> Go north of 2A1/2 2H1/2switchgear.</p>				
<p><u>EXAMINER'S NOTE:</u> <u>This is an Alternate Success Path Step</u> Provide the NEGATIVE CUE in the step below:</p>				
(C)	8.	<p>Verify that the exciter field breaker is tripped.</p> <p><u>POSITIVE CUE:</u> Green OPEN flag displayed for Exciter Field Breaker.</p> <p><u>NEGATIVE CUE:</u> Red CLOSE flag displayed for the exciter field breaker.</p>	<p>At the alterrex excitation cabinet, tripped the exciter field breaker by depressing the trip pushbutton.</p> <p>Observed the green OPEN flag on breaker.</p>	N/A SAT UNSAT
<p><u>TRANSITION NOTE:</u> Go to turbine building elevation 335'.</p>				
<p><u>EXAMINERS NOTES:</u> Steps 9/10 may be performed in either order. <u>This is an Alternate Success Path Step</u></p>				
	9.	<p>Verify "A" MFWP tripped.</p> <p><u>Examiner's CUE:</u> "A" MFWP rotation = 0 rpm. No running noises observed.</p>	<p>At panel 2C103, observed "A" MFWP (2K2A) RPM = zero (2SI-0350)</p>	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-RSD

PAGE 6 of 8

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)
(C)	<p>10. Verify "B" MFWP tripped.</p> <p><u>Examiner's CUE:</u></p> <p>"B" MFWP rotation = 3000 rpm.</p> <p>Running noises observed.</p> <p><u>POSITIVE CUE:</u></p> <p>After the operator manually trips the "B" MFW Pump Turbine speed indication is decreasing.</p> <p><u>NEGATIVE CUE:</u></p> <p>"B" MFW Pump Turbine speed indication is 3030 rpm and steady.</p>	<p>At panel 2C104, observed "B" MFWP (2K2B) RPM = 3000 RPM (2SI-0331).</p> <p>When report that 'B' MFP is still running, pulled the manual trip handle away from the panel.</p> <p>Observed RPM decreasing on 2K2A Speed Indicator (2SI-0350).</p> <p><u>OR</u></p> <p>Listened for sound of decreasing turbine speed.</p>	<p>N/A SAT UNSAT</p>
END			

STOP TIME: _____

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- A fire is in progress in Unit 1 Control Room.
- Unit 2 is forced to evacuate the Unit 2 Control Room and perform AOP 2203.030, "Remote Shutdown."

INITIATING CUE:

The SM/CRS directs, "Perform actions directed in AOP 2203.030, Section 5, 'CBOT Actions,' for "Remote Shutdown." Steps 1 through 8

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- A fire is in progress in Unit 1 Control Room.
- Unit 2 is forced to evacuate the Unit 2 Control Room and perform AOP 2203.030, "Remote Shutdown."

INITIATING CUE:

The SM/CRS directs, "Perform actions directed in AOP 2203.030, Section 5, 'CBOT Actions,' for "Remote Shutdown." Steps 1 through 8

JOB PERFORMANCE MEASURE				
JPM#	ANO-2-JPM-NRC-XFCEA	REV	11	PAGE 1 of 7

SYSTEM/DUTY AREA: Control Element Drive Mechanism Control System

TASK: Transfer a CEA to the hold bus

JTA #: ANO2-RO-CEDM-OFFNORM-12

KA VALUE RO: 3.7 SRO: 3.9 KA REFERENCE: 001 A2.14

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: X LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 20 minutes

REFERENCE(S) OP 2105.009, Exhibit 1

EXAMINEE'S NAME: _____ Badge #: _____

EVALUATOR'S NAME: _____ DATE: _____

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: _____

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

SIGNED: _____ DATE: _____

JOB PERFORMANCE MEASURE					
JPM#	ANO-2-JPM-NRC-XFCEA	REV	11		PAGE 2 of 7

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

PM INITIAL TASK CONDITIONS:

The following conditions exist:

1. The Plant is at 100% power.
2. 2K10-H1 "CEDMCS COIL VOLTAGE HI" is in alarm
3. 2K20-H3 "CEDMCS TIMER FAILURE" is locked in alarm

TASK STANDARD:

CEA 47 held by Upper Gripper on the HOLD bus with CEDM power switch CKT BKR FOR CEA 47 OPENED

TASK PERFORMANCE AIDS:

4. PowerPoint XFCEA Pictures.ppt located in "In Plant JPM" folder
5. OP 2105.009 Exhibit 1
6. Stop watch for timing subgroup transfer within 30 seconds.

JOB PERFORMANCE MEASURE

INITIATING CUE: The CRS provides the following direction:

1. Place the affected CEA subgroup on the hold bus using 2105.009, Exhibit 1

START TIME:

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)	
<u>EXAMINERS NOTE:</u>				
Alarm lights may be either "RED" or "GREEN". POSITIVE CUES must be supplied to provide expected plant indications.				
(C)	1. (Step 1)	Check Timer Failure Alarm (TFA) lamps. <u>EXAMINER'S CUE:</u> Red light "ON" for CEA #47 <p align="center">OR</p> Check Card Status Monitor lights to determine affected subgroup/CEA. <u>EXAMINER'S CUE:</u> Card status monitor light flashing for CEA #47 subgroup.	On CEDMCS Cabinet (2C72) Bay A and Bay B supervisory panels, checked TFA lamps. Observed red light ON for CEA #47. <p align="center">OR</p> On CEDMCS Cabinets 2C71 and 2C72, checked CEA Card Status Monitor lights. Observed card status monitor light for CEA #47 subgroup flashing	N/A SAT UNSAT
	2. (Step 2.1)	Locate the affected Subgroup Number and Subgroup Maintenance Switch <u>EXAMINER'S CUE:</u> Maintenance switch #12 on 2C72 for CEA 047 is pointing down.	Identified the correct subgroup number for CEA 47. On 2C72 located maintenance switch #12 for that subgroup.	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>				
Do not allow examinee to open the cabinet door to 2C-71. Once they have located the correct door, show them the picture of the voltage readings which indicate ~60 VDC.				
	3. (Step 2.2)	Check positive and negative Hold Bus voltages >50 VDC. <u>POSITIVE CUE:</u> Voltage meters indicate ~60 VDC	AT back of panel 2C-71, observed Hold Bus Voltages (positive & negative) > 50 VDC on bus voltage meters.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

Examiner Note:				
When the CEA is transferred to the Upper Gripper start the timer for the 30 second critical time to complete the transfer to the Hold Bus.				
Examiner Note:				
Do not allow examinee to open the Card Status Monitor door. When the examinee has located the correct door, show them the picture of the ACTM cards.				
	4. (Step 2.3)	Open the Card Status Monitor door <u>EXAMINER'S CUE:</u> LG ENGD and ABNM VOLT lights illuminated	Opened door Observed the lower gripper light and ABN VOLT light illuminated.	N/A SAT UNSAT
(C)	5. (Step 2.4)	Operate the MAN TRANSFER toggle switch on the ACTM card for CEA 47 to transfer it to the Upper Gripper. <u>EXAMINER'S CUE:</u> UG ENGD light illuminates and Lower Gripper light extinguishes when the MAN TRANS switch on the ACTM card is operated	Pushed up on the MANUAL TRANSFER toggle switch Observed the Lower Gripper light extinguishes and the Upper Gripper light illuminates & ABN VOLT light remains illuminated.	N/A SAT UNSAT
(C)	6. (Step 2.5)	Operate Subgroup Maint Switch to place CEA #47 on hold bus. <u>EXAMINER'S CUE:</u> Subgroup maintenance switch #12 is pointing up.	On front of 2C72 Bay "B" Supervisory Panel, located and raised subgroup maintenance switch #12 to the ON position within 30 seconds of completing the previous step. Within 30 seconds after operation of the MANUAL TRANSFER switch, operated subgroup maintenance switch.	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>				
Do not allow examinee to open the cabinet door to 2C-71. Once they have located the correct door, show them the picture of the voltage readings which indicate ~45 VDC.				
	6. (Step 2.6)	Check positive and negative Hold Bus voltages. <u>EXAMINER'S CUE:</u> Voltage meters indicate 44 VDC	AT back of panel 2C-71, observed Hold Bus Voltages (positive & negative) decreased > 10 VDC from initial reading on bus voltage meters.	N/A SAT UNSAT

(C)	7. (Step 2.7)	Open the disconnect switch for CEA #47. <u>EXAMINER'S CUE:</u> Green light ON, red light OFF.	At front of panel 2C71 located and pulled downward on CEA #47 "Power Switch" disconnect. Observed green light ON, red light OFF.	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE					
JPM#	ANO-2-JPM-NRC-XFCEA	REV	11		PAGE 6 of 7

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

The plant is at 100%.

2K10-H1 "CEDMCS COIL VOLTAGE HI" is in alarm

2K20-H3 "CEDMCS TIMER FAILURE" is locked in alarm

INITIATING CUE:

The CRS directs you to place the affected CEA subgroup on the hold bus using 2105.009, Exhibit 1

JOB PERFORMANCE MEASURE					
JPM#	ANO-2-JPM-NRC-XFCEA	REV	11		PAGE 7 of 7

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

The plant is at 100%.

2K10-H1 "CEDMCS COIL VOLTAGE HI" is in alarm

2K20-H3 "CEDMCS TIMER FAILURE" is locked in alarm

INITIATING CUE:

The CRS directs you to place the affected CEA subgroup on the hold bus using 2105.009, Exhibit 1

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 9 of 31 CHANGE: 026
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EXHIBIT 1

2105.009

CEDMCS TIMER FAILURE ALARM RESPONSE

Revised 04/06/08

PAGE 1 OF 1

- 1.0 Determine affected CEA by individual CEA Timer Failure Alarm (TFA) (2C72) OR card status lights on lower section of CEDMCS cabinets (2C70 /2C71).

NOTE

- CEA must be on Upper Gripper to be transferred to Hold Bus.
- To prevent transfer back to Lower Gripper, Subgroup must be transferred to Hold Bus within 30 seconds of operating the MAN TRANS switch.
- CEA drop is likely if TFA locked in due to High Voltage and CEA CANNOT be placed on Hold Bus.

- 2.0 IF ONE of the following conditions exist:

- CEDMCS Coil Voltage Hi (2K10-H1) locked in alarm
- Timer Failure Alarm (TFA) will NOT clear on individual CEAs with ACTM ABNM VOLT LED and CEA LG ENGD LED lit.

THEN attempt placing affected CEA Subgroup on Hold Bus as follows:

- 2.1 On 2C72 locate the following:

- Affected Subgroup Number
- Subgroup Maint switch

- 2.2 Check positive AND negative Hold Bus voltage meters reading > 50 VDC:

- Subgroups 1-10 (In back of 2C70)
- Subgroups 11-20 (In back of 2C71)

- 2.3 Open affected Card Status Monitor door.

- 2.4 Operate MAN TRANS switch on affected ACTM card to transfer CEA to Upper Gripper.

- 2.5 WHEN UG ENGD light illuminated,
THEN transfer Subgroup to Hold Bus using applicable Subgroup Maint switch on 2C72.

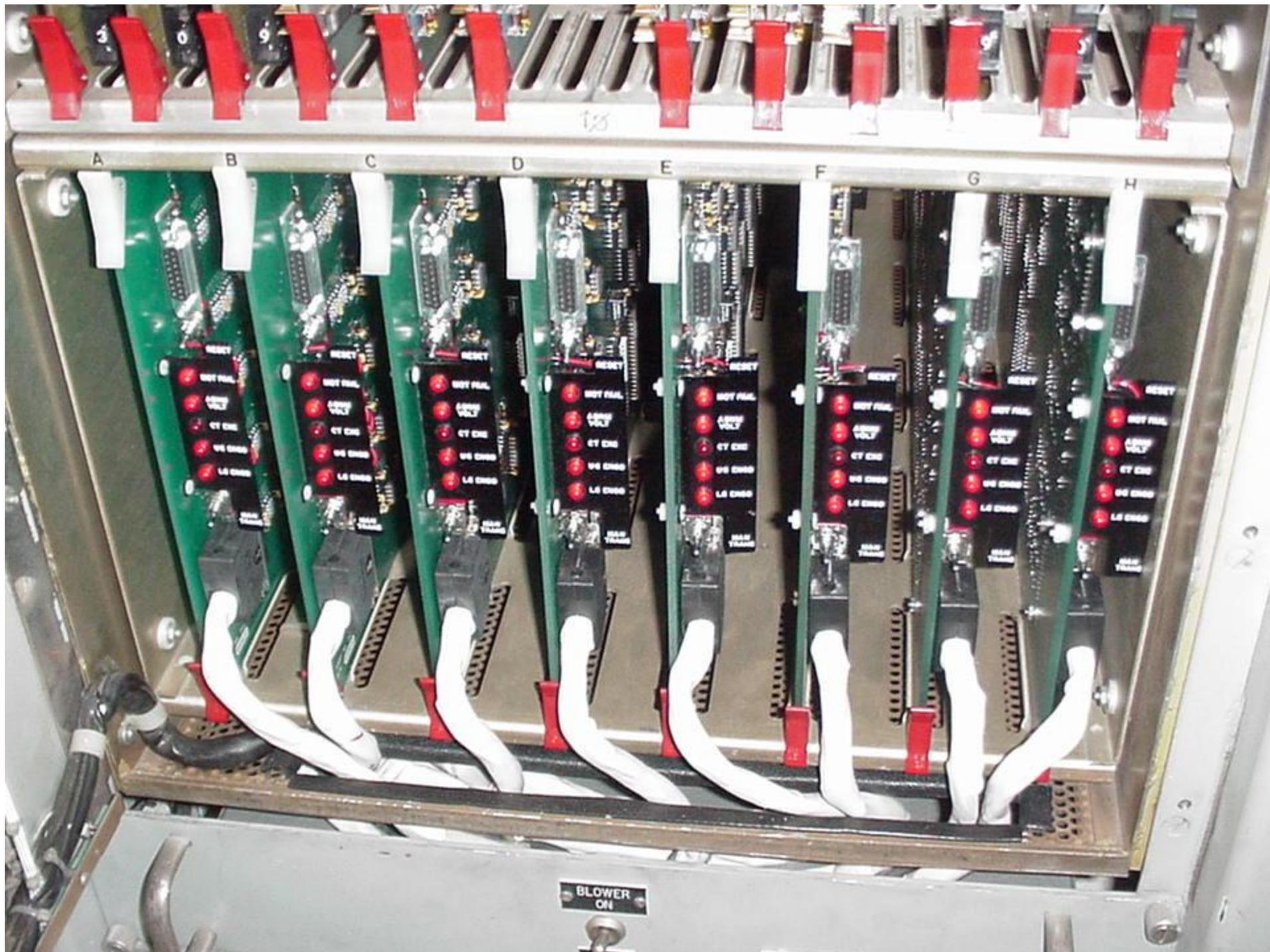
- 2.6 Check positive and negative Hold Bus voltages have dropped at least 10 VDC from initial reading in step 2.2.

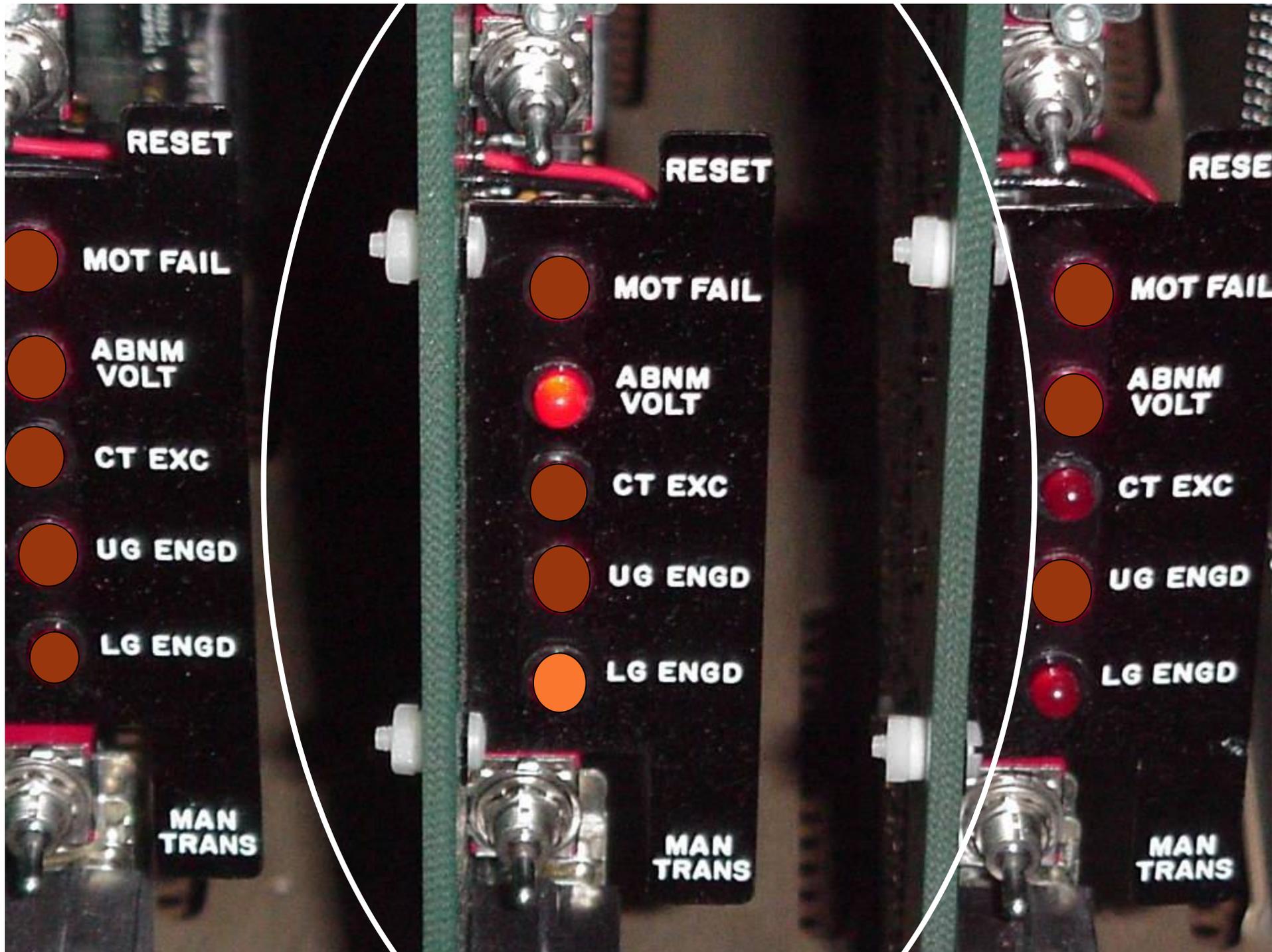
- Subgroups 1-10 (In back of 2C70)
- Subgroups 11-20 (In back of 2C71)

- 2.7 On Power Switch Assembly door, open affected CEA Disconnect breaker.

