Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Initiated:

John Follett

Developer Date

Reviewed:

Bob Royce

Technical Reviewer Date

Approved:

Paul Scott

Facility Reviewer Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	NRC Validation Comments from week of 7/20/15: – Remove Plant Status sheet which cued operator that TDAFW pump was out of service. – Pgs 4 & 14: Delete "Plant status is provided on attached turnover sheet" from Initiating Cue. Add to Initial Condition: "Plant is at 100% power, steady state with no equipment out of service." – Pg 4, Simulator Requirements: Delete step 2 to load schedule NRC-04, not required. Modify step 3 of simulator Setup to "Close 3MSS*MOV17A, B, D for TDAFW pump" since valves are no longer tagged with power removed. Delete step 4 to tag AOVs. – Pg 7, Step #6: Delete Standard step 1 reference to Turnover Sheet. Modify Standard step 2 to request US to review applicable LCOs. Add Cue that US has performed review. – Pg 7, Step #7: Add new standard step and cue for a report that window MB1E 4-1 is lit. – Pg 8, Step #9: Modify Standard step 1 to expect examinee to identify TDAFW pump is out of service. Add cue for examinee to perform step 4.2.3 if they request US to perform the step. Add cue to continue with procedure if they report the pump out of service. – Pg 10 Step #14: Add cue for 14 day requirements do not apply. – Pg 12 Step #17: Change Critical from 'Y' to 'N' for Standards 1 and 2.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______________________

JPM Number: 2K15 RO A.1.1 Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

System: A.C. Electrical Distribution

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 8

Task Number(s): 062-04-004

Applicable To: SRO ______ STA ______ RO X PEO ______

K/A Number: 2.1.31 K/A Rating: 4.6 / 4.3

Method of Testing: Simulated Performance: ______ Actual Performance: X

Location: Classroom: ______ Simulator: X In-Plant: ______

Task Standards: Correctly complete AC Electrical Source Inoperability Surveillance for one EDG inoperable

Required Materials: (procedures, equipment, etc.)

SP 3646A.7, "AC Electrical Sources Inoperability" Rev 009-03

SP 3646A.7-002, "T/S 3.8.1.1 ACTION b. – One EDG Inoperable" Rev 005-02

General References:

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 RO A.1.1 Revision : 0

Initial Conditions: Plant is at 100% power, steady state with no equipment out of service.
10 minutes ago, ROCKER ARM LUBE OIL LEVEL HIGH alarm came in on 'B' EDG. PEO investigated and reported that level could not be maintained less than 2/3 full. Water is draining from 3EGO*V7B, Oil Reservoir Drain. The 'B' EDG was declared inoperable, effective at time of discovery due to the jacket water leak into rocker arm lube oil. T/S 3.8.1.1 was entered.

Initiating Cues: You are the On-Shift Reactor Operator. Your task is to complete SP 3646A.7, "AC Electrical Sources Inoperability" for the "B" EDG. The US has provided you a copy of the procedure and Surveillance Form, which is authorized.

Simulator Requirements:

1. Reset to **IC-356**, 100% steady-state power.
2. Close **3MSS*MOV17A, B, D** for TDAFW pump.
3. Place the simulator in "RUN", check for a stable IC condition, and acknowledge/clear annunciators.

Approximate setup time is 4 minutes.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

START TIME: ____________

S T E P # 1	Performance: **SP 3646A.7, PREREQUISITES** 2.1.1 The SM/US has signed the "Test Authorized By" block on the appropriate form.	Critical: Y ☐ N ☒
	Standard: Reviews Prerequisites from SP 3646A.7, then reviews cover sheet of SP 3646A.7-002. Confirms "Test Authorized By" has been signed.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 2	Performance: **SP 3646A.7-002, Cover Sheet** Initial for "Prerequisites Completed" on cover sheet.	Critical: Y ☐ N ☒
	Standard: Verifies all prerequisites met, then initials for "Prerequisites Completed" on cover sheet.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 3	Performance: **SP 3646A.7-002, Cover Sheet** Initial for "Precautions Noted" on cover sheet.	Critical: Y ☐ N ☒
	Standard: Reviews Precautions from SP 3646A.7 are listed as "N/A". Initials for "Precautions Noted" on cover sheet.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<table>
<tr><td rowspan="4">S T E P
4</td><td>Performance: SP 3646A.7
4.2 T/S 3.8.1.1 ACTION b. – One EDG Inoperable
NOTE
Verification of the offsite sources must be performed as follows:
• Within one hour prior to or one hour after entering the ACTION statement
• At least once every eight hours while in the ACTION statement</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reviews NOTE.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">S T E P
5</td><td>Performance:
4.2.1 Refer To SP 3646A.7-002 and PERFORM the following for each vital 4160 volt bus:
• CHECK that both RSST A <u>AND</u> NSST A are energized with no valid alarms.
• VERIFY that the breaker alignment for supplying the vital 4,160V bus from both offsite sources is OPERABLE.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
1. Initials each row on SP 3646A.7-002 for Step 4.2.1 in space provided for Bus 34C (pg 2).
2. Marks or initials SAT for Bus 34C capable of being powered from both off-site sources (pg 2).
3. Initials each row on SP 3646A.7-002 for Step 4.2.1 in space provided for Bus 34D (pg 3).
4. Marks or initials SAT for Bus 34D capable of being powered from both off-site sources (pg 3).</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

S T E P # 6	Performance: 4.2.2 Within two hours, Refer To SP 3646A.7-002 and PERFORM the following for the OPERABLE EDG: a. REVIEW LCO ACTION statements in effect for each OPERABLE system, subsystem, train, component, or device.	Critical: Y ☐ N ☒
	Standard: 1 Request US review applicable LCO ACTION statements. 2 Initials every row of the “EDG A OPERABLE” column for step 4.2.2.a (pg 4). 3 Leaves the “EDG B OPERABLE” column blank or documents all rows N/A for step 4.2.2.a (pg 4).	Grade: S ☐ U ☐
	Cue: **US has performed a review of all applicable Tech Specs. Continue on with the procedure.**	
	Comments:	
STEP #7	Performance: b. VERIFY equipment associated with the listed bypass annunciators is OPERABLE.	Critical: Y ☐ N ☒
	Standard: 1 Observes status of Train A bypass annunciator windows at MB1, none are LIT for Train A. 2 Initials each row of the “OPERABLE” column for step 4.2.2.b for “EDG A OPERABLE” (pg 5). 3 Documents N/A or leaves blank the Initial box for window MB1E 4-1, TDAFW (pg 6). 4 Documents N/A for the remaining boxes in the “OPERABLE” column for step 4.2.2.b for “EDG B OPERABLE” (pg 6).	Grade: S ☐ U ☐
	Cue: If examinee reports window MB1E 4-1 lit, provide the cue: **Continue on with the procedure.**	
	Comments: Examinee may perform a Lamp Test to confirm annunciator status.	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

STEP			
STEP #8	Performance:	c. VERIFY associated equipment is OPERABLE.	Critical: Y ☐ N ☒
	Standard:	1 Reviews the Turnover Sheet, recognizing that none of the MOVs listed on pg 5 for step 4.2.2.c for "EDG A OPERABLE" are out of service. 2 Initials each row of the "OPERABLE" column for step 4.2.2.c for "EDG A OPERABLE" (pg 5). 3 Documents N/A for the "OPERABLE" column for step 4.2.2.c for "EDG B OPERABLE" (pg 6).	Grade: S ☐ U ☐
	Cue:		
	Comments:		
STEP #9	Performance:	4.2.3 <u>IF</u> in MODE 1, 2, or 3, within two hours, VERIFY the turbine driven auxiliary feedwater pump is OPERABLE and DOCUMENT on SP 3646A.7-002.	Critical: Y ☒ N ☐
	Standard:	1. Recognizes from observation that the TDAFW pump is out of service from one or more of the following: • Either the Bypass Annunciator window is lit for MB1E 4- • MOVs 3MSS*MOV17A, B, D are closed at MB5. 2. Marks or initials the "Unsat" column for step 4.2.3 (pg 6).	Grade: S ☐ U ☐
	Cue:	• If examinee requests US to perform step 4.2.3, provide the cue: **You are the only operator available to evaluate step 4.2.3.** • If examinee reports TDAFW pump is out of service, provide the cue: **Continue on with the procedure.**	
	Comments:		
STEP #10	Performance:	4.2.4 Refer To LCO 3.8.1.1, "A.C. Sources – Operating," ACTION b.3 and DETERMINE if any additional ACTION requirements are applicable based on performance of steps 4.2.2 and 4.2.3.	Critical: Y ☐ N ☒
	Standard:	Requests US to determine if action requirements are applicable.	Grade: S ☐ U ☐
	Cue:	**The US will review if there any additional ACTION requirements, continue on with procedure.**	
	Comments:		

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

STEP		
STEP #11	Performance: 4.2.5 IF the EDG became inoperable due to pre-planned maintenance or testing, PERFORM the following:	Critical: Y ☐ N ☒
	Standard: Recognizes step is not applicable.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #12	Performance: **NOTE** An independently testable component is one which can be tested without running the EDG. Examples would be I&C loops out of calibration, valves found out of alignment, leaks on piping, breaker failures, and other similar items.	Critical: Y ☐ N ☒
	Standard: Reviews NOTE.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

STEP #13	Performance: 4.2.6 IF the EDG became inoperable due to an inoperable support system OR an independently testable component, PERFORM *one* the following within 24 hours and DOCUMENT on SP 3646A.7-002: • VERIFY *no* potential Common Mode Failure exists and GoTo step 4.2.7 • Refer To the applicable procedure below and PERFORM actions for starting the OPERABLE EDG from MB8 without loading: • SP 3646A.1, "Emergency Diesel Generator A Operability Test"	Critical: Y ☐ N ☒
	Standard: 1. Based on NOTE, examinee determines that the 'A' EDG has no symptoms of jacket water leak. 2. Checks the box for "Common Mode Failure Determination" for step 4.2.5/4.2.6 (pg 7). 3. Marks or initials the "Sat" column for step 4.2.5/4.2.6 (pg 7).	Grade: S ☐ U ☐
	Cue: If requested assistance to assess the status of the 'A' EDG for Common Mode Failure, provide the cue: **The System Engineer and PEO have inspected the 'A' EDG, no symptoms of jacket water leak exist.**	
	Comments:	
STEP #14	Performance: 4.2.7 IF the EDG may be subject to an extended on–line maintenance window of more than 72 hours, PERFORM the following to ensure Tech Spec 14 day on–line maintenance requirements are met:	Critical: Y ☐ N ☒
	Standard: Recognizes step is not applicable.	Grade: S ☐ U ☐
	Cue: If requested to assess if 14 day requirements are met, provide the cue: **The US has determined that Tech Spec 14 day requirements do not apply.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

STEP #15	Performance: 4.2.8 Refer To LCO 3.8.1.1, “A.C. Sources – Operating,” ACTION b. and DETERMINE if any additional ACTION requirements are applicable.	Critical: Y ☐ N ☒
	Standard:	Grade: S ☐ U ☐
	Cue: Provide the cue: **The US will perform the LCO review, continue on with SP 3646A.7.**	
	Comments:	
STEP #16	Performance: 4.2.9 REPEAT step 4.2.1 through 4.2.4 at least once every eight hours until both EDGs are restored to OPERABLE status.	Critical: Y ☐ N ☒
	Standard: Informs the US that surveillance must be repeated at least once every eight hours until both EDGs are restored to OPERABLE status.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1 Revision: 0/1

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

STEP #17	Performance: Review Surveillance Form for Acceptance Criteria and document status on cover sheet.	
	Standard: 1. Marks the “NO” box on the cover sheet for Acceptance Criteria Satisfied, or leaves both boxes empty.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: 2. Signs and dates the cover sheet as “Performed By”	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: 3. Informs the US that Acceptance Criteria is NOT satisfied.	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.1.1 Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

Date Performed: ______________

Examinee: ______________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ______________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 RO A.1.1 Revision: 0

Initial Conditions: Plant is at 100% power, steady state with no equipment out of service.

10 minutes ago, ROCKER ARM LUBE OIL LEVEL HIGH alarm came in on 'B' EDG. PEO investigated and reported that level could not be maintained less than 2/3 full. Water is draining from 3EGO*V7B, Oil Reservoir Drain. The 'B' EDG was declared inoperable, effective at time of discovery due to the jacket water leak into rocker arm lube oil. T/S 3.8.1.1 was entered.

Initiating Cues: You are the On-Shift Reactor Operator. Your task is to complete SP 3646A.7, "AC Electrical Sources Inoperability" for the "B" EDG. The US has provided you a copy of the procedure and Surveillance Form, which is authorized.

Examinee: ________________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

JPM Number: 2K15 RO A.1.2   Revision: 0/1

Initiated:

John Follett ________________________________   ________________
Developer   Date

Reviewed:

Bob Royce ________________________________   ________________
Technical Reviewer   Date

Approved:

Paul Scott ________________________________   ________________
Facility Reviewer   Date

JPM Number: 2K15 RO A.1.2 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pgs 3 & 9: Changed validated time from 10 to 20 minutes. – Pgs 3 – 5: Remove references to the Monthly Reactivity Data Sheet and replace with Initial Conditions where applicable. – Pgs 4, 6 & 10: Provide the value of 10.4 gal BA/ppm in the Initial Conditions. – Pgs 4 & 10: Replace CONVEX with ISO–NE to match AOP 3575. – Pgs 4 & 10: Add downpower rate of 5%/min to Initiating Cues. – Remove Pg 11, Monthly Reactivity Data Sheet.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 20

Task Number(s): 009-01-004

Applicable To: SRO ______ STA ______ RO X PEO ______

K/A Number: 2.1.20 K/A Rating: 4.6 / 4.6

Method of Testing: Simulated Performance: ______ Actual Performance: X

Location: Classroom: X Simulator: ______ In-Plant: ______

Task Standards: Correctly determine the required boration time and final control rod height for a rapid downpower.

Required Materials: Cycle 17 RE Curve and Data Book
(procedures, equipment, etc.)

General References: AOP 3575, Rapid Downpower, Rev 020

Setup Requirements: **Ensure applicant copy of Curve and Data Book does NOT contain Reactivity Plans (RE-H-01 thru RE-H-17) prior to commencing JPM.**

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 RO A.1.2 Revision : 0/1

Initial Conditions: Plant status is as follows:

- 100% power
- 1285 MWe
- Core burnup is 9,500 MWD / MTU
- Boron concentration is 1200 ppm
- 10.4 gal BA/ppm
- Control Bank D position is 218 steps

You are the Extra Licensed Operator on shift. ISO–NE has requested MP3 conduct an emergency load reduction of 450 MWe.

Initiating Cues: The US has directed you to calculate the required boration time for a 5%/min downpower in accordance with AOP 3575.

Assume a boration flow rate of 80 gpm.

You are also directed to determine the final control rod height for the rapid downpower.

Use the Cycle 17 Curve and Data Book, and use curves when possible.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

START TIME: ____________

S T E P # 1	Performance: Obtain proper Abnormal Operating Procedure and Curve Book.	Critical: Y ☐ N ☒
	Standard: Obtains a copy of AOP 3575, "Rapid Downpower", MP3 Cycle 17 RE Curve and Data Book, and July 2015 Monthly Reactivity Data Sheet.	Grade: S ☐ U ☐
	Cue: **Provide copies of AOP 3575, "Rapid Downpower" and July 2015 Monthly Reactivity Data Sheet.**	
	Comments:	
S T E P # 2	Performance: Determine required boration time.	
	Standard: Correctly determines the total power change: 450 Mwe ÷ 1285 Mwe per 100% power = **35%**	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Locates the formula and values in AOP 3575 at steps 4.k and 4.l. Correctly determines the required boration time using the following formula: $\frac{\text{Total Power Change (\%) x 18 (gal BA/\% Power)}}{\text{BA Flow Rate}}$ = Time (min) [35% x 18] ÷ 80 gpm = **7.875 min** (7 min 53 sec)	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments: A range of 34 to 36% is acceptable. A range of 7.5 to 8 min is acceptable.	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

<table>
<tr><td rowspan="4">STEP # 3</td><td>Performance:
Determine the total power defect associated with the 35% power change.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Refers to the “Total Power Defect vs Percent Power for MOL” curves (RE-E-01). Selects the 1200 ppm curve and determines the power defect associated with a power change from 100% to 65% power.

1975 – 1325 = 650 pcm (1978 – 1332 = 656 pcm calculated)</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:
A range of 630 to 670 pcm is acceptable.</td></tr>
<tr><td rowspan="5">STEP # 4</td><td>Performance:
Determine boron concentration change associated with the boration.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Calculates the volume of boric acid added:

Power Change (%) x 18 (gal BA/% Power) = gal BA
35 x 18 = 630 gal</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Refers to the Initial Condition for the “Gallons boric acid per ppm RCS [B] increase”:
(10.4 gal BA / ppm)

Calculates RCS boron concentration change:

630 gal ÷ 10.4 gal/ppm ≈ 61 ppm</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:
A range of 615 to 650 gal is acceptable.
A range of 59 to 63 ppm is acceptable.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

S T E P # 5	Performance: Determine the negative reactivity added as a result of the boration.	Critical: Y ☐ N ☒
	Standard: Refers to the "Differential Boron Worth vs Burnup" curves (RE-F-02). Selects the HFP DBW curve and determines differential boron worth for 9,500 MWD/MTU. **- 6.375 pcm/ppm** (-6.31 pcm/ppm calculated)	Grade: S ☐ U ☐
	Standard: Calculates the negative reactivity added: 61 ppm x (- 6.375 pcm /ppm) ≈ **- 389 pcm** (385 pcm calculated)	Grade: S ☐ U ☐
	Cue:	
	Comments: A range of -6.30 and -6.40 pcm /ppm is acceptable. A range of 382 to 390 pcm is acceptable.	
S T E P # 6	Performance: Determine the negative reactivity added as a result of rod insertion.	Critical: Y ☐ N ☒
	Standard: Calculates the negative reactivity due to rod insertion by subtracting the reactivity change due to boron from the reactivity change for total power defect: 650 pcm - 389 pcm = **261 pcm**	Grade: S ☐ U ☐
	Cue:	
	Comments: A range of 250 to 285 pcm is acceptable.	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

STEP #7	Performance: Determine the predicted final control rod height.	
	Standard: Refers to the "Integral Rod Worth versus Steps Withdrawn" curve for control banks D and C in overlap, MOL, HFP, equilibrium Xe (RE-D-02). Determines the rod worth for the initial rod height of 218 steps: CB D at 218 steps = **12 pcm** (9 pcm computed)	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Computes rod worth value: 261 pcm + 12 pcm = **273 pcm** (282 pcm computed)	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Refers to the "Integral Rod Worth versus Steps Withdrawn" curve for control banks D and C in overlap, MOL, HFP, equilibrium Xe (RE-D-02). Determines the predicted final control rod height for an integral rod worth of 275 pcm: 275 pcm = **CB D at 138 steps** (135 steps computed)	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments: A range of 8 to 15 pcm is acceptable. A range of 130 to 140 steps is acceptable.	
STEP #8	Performance: Examinee Reports Task Completion.	Critical: Y ☐ N ☒
	Standard: Reports to the US that the required boration time and final control rod height has been determined.	Grade: S ☐ U ☐
	Cue: **Please turn in all notes and calculations. The evaluation for this JPM is complete.**	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 RO A.1.2 Revision: 0/1

Initial Conditions: Plant status is as follows:

- 100% power
- 1285 MWe
- Core burnup is 9,500 MWD / MTU
- Boron concentration is 1200 ppm
- 10.4 gal BA/ppm
- Control Bank D position is 218 steps

You are the Extra Licensed Operator on shift. ISO–NE has requested MP3 conduct an emergency load reduction of 450 MWe.

Initiating Cues: The US has directed you to calculate the required boration time for a 5%/min downpower in accordance with AOP 3575.

Assume a boration flow rate of 80 gpm.

You are also directed to determine the final control rod height for the rapid downpower.

Use the Cycle 17 Curve and Data Book, and use curves when possible.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Recommend a clearance boundary for 3CCI*P1A

JPM Number: 2K15 RO A.2 Revision: 0/1

Initiated:

John Follett

Developer Date

Reviewed:

Bob Royce

Technical Reviewer Date

Approved:

Paul Scott

Facility Reviewer Date

JPM Number: 2K15 RO A.2 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – PG 10, add "OR" and "Breaker is OFF" to 3CCI*P1A Control Switch in Tagged Position column.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 RO A.2 Revision: 0

Task Title: Recommend a clearance boundary for 3CCI*P1A

System: Tagging and Clearance

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 341-01-079

Applicable To: SRO X STA ____ RO X PEO X

K/A Number: GEN 2.2.13 K/A Rating: 4.1 / 4.3

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards: Develop and review a tag clearance.

Required Materials: (procedures, equipment, etc.)

1) P&IDs; EM-113B Rev. 042, EM-114A Rev. 018
2) EE One-Line diagrams
3) ESK Power Supply Book
4) OP 3330E, *Safety Injection Pump Cooling System* Rev. 007-05
5) OP 3308-006, *Electrical Checklist for High Pressure Safety Injection* Rev. 002

General References:

1) OP-AA-200 *Equipment Clearance* Rev. 021
2) OP 3250 *Removing Equipment from Service for Maintenance* Rev. 014-08

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 RO A.2 Revision : 0

Initial Conditions:	The mechanical seal on 3CCI*P1A, "SI PP A COOLING PP", has to be replaced. Repair efforts are planned and the maintenance first line supervisor has made a work package tag-out request for the repair.
Initiating Cues:	Your task is to develop a clearance boundary for this repair activity. **Using page 2 of this handout, RECORD the components to be tagged, the required tagged position(s), and the tag color.** Tag sequence is not required.
Simulator Requirements:	None.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2 Revision: 0/1

Task Title: Recommend a clearance boundary for 3CCI*P1A

START TIME: ____________

Examiner Actions Before Start	Prior to start, ensure OP-AA-200 Att. 5 "Tag-Out Request" is marked-up with the following information: Issued to: Unit Supervisor, Unit 3 OPS, x6200 Unit: 3 Reason: Corrective Maintenance & write in AWO number: 53102476838 Equip Affected: 3CCI*P1A Work to be Done: pump seal replacement on 3CCI*P1A Assist in Defining Work Scope: Full Tagout Tagout Request Submitted By: John Franklin Tagout Request Verified By: Jeff Moore **Attachment 5 is on page 3 of the APPLICANT HANDOUT. Once marked up with the above information, it may be passed out.** **Note: JPM STEPs may be performed in any order.** At this point, the JPM may begin.	
STEP #1	Performance: Identifies correct piping isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".	Critical: Y ☒ N ☐
	Standard: Candidate uses P&ID EM-114A and other appropriate references (listed in required materials) and identifies the correct isolation boundary: • Pump Discharge (3CCI*V2) CLOSED and danger (red) tagged • Pump Suction (3CCI*V7) CLOSED and danger (red) tagged	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2 Revision: 0/1

Task Title: Recommend a clearance boundary for 3CCI*P1A

STEP #2	Performance: Identifies correct vent configuration for 3CCI*P1A, “SI PP A COOLING PP”.	Critical: Y ☒ N ☐
	Standard: Candidate uses P&ID EM-114A and identifies **at least ONE** of the following vent valves: • Vent valve (3CCI*V992) OPEN and danger (red) tagged • Pump Suction Test Valve (3CCI*V29) OPEN and danger (red) tagged • Pump Suction Test Valve (3CCI*V30) OPEN and danger (red) tagged	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #3	Performance: Identifies correct drain configuration for 3CCI*P1A, “SI PP A COOLING PP”.	Critical: Y ☒ N ☐
	Standard: Candidate uses P&ID EM-114A and identifies the following drain valve: • Pump Casing Drain (3CCI*V32) OPEN and danger (red) tagged	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #4	Performance: Identifies correct electrical isolation boundary for 3CCI*P1A, “SI PP A COOLING PP”.	Critical: Y ☒ N ☐
	Standard: Candidate uses EE-1AH or other appropriate references and identifies the correct electrical isolation point: • At MCC 32-4T (F2F), OFF and danger (red) tagged	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2 Revision: 0/1

Task Title: Recommend a clearance boundary for 3CCI*P1A

<table>
<tr><td>STEP #5</td><td>Performance:
Identifies correct electrical isolation boundary for 3CCI*P1A, “SI PP A COOLING PP”.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td></td><td>Standard:
Candidate uses EE-1AH or other appropriate references and identifies the correct electrical isolation point:
3CCI*P1A Control Switch Auto after Stop (or blank) and caution (yellow) tagged (at MB2)</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="2">Cue:</td></tr>
<tr><td></td><td colspan="2">Comments:
1. Tagging the pump control switch is not required to meet the critical nature of this step.
2. 3CCI*P1A control switch does not have a Pull to Lock position.</td></tr>
<tr><td>STEP #6</td><td>Performance:
Identifies correct electrical isolation boundary for 3SIH*P1A, “SI PP A”.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td></td><td>Standard:
Candidate prevents SI pump start by using either of the following:
• 3SIH*P1A Control Switch in PTL and danger (red) tagged (at MB2)
<u>OR</u>
• At Bus 34C (34C8-2), Racked Down and danger (red) tagged
3SIH*P1A Control Switch in PTL and caution (yellow) tagged (at MB2)</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="2">Cue:</td></tr>
<tr><td></td><td colspan="2">Comments:
1. Isolating cooling water (3CCI*P1A) to the ‘A’ Safety Injection Pump (3SIH*P1A) lube oil system will inop 3SIH*P1A. The critical nature of this step is to prevent pump start to preclude damage to this pump.
2. OP 3250, Removing Equipment from Service for Maintenance, step 1.6.3 discusses use of a red tag to the “PTL” position for non-electrical isolation.
3. If the candidate chooses to rack down the breaker for 3SIH*P1A, it would also be considered acceptable. With the breaker racked down, a caution (yellow) tag is acceptable with the switch in PTL, but is <u>NOT</u> a critical tag.
4. OP 3308-006 or other appropriate references can be used to identify the associated breaker for 3SIH*P1A, which is 34C8-2.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2 Revision: 0/1

Task Title: Recommend a clearance boundary for 3CCI*P1A

STEP #7	Performance:	Critical: Y ☐ N ☒
	Standard: Candidate submits completed Page 2 of the APPLICANT HANDOUT to the examiner. (Tagout should include all critical components previously identified.)	Grade: S ☐ U ☐
	Cue: **TERMINATION CUE:** Acknowledge the Candidate's tagout submittal. **The evaluation for this JPM is complete.**	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

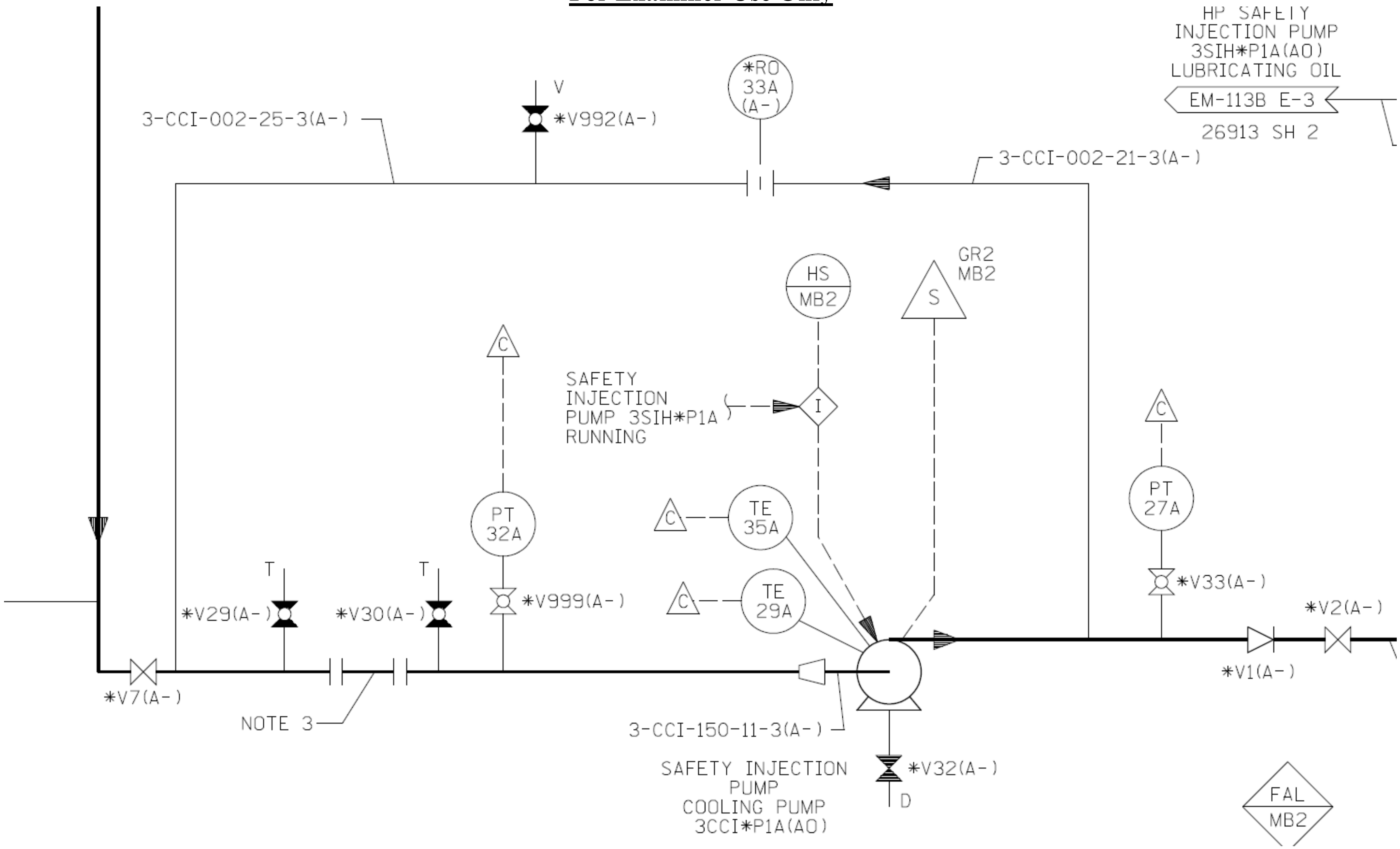
STOP TIME: _______________

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2 Revision: 0/1

Task Title: Recommend a clearance boundary for 3CCI*P1A

For Examiner Use Only



KEY for Examiner Use Only

Component	Tagged Position	Tag Color
3CCI*V2 Pump Discharge	CLOSED	RED
3CCI*V7 Pump Suction	CLOSED	RED
One of the following: • 3CCI*V992 Vent • 3CCI*V29 Pump Suction Test • 3CCI*V30 Pump Suction Test	 OPEN OPEN OPEN	 RED RED RED
3CCI*V32 Pump Casing Drain	OPEN	RED
MCC 32-4T (F2F)	OFF	RED
3CCI*P1A Control Switch (MB2)	Auto After Stop Or "Breaker is OFF"	YELLOW
Either of the following: • 3SIH*P1A Control Switch (MB2) • Bus 34C (34C8-2) 3SIH*P1A Control Switch (MB2)	 Pull to Lock Racked Down Pull to Lock	 RED RED YELLOW

Tag sequence is NOT critical.

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.2 Revision: 0

Task Title: Recommend a clearance boundary for 3CCI*P1A

Date Performed: ______________

Examinee: ______________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ______________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT (page 1 of 3)

JPM Number:	2K15 RO A.2	Revision:	0

Initial Conditions:	The mechanical seal on 3CCI*P1A, "SI PP A COOLING PP", has to be replaced. Repair efforts are planned and the maintenance first line supervisor has made a work package tag-out request for the repair.
Initiating Cues:	Your task is to develop a clearance boundary for this repair activity. **Using page 2 of this handout, RECORD the components to be tagged, the required tagged position(s), and the tag color.** Tag sequence is not required.

Component	Tagged Position	Tag Color

Dominion

Tag-Out Request

OP-AA-200 - Attachment 5 Page 1 of 1

Issued To (Name) UNIT SUPERVISOR	Extension 6200	Department UNIT 3 OPS

Tag-Out Requested On Unit: ☐ 1 ☐ 2 ☒ 3 ☐ Common

Reason For Tag-Out	Initiating Document
☒ Corrective Maintenance ☐ Preventive Maintenance ☐ Trouble Shooting ☐ Testing ☐ Engineering Work Package ☐ Other ____	Work Order Number 53102476838 Design Change Package Number ____ Other ____

Equipment Affected: 3CCI*P1A

Work To Be Done: PUMP SEAL REPLACEMENT ON 3CCI*P1A

Assist in Defining Work Scope and establishing safe work boundaries, review the following and check all that apply:

- ☐ "NO ROTATION" Tags (Equipment de-energized and prevented from turning; Non-intrusive maintenance.)
- ☐ "NO FLOW" Tags (System isolated to allow equipment to be manipulated without affecting the plant. Non-intrusive maintenance.)
- ☒ "FULL TAGOUT" Tags (Equipment isolated from all energy sources and depressurized. Intrusive maintenance.)
- ☐ "ELECTRICAL ONLY" (Equipment electrically isolated, the craft will use LOCKOUT, if required, for all other energy sources.)
- ☐ Controlling Procedure, which defines energy sources (OP, MOP, PT, ICP, MCM, etc. List in remarks.)
- ☐ Personnel entering a piping system or plant equipment (List in remarks.) (Operations will assist in determining applicable OPS procedures.)
- ☐ Auxiliary Components associated with equipment:
  - ☐ Seal Water
  - ☐ Oil sub-system
  - ☐ Cooling Water (i.e., BC, SW, CD, CC)
- ☐ Heat Trace (consider if removing insulation)
- ☐ Purge Path Required (Describe Below)
- ☐ System in-service for Freon removal
- ☐ Steam removed from air handler
- ☐ Hazardous Chemicals involved
- ☐ Control Power fuses removal required
- ☐ Grounds required
- ☐ Motor Heater fuses
- ☐ MOV motor/grease heater fuse
- ☐ MOV internal power supplies on LS/Rotor Contacts
- ☐ PMT requires Danger Tags (MOV testing, Flow Scan)

Tag-Out Request Submitted By (Name)	Date	Time
JOHN FRANKLIN	TODAY	2 HOURS AGO
Tag-Out Request Verified By (Name)	**Date**	**Time**
JEFF MOORE	TODAY	1 HOUR AGO

Recommended Isolations or Remarks (If possible, include tag type and position.)

Form No. 721716(Aug 2011)

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Task Preview for Work in RHR Heat Exchanger Room

JPM Number: 2K15 RO A.3 Revision: 0

Initiated:

Robert Royce
Developer Date

Reviewed:

John Follett
Technical Reviewer Date

Approved:

Chris Chatman
Facility Reviewer Date

JPM Number: 2K15 RO A.3 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE

JPM WORKSHEET

Facility: MP3 Examinee: ____________________

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Task Preview for Work in RHR Heat Exchanger Room

System: Radiation Control

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 8

Task Number(s): 119-03-070, Approve entry and/or enter/exit the various radiation areas located within Millstone Station

Applicable To: SRO X STA ____ RO X PEO ____

K/A Number: 2.3.7 K/A Rating: 3.5 / 3.6

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards: At the completion of this JPM the examinee has reviewed the applicable RWP and survey map to determine the radiological requirements to perform the assigned task.

Required Materials: (procedures, equipment, etc.) Operations blanket RWP No. 3150002.
Survey map for ESF Building 4' elevation

General References: RPM 5.2.2, Basic Radiation Worker Responsibilities
RPM 2.5.10, Identification and Control of High Radiological Risk Work

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 RO A.3 Revision : 0

Initial Conditions:

- A refueling outage is in progress at Millstone Unit 3.
- Preparations are being made to vent and drain a portion of "B" Train RHR System piping.
- You have been directed to make preparations to enter the "B" RHR Heat Exchanger room (ESF Building 4 foot elevation), including reviewing the applicable RWP and survey map for the area.
- You will be required to access the two mezzanine areas in the room.
- Your dose for the year is 20 mrem.

Initiating Cues:

- Determine the following information concerning the radiological requirements for entering this area:
  1. Which RWP task (job step) is appropriate for this assignment
  2. Electronic Dose Rate alarm setpoint for this area (including units of measure)
  3. Electronic Dose alarm setpoint for this area (including units of measure)
  4. Highest radiation level in the work area (including units of measure)
  5. Highest contamination level in the work area (including the specific work area and units of measure)
  6. Protective clothing required in the immediate work area (including transition to and from the area)

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Task Preview for Work in RHR Heat Exchanger Room

START TIME: ____________

STEP # 1	Performance: Review Operations Blanket RWP No. 3150002 and Radiation Survey Figure 30 (ESF 4' Elevation).	Critical: Y ☐ N ☒
	Standard: Examinee reviews Operations Blanket RWP No. 3150002 and Radiation Survey Figure 30 and determines the required information.	Grade: S ☐ U ☐
	Cue: • **At start of JPM, provide applicant with Operations Blanket RWP No. 3150002 and Radiation Survey Figure 30.** • **At start of JPM, provide applicant with Initial Conditions, Initiating Cues, and Handout (answer sheet).** • **If required, state that the HP brief is complete with a reminder to follow the requirements of the RWP.**	
	Comments: • Examinee may state that a briefing with HP is required prior to entry into the work area. • The examinee may perform the following steps in any order.	
STEP # 2	Performance: Determine which RWP task (job step) is appropriate for this assignment.	Critical: Y ☐ N ☒
	Standard: Examinee states that task No. 1 is appropriate for this task.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 3	Performance: Determine the expected dose rate alarm for this assignment.	Critical: Y ☒ N ☐
	Standard: Examinee states that the expected dose rate alarm is 15 mr/hr.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Task Preview for Work in RHR Heat Exchanger Room

STEP		
STEP # 4	Performance: Determine the expected dose alarm for this assignment.	Critical: Y ☒ N ☐
	Standard: Examinee states that the expected dose alarm is 10 mr.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 5	Performance: Determine the highest radiation level in the immediate work area.	Critical: Y ☒ N ☐
	Standard: Examinee determines highest underlined number on map, determines units(on bottom of survey figure), and states that the highest radiation level in immediate work area is 8 mr/hr.	Grade: S ☐ U ☐
	Cue:	
	Comments: The examinee may point other hot spots located on the 4' level of ESF Building, but the assigned task does NOT require those areas to be approached.	
STEP # 6	Performance: Determine the highest contamination level in the work area.	Critical: Y ☒ N ☐
	Standard: Examinee determines highest contamination level in area from circled numbers on map and Smear Results Table on Survey figure and states that the highest contamination level in this area is 3,000 DPM/100cm^2 (3K) on the Mezzanine.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Task Preview for Work in RHR Heat Exchanger Room

STEP # 7	Performance: Determine what protective clothing is required in the area.	Critical: Y ☒ N ☐
	Standard: Examinee states that contamination levels require Coveralls, Rubber Gloves, Glove Liners, Booties, Shoe Covers, Hood, Hard Hat Cover, and Modesty Garments.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: ______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Task Preview for Work in RHR Heat Exchanger Room

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 RO A.3 Revision: 0

Initial Conditions:

- A refueling outage is in progress at Millstone Unit 3.
- Preparations are being made to vent and drain a portion of "B" Train RHR System piping.
- You have been directed to make preparations to enter the "B" RHR Heat Exchanger room (ESF Building 4 foot elevation), including reviewing the applicable RWP and survey map for the area.
- You will be required to access the two mezzanine areas in the room.
- Your dose for the year is 20 mrem.