- 2.8 Refer to Tech Spec 3.1.3.1, Actions B and C.

- 3.0 Contact I&C to troubleshoot and repair.





RESET

MOT FAIL

ABNM
VOLT

CT EXC

UG ENGD

LG ENGD

MAN
TRANS

RESET

MOT FAIL

ABNM
VOLT

CT EXC

UG ENGD

LG ENGD

MAN
TRANS

RESE

MOT FAIL

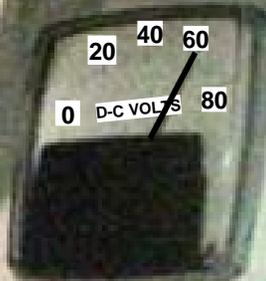
ABNM
VOLT

CT EXC

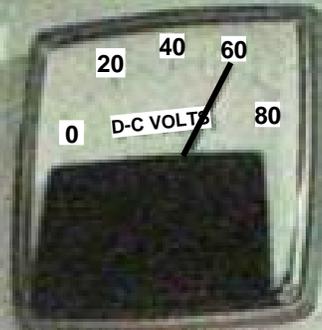
UG ENGD

LG ENGD

MAN
TRANS



POSITIVE VOLTAGE 1
OUTPUT



NEGATIVE VOLTAGE 1
OUTPUT

POSITIVE OUTPUT
ADJUST

NEGATIVE OUTPUT
ADJUST

CAUTION
HIGH VOLTAGE

F407



ϕ A

F408



ϕ B

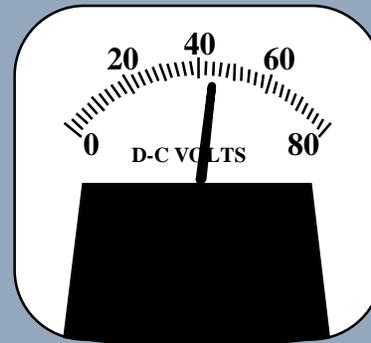
F409



ϕ C



**POSITIVE VOLTAGE 1
OUTPUT**



**NEGATIVE VOLTAGE 1
OUTPUT**



**POSITIVE OUTPUT
ADJUST**



**NEGATIVE OUTPUT
ADJUST**

**CAUTION
HIGH VOLTAGE**

UNIT: 2 REV #: 1 DATE: _____

SYSTEM/DUTY AREA: Liquid Radwaste and Boron Management System

TASK: Perform a release of 2T-69A Boric Acid Condensate Tank

JTA#: ANO2-WCO-LRWBMS-NORM-2

KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 068 A4.02

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-2104.014 LRW and BMS Operations Sup. 3

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.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the “Briefing Checklist – System Walkthrough” portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

1. **2T-69A Boric Acid Condensate Tank level is 90%.**
2. **2104.014 Sup. 1 Liquid Radwaste Release permit for 2T-69A has been submitted and completed.**
3. **2P-47A Boric Acid Condensate pump is running.**
4. **2RE-2330 radiation monitor is OPERABLE.**
5. **Maximum flow rate from Pre-Release report based on number of Circ pumps running is 250 gpm.**
6. **2CV-2330A and 2CV-2330B were both tested in Supplement 1 of 2104.014.**

TASK STANDARD:

A 2T-69A Boric Acid Condensate Tank release has been commenced using OP-2104.014 Sup. 3.

TASK PERFORMANCE AIDS:

OP-2104.014 Sup. 3

INITIATING CUE:

The SM/CRS directs, "Commence a 2T-69A Boric Acid Condensate Tank release using OP-2104.014 Sup. 3."

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
<u>TRANSITION NOTE:</u>				
Proceed to the 335 elevation of the Aux Bldg by the WCO desk.				
Examiner Note:				
Cue: Inform the applicant that the required magnetic tags are in the proper positions on 2C-112.				
	1. (Step 3.1)	Check 2CV-2312 closed and magnetic tag installed. <u>EXAMINER'S CUE:</u> Red light off, green light on. Red "CLOSED" magnetic tag is installed on 2HS-2312. Valve stem is fully down.	Observed red "CLOSED" magnetic tag installed on 2HS-2312. <u>AND EITHER:</u> At 2C-112 panel, observed red light off, green light on. <u>OR</u> Locally, observed valve stem fully down.	N/A SAT UNSAT
	2. (Step 3.1)	Check 2CV-2318 closed and magnetic tag installed. <u>EXAMINER'S CUE:</u> Red light off, green light on. Red "CLOSED" magnetic tag is installed on 2HS-2318. Valve stem is fully down.	Observed red "CLOSED" magnetic tag installed on 2HS-2318. <u>AND EITHER:</u> At 2C-112 panel, observed red light off, green light on. <u>OR</u> Locally, observed valve stem fully down.	N/A SAT UNSAT
<u>EXAMINERS NOTE:</u>				
Step 3.2 is not applicable due to using 2P-47A and Step 4 is not applicable due to releasing 2T-69A				
(C)	3. (Step 5)	Verify 2P-47A pump is running. <u>EXAMINER'S CUE:</u> Red light on, green light off. <u>OR</u> 2PI-2317 indicates 65 psig.	Either: At 2C-112 panel, observed red light on, green light off. <u>OR</u> At 2C-112 panel, observed pressure on 2PI-2317.	N/A SAT UNSAT
	4. (Step 6.1)	Remove magnetic tag from 2CV-2318. <u>EXAMINER'S CUE:</u>	Removed red "CLOSED" magnetic tag from 2HS-2318.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
		Red "CLOSED" magnetic tag is removed from 2HS-2318.		
(C)	5. (Step 6.2)	Open 2P-47A discharge valve 2CV-2318. <u>EXAMINER'S CUE:</u> Red light on, green light off.	At 2C-112 panel, placed 2HS-2318 to OPEN.	N/A SAT UNSAT
	6. (Step 6.3)	Place magnetic tag near 2CV-2318. <u>EXAMINER'S CUE:</u> Red "OPEN-DUMP" magnetic tag is near 2HS-2318.	Placed red "OPEN-DUMP" magnetic tag near 2HS-2318.	N/A SAT UNSAT
(C)	7. (Step 7.1)	Verify tank release valves open. <u>EXAMINER'S CUE:</u> 2HS-2330 is position 1 or 3. Red light on, green light off for 2CV-2330A and 2CV-2330B.	At 2C-112 panel, verified 2HS-2330 in position "1" or "3" and Red light is illuminated for 2CV-2330A and 2CV-2330B.	N/A SAT UNSAT
	8. (Step 8)	Check no release flow exists. <u>EXAMINER'S CUE:</u> Control room states, "2FR/RR-2331 recorder indicates 0 gpm."	Contacted the Control room by radio or phone to verify no flow exists on 2FR/RR-2331.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u>				
Proceed to the 326 elevation area by the Squeeze valve.				
(C)	9. (Step 9)	Open 2BM-35. <u>EXAMINER'S CUE:</u> Valve stem is fully extended.	Opened valve by turning handwheel CCW until resistance felt.	N/A SAT UNSAT
(C)	10. (Step 10)	Throttle 2BM-80A to one turn open. <u>EXAMINER'S CUE:</u> Valve is one turn open. Flow noise is heard.	Closed valve by turning handwheel CW until resistance felt. Reopened valve ~ 1 turn.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	11. (Step 10)	Verify flow less than or equal to 75 gpm. <u>EXAMINER'S CUE:</u> Flow is 60 gpm.	Contacted Control room by radio or phone to verify flow less than or equal to 75 gpm.	N/A SAT UNSAT
END				

STOP TIME: _____

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

2T-69A Boric Acid Condensate Tank level is 90%.

2104.014 Sup. 1 Liquid Radwaste Release permit for 2T-69A has been submitted and completed.

2P-47A Boric Acid Condensate pump is running.

2RE-2330 radiation monitor is OPERABLE.

Maximum flow rate from Pre-Release report based on number of Circ pumps running is 250 gpm.

2CV-2330A and 2CV-2330B were both tested in Supplement 1 of 2104.014.

INITIATING CUE:

The SM/CRS directs, "Commence a 2T-69A Boric Acid Condensate Tank release using OP-2104.014 Sup. 3."

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

2T-69A Boric Acid Condensate Tank level is 90%.

2104.014 Sup. 1 Liquid Radwaste Release permit for 2T-69A has been submitted and completed.

2P-47A Boric Acid Condensate pump is running.

2RE-2330 radiation monitor is OPERABLE.

Maximum flow rate from Pre-Release report based on number of Circ pumps running is 250 gpm.

2CV-2330A and 2CV-2330B were both tested in Supplement 1 of 2104.014.

INITIATING CUE:

The SM/CRS directs, "Commence a 2T-69A Boric Acid Condensate Tank release using OP-2104.014 Sup. 3."

SUPPLEMENT 3

BORIC ACID CONDENSATE TANK (2T-69A/B) RELEASE

- * 1.0 IF Unit 1 Circ water flow is adjusted during this release,
THEN terminate release.
- 2.0 IF any magnetic tag NOT on hand switch,
THEN do NOT perform this release and submit new release permit
(Supplement 1).
- 3.0 IF releasing Boric Acid Condensate tank (2T-69A),
THEN perform the following:
 - 3.1 Check the following valves closed
AND magnetic tag on hand switch:

	Valve Closed	Tag on HS
• 2T-69A Inlet (2CV-2312)	_____	_____
• 2P-47A Discharge (2CV-2318)	_____	_____
 - 3.2 IF using 2P-47B to pump 2T-69A,
THEN check the following:
 - 2P-47B Discharge (2CV-2326) closed.
 - Magnetic tag on hand switch.
- 4.0 IF releasing Boric Acid Condensate tank (2T-69B),
THEN perform the following:
 - 4.1 Check the following valves closed
AND magnetic tag on hand switch:

	Valve Closed	Tag on HS
• 2T-69B Inlet (2CV-2320)	_____	_____
• 2P-47B Discharge (2CV-2326)	_____	_____
 - 4.2 IF using 2P-47A to pump 2T-69B,
THEN check the following:
 - 2P-47A Discharge (2CV-2318) closed.
 - Magnetic tag on hand switch.
- 5.0 Verify selected Boric Acid Condensate pump running.

PROC./WORK PLAN NO. 2104.014	PROCEDURE/WORK PLAN TITLE: LRW AND BMS OPERATIONS	PAGE: 130 of 132 CHANGE:
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SUPPLEMENT 3

PAGE 2 OF 4

- 6.0 Perform the following to commence releasing selected 2T-69:
- 6.1 Remove magnetic tag from selected Boric Acid Condensate Pump Discharge valve:
- 2CV-2318 for 2P-47A
 - 2CV-2326 for 2P-47B
- 6.2 Open selected Boric Acid Condensate Pump Discharge valve:
- 2CV-2318 for 2P-47A
 - 2CV-2326 for 2P-47B
- 6.3 Place "Open-Dump" magnetic tag near selected Boric Acid Condensate Pump Discharge valve:
- 2CV-2318 for 2P-47A
 - 2CV-2326 for 2P-47B
- 7.0 Verify the following (N/A valve if not opened):
- 7.1 IF 2RITS-2330 operable,
THEN verify valves tested in Supplement 1 open:
- 2CV-2330A
 - 2CV-2330B
- 7.2 IF 2RITS-2330 NOT operable,
THEN open one or both of the following valves:
- 2CV-2330A
 - 2CV-2330B
- 8.0 Verify flow on 2FR/RR-2331 ~ 0 gpm.
- 9.0 Open 2P-47A/B Discharge to Circ Water Flume (2BM-35).

NOTE

Recirc valves should be maintained at least one turn open to ensure minimum recirc flow if 2CV-2330A/B close.

- 10.0 Throttle selected Boric Acid Condensate Pump Recirc (2BM-80A or 2BM-80B) as necessary to establish flow (2FIC-2330 on 2C112 or 2FR/RR-2331 on 2C14) within the following limits:
- ≤ 250 gpm (max flow rate from Pre-Release report based on number of Circ pumps running).
 - ≤ 75 gpm (range of 2FIC-2330).

PROC./WORK PLAN NO. 2104.014	PROCEDURE/WORK PLAN TITLE: LRW AND BMS OPERATIONS	PAGE: 131 of 132 CHANGE:
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SUPPLEMENT 3

- 11.0 IF 2FIC-2330 flow meter inoperable,
THEN perform the following:
- 11.1 Estimate pump flow using Attachment G at least once every four hours.
- 11.2 Document in Station Log.
- 12.0 IF 2RITS-2330 inoperable,
THEN Independently Verify the following:
- | | | |
|---|--------------|-----------|
| | Valve Closed | Tag on HS |
| 12.1 Selected Boric Acid Condensate Tank Inlet closed <u>AND</u> magnetic tag on hand switch: | _____ | _____ |
- 2CV-2312 (2T-69A)
 - 2CV-2320 (2T-69B)
- 12.2 Selected Boric Acid Condensate Pump Discharge valve open:
- 2CV-2318 (2P-47A)
 - 2CV-2326 (2P-47B)
- 12.3 One or both Discharge to Circ Water Flume valves (2CV-2330A/B) in step 7.0 are open.
- 12.4 2BM-35 open.
- 12.5 Flow within limits of step 10.0.
- * 13.0 IF at any time during release alarm set point is less conservative than required by release permit,
THEN terminate release immediately and refer to ODCM App 2, L2.1.1.
- 14.0 Record data below on the following Chart recorders:
- Process Liquid Radiation recorder (2RR-2330C)
 - BMS Liquid Discharge recorder (2FR/RR-2331)
- Release Start Date: _____
- Release Start Time: _____
- Permit Number: _____
- Tank being Released: _____
- Indicated flow: _____

PROC./WORK PLAN NO. 2104.014	PROCEDURE/WORK PLAN TITLE: LRW AND BMS OPERATIONS	PAGE: 132 of 132 CHANGE:
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SUPPLEMENT 3

- 15.0 WHEN level lowered to pump trip setpoint (6.9%),
THEN verify the following:
- Selected pump has stopped.
 - 2CV-2318 closed.
 - 2CV-2326 closed.
 - "Open-Dump" magnetic tag removed from selected pump Discharge Valve (2CV-2318 or 2CV-2326).
 - IF installed,
THEN remove Danger Tags for recirc of tank with opposite pump.

16.0 Place 2HS-2330 to position 2.

17.0 Verify the following valves closed:

- 2CV-2330A
- 2CV-2330B

18.0 Remove tag from Tank inlet (2CV-2312 or 2CV-2320).

19.0 Close 2P-47A/B Discharge to Circ Water Flume (2BM-35).

20.0 Open selected Pump Recirc valve (2BM-80A or 2BM-80B).

21.0 Record data below on the following Chart recorders:

- Process Liquid Radiation monitor (2RR-2330C)
- BMS Liquid Discharge recorder (2FR/RR-2331)

Date completed: _____
Time completed: _____
Permit Number: _____
Final tank level: _____
Indicated flow: _____

22.0 Flush 2RITS-2330 until count rate stabilizes using this procedure.

Performed by _____ Date _____
_____ Date _____
_____ Date _____
SM Review of Supplement 1 and 3 _____ Date _____

Return release permit with all supplements used to Chemistry.

Facility: ANO-2		Scenario No.: 1 (New)		Op-Test No.: 2009-1	
Examiners:			Operators:		
_____			_____		
_____			_____		
Initial Conditions: 100% MOL, All Engineered Safety Features systems are in standby. Gland Seal pressure control valve 2PCV-0231 is jacked closed. Green Train Maintenance Week.					
Turnover: 100%. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. Green Train Maintenance Week.					
Event No.	Malf. No.	Event Type*	Event Description		
1	XSG2PT10411	I (BOP) I (SRO)	'A' Steam generator safety channel pressure transmitter fails low. Tech Spec for SRO.		
2	XCVLDNHXOU	I (ATC) I (SRO)	Letdown temperature control valve input fails low.		
3	CVC2P36BFAL	C (ATC) C (SRO)	'B' Charging pump supply breaker trips due to a motor fault.		
4	RCSLOCATCB	N (BOP) R (ATC) N (SRO)	Shutdown required due to 15 gpm Reactor Coolant system leak on 'B' cold leg. Tech Spec for SRO.		
5	MTGTRPLOCKO FAILSU3	M (ALL)	Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS.		
6	CV15042	C (BOP) C (SRO)	#2 Emergency Diesel Generator service water outlet valve fails to open. This will result in de-energizing green train vital 4160VAC (2A-4) and vital 480VAC (2B-6).		
7	RCSLOCATCB	M (ALL)	Reactor Coolant system 'B' cold leg leakage ramps up to 225 gpm over 10 minutes.		
8	HPISI10A	C (BOP) C (SRO)	2P-89A Safety injection pump shaft shear.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Total malfunctions. = 8, Malfunctions after EOP entry = 2, Abnormal events = 4, Major transient = 2, EOPs with substantive actions =1, EOP Contingencies = 0, Critical tasks = 2.

Scenario #1 Objectives

- 1) Evaluate individual response to a failure of a Steam Generator Safety Channel Pressure detector.
- 2) Evaluate individual response to a failure of a Letdown temperature controller.
- 3) Evaluate individual response to a failure of a Coolant Charging pump.
- 4) Evaluate individual response to a small Reactor Coolant system leak.
- 5) Evaluate individual ability to perform a reduction in plant power.
- 6) Evaluate individual ability to respond to Degraded Electrical power.
- 7) Evaluate individual ability to mitigate a LOCA.
- 8) Evaluate individual response to a failure of cooling water to an Emergency Diesel Generator.
- 9) Evaluate individual ability to monitor operation of Emergency Core Cooling Equipment.

SCENARIO #1 NARRATIVE

Simulator session begins with the plant at 100% power. Gland seal regulator, 2PCV-0231 is jacked closed.