Initiating Cues:

- Determine the following information concerning the radiological requirements for entering this area:
  1. Which RWP task (job step) is appropriate for this assignment
  2. Electronic Dose Rate alarm setpoint for this area (including units of measure)
  3. Electronic Dose alarm setpoint for this area (including units of measure)
  4. Highest radiation level in the work area (including units of measure)
  5. Highest contamination level in the work area (including the specific work area and units of measure)
  6. Protective clothing required in the immediate work area (including transition to and from the area)

JPM Number: 2K15 RO A.3 Revision: 0

Handout

1. Which RWP task (job step) is appropriate for this assignment.

2. Electronic Dose Rate alarm setpoint for this area (including units of measure)

3. Electronic Dose alarm setpoint for this area (including units of measure)

4. Highest radiation level in the work area (including units of measure)

5. Highest contamination level in the immediate work area (including the specific work area and units of measure)

6. Protective clothing required in the immediate work area (including transition to and from the area)

JPM Number: 2K15 RO A.3 Revision: 0

KEY

DO NOT HAND OUT TO APPLICANTS

1. Which RWP task (job step) is appropriate for this assignment.

   Task 1

2. Electronic Dose Rate alarm setpoint for this area (including units of measure)

   15 mrem/hr

3. Electronic Dose alarm setpoint for this area (including units of measure)

   10 mrem

4. Highest radiation level in the work area (including units of measure)

   8 mrem/hr

5. Highest contamination level in the immediate work area (including the specific work area and units of measure)

   3,000 (3K) DPM/100 cm^2

6. Protective clothing required in the immediate work area (including transition to and from the area)

   Coveralls, Rubber Gloves, Glove Liners, Booties, Shoe Covers, Hood, Hard Hat Cover, and Modesty Garments

Examinee: ________________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Loss of CTMT Closure

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Initiated:

John Follett
Developer ____________ Date

Reviewed:

Bob Royce
Technical Reviewer ____________ Date

Approved:

Paul Scott
Facility Reviewer ____________ Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	Incorporate NRC Validation comments from week of 7/20/15: – Pgs 3 & 8: Changed validated time from 10 to 22 minutes. – Pgs 4 & 10: Changed Initiating Cue to include reference to “#4 MSIV upstream drain standpipe LS28D low point drain” as directed by NRC.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Task Title: Loss of CTMT Closure

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 22

Task Number(s): 119-03-003, 119-03-013

Applicable To: SRO X STA ____ RO ____ PEO ____

K/A Number: 2.1.36 K/A Rating: 4.1

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards: At the completion of this JPM, the examinee will have identified a loss of CTMT closure and direct actions to suspend all operations involving movement of irradiated fuel assemblies in the containment.

Required Materials: (procedures, equipment, etc.)
P&ID EM-123E (25212-26923 sht 5 of 7)
P&ID EM-145A (25212-26945 sht 1 of 3)
UNIT 3 TECHNICAL SPECIFICATIONS

General References:
AOP 3565, Loss of Containment Vacuum / Integrity
SP 3613F.3, CTMT Boundary During Movement of Fuel within the CTMT Building
OP 3250.12, Establishing CTMT Boundary for Movement of Fuel within the CTMT Building
OU-AA-200 Shutdown Risk Management
OP 3260A Conduct of Outages

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 SRO A.1.1 Revision : 0/1

Initial Conditions: The plant is in MODE 6 with refuel shuffle in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room..

Initiating Cues: The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken a low point drain valve off a main steamline drain standpipe, upstream of the #4 MSIV, near 3DTM-LS28D. He is holding 3DTM-V119 and the broken pipe nipple in his hands.

You inform the Shift manager.

Determine the impact of the broken pipe on refueling operations.

*** * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **<u>ALL</u>** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **<u>NO</u>** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Task Title: Loss of CTMT Closure

START TIME: ____________

Comments: If the candidate requests a particular reference, all of the general references have been copied and may be handed to the candidate upon request. Alternatively, DocTop may be used on the designated LORP EXAM Computers.		
Cue: If the candidate questions whether a closure plan exists for the 'D' SG manways, provide the following Cue: **A closure plan is not in place for the 'D' SG.**		
STEP # 1	Performance: Obtain and refer to the appropriate drawings or other documentation to determine that a breach of CTMT closure has occurred.	Critical: Y ☐ N ☒
	Standard: SRO Applicant refers to P&ID EM-123E (Main Steam system) and EM-145A (Turbine Plant Miscellaneous Drains).	Grade: S ☐ U ☐
	Standard: SRO Applicant determines that the 3DTM-V119 drain path is a breach of CTMT closure.	Grade: S ☐ U ☐
	Cue: If asked for valve ID name, provide the cue: **#4 MSIV Upstream Drain Standpipe LS28D Low Point Drain.**	
	Comments: Entry into AOP 3565, *Loss of CTMT Vacuum / Integrity* is not required for success in this JPM but may be referenced by the candidate.	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Task Title: Loss of CTMT Closure

S T E P # 2	Performance: Refer To Technical Specification 3.9.4 for Containment Building Penetrations and DETERMINE Limiting Condition for Operation.	Critical: Y ☒ N ☐
	Standard: Refers to T.S. LCO 3.9.4 for Containment Building Penetrations, and enters LCO ACTION statement (ACTION: With the requirements of the above specification not satisfied, immediately suspends all operations involving movement of fuel in the containment building.)	Grade: S ☐ U ☐
	Standard: SRO Applicant directs the Refueling SRO to immediately suspend all operations involving movement of fuel in the containment building.	Grade: S ☐ U ☐
	Cue: If directed to "immediately suspend" all operations involving movement of irradiated fuel assemblies in the containment, **provide examinee with Handout 2**.	
	Comments: Entry into LCO 3.9.4 ACTION requirement is required for success in this JPM. SRO applicant should state or otherwise indicate recognition of LCO requirement.	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Task Title: Loss of CTMT Closure

S T E P # 3	Performance: Correct recognition that Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.	Critical: Y ☒ N ☐
	Standard: Applicant recognizes that fuel movement is in progress in CTMT and in transit to the Fuel Building.	Grade: S ☐ U ☐
	Standard: SRO Applicant directs the Refueling SRO to complete both moves and then stop all operations involving CORE ALTERATIONS or movement of fuel in the containment building.	Grade: S ☐ U ☐
	Cue:	
	Comments: Definitions: 1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. **Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.**	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Task Title: Loss of CTMT Closure

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	22	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

<u>EXAMINEE HANDOUT 2</u>

<u>DO NOT</u> provide this handout until cued

Initial Conditions:	• In the Containment a used fuel assembly is over its new core location and is ready to be lowered. • In the Spent Fuel Pool, a used fuel assembly is in transit to its final SFP location.

Initiating Cues:	• The Refueling SRO requests guidance on what to do with the fuel assemblies.

EXAMINEE HANDOUT

JPM Number: 2K15 SRO A.1.1 Revision: 0/1

Initial Conditions: The plant is in MODE 6 with refuel shuffle in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room..

Initiating Cues: The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken off a main steamline drain valve, upstream of the #4 MSIV near 3MSS-LS28D. He is holding 3DTM-V119 and the broken pipe nipple in his hands.

You inform the Shift manager.

Determine the impact of the broken pipe on refueling operations..

Examinee: ____________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Review and Approve Reactivity Calculation

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Initiated:

Robert Royce ____________________ ____________

Developer Date

Reviewed:

John Follett ____________________ ____________

Technical Reviewer Date

Approved:

Paul Scott ____________________ ____________

Facility Reviewer Date

JPM Number: 2K15 SRO A.1.2 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	NRC Validation comments from the week of 7/20/15: – Pg 13, change 6.7 ppm/pcm to 6.7 pcm/ppm.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ____________________

JPM Number: 2K15 SRO A.1.2 Revision: 0

Task Title: Review and Approve Reactivity Calculation

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 22

Task Number(s): 009-01-004

Applicable To: SRO X STA ____ RO ____ PEO ____

K/A Number: 2.1.37 K/A Rating: 4.3 / 4.6

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards: Using RE Curve and Data Book and OP 3304C, calculate the amount of boric acid needed to perform a rod withdrawal.

Required Materials: (procedures, equipment, etc.)

1. Attachment 2 of OP 3304C, Rev 24-03, Primary Makeup and Chemical Addition **(handout)**
2. RE Curve and Data Book, Cycle 17 (**handout put on reference cart**)
3. Calculator

General References:

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 SRO A.1.2 Revision : 0

Initial Conditions:

The plant was initially in steady state conditions at 100% power. You are the Unit Supervisor, and the following sequence of events occurs:

1. At 0830, the grid becomes unstable.
2. At 0830, the crew rapidly reduces reactor power to 88% using the "Standby Load Set" pot at the EHC insert.
3. At 0833, MB4C, 3-9 “ROD CONTROL BANK LIMIT LO” annunciator illuminates.
4. The crew determines they will use OP 3304C, *Primary Makeup and Chemical Addition* to restore rod position to greater than the alarm setpoint.

At 0840, the current plant conditions are:

- Reactor power is at 88%
- Control Bank D is at 145 steps withdrawn
- Current RCS boron concentration is 1131 ppm
- Tavg is presently 584 °F
- The Plant Process Computer is NOT available.
- Core burn-up is 10,000 MWD/MTU (MOL)

In order to clear MB4C 3-9, the plan is to withdraw Control Bank D to 160 steps withdrawn while maintaining RCS temperature and Reactor Power stable.

The pre-job brief with the RO includes the following information:

- The RO is to determine the quantity of boric acid OR primary grade water needed to maintain stable conditions during the rod withdrawal.
- The RO is to use OP 3304C, Attachment 2 to make the determination.
- The RO is to use curves rather than thumbrules for the calculation.

The calculation from the RO includes:

- The amount of boric acid OR primary grade water over the next hour
- Per RE, the Hot Full Power Differential Boron Worth should be used.
- Per RE, the RO is to use a value of 1 for K (Correction Factor) in OP 3304C, Attachment 2.

Per RE, Xenon is expected to change core reactivity by 40 pcm during the course of the event (PPC is not available).

Initiating Cues:

The RO completes the calculation, and determines that 248 gallons of boric acid is required to be added.

You are to review and approve the attached calculation.

JPM Number: 2K15 SRO A.1.2 Revision : 0

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking “Y”. For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Task Title: Review and Approve Reactivity Calculation

START TIME: ____________

<table>
<tr><td rowspan="5">S T E P
1</td><td>Performance:
Reviews attached reactivity calculation (Applicant Handout, page 2 of 2)</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Determines the RO made an error:

The RO failed to calculate the change in Rod Worth from 145 steps to 160 steps, incorrectly using the Rod Worth for 160 steps.

Using RE-D-02, Integral Rod Worth vs Steps Withdrawn, MOL-HFP, Equilibrium Xenon:
Rod Worth @ 145 steps = 250 pcm
<u>Rod Worth @ 160 steps = 200 pcm</u>
Change in Rod Worth = 50 pcm</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Determines the RO made an error:

The RO incorrectly used the Hot Zero Power Boron Worth value of 6.7 pcm/ppm versus the Hot Full Power value of 6.4 pcm/ppm.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
After the SRO identifies calculation problems with Rod Worth and Boron Worth, direct the candidate to perform the calculation and document references used for each calculation.</td></tr>
<tr><td colspan="2">Comments:
The SRO must perform two critical actions to PASS this JPM. First they must recognize there is a mistake with the calculation. Secondly, they must perform the calculation correctly. The correct answer of 14 to 18 gallons of Boric Acid is calculated in the attached JPM steps.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Task Title: Review and Approve Reactivity Calculation

<table>
<tr><td rowspan="4">STEP
2</td><td>Performance:
Calculate the total reactivity change in pcm.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Adds reactivity change from (1) rod withdrawal and (2) Xenon, as follows:

A. Using RE-D-02, Integral Rod Worth vs Steps Withdrawn, MOL-HFP, Equilibrium Xenon:
Rod Worth @ 145 steps = 250 pcm
<u>Rod Worth @ 160 steps = 200 pcm</u>
Change in Rod Worth = 50 pcm

Integral Rod Worth = 50 pcm (allowable band of 45 to 55 pcm)

Options on how value can be calculated:
• <u>Approximately 50 pcm</u>: Derives integral rod worth of from graph on page 1 of RE-D-02 “Integral Rod Worth vs Steps Withdrawn Cycle 17, MOL-HFP, Equilibrium Xenon”
• <u>Approximately 50 pcm</u>: Uses differential rod worth (RE-D-02 page 2) to calculate a pcm per step at an average of approximately 3.25 to 3.55. Then multiplies 3.4 by 15 steps = 51 pcm.

B. Xenon:
- 40 pcm (given in initial conditions)

C. TOTAL REACTIVITY CHANGE = 10 pcm positive reactivity (50 + -40 pcm = 10 pcm)
(allowable band of 7 – 13 pcm)</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Task Title: Review and Approve Reactivity Calculation

S T E P # 3	Performance: Determine a boron worth value.	Critical: Y ☒ N ☐
	Standard: **Boron worth = -6.4 pcm / ppm** **(Allowable band of -6.3 to -6.5)** -6.3 to -6.5 pcm/ppm: Derives from RE-F-02 “Differential Boron Worth vs Core Average Burnup Cycle 17” page 1	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 4	Performance: Calculates reactivity worth of boron change.	Critical: Y ☒ N ☐
	Standard: Calculates reactivity worth by dividing total reactivity derived in Step #1 by boron worth derived in Step #2. Total reactivity (pcm) / Boron worth (pcm / ppm): $\mathbf{\frac{10\ pcm}{6.4\ pcm/ppm} = 1.56\ ppm}$ **(Allowable band of 1.5 – 1.7 ppm)**	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Task Title: Review and Approve Reactivity Calculation

<table>
<tr><td rowspan="4">STEP #5</td><td>Performance:
Calculates the amount of boric acid needed for RCS addition.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Determines a boration is required to offset the positive net positive reactivity calculated in step #3.
Uses step 4.7.1 of OP 3304C to go to Attachment 2 of OP 3304C.
Calculates amount of boric acid using equation in Attachment 2
$$\left(\frac{M}{8.33}\right)\left[\ln\left(\frac{7000-C_i}{7000-C_f}\right)\right]K$$
Substituting values:
M= 507,127 (Att 2 of OP 3304C)
Ci= 1131 ppm
Cf= 1132.56 ppm
(1131 ppm + 1.56 ppm (derived in step 4)
K = 1

Calculation equals: 16.2 gallons of boric acid needed (allowable band is 14 gallons to 18 gallons)</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2 Revision: 0/1

Task Title: Review and Approve Reactivity Calculation

S T E P # 6	Performance: When done with calculation, records value and reports to Examiner.	Critical: Y ☒ N ☐
	Standard: **Records 16 gallons and circles boric acid** **(allowable band is 14 gallons to 18 gallons)** *** see comment below**	Grade: S ☐ U ☐
	Cue:	
	Comments: This band is derived from approximating allowable ranges of boron concentrations (see step 3). In using these allowable values. Any further rounding or curve interpolation allowances will be evaluated by the examiner.	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.1.2 Revision: 0

Task Title: Review and Approve Reactivity Calculation

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No
Validated Time (minutes):	22	Actual Time to Complete (minutes):
Overall Result of JPM:		☐ SAT ☐ UNSAT

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

Page 1 of 2

JPM Number: 2K15 SRO A.1.2 Revision: 0

Initial Conditions: The plant was initially in steady state conditions at 100% power. You are the Unit Supervisor, and the following sequence of events occurs:

1. At 0830, the grid becomes unstable.
2. At 0830, the crew rapidly reduces reactor power to 88% using the "Standby Load Set" pot at the EHC insert.
3. At 0833, MB4C, 3-9 “ROD CONTROL BANK LIMIT LO” annunciator illuminates.
4. The crew determines they will use OP 3304C, *Primary Makeup and Chemical Addition* to restore rod position to greater than the alarm setpoint.

At 0840, the current plant conditions are:

- Reactor power is at 88%
- Control Bank D is at 145 steps withdrawn
- Current RCS boron concentration is 1131 ppm
- Tavg is presently 584 °F
- The Plant Process Computer is NOT available.
- Core burn-up is 10,000 MWD/MTU (MOL)

In order to clear MB4C 3-9, the plan is to withdraw Control Bank D to 160 steps withdrawn while maintaining RCS temperature and Reactor Power stable.

The pre-job brief with the RO includes the following information:

- The RO is to determine the quantity of boric acid OR primary grade water needed to maintain stable conditions during the rod withdrawal.
- The RO is to use OP 3304C, Attachment 2 to make the determination.
- The RO is to use curves rather than thumbrules for the calculation.

The calculation from the RO includes:

- The amount of boric acid OR primary grade water over the next hour
- Per RE, the Hot Full Power Differential Boron Worth should be used.
- Per RE, the RO is to use a value of 1 for K (Correction Factor) in OP 3304C, Attachment 2.

Per RE, Xenon is expected to change core reactivity by 40 pcm during the course of the event (PPC is not available).

Initiating Cues: The RO completes the calculation, and determines that 248 gallons of boric acid is required to be added.

You are to review and approve the attached calculation.

APPLICANT HANDOUT

Page 2 of 2

Reactor Operator's Calculation

1. Rod Worth 200 pcm

2. Total Reactivity:

   200 pcm (Rods) – 40 pcm (Xenon) = 160 pcm

3. Reactivity Worth of Boron Change:

   $$\frac{160\text{ pcm}}{6.7\text{ pcm/ppm}} = 23.88\text{ ppm}$$

4. Final Boron Concentration is:

   1131ppm + 23.88 ppm = 1154.88 ppm

5. Calculates the amount of boric acid needed for RCS addition (per OP 3304C, Att. 2):

$$\left(\frac{M}{8.33}\right)\left[\ln\left(\frac{7000 - C_i}{7000 - C_f}\right)\right]K$$

Substituting Values:
M = 507,127 (Att. 2 of OP 3304C)
Ci = 1131 ppm
Cf = 1154.88 ppm
K = 1

Amount of Boric Acid Needed = 248 gallons

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Notifications and Reportability Associated with a Safety Limit Violation.

JPM Number: 2K15 SRO A.2 Revision: 0

Initiated:

John Follett

Developer Date

Reviewed:

Bob Royce

Technical Reviewer Date

Approved:

Paul Scott

Facility Reviewer Date

JPM Number: 2K15 SRO A.2 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	No comments from NRC Validation the week of 7/20/15.	

JPM WORKSHEET

Facility: MP3 Examinee: ____________________

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 22

Task Number(s): 119-03-003

Applicable To: SRO X STA ____ RO ____ PEO ____

K/A Number: 2.2.22 K/A Rating: 4.7

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards: Determine if the plant is operating outside the requirements of the MP3 Technical Specifications and as a result, the proper notifications and event reporting requirements.

Required Materials: (procedures, equipment, etc.) MP3 Technical Specifications
RAC 14, *Non-Emergency Station Events* Rev.003-10

General References: RAC 05, *Reportability Determinations and Licensee Event Reports* Rev. 004

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 SRO A.2 Revision : 0

Initial Conditions: The plant is shutdown in MODE 4, cooling down to MODE 5 following a significant transient and subsequent uncomplicated reactor trip. Known post-trip reporting requirements were met.

The Event Review Team (ERT) has reported that just prior to the trip, with the reactor at 80% power, RCS pressure had dropped to 2000 psia and Tave elevated to 620°F.

Initiating Cues: The Operations Manager, sponsor of the ERT, asks you to evaluate this new information and identify applicable reporting requirements.

Write down your response(s) below:

* * * * **NOTES TO TASK PERFORMANCE EVALUATOR** * * * *

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

START TIME: ____________

<table>
<tr><td rowspan="4">STEP #1</td><td>Performance:
Obtains and refers to proper procedure.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Examinee obtains and refers to a copy of MP3 Technical Specifications.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="6">STEP #2</td><td>Performance:
Refer To Technical Specification 2.1.1 for SAFETY LIMITS: Reactor Core, to determine the Limiting Condition for Operation.
OR
Determine if a Safety Limit has been violated.</td><td></td></tr>
<tr><td>Standard:
Examinee Refers to T.S. 2.1.1 for SAFETY LIMITS; Reactor Core, determines the LCO is specified as follows: “The combination of THERMAL POWER, Reactor Coolant System highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the CORE OPERATING LIMITS REPORT.”</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee Refers to the CORE OPERATING LIMITS REPORT (COLR) and correctly determines that the locus of points as given in the cue for RCS pressure and temperature is in the “unacceptable region” of Figure 1 (Reactor Core Safety Limit), and is therefore a Safety limit violation.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee refers to T.S. LCO 2.1.1 for SAFETY LIMITS; Reactor Core, and enters LCO ACTION statement (ACTION: Whenever the Reactor Core Safety Limit is violated, restore compliance and be in HOT STANDBY within 1 hour.)
SRO Examinee should state or otherwise indicate recognition of LCO requirement.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:
The COLR is located in the Technical Requirements Manual (TRM).</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

STEP # 3	Performance: Obtains proper procedure to determine required notifications.	Critical: Y ☐ N ☒
	Standard: Obtains and refers to a copy of RAC 14, *Non-Emergency Station Events.*	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 4	Performance: Review Precautions. (RAC 14, Section 3)	Critical: Y ☐ N ☒
	Standard: Examinee reviews precautions 3.1 through 3.8.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 5	Performance: **Initial Event Reportability Determination** IF sufficient cause exists for reporting a non-emergency event, PERFORM the following: (RAC 14, step 4.1.1.a)	Critical: Y ☐ N ☒
	Standard: Examinee recognizes that cause exists for reporting this event.	Grade: S ☐ U ☐
	Cue: If the Examinee requests additional personnel to track the event, or requests additional assistance, provide the cue: **Additional assistance will be available shortly. Continue with your task.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

STEP # 6	Performance: As required, REQUEST Station Duty Officer (typically the non-affected unit STA) and Emergency Communicator (typically the non-affected unit WC SRO) report to the Control Room and prepare to send a Non Emergency Event Report. (RAC 14, step 4.1.1.d)	Critical: Y ☐ N ☒
	Standard: Examinee recognizes the need to call Unit 2 to request the Station Duty Officer and Emergency Communicator report to the Unit 3 Control Room.	Grade: S ☐ U ☐
	Cue:	
	Comments: RAC 14, steps 4.1.1.e through 4.1.1.i pertain to event types NOT related to the event in progress. The Examinee should recognize that these steps do not apply and move to step 4.1.1.j.	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

STEP # 7	Performance: For all events, Refer To appropriate Attachment 1 through 7 and DETERMINE State and NRC reporting requirements. (RAC 14, step 4.1.1.j)	
	Standard: Examinee refers to Attachments 1 through 7 and determines that Attachment 1, "Plant Operation / Equipment / Technical Specification Events", is the applicable attachment.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee matches the event in progress with the following event description in attachment 1: " Safety Limit Violation"	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee correctly determines the NRC Reporting Requirement for the event is as follows: **"Within 4 hours via ENS"** (10CFR50.72(b)(2)(i)**	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Standard: Examinee correctly determines the State posture code for the event is an **"Echo"**	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee correctly determines the State Reporting Requirement for the event is as follows: **"Within 1 hour of report to NRC if not already reported"** (State Reg. 22a-135-1)	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Cue: If the Examinee questions whether an Emergency Action Level Classification has been made as a result of the event leading to the Safety Limit violation, provide the following cue: **NO Emergency Action Level Classification has been made.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

<table>
<tr><td rowspan="7">S T E P
8</td><td>Performance:
Determine Additional Notifications.</td><td></td></tr>
<tr><td>Standard:
Examinee correctly determines that NOTE 8 to Attachment 1 of RAC 14 applies and that there are additional notifications. NOTES are located in Attachment 7 to RAC 14.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee verbalizes or otherwise notes that The SVP/CNO - Dominion Nuclear Connecticut, Inc. shall be notified within 24 hours.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee verbalizes or otherwise notes that the Senior Vice President - Nuclear Operations shall be notified within 24 hours.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee verbalizes or otherwise notes that the Site Vice President - Millstone shall be notified within 24 hours.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
The Emergency Communicator will prepare and send the Non Emergency Event Report and the Station Duty Officer will complete the remaining required notifications.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.2 Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	22	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 SRO A.2 Revision: 0

Initial Conditions: The plant is shutdown in MODE 4, cooling down to MODE 5 following a significant transient and subsequent uncomplicated reactor trip. Known post-trip reporting requirements were met.

The Event Review Team (ERT) has reported that just prior to the trip, with the reactor at 80% power, RCS pressure had dropped to 2000 psia and Tave elevated to 620°F.

Initiating Cues: The Operations Manager, sponsor of the ERT, asks you to evaluate this new information and identify applicable reporting requirements.

Write down your response(s) below:

Examinee: ______________________________

Examinee: ______________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

JPM Number: 2K15 SRO A.3 Revision: 0/1

Initiated:

Robert Royce	07/10/15
Developer	Date

Reviewed:

John Follett	
Technical Reviewer	Date

Approved:

Paul Scott	
Facility Reviewed	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	NRC Validation comments from week of 7/20/15: – Pgs 10 & 11: Typo 5 pages not 4. – Pg 10, Delete double header and “JPM QUESTIONS”.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 SRO A.3 Revision: 0/1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

System: Radioactive Liquid Waste System

Time Critical Task: ( ) YES (X) NO

Validated Time (minutes): 10

Task Number(s): 068-01-064, 068-03-001

Applicable To: SRO X RO ______ PEO ______

K/A Number: 2.3.6 K/A Rating: 2.0 / 3.8

Method of Testing: Simulated Performance: ______ Actual Performance: X

Location: Classroom: X Simulator: ______ In-Plant: ______

Task Standards:

Required Materials: (procedures, equipment, etc.)
OP 3335D, Radioactive Liquid Waste System Rev. 018-10
Liquid Discharge Permit
Screen Print of Rad Monitor LWS70-1

General References: None

*** READ TO THE EXAMINEE ***
I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 SRO A.3 Revision : 0/1

Initial Conditions: The unit is in MODE 5 in day 2 of a refueling outage. The following plant conditions exist:

- The ‘A’ train electrical busses are deenergized for planned maintenance.
- Three (3) circulating water pumps are in operation.
- One (1) service water pump is in operation.

Initiating Cues: The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the “B” Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking “Y”. For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.3 Revision: 0/1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

START TIME: __________

<table>
<tr><td rowspan="4">STEP #1</td><td>Performance:
Go to the correct procedure step, OP3335D, Section 4.25.5.q</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Applicant locates procedure step 4.25.5.q.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
The candidate may review previous steps. If necessary provide the following cue: Steps 4.25.1 through 4.25.5.p have been completed.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="5">STEP #2</td><td>Performance:
PERFORM Independent Verification of liquid effluent monitor alarm and alert settings. [step 4.25.5.q.1)]</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Applicant locates liquid effluent monitor alarm and alert settings on Liquid Discharge Permit and on RMS screen printout for LWS70-1. Compares permit settings and RMS information and identifies that RMS is incorrect. Recommends changing RMS to match the permit.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
When candidate identifies error, provide the following cue: “The setpoints have been corrected,” then hand the candidate the corrected RMS screen printout.</td></tr>
<tr><td>Standard:
Candidate verifies setpoints are correct and initials permit after receiving the cue.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.3 Revision: 0/1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

STEP # 3	Performance: Refer to CHEM Form 3800P-001 and CHECK "EST Activity this Discharge (Ci)" on Liquid Discharge Permit is less than action level specified. [step 4.25.5.q.2)]	Critical: Y ☐ N ☒
	Standard: Candidate compares CHEM Form 3800P-001 Action Level for activity per discharge to the "Estimated activity this discharge (Ci)" on the Discharge permit "Estimated activity this discharge (Ci)". Determines that the estimated activity for the discharge is less than the Action Level.	Grade: S ☐ U ☐
	Standard: Candidate Initials permit.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 4	Performance: IF action levels or goals are met or exceeded, Refer To CP 3800P, "Unit 3 Liquid Waste Management," for guidance on further processing of the affected tank. [step 4.25.5.q.3)]	Critical: Y ☐ N ☒
	Standard: Candidate recognizes that NO action levels or goals are met or exceeded and moves on to step 4.25.5.q.4).	Grade: S ☐ U ☐
	Cue:	
	Comments: Step 4.25.6.i.3) is N/A since no limits are exceeded.	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.3 Revision: 0/1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

S T E P # 5	Performance: CHECK required dilution flowrate is met. [step 4.25.5.q.4)]	Critical: Y ☒ N ☐
	Standard: Candidate compares discharge permit requirement of 3 circ water and 2 service water pumps, to actual plant condition of 3 circ water and **1** service water pumps. Identifies that the **required dilution flow rate is NOT met.**	Grade: S ☐ U ☐
	Cue:	
	Comments: Once the candidate identifies that the required dilution flow rate is not met provide the termination cue.	

Termination Cue: The Evaluation of this JPM is Complete

STOP TIME: _________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.3 Revision: 0/1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

DO NOT HANDOUT UNTIL INSTRUCTED

Health Loop Status: 1 2 3 4 5 6 7 8 DRMS Database Alarm Rad Alert Rad High Trouble DRMS-B MASTER: DRMS-B 08:41:33 07/14/15

Monitor #	Monitor Name	Area Monitored	Loop #	Drop #	Monitor Class	Channel Number	Channel Type	
68	LWS70	LWS DISCHARGE	5	8	NON-1E	1 of 1	LIQUID	ONLINE REACHABLE NO ALARM

Levels: Current Radiation 0.00E+00 µC/ML | 1 Minute Average = 1.88E-07 µC/ML | 1 Hour Average = 7.36E-07 µC/ML

10 Minute Average 3.85E-08 µC/ML | 1 Day Average = 6.76E-07 µC/ML

10 Minute Average Sample Flow = 0.00E+00 GPM | 10 Minute Average Process Flow = 1.00E-05 GPM

Current Temperature = 9.34E+01 °F | Current Pressure = 8.22E+01 PSI

Trip Setpoints: High Level = 6.65E-05 µC/ML | High Pressure = 1.50E+02 PSI | High Temperature = 1.40E+02 °F

Alert Level = 4.95E-05 µC/ML | Low Pressure = 0.00E+00 PSI | Low Temperature = 4.10E+01 °F

Rate Increase = 1.00E+10 µC/ML/SEC | Low Sample Flow = 5.00E-01 GPM

Conversion Factor: Radiation Level = 1.19E-08 µC/ML/CPM | Sample Flow = 0.00E+00 GPM | Process Flow = 1.00E-05 GPM

Purge: Duration = 480 SECS

Check Source: Expected = 1.00E-06 µC/ML | Response = 1.18E-05 µC/ML | Activation Period 0 MINS

Background Check: Last Check = 07/14/15 04:40:17 | Level = 1.27E-05 µC/ML

Level Alarms		Equipment Failure Alarms		Condition Alarms		Activities	
High Level	NO	Aux Equipment	NO	In Local Mode	NO	Purge / Back Flush	NO
Alert Level	NO	Check Source	NO	Alarms Relays Off	NO	Filter Step	N/A
Rate Increase	NO	Filter Step	N/A	Detector Saturated	NO	Check Source On	NO
High Pressure	NO	Out of Paper	N/A	High Conductivity	NO	Pumps On	YES
Low Pressure	NO	High Voltage	NO	Background Level Δ	NORMAL	Auto-Test On	N/A
High Temperature	NO	Detector	NO	Annunciator	ENABLED	Active Mode	YES
Low Temperature	NO						
High Flow	NO						
Low Flow	NO						

Database Maintenance | Request Monitor Trend | R-TIME Trend | Enable/Disable | View Another Monitor | REQ / CMD Statuses

Loop Overview | Floor Plan | Status Grid | Steam Generator Tube Rupture | Message Summary | Groups

JPM Number: 2K15 SRO A.3 Revision: 0/1

APPLICANT HANDOUT
Page 1 of 5

Initial Conditions: The unit is in MODE 5 in day 2 of a refueling outage. The following plant conditions exist:

- The 'A' train electrical busses are deenergized for planned maintenance.
- Three (3) circulating water pumps are in operation.
- One (1) service water pump is in operation.

Initiating Cues: The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the "B" Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

APPLICANT HANDOUT

10/13/11
Approval Date

10/13/11
Effective Date

Unit 3 Liquid Radwaste Discharge Goals

Year: 2015

	Normal at Power Operations		Refueling and Cold Shutdown Outages		Annual Goal
	Action Level	Monthly Goal	Action Level	Monthly Goal	
Volume	100,000 gal/month	120,000 gal/month	120,000 gal/month	130,000 gal/month	1.0E+06 gal
Activity	3.0E-03 Ci/month	4.0E-03 Ci/month	5.0E-03 Ci/month	5.0E-03 Ci/month	0.06 Ci
	0.001 Ci/discharge		0.001 Ci/discharge		

Anton Chemistrini / 1/6/2015
Radwaste Coordinator / Date

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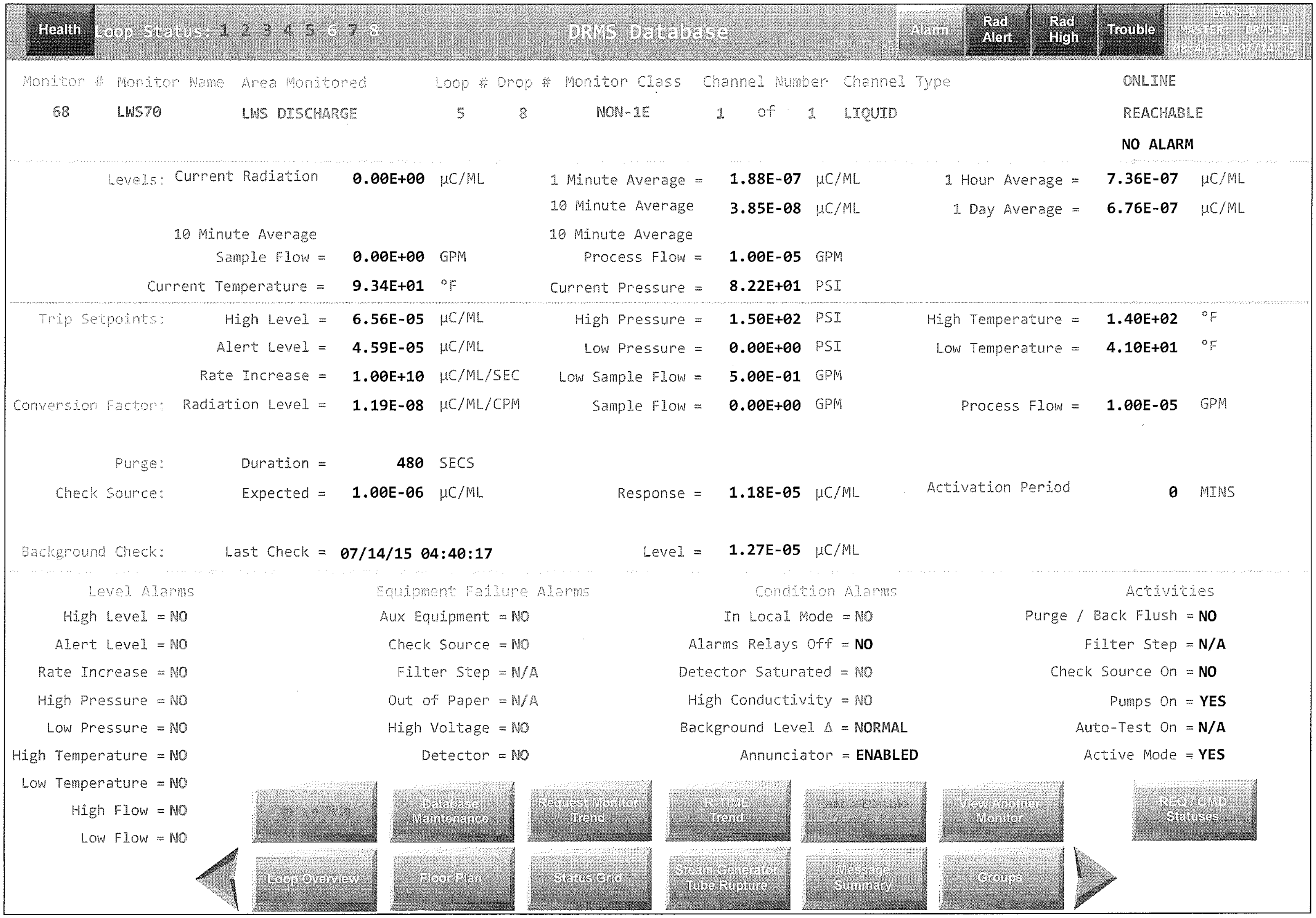
Rev. 000−01
Page 1 of 1

APPLICANT HANDOUT



APPLICANT HANDOUT

09/07/10 Approval Date

09/07/10 Effective Date

Millstone Unit 3
Liquid Discharge Permit Number : 6883 (2015-31047)

Tank: WTT-B Date and time sampled: Today 1 hour ago

Sampled by: Anton Chemistrini Date and time on recirc: Today 4 hours ago

NPDES Requirements Satisfied: A. C.

Independent samples taken >>> yes / no (circle one)

Chemistry Supervision approval required for dilution flow less than 100,000 gpm.

Isotope	(A) Activity (μCi/ml)	(B) 10 X EC (μCi/ml)	(C) Activity/ 10 X EC	(D) Radmonitor Response Factor (cpm/μCi/ml)	(E) Monitor Response ccpm
H-3	3.750E-01	1.000E-02	3.750E+01		
MN-54	1.798E-07	3.000E-04	5.993E-04	7.300E+07	1.312E+01
CO-58	3.185E-07	2.000E-04	1.592E-03	9.800E+07	3.121E+01
CO-60	1.256E-06	3.000E-05	4.185E-02	1.300E+08	1.632E+02
NB-97	1.524E-07	3.000E-03	5.079E-05	7.400E+07	1.128E+01
AG-110M	1.249E-07	6.000E-05	2.082E-03	2.300E+08	2.874E+01
SN-117M	6.518E-08	3.000E-04	2.173E-04	1.200E+08	7.821E+00
CS-137	1.297E-07	1.000E-05	1.297E-02	6.400E+07	8.301E+00
Totals	*2.226E-06 **(F)**		3.756E+01 **(G)**		2.637E+02 **(H)**

* Not including activity due to tritium or noble gas

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APPLICANT HANDOUT

Dissolved gas conc (µCi/ml) . . . . 0.000E+00 (Limit = 1.3E−02 µCi/ml) A. C. Tech

Minimum recirculation time(min) . . . . 175 MIN

Sample acidified and saved for composite Date: Today Tech: A. C.