When the crew has completed their control room walk down and brief, the 'A' Steam Generator pressure safety channel pressure instrument, 2PT-1041-1, will fail low. This will trip one of the four PPS channels for low SG pressure trip and MSIS. Alarms for MSIS pre-trip, RPS channel trip/pre-trip, and channel 'A' operator insert (2C03) trip and pre-trip lights will be lit. The SRO will refer to the ACA 2203.012D and tech specs 3.3.1.1, 3.3.2.1, 3.3.3.5 and 3.3.3.6 for guidance. The BOP will place Channel 'A' PPS in bypass for point 11, SG pressure low, point 19, 'A' SG delta-P for EFAS 1, and point 20, 'B' SG delta-P for EFAS 2 for maintenance and trouble shooting. The crew will have one hour to place these points in bypass before exceeding the tech spec LCO.

After the 'A' PPS channel is placed in bypass and cued by lead examiner, the Letdown heat exchanger temperature input will fail low. The ATC will report that 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.

After the ATC has taken manual control of the letdown temperature control valve, the 'B' Coolant Charging Pump (CCP) will trip. The SRO will enter AOP 2203.036, Loss of Charging. The SRO will direct the ATC to manually start a standby CCP. The SRO should refer to the TRM and determine no LCOs are applicable.

SCENARIO #1 NARRATIVE (continued)

When a backup Charging pump has been started or at the lead examiner's cue, a 15 gpm RCS leak will start. The SRO will enter the excess RCS leakage AOP, OP 2203.016. ATC and BOP will perform RCS Leak rate determinations. The SRO will enter Tech Spec 3.4.6.2. The SRO will direct to ATC to maintain pressurizer level within 5% of set point by starting additional charging pumps as needed. The SRO will also direct the ATC to isolate letdown to determine the leak location. After the crew has determined the leak is not in letdown, they will restore letdown and the crew will perform a plant shutdown.

After the ATC has completed the required reactivity manipulation or cued by lead examiner, a Main Turbine Trip will occur and the crew will verify the reactor has tripped. When the reactor trips Start up transformer #3 will lock out. The RCPs and Circulating Water pumps lose power which will cause natural circulation conditions in the RCS and require steaming to atmosphere. During SPTAs, the BOP will report that #2 EDG service water outlet valve is not open requiring the #2 EDG to be secured locally.

The Crew will implement Standard Post Trip Actions (SPTA), OP 2202.001. After the reactor trips the RCS leakrate will ramp to 225 gpm over 10 minutes.

The SRO will diagnose a loss of coolant accident and enter EOP 2202.003, Loss of Coolant Accident (LOCA).

The ATC will cool down the RCS using the atmospheric dump valves. The BOP will override and open the Service Water to Component Cooling Water and Auxiliary Cooling Water valves. The ATC will control RCS pressure to recover pressurizer level. The BOP will take manual control of Emergency Feedwater flow and restore steam generator levels to normal.

Post SIAS, the 'A' High Pressure Safety Injection (HPSI) pump will shear the shaft (red train) and the 'B' high pressure safety injection pump (green train) will not be available due to loss of power. The BOP will start the 'C' HPSI pump to satisfy the required HPSI flow requirements.

Simulator Instructions for Scenario 1

Reset simulator to MOL 100% power IC steady state.

Ensure that AACG is secured and annunciators clear.

Place MINIMAL RISK and Green Train Maintenance Week signs on 2C11.

Ensure 'C' HPSI pump in standby aligned to Red train

Ensure 'B' CCP is the lead charging pump and aligned to Green train.

Ensure 2PCV-0231, Gland sealing steam pressure control valve failed closed.

Ensure T1, T2, T3, T4, & T5 set to false.

T6 = Reactor Trip

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	XSG2PT10411 Trigger = T1	0	'A' Steam generator safety channel pressure transmitter fails low.
2	XCVLDNHXOU Trigger = T2	80	Letdown Temperature control valve input fails low.
3	CVC2P36BFAL Trigger = T3	TRUE	'B' Charging pump supply breaker trips due to a motor fault.
4	RCSLOCATCB Trigger = T4	15.0 gpm	Reactor Coolant system leak on 'B' cold leg.
5	MTGTRPLOCKO Trigger = T5 FAILSU3 Trigger = T6	TRUE TRUE	Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS.
6	CV15042 Trigger = T5	0	#2 Emergency Diesel Generator service water outlet valve fails to open.
7	RCSLOCATCB CUED	225 RAMP= 10 MIN	Reactor Coolant system leak on 'B' cold leg (225 gpm ramped over 10 Minutes).
8	HPISI10A	closed	2P-89A Safety injection pump shaft shear.

Simulator Operator CUEs		
Cued by lead examiner	Trigger T1	'A' Steam generator safety channel pressure transmitter fails low.
CUE: When contacted as the WWM, then report that I & C planner will begin planning work on failed pressure instrument.		
Cued by lead examiner	Trigger T2	Letdown Temperature control valve input fails low.
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 crew has restored rad monitor flow, then report flow is 1 gpm other wise report 0 gpm.		
CUE: When contacted as the WWM, then report that I & C planner will begin planning work on failed temperature controller.		
Cued by lead examiner	Trigger T3	'B' Charging pump supply breaker trips due to a motor fault.
Cue: When contacted as the WCO, then report that the breaker for 'B' Coolant Charging Pump is in a 'tripped free' condition.		
Cue: If asked, then report that the motor for 'B' Coolant Charging Pump is hot to touch and the paint is discolored, but no fire or smoke is evident.		
Cue: If requested to vent 'B' Charging pump, then report that a solid stream of water was observed when venting the suction to 'B' Charging Pump from 2CVC-1099/1100.		
Cue: If requested, then report that seal water pump is running for requested charging pump.		
Cued by lead examiner	Trigger T4	15 gpm Reactor Coolant system leak on 'B' cold leg.
Cue: If requested, then report that seal water pump is running for requested charging pump.		
Cued by lead examiner	Trigger T5 and reactor trip	Main Turbine trip and Startup #3 transformer lockout.
CUE: If requested, then report #2EDG is locked out locally.		
CUE: If contacted, then act as Chemistry and respond as requested.		
CUE: If contacted as WCO, then open the #2EDG SW outlet valve and report that 2CV-1504-2 is open.		
CUE: If contacted as AO, then place #2 EDG back to AUTO and report action taken.		

Reactor Trip		Reactor Coolant system 'B' cold leg leakage ramps up to 225 gpm over 10 minutes.
		2P-89A Safety injection pump shaft shear.
CUE: if requested as WCO, then report that 'A' HPSI pump shaft is sheared.		
CUE: if requested as WCO, then report that 'C' HPSI pump post start checks are satisfactory.		

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 1		
Event No.: 1		
Event Description: 'A' Steam Generator pressure transmitter, 2PT1041-1, on Channel 'A' fails low.		
Cued by Lead Examiner	ANY	Announce annunciators: 2K04-A4 CH A RPS/ESF/PRETRIP/TRIP 2K04-B3 PPS Channel TRIP 2K04-E4 MSIS PRETRIP
	ANY	Report A SG low pressure pretrip/trip on PPS insert.
	BOP	Compare all four channels and report 2PI-1041-1 indicates zero.
	SRO	Implement Annunciator Corrective Action 2203.012D. 2K04-A4 CH A RPS/ESF/PRETRIP/TRIP applicable actions: 2.1 Refer to PPS insert on 2C03 to determine cause. 2.2 Compare all Channels to validate alarm. 2.6 <u>IF</u> channel failed, <u>THEN</u> refer to Tech Specs 3.3.1.1, 3.3.2.1, 3.3.3.5, 3.3.3.6, and TRM 3.3.1.1. 2K04-B3 PPS Channel TRIP applicable actions: 2.1 Determine which RPS or ESFAS trips have occurred on PPS inserts. 2.3 <u>IF</u> channel failed, <u>THEN</u> refer to Tech Specs 3.3.1.1 and 3.3.2.1 and TRM 3.3.1.1. 2K04-E4 MSIS PRETRIP applicable actions: 2.3 <u>IF</u> channel failed, <u>THEN</u> place in bypass using 2105.001, CPC/CEAC Operations. 2.4 Refer to Tech Spec 3.3.2.1.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 1		
Event No.: 1		
Event Description: 'A' Steam Generator pressure transmitter, 2PT1041-1, on Channel 'A' fails low.		
	SRO	<p>Enter Tech Spec 3.3.1.1 action 2, 3.3.2.1 action 10, 3.3.3.5, and 3.3.3.6 action 1.</p> <p>Direct BOP to bypass bistable points for the associated functional units: A SG PRESS low (Bistable 11) A SG ΔP - EFAS 1 (Bistable 19) A SG ΔP - EFAS 2 (Bistable 20)</p> <p>SRO must enter Tech Specs 3.3.1.1 action 2, 3.3.2.1 action 10, 3.3.3.5, and 3.3.3.6 action 1.</p>
	BOP	<p>Bypass the points 11, 19, and 20 on Channel A IAW 2105.001 CPC/CEAC operations section 11:</p> <p>11.1 Refer to Tech Spec 3.3.1.1, 3.3.2.1, 3.3.3.5, 3.3.3.6 and TRM 3.3.1.1.</p> <p>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)</p> <p>11.3 Enter appropriate Tech Spec/TRM actions.</p> <p>11.4 Verify points to be bypassed <u>NOT</u> bypassed in ANY other channel.</p> <p>11.5 Place desired points in BYPASS for selected channel on 2C23.</p> <p>Examiners Note: Key 12 required.</p>
	ANY	<p>Verify annunciator 2K04-C3 PPS CHANNEL BYPASSED</p> <p>Verify correct channels in bypass.</p>
	SRO	Contact work management.
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on failed pressure instrument.		
Termination Criteria: Affected channel points placed in bypass or at lead examiner's discretion.		

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 2
Event Description: Letdown Temperature control valve input fails low.			
Time	Position	Applicant's Actions or Behavior	
Cued by Lead Examiner	ATC	Announce alarm LETDOWN HX 2E29 OUTLET TEMP HI and report temperature.	
	SRO	Implement Annunciator Corrective Action 2203.012L.	
	ANY	2.1 Check temperature on 2TIC-4815 and Computer Point (T4805). Examiners note: Temperature is reading accurately on the control board indication and the computer point.	
	ATC	2.2 Verify letdown flow (2FIS-4801) within 10 gpm of charging flow (2FIS-4863).	
	ANY	Direct WCO to locally perform the following: 2.3 Locally verify CCW flow through Letdown Heat Exchanger (2FIS-5261).	
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.			
	ANY	2.4 IF Loop 2 CCW temperature high, THEN reduce temperature using Component Cooling Water System Operation (2104.028). Examiners Note: Loop 2 CCW temperature is not expected to be high.	
	ATC	2.5 IF Letdown HX Temperature Controller (2TIC-4815) NOT controlling in AUTOMATIC, THEN perform the following: 2.5.1 Place 2TIC-4815 in MANUAL. 2.5.2 Raise CCW flow.	
	SRO	Establish a control band for letdown heat exchanger outlet.	
	ANY	Report 2K12 J1 RADMONITOR FLOW LO	
	SRO	Direct actions of 2K12 J1 RADMONITOR FLOW LO:	
	ANY	Direct WCO to perform the following: 2.2 Locally check flow on 2FIS-4807.	
CUE: When contacted as the WCO and requested then , if crew has restored rad monitor flow report flow is 1 gpm other wise report 0 gpm.			
	ANY	2.3 Verify letdown flow (2FIS-4801) > 28 gpm.	
	ANY	2.4 Verify L/D to Rad Monitor (2CV-4804) open.	
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.: 2009-1			Scenario No.: 1			Event No.: 3		
Event Description: 'B' Charging pump supply breaker trips due to a motor fault.								
Time		Position		Applicant's Actions or Behavior				
Cued by Lead Examiner		ATC		Announce 2K12-B3 Charging low flow alarm. Announce that 'B' CCP has tripped and both red and green lights are out.				
		SRO		Enter and direct the actions of AOP OP-2203.036, Loss of charging.				
		ATC		1. Check Charging flow path as follows: <ul style="list-style-type: none"> • Suction source aligned to VCT, RWT, or BAMT. • Charging Header Isolation valve (2CV-4840-2) open. 				
		ATC		2. <u>IF</u> lead Charging pump stopped <u>AND</u> green indicating light OFF, <u>THEN</u> start backup Charging pump. (2P-36A or 2P-36C)				
		ATC		3. Check for adequate Charging pump operation as follows: <ul style="list-style-type: none"> • Charging header flow 40 to 45 gpm. • Charging Pump Discharge header pressure greater than RCS pressure. • Charging Pump Discharge pressure and flow stable. 				
		ANY		4. Check for indications of Charging header rupture: <ul style="list-style-type: none"> • VCT level drop. • Aux Building or CNTMT radiation level rise. • Waste Tanks 2T20A/B level rise. • CNTMT Sump level rise. • Aux Building sump level rise. <p>Examiner Note: There will be no indications of a Charging Header rupture and the SRO should proceed to step 9.</p>				
		SRO		Direct Waste Control Operator to vent the suction of 'B' CCP. 9. Locally check affected Charging pump for gas binding using Attachment B, Charging Pump Venting.				

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 3
Event Description: 'B' Charging pump supply breaker trips due to a motor fault.			
Time	Position	Applicant's Actions or Behavior	
<p>Cue: If requested to vent 'B' Charging pump, then report that a solid stream of water was observed when venting the suction to 'B' Charging Pump from 2CVC-1099/1100.</p> <p>Cue: If asked report that the motor for 'B' Coolant Charging Pump is hot to touch and the paint is discolored, but no fire or smoke is evident.</p> <p>Cue: When contacted as the WCO, then report that the breaker for 'B' Coolant Charging Pump is in a 'tripped free' condition.</p>			
	SRO	10. <u>IF</u> Charging pumps were <u>NOT</u> gas bound, <u>THEN GO TO</u> Step 17. (B charging pump will not be gas bound)	
	ATC	<p>Examiner Note: All of the following steps may be satisfied and only need to be checked by the ATC with exception of the following:</p> <ul style="list-style-type: none"> • Recording charging header data and • Restoring Letdown (which may need to be restored if it isolated on high temperature). <p>17. Restore Charging and Letdown as follows:</p> <p>A. Verify Charging Pump Header Isolation valve (2CV-4840-2) open.</p> <p>B. Verify VCT Outlet valve (2CV-4873-1) open.</p> <p>C. Verify RWT to Charging Pump Suction valve (2CV-4950-2) closed.</p> <p>D. Verify at least ONE Charging pump running, refer to 2104.002, Chemical and Volume Control.</p> <p>1) Record charging header data using 2202.010, Standard Attachment 44, Charging Header Data.</p> <p>E. Check for adequate Charging pump operation as follows:</p> <ul style="list-style-type: none"> • Charging header flow 40 to 45 gpm. • Charging Pump Discharge header pressure greater than RCS pressure. • Charging Pump Discharge pressure and flow stable. <p>F. Restore Letdown, refer to 2104.002, Chemical and Volume Control.</p>	
Cue: If requested report that seal water pump is running for requested charging pump.			

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1	Scenario No.: 1	Event No.: 3
Event Description: 'B' Charging pump supply breaker trips due to a motor fault.		
	ATC	<p>OP-2104.002 Chemical and Volume Control section to restore letdown.</p> <p>9.2 Restoring Letdown Flow (After Temporary Isolation)</p> <p>9.2.1 Verify Letdown Flow controller (2HIC-4817) in MANUAL.</p> <p>9.2.2 Verify Letdown Flow Control valves closed:</p> <ul style="list-style-type: none"> • 2CV-4816 • 2CV-4817 <p>9.2.3 Verify Letdown Pressure controller (2PIC-4812) in MANUAL.</p> <p>9.2.4 Verify selected 2CV-4810/2CV-4811 fully open.</p> <p>9.2.5 Verify Letdown isolation (2CV-4820-2) open.</p> <p>9.2.6 Verify Regen Hx inlet (2CV-4821-1) open.</p> <p>9.2.7 Verify Letdown Regen Hx Outlet valve (2CV-4823-2) open.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">NOTE</p> <p>If LD/DI 2T-36A/B, 2T-70 Inlet/Bypass (2CV-4803) has been actuated it must be taken to BYPASS and then back to AUTO/ION EXCH to restore flow through the Ion Exch.</p> </div> <p>9.2.8 Verify LD/DI 2T-36A/B, 2T-70 Inlet/Bypass (2CV-4803) hand switch is in AUTO/ION EXCH:</p> <p>9.2.9 Verify 2F-3A/B Inlet Isolation (2CVC-139) fully open.</p> <p>9.2.10 Verify CCP running.</p> <div style="border: 2px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">CAUTION</p> <p>High Pressure Letdown Relief valve (2PSV-4822) lifts at 600 psia</p> </div> <p>9.2.11 Slowly open 2CV-4816/2CV-4817 to initiate flow.</p>

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 3
Event Description: 'B' Charging pump supply breaker trips due to a motor fault.			
Time	Position	Applicant's Actions or Behavior	
		<p>9.2.12 Slowly close 2CV-4810/2CV-4811 to establish desired pressure:</p> <ul style="list-style-type: none"> • IF RCS pressure < 450 psia, THEN maintain L/D backpressure (2PIC-4812) above saturation for letdown temperature (2TI-4820). • IF RCS pressure > 450 psia, THEN maintain L/D backpressure (2PIC-4812) at setpoint (normal setpoint is 350 psig). <p>9.2.13 WHEN letdown pressure at desired setpoint, THEN Letdown Pressure controller (2PIC-4812) may be placed in AUTO.</p> <p>9.2.14 Manually adjust 2CV-4816/2CV-4817 position to match Letdown Flow controller (2HIC-4817) automatic and manual signals.</p> <p>9.2.15 WHEN 2HIC-4817 automatic and manual signals are matched, THEN 2HIC-4817 may be placed in AUTO.</p>	
	SRO	G. Exit this procedure. (SRO will exit the loss of Charging procedure.)	
Termination Criteria: When backup CCP started or at discretion of lead examiner.			

Op-Test No.: 2009-1			Scenario No.: 1			Event No.: 4		
Event Description: 15 gpm Reactor Coolant system leak on 'B' cold leg.								
Time	Position	Applicant's Actions or Behavior						
Cued by Lead Examiner	ANY	Report the following indications: <ul style="list-style-type: none"> • Containment dew point rising • Pressurizer Level lowing. • Letdown flow lowering. 						
	SRO	Perform the following actions: <ul style="list-style-type: none"> • Assess Critical parameters • Determine RCS leak is present and enter Excess RCS Leakage AOP. 						
	SRO	Enter and direct the actions of AOP OP-2203.016, Excess RCS Leakage: <ol style="list-style-type: none"> 1. Open Placekeeping page. 						
	ANY	*2. Check PZR level controlled within 5% of setpoint. (The SRO may direct the ATC to start Backup Charging pumps as necessary to maintain PZR level within 5% of setpoint)						
Cue: If requested report that seal water pump is running for requested charging pump.								
	ANY	*3. Check PZR level maintained within 10% of setpoint.						
	ATC	*4. Maintain VCT level 60 to 75%, refer to 2104.003, Chemical Addition.						
	ANY	*5. Determine RCS leakrate by ANY of the following: <ul style="list-style-type: none"> • Computer LKRT programs. • Check PZR level stable and use Charging and Letdown mismatch minus Controlled Bleed Off. • Check Letdown isolated and estimate RCS leak rate by total Charging flow minus Controlled Bleed Off. • CNTMT Sump level rate of rise. 						