Release limit (Ci) 4.000E-03

Total activity released to date (Ci) 2.567E-03

Estimated volume this discharge (Gal) . 21000

Estimated activity this discharge (Ci) . . 1.769E-04 *

Estimated total activity released (Ci) . . 2.744E-03 *

(1) Reduction factor 2.662E-02

Circ water pumps: 3

Service water pumps: . . . . 2 SM/US Initials

(2) Required dilution flow rate . . . . 330,000 (gpm) _______

(3) Normal rate limit(flow rate = #1 • #2 • 0.1) . . . . 150 (gpm) _______

(4) Liquid effluent monitor alert setting . . . . 4.95E-05 (µCi/ml) _______

(5) Liquid effluent monitor alarm setting . . . . 6.65E-05 (µCi/ml) _______

(6) Rad monitor source check completed at 1 hour ago T. G. Operator initials

Maximum approved rate . . . . _____________ (gpm) _______
(Authorization required to exceed normal rate limit)

Dual verification of release rate calculation Yes /No (Circle One) _______

−−−DISCHARGE−−−

	DATE	TIME	DILUTION FLOW RATE (gpm)	TANK LEVEL (gallons)	DISCHARGE RATE (gpm)	OPERATOR
START						
END						

Liquid effluent monitor reading 15 minutes after start of discharge _____________ µCi/ml
(this shall be a 10 minute average reading)

Liquid effluent monitor reading after chamber flush . . . . _____________ µCi/ml

Total liquid waste discharged = ______________ (gal) • 3785 = _____________ ml

Shift Manager ______________________ Date ____________ Time __________

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Rev. 004−01
Page 2 of 2

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

JPM Number: 2K15 SRO A.4 Revision: 0/1

Initiated:

Robert Royce

Developer Date

Reviewed:

John Follett

Technical Reviewer Date

Approved:

Paul Scott

Facility Reviewer Date

JPM Number: 2K15 SRO A.4 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/14/15	NRC Validation comments from the week of 7/20/15: – Pgs 4 & 10: Removed #3 and #4 (PAR) from Initiating Cue because it cued examinee that GE Alpha was expected. – Pg 6, added new STEP#4 to provide a cue to determine the PAR and the method of communication to the State.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

System: N/A

Time Critical Task: ☒ YES ☐ NO

Validated Time (minutes): 30

Task Number(s): 301-05-366, 301-05-449

Applicable To: SRO X STA ____ RO ____ PEO ____

K/A Number:	K/A Rating:
2.4.41	2.9 / 4.6
2.4.44	2.4 / 4.4

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: X Simulator: ____ In-Plant: ____

Task Standards:

- Determine the EAL and State Posture Code
- Determine the minimum required PAR

Required Materials:
(procedures, equipment, etc.)

- MP-26-EPI-FAP06-003, Millstone Unit 3 Emergency Action Levels Rev. 009
- MP-26-EPI-FAP01-001, Control Room Director Of Station Emergency Operation (CR DSEO) Rev. 013
- MP-26-EPI-FAP06, Classification and PARs Rev.010
- MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations Rev. 005
- MP-26-EPI-FAP-07-001, Nuclear Incident Report Form (IRF) Rev. 001-03

General References:

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 SRO A.4 Revision : 0/1

Initial Conditions: The "A" RHR pump is tagged out for an oil change.

The following sequence of events occurs:

Time	Event
0245	An earthquake (0.10g ZPA) occurs.
0245	Reactor trip and Safety Injection on low pressurizer pressure.
0245	The "B" RHR pump does not start.
0255	The following plant conditions currently exist:

- RCS pressure is 60 psia
- RCS subcooling is 0ºF
- Core exit thermocouples are 293°F
- RVLMS (plenum) is 19%
- Containment pressure is 15 psia
- RMS*RE04A/05A are stable at 4 R/hr
- Current wind speed is 5 mph
- Current wind direction is from 040 and into 220 degrees

Initiating Cues: You are the Shift Manager at Millstone.

Determine the required:

1. Emergency Action Level
2. State Posture Code

This is a time critical task.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

START TIME: ____________

STEP # 1	Performance: Obtain Proper procedure.	Critical: Y ☐ N ☒
	Standard: Obtains or requests copy of MP-26-EPI-FAP06-003, MP3 Emergency Action Levels.	Grade: S ☐ U ☐
	Cue:	
	Comments: The CR DSEO Notebook contains applicable procedures.	
STEP # 2	Performance: Classify the Event.	Critical: Y ☒ N ☐
	Standard: Recognizes a potential loss of the Fuel Clad Barrier, based on RVLMS ≤ 19% (plenum) (FCB4).	Grade: S ☐ U ☐
	Standard: Recognizes a loss of the RCS Barrier based on RCS Subcooling < 32ºF Due to RCS Leak (RCB2).	Grade: S ☐ U ☐
	Standard: Recognizes a loss of the CTMT Barrier based on No CTMT Pressure Increase when Expectation exists. (CNB3)	☐Grade: S ☐ U ☐
	Standard: Reviews MP-26-EPI-FAP06-003 and determines that a NRC EAL of GENERAL EMERGENCY, BG1 exists. Fuel Clad Barrier (P), RCS Barrier (L) and CTMT Barrier (L)	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

STEP # 3	Performance: Determine State Posture Code.	Critical: Y ☒ N ☐
	Standard: Reviews MP-26-EPI-FAP06-003 and determines that the block for BG1 is the same color as State Posture ALPHA Tables are color coded to reflect the State Posture.	Grade: S ☐ U ☐
	Cue:	
	Comments: **Record the Time Classification is Completed: ___________________**	
STEP # 4	Performance: Identifies a Protective Action Recommendation is required.	Critical: Y ☐ N ☒
	Standard: Determines the required PAR.	Grade: S ☐ U ☐
	Cue: If necessary, provide the cue: **Determine the required Protective Action Recommendation, and the method of communicating this PAR recommendation to the State.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

<table>
<tr><td rowspan="9">STEP #5
FAP06-005, Step 1</td><td>Performance:
Refer to Section B, "CR PAR Process Flowchart" and determine the appropriate PAR.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Refers to MP-26-EPI-FAP06-005, Section B, "Control Room PAR Process Flowchart" and determines a General Emergency has been declared and moves to the "GE-ALPHA" decision box.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Reviews flowchart and determines a GE-ALPHA has been declared and moves to the "Rapidly Progressing Severe Incident" decision box.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Reviews Table 3 and determines a "Rapidly Progressing Severe Incident" is NOT in progress (Core Exit Thermocouples are NOT greater than 1200°F), and moves to the "Does CTMT Radiation Exceed Table 1 Values?" decision box.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Reviews Table 1, and determines Containment Radiation has NOT exceeded Table 1 Values, and moves to the "Do 5-Mile Doses Exceed Table 2 PAGs?" decision box.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Reviews Table 2, determines 5-mile doses do NOT exceed the Table 2 PAGs, and moves to the "Hostile Action Imminent" decision box.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Reviews the "Hostile Action Imminent" decision box, determines a hostile action impediment does NOT exist, and determines the required GE-ALPHA PAR is to Evacuate a 5-mile Radius and all other Zones Monitor and Prepare.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

STEP # 6		
	Performance: Refer to Section B, "CR PAR Process Flowchart", NOTE 2 and determine method of communicating the PAR to the State.	Critical: Y ☒ N ☐
	Standard: Determines that for a General Emergency-Alpha with actions only necessary out to 5 miles, the Incident Report Form serves as PAR notification.	Grade: S ☐ U ☐
	Cue:	
	Comments: • The IRF will serve as the necessary PAR notification to the state so no additional DEP communication is required. • 15 minutes to determine Emergency Action Level and State Posture Code. • 15 minutes after classifying event to determine minimum required PAR. **Record the Time Classification is Completed:**______________	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.4 Revision: 0/1

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☒ Yes ☐ No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 SRO A.4 Revision: 0/1

Initial Conditions: The "A" RHR pump is tagged out for an oil change.

The following sequence of events occurs:

Time	Event
0245	An earthquake (0.10g ZPA) occurs.
0245	Reactor trip and Safety Injection on low pressurizer pressure.
0245	The "B" RHR pump does not start.
0255	The following plant conditions currently exist:

- RCS pressure is 60 psia
- RCS subcooling is 0ºF
- Core exit thermocouples are 293°F
- RVLMS (plenum) is 19%
- Containment pressure is 15 psia
- RMS*RE04A/05A are stable at 4 R/hr
- Current wind speed is 5 mph
- Current wind direction is from 040 and into 220 degrees

Initiating Cues: You are the Shift Manager at Millstone.

Determine the required:

1. Emergency Action Level
2. State Posture Code

This is a time critical task.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Manual Make-up Calculation & Manual Make-up to VCT

JPM Number: 2K15 S.1 RO   Revision: 1/1

Initiated:

Robert Royce
Developer   Date

Reviewed:

John Follett
Technical Reviewer   Date

Approved:

Paul Scott
Facility Representative   Date

JPM Number: 2K15 S.1 RO Revision: 1/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
7/22/15	New JPM to replace "Perform A Boration At Power" which was rejected during NRC Validation because it was too similar to tasks performed during operating exams. New JPM is Rev 1 to account for the new content under the same JPM number of 2K15 S.1 RO.	1
8/17/15	NRC Validation Comments from week of 7/20/15: – Pgs 3& 14: Change time from 12 to 13 minutes. – Pg 4, Simulator Setup: Combine steps 4&5 to prevent overfilling. Correct valve ID and position 3CHS*LCV113A to GWS or AUTO. Add step to set FK-111 to 5.00. – Pg 14, STEP #24: Added comment indicating computation of gallons is not required. Included ratio of gallons to %.	1/1

JPM WORKSHEET

Facility: MP3 Examinee: __________

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

System: NA

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 13

Task Number(s): 009-01-028

Applicable To: SRO X STA ____ RO X PEO ____

K/A Number: 004-A4.13 K/A Rating: 3.3 / 2.9

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards:
(1) Calculate Pot settings based on 3304C tables and data given
(2) Perform a manual make up to the VCT IAW OP3304C

Required Materials: (procedures, equipment, etc.)
Simulator,
OP3304C, Rev 24-03
Calculator

General References: None

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.1 RO Revision : 1/1

Initial Conditions:

The plant is at 100% Power,

Core Burnup is 9340 MWD/MTU

RCS Boron concentration is 1100 ppm

BAT Tank “A” boron concentration is 6850 ppm

BAT Tank “B” boron concentration is 6850 ppm

Auto Makeup Reactivity Correction Factor is 1.0

The crew is preparing to perform the daily leak check calculation.

Initiating Cues:

The Unit Supervisor has directed you to PERFORM a Manual Make-up to the VCT per OP 3304C *Primary Makeup and Chemical Addition*, Section 4.3, “Aligning for Manual Makeup to the VCT at Current RCS Boron Concentration,” steps 4.3.1 through 4.3.17. Raise level to 50%. It is not required to restore the makeup system after the makeup is complete.

Simulator Requirements:

100% IC

Setup:

1. Reset the Simulator to a 100% IC
2. Place simulator in “RUN” and clear all Alarms
3. Ensure “B” BAT Pump is aligned for auto Start.
4. Place the VCT Divert Valve, 3CHS*LCV112A, to GWS and

   WHEN

   VCT level is < 45%

   THEN

   Place VCT Divert Valve, 3CHS*LCV112A, to AUTO.
5. Set FK-110 potentiometer to a value of 4.00.
6. Set FK-111 potentiometer to a value of 5.00.
7. Set 3CHS-FY110B, “BORIC ACID" “BATCH" counter (MB3) to 1.
8. 3CHS-FY111B, “PRI WTR" “BATCH" counter (MB3) to 15.

Restoration:

After JPM is complete, perform OP 3304C, section 4.3.18 to restore counters to normal values.

*** * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * ***

1. Critical steps for this JPM are indicated by checking “Y”. For the Applicant to achieve a satisfactory grade, **<u>ALL</u>** critical steps must be completed correctly.
2. When the Applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question Applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **<u>NO</u>** circumstances must the Applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

START TIME: ____________

STEP #1 OP 3304C NOTES prior to step 4.3.1	Performance: NOTE 1. Auto makeup is <u>not</u> available during manual makeup. 2. Main Board components identified in this section are located on MB3.	Critical: Y ☐ N ☒
	Standard: Reads NOTES.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #2 OP 3304C Step 4.3.1	Performance: <u>IF</u> this Section is being used during shutdown operations to flush the VCT, VERIFY applicable Prerequisites and Section 4.1 are complete.	Critical: Y ☐ N ☒
	Standard: Standard: Chooses not to verify shutdown prerequisites, since the plant is at 100% power.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #3 OP 3304C Step 4.3.2	Performance: PLACE “REAC CLNT MAKEUP START SW" in “STOP."	Critical: **Y** ☒ N ☐
	Standard: Presses the "STOP" pushbutton on the "REAC CLNT MAKEUP START SW" and observes that pushbutton back light comes on.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP		
STEP #4 OP 3304C Step 4.3.3	Performance: PLACE "REAC CLNT MAKEUP SELECT SW" in "MANUAL."	Critical: **Y** ☒ N ☐
	Standard: Presses the "MANUAL" pushbutton on the "REAC CLNT MAKEUP SELECT SW" and observes that the pushbutton back light comes on.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #5 OP 3304C Step 4.3.4	Performance: VERIFY 3CHS-FK111, "TOTAL MAKEUP FLOW CONT," set at 80 gpm.	Critical: Y ☐ N ☒
	Standard: Checks that the potentiometer for 3CHS-FK111 is set for "5".	Grade: S ☐ U ☐
	Cue:	
	Comments: Applicant may check Section 1.2 of OP 3304C to confirm that 0-10 turns equates to 0-160 gpm. Ratio 80/160 = x/10. X = 5	
STEP #6 OP 3304C Step 4.3.5	Performance: Refer To Attachment 1 and VERIFY 3CHS-FK110, "BORIC ACID BLEND FLOW CONT," is set to provide required boric acid flow rate.	Critical: Y ☐ N ☒
	Standard: Refers to Attachment 1.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

<table>
<tr><td rowspan="4">STEP #7
OP 3304C Att.1: NOTE prior to Step 1</td><td>Performance:
NOTE
Although makeup controller is operating within design parameters, operating experience from performing blended makeups at high RCS boron concentrations (>2,500 ppm) and large volumes (> 200 gallons) has shown that the difference between setpoint and actual flow may result in a makeup concentration that is up to 5 to 7% below the calculated value. Makeup concentration should be set 100 to 150 ppm above the desired value. Consideration should also be given to dividing large blended makeups into parts and sampling the RCS in between the parts of the markups. This will allow correction of any undesirable results prior to completion of the makeup.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reads NOTE.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #8
OP 3304C Att 1, Step 1</td><td>Performance:
DETERMINE required boric acid flow rate, based on current RCS and in-service Boric Acid Storage Tank boron concentrations, by performing one of the following:
OBTAIN flow rate from Attachment 3, “Boric Acid Flow Rate Based on 80 gpm Blended Makeup"
CALCULATE flow rate by applying the following formula:
Required boric acid flow rate = (RCS CB/In–service BAST CB) x (80 gpm)</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Using either Attachment 3 or equation, determines that the correct flow rate is approximately 12.85 gpm.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP #9 OP 3304C Att 1, NOTE prior to step 2	Performance: NOTE During long on-line periods, B-10 depletes more than indicated by regular RCS sampling. Without correction, an auto makeup will over-borate the RCS. The correction factor is to account for B-10 depletion.	Critical: Y ☐ N ☒
	Standard: Reads note	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #10 OP 3304C Att 1, Step 2	Performance: Refer To the current Monthly Reactivity Data Sheet in the Reactor Engineering Curve and Data Book and CALCULATE the corrected boric acid flow rate by multiplying the flow rate determined in step 1. by the auto makeup reactivity correction factor.	Critical: Y ☐ N ☒
	Standard: Obtains the Auto Makeup Reactivity Correction Factor of 1.0 from the Initial Conditions and multiplies 12.85 gpm x 1 = 12.85 gpm	Grade: S ☐ U ☐
	Cue: If necessary, provide the cue: **The auto makeup reactivity correction factor is 1.**	
	Comments:	
STEP #11 OP 3304C Att 1, Step 3	Performance: CALCULATE 3CHS-FK110 pot setting by applying the following formula: 3CHS–FK110 pot setting = Corrected boric acid flow rate x (10 turns/40 gpm)	Critical: **Y** ☒ N ☐
	Standard: 12.85 gpm x (10 turns/40 gpm) = approximately 3.21 turns.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP #12 OP 3304C Att 1, Step 4	Performance: IF necessary, ADJUST 3CHS-FK110, "BORIC ACID BLEND FLOW CONT," to the pot setting determined in step 3. (MB3)	Critical: **Y** ☒ N ☐
	Standard: Sets the potentiometer for 3 CHS-FK110 to a value of approximately 3.21 turns	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #13 OP 3304C CAUTION prior to step 4.3.6	Performance: CAUTION A severe power transient may occur if the makeup batch preset quantities are allowed to count down to zero. Ensure sufficient preset quantities are set for what may be a long manual makeup.	Critical: Y ☐ N ☒
	Standard: Reads Caution.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #14 OP 3304C NOTE prior to step 4.3.6	Performance: NOTE Attachment 7 provides guidance on adjusting batch counter preset quantity.	Critical: Y ☐ N ☒
	Standard: Reads NOTE. Uses Attachment 7 to adjust the batch counter, if needed.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP		
STEP #15 OP 3304C Step 4.3.6	Performance: At 3CHS-FY110B, "BORIC ACID" "BATCH" counter, SET preset quantity to at least "900000."	Critical: **Y** ☒ N ☐
	Standard: Selects at least "900000" on 3CHS-FY110B by pushing the side arrow key to access the preset quantity value and selects the desired digits by using the up and down arrows, as needed. Presses the circle arrow key to enter the value.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #16 OP 3304 Step 4.3.7	Performance: At 3CHS-FY111B, "PRI WTR" "BATCH" counter, SET preset quantity to at least "900000."	Critical: **Y** ☒ N ☐
	Standard: Selects at least "900000" on 3CHS-FY111B by pushing the side arrow key to access the preset quantity value and selects the desired digits by using the up and down arrows, as needed. Presses the circle arrow key to enter the value.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #17 OP 3304C NOTE prior to Step 4.3.8	Performance: NOTE Manual makeup must be monitored closely as there is no automatic shutoff when a high level in the VCT is reached.	Critical: Y ☐ N ☒
	Standard: Reads NOTE	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP #18 OP 3304C Step 4.3.8	Performance: OPEN 3CHS*FCV110B, "MAKE-UP TO CHG."	Critical: **Y** ☒ N ☐
	Standard: Places the control switch for 3CHS*FCV110B to the Open position and verifies red light comes on and green light goes off.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #19 OP 3304C Step 4.3.9	Performance: To commence makeup to the VCT, PLACE "REAC CLNT MAKEUP START SW" in "START."	Critical: **Y** ☒ N ☐
	Standard: Presses the "START" pushbutton on the "REAC CLNT MAKEUP START SW" and observes that the stop light goes out and the START pushbutton illuminates.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #20 OP 3304C	Performance: (Step 4.3.10) VERIFY the following counters reset to "0": • 3CHS-FY110B, "BORIC ACID" "BATCH" counter • 3CHS-FY111B, "PRI WTR" "BATCH" counter	Critical: Y ☐ N ☒
	Standard: Observes 3CHS-FY110B and 3CHS-FY111B read "0".	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO   Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP #21 OP 3304C Step 4.3.11	Performance: MONITOR reactor power and Tave during manual makeup.	Critical: **Y** ☒ N ☐
	Standard: Periodically checks reactor power and Tave during the makeup.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #22 OP 3304C Step 4.3.12	Performance: VERIFY proper flows on indicating recorder 3CHS-FR110, "MAKEUP TO VCT."	Critical: Y ☐ N ☒
	Standard: Checks recorder 3CHS-FR110, and observes Boric Acid flow is about 12.85 gpm, and total flow is approximately 80 gpm.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #23 OP 3304C Step 4.3.13	Performance: During the makeup, PLACE 3CHS*LCV112A, "L/D DIVERT," to "GWS" and RETURN to "AUTO," as necessary, to maintain desired VCT level.	Critical: Y ☐ N ☒
	Standard: Reads step.	Grade: S ☐ U ☐
	Cue:	
	Comments: Diverting to GWS will not be required, since level will not reach 66% in the VCT.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP #24 OP 3304C Step 4.3.14	Performance: WHEN desired, PLACE “REAC CLNT MAKEUP START SW" in “STOP."	Critical: **Y** ☒ N ☐
	Standard: When the VCT level is approximately 50% (critical nature of the step is to stop prior to reaching the 56% divert setpoint for the VCT), depresses the "STOP" pushbutton on the "REAC CLNT MAKEUP START SW"	Grade: S ☐ U ☐
	Cue:	
	Comments: VCT is ≈ 20 gal/%. An increase from 45% to 50% is approximately 100 gal. Applicant is not required to calculate the expected number of gallons to make-up.	
STEP #25 OP 3304C Step 4.3.15	Performance: PLACE 3CHS*FCV110B, “MAKE-UP TO CHG," in “AUTO."	Critical: **Y** ☒ N ☐
	Standard: Places the control switch for 3CHS*FCV110B to the CLOSE/AUTO position and verifies the red light off and the green light lit.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #26 OP 3304C Step 4.3.16	Performance: VERIFY 3CHS*FCV110B, “MAKE-UP TO CHG," closed.	Critical: Y ☐ N ☒
	Standard: Checks the 3CHS*FCV110B "CLOSE" light lit.	Grade: S ☐ U ☐
	Cue:	
	Comments: Applicant likely checked this in the previous step. Applicant may also check other indications, such as makeup system flow.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

STEP		
STEP #27 OP 3304C Step 4.3.17	Performance: VERIFY 3CHS*LCV112A, "L/D DIVERT," in "AUTO."	Critical: Y ☐ N ☒
	Standard: Checks the 3CHS*LCV112A "AUTO" light lit.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #28	Performance: Notify the US that the manual makeup to the VCT has been completed.	Critical: Y ☐ N ☒
	Standard: Informs the US that the manual makeup to the VCT has been completed.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

NOTE: After JPMs are complete, instructor should perform OP 3304C, section 4.3.18 to restore counters to normal values.

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.1 RO Revision: 1/1

Task Title: Manual Make-up Calculation & Manual Make-up to VCT

Date Performed: ____________________

Examinee: ____________________

For the Applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.1 RO   Revision: 1/1

Initial Conditions: The plant is at 100% Power,
Core Burnup is 9340 MWD/MTU
RCS Boron concentration is 1100 ppm
BAT Tank "A" boron concentration is 6850 ppm
BAT Tank "B" boron concentration is 6850 ppm
Auto Makeup Reactivity Correction Factor is 1.0
The crew is preparing to perform the daily leak check calculation.

Initiating Cues: The Unit Supervisor has directed you to PERFORM a Manual Make-up to the VCT per OP 3304C *Primary Makeup and Chemical Addition*, Section 4.3, "Aligning for Manual Makeup to the VCT at Current RCS Boron Concentration," steps 4.3.1 through 4.3.17. Raise level to 50%. It is not required to restore the makeup system after the makeup is complete.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: VENT UNISOLATED SI ACCUMULATORS

JPM Number: 2K15 S.2 Revision: 0/1

Initiated:

John Follett
Developer Date

Reviewed:

Bob Royce
Technical Reviewer Date

Approved:

Paul Scott
Facility Reviewer Date

JPM Number: 2K15 S.2 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 4, IC-359, 720 PSIA, 440 °F. – Pg 8, Step #7: Added statement that Alternate Path Begins. – Pg 12, delete JPM Questions. – Pg 11, Delete Work Practice Performance, Operator Fundamentals and JPM Questions.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

System: ECC

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 000-05-322, 006-01-057

Applicable To: SRO ____ STA ____ RO X PEO X

K/A Number:		K/A Rating:	
	006-A1.13		3.5 / 3.7
	006-A4.07		4.4 / 4.4

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards: Vent Any Unisolated SI Accumulators IAW ES-1.2, Post LOCA Cooldown and Depressurization, Step 22

Required Materials: (procedures, equipment, etc.)
ES-1.2, Post LOCA Cooldown and Depressurization, Rev.019-00
GA-7, Isolating Accumulators, Rev 000-01

General References:

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.2 Revision : 0/1

Initial Conditions:	The plant has experienced a Loss of Coolant Accident. The control room crew has responded by using the Emergency Operating Procedures and has just completed step 21 of ES-1.2, Post LOCA Cooldown and Depressurization. Shutdown Margin has been verified adequate and ECCS flow is NOT required.
Initiating Cues:	The US has directed you to complete step 22, “Check If SI Accumulators Should Be Isolated,” of ES-1.2, “Post LOCA Cooldown and Depressurization”.

Simulator Requirements: Preferred:

1. Reset to **IC-359** Post LOCA, 720 psia, 440 °F
2. Insert schedule **JPM027.sch**.
   SIDI0054 = OPEN
   Trig 1: SIR15, SIR16, SIR17, SIR18 = RI @ 15 sec delay each
   Trig 3: SIR15,SIR16, SIR17, SIR18 = RO @ 15 sec delay each

Approximate simulator setup time is 5 minutes.

Optional:

1. Reset to any 100% power IC. Insert MALF RC03A, Severity 0.08 and go to run.
2. Carry out the actions specified in E-0, E-1 and ES1.2 up to step 21 of ES-1.2.
3. Insert override SIDI0054 3SIL*MV8808B,to OPEN to prevent the “B” Accumulator outlet isolation valve from closing.
4. If necessary, remove or modify malfunction (RC03A), to fill the PZR to greater than 16%. Acknowledge the annunciators and place the simulator in “FREEZE”.
5. After the examinee has received the initial conditions and initiating cues, place the simulator in “RUN”.

Approximate simulator setup time is 25 minutes.

* * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * *

1. Critical steps for this JPM are indicated by checking “Y”. For the applicant to achieve a satisfactory grade, **<u>ALL</u>** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **<u>NO</u>** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

START TIME: ____________

STEP		
STEP # 1	Performance: **22 Check If SI Accumulators Should Be Isolated** 22.a Verify RCS subcooling based on core exit TCs–GREATER THAN 32°F (115°F ADVERSE CTMT)	Critical: Y ☐ N ☒
	Standard: Examinee checks that RCS subcooling based on CETCs greater than 32°F using PPC, ICCM, or MB indications.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 2	Performance: 22.b VERIFY PZR level Greater than - 16% (50% ADVERSE CTMT)	Critical: Y ☐ N ☒
	Standard: Examinee verifies PZR level - Greater than - 16% at MB4 or with PPC.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 3	Performance: 22.c Using GA-7, Isolate SI Accumulators	Critical: Y ☐ N ☒
	Standard: Examinee obtains a copy of GA-7, Isolate SI Accumulators.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

<table>
<tr><td rowspan="4">STEP
4</td><td>Performance:
GA-7, Isolating Accumulators
1. Locally Unlock and Place the SI accumulator isolation valve breakers to ON.
• 32-2R-F4M
• 32-2R-R5F
• 32-2W-F4M
• 32-2W-R3J</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Examinee contacts PEO to locally unlock and place the SI accumulator isolation valve breakers to ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
When trigger 1 is complete, call Control Room and report: SI accumulator isolation valve breakers are ON, step 1 of GA-7 is complete.</td></tr>
<tr><td colspan="2">Comments:
Simulator instructor: Use the Trigger 1 to sequentially activate the following REMOTEs:
SIR15, SIR 6, SIR17, SIR18 to RI, and insert OVERRIDE SIDI0054, 3SIL*MV8808B to OPEN.</td></tr>
<tr><td rowspan="4">STEP
5</td><td>Performance:
2. RESET SI, If Necessary</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Examinee recognizes from the initiating cue that SI has already been reset.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
If the examinee asks whether SI has been reset, provide the following cue: SI has already been reset.</td></tr>
<tr><td colspan="2">Comments:
Acceptable for examinee to reset SI.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

STEP # 6	Performance: **3. CLOSE All SI Accumulator Isolation Valves** • 3SIL*MV8808A • 3SIL*MV8808B • 3SIL*MV8808C • 3SIL*MV8808D	
	Standard: Examinee turns the control switch for 3SIH*MV8808A to the close position and observes that the indicating lights for 3SIH*MV8808A are green ON, red OFF. The valve is CLOSED.	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Standard: Examinee turns the control switch for 3SIH*MV8808C to the close position and observes that the indicating lights for 3SIH*MV8808C are green ON, red OFF. The valve is CLOSED	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Standard: Examinee turns the control switch for <u>3SIH*MV8808B</u> to the close position and observes that the indicating lights for <u>3SIH*MV8808B</u> are green **OFF**, red **ON**. The valve position does not change. The valve is still **OPEN**	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee turns the control switch for 3SIH*MV8808D to the close position and observes that the indicating lights for 3SIH*MV8808D are green ON, red OFF. The valve is CLOSED	Critical: Y ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments: Valves in this step are bulleted and **can be performed in any order**. Order given for this performance step is from left to right on MB2.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

STEP # 7	**Alternate Path Begins** Performance: Step 3RNO: Vent any unisolated accumulator(s): a. Verify SI accumulator nitrogen supply valves (3SIL*CV8880 and 3SIL*CV8968) closed on MB2.	Critical: Y ☐ N ☒
	Standard: Examinee observes SI accumulator nitrogen supply valves (3SIL*CV8880 and 3SIL*CV8968) closed on MB2. Green CLOSED indicating lights are ON and red OPEN indicating lights are OFF.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 8	Performance: Step 3 RNO: b. For each accumulator requiring venting, OPEN one from each pair of the following isolation valves: • For tank B (3SIL*SV8875B or 3SIL*SV8875F)	Critical: Y ☒ N ☐
	Standard: Examinee pushes the controller for **EITHER** 3SIL*SV8875B or 3SIL*SV8875F to the open position and observes that the indicating lights are green OFF, red ON. The valve is OPEN.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

<table>
<tr><td rowspan="6">STEP
9</td><td>Performance:
Step 3 RNO:
c. OPEN one SI accumulator vent control valve (3SIL*HC943A or 3SIL*HC943B).</td><td></td></tr>
<tr><td>Standard:
Examinee operates EITHER 3SIL*HC943A or 3SIL*HC943B to the open position and observes that the up arrow light is on. The valve position is >0%.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee observes pressure in accumulator decreasing on SIL-PI962 or 963.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td>Standard:
Examinee observes ANN MB2A, 4-7B, SI ACC B PRESSURE LO is lit.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

STEP #10	Performance: **4. Locally Place the SI Accumulator Isolation Valve Breakers To OFF And Lock.** • 32-2R-F4M • 32-2R-R5F • 32-2W-F4M • 32-2W-R3J – FINAL –	Critical: Y ☐ N ☒
	Standard: Examinee contacts PEO to locally unlock and place the SI accumulator isolation valve breakers to OFF and Lock.	Grade: S ☐ U ☐
	Cue:	
	Comments: **Simulator instructor: Use trigger 3** to reset the following REMOTEs: SIR 15, SIR 16, SIR 17 and SIR 18 to RO.	
STEP #12	Performance: CONFIRM power removed from SI accumulator isolation valves.	Critical: Y ☐ N ☒
	Standard: OBSERVE "power on" white lights for SI Accumulator Isolation valves extinguished at MB2	Grade: S ☐ U ☐
	Cue: When trigger 3 is complete, call Control Room and report: **SI accumulator isolation valve breakers are Locked OFF, step 4 of GA-7 is complete.**	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.2 Revision: 0/1

Task Title: VENT UNISOLATED SI ACCUMULATORS

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.2 Revision: 0/1

Initial Conditions: The plant has experienced a Loss of Coolant Accident. The control room crew has responded by using the Emergency Operating Procedures and has just completed step 21 of ES-1.2, Post LOCA Cooldown and Depressurization. Shutdown Margin has been verified adequate and ECCS flow is NOT required.

Initiating Cues: The US has directed you to complete step 22, “Check If SI Accumulators Should Be Isolated,” of ES-1.2, “Post LOCA Cooldown and Depressurization”.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: ARM COPPS

JPM Number: 2K15 S.3 Revision: 0/1

Initiated:

John Follett ______________________ ____________

Developer Date

Reviewed:

Bob Royce ______________________ ____________

Technical Reviewer Date

Approved:

Paul Scott ______________________ ____________

Facility Reviewer Date

JPM Number: 2K15 S.3 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 17, delete JPM Questions. – Pg 16, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pg 3, Change K/A number from 010-000-K4.03 to 010-K4.03. – Pg 4, Update to IC-360. Delete Simulator Requirement #4, not applicable. Update Initial Conditions with as found Plant Parameters, and General Prerequisites of OP 3208 are met. – Pg 4, update Initiating Cue to arm COPPS Train A only in accordance with OP 3301I, section 4.1. Delete STEPS to arm Train B. – Pgs 9&10, STEPS #9 and #12: Change Standard to request an Independent Verification. – Pg 11, STEP #13: Delete reference to Train B.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ____________________

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

System: ____________________

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15 minutes

Task Number(s): 010-01-041

Applicable To: SRO ______ STA ______ RO X PEO ______

K/A Number: 010-K4.03 K/A Rating: 3.8/4.1

Method of Testing: Simulated Performance: ______ Actual Performance: X

Location: Classroom: ______ Simulator: X In-Plant: ______

Task Standards:

Required Materials:
(procedures, equipment, etc.)

General References: OP 3208, Plant Cooldown, Rev. 022-09

OP 3301I, Operation of the Cold Overpressure Protection System, Rev. 007-02

OP 3301I–001, Cold Overpressure Protection System (COPPS) Arming Checklist, Rev. 008-02

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.3 Revision : 0/1

Initial Conditions:	The control room team is progressing through OP 3208, Plant Cooldown. Plant parameters are: • RCS Pressure 360 psia • Tc ≈ 244 °F • Pzr Lvl 50% (cold cal) General Prerequisites of OP 3208 are met.
Initiating Cues:	The US has directed you to arm COPPS Train A in accordance with OP 3301I section 4.1.
Simulator Requirements:	1. Reset to **IC-360.** 2. Place the simulator in "run". 3. Call up the subcooling screen at the RO desk. 4. Acknowledge and reset annunciators and place the simulator in "freeze". 5. Place the simulator in run when the examinee has received the initial conditions and initiating cues.

*** * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

START TIME: ____________

<table>
<tr><td rowspan="4">S T E P
1</td><td>Performance:
Obtains a copy of OP 3301I, “Operation of the Cold Overpressure Protection System “and form OP 3301I-001, “Cold Overpressure Protection System (COPPS) Arming Checklist”.
4.1 Arming COPPS Train A
4.1.1 VERIFY the General Prerequisites are met.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
Provide the cue: General Prerequisites are met.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">S T E P
2</td><td>Performance:
NOTE
A key (Shift Manager key locker) is required to open Train A Safeguards Test Cabinet.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reads NOTE.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

<table>
<tr><td rowspan="4">STEP #3</td><td>Performance:
4.1.2 CHECK the following conditions and INITIAL OP 3301I-001 for Train A:
• 3RCS*PCV455A, pressurizer PORV, OPERABLE
• 3RCS*MV8000A, PORV block valve, open
• “PORV LOSS OF POWER TRAIN A/B” (MB4C 1-2), not lit
• The red “GENERAL WARNING” indicator lamp on the front of Train A SSPS logic cabinet is not lit
• No work in progress on Train A SSPS
• Lamp 022 in cabinet 1 of 3RPS*PNLSAFA1, Train A safeguards test cabinet, lit</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
1. Checks 3RCS*PCV455A, pressurizer PORV indicating lights are green ON, red OFF and initials checklist.
2. Checks 3RCS*MV8000A, PORV block valve indicating lights are green OFF, red ON and initials checklist.
3. Checks MB4C 1-2 is <u>NOT</u> lit and initials checklist.
4. Checks the red “GENERAL WARNING” indicator lamp on the front of Train A SSPS logic cabinet is <u>NOT</u> lit and initials checklist.
5. Checks there is no work in progress on Train A SSPS and initials checklist.
6. Checks Lamp 022 in cabinet 1 of 3RPS*PNLSAFA1, Train A safeguards test cabinet is ON and initials checklist.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
When examinee reaches #4 provide the cue: Red General Warning light is OFF.
When examinee reaches #5 provide the cue: No work is in progress on Train A of SSPS.
When examinee reaches #6 provide the cue: Lamp 022 is ON.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #4</td><td>Performance:
4.1.3 PERFORM CHANNEL CHECK on all wide range Thot channels and INITIAL OP 3301I-001.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

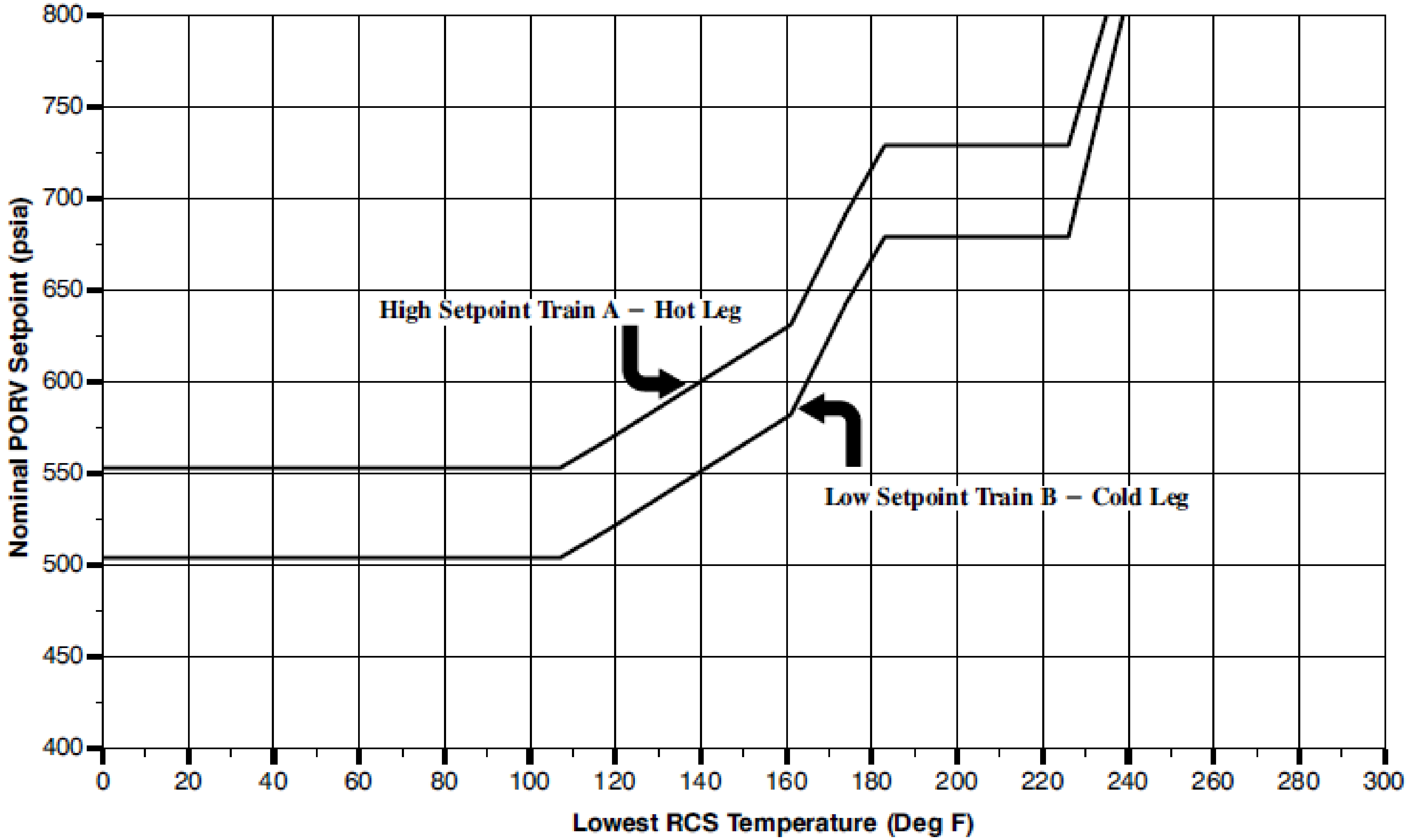
S T E P # 5	Performance: 4.1.4 PERFORM CHANNEL CHECK on wide range RCS pressure channel 405 and INITIAL OP 3301I-001.	Critical: Y ☐ N ☒
	Standard: Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 6	Performance: 4.1.5 Refer To Attachment 1 and CHECK RCS pressure less than the nominal PORV setpoint for the lowest RCS hot leg temperature as indicated by the "High Setpoint Train A – Hot Leg" curve and INITIAL OP 3301I-001.	Critical: Y ☒ N ☐
	Standard: Checks RCS temperature and pressure and compares these values to Attachment1. Concludes the acceptance criteria is met and initials checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

Attachment 1
Cold Overpressure Protection Setpoints Composite
(Sheet 1 of 1)



PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

STEP		
STEP # 7	Performance: 4.1.6 CHECK at least one RCS loop stop valve open in at least three loops and INITIAL OP 3301I-001.	Critical: Y ☐ N ☒
	Standard: Checks the valve position indication lights on MB4 and observes all loop stop valves indicate green OFF, red ON and initials checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 8	Performance: 4.1.7. CHECK "PRESSURE APPROACHING COPS SETPOINT (PCV-455A)" annunciator (MB4A 1-2), not lit and INITIAL OP 3301I-001.	Critical: Y ☐ N ☒
	Standard: Checks that annunciator MB4A 1-2 is not lit and initials checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 9	Performance: 4.1.8 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	Critical: Y ☐ N ☒
	Standard: Requests an Independent Verification.	Grade: S ☐ U ☐
	Cue: If requested to perform an Independent Verification, provide the cue: **Independent Verification is complete and initialed on checklist.**	
	Comments:	
STEP # 10	Performance: 4.1.9 PLACE 3RCS*PCV455A, "PORV" (MB4), in "AUTO" and INITIAL OP 3301I–001.	Critical: Y ☐ N ☒
	Standard: Observes that the control switch for 3RCS*PCV455A is aligned to the "auto" position and initials checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

STEP #11	Performance: 4.1.10 PERFORM the following to arm COPPS Train A:	
	Performance: a. PLACE "COPPS" "ARM/BLOCK TR A" switch (MB4) in "ARM."	Critical: Y ☒ N ☐
	Standard: Rotates the train A COPPS ARM/BLOCK switch (MB4) to the "ARM" position.	Grade: S ☐ U ☐
	Performance: b. CHECK "COPPS" "ARM/BLOCK TR A" white "ARM" light, lit.	Critical: Y ☒ N ☐
	Standard: Confirms the white "ARM" light is lit for train A.	Grade: S ☐ U ☐
	Performance: c. INITIAL OP 3301I-001.	Critical: Y ☐ N ☒
	Standard: Initials the checklist.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #12	Performance: 4.1.11 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	Critical: Y ☐ N ☒
	Standard: Requests an Independent Verification.	Grade: S ☐ U ☐
	Cue: When requested, provide the cue: **Independent Verification is complete and has been initialed on the checklist.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

STEP #13	Performance: Notify the US that COPPS Train A is armed in accordance with OP3301I sections 4.1.	Critical: Y ☐ N ☒
	Standard: Informs the US that section 4.1 of OP3301I has been completed, Train A of COPPS is armed.	Grade: S ☐ U ☐
	Cue: **Terminating Cue: The evaluation for this JPM is concluded.**	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.3 Revision: 0/1

Task Title: ARM COPPS

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	15 minutes	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.3 Revision: 0/1

Initial Conditions: The control room team is progressing through OP 3208, Plant Cooldown.

Plant parameters are:

- RCS Pressure 360 psia
- Tc ≈ 244 °F
- Pzr Lvl 50% (cold cal)

General Prerequisites of OP 3208 are met.

Initiating Cues: The US has directed you to arm COPPS Train A in accordance with OP 3301I section 4.1.

Examinee: ___________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Aligning RHR for SDR Inventory Control

JPM Number: 2K15 S.4 Revision: 0/1

Initiated:

John Follett

Developer ______ Date

Reviewed:

Bob Royce

Technical Reviewer ______ Date

Approved:

Paul Scott

Facility Reviewer ______ Date

JPM Number: 2K15 S.4 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 11, delete JPM Questions. – Pg 10, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pg 4, Initial conditions: add plant conditions. Initiating Cues: Add that Prerequisites have been met. Add that another operator will maintain RCS temperature control. Simulator Requirements: Add bullet to ensure 3CCP*FV66B is partially open with temperature stable.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

System: ______

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 8

Task Number(s): 005-01-002/019

Applicable To: SRO ____ STA ____ RO X PEO ____

K/A Number: 005-A4.01; 005-4.02 K/A Rating: 3.6 / 3.4; 3.4 / 3.1

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards: Satisfactorily align RHR Train A for shutdown risk inventory control.

Required Materials:
(procedures, equipment, etc.)

General References: OP 3310A, Residual Heat Removal System, Rev. 017-08

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.4 Revision : 0/1

Initial Conditions:	The plant is in MODE 5 post refueling, with various maintenance activities being completed prior to plant heat up. All RCS loops are full, both trains of RHR are in Cooldown mode, and all steam generators have adequate level. The annunciators are in Master Silence. Plant conditions are as follows: • RCS Pressure ≈ 400 PSIA • Tc ≈ 190 °F
Initiating Cues:	The US has directed you to align RHR Train A for shutdown risk inventory control using OP3310A section 4.21. Prerequisites have been met. Another operator will maintain RCS temperature control.
Simulator Requirements:	• Set for **IC-351** • Hang Mode 5 Tags • Ensure Caution tag on 3SIL*MV8812A reading: **"Maintain valve closed unless needed for inventory control."** • Ensure 3CCP*FV66A is closed (100%) • Ensure 3CCP*FV66B is partially open with temperature stable. • Ensure key 35 is in 3RHS*MV8701B (simulates normal practice when valve is open in this mode)

* * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * *

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

START TIME: ____________

Comments: Candidate may review OP 3310A precautions prior to starting the task. This is acceptable.

S T E P # 1	Performance: **4.21 Aligning RHR Train A for Shutdown Risk Inventory Control** **NOTE** This section aligns Train A of RHR for injection from the RWST for: • Inventory Control requirement of OU-M3-201 "Shutdown Safety Assessment Checklist". This alignment assumes RHR Train A is initially in the cooldown alignment and is not required for Technical Specification requirements or Decay Heat Removal defense in depth. • EOP 3505 direction to restore RCS inventory using RHR.	Critical: Y ☐ N ☒
	Standard: Reviews NOTE.	Grade: S ☐ U ☐
	Cue: If asked about COPPS, provide the following cue: **Both trains of COPPS are being credited for cold overpressure protection.**	
	Comments: RHR A is initially in cooldown alignment.	
S T E P # 2	Performance: 4.21.1 ENSURE one of the following conditions met: • Plant in MODE 5 with at least two RCS loops filled and T/S 3.4.1.4.1 LCO satisfied without crediting RHR Train A • Plant in MODE 6 with water level greater than or equal to 23 feet above the top of the RV flange • Actual loss of RCS inventory and use of RHR is directed by EOP 3505, "Loss of Shutdown Cooling"	Critical: Y ☐ N ☒
	Standard: • RO will request of US whether T/S 3.4.1.4.1 is satisfied. • SRO will check TS and verify from the initial prompt information that T/S 3.4.1.4.1 is met.	Grade: S ☐ U ☐
	Cue: • If requested, provide the following cue: **RCS has been filled in accordance with applicable procedure** • If requested by RO only, provide the following cue: **TS 3.4.1.4.1 is satisfied without crediting RHR train A.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

<table>
<tr><td rowspan="4">STEP
#3</td><td>Performance:
4.21.2 PLACE 3RHS*P1A, “RHR PP A," in “STOP" and then in “PULL-TO-LOCK" (MB2).</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
3RHS*P1A is taken to stop, green light is observed, then taken to P-T-L, and all lights observed to extinguish.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
#4</td><td>Performance:
4.21.3 CLOSE 3RHS*V20, RHR loop A CVCS letdown isolation.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Contacts PEO to close 3RHS*V20.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
• BOOTH: When requested, Trigger 1 to close RHS*V20 using RHR01 to CLOSE.
When completed, call the control room and report: 3RHS*V20 is closed.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
#5</td><td>Performance:
4.21.4 Using key lock switch, CLOSE 3RHS*MV8701B, “A ISOL (OUT)" (MB2):</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Confirms key is in switch 3RHS*MV8701B, then rotates switch to the CLOSE direction. Confirms only GREEN light lit.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:
Switch does <u>NOT</u> have to be held. Valve takes several minutes to close.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

STEP		
STEP # 6	Performance: 4.21.5 PERFORM the following (MB2): a. PLACE 3RHS-FK618, "RHR HDR FLOW," in "MAN."	Critical: Y ☒ N ☐
	Standard: MANUAL selected on controller 3RHS-FK618.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 7	Performance: b. CLOSE the following: • 3RHS-FK618, "RHR HDR FLOW" (100% output) • 3RHS-HC606, "HX A FLOW"	Critical: Y ☒ N ☐
	Standard: 3RHS-FK618 taken to 100% output (Down arrow required.)	Grade: S ☐ U ☐
	Standard: 3RHS-HC606 taken to 0% output.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 8	Performance: 4.21.6 ADJUST 3CCP-HK66A1, "RPCCW HX FLOW" (MB2) as necessary to maintain RPCCW Train A flow requirements.	Critical: Y ☐ N ☒
	Standard: Recognizes that 3CCP*FV66A is closed as an initial condition. (no actions are necessary).	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

S T E P # 9	Performance: 4.21.7 To align 3SIL*MV8809A, "PP A COLD LEG INJ," PERFORM the following: a. IF RCS pressure is greater than 100 psia, OR IF actual loss of RCS inventory is in progress, PERFORM the following: 1) ENSURE 3SIL*MV8809A, "PP A COLD LEG INJ," open (MB2). 2) Go to step 4.21.8.	Critical: Y ☐ N ☒
	Standard: Verifies pressure > 100 psia and 3SIL*MV8809A is OPEN (red light lit, green light off). Proceeds to step 4.21.8.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 1 0	Performance: 4.21.8 To open 3SIL*MV8812A, "RWST/PP A SUCT ISOL," PERFORM the following (MB2): a. REMOVE the following Caution Tag from 3SIL*MV8812A, "RWST/PP A SUCT ISOL," control switch. **"Maintain valve closed unless needed for inventory control."**	Critical: Y ☐ N ☒
	Standard: Removes the caution tag on 3SIL*MV8812A.	Grade: S ☐ U ☐
	Cue: Provide the cue: **You have been given a Tag Removal Sheet for the yellow Caution tag on 3SIL*MV8812A.**	
	Comments:	
STEP #11	Performance: b. OPEN 3SIL*MV8812A, "RWST/PP A SUCT ISOL."	Critical: Y ☒ N ☐
	Standard: Opens 3SIL*MV8812A, confirms RED light lit, GREEN light out.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

STEP #12	Performance: 4.21.9 PLACE 3RHS*P1A, "RHR PP A," in "AUTO" after "STOP" (MB2).	Critical: Y ☒ N ☐
	Standard: Removes 3RHS*P1A from P-T-L, which places it in the AUTO after STOP position. Only green light is illuminated.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #13	Performance: 4.21.10 <u>IF</u> actual loss of RCS inventory is in progress, START 3RHS*P1A, "RHR PP A" (MB2).	Critical: Y ☒ N ☐
	Standard: Recognizes loss of RCS inventory is <u>NOT</u> in progress, does <u>NOT</u> start 3RHS*P1A.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.4 Revision: 0/1

Task Title: Aligning RHR for SDR Inventory Control

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.4 Revision: 0/1

Initial Conditions: The plant is in MODE 5 post refueling, with various maintenance activities being completed prior to plant heat up.

All RCS loops are full, both trains of RHR are in Cooldown mode, and all steam generators have adequate level.

The annunciators are in Master Silence.

Plant conditions are as follows:

- RCS Pressure ≈ 400 PSIA
- Tc ≈ 190 °F

Initiating Cues: The US has directed you to align RHR Train A for shutdown risk inventory control using OP3310A section 4.21.

Prerequisites have been met.

Another operator will maintain RCS temperature control.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Natural Circulation Cooldown using GA-26

JPM Number: 2K15 S.5 Revision: 0/1

Initiated:

John Follett

Developer Date

Reviewed:

Bob Royce

Technical Reviewer Date

Approved:

Paul Scott

Facility Reviewer Date

JPM Number: 2K15 S.5 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/18/15	NRC Validation Comments from week of 7/20/15: – Pg 13, delete JPM Questions. – Pg 12, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pg 3, Change K/A rating from 3.2* / 3.3 to 3.2 / 3.3. – Pgs 4 & 13, Initial Conditions: Add initial plant parameters. – Pg 5, Simulator Requirements: Change Mode 5 to Mode 3, typo. – Pg 9, STEP #9, added Alternate Path Begins. – Pg 11, added new note to provide cooldown rate versus SG pressure.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

System: Main Steam

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 20

Task Number(s): 000-05-101

Applicable To: SRO X STA ____ RO X PEO ____

K/A Number: 039-A1.05 K/A Rating: 3.2 / 3.3

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards: Initiate an RCS cooldown, using ES-0.2, Natural Circulation Cooldown.

Required Materials:
(procedures, equipment, etc.)

General References: ES-0.2, Natural Circulation Cooldown, Rev. 019-01
GA-26, Dumping Steam to Condenser or Atmosphere, Rev. 001

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.5 Revision : 0/1

Initial Conditions:

A loss of offsite power has occurred and the reactor tripped. It's reported that offsite power will not be restored for an extended period of time.

The following conditions exist:

- The control room team has completed through step 4 of ES-0.2, Natural Circulation Cooldown.
- GA - 15, Establishing Boron Concentration For Natural Circulation Cooldown, has been completed and RCS boron concentrations are satisfactory.
- All four MSIV's are closed
- AFW flow has been isolated to the SGs, NR levels approximately 50%
- WR Pressure approximately 2290 psia
- Pzr Level approximately 60%
- Th approximately 553 °F
- Tc approximately 535 °F
- LOP has been reset at MB2

Initiating Cues:

The US has directed you to commence a natural circulation cooldown using ES-0.2 Step 5.

The US directs you to:

- Target a cooldown rate of 20 – 45 °F per hour
- Maintain SG NR level at 40 – 60%

Report when you have established a controlled cooldown of ALL SG's.

A floor instructor will be responsible for all annunciators **EXCEPT** for **MB5**. You may silence MB5 annunciators as necessary.

PPC trends have been set-up on the BOP station and may be adjusted, as needed.

JPM WORKSHEET

JPM Number: 2K15 S.5 Revision : 0/1

Simulator Requirements:

1. **Reset to IC-352** Mode 3 **OR**
2. Reset to IC 13 or any 100% power IC
3. Place Simulator in RUN
4. Insert ED01 (Loss of Offsite Power)
5. Insert IA02B (IAS-C1B trip)
6. Reset LOP at MB2
7. Perform all actions in ES-0.1 and ES-0.2 (through step 4) (excluding performance of GA-26)
8. Restart PPC by inserting the following remotes
   - EDR 18 (MCC1A3 Reset)
   - EDR 44 (Battery 6 inverter 6 trouble reset)
   - PCR01 (Restart Realtime) (start)
   - PCR02 (Ready to start Rtime 58 sec)
   - PCR03 (Rtime start delay) (final value 0)
9. **Build a trend** on the BOP station of SG levels, pressures, and RCS cold leg temperatures.
10. **Stay in freeze until ready to begin.**

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

START TIME: ____________

<table>
<tr><td>Cue:</td><td colspan="2">The simulator set-up is relatively unstable (SG safety valves are beginning to lift). PRIOR to placing the simulator in RUN, ask the candidate if they want to establish (or adjust) PPC trends. Allow the candidate time to do this before placing the simulator in run and beginning the JPM.</td></tr>
<tr><td rowspan="4">STEP #1</td><td>Performance:
<u>CAUTION</u>
RCS cold leg WR temperature must NOT be reduced below 520 °F until main steam line low pressure SI is blocked (P-11).

<u>NOTE</u>
If this procedure is being performed during a loss of offsite power with the wind speed GREATER THAN 90 mph anticipated, the following conditions should be established using this procedure:
• RCS cold leg WR temperature of LESS THAN 400°F
• RCS pressure of GREATER THAN 850 psia
• SI accumulator isolation valves all open</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reads caution and note.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #2</td><td>Performance:
5. Initiate RCS Cooldown To Cold Shutdown
a. Verify boration as specified by GA-15 - COMPLETED</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Recognizes from initiating cue that GA-15 has been completed.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
If requested, report: GA-15 has been completed. Cooldown can commence with current RCS boron concentrations.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

S T E P # 3	Performance: b. Maintain cooldown rate in RCS cold legs – LESS THAN 50 °F/hr	Critical: Y ☐ N ☒
	Standard: Reads step and proceeds to next step.	Grade: S ☐ U ☐
	Cue:	
	Comments: This limit will be met by the US direction to maintain cooldown rate at approximately 30 °F/hr (initiating cue). If needed, ensure examinee understands desired cooldown rate is per US direction.	
S T E P # 4	Performance: c. Using GA-26, Dump steam to initiate RCS cooldown	Critical: Y ☐ N ☒
	Standard: Reads step and proceeds to GA-26.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 5	Performance: GA-26, Dumping Steam to Condenser or Atmosphere **NOTE** • Auxiliary feed flow directly impacts RCS heatup and cooldown rates and must be considered along with dumping steam. • Steam line pressure changes more rapidly if fewer than four SGs are used. • After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded. • Instrument air compressor B is tripped by SI, CDA and LOP.	Critical: Y ☐ N ☒
	Standard: Reads note and proceeds to next step.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

<table>
<tr><td rowspan="4">STEP
6</td><td>Performance:
1. Verify Plant Conditions
a. Check instrument air compressors – AT LEAST ONE RUNNING</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
At MB1, observes 3IAS-C1A and 3IAS-C1B are not running (Green lights ‘On’, Red lights ‘Off’). Moves to the RNO column.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
7</td><td>Performance:
RNO 1.a. Perform the following:
1) <u>IF</u> SI or CDA present,
<u>THEN</u>
Place both trains of steam dump interlock selector switches in OFF and Proceed to step 6.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Observes the following annunciators not lit:
• MB2B 5-5 “CDA”
• MB2B 5-9 “SI”

Proceeds to next step.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
8</td><td>Performance:
2) RESET LOP if required.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Recognizes that LOP has been reset from initiating cue (or cue below) and proceeds to next step.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
As needed, report; LOP has been reset.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

<table>
<tr><td rowspan="4">STEP #9</td><td>Alternate Path Begins
Performance:
3) START one instrument air compressor.
<u>IF</u> instrument air can <u>NOT</u> be restored,
<u>THEN</u>
Place both trains of steam dump interlock selector switches in OFF and Proceed to step 6.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
1. At MB2, closes breaker for 3IAS-C1B and observes breaker remaining open, green light ON and amber light ON.
2. Recognizes failure of 3IAS-C1B and places both trains of steam dump interlock selector switches in OFF.
3. Proceeds to step 6.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #10</td><td>Performance:
6. Dump Steam to Atmosphere Using SG Atmospheric Relief Bypass Valves
a. Place the desired SG atmospheric relief bypass valves' CONTROL LOCKOUT switches in NORMAL (MB5R)
• 3MSS*MOV74A
• 3MSS*MOV74B
• 3MSS*MOV74C
• 3MSS*MOV74D</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Places Control Lockout switches (MB5R) in Normal for:
• 3MSS*MOV74A
• 3MSS*MOV74B
• 3MSS*MOV74C
• 3MSS*MOV74D</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

Notes to Evaluator :
During upcoming cycling of the atmospheric relief bypass valves, thermal overloads may actuate causing an annunciator, MB8B 2-8, MCC LOSS OF CNTL POWER, to alarm. This alarm is generated when motor thermal limits are exceeded. An overloaded condition does not render the valve inoperable, but serves as a warning to the operator that the motor may reach a point where damage can occur that will render the valve motor inoperable.
Every time the valve is positioned, the motor is subjected to starting current, which is typically 6 to 8 times normal running current. The valve motors are designed to withstand 7 starts per hour with a cool down period of 1.5 hours after the seventh start. Caution should be used when cycling a valve to control RCS temperature or steam generator pressure to prevent exceeding design start conditions of the valve motor.

STEP #11	Performance: b. Throttle the desired SG atmospheric relief bypass valves to reduce or maintain RCS temperature or SG pressures as specified by the procedure in effect • 3MSS*MOV74A • 3MSS*MOV74B • 3MSS*MOV74C • 3MSS*MOV74D	Critical: Y ☒ N ☐
	Standard: Momentarily depresses Open pushbutton (throttles) the following valves: • 3MSS*MOV74A • 3MSS*MOV74B • 3MSS*MOV74C • 3MSS*MOV74D 1. Monitors RCS temperatures (may use MB indications for RCS Tcold or PPC trends for RCS Tcold). 2. Makes adjustments to bypass valves as necessary to obtain approx. 30 °F/hr cooldown rate. 3. Monitors SG levels. Adjusts AFW throttle valves to maintain SG levels between 40 – 60%.	Grade: S ☐ U ☐
	Cue: If requested to use two handed operation provide the cue: **You have permission to use two handed operation.**	
	Comments: 1. If P19 actuates on MB4D 4-5, the floor instructor should reset both trains of "Steam Line Isol SI" signals on MB2. 2. If MB8B 2-8, MCC Loss of Control Power actuates, examinee should refer to ARP and inform US. 3. Takes 2-3 seconds with OPEN button pressed to position valves for the desired cooldown rate. Further adjustments will be necessary.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

Notes to evaluator:

1. Cooldown rate and SG pressure correspond as follows:

°F/hr	psi/min
25	3.0
30	3.5
45	5.0
50	5.5

2. The critical nature of this step is not to exceed a 50 °F/hr cooldown rate (as measured using individual loop Tcold temperatures) over a 15 minute period. If this rate is exceeded over 15 minutes, candidate may still PASS if they take action to reduce the cooldown such that the 50 °F/hr limit would not be exceeded. Otherwise, a JPM failure will occur.
3. Under these plant conditions (MSIV's closed, Natural Circulation), it will be very difficult to achieve exactly 30 °F/hr cooldown per SG. The goal is establish a controlled cooldown less than 50 °F/hr (head voiding concerns). The JPM does not have to continue until a cooldown of exactly 30 °F/hr is established. When the examiner has observed a controlled cooldown, he or she may end the JPM.
4. A PASS will be given for any cooldown rate, provided ALL of the following are met:
   1) 50 °F/hr is not exceeded (see earlier discussion).
   2) All RCS temperatures are trending down.

SG inventory control is maintained within an allowable band of greater than 8% NR and less than 80% NR.

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.5 Revision: 0/1

Task Title: Natural Circulation Cooldown using GA-26

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.5 Revision: 0/1

Initial Conditions: A loss of offsite power has occurred and the reactor tripped. It's reported that offsite power will not be restored for an extended period of time.

The following conditions exist:

- The control room team has completed through step 4 of ES-0.2, Natural Circulation Cooldown.
- GA - 15, Establishing Boron Concentration For Natural Circulation Cooldown, has been completed and RCS boron concentrations are satisfactory.
- All four MSIV's are closed
- AFW flow has been isolated to the SGs, NR levels approximately 50%
- WR Pressure approximately 2290 psia
- Pzr Level approximately 60%
- Th approximately 553 °F
- Tc approximately 535 °F
- LOP has been reset at MB2

Initiating Cues: The US has directed you to commence a natural circulation cooldown using ES-0.2 Step 5.

The US directs you to:

- Target a cooldown rate of 20 – 45 °F per hour
- Maintain SG NR level at 40 – 60%

Report when you have established a controlled cooldown of ALL SG's.

A floor instructor will be responsible for all annunciators **EXCEPT** for **MB5**. You may silence MB5 annunciators as necessary.

PPC trends have been set-up on the BOP station and may be adjusted, as needed.

Examinee: ________________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to an Inadvertent Containment Isolation Phase ’A’

JPM Number: 2K15 S.6 Revision: 0/2

Initiated:

John Follett

Developer Date

Reviewed:

Bob Royce

Technical Reviewer Date

Approved:

Bob Royce

Facility Reviewer Date

JPM Number: 2K15 S.6 Revision: 0/2

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
6-25-15	Changed to alternate path at step 17 per NRC suggestion. Confirmed Safety Function 5 is accurate.	0 / 1
8/18/15	NRC Validation Comments from week of 7/20/15: – Pg 3, Change K/A from 013–A4.02 to 103–A2.03. Change K/A rating from 4.3 / 4.4 to 3.5 / 3.8. – Pgs 3 & 22: Change Validation Time from 12 to 17 minutes. – Pg 6, STEP #5: Change to Non Critical step. – Pg 11, STEP #18: JPM does NOT meet the requirements to be credited as Alternate Path. Delete comment. – Pg 16, STEP #33: Remove requirement from Standard and Cue to call up PPC display of CTMT sump pump activity. – Pg 21, STEP #45: Change T/S 3.4.5 to 3.4.4 – typo. – Pg 23, delete JPM Questions. – Pg 22, Delete Work Practice Performance, Operator Fundamentals and JPM Questions.	0/2

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

System: ESF

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 17

Task Number(s): 013-04-012

Applicable To: SRO X STA ____ RO X PEO ____

K/A Number: 013–A4.02 K/A Rating: 4.3 / 4.4

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards: All critical steps are performed satisfactorily. All sequential steps are performed in proper procedural sequence.

Required Materials:
(procedures, equipment, etc.)

General References: AOP 3578, Response to an Inadvertent Containment Isolation Phase A, Rev. 003

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.6 Revision : 0/2

Initial Conditions: The plant was at 100% power when an Inadvertent Containment Isolation Phase A (CIA) occurred while conducting SSPS surveillance testing.

Initiating Cues: The US has directed you to carry out the actions of AOP 3578, *Response to an Inadvertent Containment Isolation Phase A,* starting with step 1.

Simulator Requirements:

1. Reset to **IC-353 OR**
2. Reset to IC 18, 100% steady state, MOL (or any 100% Power IC), and carry out steps 3 – 5 below.
3. Insert malfunctions RP03A/B (Containment Isolation phase A, train A and B.
4. Place the simulator in RUN, wait for all CIA actuated components to fully reposition.
5. Remove malfunctions RP03A/B (This will allow the examinee to reset CIA).
6. **Close 3CCP*AOV178C**.
7. **Throttle RCP seals** with CVR42/43/44/45 for seal injection flows in the band of 8 – 13 gpm or higher.
8. Place the simulator in "Freeze."
9. If applicable, **remove the YCT** on PGS valves.

Approximate setup time is 5 minutes.

*** * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **<u>ALL</u>** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **<u>NO</u>** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

START TIME: ____________

<table>
<tr><td rowspan="4">S T E P
1</td><td>Performance:
<u>CAUTION</u>
If a Reactor Trip occurs or is required, go to E–0, Reactor Trip or Safety Injection.

<u>NOTE</u>
A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Obtains a copy of AOP 3578 and reviews the CAUTION and NOTE prior to step 1.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">S T E P
2</td><td>Performance:
1. Verify Containment Isolation – NOT REQUIRED
a. Check safety injection signal – NOT ACTUATED</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Observes that safety injection actuation annunciators are NOT lit at MB2B 5-9 or MB4D 1-6.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP # 3	Performance: b. Check letdown containment isolation valves – CLOSED • 3CHS*CV8152 OR • 3CHS*CV8160	Critical: Y ☐ N ☒
	Standard: Observes 3CHS*CV8152 and 3CHS*CV8160 closed (indicating lights are red OFF and green ON).	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 4	Performance: c. Simultaneously Perform the following: • CLOSE letdown orifice isolation valves • CLOSE the charging flow control valve	Critical: Y ☒ N ☐
	Standard: Simultaneously presses CLOSE on 3CHS*AV8149C <u>AND</u> the ⇓ pushbutton for 3CHS-FK121. Observes 3CHS*AV8149C indicating lights shift to red OFF and green ON. Observes flow indicator 3CHS-FI121 indicates 0%.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 5	Performance: d. Adjust seal injection flow, as necessary to control pressurizer level – 8 TO 13 GPM	Critical: Y ☐ N ☒
	Standard: Throttles 3CHS-HCV182 as necessary by rotating potentiometer of 3CHS-HC182 (MB3).	Grade: S ☐ U ☐
	Cue:	
	Comments: Candidate should throttle to the low end of the band to minimize the increase in PZR level. Flow within 8 to 13 GPM is adequate to satisfy the critical nature of this step.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP # 6	Performance: **NOTE** The isolation of Instrument Air to Containment will eventually fail the Pressurizer Spray valves closed.	Critical: Y ☐ N ☒
	Standard: Reviews the note.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 7	Performance: **2. Establish Plant Control and Monitoring** a. Reset CIA	Critical: Y ☒ N ☐
	Standard: Resets CIA by depressing the Train A and Train B CIA reset push buttons on MB2.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 8	Performance: b. Notify I&C to investigate and repair the cause of the inadvertent CIA signal	Critical: Y ☐ N ☒
	Standard: Calls I&C to investigate or requests the US make the call to I&C.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 9	Performance: c. Proceed to step 4.	Critical: Y ☐ N ☒
	Standard: Proceeds to step 4.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP		
STEP #10	Performance: **4. Establish Instrument Air To Containment** a. Check instrument air compressors – AT LEAST ONE RUNNING	Critical: Y ☐ N ☒
	Standard: Confirms the 'B' instrument air compressor is running by observing indicating lights green OFF, red ON (MB1).	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #11	Performance: b. OPEN instrument air Ctmt isolation valves: • 3IAS*PV15 • 3IAS*MOV72	Critical: Y ☒ N ☐
	Standard: Presses the OPEN push button for 3IAS*PV15 and observes indicating lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Presses the OPEN push button for 3IAS*MOV72 and observes indicating lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments: Valves can be opened in any order.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #12	Performance: **5. Align RCP Seal Return Flow To Charging Pump Suction** a. OPEN seal return containment isolation valves: • 3CHS*MV8100 • 3CHS*MV8112	Critical: Y ☒ N ☐
	Standard: Presses the OPEN push button for 3CHS*MV8100 and observes indicating lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Presses the OPEN push button for 3CHS*MV8112 and observes indicating lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments: Valves can be opened in any order.	
STEP #13	Performance: **6. Check If Normal Letdown Can Be Established** a. Check pressurizer level – GREATER THAN 22%	Critical: Y ☐ N ☒
	Standard: Checks PZR level greater than 22% by observing CVCS trend for RCS-L461 on the PPC, OR checking meters RCS*LI459A, LI460A and LI461A on MB4.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #14	Performance: b. Check head vent letdown to PRT – IN SERVICE	Critical: Y ☐ N ☒
	Standard: Observes head vent isolation valves 3RCS*SV8095A & B and 3RCS*SV8096A & B (MB3) indicate closed, confirming head vent letdown is not in service. Transitions to the RNO column.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #15	Performance: RNO b. Proceed to step 6.d.	Critical: Y ☐ N ☒
	Standard: Moves on to step 6.d.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #16	Performance: d. Establish normal letdown flow using GA-13	Critical: Y ☐ N ☒
	Standard:	Grade: S ☐ U ☐
	Cue: Once the Candidate obtains GA-13, provide the following cue: **Another RO will establish normal letdown flow using GA-13, continue with AOP 3578.**	
	Comments:	
STEP #17	Performance: **7. Restore RPCCW System To Normal** a. Check RCP thermal barrier cooling – ESTABLISHED TO ALL RCPs	Critical: Y ☐ N ☒
	Standard: Determines that there is <u>NOT</u> adequate thermal barrier cooling for RCP C by observing either of the following: • Thermal barrier flow low annunciator MB4B 3-6A is lit. • Valve 3CCP*AOV178C (MB1) indicates closed (indicating lights are green ON, red OFF). Transitions to the RNO column.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

<table>
<tr><td rowspan="4">STEP #18</td><td>Performance:
RNO a. Open affected thermal barrier return isolation valve(s):
• RCP C – 3CCP*AOV178C</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Opens 3CCP*AOV178C, observes indicating lights change to green OFF, red ON.
Confirms annunciator MB4B 3-6A is <u>NOT</u> lit.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #19</td><td>Performance:
b. Restore Reactor Plant Chill Water System:
1) Refer to the following and Perform applicable actions:
• T/S 3.6.1.4, Containment Pressure
• T/S 3.6.1.5, Air Temperature
• T/S 3.7.14.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Candidate informs the US to Refer to T/S 3.6.1.4, 3.6.1.5 and 3.7.14.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #20</td><td>Performance:
2) Refer to OP 3330C, "Recover from Loss Of Power, Containment Isolation Phase A, or Loss of Instrument Air" and Restore containment and non–safety headers</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
Provide the cue: Another RO will restore containment and non-safety headers, and complete step 7. Continue in AOP 3578 at step 8.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

<table>
<tr><td rowspan="4">STEP
#21</td><td>Performance:
<u>NOTE</u>
3DGS*CTV24 and 3DAS*CTV24 need to be reset following CIA by momentarily depressing AUTO / OPEN. When momentarily depressing AUTO / OPEN, 3DGS*CTV24 or 3DAS*CTV24 may stay open until the next pumping operation occurs.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reviews the note.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
#22</td><td>Performance:
8. Restore Affected Systems
a. Check RCS leakage monitor, 3CMS*RE 22 – IN SERVICE WITH THE FOLLOWING VALVES OPEN:
• 3CMS*CTV 20
• 3CMS*CTV 21
• 3CMS*CTV 23
• 3CMS*MOV 24</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
• Determines that 3CMS*CTV20, 21, 23 and MOV24 are CLOSED (MB1) by observing indicating lights as green ON, red OFF.
• Transitions to the RNO column.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

S T E P # 2 3	Performance: RNO a. Place 3CMS*RE 22 in service as follows: 1) Refer to the following and Perform applicable actions: • T/S 3.3.3.1 Radiation Monitoring for Plant Operation • T/S 3.4.6.1, Reactor Coolant System Leakage Detection System	Critical: Y ☐ N ☒
	Standard: Candidate informs the US to refer to T/S 3.3.3.1 and 3.4.6.1.	Grade: S ☐ U ☐
	Cue: Provide the following cue: **Tech Spec review is complete, no applicable action is necessary. Continue on in AOP 3578.**	
	Comments:	
S T E P # 2 4	Performance: 2) OPEN the following • 3CMS*CTV 20 • 3CMS*CTV 21 • 3CMS*CTV 23 • 3CMS*MOV 24	Critical: Y ☒ N ☐
	Standard: Opens 3CMS*CTV20 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Opens 3CMS*CTV21 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Opens 3CMS*CTV23 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Opens 3CMS*MOV24 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments: The CMS containment isolation valves can be opened in any order.	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP		
STEP #25	Performance: 3) Refer to OP 3312B and Restore 3CMS*RE22 to service.	Critical: Y ☐ N ☒
	Standard:	Grade: S ☐ U ☐
	Cue: Provide the following cue: **Another RO will restore 3CMS*RE22 to service. Continue on in AOP 3578.**	
	Comments:	
STEP #26	Performance: b. Check Reactor Plant Gaseous Drains - IN SERVICE WITH THE FOLLOWING VALVES OPEN: • 3DGS*CTV24 • 3DGS*CTV25	Critical: Y ☐ N ☒
	Standard: Candidate determines that 3DGS*CTV24 and 25 CLOSED by observing indicating lights as green ON, red OFF. Transitions to the RNO column.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #27	Performance: RNO b. Perform the following: 1) OPEN 3DGS*CTV25.	Critical: Y ☒ N ☐
	Standard: Opens 3DGS*CTV25 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #28	Performance: 2) Momentarily press 3DGS*CTV24 AUTO / OPEN.	Critical: Y ☐ N ☒
	Standard: Momentarily depresses the 3DGS*CTV24 AUTO / OPEN push button and observes the valve remains closed.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #29	Performance: c. Check Reactor Plant Aerated Drains – IN SERVICE WITH THE FOLLOWING VALVES OPEN: • 3DAS*CTV24 • 3DAS*CTV25	Critical: Y ☐ N ☒
	Standard: Determines that 3DGS*CTV24 and 25 CLOSED by observing indicating lights as green ON, red OFF. Transitions to the RNO column.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #30	Performance: RNO c. Perform the following: 1) Refer to T.S. 3.4.6.1.	Critical: Y ☐ N ☒
	Standard: Informs the US to refer to T.S. 3.4.6.1.	Grade: S ☐ U ☐
	Cue: **Tech Spec review is complete, continue on in AOP 3578.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP		
STEP #31	Performance: 2) OPEN 3DAS*CTV25.	Critical: Y ☒ N ☐
	Standard: Opens 3DAS*CTV25 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #32	Performance: 3) Momentarily press 3DAS*CTV24 AUTO / OPEN.	Critical: Y ☐ N ☒
	Standard: Momentarily depresses the 3DAS*CTV24 AUTO / OPEN push button and observes the valve remains closed.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #33	Performance: 4) Verify 3DAS*P2A/B and 3DAS-P10 automatic operation.	Critical: Y ☐ N ☒
	Standard:	Grade: S ☐ U ☐
	Cue: Provide the following cue: **Another RO will monitor CTMT sump pump activity. Continue on in AOP 3578.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

<table>
<tr><td rowspan="4">STEP #34</td><td>Performance:
d. Check Reactor Plant Gaseous Vents – IN SERVICE WITH THE FOLLOWING VALVES OPEN:
• 3VRS*CTV20
• 3VRS*CTV21</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Candidate determines that 3VRS*CTV20 and 21 CLOSED by observing indicating lights as green ON, red OFF.