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 1		
Event No.: 4		
Event Description: 15 gpm Reactor Coolant system leak on 'B' cold leg.		
	ANY	<p>■6. IF RCS leakage greater than 44 gpm AND in Mode 1 OR 2, THEN perform the following:</p> <p>A. Trip Reactor.</p> <p>B. GO TO 2202.001, Standard Post Trip Actions.</p>
	SRO	<p>Direct the Shift Manager to perform the following step:</p> <p>*8. Refer to 1903.010, Emergency Action Level Classification.</p>
	SRO	<p>*9. IF location of leak is known, THEN perform the applicable following steps (10.A through 10.J):</p> <ul style="list-style-type: none"> • CNTMT step 10.A • Primary to Secondary Leakage step 10.B • Quench Tank step 10.C • RDT step 10.D • RCP Seals step 10.E • CCW System step 10.F • CVCS step 10.G • SIT inleakage step 10.H • Vacuum Degasifier step 10.I • RCS Sample step 10.J <p>Examiners note: Leak location will be known and only step 10.A should be performed.</p>
	ANY	<p>Note: If this step entered from step 9, then only perform substep for identified leak path.</p> <p>10.</p> <p>A. Check the following CNTMT parameters stable or lowering:</p> <ul style="list-style-type: none"> • Humidity (Dewpoint temperature) • Sump level • Temperature • Pressure
	BOP	<p>10.</p> <p>A. Perform the following:</p> <p>1) Attempt to locate leak in CNTMT by monitoring CAMS suction points and CNTMT Area Radiation monitors.</p> <p>Examiner note: This action is a long term action and they may not change CAMS suction points during this drill.</p>

Op-Test No.: 2009-1			Scenario No.: 1			Event No.: 4		
Event Description: 15 gpm Reactor Coolant system leak on 'B' cold leg.								
Time	Position	Applicant's Actions or Behavior						
	ATC	<p>2) Verify leak NOT in Letdown line inside CNTMT by performing the following:</p> <p>a) Isolate Letdown by verifying at least ONE Letdown Isolation valve closed:</p> <ul style="list-style-type: none"> • 2CV-4820-2 • 2CV-4821-1 • 2CV-4823-2 (least preferred) <p>b) IF RCS leakage NOT stopped, THEN letdown may be restored at discretion of SM using 2104.002, Chemical and Volume Control.</p> <p>Examiners Note: Isolating Letdown will not isolate the leak and Letdown should be restored to service.</p>						
	SRO	<p>*11. Check leakage within allowable limits, refer to TS 3.4.6.2, Reactor Coolant System Leakage.</p> <p>SRO must enter Tech Spec 3.4.6.2 action b.</p>						
	ALL	<p>*11. Perform the following:</p> <p>A. Continue efforts to locate and isolate leak.</p> <p>B. <u>IF</u> plant shutdown required, <u>THEN</u> perform EITHER of the following using 2102.004, Power Operations:</p> <p>1) <u>IF</u> leakage greater than 10 gpm, <u>THEN</u> perform RCS boration using 2104.003, Chemical Addition, Attachment R, RCS Boration from the RWT or BAMT.</p> <p>2) <u>IF</u> RCS leakage less than 10 gpm, <u>THEN</u> perform RCS boration using 2104.003, Chemical Addition, Exhibit 3, Normal RCS Boration at Power.</p> <p>Examiners Note: The ATC should start a shutdown using 2104.003, Chemical Addition, Attachment R</p>						

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 4
Event Description: 15 gpm Reactor Coolant system leak on 'B' cold leg.			
Time	Position	Applicant's Actions or Behavior	
	ATC	<p>2104.003, Chemical Addition, Attachment R</p> <p style="text-align: center;">RCS BORATION FROM THE RWT OR BAMT</p> <p>1.0 Verify RCS Makeup aligned to CCP Suction.</p> <p>2.0 Determine desired boration rate and dilution flow from Reactivity Plans located in Plant Data Book or manual calculation.</p> <p>3.0 Perform the following to align for dilution:</p> <p>3.1 Verify Boric Acid Makeup Flow controller (2FIC-4926) set as follows:</p> <p style="padding-left: 40px;">3.1.1 Verify 2FIC-4926 in Manual.</p> <p style="padding-left: 40px;">3.1.2 Verify 2FIC-4926 demand set to minimum.</p> <p>3.2 Verify at least ONE Reactor Makeup Water pump running (2P-109A/B).</p> <p>3.3 Verify Reactor Makeup Water Flow controller (2FIC-4927) set as follows:</p> <p style="padding-left: 40px;">3.3.1 Setpoint set to dilution flow rate determined above.</p> <p style="padding-left: 40px;">3.3.2 IF controller in MANUAL, THEN controller demand set to desired value.</p> <p>3.4 Open VCT Makeup Isolation valve (2CV-4941-2).</p> <p>4.0 Open one of the following valves from a boric acid source:</p> <ul style="list-style-type: none"> • Charging Pump Suction from RWT (2CV-4950-2) • BAMT (2T-6A) Gravity Feed valve (2CV-4920-1) • BAMT (2T-6B) Gravity Feed valve (2CV-4921-1) <p>5.0 Close VCT Outlet (2CV-4873-1).</p> <p>6.0 IF Letdown in service, THEN place Divert valve (2CV-4826) to BMS position.</p>	

Op-Test No.: 2009-1		Scenario No.: 1		Event No.: 4	
Event Description: 15 gpm Reactor Coolant system leak on 'B' cold leg.					
Time	Position	Applicant's Actions or Behavior			
	ATC	7.0	Perform the following to start dilution flow:		
		7.1	Place Mode Select switch (2HS-4928) in Manual.		
		7.2	Verify 2FIC-4926 indicates zero.		
		*7.3	Verify 2FIC-4927 indicates desired flow rate.		
		7.4	Verify BAM Tank Recirc Valve open (2CV-4903-2 OR 2CV-4915-2) for running pumps.		
		*8.0	Perform ANY of the following to adjust boration rate as needed:		
			<ul style="list-style-type: none"> • Start and Stop additional charging pumps. • Adjust Reactor Makeup Water Flow controller (2FIC-4927) demand. • Shift suction sources between RWT and BAMT. 		
Termination Criteria: When reactivity manipulations are satisfied or at the discretion of the lead examiner.					

Op-Test No.: 2009-1			Scenario No.: 1			Event No.: 5,6, & 7		
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.								
Time	Position	Applicant's Actions or Behavior						
Cued by Lead Examiner	ANY	Recognize that the turbine tripped.						
	SRO	Direct a Reactor trip						
	ATC	Verify the Reactor is tripped.						
	ANY	Report Reactor Tripped						
	SRO	Enter and implement EOP 2202.001, Standard Post Trip Actions.						
	SRO	1. Notify Control Board Operators to monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist.						
		2. Open Safety Function Tracking page.						
Reactivity control safety function	ATC	3. Check Reactivity Control established as follows: _____A. Reactor power lowering. _____B. ALL CEAs fully inserted.						
Vital Auxiliaries safety function	BOP	4. Check Maintenance of Vital Auxiliaries satisfied: A. Main Turbine tripped. B. Generator Output breakers open. C. Exciter Field breaker open. D. At least ONE 6900v AC bus energized. (Not met) E. At least ONE 4160v Non-vital AC bus energized. F. BOTH 4160v Vital AC buses energized. (Both busses will be energized until #2 EDG is placed in lockout.) G. BOTH DGs secured. (Both DGs will be running, perform contingency to secure #2 EDG) H. At least ONE 125v Vital DC bus energized: 2D01 - SPDS point E2D01 2D02 - SPDS point E2D02						

Op-Test No.: 2009-1			Scenario No.: 1			Event No.: 5,6, & 7		
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.								
Time		Position		Applicant's Actions or Behavior				
		SRO		Direct Inside AO perform the following: G. IF ANY DG running AND SW NOT aligned, THEN locally stop DG by unlocking and placing "ENGINE CONTROL" handswitch in LOCKOUT: <ul style="list-style-type: none"> • 2E11 • 2E21 (#2 EDG will be locked out due to no service water Event #7) 				
Cue: If requested report #2EDG is locked out locally.								
RCS Inventory Control Safety function		ATC		5. Check RCS Inventory Control established as follows: <ul style="list-style-type: none"> A. PZR level: <ul style="list-style-type: none"> • 10 to 80%. • Trending to setpoint. (May not met due to LOCA Event #8, perform contingency) B. RCS MTS 30°F or greater. 				
RCS Inventory Control Safety function		SRO		Direct the following as necessary: <ul style="list-style-type: none"> A. Perform as necessary: <ol style="list-style-type: none"> 1) <u>IF</u> SIAS actuated on PPS inserts, <u>THEN GO TO</u> Step 6. 2) Verify PZR Level Control system restoring level to setpoint. 				
RCS Pressure Control Safety function		ATC		6. Check RCS Pressure Control: <ul style="list-style-type: none"> — • 1800 to 2250 psia. — • Trending to setpoint. (May not met due to LOCA Event #8, perform contingency) 				

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 1		
Event No.: 5,6, & 7		
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.		
	SRO	<p>Direct the following actions as necessary:</p> <p>6. Perform as necessary:</p> <p>D. <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed. (This step should be directed)</p> <p>E. <u>IF</u> RCS pressure lowers to 1650 psia or less, <u>THEN</u> perform the following: (This step may be directed)</p> <p>1) Verify SIAS actuated on PPS inserts.</p> <p>2) GO TO Step 7.</p> <p>F. Verify PZR Pressure Control system restoring pressure to setpoint.</p> <p>G. <u>IF ALL</u> RCPs stopped <u>AND</u> RCS pressure greater than 2250 psia, <u>THEN</u> initiate Aux spray using Attachment 27, PZR Spray Operation.</p>
	ATC	D. <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed.
Core Heat Removal safety function.	ATC	<p>7. Check Core Heat Removal by forced circulation:</p> <p>A. At least ONE RCP running. (Not met due to SU #3 lockout, perform contingency)</p>
	ANY	<p>Perform contingency:</p> <p>A. <u>IF ALL</u> RCPs stopped, <u>THEN</u> perform the following:</p> <p>1) Verify BOTH PZR Spray valves in MANUAL and closed.</p> <p>2) GO TO Step 8.</p>

Op-Test No.: 2009-1	Scenario No.: 1	Event No.: 5,6, & 7
<p>Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.</p>		
Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	<p>8. Check RCS Heat Removal:</p> <p>A. Check SG available by BOTH of the following:</p> <ul style="list-style-type: none"> • At least ONE SG level 10 to 90%. • FW maintaining SG level. (Not met due to SU #3 lockout, perform contingency) <p>B. Check MFW in RTO. (Not met due to SU #3 lockout, perform contingency)</p> <p>C. Check Feedwater line intact by the following:</p> <ul style="list-style-type: none"> • SG level stable or rising. • NO unexplained step changes or erratic FW flow. • NO unexplained step changes or erratic Condensate flow. <p>D. Check Condensate Pump discharge header pressure < 753 psig.</p> <p>E. Check SG pressure 950 to 1050 psia.</p> <p>F. Check RCS T_C 540 to 555°F.</p>
	ANY	<p>A. Perform the following:</p> <p>1) <u>IF</u> SG level lowering, <u>THEN</u> verify EFAS actuated.</p>
	ANY	<p>B. Verify EITHER of the following:</p> <ul style="list-style-type: none"> • BOTH MFW pumps tripped. • SG levels controlling at setpoint

Op-Test No.: 2009-1	Scenario No.: 1	Event No.: 5,6, & 7
<p>Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.</p>		
Time	Position	Applicant's Actions or Behavior
Containment Safety Function	ATC	<p>9. Check CNTMT parameters:</p> <p>A. Temperature and Pressure:</p> <ul style="list-style-type: none"> • Temperature less than 140°F. • Pressure less than 16 psia. <p>B. Check CNTMT Spray pumps secured.</p> <p>C. NO CNTMT radiation alarms or unexplained rise in activity:</p> <ol style="list-style-type: none"> 1) CAMS alarms: <ul style="list-style-type: none"> • "CNTMT PART/GAS RAD HI/LO" annunciator (2K10-B6) clear. 2) RCS leakage alarms: <ul style="list-style-type: none"> • "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: <ul style="list-style-type: none"> • CNTMT Area • CAMS • Process Liquid <p>D. NO secondary system radiation alarms or unexplained rise in activity:</p> <ol style="list-style-type: none"> 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 2) Secondary Systems Radiation monitors trend stable: <ul style="list-style-type: none"> • Main Steam lines • SG Sample • Condenser Off Gas
	SRO	<p>10. Notify STA to report to control room.</p> <p>11. Verify NLOs informed of Reactor trip.</p> <p>12. Verify Reactor trip announced on Plant page.</p> <p>13. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.</p>

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1	Scenario No.: 1	Event No.: 5,6, & 7
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.		
	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 EOP 2202.003, Loss of Coolant Accident
	SRO	Enter and Implement EOP 2202.003, Loss of Coolant Accident
	SRO	* 1. Confirm diagnosis of LOCA as follows: A. Check SFSC acceptance criteria satisfied every 15 minutes. (Normally performed by the STA) B. Refer to Standard Attachment 20, Break Identification Chart. C. Verify SG Sample valves open. D. Direct Chemistry to sample BOTH SGs for activity. E. <u>IF</u> SGs indicate primary to secondary leakage within TS limits, <u>THEN</u> continue with this procedure using SG with lowest leak rate for cooldown.
Cue: If contacted act as Chemistry and respond as requested.		
	SRO	* 2. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	SRO	3. Open Placekeeping page.
	SRO	4. Record present time: • Time _____
	ANY	5. Verify SIAS and CCAS actuated on PPS inserts.
	ANY	6. Notify Control Board Operators to perform the following: A. Monitor floating steps. B. Verify actuated ESFAS components using 2202.010, Exhibit 9, ESFAS Actuation.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 1		
Event No.: 5,6, & 7		
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.		
CRITICAL TASK Floating step for a cooldown Must commence a cooldown >40 degrees per hour within 30 min. of entering LOCA procedure	SRO	Examiner note: The SRO should pull up the floating step for performing a cooldown and direct the actions of the cooldown step. Step 1 of the unisolated LOCA section. ■1. Perform controlled cooldown to 275°F T _C as follows:
	ANY	A. Check RCS T _C greater than 275°F.
	ATC	B. Reset Low PZR Pressure and Low SG Pressure setpoints during cooldown and depressurization.
	ANY	C. Verify maximum of ONE RCP running in EACH loop.
	ATC	D. <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed.
	ATC	E. Monitor cooldown rate as follows: <ul style="list-style-type: none"> Record RCS T_C and PZR temperature using Standard Attachment 8, RCS Cooldown Table. Plot RCS pressure versus RCS T_C using Standard Attachment 1, P-T Limits every 15 minutes.
	ATC	F. Initiate RCS cooldown using SDBCS bypass valves or ADVs.
	ANY	G. Verify EFW or AFW capable of feeding SGs.
	ANY	H. Secure running MFW pump.
	ANY	I. Close ALL MFW Block valves.
	SRO	Examiner note: The SRO should pull up the floating step for restoring ESF and Non/ESF systems and direct the actions of the step. Step 9 of the entry section for LOCA OP-2202.003. ■9. Restore ESF/Non-ESF systems post-SIAS as follows:
	ANY	A. Verify at least ONE SW pump running on EACH loop.
	ANY	B. Verify DG SW Outlet valves open.(Not met on #2 EDG, perform contingency)

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 5,6, & 7
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.			
Time	Position	Applicant's Actions or Behavior	
Examiner note: The Crew should have the WCO open the Service water outlet valve for #2EDG then have the AO remove the EDG from Lockout to allow it to start, but may elect to start the Alternate AC generator to supply 2A-4 vital 4160V bus or cross-tie 2B-5 and 2B-6 vital 480 volt busses using floating step 21 from the entry section of 2203.003 LOCA. One of these actions should be completed to restore auxiliary spray capability (RCS pressure control)			
	ANY	<p>Direct Non-licensed operators to perform the following:</p> <p>B. IF SW Outlet valve can NOT be opened from Control Room, THEN locally perform the following for affected DG:</p> <p>1) Open DG SW Outlet valve:</p> <ul style="list-style-type: none"> • "2DG-1 SW OUTLET" 2CV-1503-1 • "2DG-2 SW OUTLET" 2CV-1504-2 <p>2) Monitor DG "SCAV AIR TEMP":</p> <ul style="list-style-type: none"> • 2TI-2931 • 2TI-2981 <p>3) <u>IF</u> DG "SCAV AIR TEMP" rises to 170°F, <u>THEN</u> stop DG by unlocking and placing "ENGINE CONTROL" switch in LOCKOUT:</p> <ul style="list-style-type: none"> • 2E11 • 2E21 	
Cue: If contacted as WCO then open the #2EDG SW outlet valve and report that 2CV-1504-2 is open.			
Cue: If contacted as AO, then place #2 EDG back to AUTO and report action taken.			
	ANY	C. Verify SW pump suction aligned to Lake.	
	ANY	D. Check 4160v Non-vital bus 2A1 or 2A2 energized from offsite power.	
	ANY	E. Check BOTH 4160v Vital buses 2A3 <u>AND</u> 2A4 energized from offsite. (Not met due to Startup #3 lockout, perform contingency)	

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 5,6, & 7
Event Description: Main Turbine Generator trip causing a reactor trip and a Startup #3 transformer lockout causing natural circulation of the RCS. #2 Emergency Diesel Generator service water outlet valve fails to open. And, the RCS LOCA ramps to 225 gpm over 10 min.			
Time	Position	Applicant's Actions or Behavior	
	ANY	E. Perform the following: 2) <u>IF</u> EITHER 4160v Vital bus energized from DG, <u>THEN</u> perform the following: a) Verify ONE SW pump running on train supplied by DG. b) GO TO Step 9.G.	
	ANY	G. Check SW to CCW restored. (Not met, perform contingency)	
	ANY	G. <u>IF</u> CCW available, <u>THEN</u> restore SW to CCW, refer to Exhibit 5, CCW/ACW/SW Alignment.	
	ANY	H. Check ACW restored. (Not met, perform contingency)	
	ANY	H. Restore SW to ACW, refer to Exhibit 5, CCW/ACW/SW Alignment.	
	ANY	I. Maintain SW header pressure greater than 85 psig.	
Termination criteria: When the Crew has commenced a cooldown or at discretion of lead examiner.			

Op-Test No.: 2009-1		Scenario No.: 1	Event No.: 8
Event Description: 2P-89A Safety injection pump shaft shear.			
Time	Position	Applicant's Actions or Behavior	
	ANY	Recognizes and announces failure of 'A' HPSI pump due to shaft shear.	
Cue: As waste control operator if requested report that 'A' HPSI pump shaft is sheared.			
	SRO	Direct BOP start 'C' HPSI pump (2P89C).	
CRITICAL TASK	BOP	<p>On 2C17, remove the hand switch for 'C' HPSI pump (2P89C) from PTL and verified 2P-89C started and discharge pressure indicated (if pressure < 1450psia, verified flow to RCS) or #2 EDG restored and 'B' HPSI pump (2P-89) is running.</p> <p>2P-89C or 2P-89B must be started prior to reaching 10⁰F Margin to Saturation.</p>	
Termination criteria: Termination criteria: When 'B' or 'C' HPSI pump is started or at the discretion of the lead examiner.			

Facility: ANO-2	Scenario No.: 2 (New)	Op-Test No.: 2009-1	
Examiners: _____	Operators: _____		
_____	_____		
_____	_____		
<p>Initial Conditions: 100% MOL, All Engineered Safety Features systems are in standby. Gland Seal steam pressure control valve 2PCV-0231 jacked closed. RED Train Maintenance Week. 2T-6A Boric Acid Make up tank is aligned for acid reducing shut down chemistry for Unit 1</p>			
<p>Turnover: 100%. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. RED Train Maintenance Week. 2T-6A Boric Acid Make up tank is aligned for acid reducing shut down chemistry for Unit 1 refueling outage that starts next week. Evolution scheduled: Drain Containment Sump to 50% level. Steps 20.1.1 and 20.1.2 of OP-2104.014 have been completed.</p>			
Event No.	Malf. No.	Event Type*	Event Description
1	CV20612	C (BOP) C (SRO)	Containment sump drain valve fails open during normal drain evolution. Tech Spec for SRO
2	SW2P-4A	C (BOP) C (SRO)	2P-4A Service water pump breaker trips
3	XRCCHAPLVL	I (ATC) I (SRO)	'A' Pressurizer level channel fails High. Tech Spec for SRO
4		R (ATC) N (BOP) N (SRO)	System Dispatcher call with a request to reduce power to ~ 850MWe(~80%) within 30 min.
5	CV10101 SGAMSIVBEF	M (ALL)	'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand on 'A' S/G outside containment commences.
6	CEA38STUCK CV48731 CVC2P39B	C (ATC) C (SRO)	Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B will trip when the reactor trips.
7	ESFCCAS2	C (BOP) C (SRO)	Green train Containment coolers fail to automatically actuate.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Total malfunctions. = 6, Malfunctions after EOP entry = 2, Abnormal events = 3, Major transient = 1, EOPs with substantive actions = 1, EOP Contingencies = 1, Critical tasks = 2.

Scenario #2 Objectives

- 1) Evaluate individual response to a failure of a Containment isolation valve.
- 2) Evaluate individual ability to operate safety related equipment.
- 3) Evaluate individual response to a failure of a Service Water pump.
- 4) Evaluate individual response to a failure of a Pressurizer level control channel.
- 5) Evaluate individual ability to perform a reduction in plant power.
- 6) Evaluate individual response to a stuck out CEA after a Reactor Trip.
- 7) Evaluate individual response to a failed closed Main Steam Isolation Valve.
- 8) Evaluate individual ability to mitigate an Excess Steam Demand Outside containment.
- 9) Evaluate individual ability to monitor operation of Engineered Safety Features equipment.

SCENARIO #2 NARRATIVE

Simulator session begins with the plant at 100% power steady state Gland seal regulator, 2PCV-0231 is jacked closed and 2T-6A is aligned for acid reducing chemistry.

When the crew has completed their control room walk down and brief, The BOP will drain the Containment sump to the Auxiliary building sump using the normal drain method. When the BOP attempts to close 2CV-2061-2 it remains open. The BOP should ensure the series sump drain valve 2CV-2060-1 is closed and sump level is stable. The SRO will determine that Tech Spec 3.6.3.1 is applicable and will enter Tech Spec 3.6.3.1.

After the Crew has entered the appropriate Tech Spec, verified sump level is stable and cued by lead examiner; the 'A' Service Water Pump (2P-4A) breaker will trip open. The SRO will enter AOP, 2203.022 Loss of Service Water. The SRO will direct the BOP to start 2P-4B Service Water Pump.

After the 'B' Service Water pump is placed in service and cued by lead examiner, the in service Pressurizer (PZR) control channel level instrument will fail high. This will result in letdown going to maximum flow, the two backup CCP's will automatically stop, all PZR heaters energizing and actual PZR level lowers. AOP 2203.028, PZR Systems Malfunctions, will be entered and actions directed by the SRO. The ATC will take the letdown flow controller to manual and control PZR level. The ATC will also verify that the other level control channel is reading correctly and select that channel for control and place the PZR low level cutoff switch to the unaffected channel. The SRO will enter Tech Spec 3.3.3.6 Post Accident Instrumentation. When the auto and manual signals are matched, the ATC will place the letdown flow controller to automatic.

SCENARIO #2 NARRATIVE (continued)

After the ATC has placed 'B' Channel pressurizer level control in service and restored letdown to automatic, The Pine Bluff Systems Operations Center (SOC) will call the Control Room with a Transmission Loading Relief (TLR) to reduce plant output by 200MWe. The SOC will also report that all limits of EN-DC-199 are still met. If Contacted, Unit 1 will be unable to maneuver due to a planned refueling outage.

After the ATC has completed the required reactivity manipulation and cued by lead examiner, 2CV-1010-1 'A' Steam Generator Main Steam Isolation Valve will fail closed. The crew will verify the reactor is tripped.

The Crew will implement Standard Post Trip Actions (SPTA), OP 2202.001. When the reactor trips one CEA will remain withdrawn which requires emergency boration. The VCT outlet will remain open and 2P-39B Boric Acid Makeup pump will trip when the reactor trips. Reactivity control will not be satisfied. During SPTAs, an Excess Steam Demand event outside of Containment will commence. The Crew will manually actuate Main Steam Isolation Signal (MSIS) or verify that a Main Steam Isolation signal automatically actuates. The Crew will secure and/or verify that Emergency Feedwater (EFW) is not feeding 'A' Steam generator. The ATC will secure two Reactor coolant Pumps when RCS pressure goes below 1400 psia.

The SRO will diagnose Functional Recovery due to reactivity control not being met and enter OP 2202.009, Functional Recovery.

The crew will manually control Reactor Coolant Temperature once the 'A' SG boils dry using the upstream Atmospheric Dump Valve on 'B' SG. The ATC will control RCS pressure using normal spray.

Simulator Instructions for Scenario 2

Reset simulator to MOL 100% power IC stead state.

Ensure that AACG is secured and annunciators clear.

Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.

Swing ESF equipment aligned to the RED train.

'B' CCP lead charging pump.

2PCV-0231, Gland sealing steam pressure control valve failed closed.

2T-6A aligned for acid reducing shut down chemistry (CV49201 Value = 0, 2P-39A running with the recirc open, 2P-39A discharge valve closed CVC40A = 0)

Ensure CVC40A = 0

T1, T2, T3, T4, set to false.

T1 set to NE3O061A

T5 set to Reactor trip.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	CV20612 Trigger = T1	1.0 / 8 sec.	Containment isolation valve 2CV-2061-2 fails open.
2	SW2P-4A Trigger = T2	True	2P-4A Service water pump breaker trips.
3	XRCCHAPLVL Trigger = T3	100	Control Channel "A" Pressurizer Level fails High.
4			System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min.
5	CV10101 Trigger = T4 SGAMSIVBEF Trigger = T5	0 1.5/ Delay = 4 min.	'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand on 'A' S/G outside containment commences.
6	CEA38STUCK CV48731 CVC2P39B Trigger = T5 for CVC2P39B only	0% 1 True	Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B will trip when the reactor trips.
7	ESFCCAS2	True	Green train Containment coolers fail to automatically or manually actuate.

Simulator Operator CUEs		
At T=0	Trigger T1	Containment isolation valve 2CV-2061-2 fails open during normal drain evolution
Cue: When contacted as the WWM, then report that I&C will trouble shoot 2CV-2061-2.		
Cued by lead examiner	Trigger T2	2P-4A Service water pump breaker trips.
<p>Cue: If asked report that the motor for 'A' Service Water Pump is hot to touch, but no fire or smoke is evident.</p> <p>Cue: If requested when 'B' Service Water pump is started, report as AO that 'B' Service Water pump post start checks are satisfactory.</p> <p>Cue: When contacted as the WWM, then report that the electrical planner will begin planning work on failed pump.</p>		
Cued by lead examiner	Trigger T3	Control Channel "A" Pressurizer Level fails High.
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on failed level instrument.		
Cued by lead examiner		System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min.
<p>Cue: Call as the Pine Bluff Systems Operations Center (SOC) with a Transmission Loading Relief (TLR) to reduce plant output to ~850 MWe (lower output by 200 MWe) within 30 min. The SOC will also report that all limits of EN-DC-199 are satisfied.</p> <p>Cue: If contacted as Unit 1 report that the plant is within 60 days of a refueling outage and can not lower power.</p>		
Cued by lead examiner	Trigger T4	'A' Steam Generator MSIV 2CV-1010-1 fails closed.
Reactor Trip	Trigger T5	Excess Steam Demand on 'A' S/G outside containment commences.
Reactor Trip		Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B will trip when the reactor trips.
<p>Cue: If contacted as the AO to open 2CVC-40A (2P-39A discharge valve), then report that it is stuck closed and will not open.</p> <p>Cue: If contacted as the WCO to locally close 2CV-4873-1 VCT outlet valve, then delay locally closing the valve until after functional recovery procedure has been entered. After the functional recovery procedure has been entered then close 2CV-4873-1 VCT outlet valve and report to the control room that the valve is closed.</p>		
Containment Cooling actuation.		Green train Containment coolers fail to automatically or manually actuate.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 2		
Event No.: 1		
Event Description: Draining the Containment sump beginning with step 20.1.3.		
	BOP	20.1.3 Open the following valves to drain CNTMT sump: <ul style="list-style-type: none"> • Containment Sump Isolation valve (2CV-2060-1) • Containment Sump Isolation valve (2CV-2061-2)
	ANY	*20.1.4 Using level indication or corresponding computer points, monitor the following to prevent overflow: <ul style="list-style-type: none"> • Aux Building sump (2LIS-2000 or 2LIS-2000B) • In service Waste tank: <ul style="list-style-type: none"> - 2T-20A (2LIS-2010) - 2T-20B (2LIS-2012)
	BOP	*20.1.5 Cycle 2CV-2061-2 as necessary to prevent overflowing Aux Building sump.
	BOP	Report to the SRO that 2CV-2061-2 is open and will not close.
	BOP	20.1.6 WHEN draining is complete, THEN close the following valves: <ul style="list-style-type: none"> • 2CV-2061-2 • 2CV-2060-1 <p>Examiner note: The BOP should close 2CV-2060-1 to stop draining the containment sump.</p>
	ANY	Verify that Containment Sump level is not trending down.
	SRO	Refer to Tech Specs and enter Tech Spec 3.6.3.1 and determine that 2CV-2061-2 must be isolated or restored to operable within 4 hours <p>Examiner note: SRO must enter Tech Spec 3.6.3.1 action 'a' due to 2CV-2061-2 being failed open.</p>
	SRO	Contact work management.
Cue: When contacted as the WWM, then report that I&C will trouble shoot 2CV-2061-2.		
Termination criteria: When Tech Spec 3.6.3.1 action a is entered and 2CV-2060-1 is closed or at lead examiner's discretion.		

Op-Test No.: 2009-1		Scenario No.: 2	Event No.: 2
Event Description: 2P-4A Service water pump breaker trips.			
Time	Position	Applicant's Actions or Behavior	
Cued by lead examiner	ANY	Report 2K06-B5 "2P4A BREAKER TRIP"	
	SRO	Enter and direct actions of AOP 2203.022, Loss of Service Water *1. Check the following criteria satisfied: A. Breaker trip annunciators clear (2K06-B5/2K05-B4, B5). (Perform contingency)	
	SRO	A. GO TO Step 7.	
	SRO	7. Check "2P4A BREAKER TRIP" annunciator (2K06-B5) clear. (Perform contingency)	
	BOP	A. <u>IF</u> 2P4B aligned to Loop 1, <u>THEN</u> verify 2P4B running. Examiner note: BOP will verify a suction source and start 2P-4B	
Cue: If asked report that the motor for 'A' Service Water Pump is hot to touch, but no fire or smoke is evident.			
Cue: If requested when 'B' Service Water pump is started, report as AO that 'B' Service Water pump post start checks are satisfactory.			
Cue: If asked report that the breaker for 'A' service water pump has overcurrent flags dropped.			
	SRO	Contact work management.	
Cue: When contacted as the WWM, then report that the electrical planner will begin planning work on failed pump.			
Termination criteria: When 'B' service water pump is placed in service or at lead examiner's discretion.			

Op-Test No.: 2009-1			Scenario No.: 2			Event No.: 3		
Event Description: 'A' Pressurizer level channel fails High. Tech Spec for SRO								
Time		Position		Applicant's Actions or Behavior				
Cued by lead examiner		ANY		Announce alarm 2K10-J6 CNTRL CH 1 LEVEL HIGH. Report 2LI-4627-2 and 2LR-4625 indicate normal. Letdown flow high.				
		SRO		Direct the ATC to place letdown flow controller to manual and lower flow to control pressurizer level.				
		ATC		Place 2HIC-4817 to manual and lower letdown flow to control pressurizer level.				
		SRO		Enter and implement AOP 2203.028, PZR Systems Malfunctions				
		SRO		6. Check the following PZR level annunciators clear: <ul style="list-style-type: none"> • "CNTRL CH 1/2 LEVEL LO" 2K10-G6/G7 • "CNTRL CH 1/2 LEVEL HI" 2K10-J6/J7 (Annunciators not clear, implement contingency) 				
		ANY		6. Perform the following: <ul style="list-style-type: none"> A. Compare PZR level instruments to determine the affected channel. 				
		ATC		C. <u>IF</u> selected control channel failed, <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Place Letdown Flow controller (2HIC-4817) in MANUAL. 				
		ATC		2) Place PZR Level Channel Select switch (2HS-4628) to unaffected channel. (Channel 2)				
		ATC		3) Place PZR Low Level Cutoff select switch (2HS-4642) to unaffected channel. (Channel B)				
		ANY		4) Verify PZR heaters and Normal Spray operating to restore RCS pressure 2025 to 2275 psia.				
		ATC		5) <u>WHEN</u> Letdown Flow controller (2HIC-4817) automatic <u>AND</u> manual signals match, <u>THEN</u> place Letdown Flow controller in AUTO.				

Op-Test No.: 2009-1		Scenario No.: 2	Event No.: 3
Event Description: 'A' Pressurizer level channel fails High. Tech Spec for SRO			
Time	Position	Applicant's Actions or Behavior	
		Examiner Note: The ATC may elect to take manual control of the pressurizer level controller (2LIC-4627), match the auto and manual signals then place the pressurizer level controller (2LIC-4627) to automatic.	
	SRO	E. Refer to TS 3.3.3.5, Remote Shutdown Instrumentation and 3.3.3.6, Post-Accident Instrumentation. Examiner note: SRO must enter Tech Spec 3.3.3.6 action 1 for Post Accident Instrumentation.	
	SRO	Contact work management.	
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on failed level instrument.			
Termination Criteria: PZR level control selected to channel 2 in auto control or at lead examiner's discretion.			

Op-Test No.: 1		Scenario No.: 2		Event No.: 4	
Event Description: System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min. Crew will perform a plant shutdown					
Time	Position	Applicant's Actions or Behavior			
Cue: Call as the Pine Bluff Systems Operations Center (SOC) with a Transmission Loading Relief (TLR) to reduce plant output to ~850 MWe (lower output by 200 MWe) within 30 min. The SOC will also report that all limits of EN-DC-199 are satisfied and the reliability of Offsite power is not impacted.					
Cued by lead examiner	SRO	Implement OP-2107.001, Electrical system operations Attachment S			
	SRO	1.1	IF notified by the SOC, TOC or Woodlands dispatcher that a TLR has been issued for ANO, THEN perform the following: 1.1.1 Conduct Reactivity Brief for requested downpower.		
	ALL	1.1.2	Unit designated to reduce power, commence power reduction using respective Power Operations procedure.		
Cue: If contacted as Unit 1 report that the plant is within 60 days of a refueling outage and can not lower power.					
	SRO	1.1.3	Notify Operations Management.		
Examiner note: 2107.001 attachment S step 1.1.4 and 1.15 are normally completed by the Shift Manager and are not expected to be completed by the Control Room Supervisor.					
		1.1.4	IF power reduction requested is greater than 25 MWe, THEN inform Site Duty Manager to perform the following: A. Perform required notifications per Notifications of Off-Normal Situations/Corporate Duty Manager responsibilities (EN-OM-128). B. Notify NRC Resident.		
		1.1.5	IF notified by the Dispatcher of any off site disturbance that may affect the reliability of Offsite Power, THEN perform a Risk assessment using guidance in COPD-24.		
		1.1.6	Verify with Pine Bluff SOC that requirements of ENS-DC-199, Off-Site Power Supply Design Requirements, off-site post-trip voltage and frequency limits still met.		