Transitions to the RNO column.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #35</td><td>Performance:
RNO d. Perform the following:
1) OPEN 3VRS*CTV20.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Opens 3VRS*CTV20 by depressing the OPEN push button and observing lights shift to green OFF, red ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #36</td><td>Performance:
2) OPEN 3VRS*CTV21.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Opens 3VRS*CTV21 by depressing the OPEN push button and observing lights shift to green OFF, red ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #37	Performance: e. Check fire protection water to containment valves - OPEN: • 3FPW*CTV48 • 3FPW*CTV49	Critical: Y ☐ N ☒
	Standard: Determines that 3FPW*CTV48 and 49 are CLOSED by observing indicating lights as green ON, red OFF. Transitions to the RNO column.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #38	Performance: RNO e. Perform the following: 1) Refer to the following and Perform applicable actions: • TRM 3.7.12.2, Spray and/or Sprinkler Systems • TRM-3.7.12.5, Fire Hose Stations	Critical: Y ☐ N ☒
	Standard: Candidate informs the US to refer to TRM 3.7.12.2 and 3.7.12.5.	Grade: S ☐ U ☐
	Cue: **Tech Spec review is complete, continue on in AOP 3578.**	
	Comments:	
STEP #39	Performance: 2) OPEN 3FPW*CTV48.	Critical: Y ☒ N ☐
	Standard: Opens 3FPW*CTV48 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

<table>
<tr><td rowspan="4">STEP #40</td><td>Performance:
3) OPEN 3FPW*CTV49.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Opens 3FPW*CTV49 by depressing the OPEN push button and observing lights shift to green OFF, red ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #41</td><td>Performance:
f. Check PGS to containment valves – OPEN:
• 3PGS*CV8046
• 3PGS*CV8028</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Candidate determines that 3PGS* CV8046 and CV8028 are CLOSED by observing indicating lights as green ON, red OFF.

Transitions to the RNO column.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #42</td><td>Performance:
RNO f. OPEN valves as directed by SM/ US.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Candidate requests from the US whether to open the PGS valves to containment.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
When asked, provide the following cue: Open the PGS valves to containment.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #43	Performance: OPEN the PGS valves to containment as directed.	Critical: Y ☒ N ☐
	Standard: Opens 3PGS* CV8046 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Standard: Opens 3PGS* CV8028 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue: Provide the following cue: **OPEN 3PGS*CV8046 and 3PGS*CV8028.**	
	Comments: The PGS to containment valves can be opened in any order.	
STEP #44	Performance: **9. If Necessary, Refer To OP 3219, "Post–Transient MCB Walkdown," And Verify Normal Component Position**	Critical: Y ☐ N ☒
	Standard: Informs the US to refer to OP 3219, "Post–Transient MCB Walkdown" to verify normal component position.	Grade: S ☐ U ☐
	Cue: Provide the following cue: **Another RO will carry out OP 3219, "Post–Transient MCB Walkdown".**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

STEP #45		
	Performance: **10. Determine If Plant Operation Can Continue** • T/S 3,3,2, Engineered Safety Features Actuation System Instrumentation • T/S 3.3.3.1, Radiation Monitoring For Plant Operation • T/S 3.4.4, Relief Valves • T/S 3.4.6.1, Reactor Coolant System Leakage Detection System	Critical: Y ☐ N ☐
	Standard: Candidate informs the US to refer to T/S 3.3.2, 3.3.3.1, 3.4.4 and 3.4.6.1.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.6 Revision: 0/2

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	17	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.6 Revision: 0/2

Initial Conditions: The plant was at 100% power when an Inadvertent Containment Isolation Phase A (CIA) occurred while conducting SSPS surveillance testing.

Initiating Cues: The US has directed you to carry out the actions of AOP 3578, *Response to an Inadvertent Containment Isolation Phase A,* starting with step 1.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Transferring 34D To Offsite Power

JPM Number: 2K15 S.7 Revision: 0/1

Initiated:

John Follett

Developer ______ Date

Reviewed:

Bob Royce

Technical Reviewer ______ Date

Approved:

Paul Scott

Facility Reviewer ______ Date

JPM Number: 2K15 S.7 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/18/15	NRC Validation Comments from week of 7/20/15: – Pg 13, delete JPM Questions. – Pg 12, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pgs 4 & 13: Add plant conditions to Initial Conditions. Change transfer from "offsite power" to "the NSST". Delete instructions for diesel to remain loaded from Initiating Cue. – Pg 4, Simulator Requirements: Add new step "Place 3HVR-HVU2A (VP1 center), Aux Bldg Supply Fan, to STOP. Insert Override CHDI0012 to STOP."	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

System: AC Electrical Distribution

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 062-01-049

Applicable To: SRO ____ STA ____ RO X PEO ____

K/A Number: 062-A2.12 K/A Rating: 3.2 / 3.6

Method of Testing: Simulated Performance: ____ Actual Performance: X

Location: Classroom: ____ Simulator: X In-Plant: ____

Task Standards: Satisfactorily complete restoring off site power to a 4.16 KV bus during the recovery from a loss of power.

Required Materials:
(procedures, equipment, etc.)

General References: GA-2, Transferring 34C or 34D to Offsite Power, Rev. 003

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.7 Revision : 0/1

Initial Conditions: A temporary UV condition has resulted in bus 34D being powered by the "B" EDG. Bus 34B is powered by the NSSA.

Plant conditions are as follows:

- RCS Pressure ≈ 110 psia
- Temperature ≈ 117 °F

Initiating Cues: The US has directed you to transfer emergency bus 34D to the NSST using GA-2.

Simulator Requirements:

1. Reset to **IC-354**, Cold Shutdown, RCS Pressure ≅ 110 psia, temperature ≅ 117°F.
2. Insert malfunction ED04D (34D bus differential lockout). Place the simulator in "RUN".
3. After the plant stabilizes, remove the malfunction. The "B" EDG output breaker will auto close and energize bus 34D. Adjust "B" EDG frequency to 60 Hz.
4. Match flags for 34D - 34B tie breaker. Close the breakers for the "B" train emergency load centers.
5. **Match Bus Voltage, 34D to 34B.**
6. Place 3HVR-HVU2A (VP1 center), Aux Bldg Supply Fan, to STOP. Insert Override CHDI0012 to STOP.
7. Acknowledge the clear/reset alarms and place the simulator in "FREEZE".
8. After the examinee has received the initiating cues and initial conditions, place the simulator in "RUN".

Approximate setup time is 4 minutes.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

START TIME: ____________

S T E P # 1	Performance: Obtain a copy of GA-2.	Critical: Y ☐ N ☒
	Standard: Obtains a copy of GA-2.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 2	Performance: **1. Check Transfer Of Bus 34C – DESIRED** **RNO**– Proceed to step 11.	Critical: Y ☐ N ☒
	Standard: Recognizes from turnover that transfer of Bus 34D desired, proceeds to step 11.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 3	Performance: **11. Check Transfer Of Bus 34D – DESIRED**	Critical: Y ☐ N ☒
	Standard: Confirms that transfer of bus 34D is desired, proceeds to step 12.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

<table>
<tr><td rowspan="4">STEP
4</td><td>Performance:
12. Check Source Supplying Bus 34D – EDG B</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Confirms that EDG B is supplying Bus 34D by one of the following methods:
• Recalls that Initiating Cue stated EDG B is supplying Bus 34D.
OR
• Confirms that EDG B SPLY breaker DGB*34D-2 is closed by observing indicating lights are green OFF, red ON.
• Confirms that 34D–34B TIE breaker 34D*1T-2 is open by observing indicating lights are green ON, red OFF.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
5</td><td>Performance:
<u>NOTE</u>
Switching from “UNIT” to “PARALLEL” will cause diesel generator frequency to decrease.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reviews NOTE.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
6</td><td>Performance:
13. Prepare For EDG B Parallel Operations
a. Reset LOP (MB2)</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Depresses the train "B" LOP RESET pushbutton on MB2.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:
The examinee may also push the Train A LOP reset pushbutton.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

STEP #7	Performance: b. Verify annunciator BUS 34D UNDERVOLTAGE (MB8C 3–2) – NOT LIT	Critical: Y ☐ N ☒
	Standard: Confirms annunciator MB8C 3–2 is NOT in alarm and proceeds to step c.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #8	Performance: c. Press BYPASS for 34D undervoltage block pushbutton (MB8R)	Critical: Y ☒ N ☐
	Standard: Presses the BYPASS pushbutton for 34D U/V block.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #9	Performance: d. Observe undervoltage block white light – NOT LIT	Critical: Y ☐ N ☒
	Standard: Observes the UNDERVOLT RLY OPER white light is OFF.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #10	Performance: e. Adjust diesel SPEED/LOAD switch to obtain frequency 60.8 Hz	Critical: Y ☒ N ☐
	Standard: Rotates the EDG B "SPEED/LOAD" switch to RAISE or LOWER as necessary to obtain a diesel frequency of 60.8 Hz.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

STEP #11	Performance: f. Place B diesel Mode Selector in PARALLEL	Critical: Y ☒ N ☐
	Standard: Rotates the EDG B "MODE SEL" switch to PARALLEL.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #12	Performance: g. Adjust diesel SPEED/LOAD switch to maintain frequency between 59.9 to 60.1 Hz	Critical: Y ☒ N ☐
	Standard: Rotates the EDG B "SPEED/LOAD" switch to RAISE or LOWER as necessary to obtain a diesel frequency of 59.9 to 60.1 Hz.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #13	Performance: **NOTE** The RSSA is "INCOMING" and the EDG is "RUNNING."	Critical: Y ☐ N ☒
	Standard: Reviews NOTE.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

STEP #14	Performance: **14. Check EDG B Parallel To RSSA – DESIRED** **RNO–** Proceed to step 15.	Critical: Y ☐ N ☒
	Standard: Recalls from the Initiating Cue that Bus 34B is powered by the NSSA and proceeds to step 15.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #15	Performance: **NOTE** The NSSA is "INCOMING" and the EDG is "RUNNING."	Critical: Y ☐ N ☒
	Standard: Reviews NOTE.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #16	Performance: **15. Parallel EDG B Diesel To NSSA Through 34B–34D Tie Breaker** a. Check 34B energized from NSST	Critical: Y ☐ N ☒
	Standard: Confirms that NSSA – SPLY breaker NSSA – 34B-2 is closed by observing indicating lights are green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

STEP #17	Performance: b. Place 34B–34D tie Sync Selector switch in ON	Critical: Y ☒ N ☐
	Standard: Places Sync Selector key into the lock for SYNC SEL switch 34D–34B TIE (if necessary) and rotates the switch to ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #18	Performance: c. Synchronize and CLOSE – 34B–34D tie breaker (34D*1T–2)	Critical: Y ☒ N ☐
	Standard: Synchronizes the incoming and running sources, then rotates the 34B-34D TIE breaker 34D*1T-2 to the CLOSE position and observes the lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #19	Performance: d. Place 34B–34D tie synchronizing selector switch in OFF	Critical: Y ☐ N ☒
	Standard: Rotates the SYNC SEL switch 34D–34B TIE to OFF.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

STEP # 20		
	Performance: e. Release BYPASS pushbutton at MB8R, if required	Critical: Y ☐ N ☒
	Standard: Marks the step N/A.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.7 Revision: 0/1

Task Title: Transferring 34D To Offsite Power

Date Performed: ____________________

Examinee: ____________________

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: 2K15 S.7 Revision: 0/1

Initial Conditions: A temporary UV condition has resulted in bus 34D being powered by the "B" EDG. Bus 34B is powered by the NSSA.

Plant conditions are as follows:

- RCS Pressure ≈ 110 psia
- Temperature ≈ 117 °F

Initiating Cues: The US has directed you to transfer emergency bus 34D to the NSST using GA-2.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Stop Auxiliary Building Filtration (Lower Levels)

JPM Number: 2K15 S.8 Revision: 0/1

Initiated:

John Follett ______________________ ____________

Developer Date

Reviewed:

Bob Royce ______________________ ____________

Technical Reviewer Date

Approved:

Paul Scott ______________________ ____________

Facility Reviewer Date

JPM Number: 2K15 S.8 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/18/15	NRC Validation Comments from week of 7/20/15: – Pg 11, delete JPM Questions. – Pg 10, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pgs 4 & 11: Add plant status to Initial Conditions.	0/1

JPM WORKSHEET

Facility: MP3　　　　Examinee: ______

JPM Number: 2K15 S.8　　　　Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

System: Reactor Plant Ventilation

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 088-01-005

Applicable To: SRO ______ STA ______ RO X PEO ______

K/A Number:		K/A Rating:
	APE: 060-AA2.06	3.6 / 3.8
	APE: 060-AA1.02	2.9 / 3.1

Method of Testing: Simulated Performance: ______ Actual Performance: X

Location: Classroom: ______ Simulator: X In-Plant: ______

Task Standards: Satisfactorily complete stopping filtered exhaust of the lower levels of the Auxiliary Building n accordance with OP 3314A, “Auxiliary Building Heating, Ventilation and Air Conditioning”

Required Materials: Simulator
(procedures, equipment, etc.)

General References: OP 3314A, Auxiliary Building Heating, Ventilation and Air Conditioning, Rev. 023-13

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 S.8 Revision : 0/1

Initial Conditions:	The plant is at 100% power, all plant parameters normal. Maintenance activities on the boron evaporator are complete, radiation monitor HVR-RE12 is no longer in alarm. The Aux Building Filter is no longer required to be in service.
Initiating Cues:	The US has directed you to stop manual area filtration of the lower levels of the Auxiliary Building per OP 3314A, Section 4.5.
Simulator Requirements:	1. Reset to **IC-355**. 2. Place the simulator in "RUN". 3. Verify 3HVR*FN14A and 3HVR*FN14B, charging and RPCCW pump supply fans, in "AUTO" (VP1) with the "A" train running.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

START TIME: ____________

STEP # 1	Performance: **4.5 Stopping Manual Area Filtration of Auxiliary Building General Area Lower Levels** 4.5.1 STOP 3HVR-HVU2B, "AUX BLDG" HVU's" (VP1).	Critical: Y ☒ N ☐
	Standard: Rotates control switch to STOP for 3HVR-HVU2B and observes green ON red OFF indications	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 2	Performance: 4.5.2 STOP 3HVR-FN7, "AUX BLDG" "EXH FANS" (VP1).	Critical: Y ☒ N ☐
	Standard: Rotates control switch to STOP for 3HVR-FN7 and observes green ON red OFF indications.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 3	Performance: **NOTE** 3HVR*AOD44A and 3HVR*AOD44B have a cycle time of approximately 45 seconds.	Critical: Y ☐ N ☒
	Standard: Reviews Note.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<table>
<tr><td rowspan="4">STEP
4</td><td>Performance:
4.5.3 <u>IF</u> stopping 3HVR*FN6A, filter exhaust fan unit, PERFORM the following (VP1):
a. PRESS “NORMAL” for 3HVR*AOD44A, charging and RPCCW pump normal exhaust for Train A, and ENSURE 3HVR*AOD44A, normal exhaust, opens.</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Presses “NORMAL” pushbutton for 3HVR*AOD44A and confirms the following indications are observed:
• 3HVR*AOD44A, green light OFF, red light ON</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP
5</td><td>Performance:
b. PLACE 3HVR*FN6A, filter exhaust fan unit, in “STOP” and HOLD.
c. <u>WHEN</u> the following occurs, RELEASE 3HVR*FN6A control switch:
• 3HVR*AOD20A, filter supply, closes
• 3HVR*MOD28A, filter exhaust, closes
• 3HVR*FN6A, exhaust fan, stops
• Filter bank heater, deenergizes</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Presses and holds “FILTER” pushbutton for 3HVR*AOD44A until the following indications are observed:
• 3HVR*AOD20A, green light ON, red light OFF
• 3HVR*MOD28A, green light ON, red light OFF
• 3HVR*FN6A, green light ON, red light OFF
• FLT1A HTR1 red light OFF
• FLT1A HTR2 red light OFF</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

S T E P # 6	Performance: 4.5.4 IF stopping 3HVR*FN6B, filter exhaust fan unit, PERFORM the following (VP1):	Critical: Y ☐ N ☒
	Standard: Marks step "NA" and moves to next step.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
S T E P # 7	Performance: 4.5.5 To shift Auxiliary Building filters to unfiltered alignment, PERFORM the following (VP1): a. PRESS and HOLD "NORMAL" pushbutton for the following dampers: • 3HVR*AOD40A, normal exhaust damper • 3HVR*AOD42A, filter supply damper b. WHEN the following dampers reposition, RELEASE "NORMAL" pushbutton • 3HVR*AOD40A, normal exhaust damper, opens • 3HVR*AOD42A, filter supply damper, closes	Critical: Y ☒ N ☐
	Standard: Presses and holds the "NORMAL" pushbutton for filter/normal exhaust dampers 3HVR*AOD40A/42A until the indicating lights shift to 3HVR*AOD40A, green OFF, red ON and 3HVR*AOD42A indicating lights shift to green ON, red OFF, THEN releases the pushbutton.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<table>
<tr><td rowspan="4">S T E P
8</td><td>Performance:
c. PRESS and HOLD “NORMAL” pushbutton for the following dampers:
• 3HVR*AOD40B, normal exhaust damper
• 3HVR*AOD42B, filter supply damper
d. <u>WHEN</u> the following dampers reposition, RELEASE “NORMAL” pushbutton:
• 3HVR*AOD40B, normal exhaust, opens
• 3HVR*AOD42B, filter supply damper, closes</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Presses and holds the “NORMAL” pushbutton for filter/normal exhaust dampers 3HVR*AOD40B/42B until the indicating lights shift to 3HVR*AOD40B, green OFF, red ON and 3HVR*AOD42B indicating lights shift to green ON, red OFF, THEN releases the pushbutton.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">S T E P
9</td><td>Performance:
4.5.6 START 3HVR–FN7, “AUX BLDG” “EXH FANS” (VP1).</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Rotates the control switch for 3HVR-FN7 to “START” and observes the indicating lights shift to green OFF, red ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

STEP #10		
	Performance: 4.5.7 START 3HVR-HVU2B, “AUX BLDG” “HVU’s” (VP1)	Critical: Y ☒ N ☐
	Standard: Rotates the control switch for 3HVR-HVU2B to “START” and observes the indicating lights shift to green OFF, red ON.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.8 Revision: 0/1

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 S.8 Revision: 0/1

Initial Conditions: The plant is at 100% power, all plant parameters normal.

Maintenance activities on the boron evaporator are complete, radiation monitor HVR-RE12 is no longer in alarm. The Aux Building Filter is no longer required to be in service.

Initiating Cues: The US has directed you to stop manual area filtration of the lower levels of the Auxiliary Building per OP 3314A, Section 4.5.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

JPM Number: 2K15 P.1 Revision: 0/1

Initiated:

John Follett ______________________ ____________

Developer Date

Reviewed:

Bob Royce ______________________ ____________

Technical Reviewer Date

Approved:

Paul Scott ______________________ ____________

Facility Reviewer Date

JPM Number: 2K15 P.1 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 17, delete JPM Questions. – Pg 16, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pgs 5, 6 & 8: Added Alternate Path Begins to comments, and to STEP #2 and STEP #7.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______________________

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

System: ______________________

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 16

Task Number(s): 344-05-017

Applicable To: SRO X STA ____ RO X PEO X

K/A Number: 065-AA1.04 K/A Rating: 3.5/3.4

Method of Testing: Simulated Performance: X Actual Performance: ____

Location: Classroom: ____ Simulator: ____ In-Plant: X

Task Standards: Satisfactorily perform the local actions on a loss of instrument air as specified in AOP 3562, *Loss of Instrument Air*, Attachment A and OP 3332A, *Instrument Air System.*

Required Materials: None.
(procedures, equipment, etc.)

General References: AOP 3562, Loss of Instrument Air, Rev. 011
OP 3332A, Instrument Air System, Rev. 015-05
ARP 3353.IS 3-2, Air Dryer Reactivation Blower Fail, Rev. 001-03

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 P.1 Revision : 0/1

Initial Conditions: A loss of instrument air has occurred and the Control Room Team is carrying out the actions of AOP 3562, *Loss of Instrument Air.* Steps 1 and 2.a are complete, but instrument air pressure continues to decrease. Actions in accordance with the "Response Not Obtained" column are required.

Initiating Cues: The US has directed you to locally start air compressors and perform filter and dryer checks using Attachment A of AOP 3562, *Loss of Instrument Air.*

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

4. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
5. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
6. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
7. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

START TIME: ____________

Comments to Evaluator:

1) Step 1 of Attachment A (AOP 3562) makes the examinee aware of an alarm condition for a *dryer* failure. The examinee may be expecting to find *air compressor* failures and may choose to ignore the alarm condition. As a result, different procedural flow paths may be followed. The candidate may elect to perform the Annunciator Response Procedure (ARP) for the dryer failure, or move through steps 1 and 2 of Attachment A to address compressor issues. Either path will result in placing the emergency dryer in service, so either path is acceptable.
2) "**Alternate Path Begins**" when candidate recognizes the dryer is clogged and the emergency dryer is required to be placed in service. This will occur at STEP #2 or STEP #7 due to the dual flow path nature of this JPM.
3) Mark unused steps with "N/A" in the "Grade" area when directed.
4) If requested for status of receiver pressure 3IAS-PI23A, provide the cue: **Pressure is approximately 110 psi.**
5) If requested for status of receiver pressure 3IAS-PI23B, provide the cue: **Pressure is approximately 110 psi.**
6) If requested for status of dryer inlet pressure 3IAS-PI39A, provide the cue: **Pressure is approximately 110 psi.**
7) If requested for status of dryer inlet pressure 3IAS-PI39B, provide the cue: **Pressure is approximately 0 psi.**
8) If requested for status of the 'A' air compressor, provide the cue: **The 'A' compressor is running with the control switch in CS.**
9) If requested for status of the 'B' air compressor, provide the cue: **The 'B' compressor is running with the control switch in CS.**

STEP # 1	Performance: **AOP 3562 Attachment A:** **1. Perform The Following:** a. Refer To appropriate instrument and service air compressor annunciator response procedures and Restore air compressors to service.	Critical: Y ☐ N ☒
	Standard: Locates panel IS (Turbine Building 14' elev. SW corner facing west wall) and observes alarm status.	Grade: S ☐ U ☐
	Cue: • When requested provide the cue: **Window IS 3-2 AIR DRYER REACTIVATION BLOWER FAIL is in alarm. All other windows are <u>NOT</u> lit.** • When requested, **provide the ARP for OP 3353.IS window 3-2.**	
	Comments: If examinee does not perform ARP IS 3-2 instructions, document "N/A" on STEP #2 and proceed to STEP #3.	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

S T E P # 2	**Alternate Path Begins:** Performance: **ARP OP 3353.IS 3-2, AIR DRYER REACTIVATION BLOWER FAIL: CORRECTIVE ACTIONS** 1. Refer To OP 3332A, "Instrument Air System," and PLACE 3IAS-DRY2, emergency instrument air dryer, in service.	Critical: Y ☐ N ☒
	Standard: Proceeds to OP 3332A.	Grade: S ☐ U ☐ N/A ☐
	Cue: When requested, **provide a copy of OP 3332A, Instrument Air System.**	
	Comments: If examinee is proceeding to OP 3332A, document "N/A" on STEP #3 through STEP #8 and proceed to OP 3332A instructions at STEP #9.	
S T E P # 3	Performance: **AOP 3562 Attachment A step 1:** b. Place both instrument air compressor control switches to CS (continuous service)	Critical: Y ☐ N ☒
	Standard: Locates control switch for 3IAS-C1A (North of 'A' compressor on top of panel) and checks switch position.	Grade: S ☐ U ☐ N/A ☐
	Cue: **The control switch is in the CS position.**	
	Standard: Locates the control switch for 3IAS-C1B (North of 'B' compressor on top of panel), checks switch position.	Grade: S ☐ U ☐ N/A ☐
	Cue: **The control switch is in the CS position.**	
	Comments: These switches may be addressed in any order.	
S T E P # 4	Performance: **AOP 3562 Attachment A step 1:** c. Place the service air compressor control switch to CS (continuous service)	Critical: Y ☐ N ☒
	Standard: Locates control switch for 3SAS-C1 (North of SA compressor on top of panel) and checks switch position.	Grade: S ☐ U ☐ N/A ☐
	Cue: **The control switch is in the CS position.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP # 5	Performance: **AOP 3562 Attachment A step 1:** d. CLOSE service air header supply valve (3SAS-AOV33)	Critical: Y ☐ N ☒
	Standard: Locates valve 3SAS-AOV33 control switch (on IAS Panel) and positions switch to CLOSE.	Grade: S ☐ U ☐ N/A ☐
	Cue: **Green light is OFF and red light is ON.**	
	Comments:	
STEP # 6	Performance: **AOP 3562 Attachment A step 1:** e. OPEN service air to instrument air cross-connect valve (3IAS-AOV14)	Critical: Y ☐ N ☒
	Standard: Locates valve 3IAS-AOV14 control switch (on IAS Panel) and and positions switch to OPEN.	Grade: S ☐ U ☐ N/A ☐
	Cue: **Green light is ON and red light is OFF.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

S T E P # 7	**Alternate Path Begins:** Performance: **AOP 3562 Attachment A:** **2. Verify The Following Instrument Air Dryer Annunciators – NOT LIT** • AIR DRYER REACTIVATION BLOWER FAIL (IS 3-2) • AIR DRYER HEATER TEMP HI (IS 3-3) • AIR DRYER DISCHARGE MOIST HI (IS 3-4) • ALARM BLOWER FAILURE (Dryer Skid, 3IAS-PNLCP1)	Critical: Y ☐ N ☒
	Standard: Locates panel IS (Turbine Building 14' elev. SW corner facing west wall) and verifies the alarms are not lit.	Grade: S ☐ U ☐ N/A ☐
	Cue: 1) When requested provide the cue: **Window IS 3-2 AIR DRYER REACTIVATION BLOWER FAIL is in alarm. All other windows are <u>NOT</u> lit.** 2) If requested, **provide the ARP for OP 3353.IS window 3-2.**	
	Standard: Locates panel CP1 (behind air dryer) and verifies the ALARM BLOWER FAILURE lamp is not lit.	Grade: S ☐ U ☐ N/A ☐
	Cue: When requested provide the cue: **ALARM BLOWER FAILURE lamp is lit.**	
	Comments: The examinee may verify alarm/lamp status in any order.	
S T E P # 8	Performance: **AOP 3562 Attachment A** **RNO for step 2.** – Using OP 3332A, "Instrument Air System," Place 3IAS-DRY1 or 3IAS-DRY2, emergency instrument air dryer, in service.	Critical: Y ☐ N ☒
	Standard: Proceeds to OP 3332A.	Grade: S ☐ U ☐ N/A ☐
	Cue: When requested, **provide a copy of OP 3332A, Instrument Air System.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP #9	Performance: **OP 3332A, Instrument Air System:** **4.3 Operation of Instrument Air Dryers 3IAS-DRY1 and 3IAS-DRY2**	Critical: Y ☐ N ☒
	Standard: Locates section 4.3, Operation of Instrument Air Dryers 3IAS-DRY1 and 3IAS-DRY2.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #10	Performance: **NOTE** 1. Instrument air dryer is only removed from service for maintenance. 2. When 3IAS-DRY2, emergency instrument air dryer, will be in service during cold weather, evaluate the need for compensatory measures due to moisture in the air lines. Air supply lines to 3BDG-HV20A, B, C, & D have been susceptible to freezing. Periodic blowdown of air supply regulators to 3BDG-HY20A2, 3BDG-HY20B2, 3BDG-HY20C2, & 3BDG-HY20D2, blowdown flow control valve current/pneumatic converters may be necessary. 3. 3IAS-DRY2 is capable of drying air to 55% relative humidity. The dew point will change as the temperature of air entering the dryer changes Over the normal range of instrument air temperatures at the outlet of the aftercooler, dew point of the instrument air is not expected to be < 40°F. This is significantly higher than the dew point provided by the normal dryer. Moisture will begin to condense out of the instrument air when ambient temperature (where the instrument air pipe is located) drops below the dew point of the instrument air. Blowing down the air header will not improve air quality, it will only remove accumulated condensation from the header.	Critical: Y ☐ N ☒
	Standard: Reviews NOTE.	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP #11	Performance: 4.3.1 IF outside air temperature is expected to drop to less than 50°F AND 3IAS-DRY2 has been in service for at least 24 hours, Refer To SP 3670.3, "Control of Temporary Logs," and CREATE a Temporary Log to document component blowdown:	Critical: Y ☐ N ☒
	Standard: Reads the step and moves on.	Grade: S ☐ U ☐
	Cue: Provide the cue: **The control room will handle creation of all applicable Temporary Logs.**	
	Comments:	
STEP #12	Performance: 4.3.2 IF desired to place 3IAS-DRY2, emergency instrument air dryer, in service AND remove 3IAS-DRY1, instrument air dryer, from service, PERFORM the following: a. ENSURE 3IAS-DRY2, emergency instrument air dryer, chemical drying agent is visible in bulls eye.	Critical: Y ☐ N ☒
	Standard: Locates bulls eye and observes chemical drying agent is visible.	Grade: S ☐ U ☐
	Cue: If necessary, provide the cue: **Chemical drying agent is visible in bulls eye.**	
	Comments:	
STEP #13	Performance: b. THROTTLE open 3IAS-V991, emergency instrument air dryer inlet isolation valve.	Critical: Y ☒ N ☐
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the dryer.	Grade: S ☐ U ☐
	Cue: **You hear air rapidly issuing into the dryer, after several minutes the rate slows until it can no longer be heard.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<table>
<tr><td rowspan="6">STEP #14</td><td>Performance:
c. WHEN pressure stops increasing on 3IAS-PI 105 (local), fully OPEN 3IAS-V991, emergency instrument air dryer inlet isolation valve.</td><td></td></tr>
<tr><td>Standard:
Locates 3IAS-PI 105 and observes pressure.</td><td>Critical:
Y ☐ N ☒
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
When requested provide the cue: Pressure indicates approximately 110 psi and stable.</td></tr>
<tr><td>Standard:
Rotates 3IAS-V991CCW until a hard stop is met, then rotates handwheel CW 1/4 turn.</td><td>Critical:
Y ☒ N ☐
Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
The handwheel rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
<tr><td rowspan="4">STEP #15</td><td>Performance:
NOTE
The air dryer blowdown liquid (a salt slurry) cannot be discharged to floor drains. This salt slurry contains a sodium/magnesium chlorite mixture (MSDS No. 00000129, “DRY-O-LITE”) which is not permitted for discharge through DSN 006 (storm drains). It should be collected in a non-metallic container.</td><td>Critical:
Y ☐ N ☒</td></tr>
<tr><td>Standard:
Reviews NOTE.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP #16	Performance: d. To blowdown 3IAS-DRY2, emergency instrument air dryer, PERFORM the following: 1) OBTAIN a non-metallic drum to contain blowdown liquid.	Critical: Y ☐ N ☒
	Standard: Describes the location of a non-metallic drum.	Grade: S ☐ U ☐
	Cue: 1. Question examinee as follows: **Where is a non-metallic drum located?** 2. Once satisfied with the response, provide the cue: **You have a non-metallic drum.**	
	Comments:	
STEP #17	Performance: 2) CONNECT a hose to 3IAS-V810, emergency dryer inlet drain, and DIRECT other end into a non-metallic container.	Critical: Y ☐ N ☒
	Standard: 1. Describes the location of a drain hose, fittings and tools. 2. Locates 3IAS-V810 and connects hose between valve and non-metallic drum.	Grade: S ☐ U ☐
	Cue: 1. Question examinee as follows: **Where are hoses, fittings and tools located?** 2. When satisfied with the response, provide the cue: **You have a hose, fittings and tools.** 3. When examinee describes connection, provide the cue: **The hose is connected.**	
	Comments:	
STEP #18	Performance: 3) THROTTLE open 3IAS-V810, emergency dryer inlet drain.	Critical: Y ☒ N ☐
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the non-metallic drum.	Grade: S ☐ U ☐
	Cue: **You hear air and moisture issuing into the non-metallic drum, after several minutes only air can be heard.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP #19	Performance: 4) WHEN moisture-free air issues, CLOSE 3IAS-V810, emergency dryer inlet drain.	Critical: Y ☒ N ☐
	Standard: Rotates 3IAS-V810CW until a hard stop is met.	Grade: S ☐ U ☐
	Cue: **The handwheel rotates CW until a hard stop is met.**	
	Comments:	
STEP #20	Performance: 5) CONNECT a hose to 3IAS-V488, emergency dryer drain, and DIRECT other end into a non-metallic container.	Critical: Y ☐ N ☒
	Standard: Disconnects hose from 3IAS-V810. Locates 3IAS-V488 and connects hose between valve and non-metallic drum.	Grade: S ☐ U ☐
	Cue: When examinee describes connection, provide the cue: **The hose is connected.**	
	Comments:	
STEP #21	Performance: 6) THROTTLE open 3IAS-V488, emergency dryer drain.	Critical: Y ☒ N ☐
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the non-metallic drum.	Grade: S ☐ U ☐
	Cue: **You hear air and moisture issuing into the non-metallic drum, after several minutes only air can be heard.**	
	Comments:	
STEP #22	Performance: 7) WHEN moisture-free air issues, CLOSE 3IAS-V488, emergency dryer drain.	Critical: Y ☒ N ☐
	Standard: Rotates 3IAS-V488 CW until a hard stop is met.	Grade: S ☐ U ☐
	Cue: **The handwheel rotates CW until a hard stop is met.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP # 23	Performance: 8) WHEN collection container is near full, REQUEST Waste Services Department dispose of contents.	Critical: Y ☐ N ☒
	Standard: Checks contents of collection container and moves on to next step.	Grade: S ☐ U ☐
	Cue: **The non-metallic drum is nearly empty.**	
	Comments:	
STEP # 24	Performance: e. OPEN 3IAS-V990, emergency instrument air dryer outlet isolation valve.	Critical: Y ☒ N ☐
	Standard: Locates 3IAS-V990, rotates handwheel CCW until a hard stop is met, then rotates handwheel CW 1/4 turn.	Grade: S ☐ U ☐
	Cue: **The handwheel rotates CCW until a hard stop is met, then rotates CW 1/4 turn.**	
	Comments:	
STEP # 25	Performance: f. CLOSE 3IAS-V989, instrument air dryer inlet isolation valve.	Critical: Y ☒ N ☐
	Standard: Locates 3IAS-V989 and rotates handwheel CW until a hard stop is met.	Grade: S ☐ U ☐
	Cue: **The handwheel rotates CW until a hard stop is met.**	
	Comments:	
STEP # 26	Performance: g. CLOSE 3IAS-V988, instrument air dryer outlet isolation valve.	Critical: Y ☒ N ☐
	Standard: Locates 3IAS-V988 and rotates handwheel CW until a hard stop is met.	Grade: S ☐ U ☐
	Cue: **The handwheel rotates CW until a hard stop is met.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

STEP #27	Performance: h. PLACE 3IAS-SWDRY1, instrument air dryer, "DISCONNECT SWITCH" in "OFF" (3IAS-PNLDS).	Critical: Y ☒ N ☐
	Standard: Locates DISCONNECT SWITCH 3IAS-SWDRY1 and places the switch in OFF.	Grade: S ☐ U ☐
	Cue: **The switch is in OFF.**	
	Comments:	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: ______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.1 Revision: 0/1

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	16	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 P.1 Revision: 0/1

Initial Conditions: A loss of instrument air has occurred and the Control Room Team is carrying out the actions of AOP 3562, *Loss of Instrument Air.* Steps 1 and 2.a are complete, but instrument air pressure continues to decrease. Actions in accordance with the "Response Not Obtained" column are required.

Initiating Cues: The US has directed you to locally start air compressors and perform filter and dryer checks using Attachment A of AOP 3562, *Loss of Instrument Air*.

Examinee: ______________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

JPM Number: 2K15 P.2 Revision: 0/1

Initiated:

John Follett
Developer Date

Reviewed:

Bob Royce
Technical Reviewer Date

Approved:

Paul Scott
Facility Reviewer Date

JPM Number: 2K15 P.2 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 10, delete JPM Questions. – Pg 9, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. Pg 7, added Alternate Path Begins to STEP #6.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ______

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

System: AC Electrical Distribution

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 000-05-051, 600-05-019

Applicable To: SRO X STA ____ RO X PEO X

K/A Number: 062-A4.04 K/A Rating: 2.6 / 2.7
EPE-011-EA2.08 3.4 / 3.9

Method of Testing: Simulated Performance: X Actual Performance: ____

Location: Classroom: ____ Simulator: ____ In-Plant: X

Task Standards: Satisfactorily complete Attachment D to ES-1.3, *Transfer To Cold Leg Recirculation*, for ESF and Auxiliary Building sump pumps.

Required Materials:
(procedures, equipment, etc.)

General References: ES-1.3, Transfer To Cold Leg Recirculation, Rev. 016-00
SA-AA-125, Electrical Safety, Rev. 015

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 P.2 Revision : 0/1

Initial Conditions:	A Loss of Coolant Accident has occurred which resulted in a reactor trip and safety injection. The Control Room team has carried out the applicable EOPs, and is currently performing step 8 and Attachment D of ES-1.3, *Transfer To Cold Leg Recirculation.* The plant is aligned for Cold Leg Recirculation.
Initiating Cues:	The US has directed you to perform Step 3 of Attachment D to ES-1.3, for ESF and Auxiliary Building sump pumps. The control Room team will carry out steps 1 and 2 of Attachment D to verify proper operation of the ESF building Groundwater Sump Pump, 3SRW-P5. You have been briefed and have checked out with the Control Room DSEO and RMT1. You will be accompanied by an HP Technician.