Op-Test No.: 1		Scenario No.: 2		Event No.: 4	
Event Description: System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min. Crew will perform a plant shutdown					
Time	Position	Applicant's Actions or Behavior			
Examiner note: The following steps are the applicable steps from 2102.004, Power Operation to perform a power reduction to 80%					
Power reduction	SRO	11.6	Notify the following of intent to reduce power: <ul style="list-style-type: none"> • Chemistry • Reactor Engineering • Radiation Protection • Little Rock Dispatcher • Woodlands Dispatcher 		
	ATC	11.7	IF power reduction NOT rapid, THEN perform the following: <ul style="list-style-type: none"> • Determine amount of boric acid required for power reduction from Reactivity curves (located in Plant Data book) OR Unit 2 Shift Relief Sheet (1015.016). • IF NOT otherwise specified by Reactor Engineering, THEN determine desired rate of load change using Attachment A of this procedure. <p>Examiner note: This down power is not considered a rapid power reduction.</p>		
	ATC	11.8	Commence Power reduction by performing the following as necessary: <ul style="list-style-type: none"> • Boration using Normal Borate Mode to Charging pump suction (unless directed otherwise by Abnormal Operating Procedure) Refer to Chemical Addition (2104.003). • CEA insertion using CEDMCS Control System Operation (2105.009), Exhibit 3 CEDMCS Operations (normally for ASI control). 		
	ANY	*11.9	Lower Turbine load as necessary to hold Tave within $\pm 2^\circ\text{F}$ of program Tref using Exhibit 1, TAVE VS TREF.		
	ATC	* 11.12	Maintain ASI by performing the following: <ul style="list-style-type: none"> • IF power reduction rapid, <u>THEN</u> maintain ASI (PID 268) within Core Operating Limits Report (COLR) limits using CEA Group 6 or Group P. • IF power reduction NOT rapid, <u>THEN</u> maintain ASI at desired value using CEA Group 6 and Group P per Attachment A. (QASI trip setpoint ± 0.48) 		

Op-Test No.: 1	Scenario No.: 2	Event No.: 4
Event Description: System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min. Crew will perform a plant shutdown		
Time	Position	Applicant's Actions or Behavior
	ATC	<p>OP-2104.003, Chemical Addition Exhibit 3 (Normal Boration).</p> <p>1.0 Verify Boric Acid Makeup Flow controller (2FIC-4926) set as follows:</p> <ul style="list-style-type: none"> • In MANUAL OR AUTO. • Setpoint set to desired flowrate. <p>2.0 Verify desired BAM pump (2P-39A OR 2P-39B) selected for automatic operation using BAM pump Select switch (2HS-4911-2).</p> <p>3.0 Operate Mode Select Switch (2HS-4928) as follows:</p> <p>3.1 Place to BORATE.</p> <p>3.2 Verify the following:</p> <ul style="list-style-type: none"> • Charging Pump Suction from Boric Acid (2CV-4930) opens. • Selected BAM pump (2P-39A OR 2P-39B) running. <p>*4.0 IF additional boric acid flow required, THEN manually start additional BAM pump (2P-39A OR 2P-39B).</p> <p>*5.0 Verify BAM Tank Recirc Valve (2CV-4903-2 OR 2CV-4915-2) open for running pumps.</p> <p>6.0 Operate Boric Acid Makeup Flow Batch controller (2FQIS-4926) as follows:</p> <p>6.1 Depress Red pushbutton.</p> <p>6.2 Verify 2FQIS-4926 set for desired quantity.</p> <p>6.3 Verify 2FIC-4926 indicates desired flow rate.</p> <p>* 7.0 Monitor the following parameters:</p> <ul style="list-style-type: none"> • RCS Tave • Axial Shape Index • Reactor power <p>8.0 WHEN 2FQIS-4926 at zero, THEN verify the following:</p> <ul style="list-style-type: none"> • Boric Acid Makeup Flow Control valve (2CV-4926) closes. • No flow indicated on 2FIC-4926. <p>9.0 Repeat steps 6.0 through 8.0 as required for boric acid addition.</p>
Termination Criteria: When reactivity manipulations are satisfied or at the discretion of the lead examiner.		

Time	Position	Applicant's Actions or Behavior								
Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6								
Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.										
Cued by lead examiner	ANY	Report Reactor Tripped								
	SRO	Enter and implement EOP 2202.001, Standard Post Trip Actions.								
	SRO	1. Notify Control Board Operators to monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist. 2. Open Safety Function Tracking page.								
Reactivity control safety function	ATC	3. Check Reactivity Control established as follows: A. Reactor power lowering. B. ALL CEAs fully inserted. (Not met due to Event #6, perform contingency)								
	SRO	Direct ATC to perform emergency boration in progress using Exhibit 1, Emergency Boration. _____ B. Verify emergency boration in progress using Exhibit 1, Emergency Boration. Examiner note: Emergency boration can not be established.								
	ATC	1. Select ONE of the following Emergency Boration flowpaths: <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">FLOWPATH</th> <th style="text-align: center;">ACTIONS REQUIRED</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">A. Gravity Feed</td> <td style="vertical-align: top;">A. Verify at least ONE BAM Tank Gravity Feed valve open: <ul style="list-style-type: none"> • 2CV-4920-1 • 2CV-4921-1 </td> </tr> <tr> <td style="vertical-align: top;">B. BAM pumps</td> <td style="vertical-align: top;">B. 1) Start at least ONE BAM pump. 2) Open Emergency Borate valve (2CV-4916-2). 3) Verify Boric Acid Makeup Flow Control valve (2CV-4926) closed.</td> </tr> <tr> <td style="vertical-align: top;">C. RWT to Charging pumps</td> <td style="vertical-align: top;">C. Open Charging Pump Suction Source From RWT valve (2CV-4950-2).</td> </tr> </tbody> </table>	FLOWPATH	ACTIONS REQUIRED	A. Gravity Feed	A. Verify at least ONE BAM Tank Gravity Feed valve open: <ul style="list-style-type: none"> • 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) Verify Boric Acid Makeup Flow Control valve (2CV-4926) closed.	C. RWT to Charging pumps	C. Open Charging Pump Suction Source From RWT valve (2CV-4950-2).
FLOWPATH	ACTIONS REQUIRED									
A. Gravity Feed	A. Verify at least ONE BAM Tank Gravity Feed valve open: <ul style="list-style-type: none"> • 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) Verify Boric Acid Makeup Flow Control valve (2CV-4926) closed.									
C. RWT to Charging pumps	C. Open Charging Pump Suction Source From RWT valve (2CV-4950-2).									

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.		
	ATC	2. Close VCT Outlet valve (2CV-4873-1). Examiner Note: The VCT outlet valve will not close and should perform step 3.
	ATC	3. <u>IF</u> VCT Outlet valve does <u>NOT</u> close, <u>THEN</u> verify BAM Pumps Emergency Boration flowpath selected. Examiner Note: 2P-39B breaker will trip when the reactor is tripped and 2P-39A BAM pump is not available due to the line up for acid reducing chemistry. Emergency boration can not be completed and should be reported to the SRO.
Examiner note: SRO may discuss Shutdown margin Tech Spec 3.1.1.1 due to one CEA withdrawn and inability to emergency borate. One CEA can be withdrawn without emergency boration and meet shutdown margin (SDM).		
Cue: If contacted as the AO to open 2CVC-40A (2P-39A discharge valve), then report that it is stuck closed and will not open.		
Cue: If contacted as the WCO to locally close 2CV-4873-1 VCT outlet valve, then delay locally closing the valve until after Functional recovery procedure has been entered. After the functional recovery procedure has been entered then close 2CV-4873-1 VCT outlet valve and report to the control room that the valve is closed.		
Vital Auxiliaries safety function	BOP	4. Check Maintenance of Vital Auxiliaries satisfied: A. Main Turbine tripped. B. Generator Output breakers open. C. Exciter Field breaker open. D. At least ONE 6900v AC bus energized E. At least ONE 4160v Non-vital AC bus energized. F. BOTH 4160v Vital AC buses energized. G. BOTH DGs secured. H. At least ONE 125v Vital DC bus energized: 2D01 - SPDS point E2D01 2D02 - SPDS point E2D02

Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
<p>Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.</p>		
Time	Position	Applicant's Actions or Behavior
		<p>F. Verify PZR Pressure Control system restoring pressure to setpoint.</p> <p>G. <u>IF ALL RCPs stopped AND RCS pressure greater than 2250 psia, THEN</u> initiate Aux spray using Attachment 27, PZR Spray Operation.</p>
Core Heat Removal safety function.	ATC	<p>7. Check Core Heat Removal by forced circulation:</p> <p>A. At least ONE RCP running.</p> <p>B. CCW flow aligned to RCPs.</p> <p>C. Loop delta T less than 10°F.</p> <p>D. RCS MTS 30°F or greater.</p> <p>E. Check SW aligned to CCW. (May not be aligned and should perform contingency)</p> <p>F. IF SIAS or MSIS actuated, THEN maintain SW header pressure greater than 85 psig.</p>
	SRO	If required, direct the contingency for step 7. E
	BOP	E. IF CCW available, THEN restore SW to CCW, refer to 2202.010 Exhibit 5, CCW/ACW/SW Alignment.

Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.		
Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	8. Check RCS Heat Removal: <ul style="list-style-type: none"> A. Check SG available by BOTH of the following: <ul style="list-style-type: none"> • At least ONE SG level 10 to 90%. • FW maintaining SG level. (Should not be met due to MSIS, perform contingency if necessary) B. Check MFW in RTO. (Should not be met due to MSIS, perform contingency if necessary) C. Check Feedwater line intact by the following: <ul style="list-style-type: none"> • SG level stable or rising. • NO unexplained step changes or erratic FW flow. • NO unexplained step changes or erratic Condensate flow. D. Check Condensate Pump discharge header pressure < 753 psig. E. Check SG pressure 950 to 1050 psia. (Not Met, perform Contingency) F. Check RCS TC 540 to 555°F.
	ANY	Perform step 8 contingency actions that are applicable: <ul style="list-style-type: none"> A. Perform the following: <ul style="list-style-type: none"> 1) <u>IF</u> SG level lowering, <u>THEN</u> verify EFAS actuated. (To the 'B' S/G only)
	ANY	<ul style="list-style-type: none"> B. Verify EITHER of the following: <ul style="list-style-type: none"> • BOTH MFW pumps tripped. • SG levels controlling at setpoint

Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
<p>Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.</p>		
Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	<p>E. Perform as necessary:</p> <ol style="list-style-type: none"> 1) <u>IF</u> SG pressure 751 psia or less, <u>THEN</u> perform the following: <ol style="list-style-type: none"> a) Verify MSIS actuated on PPS inserts. b) Maintain RCS post-cooldown conditions as follows: <ul style="list-style-type: none"> • Maintain RCS pressure within P-T limits with PZR heaters and spray using Attachment 27, PZR Spray Operation. • Maintain RCS temperature by steaming intact SG using Upstream ADV or Upstream ADV Isolation MOV. c) GO TO Step 9.

Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
<p>Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.</p>		
Time	Position	Applicant's Actions or Behavior
Containment Safety Function		<p>9. Check CNTMT parameters:</p> <p>A. Temperature and Pressure:</p> <ul style="list-style-type: none"> • Temperature less than 140°F. • Pressure less than 16 psia. <p>B. Check CNTMT Spray pumps secured.</p> <p>C. NO CNTMT radiation alarms or unexplained rise in activity:</p> <ol style="list-style-type: none"> 1) CAMS alarms: <ul style="list-style-type: none"> • "CNTMT PART/GAS RAD HI/LO" annunciator (2K10-B6) clear. 2) RCS leakage alarms: <ul style="list-style-type: none"> • "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: <ul style="list-style-type: none"> • CNTMT Area • CAMS • Process Liquid <p>D. NO secondary system radiation alarms or unexplained rise in activity:</p> <ol style="list-style-type: none"> 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 2) Secondary Systems Radiation monitors trend stable: <ul style="list-style-type: none"> • Main Steam lines • SG Sample • Condenser Off Gas
	SRO	<p>10. Notify STA to report to control room.</p> <p>11. Verify NLOs informed of Reactor trip.</p> <p>12. Verify Reactor trip announced on Plant page.</p> <p>13. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.</p>

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.		
	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 Functional Recovery EOP 2202.009.
	SRO	Enter and implement Functional Recovery EOP 2202.009.
	SRO	2. Record present time: • Time _____.
	SRO	* 3. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	ANY	* 4. Check RCS pressure greater than 1400 psia.
	ANY	If not performed in SPTA's, then perform contingency to secure 2 RCPs * 4. Perform the following: A. <u>IF</u> RCS pressure less than 1400 psia, <u>THEN</u> perform the following: 1) Verify maximum of ONE RCP running in EACH loop. 2) <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed.
Examiner Note:		
The SRO may have directed the ATC and BOP actions for maintaining post-cooldown conditions from SPTAs and therefore may not implement the following floating step.		
	SRO	Should pull up the floating step for maintain post-cooldown conditions. HR-2 Step 33.

Op-Test No.: 1	Scenario No.: 2	Event No.: 5 & 6
<p>Event Description: 'A' Steam Generator MSIV 2CV-1010-1 fails closed. Then 4 minutes after trip an Excess Steam Demand outside containment commences. Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B Boric acid make up (BAM) pump will trip when the reactor trips.</p>		
Time	Position	Applicant's Actions or Behavior
	ANY	<p>F. Check RCS and Core Heat Removal satisfied:</p> <ol style="list-style-type: none"> 1) At least ONE intact SG available for Heat Removal by EITHER of the following: <ul style="list-style-type: none"> • Level 10 to 90% [20 to 90%] with FW available. • Level being restored with total FW flow of 485 gpm or greater. 2) <u>IF</u> ANY RCP operating, <u>THEN</u> RCS ΔT less than 10°F and <u>NOT</u> rising. 3) <u>IF</u> ALL RCPs secured, <u>THEN</u> RCS ΔT less than 50°F and <u>NOT</u> rising. 4) RCS T_C less than 555°F and <u>NOT</u> rising. 5) RCS MTS 30°F or greater. 6) RVLMS LVL 01 indicates WET.
	ANY	<p>G. Check CNTMT Isolation satisfied:</p> <ol style="list-style-type: none"> 1) CNTMT parameters normal: <ol style="list-style-type: none"> a) "CNTMT RADIATION HI" annunciator (2K10-A6) clear. b) NO unexplained rise in CNTMT radiation. c) CNTMT pressure less than 18.3 psia. 2) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 3) NO unexplained rise in Secondary Systems Radiation monitor trends: <ul style="list-style-type: none"> • Main Steam lines • SG Sample • Condenser Off Gas

Op-Test No.: 1		Scenario No.: 2	Event No.: 7
Event Description: Green train Containment coolers fail to automatically or manually actuate.			
Time	Position	Applicant's Actions or Behavior	
	ANY	Recognize the Green train Containment coolers failed to automatically actuate.	
	SRO	Direct the CBOT to manually align the Green train Containment Coolers to the emergency mode using OP-2202.010 Standard Attachment, Exhibit 9	
	BOP	<p>Perform the following to align the Green train Containment Coolers to the emergency mode:</p> <p>3.0 <u>IF</u> CCAS, <u>THEN</u> verify the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Red Train CNTMT Coolers in service. <input type="checkbox"/> Service Water aligned to Red Train CNTMT Coolers. <input type="checkbox"/> Red Train Bypass Dampers open. <input type="checkbox"/> Green Train CNTMT Coolers in service. <input type="checkbox"/> Service Water aligned to Green Train CNTMT Coolers. <input type="checkbox"/> Green Train Bypass Dampers open. 	
Examiner note: The SRO may discuss Tech Spec 3.3.2.1 ESFAS and 3.6.2.3 Containment Cooling due to the failure to automatically actuate.			
Termination criteria: Green train Containment Coolers aligned IAW 2202.010 Exhibit 9 or at examiner's discretion.			

Facility: ANO-2		Scenario No.: 3 (Modified)		Op-Test No.: 2009-1	
Examiners:			Operators:		
_____			_____		
_____			_____		
Initial Conditions: ~60% MOL, Condenser outer waterboxes placed in service after tube plugging. All Engineered Safety Features systems are in standby. 2PCV-0231 jacked closed. RED Train Maintenance Week.					
Turnover: ~60% power Condenser outer waterboxes placed in service after tube plugging. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. RED Train Maintenance Week. The previous shift has completed steps 10.1.1 through 10.1.6 and section 10.2 of starting the second heater drain pump and 'B' Heater drain pump needs to be placed in service. 2 Condensate pumps are running with Condensate recirculation valves in manual. Commence power escalation using applicable 2104.002 step 9.1 through 9.11 are complete and steps 9.13 to 9.18 and 9.20 to 9.28 are not applicable or complete. Reactor engineering recommends a 12% per hour rate.					
Event No.	Malf. No.	Event Type*	Event Description		
1	(New)	N (SRO) R (ATC)	Power escalation following a forced outage.		
2	(New)	N (BOP) N (SRO)	Place the 'B' Heater Drain pump in service.		
3	NIBLINEPWR (Modified)	I (BOP) I (SRO)	'B' channel nuclear instrument fails high. Tech Spec for SRO.		
4	XRCCHBPCNT (New)	I (ATC) I (SRO)	'B' Pressurizer control channel pressure fails high.		
5	SGBTUBE (Modified)	M (ALL)	'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO		
6	RPSRXMAN RPSRXAUTO (New)	C (ATC) C (SRO)	Failure of the reactor protection system to automatically or manually trip the reactor.		
7	OP5130 OP5134 (New)	C (BOP) C (SRO)	Generator output breakers fail to open automatically		
8	CNDVACPPA CND2C5B	C (BOP) C (SRO)	2C-5A Vacuum pump trip 2C-5B Vacuum pump fails to auto start.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Total malfunctions. = 6, Malfunctions after EOP entry = 2, Abnormal events = 2, Major transient = 1, EOPs with substantive actions = 1, EOP Contingencies = 0, Critical tasks = 2.

Scenario #3 Objectives

- 1) Evaluate individual ability to perform a power escalation.
- 2) Evaluate individual ability to place the second heater drain pump in service.
- 3) Evaluate individual response to a failure of a Nuclear Instrumentation channel.
- 4) Evaluate individual response to a failure of a Pressurizer pressure control channel.
- 5) Evaluate individual response to a steam generator tube rupture.
- 6) Evaluate individual response to a failure of a RPS to manually or automatically trip the reactor.
- 7) Evaluate individual response to the generator output breakers failure to automatically open.
- 8) Evaluate individual ability to mitigate a steam generator tube rupture.
- 9) Evaluate individual response to a vacuum pump trip.
- 10) Evaluate individual response to a failure to the backup vacuum pump to auto start.

SCENARIO #3 NARRATIVE

Simulator session begins with the plant at 60% power Condenser outer waterboxes placed in service after tube plugging. Gland seal regulator, 2PCV-0231 is jacked closed. The previous shift has completed steps 10.1.1 through 10.1.6 of OP-2106.016 (Condensate and Feedwater operations) for placing the 'B' Heater Drain pump in service.