*** * * * <u>NOTES TO TASK PERFORMANCE EVALUATOR</u> * * * ***

1. Critical steps for this JPM are indicated by checking “Y”. For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

START TIME: ____________

Comments for Evaluator:

1. Breakers may be performed in any order.
2. Examinee may elect to bypass the Loss of Control Power Alarm by taking the Bypass switch from "Normal" to "Bypass" on steps associated with MCC breakers. This is NOT required for successful completion of this JPM.
3. If requested, **Provide examinee with a copy of SA-AA-125**.
4. If examinee uses SA-AA-125, "Electrical Safety" to look up required electrical safety PPE, they should conclude that minimum PPE is leather gloves, natural fiber clothing, and long sleeve shirt. It is acceptable for examinee to go beyond the minimum.
5. Examinee is NOT required to don electrical safety PPE for this JPM. If necessary, provide the cue: **You have donned all required electrical safety PPE.**
6. WHEN the examinee is at the RCA HP desk and has concluded their entry brief, provide the cue: **The HP Technician informs you that radiological conditions preclude access to the ESF Building.**

STEP # 1		
	Performance: **ES-1.3 Attachment D, NOTE prior to step 1:** **NOTE** • 3., de-energize ESF and Auxiliary Building sump pumps should be performed within 24 hours following event initiation using HP coverage.	Critical: Y ☐ N ☒
	Standard: Reviews NOTE for Step 3.	Grade: S ☐ U ☐
	Cue: If requested, provide the cue: **An HP Tech will accompany you on your task.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

STEP # 2	Performance: **ES-1.3 Attachment D:** 3. Place the breakers for the sump pumps listed in Table 1 to OFF. IF radiological conditions preclude access to the MCC, THEN using Table 2, deenergize the associated MCC at its load center.	Critical: Y ☐ N ☒
	Standard: Reads step 3 and skips over MCC breakers located in the ESF building.	Grade: S ☐ U ☐
	Cue: If examinee attempts to go to the ESF building provide the cue: **The HP Technician informs you that radiological conditions preclude access to the ESF Building.**	
	Comments:	
STEP # 3	Performance: At MCC 32-3G, PLACE breaker 2H to OFF.	Critical: Y ☒ N ☐
	Standard: Locates breaker 2H on MCC 32-3G (Aux Building, 24'), switches breaker 2H to OFF.	Grade: S ☐ U ☐
	Cue: **Breaker handle is aligned to OFF.**	
	Comments:	
STEP # 4	Performance: At MCC 32-3H, PLACE breaker 4D to OFF.	Critical: Y ☒ N ☐
	Standard: Locates breaker 4D on MCC 32-3H (Aux Building, 24'), switches breaker 4D to OFF.	Grade: S ☐ U ☐
	Cue: **Breaker handle is aligned to OFF.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

STEP # 5	Performance: At MCC 32-3H, PLACE breaker 4B to OFF.	Critical: Y ☒ N ☐
	Standard: Locates breaker 4B on MCC 32-3H (Aux Building, 24'), switches breaker 4B to OFF.	Grade: S ☐ U ☐
	Cue: **Breaker handle is aligned to OFF.**	
	Comments:	
STEP # 6	**Alternate Path Begins** Performance: Move on to Table 2.	Critical: Y ☐ N ☒
	Standard: Candidate recognizes that MCCs 32-2F and 32-2J will have to be deenergized at their respective load centers.	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP # 7	Performance: **NOTE** Deenergizing MCC 32-2F will render ESF building ventilation monitor 3HVQ*RE49 inoperable.	Critical: Y ☐ N ☒
	Standard: Candidate reviews NOTE prior to Table 2 and recognizes that it DOES apply.	Grade: S ☐ U ☐
	Cue: If the examinee reports that deenergizing MCC 32-2F will render 3HVQ*RE49 inoperable, provide the following cue: **The control room has been notified.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

STEP #8	Performance: At Bus 32F, OPEN breaker 8 – 2.	Critical: Y ☒ N ☐
	Standard: Locates feeder breaker for MCC 32-2F (8 - 2) on load center 32F (Service Building, 4'), rotates breaker control switch 8-2 to OPEN.	Grade: S ☐ U ☐
	Cue: **Control switch is in the OPEN position, breaker indicating lights switch to Green ON, Red OFF.**	
	Comments:	
STEP #9	Performance: At Bus 32J, OPEN breaker 8 - 2.	Critical: Y ☒ N ☐
	Standard: Locates feeder breaker for MCC 32-2J (8 - 2) on load center 32J (Service Building, 4'), rotates breaker control switch 8-2 to OPEN.	Grade: S ☐ U ☐
	Cue: **Control switch is in the OPEN position, breaker indicating lights switch to Green ON, Red OFF.**	
	Comments:	
STEP #10	Performance: Notify the Control Room that Step 3 of Attachment D to ES-1.3 is complete.	Critical: Y ☐ N ☒
	Standard: Candidate informs the US that step 3 of Attachment D to ES-1.3 is complete.	Grade: S ☐ U ☐
	Cue: TERMINATION CUE: **The evaluation for this JPM is concluded.**	
	Comments:	

STOP TIME: ______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.2 Revision: 0/1

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________
Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 P.2 Revision: 0/1

Initial Conditions: A Loss of Coolant Accident has occurred which resulted in a reactor trip and safety injection. The Control Room team has carried out the applicable EOPs, and is currently performing step 8 and Attachment D of ES-1.3, *Transfer To Cold Leg Recirculation.* The plant is aligned for Cold Leg Recirculation.

Initiating Cues: The US has directed you to perform Step 3 of Attachment D to ES-1.3, for ESF and Auxiliary Building sump pumps.

The control Room team will carry out steps 1 and 2 of Attachment D to verify proper operation of the ESF building Groundwater Sump Pump, 3SRW-P5.

You have been briefed and have checked out with the Control Room DSEO and RMT1.

You will be accompanied by an HP Technician.

Examinee: ______________________________

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Cross-Connect Service Water to East Switchgear Ventilation

JPM Number: 2K15 P.3 Revision: 0/1

Initiated:

John Follett ______________________ ____________
Developer Date

Reviewed:

Bob Royce ______________________ ____________
Technical Reviewer Date

Approved:

Paul Scott ______________________ ____________
Facility Reviewer Date

JPM Number: 2K15 P.3 Revision: 0/1

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/17/15	NRC Validation Comments from week of 7/20/15: – Pg 9, delete JPM Questions. – Pg 8, Delete Work Practice Performance, Operator Fundamentals and JPM Questions. – Pg 5, STEP #1: Changed to Critical 'Y'. – Pg 7, STEP #3: 3SWP*V747 is a butterfly style valve with a hand crank. Arrows on the valve point in the direction of flow. 3SWP*V746 has pointer for open/closed indication on top of valve stem.	0/1

JPM WORKSHEET

Facility: MP3 Examinee: ____________________

JPM Number: 2K15 P.3 Revision: 0/1

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

System: Service Water System

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 12

Task Number(s): 000-05-171

Applicable To: SRO X STA ____ RO X PEO X

K/A Number:		K/A Rating:	
	076-K1.19		3.6 / 3.7
	APE 068-AA1.21		3.9 / 4.1

Method of Testing: Simulated Performance: X Actual Performance: ____

Location: Classroom: ____ Simulator: ____ In-Plant: X

Task Standards: All critical steps are performed satisfactorily. All sequential steps are performed in proper procedural sequence.

Required Materials:
(procedures, equipment, etc.)

General References: EOP 3509.1, Control Room, Cable Spreading Area or Instrument Rack Room Fire, Rev. 019

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: 2K15 P.3 Revision : 0/1

Initial Conditions: A fire occurred in the MP3 Control Room requiring evacuation. The crew is controlling the plant from the Auxiliary Shutdown Panel in accordance with EOP 3509.1.

Initiating Cues: The US has directed you to perform local actions to Align Equipment Ventilation for the East Switchgear Room by performing Steps 28.a and 28.b of EOP 3509.1. You have two 3095 keys and a locked valve key.

*** * * * NOTES TO TASK PERFORMANCE EVALUATOR * * * ***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 P.3 Revision: 0/1

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

START TIME: ____________

<table>
<tr><td colspan="3">Evaluator Comments:
1. If examinee asks for current ACU indicating light status, provide the following cue: Cubicle 3J, green light lit. Cubicle 3M, red light lit.
2. Bulleted procedure steps can be performed in any order.</td></tr>
<tr><td rowspan="6">STEP # 1</td><td>Performance: EOP 3509.1
28. Align Equipment Ventilation
a. START east switchgear ACUs:
• Using 3095 key at breaker 32–2T–3J, START 3HVC*ACU3A
• Using 3095 key at breaker 32–2T–3M, START 3HVC*ACU4A</td><td>Critical:
Y ☒ N ☐</td></tr>
<tr><td>Standard:
Locates 32–2T –3J in East Switchgear Room, 4'-6" elevation and simulates inserting 3095 key into key lock. Rotates key CW to START, verifies green indicating light OFF, red light ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
Breaker is closed and 3HVC*ACU3A is running.</td></tr>
<tr><td>Standard:
Locates 32–2T –3M in East Switchgear Room, 4'-6" elevation and simulates inserting 3095 key into key lock. Rotates key CW to START, verifies green indicating light OFF, red light ON.</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="2">Cue:
Breaker is closed and 3HVC*ACU4A is running.</td></tr>
<tr><td colspan="2">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2K15 P.3 Revision: 0/1

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

STEP # 2	Performance: b. Cross–connect service water to the switchgear room ACUs 1) At 3SCV*PNLR1(O) (Control Building 4'-6") Place breakers 19 and 22 to OFF	Critical: Y ☒ N ☐
	Standard: Locates 3SCV*PNLR1(O) in East Switchgear Room, opens panel door. Locates breaker 19, simulates sliding breaker 19 to OFF.	Grade: S ☐ U ☐
	Cue: **Breakers is OFF.**	
	Standard: Locates breaker 22, simulates sliding breakers 22 to OFF.	Grade: S ☐ U ☐
	Cue: **Breakers is OFF.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2K15 P.3 Revision: 0/1

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

STEP # 3		
	Performance: 2) Locally Open service water cross–connect valves (W. Swgr, SW Encl Tube): • 3SWP*V745 • 3SWP*V747 • 3SWP*V744 • 3SWP*V746	Critical: Y ☒ N ☐
	Standard: Locates valve 3SWP*V745. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.	Grade: S ☐ U ☐
	Cue: **The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.**	
	Standard: Locates valve 3SWP*V747. Using locked valve key unlocks and removes chain. Rotates valve or handle CCW until arrows point in the direction of flow.	Grade: S ☐ U ☐
	Cue: • **The handle rotates CCW until arrows point in the direction of flow.**	
	Standard: Locates valve 3SWP*V744. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.	Grade: S ☐ U ☐
	Cue: • **The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.**	
	Standard: Locates valve 3SWP*V746. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until arrow on top of valve stem indicates OPEN.	Grade: S ☐ U ☐
	Cue: • **The handwheel (or handle) rotates CCW until arrow on valve stem indicates OPEN.**	
	Comments: • Positioning valve off of the backseat is not a critical task. • For the two valves with position indication, provide cue: **Pointers are aligned vertically.**	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _______________

VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.3 Revision: 0/1

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

Date Performed: ____________________

Examinee: ____________________

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: ____________________

Print / Sign

Areas for Improvement / Comments:

APPLICANT HANDOUT

JPM Number: 2K15 P.3 Revision: 0/1

Initial Conditions: A fire occurred in the MP3 Control Room requiring evacuation. The crew is controlling the plant from the Auxiliary Shutdown Panel in accordance with EOP 3509.1.

Initiating Cues: The US has directed you to perform local actions to Align Equipment Ventilation for the East Switchgear Room by performing Steps 28.a and 28.b of EOP 3509.1. You have two 3095 keys and a locked valve key.

SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 3 ILT**	
COURSE:	**N/A**	
EXAM TITLE:	**Four Faulted SG's – New Scenario**	**EXAM #: 2K15 NRC-01**
Total Time	**120 Minutes**	

Prepared by:	John Follett		
	Printed Name	Developer	Date
Reviewed by:	Bob Royce		
	Printed Name	Technical Reviewer	Date
Approved by:	Paul Scott		
	Printed Name	Facility Reviewer	Date

SEG#_2K15 NRC-01_ Rev ; __0/1___

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/10/15	Comments from NRC Validation on 7/20/15: - Pgs 1 and 5, changed time to 120 minutes. - Pgs 7 through 11, new initial condition IC-358. - Pg 11: Listed schedule and event file names. Added actual and predicted intake and environmental conditions of YELLOW. Added power level and BOL. Added BOL Curve and Data Book. Added instruction to provide marked up copy of AOP 3569. - Pg 12 changed as found Pzr Lvl setpoint to 53%. - Pg 19 added instructions for setting batch counter. - Pg 20, Added statement expecting RO to align for auto makeup using OP 3304C. - Pg 34, changed decision to direction. - Pg 35, added page number where US will resume AOP 3577. - Pg 37, Changed 'B' CRDM fan to 'C'. - Pg 43 & 45: Move check of generator output breaker open from step 2.b to 4.d to reflect change in E-0. - Pg 53, Added PEO report of steam from MSVB. - Pg 76 turnover sheet updates due to Initial Condition: Thermal Power = 2269 MWTH, Electric Power = 914 MWe, Intake = Yellow, Rod Height = 159 steps, Current Boron = 1129 pcm, Boron Pot setting = 3.23 turns / 13 gpm.	0/1

SEG# 2K15 NRC-01 Rev ; 0/1

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

SEG# 2K15 NRC-01 Rev ; 0/1

SECTION 3

EXAM OVERVIEW

Title: Four Faulted SG's New Scenario

1. The crew takes the shift with the plant at 74% power due to intake conditions. Last shift performed a downpower and entered AOP 3569, *Severe Weather*, for a hurricane watch. Last shift also performed OP 3301G section 4.5 "Induce Pressurizer Spray to Equalize Boron Concentration". Additionally, the 'B' Stator Cooling Pump is out of service for a bearing replacement. The crew has direction to maintain power stable as Management evaluates hurricane tracking.

   Event 1: The primary pressurizer level control channel (RCS*LT459) will fail high, causing the charging flow control valve to reduce flow, pressurizer level will lower. The RO will place the charging flow control valve in manual and correct charging flow. The US will enter AOP 3571, *Instrument Failure Response*. The crew will swap backup channels and direct I&C to trip bistables. The US will refer to and enter Technical Specification 3.3.1 Action 6 (FU# 11). The US will review Technical Specifications 3.3.3.5 and 3.3.3.6 and Technical Requirement 7.4.1

   Event 2: Based on hurricane tracking, Station management will direct a downpower to 60% at 1% per minute. The crew will enter AOP 3575, *Rapid Downpower*, and perform the downpower.

   Event 3: 3FWS-PT508 "Feed Header Pressure Transmitter" will fail high requiring the BOP to take manual control of the feedwater master speed controller. Once the plant is stable the crew will enter and complete actions in AOP 3571, *Instrument Failure Response*.

   Event 4: The 'A' train emergency bus, 34C, will become faulted (& unrecoverable). The RO will perform immediate actions of AOP 3581, *Immediate Actions,* to simultaneously close the letdown orifice isolation valves and the charging flow control valve. The US will enter AOP 3581, confirm immediate actions are complete, and transition to AOP 3577, *Loss of Normal and Offsite Power to a 4kv Emergency Bus*, and perform multiple, time critical actions to keep the plant on-line. The following Technical Specifications are in effect; 3.8.1.1 Action a, 3.8.2.1, 3.8.3.1. The following Technical Requirements are in effect: 7.4.1, 7.6.1.

   Event 5: After the crew has stabilized the plant, a Main Generator trip will occur causing an automatic Reactor trip. A steam line break will occur outside of containment, upstream of 'C' MSIV. The 'C' & 'D' MSIV's fail open while 'A' & 'B' low set safety valves fail open. All four SG's will be faulted.

   While in E-0, *Reactor Trip or Safety Injection*, the crew will have to identify and mitigate two separate failures while dealing with complications of only having the 'B' train emergency bus available:

   Event 6: No Aux Feed pumps will auto start. The 'A' MDAFW pump is not available due to the prior loss of bus 34C and the 'B' MDAFW pump will trip on over current once manually started. Steam supply valves must be opened to start the Turbine Driven AFW pump. **[Critical Task B.4]** – Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.

SEG# 2K15 NRC-01 Rev ; 0/1

Event 7: 3SIH*MV8801B, Charging to Cold Leg Injection Valve, fails to open after the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH*MV8801B to provide Charging flow to the core. **[Critical Task B.6]** – Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0.

The crew will transition to ECA-2.1, Uncontrolled Depressurization of all Steam Generators. Once the crew establishes aux feed water flow, they will need to limit flow to 100 gpm per faulted SG. **[Critical Task B.33]** – Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF. The crew will have to work through complications of not having the ‘A’ train emergency bus and ultimately terminate safety injection. During SI termination, the ‘A’ SG safety valve reseats. The crew must notice this and wait on transition (per prior CAUTION) to E-2 until after SI is terminated. The scenario may end after the crew makes the proper transition to E-2.

2. The SRO candidate (US) should classify this event as an **ALERT Charlie One** based on Unisolable Steam Line Break outside CTMT (BA2).

3. Duration of Exam: 120 minutes

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

INPUT SUMMARY						
RESET SIMULATOR TO IC–358						
Either **INPUT** or **Load** Schedule **NRC–01.sch** AND Event file **NRC-01.evt,** THEN **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
CW05A	Cndsr Tube Sheet Plugged (CW-A Side)					40% Block
CW05B	Cndsr Tube Sheet Plugged (CW-B Side)					40% Block
CW05C	Cndsr Tube Sheet Plugged (CW-C Side)					40% Block
CW05D	Cndsr Tube Sheet Plugged (CW-D Side)					40% Block
CW05E	Cndsr Tube Sheet Plugged (CW-E Side)					40% Block
CW05F	Cndsr Tube Sheet Plugged (CW-F Side)					40% Block
FW18B	MDAFW Pp Trip (P1B)					--
FW20A	MDAFW PP Fails to Auto Start (P1A)					--
FW20C	TDAFW PP Fails to Auto Start (P2)					--
MS12C	MS ISO Valve CTV27C Stuck Open					--
MS12D	MS ISO Valve CTV27D Stuck Open					--
RX10A	PZR Level LT459 Fail	1				100% Lvl
RX19	3FWS-PT508 Failure	3				2000 PSIG
ED04C	Loss of 4160V Bus 34C	4				--
EG01	Main Generator Trip	5				--

INPUT SUMMARY						
RESET SIMULATOR TO IC–358						
Either **INPUT** or **Load** Schedule **NRC–01.sch** AND Event file **NRC-01.evt,** THEN **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MS02C	MS LN C RUP O.S. CTMT UP MSIV	30				50,000 LB
MS07A	MS Safety Valve RV22A Fail	30				100 %VWO
MS07B	MS Safety Valve RV22B Fail	30				100 %VWO
REMOTE FUNCTIONS						
CHR17	TS 374 Wind Direction					205 deg
CHR18	TS 142 Wind Direction					198 deg
CHR19	TS 33 Wind Direction					192 deg
CHR20	TS 374 Wind Speed					42 mph
CHR21	TS 142 Wind Speed					39 mph
CHR22	TS 33 Wind Speed					35 mph
CWR05	Wave Intensity Increases Screen D/P (Inches)					5
CWR06	TWS A Speed – Traveling Screen					SLOW 1
CWR07	TWS B Speed – Traveling Screen					SLOW 1
CWR08	TWS C Speed – Traveling Screen					SLOW 1
CWR09	TWS D Speed – Traveling Screen					SLOW 1
CWR10	TWS E Speed – Traveling Screen					SLOW 1

INPUT SUMMARY						
RESET SIMULATOR TO IC–358						
Either **INPUT** or **Load** Schedule **NRC–01.sch** AND Event file **NRC-01.evt,** THEN **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
CWR11	TWS F Speed – Traveling Screen					SLOW 1
MSR40	MSIV CTV27C TRAIN-A FUSE INDICATION ONLY	7	3 min			OUT
MSR42	MSIV CTV27D TRAIN-A FUSE INDICATION ONLY	7	4 min			OUT
MSR41	MSIV CTV27C TRAIN-B FUSE INDICATION ONLY	8	3 min			OUT
MSR43	MSIV CTV27D TRAIN-B FUSE INDICATION ONLY	8	4 min			OUT
RXR106	Prot Set Door 1 (open)	10				OPEN
RXR25	RCS-LT459 Bistable	10	15 sec			TRIP
RXR106	Prot Set Door 1 (close)	10	20 sec			CLOSE
SWR25	TPCCW Supply Valve MOV71A (LOP)	12	4 min	60 sec		0%
CCR08	TRA RPCCW to Chiller B (V167, V186)	14	5 min			OPEN
CCR09	TRB RPCCW to Chiller B (V177, V187)	14	6 min			OPEN
SIR15	MV8808A BKR RO	16	4 min			RI
SIR17	MV8808C BKR RO	16	4:10 min			RI
SIR16	MV8808B BKR RO	16	4:50 min			RI
SIR18	MV8808D BKR RO	16	5:00 min			RI
SIR15	MV8808A BKR RO	17	1 min			RO
SIR17	MV8808C BKR RO	17	1:10 min			RO

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INPUT SUMMARY						
RESET SIMULATOR TO IC–358						
Either **INPUT** or **Load** Schedule **NRC–01.sch** AND Event file **NRC-01.evt,** THEN **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
SIR16	MV8808B BKR RO	17	1:50 min			RO
SIR18	MV8808D BKR RO	17	2:00 min			RO
SIR14	SIH*MV8801B Bkr RO					RO
SIR14	SIH*MV8801B Bkr RO	20	1 sec			RI
OVERRIDES						
CVLO0338	3SIH*MV8801B Green Cold Leg Injection					ON
CVLO0338	3SIH*MV8801B Green Cold Leg Injection	20			1 sec	ON

EVENTS		
Event Code	Description	Event Number
ZMSIHMV8801BDI(1)	3SIH*MV8801B COLD LEG INJECTION = OPEN	20

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><td colspan="2">❑ COMPLETE Simulator Setup and Readiness Checklist.
❑ SELECT appropriate IC: IC-358, 74% power, BOL.
❑ LOAD and RUN applicable Schedule, NRC-01.sch.
❑ LOAD event file NRC-01.evt.
❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous ‘Input Summary’ page.
❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable:
▪ Pressurizer spray valves 50% setpoint
▪ Backup heaters ON
❑ As necessary, REMOVE the following Equipment from service and tag accordingly:
▪ 3GMC-P1B, ‘B’ Stator Cooling Pp, in PTL with YCT
❑ Set Environmental and Intake flags for ACTUAL and PREDICTED to YELLOW.
❑ Use Beginning of Life curve and data books.
❑ Provide a marked-up copy of AOP 3569, completed up through step 16.</td><td>N/A</td></tr>
<tr><td>❑ CONDUCT briefing with evaluators.</td><td colspan="2">PRE-SCENARIO:
❑ BRIEF the crew initial plant conditions and provide a shift turnover.
❑ <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew.
❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.</td></tr>
<tr><td></td><td></td><td>(All) Walk down control boards and conduct shift briefing.</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
The Crew will take the watch at step 16 in AOP 3569, *Severe Weather Conditions*. The previous crew performed all steps up to 16.		
*********** **EVENT 1** ***********		
<u>Event 1</u> **Trigger 1** **T = ≈ 1 min after taking the shift** (RX10A) 3RCS*LT459 fails high	Notes on Event 1: (1) The primary PZR level channel failure (high) will cause the control system to reduce charging flow in an attempt to restore level. (2) If no operator action is taken, actual level will lower. Automatic letdown isolation will occur at 22%.	**RO:** Identifies level deviation alarm due to failed level instrument.
		US: Enters AOP 3571, *Instrument Failure Response* (Rev 011-01)
		US: Reads Caution / Note to crew: **<u>CAUTION</u>** Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. **<u>NOTE</u>** If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
	RO should identify a failure of 3RCS*LT459. RO will adjust 3CHS*FCV121 in manual to restore pressurizer level to setpoint, ≈ 53%.	**RO:** **1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Pressurizer level will be lowering due to net seal injection flow. If Pressurizer level drops 6% below program level, the RO should communicate this to the US. The US should then enter T/S 3.4.3.1 Action b (2 hours to correct).	**RO:** **2. Stabilize The Plant Parameters**
		US: Reads Note to crew: **NOTE** It is desired that I&C personnel trip the bistables specified in this procedure. If, during off–hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.
		US: **3. Perform Corrective Actions Using Appropriate Attachment** **Instrument Failure — Attachment** PZR Level Channel Failure — C
	RO directed to place 3RCS-LS459D in Channel 3-2. RO directed to place 3RCS-LS459E in any channel other than 1.	**RO:** 1. Defeat the failed channel input. Pressurizer Level Select – Control — 3RCS-LS459D Pressurizer Level Select – Record — 3RCS-LS459E
		RO: 2. Restore PZR level to normal.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Letdown isolation should not have occurred.	**RO:** 3. If necessary, using OP 3304A, "Charging and Letdown," Restore letdown.
		RO: 4. Place PZR level controller in automatic.
	Crew took the shift with PZR Spray induced for earlier downpower (on turnover report). Backup heaters should remain energized.	**RO:** 5. Reset pressurizer heaters as necessary.
		RO: 6. When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the SM.
		US: 7. Trip the associated Reactor Protection System bistable(s): a. Place a check mark in the box above the appropriate channel that requires tripping on the last page of this Attachment.
	The US should enter: **[Tech Specs]** 3.3.1, Functional Unit 11, Action 6	**US:** b. Refer to Technical Specification 3.3.1, 3.3.3.5, and 3.3.3.6.
	The RO should do a lamp check to ensure all bistable lights are functional, then verify no coincidence would be met when bistables are tripped.	**RO:** c. Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Caution/Note to crew: **CAUTION** If the General Warning lamp is lit on 3RPS*RAKLOGB, Placing train A SSPS "Multiplexer Test" switch in "A+B" will cause the reactor to trip. **NOTE** The following step will distinguish whether the failure is within SSPS or the Protection channel.
	Channel indication is not normal. The US should N/A this section and proceed to next step.	**US:** d. If bistable status light(s) (MB4F) indicate that a single bistable input has tripped and channel indication is normal, PERFORM the following:
T = When requested: **Report to the Control Room as I&C.**		**US:** e. Request the I&C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment C and Attachment S.
Trigger 10 T = After I&C brief Trip Bistables (RXR106, RXR25)		**RO:** f. Verify the appropriate bistable status light(s) are lit.
	Indicator 3RCS*LI459C is affected by the failure of 3TCS*LT459. Appendix R transmitter 3RCS-LT459C is not affected and therefore can be used to meet the TRM requirement. Entry into TRM 7.4.1 is not required.	**US:** 8. If indicator 3RCS*LI459C is failed, Refer to TRM Table 7.4.1, Fire Related Safe Shutdown Components, "Reactor Coolant System."

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 9. Request I&C perform corrective maintenance on failed instrument.
	*********** **EVENT 2** ***********	
<u>Event 2</u> **T = after crew brief or when directed by Chief Examiner** **Call US as OMOC and REPORT:** "Due to hurricane tracking, station management directs a downpower to 60% power at 1% per minute. AOP 3575 should be used."	**OMOC DIRECTED DOWNPOWER**	**US:** Receives phone call, briefs crew, and **enters AOP 3575, *Rapid Downpower* (Rev 020-00)**
		US: Reads Note to crew: **<u>NOTE</u>** If at any time either of the following annunciators is received Immediately perform step 7.: • ROD CONTROL BANKS LIMIT LO (MB4C 3-9) • ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)
		RO: **1. Check Rod Control – IN AUTO**
	Load set is normally desired.	**BOP:** **2. Align EHC Panel** 2.a. Check load reduction using load set – DESIRED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 2.b. Using Attachment E align EHC panel for LOAD SET operation
		BOP: uses Attachment E **1. Align EHC Panel** a. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT b. Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction **c.** Select DECREASE LOADING RATE to ON
	This Note is NA. The US may not read it.	**US:** resumes at step 3 and Reads Note to crew: **<u>NOTE</u>** ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
	Proceeds to step 5 for 1% / min downpower.	**US:** **3. Determine Power Reduction Rate (% / min)** 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN **RNO**– Perform the following: 1) <u>IF</u> desired power reduction rate is 1 %/min <u>THEN</u> Proceed to step 5.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **5. Align RCS Makeup System For Boration** 5.a. Check Rod Control – AVAILABLE FOR ROD INSERTION 5.b. Proceed to step 5.e.
	US will use RNO. Curve and Data Book contains rapid downpower reactivity plans; however they all begin at 100% power.	**RO:** 5.e. Check use of "Rapid Downpower Summary Sheet" (RE-H-17) in the RE Curve and Data Book – DESIRED **RNO**–Proceed To step 5.h.
		RO: 5.h. Using table, Determine gal BA/% Power for current time in core life Core Burnup — Gal BA/% Power <7000 MWD/MTU — 19 gal/%
		RO: 5.i. Using formula, Determine boration amount
Numbers may vary slightly…. 14% (pwr change) x 19 (gal per % pwr) **EQUALS 266 gallons**	Total Power Change (Δ%)x___(gal BA/% Power) = _____gal Boration Amount	

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
PUSH the “▼” key to access the preset quantity value and select the first digit, as indicated by in the upper display. PUSH the “▲” key, as necessary, to increment the digit to the desired value. PUSH the “→” key, as necessary, to select the next digit that needs to be changed. REPEAT steps 2. and 3. until the desired preset quantity is shown. PUSH the “↵” key to enter the value.		**RO:** 5.j. Set the boric acid batch counter to the boration amount determined.
		RO: 5.k. Using table, adjust boric acid blend flow controller pot setting
		Core Burnup: <7000 MWD/MTU — Pot Setting: 7.25 — Expected Boric Acid Flow Rate (gpm): 29
		RO: 5.l. Select BORATE on the reactor coolant makeup select switch
		RO: 5.m. Select START on the reactor coolant makeup start switch
		RO: 5.n. Verify boric acid flow – INDICATED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Boration will auto stop when counter reaches zero. RO will align for auto makeup using OP 3304C.	**RO:** 5.o. Proceed To step 6. and WHEN Boration time has been performed for the desired time, THEN Stop boration using one of the following: • Attachment G • OP 3304C, Primary Makeup and Chemical Addition
		US: Reads Note to crew: **NOTE** If at any time the power reduction rate or final desired power level must be changed, Return to step 1.
	Hold point until effects of boron are demonstrated	**US:** **6. Initiate Load Reduction** 6.a. Check Rapid or gravity boration – IN PROGRESS **RNO**—WHEN Any of the following change due to boration: • Tavg • Reactor power THEN Proceed to step 6.b.
		BOP: 6.b. Check turbine OPERATING MODE – MANUAL

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Load set desired.	**BOP:** 6.c. Check load reduction using load set – DESIRED
	1% expected.	**BOP:** 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)
	870 MWe on load set meter = 700 MWe desired load.	**BOP:** 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
	Pressurizer heaters were on when crew took the shift. No actions necessary.	**RO:** 6.f. Energize all PZR heaters
	Pressurizer spray valves were set to 50% when crew took the shift. No actions necessary.	**RO:** 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)
		RO: 6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain: • Rods above the Rod Insertion Limit (RIL) • Tavg – Tref error/deviation -5°F to +5°F • AFD within COLR limits • Desired downpower rate
Answer phone as CONVEX: Inform caller to maintain VAR loading at 100 MVARs out		**US:** 6.i. Check power reduction – CONVEX REQUESTED **RNO**– Inform CONVEX of load reduction rate (MWe/min) and final MWe level.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **7. Verify Rod Position Above RIL** 7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT **RNO**– Proceed to step 7.j. and, IF at any time, the annunciator is received, THEN Perform steps 7.c. through 7.h.
		RO: 7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT **RNO**– Proceed to step 8. and, IF the annunciator is received, THEN Perform step 7.k. and 7.l.
		RO and BOP: **8. Using Attachment C, “Rapid Downpower Parameters” MONITOR parameters**
		US: **9. Degrade Condenser Backpressure** 9.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 70% (907 MWe)
T = when requested Modify FW01 as necessary to keep condenser backpressure between 2.0 to 4.0 in. HgA.		**BOP:** 9.b. Using OP 3329, “Condenser Air Removal”, Degrade condenser backpressure to between 2.0 in. HgA and 4.0 in. HgA.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **10. Align One Feedwater Pump For Removal from Service** 10.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 50% (648 MWe) **RNO**– Proceed to step 11.
		RO: **11. Verify Power Related Interlock Status** 11.a. Check reactor power – LESS THAN THE P-9 SETPOINT **RNO**– Proceed to step 12. and, WHEN Power LESS THAN P-9, THEN Return to step 11.
		US: **12. Align Plant Systems for less than 30% Power Operation** 12.a. Verify Final Desired Power Level – LESS THAN 30% **RNO**– Proceed to step 13.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **13. Check Plant Status** 13.a. Verify – AT FINAL DESIRED POWER LEVEL **RNO–** Continue power reduction and, WHEN Actual load is within 200 MWe of final desired load, THEN • Adjust “LOAD SET” to decrease loading rate as necessary to stabilize power level. • Check the following “LOAD MONITORING” indications ○ “AT SET LOAD” light *lit* ○ “DECREASING LOAD” light *not* lit
		RO: 13.b. Refer to OP 3304C, “Primary Makeup and Chemical Additions.” and Borate or Dilute as necessary to maintain the following: • Tavg – Tref error/deviation -1.5°F to +1.5°F • AFD within the target band
		RO: 13.c. If desired, Place rod control SEL switch in AUTO
		RO: 13.d. Using GA-9, Align for auto makeup

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: uses GA-9 (Rev 000-02)
		1. Check Aligning For Auto Makeup – Desired
		RO reads NOTE Note Boric acid flow of 0 to 40 gpm corresponds to 0 to 10 turns on 3CHS-FK110, boric acid makeup flow controller as determined on page 8.
T = if contacted for RCS boron concentration Report: **RCS boron concentration is 1765 pcm.**	**RO** uses current RCS boron concentration (or chemistry recent sample) and table on page 8 to select desired pot setting.	**RO:** **2. Align For Auto Makeup** 2.a. Check pot setting for boric acid flow rate – DETERMINED BY EOP IN EFFECT **RNO**– Determine pot setting for boric acid flow for current conditions using the B.A. Flow Rate table on page 8.
		RO: 2.b. Adjust boric acid blended flow controller (3CHS-FK110) to determined pot setting
		RO: 2.c. Verify total makeup flow controller (3CHS-FK111) pot – SET FOR 80 gpm
		RO: 2.d. Check boric acid transfer pump (3CHS*P2A or 3CHS*P2B) – ONE PUMP IN AUTO
		RO: 2.e. Place total makeup flow controller (3CHS-FK111) in AUTO

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 2.f. Place boric acid blended flow controller (3CHS-FK110) in AUTO
		RO: 2.g. Place REAC CLNT MAKEUP SELECT SW in AUTO
		RO: 2.h. Place REAC CLNT MAKEUP START SW in START
		RO: 2.i. Verify batch counters – RESET TO “000000” • Boric acid batch counter (3CHS-FY110B) • Primary water batch counter (3CHS-FY111B)
		RO: 2.j. Go to procedure and step in effect
		RO: Reports that GA-9 is complete for aligning for auto makeup.
		US: resumes AOP 3575
Move on to Event 3 when GA-9 is complete.		**BOP:** 13.e. If desired, Using OP 3323A, “Main Turbine” PLACE turbine in “Load Limit” operation

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
*********** **EVENT 3** ***********		
Event 3 **Trigger 3** **T = when GA-9 is complete** (RX19) 3FWS-PT508 fails high	Notes on Event 3: (1) This failure will slowly raise the feedwater pressure input the feed pump master speed controller, 3FWS-SK509A. Controller output will decrease slowing both turbine driven main feed pumps. Feedwater regulating valves will slowly open, maintaining generator level on program. (2) No immediate actions are necessary, the crew is not expected to enter AOP 3581, however doing so is acceptable.	**BOP:** Responds to failure by taking manual control of 3FWS-SK509A and informing US of associated annunciators. **US:** Based on diagnosis of an instrument failure, **Enters AOP 3571 (Rev 011-01)**
		US: Reads Caution / Note to crew: **CAUTION** Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. **NOTE** If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
	BOP places 3FWS-SK509A in manual.	**BOP:** **1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL**
	BOP restores output to achieve a program DP of 40-175 psid corresponding to the current power level. (Setpoint ≈ 120 psid @ 60% power)	**BOP:** **2. Stabilize The Plant Parameters**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to self: **NOTE** It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.
		US: **3. Perform Corrective Actions Using Appropriate Attachment** **Instrument Failure — Attachment** Feedwater Header Pressure Channel Failure (PT508) — K
	Action already in progress. Restoration to program DP will take time if feedwater regulation valves have moved significantly.	**BOP:** 1. Verify the feedwater pump A and B master speed control (3FWS-SK509A) is in MANUAL and Restore feed pump DP to normal (Program: 40 to 175 psid).
		BOP: 2. After conditions have stabilized, Observe MB annunciators and parameters and immediately report any unexpected or unexplained conditions to the Shift Manager.
		US: Reads Note to crew: **NOTE** There are no Technical Specifications or bistables associated with 3FWS-PT508.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 3. Request I&C Department perform corrective maintenance on failed instrument.
*********** **EVENT 4** ***********		
Notes on Event 4: A loss of Bus 34C will require timely crew response to avoid a Reactor trip. The following primary concerns exist: (a) 'A' train of component cooling water (CCP) is lost. 'A' & 'D' RCPs need to be supplied with 'B' train CCP (foldout page trip criteria). (b) With the loss of 'A' train of CCP, letdown heat exchanger cooling will be lost. As a result, VCT temperature will rise rapidly. The RO will need to isolate Charging and letdown to avoid Reactor (& RCP) trip criteria (foldout page). (c) With the loss of 'A' train Service Water; alignments to the secondary plant component cooling water (CCS) are necessary. If this is not done, a turbine runback will occur on high stator cooling water temperatures.		
Event 4 **Trigger 4** **T = upon completion of crew brief or when directed by Chief Examiner** (ED04C) Loss Of Emergency Bus 34C	**US: may place annunciators in Master Silence.**	**RO:** Identifies letdown isolation required on loss of 34C and performs Immediate Actions of AOP 3581, Attachment F, from memory: **Att. F.1 Isolate Letdown And Charging** a. Simultaneously perform the following: • CLOSE letdown orifice isolation valves • CLOSE the charging flow control valve The RO will focus brief immediate actions are complete.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **Enters AOP 3581** **(Rev 001-00)** **1. Using Appropriate Attachment, Perform Immediate Actions** **EVENT** **Attachment** Events Requiring Isolation of Charging and Letdown F • Loss of Bus 34C
		US: Proceeds to Attachment F and confirms with RO that step 1 Immediate Actions are complete.
		US: **Att. F.2 Check Initiating Event – INSTRUMENT FAILURE:** • Pressurizer Level **RNO**– Go to procedure and step in effect.
		US: **Enters AOP 3577** **(Rev 002-01)**
		US: Reads Note to crew: **NOTE** The Foldout page must be open.
		BOP: **1. Check If Letdown Should Be Isolated** 1.a. Check either 4.16 KV emergency bus – DE-ENERGIZED
		BOP: 1.b. Check affected bus -BUS 34C

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	This step may already be complete.	**RO:** 1.c. Simultaneously Perform the following: • CLOSE letdown orifice isolation valves • CLOSE the charging flow control valve
		RO: 1.d. CLOSE charging header isolation valve (3CHS*MV8106)
	Malfunction insertion will result in a massive bus failure resulting in bus differential relay actuation on bus 34C. Power will be unrecoverable to bus 34C.	**BOP:** **2. Try To Restore Power To <u>Affected</u> Emergency Bus** 2.a. Check bus differential annunciator for the affected bus – LIT • For bus 34C – BUS 34C BUS DIFF (MB8A 4-12)
	BOP stops ‘A’ EDG	**BOP:** 2.b. Perform the following: 1) STOP <u>affected</u> bus EDG by pressing both emergency stop pushbuttons. 2) Proceed to step 3.
	‘B’ Charging pump will be running	**RO:** **3. Check If A Charging Pump Should Be Started** 3.a. Check charging pumps – NONE RUNNING **RNO**– Proceed to step 3c.
		RO: 3.c. Throttle RCP seal injection flow to maintain BETWEEN 8 and 13 gpm.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **4. Check Service Water Alignment** 4.a. Check Affected bus – DEENERGIZED
Trigger 12 T = when directed to close 3SWP*MOV71A (SWR25 to 0%) Has 4 min timer Wait 5 minutes and **call** control room to report 3SWP*MOV71A is closed.		**PEO:** 4.b. Locally Close service water supply valve to TPCCW from affected train • For Train A: 3SWP*MOV71A
	RO starts the 'B' SW pump.	**RO:** 4.c. START the second SW pump in the non-affected Train
	RO opens 3SWP*MOV71B.	**RO:** 4.d. Verify service water supply valve to TPCCW from the operating SW train (3SWP*MOV71A or 3SWP*MOV71B) – OPEN **RNO**– OPEN valve.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	RPCCW flow in 'B' train is verified.	**RO:** **5. Cross-Connect RPCCW Containment Headers** 5.a. Verify the RPCCW containment supply and return header isolation valves in the operating train – OPEN • For Train B: Flow indicated – 3CCP-FI15B, CTMT SPLY FLOW OR 3CCP*MOV45B 3CCP*MOV48B 3CCP*MOV49B (ESF Status Group 4, 9-25, 10-24, and 11-25)
		RO: 5.b. Simultaneously OPEN the RPCCW containment header cross-connect valves: 3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B
	This ends the time critical actions that needed to be done to avoid Reactor trip criteria (on the foldout page).	**RO:** 5.c. CLOSE RPCCW containment return header isolation valve in the affected train For Train A: 3CCP*MOV49A

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	RO selects "STOP" then 'Auto' on 'B' Boric Acid Transfer Pump.	**RO:** **6. Check Boric Acid Transfer Pump Alignment** 6.a. Verify the boric acid transfer pump selected for AUTO-ENERGIZED **RNO**– Select AUTO on energized pump.
	Pot was adjusted per GA-9 coming out of downpower.	**RO:** 6.b. Adjust boric acid blend flow pot setting to the appropriate setpoint
		US: **7. Restore Containment Cooling**
		US: Reads Note to crew: **<u>NOTE</u>** LOP signal may take up to six minutes before it can be reset with the bus de-energized.
		RO: 7.a. RESET both trains LOP
		BOP: 7.b. Check <u>affected</u> bus – Bus 34C
		RO: 7.c. OPEN RPCCW non-safety header supply/return isolation valves Train B (3CCP*AOV197B/194B)
	Based on the Chief Examiner's direction, the next event may be initiated. In case the decision is to continue in AOP 3577, additional steps are provided. The T/S impact (covered in following text) may be asked as a follow-up.	**RO:** 7.d. CLOSE RPCCW non-safety header supply/return isolation valves Train A (3CCP*AOV197A/194A).

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	'C' CDS chiller should be running.	**RO:** 7.e. Verify CDS chiller on train with power – AUTO STARTS **RNO**– START chiller.
	US will resume at page 37 in AOP 3577.	**RO:** 7.f. Using OP 3330A, Reactor Plant Component Cooling Water, Cross-connect non-safety related RPCCW headers
	This will allow the 'A' CDS chiller to restart.	**RO:** **Locates section 4.15 of OP 3330A (Rev 018-09)** **4.15 Cross-Connect Non-Safety Related RPCCW Headers**
		RO: reads Caution/NOTE **<u>CAUTION</u>** An evaluation of RPCCW System loads should be conducted prior to performing cross-connects or train split evolutions to avoid exceeding 8,100 gpm through any one RPCCW pump and heat exchanger. **<u>NOTE</u>** The RPCCW System non-safety related supply and return headers are normally split.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
Trigger 14 T = immediately when directed (CCR08 & CCR09) have 5 & 6 min timers to open 'A' & 'B' train RPCCW manual crossties IAW step 4.15.1 of OP 3330A	RO should contact PEO to open valves.	**PEO:** 4.15.1 OPEN the following valves: • 3CCP-V186, Train A RPCCW to chilled water chiller 1B outlet • 3CCP-V167, Train A RPCCW to chilled water chiller 1B inlet • 3CCP-V187, Train B RPCCW to chilled water chiller 1B outlet • 3CCP-V177, Train B RPCCW to chilled water chiller 1B inlet
		RO: 4.15.2 IF only Train B RPCCW System will be available, PERFORM the following: a. ENSURE 3CCP*AOV10B/19B, "SPLY/RTN ISOL TR B" (MB1), open.
		RO: b. ENSURE 3CCP*AOV197B/194B, "SPLY/RTN ISOL TR B" (MB1), open.
		RO: c. CLOSE 3CCP*AOV197A/194A, "SPLY/RTN ISOL TR A" (MB1).
		RO: d. CLOSE 3CCP*AOV10A/19A, "SPLY/RTN ISOL TR A" (MB1).
	N/A	**RO:** 4.15.3 IF only Train A RPCCW System will be available, PERFORM the following:

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: Reports that OP 3330A is complete for performing Cross-Connecting the Non-Safety Related RPCCW headers.
		US: resumes in AOP 3577
	'A' CDS chiller should restart after a few minutes.	**RO:** 7.g. Verify associated CDS chiller – STARTS
		BOP: 7.h. Check CAR fans – TWO FANS RUNNING
	BOP starts 'C' CRDM fan.	**BOP:** 7.i. Check CRDM fans – TWO FANS RUNNING **RNO**– START fan(s), if available.
	If containment pressure is rising, RO may need to start the 'A' and 'B' CTMT Vacuum Pumps.	**RO:** 7.j. Check containment pressure – STABLE OR DECREASING **RNO**– Perform the following: 1) Using OP 3313E, "Containment Vacuum," Maintain normal operating containment pressure.
	Above 14.0 psia T/S 3.6.1.4 will be entered.	**US:** 2) Refer to Technical Specification 3.6.1.4, "Containment Pressure," for additional actions.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to crew: **NOTE** A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.
		RO: **8. Align Charging And Letdown** 8.a. Check the affected bus – Bus 34D **RNO**– Perform the following: 1) Using GA-14, Establish head vent letdown to the PRT. 2) Proceed to step 9.
		RO: enters GA-14 (Rev. 001-01): **1. Check Reactor Head Vent Valves – CLOSED** • 3RCS*HC442A • 3RCS*HC442B
		RO: **2. OPEN One Set Of Reactor Vessel Head Vent Isolation Valves** • 3RCS*SV8095A • 3RCS*SV8096A OR • 3RCS*SV8095B • 3RCS*SV8096B
		RO: **3. Check Head Vent Letdown To VCT – DESIRED** **RNO**– Proceed to Step 6.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **6. Establish Head Vent Letdown To PRT** 6.a. Check head vent letdown – ALIGNED TO VCT **RNO**– Proceed to step 6.d.
		RO: 6.d. Adjust head vent valve (3RCS*HC442A or 3RCS*HC442B) to establish desired flow to PRT.
		RO: 6.e. Go to procedure and step in effect
		US: resumes in AOP 3577 at step 9 from RNO step 8.a.2)
	Move on to next event with the concurrence of the Chief Examiner	**BOP:** **9. Isolate Auxiliary Steam To Auxiliary Building** 9.a. CLOSE auxiliary steam isolation valves to the Auxiliary Building 3ASS*AOV102A 3ASS*AOV102B
		BOP: **10. Verify Service Water Flow To The Operating Control Building Chiller Heat Exchanger** • For chiller B (HVK*CHL1B) Check annunciator CONTROL BLDG CHLR CNDSR B SW FLOW LO (VP1C 3-3) – NOT LIT

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	The 'B' Spent Fuel Pool Cooling Pump will be running.	**RO:** **11. Verify Spent Fuel Pool Cooling Alignment** 11.a. Check spent fuel cooling pumps – ONE RUNNING
		RO: 11.b. Check RPCCW to the in-service spent fuel pool cooling heat exchanger – FLOW INDICATED • RPCCW safety header flow indication greater than RHR HX RPCCW flow indication

The T/S interpretation (step 16 of AOP 3577) may be asked as a follow-up. Given the loss of Bus 34C, the following T/S are in effect:

- **T/S 3.8.1.1,** AC Sources – Operating
  ACTIONs a. One offsite circuit
  a.1 Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit within 1 hour prior to or after entering this condition, and at least once per 8 hours thereafter.
  AND
  a.2 Restore the inoperable offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- **T/S 3.8.2.1,** DC Sources – Operating
  a. With either Battery Bank 301A-1 or 301B-1, and/or one of the required full capacity chargers inoperable, restore the inoperable battery bank and/or full capacity charger to OPERABLE status within 2 hours or ...
  b With either Battery Bank 301A-2 or 301B-2 inoperable, and/or one of the required full capacity chargers inoperable, restore the inoperable battery bank and/or full capacity charger to OPERABLE status within 24 hours or ...
- **T/S 3.8.3.1,** Onsite Power Distribution – Operating
  a. With one of the required trains of A.C. emergency busses not OPERABLE, restore the inoperable train to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- **TRM 7.4.1**, Fire Related Safe Shutdown Components 'A' train components.
- **TRM 7.6.1**, Equipment Required for Safety Grade Cold Shutdown for 'A' train components.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Move on to next event	**– End of AOP 3577 –**
*********** **EVENT 5** ***********		

Details on Event 5:

1. A Main Generator trip will occur causing an automatic Reactor trip. A steam line break will occur up-stream of 'C' MSIV. The 'C' & 'D' MSIV's fail open while 'A' & 'B' low set safety valves fail open. All four SG's will be faulted.
2. While in E-0, Reactor Trip or Safety Injection, the crew will have to identify and mitigate two separate failures while dealing with complications of only having the 'B' train emergency bus available. RCP Trip criteria from the foldout page will be met. Tripping RCPs isn't a critical task based on the lack of plant impact if not performed.

Event 6: No Aux Feed pumps will auto start. The 'A' MDAFW pp is not available due to the prior loss of bus 34C and the 'B' MDAFW pump will trip on overcurrent once manually started. Steam supply valves for the Turbine Driven AFW pump must be opened to start the pump. **[Critical Task B.4] –** Establish 530 gpm AFW flow to the SGs before transition out of E-0.

Event 7: 3SIH*MV8801B, Charging to Cold Leg Injection Valve, will have failed to open on the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH*MV8801B to provide Charging flow to the core.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
Trigger 5 **T = when directed by Chief Examiner** (EG01) Main Generator trip	**Event 5**	**US:** Acknowledges report from RO or BOP on Reactor trip and **enters E-0** **(Rev 29)** US does not read Caution/Notes to crew prior to Immediate Actions. **CAUTION** When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve's full travel. **NOTE** • Foldout page must be open. • ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10^5 $^R/_{hr}$ in containment. The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.
		RO: **1. Verify Reactor Trip** • Check reactor trip and bypass breakers – OPEN • Check rod bottom lights – LIT • Check neutron flux -DECREASING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **2. Verify Turbine Trip** 2.a. Check all turbine stop valves – CLOSED
	BOP recognizes 34C had a previous bus fault. The crew proceeds in E-0 with power available to only bus 34D (B train).	**BOP:** **3. Verify Power To AC Emergency Busses** 3.a. Check AC emergency busses 34C and 34D – BOTH ENERGIZED **RNO**– Try to energize the affected AC emergency buss(es) from its associated EDG. IF power can NOT be restored to at least one AC emergency bus, THEN Go to ECA-0.0, Loss of All AC Power, step 3. (Observe NOTE prior to step 1.)

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><td></td><td>The RO should monitor for RCP Trip criteria and trip all four RCP's when RCS pressure less than 1500 psia (1800 psia ADVERSE) AND either an SI pump running or a CHS pump running with its cold leg injection MOV open.</td><td>RO:
4. Check If SI Is Actuated
4.a. Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT
RNO– Check if SI is required:
• CTMT pressure GREATER THAN 18 psia
OR
• PZR pressure LESS THAN 1890 psia
OR
• PZR level LESS THAN 9%
OR
• RCS subcooling LESS THAN 32°F
OR
• SG pressure LESS THAN 660 psig

IF SI is required,
THEN
Initiate SI and Proceed to step 4.c.</td></tr>
<tr><td></td><td></td><td>RO:
4.c. Check reactor trip and bypass breakers – OPEN</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 4.d. Check generator output breaker – OPEN **RNO**– IF main generator output breaker is NOT open after 30 seconds, THEN TRIP main generator output breaker. IF main generator output breaker will NOT trip, THEN *Simultaneously* Press both emergency trip pushbuttons.
	Based on the earlier bus 34C failure, there will be two 'B' train SW pumps running and no 'A' train pumps. This comment on the unavailability of 'A' train components is typical throughout the rest of the scenario. As such, each step will NOT be marked with this statement.	**RO:** **5. Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING**
	RO should recognize the loss of CCP to the 'A' & 'D' RCPs and stop them.	**RO:** **6. Verify RPCCW Pumps – ONE PER TRAIN RUNNING**
		RO: **7. Verify ECCS Pumps Running** • Check SI pumps – RUNNING • Check RHR pumps – RUNNING • Check two charging pumps – RUNNING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
BOP may call requesting PEO investigate switchgear for the 'B' MDAFW pump. **T = 5 min** **Call as Primary PEO and report:** "The 'B' MDAFW pump breaker tripped on overcurrent."	**Event 6: No aux feed pumps start** NO AFW pumps will be running. 'A' MDAFW: BUS 34C has no power 'B' MDAFW: trips on over current once manually started 'C' TDAFW: must be started by opening steam supply valves. **[Critical Task B.4]** Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.	**BOP:** **8. Verify AFW Pumps Running** 8.a. Check MD pumps – RUNNING **RNO–** START pump(s). 8.b. Check turbine-driven pump – RUNNING, IF NECESSARY **RNO–** OPEN steam supply valves.
		BOP and RO: **9. Verify FW Isolation** • Check SG feed regulating valves – CLOSED • Check SG feed regulating bypass valves – CLOSED • Check FW isolation trip valves – CLOSED • Check TD FW pumps – TRIPPED • Check MD FW pump – STOPPED • Check SG blowdown isolation valves – CLOSED • Check SG blowdown sample isolation valves – CLOSED • Check SG chemical feed isolation valves – CLOSED **RNO**– Align component(s) as necessary for minimum safety function.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **10. Check If Main Steam Lines Should Be Isolated** 10.a. Check Ctmt pressure – GREATER THAN 18 psia OR Any SG pressure – LESS THAN 660 psig OR Annunciator "MAIN STEAMLINE ISOLATION" (MB2B 5-7) – LIT
	'C' and 'D' MSIVs are failed open.	**BOP:** 10.b. Verify MSIVs and MSIV bypass valves – CLOSED **RNO**– Initiate MSI. IF MSI will NOT actuate, THEN CLOSE the MSIVs and MSIV bypass valves.
	'C' and 'D' MSIVs are failed open.	**RO:** 10.c. Check ESF Group 3 lights – LIT **RNO**—Align steam line drains for minimum safety functions

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **11. Check If CDA Required** 11.a. Check Ctmt pressure -GREATER THAN 23 psia OR Annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – LIT **RNO**– Proceed to step 12.
		BOP: **12. Verify CAR Fans Operating In Emergency Mode**
	BOP stops 'C' CAR fan. Powered from Bus 32M, which is fed from Bus 34B.	**BOP:** 12.a. Check CAR fan status: • CAR fans A and B – RUNNING • CAR fan C – STOPPED **RNO**– START/STOP CAR fans as necessary.
	Only 'B' train valves are open.	**RO:** 12.b. Verify RPCCW Ctmt supply and return header isolations – OPEN
	Only 'B' train valves are open.	**RO:** 12.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Minimum safety function should be met by the 'B' train.	**RO:** **13. Verify CIA** 13.a. Check ESF Group 2, columns 2 through 10 – LIT **RNO–** Initiate CIA. IF ESF Group 2, columns 2 through 10 are NOT lit, THEN Using Attachment A, Reposition valves as necessary for minimum safety function.
RCS pressure may be below the fold-out page criteria for stopping all RCPs.	**Event 7: Failure of 3SIH*MV8801B** 3SIH*MV8801B, Charging to Cold Leg Injection Valve, failed to open after the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH*MV8801B to provide Charging flow to the core. **[Critical Task B.6]** – Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0. **RO should verify RCS pressure is less than 1900 psia and OPEN 3SIH*MV8801B.**	**RO:** **14. Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights – OFF • Verify ESF Group 2 lights – LIT **RNO**– Align component(s) as necessary for minimum safety function.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **15. Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature – GREATER THAN 180°F OR • Ctmt radiation – GREATER THAN 10^5 R/hr **RNO**– DO NOT use ADVERSE CTMT parameters.
		RO: **16. Verify ECCS Flow** 16.a. Check PZR pressure – GREATER THAN 1900 psia **RNO**– Proceed to step 16.d.
	Event 7: This is a **second** chance for the RO to identify 3SIH*MV8801B failed to open. **The RO should verify RCS pressure is less than 1900 psia and OPEN 3SIH*MV8801B.**	**RO:** 16.d. Check charging pumps – FLOW INDICATED **RNO**– START pumps and Align valves.
		RO: 16.e. Check RCS pressure – LESS THAN 1650 psia (1950 psia ADVERSE CTMT)
		RO: 16.f. Check SI pumps – FLOW INDICATED
		RO: 16.g. Check RCS pressure – LESS THAN 300 psia (500 psia ADVERSE CTMT) **RNO**– Proceed to step 17.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	The US should conduct a short brief here.	**BOP:** **17. Verify Adequate Heat Sink** 17.a. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO**– Proceed to step 17.d.
		BOP: 17.d. Verify Total AFW Flow – GREATER THAN 530 gpm
		BOP: **18. Verify AFW Valve Alignment – PROPER EMERGENCY ALIGNMENT**
		RO: **19. Verify ECCS Valve Alignment – PROPER EMERGENCY ALIGNMENT**
	Will be lit due to manual SI or loss of power to 'A' train earlier.	**RO:** **20. Check If CBI Required** 20.a. Check annunciator "CONTROL BUILDING ISOLATION" (MB4D 3-6) – LIT
	If the crew does NOT manual SI, then the CBI alignment will be abnormal (due to 'A' train partial CBI on previous LOP). If this is the case, the crew will have to perform a RNO action to complete CBI alignment for Train 'B'. As such, the BOP will place the 'B' Control Building Filter Fan to ON.	**BOP:** 20.b. Check Train A Control Building filter fan (3HVC*FN1A) – RUNNING **RNO**– Perform the following: 1) <u>IF</u> Train B Control Building filter fan is running (3HVC*FN1B running), <u>THEN</u> Proceed to step 20.c. 2) Place one Control Building filter fan control switch in ON.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	3HVC*AOD119B opens.	**BOP:** 20.c. Check recirc damper for the running Control Building filter fan (3HVC*AOD119A or B) – OPEN
	Minimum safety function will be met.	**RO:** 20.d. Verify ESF Group 2 CBI lights – LIT **RNO**– Align HVAC components as necessary for minimum safety function.
		BOP: 20.e. Verify Control Building purge supply fan and purge exhaust fan – NOT RUNNING
		BOP: 20.f. Place kitchen exhaust fan in OFF
T = when requested **Report:** "All Unit 3 SLCRS doors closed."		**RO or BOP:** 20.g. Verify SLCRS doors – CLOSED **RNO**– Request Security Close all SLCRS doors.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when requested **Call back in 10 minutes and report:** "Control Building pressure boundary doors are closed and dogged."	PEO will be dispatched.	**RO or BOP:** 20.h. Perform the following: • CLOSE and DOG the following Control Building pressure boundary doors ○ CB west 47'6" (C-47-1A) ○ CB east 64'6" (C-64-1B) • Verify the following Control Building pressure boundary doors – CLOSED ○ CB west 47'6" (C-47-1) ○ CB north 64'6" chiller room door (C-64-4) ○ CB north 64'6" chiller room door (C-64-5) ○ CB east 49'6"(C-49-1)
		BOP: **21. Check RCS Temperature** 21.a. Using GA-26, Dump steam as necessary to control RCS cold leg WR temperature – BETWEEN 550°F AND 560°F
		BOP: 21.b. Verify RCS cold leg WR temperature – GREATER THAN 550°F **RNO**– Proceed to step 21.d.
		BOP: 21.d. Maintain total feed flow BETWEEN 530 and 600 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 21.e. CLOSE SG atmospheric relief and relief bypass valves
T = when contacted to look at MSVB roof for signs of steam release Report as PEO: **Steam is issuing from the 'A' and 'B' Code Safety valves. Steam is also issuing from MSVB doors, and under the grating for the MSVB tunnel.**	2 MSIV's are still failed open. RNO actions necessary.	**BOP:** 21.f. Check the following valves – CLOSED • MSIVs • MSIV bypass valves **RNO**– Place both condenser steam dump interlock selector switches to OFF. IF unexpected cooldown continues, THEN CLOSE the MSIVs and MSIV bypass valves.
		US: reads notes to crew: **NOTE** • If the SBO diesel auxiliaries are not repowered within an hour, the SBO diesel may be unavailable for starting. • Power to the SBO diesel auxiliaries should be monitored and if power is lost, GA-25 or GA-27, as applicable, should be used to re-establish power.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	34A1-2 closed to Bus 34A which is energized	**BOP:** **22. Check Power To SBO Diesel Auxiliaries** 22.a. Verify any SBO bus tie breaker – CLOSED TO AN ENERGIZED BUS • Bus 34A: 34A1-2 • Bus 34B: 34B1-2 • Bus 24E: A505 (Unit 2)
		RO: **23. Check PZR Valves** 23.a. Verify PORVs – CLOSED
		RO: 23.b. Verify normal PZR spray valves – CLOSED
		RO: 23.c. Verify PORV block valves – AT LEAST ONE ENERGIZED VALVE OPEN
		RO: 23.d. Verify PZR safety valves – CLOSED
		US: Reads Caution to crew: **CAUTION** To prevent seal damage, seal injection flow should be maintained to all RCPs.
	The RCP's should have been stopped earlier based on foldout page criteria as written into guide on previous steps.	**RO:** **24. Check If RCPs Should Be Stopped** 24.a. Verify RCPs – ANY RUNNING **RNO**– Proceed to step 25.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	The crew will transition to E-2 here.	**BOP:** **25. Check If SG Secondary Boundaries Are Intact** 25.a. Check pressure in all SGs – • NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED **RNO**– Initiate monitoring of CSF Status Trees and Go to E-2, Faulted Steam Generator Isolation.
		US: **Enters E-2 (Rev 012)** and reads Caution to crew: **<u>CAUTION</u>** • At least one SG must be maintained available for RCS cooldown. • Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown or sampling is required. • If RWST level decreases to LESS THAN 520,000 gal, Go to ES-1.3, Transfer to Cold Leg Recirculation, to align the ECCS system.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when requested to perform Attachment A Use applicable trigger as directed: (Note, triggers have delays included) **Trigger 7 to remove Train A fuses** (MSR40 & MSR42 to OUT) 3MSS*CTV27C Train A Grn & Red OFF 3MSS*CTV27D Train A Grn & Red OFF **Trigger 8 to remove Train B fuses** (MSR41 & MSR43 to OUT) 3MSS*CTV27C Train B Grn & Red OFF 3MSS*CTV27D Train B Grn & Red OFF	Attachment A will be unsuccessful in closing the MSIV's.	**BOP:** **1. Check Main Steam Isolation And Bypass Valves – CLOSED** **RNO**– CLOSE valves. <u>IF</u> flow path(s) can <u>NOT</u> be isolated, <u>THEN</u> Using Attachment A, Perform actions as necessary to provide isolation.
	The crew will transition to ECA-2.1 here.	**BOP:** **2. Check At Least One SG Secondary Boundary Is Intact** 2.a. Check pressures in all SGs – AT LEAST ONE STABLE OR INCREASING **RNO**– <u>IF</u> all SG pressures decreasing in an uncontrolled manner, <u>THEN</u> Go to ECA-2.1, Uncontrolled Depressurization of All Steam Generators.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Transitions to ECA-2.1 (Rev 018-00) and reads Caution / Note to crew: **C A U T I O N** • If the capability (e.g., open throttled valves or start TD AFW pump stopped in step 1.b.) to feed SGs at GREATER THAN 530 gpm is NOT available and Heat Sink status is RED, then Go to FR-H.1, Response to Loss of Secondary Heat Sink. • If the TD AFW pump is the only available source of feed flow, a steam supply to the TD AFW pump must be maintained from at least one SG. **NOTE** Foldout page must be open.
	Already completed in E-2.	**BOP:** **1. Check Secondary Pressure Boundary** 1.a. Verify MSIVs and MSIV bypass valves – CLOSED **RNO**– Initiate MSI. IF MSI will NOT actuate, THEN CLOSE the MSIVs and MSIV bypass valves. IF MSIVs OR MSIV bypass valves will NOT close, THEN Using Attachment B, Pull the affected valve(s) fuse block.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	TDAFW is the only source of AFW. The crew should not isolate all steam supply valves to the TDAFW pump. This tests the previous CAUTION "If the TD AFW pump is the only available source of feed flow, a steam supply to the TD AFW pump must be maintained from at least one SG." The US should leave one TD AFW pp steam supply valve open.	**BOP & RO:** 1.b. Check SG isolation • Verify SG feed regulating valves – CLOSED • Verify SG feed regulating bypass valves – CLOSED • Verify FW isolation trip valves – CLOSED • Verify the SG atmospheric relief and bypass valves – CLOSED • Verify steam supply valves to TD AFW pump – CLOSED • Verify SG blowdown isolation valves – CLOSED • Verify SG blowdown sample isolation valves – CLOSED • Verify SG chemical feed isolation valves – CLOSED • Using table, Verify main steam line drains upstream of MSIVs and TD AFW pump – CLOSED

SG A	SG B	SG C	SG D
3DTM*AOV29A	3DTM*AOV29B	3DTM*AOV29C	3DTM*AOV29D
3DTM*AOV61A	3DTM*AOV61B	3DTM*AOV61C	3DTM*AOV61D
3DTM*AOV63A	3DTM*AOV63B		3DTM*AOV63D
3DTM*AOV64A	3DTM*AOV64B		3DTM*AOV64D

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Caution / Note to crew: **CAUTION** A minimum feed flow of 100 gpm must be maintained to each SG with a NR level LESS THAN 8% (42% ADVERSE CTMT). **NOTE** Shutdown margin must be monitored during RCS cooldown using GA-15, Establishing RCS Boron Concentration For Shutdown Margin.
	The BOP will decrease (& maintain until directed otherwise) feed flow to 100 gpm (75–125 gpm) per SG. **[Critical Task B.33] –** Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF. Mainboard indicator scales for AFW flow are non-linear, and have only one subdivision below 100 gpm. To meet the Critical Task, the acceptable range for AFW flow is 75 to 125 gpm. This band accounts for the readability of the scale, keeps the S/G tubes from drying out, and minimizes the cooldown rate.	**BOP:** **2. Control Feed Flow To Minimize RCS Cooldown** 2.a. Check cooldown rate in RCS cold legs – LESS THAN 80°F/hr **RNO**– Decrease feed flow to 100 gpm to each SG and Proceed to step 2.c.
		RO: 2.c. Check RCS hot leg WR temperatures – STABLE OR DECREASING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Caution to crew, Note to self: **CAUTION** To prevent seal damage, seal injection flow should be maintained to all RCPs. **NOTE** The RCP trip criteria is applicable until SI is terminated in step 19.
REMOVE malfunction **MS07B** (This reseats 'B' SG low set safety valve) The scenario may end with the transition to E-2 prior to Step 11, or with a demonstrated understanding of the upcoming transition if in SI termination steps 11 – 26. **The scenario will end at the discretion of the Chief Examiner**. This guide contains ECA-2.1 through step 26.	The last scenario item is for the crew to recognize that the 'B' SG is no longer faulted and to make (or show understanding of) the proper transition to E-2 (per foldout page). The crew has until Step 11 to notice pressure rising in the 'B' SG. The crew may transition to E-2 based upon foldout page criteria. After Step 11 is begun an upcoming Caution prevents the crew from transitioning until after SI is terminated in Step 26.	**RO:** **3. Check If RCPs Should Be Stopped** 3.a. Check RCPs – ANY RUNNING **RNO**-Proceed to CAUTION prior to step 4.
		US: Reads Caution to crew: **CAUTION** If any PZR PORV opens because of high PZR pressure, step 4.a. should be repeated after pressure decreases to LESS THAN 2350 psia.
	'A' PORV indicating light has no power or alarms. RO must use alternate indications (PRT conditions) to confirm PORV closure.	**RO:** **4. Check PZR PORVs And Block Valves** 4.a. Verify PORVs – CLOSED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 4.b. Verify block valves – AT LEAST ONE OPEN
		RO: **5. Check Secondary Radiation** 5.a. Using GA-30, Align RPCCW for RCS and SG sampling
	US continues on with ECA-2.1 on page 64.	**RO: enters GA-30 (Rev. 000)** **1. Check If RPCCW Can Be Restored** 1.a. Check annunciator “CONTAINMENT DEPRES ACTUATION” (MB2B 5–5) – NOT LIT
	‘B’ CCP running	**RO:** 1.b. Check any RPCCW pumps – RUNNING
		RO: reads Caution to self: **CAUTION** After SI reset, manual operator action is required to: • Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia. • Restart safeguards equipment if offsite power is lost.
		RO: **2. Reset ESF Actuation Signals** 2.a. RESET SI 2.b. RESET CIA

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: reads Note to self: **NOTE** Instrument air compressor B is tripped by SI, CDA and LOP.
	‘A’ instrument air compressor should still be running. ‘B’ was tripped on the SI and could be restarted.	**RO:** **3. Verify Instrument Air Available** 3.a. Check instrument air compressors – AT LEAST ONE RUNNING **RNO–** Perform the following: 1) RESET LOP if required. 2) START one instrument air compressor.
T = when contacted Report: **RPCCW non-safety header cross connect valves 3CCP-V186, 167, 187 and 177 are still open.**	These valves were previously opened during recovery from the loss of Bus 34C.	**RO:** **4. Align RPCCW To Primary Sample Sink** 4.a. Check RPCCW pumps – TRAIN A PUMP RUNNING **RNO**– Perform the following: 1) OPEN RPCCW non-safety related header Train B isolation valves: • 3CCP*AOV197B/194B • 3CCP*AOV10B/19B 2) Locally Open RPCCW non-safety header crossconnect valves: • 3CCP-V186 • 3CCP-V167 • 3CCP-V187 • 3CCP-V177 3) Proceed to step 5.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **5. Obtain RCS and SG Samples** 5.a. RESET SG blowdown sample isolation 5.b. OPEN SG blowdown sample isolation valves
T = when contacted **Inform** caller that sample results will take more than 30 minutes to produce.		**RO:** 5.c. Request chemistry obtain RCS and SG samples using HP coverage.
		RO: **6. Go To Procedure And Step In Effect**
		US: resumes in ECA-2.1
		RO: 5.b. Verify trend history and alarm status of radiation monitors • Main steam line – NORMAL • Condenser air ejector – NORMAL • SG blowdown – NORMAL
T = when contacted **Inform** caller that sampling is in progress.		**RO:** 5.c. Verify SG chemistry activity sample results – AVAILABLE **RNO**– Proceed to step 6. and, WHEN SG sample results are available, THEN Perform step 5.d.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 5.d. Verify chemistry samples – NO SG INDICATES ABNORMAL RADIATION
		US: Reads Caution to crew: **CAUTION** After SI reset, manual operator action is required to: • Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia. • Restart the RHR pumps if RCS pressure decreases in an uncontrolled manner to LESS THAN 300 psia (500 psia ADVERSE CTMT). • Restart safeguards equipment if offsite power is lost.
		RO: **6. Check If RHR Pumps Should Be Stopped** 6.a. Check RHR pumps – ANY RUNNING IN SI MODE
		RO: 6.b. Check RCS pressure – GREATER THAN 300 psia (500 psia ADVERSE CTMT)
		RO: 6.c. Check RCS pressure – STABLE OR INCREASING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 6.d. RESET the following as required: • SI • CDA • LOP
		RO: 6.e. STOP RHR pumps and Place in AUTO
		RO: **7. Check If Containment Spray Should Be Stopped** 7.a. Verify quench spray pumps – RUNNING **RNO**– Proceed to step 8.
		RO: **8. Check RWST Level – GREATER THAN 520,000 gal**
	Temp remains > 440°F	**RO:** **9. Check If SI Accumulators Should Be Isolated** 9.a. Verify at least two RCS hot leg WR temperatures – LESS THAN 440°F **RNO**– Proceed to step 10. and, <u>WHEN</u> At least two RCS hot leg WR temperatures are LESS THAN 440°F, <u>THEN</u> Perform step 9.b.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **10. Check If ECCS Flow Should Be Reduced** 10.a. Verify RCS sub cooling based on core exit TCs – GREATER THAN 32°F (115°F ADVERSE CTMT)
		RO: 10.b. Verify RCS pressure – STABLE OR INCREASING
	This may be a hold step if Pressurizer level is less than 16%. If it is a hold step, eventually ECCS flow will cause Pressurizer level to rise above 16%.	**RO:** 10.c. Verify PZR level – GREATER THAN 16% (50% ADVERSE CTMT) **RNO**– Perform the following: 1) Try to stabilize PZR pressure using normal PZR spray. 2) Return to step 10.a.
		US: Reads Caution to crew: **CAUTION** After SI reset, manual operator action is required to: • Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia. • Restart safeguards equipment if offsite power is lost. If any SG pressure increases, Complete steps 11. through 26., then go to E-2, Faulted Steam Generator Isolation.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **11. RESET ESF Actuation Signals If Required** 11.a. RESET SI 11.b. RESET the following: • CDA • LOP • CIA • CIB
T = Step 11 complete **REMOVE MS07A** (Safety relief valve MSS-RV22A closes)	Crew should eventually recognize that pressure in SG 'A' is increasing. Crew must complete steps 11 – 26 before transitioning back to E-2.	**BOP:** **12. Restore MCC 32-3T** 12.a. Check emergency bus 34C – ENERGIZED **RNO**– Proceed to step 13. and, WHEN Power is restored to emergency bus 34C, THEN Perform step 12.b.
		RO: **13. Establish Instrument Air To Ctmt** 13.a. Check instrument air compressors – AT LEAST ONE RUNNING
		RO: 13.b. OPEN instrument air Ctmt isolation valves
		RO: **14. STOP All But One Charging Pump And Place In AUTO**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **15. Check RCS Pressure – STABLE OR INCREASING**
		US: **16. Establish Normal Charging Flow Path** 16.a. Fully Open charging line flow control valve
	RO will close one of two charging loop isolation valves.	**RO:** 16.b. Verify charging loop isolation valves (3CHS*AV8146 or 3CHS*AV8147) – ONE OPEN **RNO**– Re-position valves to establish only one open.
	RO has to realize 8105 was previously open before power was lost OR use status panel indication.	**RO:** 16.c. OPEN charging isolation valves • 3CHS*MV8106 • 3CHS*MV8105
	3CHS*MV8511A was already closed.	**RO:** 16.d. CLOSE the charging pump miniflow isolations to the RWST • 3CHS*MV8511A • 3CHS*MV8511B
	3SIH*MV8801A was already closed.	**RO:** 16.e. CLOSE both charging pump cold leg injection valves • 3SIH*MV8801A • 3SIH*MV8801B

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	3CHS*MV8110 was already open.	**RO:** 16.f. OPEN the charging pump recirculation isolation valves • 3CHS*MV8111A • 3CHS*MV8111B • 3CHS*MV8111C • 3CHS*MV8110
		RO: **17. Verify PZR Level** 17.a. Check PZR level – STABLE OR INCREASING
	Charging flow will be throttled back to match total flow with head vent letdown.	**RO:** 17.b. Control charging flow to maintain PZR level
		RO: **18. Check If SI Pumps Should Be Stopped** 18.a. Check SI pumps – RUNNING
		RO: 18.b. Check RCS pressure: • Pressure – STABLE OR INCREASING • Pressure – GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)
		RO: 18.c. STOP SI pumps and Place in AUTO
		RO: **19. Check If RHR Pumps Should Be Stopped** 19.a. Check RHR pumps – ANY RUNNING IN SI MODE 19.b. STOP RHR pumps and Place in AUTO

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to self: **NOTE** RCP trip criteria associated with step 3. are no longer applicable.
		RO: **20. Verify ECCS Flow Not Required** 20.a. Check RCS subcooling based on core exit TCs – GREATER THAN 32°F (115°F ADVERSE CTMT) 20.b. Check PZR level – GREATER THAN 16% (50% ADVERSE CTMT)
		RO: **21. Check RCS Hot Leg WR Temperatures – STABLE OR DECREASING**
		BOP: **22. Check NR Level In All SGs – LESS THAN 50%**
		RO: **23. Check If Letdown Can Be Established** 23.a. Verify PZR level – GREATER THAN 25% (50% ADVERSE CTMT)
		RO: 23.b. Perform the following: • Verify Train A RPCCW pump – RUNNING **RNO–** Proceed to step 23.d.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Head vent letdown previously aligned to the PRT. Crew may elect to swap letdown over to the VCT as shown here, or may determine letdown is already in service and move on to step 26. Either is acceptable.	**RO:** 23.d. Perform the following: 1) Verify Train B RPCCW pump – RUNNING 2) Using GA-14, Establish head vent letdown to VCT. 23.e. Proceed to step 26.
	This procedure will align head vent letdown to the outlet of the VCT, upstream of the charging pump suction.	**RO: enters GA-14 (Rev. 001-01):** **1. Check Reactor Head Vent Valves – CLOSED** • 3RCS*HC442A • 3RCS*HC442B **RNO**– CLOSE Valves.
		RO: **2. OPEN One Set Of Reactor Vessel Head Vent Isolation Valves** • 3RCS*SV8095A • 3RCS*SV8096A <u>OR</u> • 3RCS*SV8095B • 3RCS*SV8096B
		RO: **3. Check Head Vent Letdown To VCT – DESIRED**
		RO: **4. Check Instrument Air – IN SERVICE**
		RO: **5. Establish Head Vent Letdown to VCT** 5.a. Check Train B RPCCW – IN SERVICE

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 5.b. Check RCP seal leakoff containment inner and outer isolation valves (3CHS*MV8112 and 3CHS*MV8100) – OPEN **RNO**– Perform the following: 1) RESET CIA, if required. 2) OPEN valves.
		RO: 5.c. Open reactor vessel head to excess letdown valve (3RCS*MV8098)
		RO: 5.d. Place excess letdown divert valve (3CHS*AV8143) to VCT position
		RO: 5.e. Adjust excess letdown flow control valve (3CHS-HC123) to obtain the desired flow rate while maintaining: • Excess letdown heat exchanger outlet temperature LESS THAN OR EQUAL TO 165° F (3CHS-TI 122) • VCT Pressure LESS THAN OR EQUAL TO 65 psia (3CHS-PI 115) • No.1 seal leak rates in the normal operating range for running RCPs B and C, using graph on page 7. • CBO flow within normal operating range for running RCPs A and D, using graph on page 8.
		RO: 5.f. Go to procedure and step in effect

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: resumes in ECA-2.1 at step 26
	Based on no RCP's (no spray flow) and no letdown, crew will use RNO control RCS pressure using one PORV.	**RO:** **26. Maintain PZR Pressure Stable** 26.a. Operate PZR heaters and normal spray as necessary to maintain PZR pressure stable **RNO**– IF normal PZR spray is NOT available AND letdown is in service, THEN Using GA-28, Control RCS pressure using auxiliary spray. IF auxiliary spray is NOT available, THEN Control RCS pressure using one PORV.
	Crew should have recognized by now that pressure is rising in the 'A' SG, and level is increasing.	With step 26 complete, crew can exit ECA-2.1 and transition to E-2.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Session can be terminated.	**US: Transitions back to E-2 step 1** and reads Caution to crew **CAUTION** • At least one SG must be maintained available for RCS cooldown. • Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown or sampling is required. • If RWST level decreases to LESS THAN 520,000 gal, go to ES-1.3, Transfer to Cold Leg Recirculation, to align the ECCS system.
T = when US announces transition back to E-2 **FREEZE simulator**	**SCENARIO END:** When objectives for session have been met OR at discretion or floor instructor or lead evaluator, direct simulator be placed in FREEZE.	
RESTORE simulator to "training ready" conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.	**POST-SCENARIO:** a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.	