When the crew has completed their control room walk down and brief, the ATC will commence a power escalation and the BOP will place the 'B' Heater drain pump in service.

After the 'B' Heater Drain pump is placed in service, the ATC has completed all required reactivity manipulations and cued by lead examiner, 'B' nuclear instrumentation channel will fail high. This will result in a PPS channel trip and pre-trip, CPC sensor failure alarms and the NI linear and log power instruments on 'B' channel failing to High. The SRO will enter the Nuclear Instrument Malfunction AOP, AOP 2203.026. The SRO will direct the BOP to bypass points 1, 2, 3, and 4 on 'B' PPS. TS 3.3.1.1 and 3.3.3.5 will be entered due to the excore failure.

After the BOP has bypassed points 1, 2, 3, and 4 on 'B' PPS and cued by lead examiner, the 'B' channel Pressurizer (PZR) control channel will fail high. This will result in both main spray valves to automatically open and both proportional heater banks to go to minimum fire. Actual PZR pressure will drop and will result in an automatic reactor trip, if actions are not taken to mitigate the event. The SRO will enter Abnormal operating procedure OP 2203.028, PZR systems malfunctions. The SRO will direct selecting the opposite control channel.

After the Crew has taken all actions of OP 2203.028 PZR systems malfunctions and cued by lead examiner, a primary to secondary leak will start. The SRO will enter the primary to secondary leakage AOP, OP 2203.038. ATC and BOP will perform RCS Leak rate determinations. The SRO will enter Tech Spec 3.4.6.2. The SRO will direct the NLO's to control secondary contamination using standard attachment 19 and direct the chemists to sample the SG's for activity. When the crew has determined that the primary to secondary leak is greater than 44 gpm, the ATC will trip the reactor.

SCENARIO #3 NARRATIVE (continued)

When the ATC attempts to manually trip the reactor RPS will not work and the SRO will direct the ATC to trip the reactor using the DSS system. The Crew will implement Standard Post Trip Actions (SPTA), OP 2202.001. During SPTAs the generator output breakers will fail to automatically open and require the BOP to manually open the breakers. The Crew should actuate safety injection (SIAS) and containment cooling actuation signal (CCAS) or verified that SIAS and CCAS automatically actuates. The Crew will lower Steam Dump master controller setpoint during SPTAs to aid in maintaining margin to saturation. The ATC will secure two Reactor coolant Pumps when RCS pressure goes below 1400 psia.

The SRO will diagnose a Steam Generator Tube Rupture event and enter OP 2202.004, Steam Generator Tube Rupture. The ATC will cool down the RCS to less than 535°F using the bypass valves to the condenser. The BOP will override SW to CCW and ACW. The BOP will isolate the 'B' SG using standard attachment 10 when RCS That is less than 535°F.

After the EOP is entered, the RCS cooldown is started and at the lead examiner's discretion, 'A' vacuum pump will trip and 'B' vacuum pump will NOT automatically start. The BOP will manually start 'B' vacuum pump. If this vacuum pump is not started, the SDBCS bypass valves will close and the crew will have to steam the ruptured SG to atmosphere resulting in an off site radiological release.

Simulator Instructions for Scenario 3

Reset simulator to MOL ~60% power IC stead state.

Ensure that AACG is secured and annunciators clear.

Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.

Swing ESF equipment aligned to the RED train.

2PCV-0231, Gland sealing steam pressure control valve failed closed.

T1, T2, T3, T4, set to false.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1			No malfunctions inserted in event #1.
2			No malfunctions inserted in event #2.
3	NIBLINEPWR Trigger = T1,	200	'B' channel nuclear instrument fails high. Tech Spec for SRO.
4	XRCCHBPCNT Trigger = T2,	2500 / Ramp = 30 sec	'B' Pressurizer control channel pressure fails high.
5	SGBTUBE Trigger = T3	Value = 275gpm Ramp = 25 min.	'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO
6	RPSRXMAN RPSRXAUTO	TRUE	Failure of the reactor protection system to automatically or manually trip the reactor.
7	OP5130 OP5134	NO_ AUTO_ OPEN	Generator output breakers fail to open automatically
8	CNDVACPPA CND2C5B Trigger = T4	True	2C-5A Vacuum pump trip 2C-5B Vacuum pump fails to auto start.

Simulator Operator CUEs		
At T=0		Power escalation following a forced outage.
At T=0		Place the 'B' Heater Drain pump in service.
Cue: If contacted as the AO then report section 10.2 2P-8A/B Seal Water Pressure Controller Operation is complete. Cue: If contacted as the AO then report pre-start checks are satisfactory for the 'B' Heater Drain Pump.		
Cued by lead examiner	Trigger T1	'B' channel nuclear instrument fails high. Tech Spec for SRO.
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on nuclear instrument.		
Cued by lead examiner	Trigger T2	B' Pressurizer control channel pressure fails high.
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on failed pressure instrument.		
Cued by lead examiner	Trigger T3	'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO
Cue: If contacted as the AO then report after 5 min that the local portions of Attachment 10 for 'B' S/G are complete. Cue: If contacted as the AO then report you are commencing Attachment 19 control of secondary contamination.		
		Failure of the reactor protection system to automatically or manually trip the reactor.
		Generator output breakers fail to open automatically.
Triggered during SGTR brief. If the brief is delayed then triggered 10 min after entering SGTR procedure.	Trigger T4	2C-5A Vacuum pump trip 2C-5B Vacuum pump fails to auto start.
Cue: If contacted as the AO then report that 'B' vacuum pump is running satisfactory and 'A' vacuum pump is secured.		

Op-Test No.: 2009-1			Scenario No.: 3			Event No.: 1		
Event Description: Plant power escalation from 60%.								
Time		Position		Applicant's Actions or Behavior				
T=0		ALL		Crew will conduct brief for power increase.				
		SRO		Direct applicable actions of OP, 2102.004 Power Operations.				
		ATC		9.12 IF NOT specified otherwise by Reactor Engineering, THEN commence raising power using Attachment A of this procedure for ASI Control and power escalation limits: <ul style="list-style-type: none"> • Commence RCS dilution. [Refer to Chemical Addition (2104.003)] • Raise turbine load as necessary to maintain Tref within $\pm 2^{\circ}\text{F}$ of program Tave using Exhibit 1, TAVE VS TREF. 				

Op-Test No.: 2009-1	Scenario No.: 3	Event No.: 1
Event Description: Plant power escalation from 60%.		
		<p>OP-2104.003, Chemical Addition Exhibit 2 for dilution.</p> <ol style="list-style-type: none"> 1.0 Verify EITHER Reactor Makeup pump (2P-109A OR 2P-109B) running. 2.0 Verify Mode Select switch (2HS-4928) in DILUTE. 3.0 Verify Reactor Makeup Water Flow controller (2FIC-4927) set up as follows: <ul style="list-style-type: none"> • In MANUAL OR AUTO. • Demand set to less than Charging flow. 4.0 Verify VCT Makeup Isol valve (2CV-4941-2) open. 5.0 Operate Reactor Makeup Water Flow Batch controller (2FQIS-4927) as follows: <ol style="list-style-type: none"> 5.1 Depress Red pushbutton. 5.2 Verify 2FQIS-4927 set for desired quantity. 5.3 Verify 2FIC-4927 indicates desired flow rate. * 6.0 Monitor the following parameters: <ul style="list-style-type: none"> • RCS Tave • Axial Shape Index • Reactor power 7.0 IF desired to terminate dilution, THEN reset 2FQIS-4927 to zero. 8.0 WHEN 2FQIS-4927 at zero, THEN verify the following: <ul style="list-style-type: none"> • RMW Flow Control valve (2CV-4927) closes. • No flow indicated on 2FIC-4927. 9.0 Repeat steps 5.0 through 8.0 as required. 10.0 Close 2CV-4941-2. 11.0 Verify 2FQIS-4927 Batch Volume placard updated to current batch volume.

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 1
Event Description: Plant power escalation from 60%.			
	ANY	Direct a NLO to perform the following: * 9.19 Perform the following: <ul style="list-style-type: none"> • Monitor secondary chemistry during power escalation • Adjust chemical feed as necessary using Secondary System Chemical Addition (2106.028). 	
	BOP	9.29 WHEN ~ 50-55% power, <u>THEN</u> start second Heater Drain pump (2P-8A/B) using Condensate and Feedwater Operations (2106.016).	
Termination criteria: When reactivity manipulations are satisfied or at the discretion of the lead examiner.			

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 2		
Event Description: Place the 'B' Heater Drain pump in service starting at step 10.1.7.		
	BOP	10.1.7 Verify associated Alarms clear for pump to be started: <ul style="list-style-type: none"> • 2T-40A Low Pressure alarm (2K03-F1) • 2T-40A Low Level alarm (2K03-E1) • 2T-40B Low Pressure alarm (2K03-F2) • 2T-40B Low Level alarm (2K03-E2)
	BOP	<p style="text-align: center;">Note:</p> <ul style="list-style-type: none"> • For cross-tied 2T-40 Tank operation, Recirc controllers are set up in lead/lag style of operation with Lead Recirc controller ~ 15% greater than lag. The Dump controllers can be set up this way if desired. • Normal Heater Drain Pump Recirc Controller setpoints are 85% on the Lead controller and 70% on the Lag controller. 10.1.8 Place the following valve controllers in desired position (auto or manual - refer to Attachment J) for Heater Drain Tank Level control: <ul style="list-style-type: none"> • 2T-40A Recirc 2CV-0725 Level controller (2LIC-0812) • 2T-40B Recirc 2CV-0719 Level controller (2LIC-0826) • 2T-40A Hi Level Dump to 2E-11B controller (2LIC-0813) • 2T-40B Hi Level Dump to 2E-11B controller (2LIC-0825)
	ANY	10.1.9 Verify 2P-8A/B Seal Water pressure control established per Step 10.2 .
Cue: If contacted as the AO then report section 10.2 2P-8A/B Seal Water Pressure Controller Operation is complete.		
	BOP	10.1.10 Verify Heater Drain Tank level \geq 4 ft (~ 94% on Recirc Indicator) for selected pump to start.
Cue: If the crew delays starting the 'B' Heater drain pump due to level, act as the Shift Manager and tell the SRO to direct checking Heater Drain tank level by rotating the setpoint dial.		
	ANY	10.1.11 <u>IF</u> pump casing warming performed, <u>THEN</u> verify Step 10.1.4 complete.

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 2
Event Description: Place the 'B' Heater Drain pump in service starting at step 10.1.7.			
Time	Position	Applicant's Actions or Behavior	
Cue: If contacted as the AO then report pre-start checks are satisfactory for the 'B' Heater Drain Pump.			
	BOP	10.1.12 Start selected Heater Drain pump (2P-8A/B).	
	BOP	10.1.13 Monitor 2T-40 levels on Recirc and HLD controllers.	
	BOP	10.1.14 Verify the following valves adjust as required to maintain Heater Drain Tank level: <ul style="list-style-type: none"> • 2T-40A Hi Level Dump to 2E-11B (2CV-0813) • 2T-40B Hi Level Dump to 2E-11B (2CV-0825) • 2T-40A Recirc (2CV-0725) • 2T-40B Recirc (2CV-0719) 	
Termination Criteria: When 'B' Heater Drain pump is in service or at lead examiner's discretion.			

Op-Test No.: 2009-1			Scenario No.: 3			Event No.: 3		
Event Description: 'B' channel nuclear instrument fails High. Tech Spec 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				
		ANY		Crew will recognize that 'B' excore has failed High.				
		SRO		Enter and Implement AOP 2203.026, NI Malfunction.				
		ANY		1. Check at least TWO Linear Safety channels operable.				
		ANY		2. Check ALL Linear Safety channels operable. (Channel 'B' 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				
		BOP		C. IF ONLY ONE channel failed, THEN verify the following trip functions bypassed: <ul style="list-style-type: none"> • Hi Linear Power {1} • High LPD {3} • Low DNBR {4} 				
		SRO		D. GO TO Step 4.				
		ANY		4. Check ALL Log Power channels operable. (Channel 'B' will not be operable)				
		SRO		4. IF ALL Log Power channels NOT operable, THEN perform the following: A. IF Log Power channel #2 failed, THEN refer to TS 3.3.3.5, Remote Shutdown Instrumentation. B. Refer to TS 3.3.1.1, Reactor Protective Instrumentation. Examiner note: SRO must enter Tech Spec 3.3.3.5				

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 3
Event Description: 'B' channel nuclear instrument fails High. Tech Spec for SRO.			
Time	Position	Applicant's Actions or Behavior	
	BOP	<p>D. IF ONLY ONE Log Power channel failed, AND associated Linear Safety channel failed, THEN verify the following trip functions bypassed:</p> <ul style="list-style-type: none"> • Hi Linear Power {1} • Hi Log Power {2} • High LPD {3} • Low DNBR {4} 	
		<p>Bypass the points 1, 2, 3, and 4 on Channel B IAW 2105.001 CPC/CEAC operations section 11:</p> <p>11.1 Refer to Tech Spec 3.3.1.1, 3.3.2.1, 3.3.3.5, 3.3.3.6 and TRM 3.3.1.1.</p> <p>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</p> <p>11.3 Enter appropriate Tech Spec/TRM actions.</p> <p>11.4 Verify points to be bypassed <u>NOT</u> bypassed in ANY other channel.</p> <p>11.5 Place desired points in BYPASS for selected channel on 2C23.</p> <p>Examiners Note: Key 12 required.</p>	
	SRO	8. Notify I&C of Nuclear Instrument malfunctions.	
Cue: When contacted as the WWM, then report that I & C planner will begin planning work on nuclear instrument.			
Termination criteria: When points 1, 2, 3 and 4 are bypassed on 'B' PPS or at the discretion of the lead examiner.			

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
Cued by lead examiner	ANY	Announce alarm SEC SYS RADIATION HI.
	SRO	Enter and Implement AOP 2203.038, Primary to Secondary leakage.
	ANY	*2. Check PZR level stable or rising. (Not met, perform contingency)
	ANY	*2. Perform the following: A. Start and stop Charging pumps as necessary to maintain level.
	ANY	*3. Check PZR level maintained within 10% of setpoint.
	ANY	4. Notify Chemistry to sample Secondary system for activity using 1604.013, Measurement of Primary to Secondary Leak Rate.
	ANY	Direct NLO to perform the following: 5. Minimize secondary contamination using 2202.010 Attachment 19, Control of Secondary Contamination.
	ANY	7. Determine Primary to Secondary leakrate by ANY of the following: <ul style="list-style-type: none"> • Computer RCS LKRT programs. • Check PZR level stable and use Charging and Letdown mismatch minus Controlled Bleed Off. • Check Letdown isolated and 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.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	SRO	*8. Refer to TS 3.4.6.2, Reactor Coolant System Leakage. Examiner note: SRO must enter Tech Spec 3.4.6.2 due to primary to secondary leakage
	ANY	10. Determine leaking SG by ANY of the following: A. Secondary Systems Radiation Trend recorder: <ul style="list-style-type: none"> • 2RR-1057 B. SG Sample Radiation monitors: <ul style="list-style-type: none"> • 2RITS-5854 • 2RITS-5864 C. Main Steam Line Radiation monitors: <ul style="list-style-type: none"> • 2RI-1007 • 2RI-1057 D. SG water sample results. E. SG Tube Leak N-16 monitors.
	ANY	11. Check SG Blowdown aligned to SU/BD DI.
	SRO	May elect to implement floating step 15 for isolation steam to 2P-7A from the leaking Steam Generator.
	BOP	■15. Isolate EFW pump 2P7A Steam supply as follows: A. Close Main Steam Supply valve to 2P7A from leaking SG: <ul style="list-style-type: none"> • 2CV-1000-1 • 2CV-1050-2
	SRO	B. Refer to TS 3.7.1.2, Emergency Feedwater System. Examiner Note: The SRO must enter TS 3.7.1.2 when the Main steam supply valve to 2P-7A is closed.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	SRO	When the Leakrate is determined to be greater than 44 gpm the SRO will direct the Reactor trip. ■12. IF RCS leakage greater than 44 gpm AND in Mode 1 OR 2, THEN perform the following: A. Trip Reactor. B. GO TO 2202.001, Standard Post Trip Actions.
	ATC	Recognize a failure of manual RPS trip.
CRITICAL TASK	ATC	Trip the Reactor using the DSS pushbutton. Examiner note: DSS trip must be completed within 1 minute of recognition of RPS failure.
	SRO	Enter and implement EOP 2202.001, Standard Post Trip Actions.
	SRO	1. Notify Control Board Operators to monitor safety functions using Exhibit 7, CBO Reactor Trip Checklist. 2. Open Safety Function Tracking page.
Reactivity control safety function	ATC	3. Check Reactivity Control established as follows: A. Reactor power lowering. B. ALL CEAs fully inserted.
	BOP	Complete Post Trip contingencies to align gland seal steam using 2CV-0233 gland seal bypass valve.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
Vital Auxiliaries safety function	BOP	<p>4. Check Maintenance of Vital Auxiliaries satisfied:</p> <p>A. Main Turbine tripped.</p> <p>B. Generator Output breakers open. (Not met due to event #7, Perform contingency)</p> <p>C. Exciter Field breaker open.</p> <p>D. At least ONE 6900v AC bus energized</p> <p>E. At least ONE 4160v Non-vital AC bus energized.</p> <p>F. BOTH 4160v Vital AC buses energized.</p> <p>G. BOTH DGs secured. (May be running if SIAS is actuated, contingency is to verify service water outlet valves are open and they will both be open)</p> <p>H. At least ONE 125v Vital DC bus energized:</p> <p>2D01 - SPDS point E2D01 2D02 - SPDS point E2D02</p>
	BOP	<p>B. Open Generator Output breakers:</p> <ul style="list-style-type: none"> • 5130 • 5134
RCS Inventory Control Safety function	ATC	<p>5. Check RCS Inventory Control established as follows:</p> <p>A. PZR level:</p> <ul style="list-style-type: none"> • 10 to 80%. • Trending to setpoint. (Not met due to SGTR Event #5, perform contingency) <p>B. RCS MTS 30°F or greater.</p>

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
RCS Inventory Control Safety function	SRO	<p>Direct the following as necessary:</p> <p>A. Perform as necessary:</p> <ol style="list-style-type: none"> 1) <u>IF</u> SIAS actuated on PPS inserts, <u>THEN GO TO</u> Step 6. 2) Verify PZR Level Control system restoring level to setpoint.
RCS Pressure Control Safety function	ATC	<p>6. Check RCS Pressure Control:</p> <ul style="list-style-type: none"> — • 1800 to 2250 psia. — • Trending to setpoint. (Not met due to SGTR Event #5, perform contingency)
	SRO	<p>Examiners Note: This may or may not be performed depending on the PZR pressure trend at the time this safety function is assessed.</p> <p>Direct the following actions as necessary:</p> <p>6. Perform as necessary:</p> <ol style="list-style-type: none"> A. <u>IF</u> RCS pressure lowers to less than 1400 psia, <u>THEN</u> trip ONE RCP in EACH loop. B. <u>IF</u> NPSH requirements violated <u>OR</u> RCS MTS less than 30°F, <u>THEN</u> verify ALL RCPs tripped. D. <u>IF</u> RCP 2P32A or 2P32B stopped, <u>THEN</u> verify associated PZR Spray valve in MANUAL and closed. E. <u>IF</u> RCS pressure lowers to 1650 psia or less, <u>THEN</u> perform the following: <ol style="list-style-type: none"> 1) Verify SIAS actuated on PPS inserts. 2) GO TO Step 7. F. Verify PZR Pressure Control system restoring pressure to setpoint. G. <u>IF ALL</u> RCPs stopped <u>AND</u> RCS pressure greater than 2250 psia, <u>THEN</u> initiate Aux spray using Attachment 27, PZR Spray Operation.

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 5, 6, & 7
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.			
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. 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. (IF SIAS actuated, SW will not be aligned and should perform contingency) F. IF SIAS or MSIS actuated, THEN maintain SW header pressure greater than 85 psig.
	SRO	If required Direct the contingency for step 7. E	
	BOP	E. IF CCW available, THEN restore SW to CCW, refer to 2202.010 Exhibit 5, CCW/ACW/SW Alignment.	

Op-Test No.: 2009-1	Scenario No.: 3	Event No.: 5, 6, & 7
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
Time	Position	Applicant's Actions or Behavior
RCS Heat Removal Safety Function	ANY	8. Check RCS Heat Removal: <ul style="list-style-type: none"> A. Check SG available by BOTH of the following: <ul style="list-style-type: none"> • At least ONE SG level 10 to 90%. • FW maintaining SG level B. Check MFW in RTO (MFW may not be in RTO due to steam generator levels being at setpoint, and the contingencies are satisfied if steam generator levels are controlling near the setpoint) C. Check Feedwater line intact by the following: <ul style="list-style-type: none"> • SG level stable or rising. • NO unexplained step changes or erratic FW flow. • NO unexplained step changes or erratic Condensate flow. D. Check Condensate Pump discharge header pressure < 753 psig. (May not be met if manual actions have not already been taken) E. Check SG pressure 950 to 1050 psia. (The CRS may direct to lower the SG pressure setpoint to 960 psia to maintain margin to saturation) F. Check RCS TC 540 to 555°F.
	ANY	Perform step 8 contingency actions that are applicable: <ul style="list-style-type: none"> D. Perform EITHER of the following: <ol style="list-style-type: none"> 1) Throttle Condensate Pump Recirc Valves to maintain pressure: <ul style="list-style-type: none"> • 2FIC-0662 for 2CV-0662 • 2FIC-0663 for 2CV-0663 2) Depress "R/L" button on tripped MFP Recirc Valve Controller: <ul style="list-style-type: none"> • 2FIC-0735 for 2P-1A • 2FIC-0742 for 2P-1B

Op-Test No.: 2009-1	Scenario No.: 3	Event No.: 5, 6, & 7
<p>Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.</p>		
Time	Position	Applicant's Actions or Behavior
Containment Safety Function	ANY	<p>9. Check CNTMT parameters:</p> <p>A. Temperature and Pressure:</p> <ul style="list-style-type: none"> • Temperature less than 140°F. • Pressure less than 16 psia. <p>B. Check CNTMT Spray pumps secured.</p> <p>C. NO CNTMT radiation alarms or unexplained rise in activity:</p> <ol style="list-style-type: none"> 1) CAMS alarms: <ul style="list-style-type: none"> • "CNTMT PART/GAS RAD HI/LO" annunciator (2K10-B6) clear. 2) RCS leakage alarms: <ul style="list-style-type: none"> • "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: <ul style="list-style-type: none"> • CNTMT Area • CAMS • Process Liquid <p>D. NO secondary system radiation alarms or unexplained rise in activity: (Not met due to SGTR Event #5)</p> <ol style="list-style-type: none"> 1) "SEC SYS RADIATION HI" annunciator (2K11-A10) clear. 2) Secondary Systems Radiation monitors trend stable: <ul style="list-style-type: none"> • Main Steam lines • SG Sample • Condenser Off Gas

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	SRO	10. Notify STA to report to control room. 11. Verify NLOs informed of Reactor trip. 12. Verify Reactor trip announced on Plant page. 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 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 Steam Generator Tube Rupture EOP 2202.004
	SRO	Enter and implement Steam Generator Tube Rupture EOP 2202.004
	SRO	* 1. Confirm diagnosis of SGTR: A. Check SFSC acceptance criteria satisfied every 15 minutes. B. Refer to 2202.010 Attachment 20, Break Identification Chart. C. Verify SG Sample valves open. D. Notify Chemistry to perform BOTH of the following: <ul style="list-style-type: none"> • Sample BOTH SGs for activity. • Monitor RDACS for off site dose releases.
	SRO	* 2. Notify SM to refer to Technical Specifications and 1903.010, Emergency Action Level Classification.
	ANY	4. Verify SIAS and CCAS actuated on PPS inserts.

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	SRO	5. Notify Control Board Operators to perform the following: <ul style="list-style-type: none"> A. Monitor floating steps. B. Verify actuated ESFAS components using 2202.010, Exhibit 9, ESFAS Actuation.
	ANY	*6. Check CCW aligned to RCPs.
	SRO	May elect to pull up the floating step for commencing a cooldown. Step 11. It is possible that the SRO will implement step 11 at the same time he implements step 7.
	ATC	<p>■ 11. Commence RCS cooldown to less than 535°F TH as follows:</p> <ul style="list-style-type: none"> A. Reset Low SG Pressure setpoints during cooldown and depressurization. B. Commence RCS depressurization to maintain RCS MTS 30 to 45°F. C. Monitor cooldown rate as follows: <ul style="list-style-type: none"> • Record RCS T_C and PZR temperature using Attachment 8, RCS Cooldown Table. • Plot RCS pressure versus RCS T_C using 2202.010 Attachment 1, P-T Limits every 15 minutes. D. IF ANY RCPs running, THEN initiate RCS cooldown using EITHER of the following: <ol style="list-style-type: none"> 1) SDBCS Bypass valves (condenser available) - most preferred. 2) SDBCS ADV from intact SG to atmosphere – least preferred <ul style="list-style-type: none"> • IF necessary, THEN supplement with SDBCS ADV from ruptured SG to atmosphere as needed. <p>Examiner Note: The SDBCS Bypass valves should be used to minimize off site release.</p>

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	ANY	F. IF SDBCS Bypass valves available for RCS cooldown, THEN place ALL ADV Permissive switches in OFF.
	BOP	G. Verify EFW or AFW capable of feeding SGs.
	ANY	H. Secure running MFW pump.
	BOP	I. Close ALL MFW Block valves.
	ANY	■7. Restore ESF/Non-ESF systems post-SIAS as follows:
		A. Verify at least ONE SW pump running on EACH loop.
	ANY	B. Verify DG SW Outlet valves open.
	ANY	C. Verify SW pump suction aligned to Lake.
	ANY	D. Check 4160v Non-vital bus 2A1 or 2A2 energized from offsite power.
	ANY	E. Check 4160v Vital buses 2A3 AND 2A4 energized from offsite power.
	BOP	F. Start SW pumps as needed to maintain SW header pressure.
	ANY	G. Check SW to CCW restored.
	ANY	H. Check ACW restored. (Not met, perform contingency)
	BOP	H. Restore SW to ACW, refer to 2202.010 Exhibit 5, CCW/ACW/SW Alignment.
	BOP	I. Maintain SW header pressure greater than 85 psig.
	ANY	*8. Verify Safety Injection flow to RCS as follows:
		A. Check total HPSI flow acceptable using 2202.010 Exhibit 2, HPSI Flow Curve.
		B. Check total LPSI flow acceptable using 2202.010 Exhibit 3, LPSI Flow Curve.
	ANY	■9. Check RCS pressure greater than 1400 psia. (Not met, perform contingency)

Op-Test No.: 2009-1	Scenario No.: 3	Event No.: 5, 6, & 7
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
Time	Position	Applicant's Actions or Behavior
	ANY	<p>■9. Perform the following:</p> <p>A. IF RCS pressure less than 1400 psia, THEN perform the following:</p> <ol style="list-style-type: none"> 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. <p>B. IF NPSH requirements violated OR RCS MTS less than 30°F, THEN perform the following:</p> <ol style="list-style-type: none"> 1) Stop ALL RCPs. 2) Verify BOTH PZR Spray valves in MANUAL and closed.
	ANY	<p>■10. Check IA pressure greater than 65 psig.</p>
	ANY	<p>*12. Minimize primary to secondary break flow as follows:</p> <p>A. Check ANY RCP running.</p> <p>B. Maintain RCS pressure within the following criteria:</p> <ul style="list-style-type: none"> • Within 100 psia above minimum RCP NPSH requirement, refer to 2202.010 Attachment 1, P-T Limits. • Less than 1000 psia as conditions allow. • Within 50 psi of ruptured SG pressure as RCP NPSH requirements allow. <p>Examiners note: The criteria to minimize break flow can not be established until HPSI is overridden. Then the crew should establish these limits.</p>

Time	Position	Applicant's Actions or Behavior
Op-Test No.: 2009-1		
Scenario No.: 3		
Event No.: 5, 6, & 7		
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.		
	ANY	<p>C. Use EITHER of the following to depressurize RCS:</p> <ol style="list-style-type: none"> 1) 2202.010 Attachment 27, PZR Spray Operation. 2) IF HPSI termination criteria met, THEN cycle Charging pumps or throttle HPSI flow to lower PZR pressure.
	ANY	D. IF RCS pressure less than ruptured SG pressure, THEN sample RCS Boron concentration every 30 minutes.
	ANY	<p>13. Determine ruptured SG by comparing ANY of the following:</p> <ol style="list-style-type: none"> A. Secondary Systems Radiation Trend recorder (2RR-1057). B. Main Steam Line Radiation Monitors: <ul style="list-style-type: none"> • 2RI-1007 • 2RI-1057 C. SG Sample Radiation Monitors: <ul style="list-style-type: none"> • 2RITS-5854 • 2RITS-5864 D. SG Tube Leak N-16 monitor history trends. E. SG levels. <ol style="list-style-type: none"> 1) Level rising faster in ONE SG with similar FW flow rates and steaming rates in BOTH SGs. 2) Rising SG level with ALL FW isolated. F. Steam flow and FW flow prior to Reactor trip. G. SG water sample results.

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 5, 6, & 7
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.			
Time	Position	Applicant's Actions or Behavior	
	ANY	Direct the NLO's to perform the following: 14. Minimize secondary contamination by performing BOTH of the following: A. Commence isolation of ruptured SG by performing local actions ONLY of 2202.010 Attachment 10, SG Isolation. B. 2202.010 Attachment 19, Control of Secondary Contamination.	
<p>Cue: If contacted as the AO then report after 5 min that the local portions of Attachment 10 for 'B' S/G are complete.</p> <p>Cue: If contacted as the AO then report you are commencing Attachment 19 control of secondary contamination.</p>			
	ANY	15. Isolate ruptured SG Steam Supply to EFW pump 2P7A as follows:	
	ANY	A. Verify EFW pump 2P7B running.	
		B. <u>IF</u> 2P7B NOT running, <u>THEN</u> verify AFW pump 2P75 running.	
		C. Stop EFW pump 2P7A:	
		<ol style="list-style-type: none"> 1) Override and close Steam Supply to 2P7A valve (2CV-0340-2). 2) Close Main Steam Supply valve from ruptured SG to EFW pump 2P7A: <ul style="list-style-type: none"> • "SG A TO EMER FW PMP TURB" 2CV-1000-1 • "SG B TO EMER FW PMP TURB" 2CV-1050-2 <p>Examiner Note: The SRO must enter TS 3.7.1.2 when the Main steam supply valve to 2P-7A is closed.</p>	

Op-Test No.: 2009-1		Scenario No.: 3	Event No.: 5, 6, & 7
Event Description: 'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO. Also failure of the reactor protection system to automatically or manually trip the reactor and Generator output breakers failure to open automatically.			
Time	Position	Applicant's Actions or Behavior	
	ALL	<p>18. Isolate ruptured SG as follows:</p> <p>A. Monitor RCS TH during cooldown with ANY of the following:</p> <ul style="list-style-type: none"> • PMS point T4614 • PMS point T4714 • SPDS display <p>B. WHEN RCS TH less than 535°F, THEN isolate ruptured SG using 2202.010 Attachment 10, SG Isolation.</p> <p>C. Maintain ruptured SG less than 1050 psia with ONE of the following:</p> <ul style="list-style-type: none"> • MSIV Bypass valve • Upstream ADV 	

Op-Test No.: 1		Scenario No.: 3	Event No.: 8
Event Description: 2C-5A Vacuum pump trip and 2C-5B Vacuum pump fails to auto start..			
Time	Position	Applicant's Actions or Behavior	
Triggered during SGTR brief. If the brief is delayed then triggered 10 min after entering SGTR procedure.	ANY	Announce alarm VACUUM PUMP 2C5A TRIP	
	SRO	Enter and implement AOP 2203.019, Loss of Condenser Vacuum.	
	ANY	2. Check BOTH Condenser Vacuum pumps running. (Not met perform contingency)	
	BOP	2. Perform the following: A. Start standby Vacuum pump (2C5A/B).	
	ANY	Dispatch a NLO to verify 2C-5B is running properly.	
Cue: If contacted as the AO then report that 'B' vacuum pump is running satisfactory and 'A' vacuum pump is secured.			
Termination criteria: When 'B' Vacuum pump has been started or at examiners discretion.			

Facility: Arkansas Nuclear One			Date of Exam: 8-10-09			Operating Test No.: 2009-1											
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M (*)		
		1			2			3			4						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX	4											1	1	1	0	
	NOR					4				2			2	1	1	1	
	I/C	2,3				1,2,7				3,7,8			5	4	4	2	
	MAJ	5,7				5,				5			3	2	2	1	
	TS												0	0	2	2	
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX					4				1			1	1	1	0	
	NOR			4									1	1	1	1	
	I/C			1,6,8		3,6				4,6			5	4	4	2	
	MAJ			5,7		5				5			3	2	2	1	
	TS												0	0	2	2	
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X	RX												0	1	1	0	
	NOR	4			4								1	1	1	1	
	I/C	1,2,3, 6,8			1,2,3, 6,7								5	4	4	2	
	MAJ	5,7			5								2	2	2	1	
	TS	1,4			1,3								2	0	2	2	
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X	RX												0	1	1	0	
	NOR								1,2				2	1	1	1	
	I/C								3,4,6, 7,8				5	4	4	2	
	MAJ								5				1	2	2	1	
	TS								3,5				2	0	2	2	

Instructions:

- 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 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 Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- 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 instrument or component malfunctions on a 1-for-1 basis.
- 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.

Facility: Arkansas Nuclear One			Date of Exam: 8-10-09			Operating Test No.:2009-1											
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	RX	4			4								1	1	1	0	
	NOR							1,2					2	1	1	1	
	I/C	2,3			3,6			3,4,6,7,8					7	4	4	2	
	MAJ	5,7			5			5					3	2	2	1	
	TS							3,5					2	0	2	2	
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX													1	1	0	
	NOR													1	1	1	
	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX													1	1	0	
	NOR													1	1	1	
	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX													1	1	0	
	NOR													1	1	1	
	I/C													4	4	2	
	MAJ													2	2	1	
	TS													0	2	2	

Instructions:

- 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 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 Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- 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 instrument or component malfunctions on a 1-for-1 basis.
- 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.

Facility: Arkansas Nuclear One Date of Examination: 8-10-09 Operating Test No.: 2009-1

Competencies	APPLICANTS											
	RO <input checked="" type="checkbox"/> X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			RO <input checked="" type="checkbox"/> X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/> X			RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/> X		
	SCENARIO			SCENARIO			SCENARIO			SCENARIO		
	1	2	3	1	2	3	1	2	3	1	2	3
	BOP	BOP	ATC	ATC	ATC	BOP						
Interpret/Diagnose Events and Conditions	1,5,6,8	1,2,5,7	4,5,6	2,3,4,5,7	3,5,6,7	3,5,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7			1,2,3,5,6,7	3,4,5,6,7,8
Comply With and Use Procedures (1)	1,4	4	1	4	4	2	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7			1,2,3,4,5,6,7	1,3,4,5,6,7,8
Operate Control Boards (2)	1,4,5,6,8	1,2,4,5,7	1,4,5,6	2,3,4,5,7	3,4,5,6	2,3,5,7,8	N/A	N/A			N/A	N/A
Communicate and Interact	1,4,5,6,7,8	1,2,4,5,6,7	1,4,5,6	2,3,4,5,7	2,3,4,5,6,7	2,3,5,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7			1,2,3,4,5,6,7	1,2,3,4,5,6,7,8
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	N/A	N/A	N/A	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7			1,2,3,4,5,6,7	1,2,3,4,5,6,7,8
Comply With and Use Tech. Specs. (3)	N/A	N/A	N/A	N/A	N/A	N/A	1,4	1,3			1,3	3,5

Notes:
 (1) Includes Technical Specification compliance for an RO.
 (2) Optional for an SRO-U.
 (3) Only applicable to SROs.

Facility: Arkansas Nuclear One Date of Examination: 8-10-09 Operating Test No.: 2009-1

Competencies	APPLICANTS											
	RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>			RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		
	SCENARIO			SCENARIO			SCENARIO			SCENARIO		
	1 ATC	2 ATC	3 SRO				1	2	3	1	2	3
Interpret/Diagnose Events and Conditions	2,3,4,5,7	3,5,6,7	3,4,5,6,7,8									
Comply With and Use Procedures (1)	4	4	1,3,4,5,6,7,8									
Operate Control Boards (2)	2,3,4,5,7	3,4,5,6	N/A									
Communicate and Interact	2,3,4,5,7	2,3,4,5,6,7,	1,2,3,4,5,6,7,8									
Demonstrate Supervisory Ability (3)	N/A	N/A	1,2,3,4,5,6,7,8									
Comply With and Use Tech. Specs. (3)	N/A	N/A	3,5									
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												