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SECTION 5
EXAM GUIDE SUMMARY

Title: Four Faulted SG's

Critical Tasks

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS SELECTION
Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.	E-0 – B.4	061-A2.04 (3.4 / 3.8)	Failure results in "adverse consequence(s) or a significant degradation in the mitigative capability of the plant." This would result in a demonstrated inability of the crew to recognize a failure / incorrect auto actuation of an ESF system or component.
Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0.	E-0 – B.6	006-A4.07 (4.4 / 4.4)	Failure to establish injection flow from at least one Charging/SI pump under the postulated conditions constitutes misoperation or incorrect crew performance in which the crew does not prevent "degraded emergency core cooling system (ECCS) … capacity."
Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF.	ECA-2.1 – B.33	040-AA1.10 (4.1 / 4.1) Westinghouse EPE E12–EK3.3 (3.5 / 3.7)	Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable severe challenge to the integrity CSF. Also, failure to perform challenges subcriticality and the containment CSF's beyond those irreparably introduced by the postulated plant conditions.
NOTE Critical Tasks are not required for Progress Review Exams.			

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Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Millstone 3 Scenario No.: 2K15 NRC-01 Op-Test No.: 2K15

Examiners: Operators:

Initial Conditions: IC-357, 74% Power, Beginning of Life

Turnover:
The last shift performed a downpower to 74% power due to intake conditions.
AOP 3569, Severe Weather, has been entered for a hurricane watch. Additionally, last shift performed OP 3301G to induce pressurizer sprays. The ‘B’ Stator Cooling Pump is out of service for bearing replacement. Orders are to maintain power stable as management evaluates hurricane tracking.

Event No.	Malf. No	Event Type*	Event Description
1	RX10A	I (RO) T/S (US)	Primary Pressurizer Level control channel (RCS*LT459) fails high causing level to decrease (AOP 3571). *(Tech Spec entry)*
2	–	R (RO) N (BOP) R (US)	Due to hurricane tracking, Management directs downpower to 60% @ 1% per minute (AOP 3575).
3	RX19	I (BOP)	3FWS-PT508 fails high requiring manual control of the Master Speed Controller (AOP 3571).
4	ED04C	C (RO) T/S (US)	Loss of emergency bus 34C. Isolate letdown (AOP 3581). Recover from loss of 34C (AOP 3577). *(Tech Spec entry)*
5	EG01 MS02C MS07A MS07B MS12C MS12D	M (RO) M (BOP) M (US)	A main generator trip occurs, causing a steam line break outside of containment, upstream of ‘C’ MSIV. On the plant trip, the ‘C’ & ‘D’ MSIV’s fail open and the ‘A’ & ‘B’ low set SG safety valves fail open. All four SG’s are faulted (ECA-2.1). Later in event, one S/G safety reseats (will transition to E-2).
6	FW20C FW18B	C (BOP)	No Aux Feed Pumps auto start. The Turbine Driven Aux Feed Pump can be started from MB5.
7	SIR14	C (RO)	Charging injection valve (3SIH*MV8801B) fails to open below P-19 requiring actions to open.
*	(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor		

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SHIFT TURNOVER REPORT

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	74%
Megawatts:	Thermal: 2629 MWTH	PZR Pressure:	2250 psia
	Electric: 914 MWe	RCS T-AVE:	580 degF
RCS Leakage:	Identified: 0.078 gpm	Core Burnup:	150 MWD/MTU
	Unidentified: 0.108 gpm	Protected Train/Facility:	**"A" (Orange)**
Date/Time:	Today 0015	Intake:	**YELLOW**

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
3GMC-P1B	Stator cooling pump tagged out of service for a bearing replacement.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

1. A hurricane watch is in effect. AOP 3569 is in progress, the previous crew carried out all actions through step 16.
2. An intake structure co-coordinator is stationed at the Intake and has responsibility to perform steps 8b, 8c, and 8d of AOP 3569.
3. SM and STA are monitoring OP 3215, Response to Intake Structure Degraded Conditions, and SP 3665.1, Flood Level Determination.
4. Last shift reduced power to 74% due to intake conditions. Maintain power stable unless conditions change. Xenon is building in (-90 pcm / hr). Withdraw control rods to maintain Tavg within + / - 1°F of Tref as Xenon builds in.
5. Pressurizer sprays have been induced to support earlier downpower per OP 3301G sect 4.5.

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADTL INFO)

Current Rod Height	159 steps
Xenon Trend	building in -90 pcm / hr
Current Boron	1129 pcm
Boron Pot Setting / Blend Ratio	3.23 turns / 13 gpm

SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 3 ILT**	
COURSE:	**N/A**	
EXAM TITLE:	**LOCA Outside Containment – Bank**	**EXAM#: 2K15 NRC-02**
Total Time	**90 Minutes**	

Prepared by:	John Follett		
	Printed Name	Developer	Date
Reviewed by:	Bob Royce		
	Printed Name	Technical Reviewer	Date
Approved by:	Paul Scott		
	Printed Name	Facility Reviewer	Date

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SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
8/11/15	Comments from NRC Validation on 7/21/15: - Pgs 1 & 4, changed time to 90 minutes. - Pg 4: Changed opening statement of Exam Overview to explain lack of BOP Instrument/Component malfunctions. Changed from unisolable leak to isolable leak per NRC comment to reduce exam time. Updated Event 6 to include new Critical Task, B.32. Updated Event 7 to indicate transition to E-1 and scenario termination. - Pgs 6, 38, 60: changed SI06A to SI06B and unisolable to isolable. - Pg 8: Listed schedule and event file names. Added power level and MOL. Added BOL Curve and Data Book. - Pg. 21, added procedure reference to OP 3353.RW 3-11. - Pg 33, added instruction per NRC comment to move on to Event 4, with concurrence from Lead Examiner, to reduce exam time. - Pgs 41 & 42: Move check of generator output breaker open from step 2.b to 4.d to reflect change in E-0. - Pg 42, changed RCPs 2 & 4 to B & C for consistency and to fix typo. - Pg 47: Added info on SG 2 & 3 may have NR level > 8% if crew stopped the B & C RCPs. Added steps 17.b and 17.c. - Pg 57: Changed leak from unisolable to isolable. Added Critical Task B.32. Added notes to expect pressure to increase when 3SIH*MV8835 is closed and expectation that 3SIH*8835 should remain closed. - Pg 58: Added step 5.b to go to E-1 and deleted step to go to ECA-1.1. Scenario to be terminated at transition to E-1. - Pg 59, changed Critical Task from B.29 to B.32.	0/1

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TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

.

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SECTION 3
EXAM OVERVIEW

Title: LOCA Outside Containment Bank scenario, sequence modified.

1. The Scenario will begin with the plant at 100% power and at middle of life. The "B" HVR SLCRS unit is out of service for planned maintenance. Scenario was originally written to be run 4 times in one day. To reduce run time, Instrument/Component malfunctions were omitted from the BOP side. Sufficient Instrument/Component malfunctions exist in the other scenarios to evaluate candidates in the BOP position.

   Event 1: A PZR power operated relief valve (PORV), 3RCS*PCV455A, will begin to leak. The crew will carry out the actions of the Annunciator Response Procedure (or AOP 3555, *Reactor Coolant Leak*) and block the affected PORV. The US will refer to and enter Technical Specification 3.4.4 Action a.

   Event 2: ISO – NE will direct the crew to begin an Emergency Load Reduction decreasing unit electrical output by 300 MWe. The crew will use AOP 3575, *Rapid Downpower* to accomplish this down power at 5%/min.

   Event 3: Once the downpower is complete and the plant stable, an unisolable leak in the "B" RPCCW train will result in the crew entering AOP 3561, *Loss of Reactor Plant Cooling*. The leak will be small enough such that surge tank make-up fill will be able to keep up with the leak rate. The crew will carry out the leak isolation steps in AOP 3561, and ultimately determine that the leak is unisolable. This will require taking the affected train (B) of RPCCW out of service. The US will refer to and enter Technical Specification 3.7.3 and Technical Requirement 7.4.1 Action A.

   Event 4: After the affected train of RPCCW is taken out of service, an Inter-System LOCA will occur. The location of the rupture will be upstream of 3SIH*MV8835 and can be isolated (rupture is in the ESF building, 'A' RHR pump cubicle). The crew should carry out the actions specified in AOP 3555, *Reactor Coolant Leak*, and determine the leak rate is beyond the capacity of two charging pumps. The crew will be required to initiate a manual Reactor Trip and Safety Injection. The crew will enter E-0, *Reactor Trip Or Safety Injection.*

   Event 5: SLCRS "A" HVR EXH FAN/SPLY DMPR (3HVR*FN12A) fails to auto start and must be manually started. **[Critical Task]** – Manually start at least one train of SLCRS ventilation system (3HVR*FN12A) to minimize radiation release to the public.

   Event 6: The crew should proceed through E-0 to step 27 and then transition to ECA-1.2, *LOCA Outside CTMT,* in an attempt to locate and isolate the leak. The crew will not be successful in isolating the leak by closing 3SIH*MV8835. **[Critical Task B.32]** – Isolate the LOCA outside containment before transition out of ECA-1.2.

   Event 7: Once indications of the inability to isolate the leak are obtained, the crew should transition to E-1, *Loss of Reactor or Secondary Coolant*. The session will end upon transition to E-1.

2. The SRO candidate (US) should classify this event as a **Site Area emergency**, based on a loss of both the RCS and CTMT barriers.
3. Duration of Exam: 90 minutes

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

INPUT SUMMARY

RESET SIMULATOR TO IC-18

Either **INPUT** or **Load:** Schedule **NRC02.sch** AND Event file **NRC-2.evt,** THEN **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
RC07A	Pzr PORV PCV455A Leak	1		60 sec		2.0 klbm/hr
CC04B	RPCCW Pipe Leak Hdr B	3				100 gpm
CC04B	RPCCW Pipe Leak Hdr B	4		60 sec		60 gpm
SI06B	RCS to SI LOCA (Isolable)	10		60 sec		350 gpm
REMOTE FUNCTIONS						
CCR50	Trn B Safety Hdr Isol Man (V108/121)	5	7 min			CLOSE
CVR95	RCP Seal Water Return	6	3 min			VCT
CCR07	RPCCW to SF Cooler B (V112)	7				0%
CCR06	RPCCW to SF Cooler A (V110)	8				50%
CCR34	RE31 Sample Hdr	9				HDR A
RCR23	RCP 1 Overcurrent Trip Setpoint	11	1 min			COLD
RCR24	RCP 2 Overcurrent Trip Setpoint	11	2 min			COLD
RCR25	RCP3 Overcurrent Trip Setpoint	11	3 min			COLD
RCR26	RCP 4 Overcurrent Trip Setpoint	11	4 min			COLD
WDR03	Rad Liq/Das Loc Panel Acknowledge	14				ACKNW

INPUT SUMMARY						
RESET SIMULATOR TO IC-18						
Either **INPUT** or **Load:** Schedule **NRC02.sch** AND Event file **NRC-2.evt,** THEN **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
OVERRIDES						
CHLO0411	FN12A RED SLCRS EXH FN12A RUNNING					OFF
CHLO0410	FN12A GREEN SLCRS EXH FN12A RUNNING					ON
CHLO0695	MOD87A RED SLCRS FILTER EXH DMPR					OFF
CHLO0694	MOD87A GREEN SLCRS FILTER EXH DMPR					ON
CHLO0399	FLT3A RED SLCRS FILTER HEATER					OFF
ANLO1103	SLCRS EXH HVR FN12A RUNNING					OFF
CHLO0411	FN12A RED SLCRS EXH FN12A RUNNING	20				ON
CHLO0410	FN12A GREEN SLCRS EXH FN12A RUNNING	20	9 sec			OFF
CHLO0695	MOD87A RED SLCRS FILTER EXH DMPR	20	9 sec			ON
CHLO0694	MOD87A GREEN SLCRS FILTER EXH DMPR	20	9 sec			OFF
CHLO0399	FLT3A RED SLCRS FILTER HEATER	20	9 sec			ON
ANLO1103	SLCRS EXH HVR FN12A RUNNING	20	9 sec			ON

EVENTS		
Event Code	Description	Event Number
ZVHVRFN12ADI(5)	HVR*FN12A SLCRS EXH FAN/SPLY DMPR A = START	20

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
❑ COMPLETE Simulator Setup and Readiness Checklist. ❑ SELECT appropriate IC: **IC-18**, 100% power, MOL. ❑ LOAD and RUN applicable Schedule, **NRC-02.sch**. ❑ LOAD event file **NRC-02.evt**. ❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, <u>OR</u>, as specified on previous '**Input Summary**' page: ▪ Normal 100% power conditions ❑ As necessary, REMOVE the following Equipment from service and tag accordingly: ▪ **"B" HVR EXH FAN/SPLY DMPR (3HVR*FN12B) (Caution Tag on control switch and place in PTL)** ❑ Use Middle of Life curve and data books.		N/A
❑ CONDUCT briefing with evaluators.	**PRE-SCENARIO:** ❑ BRIEF the crew initial plant conditions and provide a shift turnover. ❑ <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew. ❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.	
		(All) Walk down control boards and conduct shift briefing.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
*********** **EVENT 1** ***********		
Event 1 **Trigger 1** **T ≈ 1 minute after turnover** (RC07A) 3RCS*PCV455 leak at 2 klbm/hr (1%), 60 sec ramp	**'A' Pressurizer PORV Leak** Setpoint is 20°F > ambient. Setpoint is flow detected, which is known to occur with a leaking PORV.	**RO:** Identifies alarms lit on: • MB4A 3-5, "PZR RELIEF VALVE DIS TEMP HI" • MB4A 4-5, "PZR SAFETY VALVE DISCH FLOW"
		US: Enters ARP MB4A 3-5 (Rev 002-20) CORRECTIVE ACTIONS
	MB4B 4-9 is not lit.	**RO:** 1. IF (MB4B 4-9) "PORV OPEN" is lit, Go to OP 3353.MB4B 4-9, "PORV OPEN."
	MB4A 3-4 is not lit.	**RO:** 2. IF (MB4A 3-4) "PRESSURIZER PRESSURE HI" is lit, Go to MB4A 3-4, "PRESSURIZER PRESSURE HI."
	Verifies PORV outlet temperature high, reading above ambient on 3RCS-TI463 (about 150°F and increasing).	**RO:** 3. CONFIRM high PORV outlet temperature on 3RCS-TI 463, "PORV OUTLET TEMPS" (MB4).
	Both PORV position indication lights show closed.	**RO:** 4. IF 3RCS*PCV455A or 3RCS*PCV456, "PORV," (MB4), is not fully closed, CLOSE PORVs.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 5. IF 3RCS*PCV455A or 3RCS*PCV456, "PORV", (MB4), fail to close, CLOSE associated PORV block (MB4): PORV — PORV BLOCK 3RCS*PCV455A — 3RCS*MV8000A 3RCS*PCV456 — 3RCS*MV8000B
	Data logger is located in: PPC Top Menu EEQ Monitor Menu (Page 2) Reactor Coolant System	**RO:** 6. IF pressurizer pressure is not high AND both pressurizer power relief valves are closed, PERFORM the following to determine leaking PORV: 6.1 MONITOR PORV outlet temperatures on data logger.
	PRT Press ≈ 16 psia, rising PRT Temp ≈ 70°F, rising Tailpipe Temp ≈ 208°F	**RO:** 6.2 IF data logger indicates 3RCS*PCV455A, "PORV" is leaking, TEST 3RCS*PCV455A, "PORV," as follows:
T = when contacted **Inform the US that the STA will perform the risk review.** **Call back after several minutes and report:** "Risk review is complete, risk profile is green."	MP-13-PRA-FAP01.1 superseded by NF-AA-PRA-370, *Probabilistic Risk Assessment Procedures and Methods: MRule (a)(4) Risk Monitor Guidance*	**US:** 6.2.1 Refer To MP-13-PRA-FAP01.1, "Performing (a)(4) Risk Reviews," and PERFORM risk review.
		RO: 6.2.2 CLOSE 3RCS*MV8000A, "PORV BLOCK" (MB4).

SCENARIO TIME LINE

BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Crew should notice PORV outlet temps lowering	**RO:** 6.2.3 MONITOR 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4).
	The US should enter: • 3.4.4, Action a (3.4.6.2 – leakage Blocked & identified) • (3.4.9.3 – Applies to Mode 4) • TRM 3.4.11, Action C defers to TS 3.4.4.	**US:** 6.2.4 IF 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4), decreases, PERFORM the following: a. Refer To the following and PERFORM applicable actions: • T/S 3.4.4, "Relief Valves" • T/S 3.4.6.2, "Operational Leakage" • T/S 3.4.9.3, "Overpressure Protection Systems" • TRM 3.4.11, "Reactor Coolant System Vents"
When Tech Specs are addressed, move on to Event 2.	**This step does not apply. The Block valve should remain closed.**	**US:** 6.2.5 IF 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4), remains high, Refer To OP 3301G, "Pressurizer Pressure Control," and OPEN 3RCS*MV8000A, "PORV BLOCK" (MB4).
	*********** **EVENT 2** ***********	
T = when Tech Specs are addressed **Call as ISO – NE and REPORT:** "ISO – NE is requesting Millstone Unit 3 to perform an Emergency Load Reduction of 300 MWe in the next 25 minutes due to Grid Instabilities. Maintain current VAR loading."	**ISO – NE directed Emergency Load Reduction of 300 MWe.** Crew will use AOP 3575, Rapid Downpower.	**US:** Receives phone call, briefs crew, and **enters AOP 3575 (Rev 020-00)**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to crew: **NOTE** If at any time either of the following annunciators is received Immediately perform step 7.: • ROD CONTROL BANKS LIMIT LO (MB4C 3-9) • ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)
		RO: **1. Check Rod Control – IN AUTO**
	Load set is normally desired.	**BOP:** **2. Align EHC Panel** 2.a. Check load reduction using load set – DESIRED
		BOP: 2.b. Using Attachment E align EHC panel for LOAD SET operation **Att E Align EHC Panel** 1. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT 2. Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction 3. Select DECREASE LOADING RATE to ON

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to self **NOTE** ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
		US: **3. Determine Power Reduction Rate (% / min)** 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN
		US: reads Caution to crew: **CAUTION** If SI actuation occurs during this procedure, Go to E-0, Reactor Trip or safety Injection, and restore from rapid boration lineup.
		4. RO: Initiate Rapid Boration 4.a. Verify RCS makeup system in – AUTO
		RO: 4.b. START one boric acid transfer pump
		RO: 4.c. OPEN emergency boration valve (3CHS*MV8104)
		RO: 4.d. Verify direct boric acid flow (3CHS-FI 183A) – INDICATED
		RO: 4.e. OPEN charging line flow control valve, to match indicated boric acid flow (3CHS-FI 183A)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 4.f. Record time boration started Time _________
		RO: 4.g. Check Rod Control – AVAILABLE FOR ROD INSERTION
	A decrease of 300 MWE is ≈ 23% power @ ≈ 985 MWe. Crew will probably decrease power to 75% using the Rapid Downpower Summary Sheet (RE-H-17) for 5%/min	**RO:** 4.h. Check use of “Rapid Downpower Summary Sheet” (RE-H-17) in the RE Curve and Data Book – DESIRED **RNO**– Proceed To step 4.k.
	<u>Per RE-H-17</u>: Final Power Level = 75% Generator Output = 941 MWe Boric Acid Required = 450 gal Boration Time = 6 min Reactivity Plan = RE-H-05	**RO:** 4.i. Using the “Rapid Downpower Summary Sheet” (RE-H-17), Determine approximate boration time
	Normally use Attachment G.	**RO:** 4.j. Proceed To step 6. and <u>WHEN</u> Boration time has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: • Attachment G • OP3304C, Primary Makeup and Chemical Addition

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 4.k. Use 18 gal BA/% Power to determine boration time in step 4.l
	Assuming a 23% decrease…	**RO:** 4.l. Using formula, Determine boration time (If gravity borating, use net charging flow (chg + seal inj – seal return total flow) for BA flow rate:
Numbers may vary slightly…. 23% x 18 gal/% = **414 gal** 414 gal ÷ 75 gpm = **5.5 min**	<u>Total Power Change (Δ%)x ________</u>(gal BA/% Power) = ________ min Boration Time BA Flow Rate	
	Will use Attachment G.	**RO:** 4.m. Proceed to step 6. and <u>WHEN</u> Boration has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: • Attachment G • OP 3304C, Primary Makeup and Chemical Addition
		US: Reads Note to crew: **<u>NOTE</u>** If at any time the power reduction rate or final desired power level must be changed, Return to step 1.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **6. Initiate Load Reduction** 6.a. Check Rapid or gravity boration – IN PROGRESS
		BOP: 6.b. Check turbine OPERATING MODE – MANUAL
		BOP: 6.c. Check load reduction using load set – DESIRED
	5% /min	**BOP:** 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)
	Numbers may vary slightly…. Desired MWe / Load Set Mwe / ≈ Rx Power 950 / 1080 / 77 * 941 / 1068 / 76 900 / 1050 / 75 * Extrapolated value	**BOP:** 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
		RO: 6.f. Energize all PZR heaters
		RO: 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain: • Rods above the Rod Insertion Limit (RIL) • Tavg – Tref error/deviation –5°F to +5°F • AFD within COLR limits • Desired downpower rate
Answer phone as CONVEX: Inform caller to maintain VAR loading at 100 MVARs out		**US:** 6.i. Check power reduction – CONVEX REQUESTED **RNO**– Inform CONVEX of load reduction rate (MWe/min) and final MWe level.
		RO: **7. Verify Rod Position Above RIL** 7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT **RNO**– Proceed to step 7.j. and, <u>IF</u> at any time, the annunciator is received, <u>THEN</u> Perform steps 7.c. through 7.h.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT **RNO**– Proceed to step 8. and, IF the annunciator is received, THEN Perform step 7.k. and 7.l.
		RO and BOP: **8. Using Attachment C, "Rapid Downpower Parameters" MONITOR parameters**
		US: **9. Degrade Condenser Backpressure** 9.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 70% (907 MWe) **RNO**– Proceed to step 11.
		RO: **11. Verify Power Related Interlock Status** 11.a. Check reactor power – LESS THAN THE P-9 SETPOINT **RNO**– Proceed to step 12. and, WHEN Power LESS THAN P-9, THEN Return to step 11.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **12. Align Plant Systems for less than 30% Power Operation** 12.a. Verify Final Desired Power Level – LESS THAN 30% **RNO**– Proceed to step 13.
		US: **13. Check Plant Status** 13.a. Verify – AT FINAL DESIRED POWER LEVEL **RNO**– Continue power reduction and, WHEN Actual load is within 200 MWe of final desired load, THEN • Adjust “LOAD SET” to decrease loading rate as necessary to stabilize power level. • Check the following “LOAD MONITORING” indications: ○ “AT SET LOAD” light *lit* ○ “DECREASING LOAD” light *not* lit

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 13.b. Refer to OP 3304C, "Primary Makeup and Chemical Additions." and Borate or Dilute as necessary to maintain the following: • Tavg – Tref error/deviation -1.5°F to +1.5°F • AFD within the target band
		RO: 13.c. If desired, Place rod control SEL switch in AUTO
	When the crew starts GA-9, move on to event 3.	**RO:** 13.d. Using GA-9, Align for auto makeup
	*********** **EVENT 3** ***********	
Trigger 3 **T = downpower complete** (CCO4B) 'B' Train RPCCW pipe leak (100gpm)	**Loss of RPCCW** Notes on Event 3: (1) The leak is between 3CCP*V6 and 3CCP*AOV197B and is unisolable. (2) The first indication of the CCP leak will be annunciator MB1C 2-7B 'RPCCW Surge Tank Level Lo.' (3) It takes about 5 minutes for this alarm to come in.	
Trigger 4 **T = Alarm on MB1C 2-7B** **RPCCW Surge Tank Level Lo** (CCO4B) 'B' Train RPCCW pipe leak (reduce to 60gpm)	This will reduce leak rate to 60 gpm. This will allow for the fill line to keep up with leakage.	**US: enters ARP MB1C 2-7B (Rev 007)** **Setpoint: Less than 92.2%**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when contacted to investigate Rad Waste Alarm **Trigger 14** **T = wait ≈ 5 minutes** (WDR03) Rad Liq/Das Loc Panel Acknowledge **Call back as PEO:** The alarm is OP 3353.RW 3-11, "AUX BLDG SUMP 5 HI-HI"	The "RAD WASTE TROUBLE" alarm will come in after several minutes and the crew should dispatch a PEO to investigate the alarm.	**RO: <u>Corrective Actions</u>** 1. CHECK 3CCP-LI 20A, "RPCCW SURGE TK LVL A" and 3CCP-LI 20B, "RPCCW SURGE TK LVL B," to confirm alarm (MB1).
T = when contacted **Wait 3 minutes and call back as PEO:** "No visible leak around Rad Monitor."	Crew will dispatch a PEO to investigate leak at Rad Monitor.	**RO:** 2. <u>IF</u> leak is on Rad Monitor 3CCP-RE31, CLOSE the following: • 3CCP*V965, Train A supply to Rad Monitor • 3CCP*V966, Train B supply to Rad Monitor
		RO: 3. <u>IF</u> level decreased to less than 68 percent and recovered, then reset the following valves by momentarily depressing the CLOSE/AUTO pushbuttons: • 3CCP*MOV223/225 • 3CCP*MOV222/224 • 3CCP*MOV226/228 • 3CCP*MOV227/229
		US: 4. Go To AOP 3561, "Loss Of Reactor Plant Component Cooling Water."

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	The US should designate a board operator to 'own' Foldout Page criteria.	**US: enters AOP 3561 (Rev 015) and reads Note to crew:** **<u>NOTE</u>** • The Foldout Page must be open. • Water hammer can occur with a loss of Train A RPCCW flow to the non--regenerative heat exchanger. OP–AA–1900 contains guidance for addressing water hammer events and the Technical Specification (T/S 4.7.10.d) requirements.
		RO: **1. Verify RPCCW System Alignment** 1.a. Check Train A RPCCW pump – RUNNING
		RO: 1.b. Check RPCCW pumps – AT LEAST ONE RUNNING
	Both pumps running	**RO:** 1.c. Check RPCCW pumps – ONLY ONE RUNNING **RNO**– Proceed to step 1.i.
	Valves open	**RO:** 1.i. Check RPCCW containment supply and return header isolation valves – OPEN

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Valves closed	**RO:** 1.j. Check RPCCW containment header cross-connect valves – CLOSED 3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B
	Valves open	**RO:** **2. Check Service Water To RPCCW Heat Exchangers** 2.a. Verify RPCCW heat exchanger SW inlet isolation valves (3SWP*MOV50A and 3SWP*MOV50B) – OPEN
	Flow is at least 6200 gpm to each HX	**RO:** 2.b. Verify service water flow to each operating RPCCW heat exchanger – GREATER THAN 6200 gpm
		US: **3. Check IF RPCCW System Is Intact** 3.a. Verify RPCCW SURGE TANK LEVEL LOW annunciator (MB1C 2-7B) – NOT LIT **RNO**– Proceed to Attachment C.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: proceeds to Attachment C and reads Note to crew: **NOTE** • The train with surge tank level continuing to decrease below the top of divider plate, may be considered the affected RPCCW train. • Changes in sump levels may assist in determining leak location.
	Crew will dispatch PEOs to investigate leak. Leak location is Aux Building which should have been reported as a result of having a PEO respond to Rad Waste alarm.	**RO:** **1. Determine Affected RPCCW Train** 1.a. Locally Inspect the following locations for leaks: • Auxiliary Building • Fuel Building • Containment (If accessible) • Service Building • ESF Building
		RO: 1.b. Using PPC Aerated Drains screen, Monitor sump pump activity
		RO: 1.c. CLOSE RPCCW surge tank fill valve (3CCP-LV20)
	Train ‘B’ has the leak which will be observed on the trend of CCP tank level.	**RO:** 1.d. Check affected RPCCW train – NOT IDENTIFIED **RNO**– Go to step 1.h

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 1.h. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO
	The leak is relatively small. The crew has ample time to attempt leak isolation in the steps that follow.	**RO:** 1.i. Maintain surge tank level – BETWEEN 92% and 98%
		US: Reads Caution/Note to crew: **CAUTION** Isolating a RPCCW non-safety header may result in an uncontrolled radioactive release. **NOTE** • Steps 2 through 8 may be performed in any order. • If the leak is located during performance of steps 2. through 8., the step in progress should be completed and recovery actions continue starting with the Note prior to step 9.
		RO: **2. Isolate RPCCW Non-Safety Header** 2.a. CLOSE auxiliary steam isolation valves to the Auxiliary Building 3ASS*AOV102A 3ASS*AOV102B
	The “C” CDS Chiller will trip.	**RO:** 2.b. CLOSE the affected RPCCW train non-safety header isolation valves

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 2.c. CLOSE RPCCW surge tank fill valve (3CCP-LV20)
	Yes; level will still be decreasing.	**RO:** 2.d. Check RPCCW surge tank level – DECREASING
		RO: 2.e. OPEN the affected train non-safety header isolation valves
	Chiller should start, otherwise RNO starts chiller.	**RO:** 2.f. Verify CDS chiller on affected RPCCW train – STARTS
		RO: 2.g. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO
		RO: 2.h. Maintain surge tank level BETWEEN 92% and 98%.
T = when contacted for PEO support Inform caller that Work Control SRO will accomplish alignment of aux steam to the Aux Building.		**BOP:** 2.i. Using OP 3331A, “Auxiliary Boiler, Steam, and Condensate,” Align auxiliary steam to the Auxiliary Building

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	CTMT sump level trends will be normal.	**RO:** **3. Check If RPCCW Ctmt Header Should Be Isolated** 3.a. Check Ctmt sump level trends (plant computer) – INCREASING IN AN UNEXPECTED MANNER **RNO**– Proceed to step 4.
		US: **4. Isolate RPCCW Train A Safety Header** 4.a. Check the affected RPCCW Train – TRAIN A **RNO**– Proceed to step 6.
		US: **6. Isolate RPCCW Train B Safety Header** 6.a. Check the affected RPCCW Train – TRAIN B
		RO: 6.b. Verify RHR pump B – NOT RUNNING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T= 3 min after PEO dispatched to isolate safety header **Report as PEO:** "Water is spraying out of the CCP header all over floor. The leak is between 3CCP*V6 and 3CCP*AOV197B on the mezzanine level in Aux building." **Trigger 5** **T = if requested** (CCR50) Trn B Safety Hdr Isol Man (V108/121) **7 min delay**	NOTE The Crew should refer to P&ID EM-121A and determine **the leak is unisolable**. Based on step 2 note, crew should complete step 6 then proceed to Att C, NOTE prior to step 9.	**RO:** 6.c. Locally Close Train B safety header isolation valves 3CCP*V108 3CCP*V121
		RO: 6.d. CLOSE RPCCW surge tank fill valve (3CCP-LV20)
	Yes; level will still be decreasing.	**RO:** 6.e. Check RPCCW surge tank level – DECREASING
		RO: 6.f. Locally Open safety header isolation valves 3CCP*V108 3CCP*V121
		RO: 6.g. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 6.h. Maintain surge tank level BETWEEN 92% and 98%
		US: moves on to step 9
		US: Reads Note to crew: **<u>NOTE</u>** An isolable leak is a leak that can be isolated without removing the entire affected RPCCW train from service.
	Yes, Train B	**RO:** **9. Check If RPCCW Leak Isolated** 9.a. Check leak – LOCATED
	<u>NO</u>	**RO:** 9.b. Check leak – ISOLABLE **RNO**– Proceed to CAUTION prior to step 10.
		US: Reads Caution/Note to crew: **<u>CAUTION</u>** If the RPCCW Ctmt header cross-connect valves close due to low surge tank level (approximately 68%), step 10.c. RNO should be performed. **<u>NOTE</u>** A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Train B affected Train A non affected	**RO:** **10. Remove Affected RPCCW Train From Service** 10.a. Verify the RPCCW containment supply and return header isolation valves in the non affected train – OPEN
	CTMT sump level trends are still normal	**RO:** 10.b. Check containment sump level trends (plant computer) – NORMAL
		RO: 10.c. Simultaneously OPEN the RPCCW containment header cross-connect valves: 3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B
	Train B	**RO:** 10.d. CLOSE the RPCCW containment supply and return header isolation valves in the affected train
		BOP: 10.e. CLOSE auxiliary steam isolation valves to the Auxiliary Building 3ASS*AOV102A 3ASS*AOV102B
	Train B	**RO:** 10.f. STOP the affected train RPCCW pump and Place in PULL-TO-LOCK

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Yes	**RO:** 10.g. Check the standby RPCCW pump – ALIGNED TO THE AFFECTED TRAIN
		RO: 10.h. Place the standby RPCCW pump in PULL-TO-LOCK
	Yes	**RO:** 10.i. Check the affected RPCCW train – TRAIN B
	Go to page 34 of sim guide to continue on in AOP 3561.	**US directs RO:** 10.j. Using OP 3304A, “Charging and Letdown,” Perform shifting seal return flowpaths to shift seal return to the top of the VCT

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: enters OP 3304A (Rev. 032-05), section 4.19 Shifting Seal Return Flowpaths
		RO: reads Caution and Note: **CAUTION** 1. This section for shifting of seal return to the top of the VCT, shall only be performed as directed by an EOP/AOP OR Plant is in Mode 5,6, or 0. 2. To avoid disrupting reactor coolant pump seal backpressure, care should be exercised when changing VCT pressure. **NOTE** The only normal seal return flow path is to the charging pump suction.
	AOP directed.	**RO:** 4.19.1 CHECK that it was directed to shift flow path by EOP/AOP OR Plant is in MODE 5, 6, or 0.
	Hydrogen is in service.	**RO:** 4.19.2 IF nitrogen is in service, ENSURE 3CHS-PIC8155, VCT nitrogen regulator supply (local), set to maintain 35 psia.
T = if Chemistry contacted: “Maintain 3GSH-PIC 48 set at 32 psig of hydrogen pressure on the VCT.” **T = if PEO contacted, report:** “3GSH-PIC 48 is set at 32 psig”	CP 3802A, “Primary Chemistry Control” step 4.4.11 directs a setting of 32 psig.	**RO:** 4.19.3 IF hydrogen is in service, ENSURE 3GSH-PIC48, “GSH to VCT H2 PRESSURE INDICATING CONTROLLER,” set per Chemistry direction, between 15 and 40 psig (GW).

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 4.19.4 IF seal return/CBO is aligned to VCT, MONITOR VCT pressure on 3CHS-PI115, "VCT PRESS" (MB3), to ensure reactor coolant pump seal backpressure is greater than 30 psia.
	TRM 7.4.1	**US:** 4.19.5 IF shifting seal return flow path to the top of the VCT, PERFORM the following: a. Refer to TRM 7.4.1 and TRM 7.6.1 in MODES 1,2 or 3 OR TRM 3.1.2.1 in MODES 4, 5 or 6.
T = 3 min after requested **Call back as PEO:** "3CHS*V541 open."		**PEO:** b. UNLOCK and OPEN 3CHS*V541, degas aux spray to VCT.
Trigger 6 **T = 3 min after requested** (CVR95) RCP Seal Water Return to VCT **Call back as PEO:** "3CHS*V540 closed."		**PEO:** c. CLOSE 3CHS*V540, RCP sealwater return header isolation.
T = call back complete from Trigger 6 **With concurrence from Lead Examiner, move on to Event 4 on page 38.**	Step is N/A.	**RO:** 4.19.6 IF shifting seal return flow path to the charging pump suction, PERFORM the following:

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: continues with AOP 3561, Att. C. step 10.k
		RO: 10.k. Throttle open the letdown heat exchanger RPCCW flow control valve to stabilize VCT temperature
		RO: 10.l. Check VCT temperature – STABLE OR DECREASING
	US should enter 3.6.1.4 if CTMT pressure exceeds **14.0 psia**.	**US:** 10.m. Using OP 3313E, “Containment Vacuum,” Maintain normal operating containment pressure – BETWEEN 13.7 psia and 13.9 psia **RNO**– Refer to Technical Specification 3.6.1.4, Containment Pressure, for additional actions.
		RO: 10.n. Using the RPCCW safety header flow indication and RHR HX RPCCW flow indication, Check RPCCW to the in-service spent fuel pool cooling heat exchanger – FLOW INDICATED **RNO**– Using OP 3305, “Spent Fuel Pool Cooling and Purification,” Perform Spent Fuel Pool Cooling System pump and HX shift.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Go to page 37 to resume in AOP 3561.	**US: enters OP 3305 (Rev 022-01)** **4.3 Spent Fuel Pool Cooling System Pump and HX Shift**
	N/A	**RO:** 4.3.1 IF shifting from normal Train A alignment (pump A and HX A) to normal Train B alignment (pump B and HX B), PERFORM the following:
		RO: 4.3.2 IF shifting from normal Train B alignment (pump B and HX B) to normal Train A alignment (pump A and HX A), PERFORM the following: a. STOP 3SFC*P1B, "SPENT FUEL POOL PPS" "B" (MB1).
Trigger 7 T = when requested (CCR07 to 0%) RPCCW to SF Cooler B (V112)		**PEO:** b. UNLOCK and CLOSE 3SFC*V975, fuel pool cooler B outlet valve.
Trigger 8 T = when requested (CCR06 to 50%) RPCCW to SF Cooler A (V110)		**PEO:** c. THROTTLE open 3SFC*V976, fuel pool cooler A outlet valve, to approximately 50%.
		RO: d. Start 3SFC*P1A, SPENT FUEL POOL PPS" "A" (MB1).

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when requested Adjust CCR06 as necessary (May need to go to 100% to get flow in spec.)		**PEO:** e. THROTTLE 3SFC*V976, fuel pool cooler A outlet valve, to adjust spent fuel pool cooler outlet flowrate to between 3,450 and 3,550 gpm, as indicated on one of the following: • SFC-F19 (computer) • 3SFC-FI19 (FP)
		PEO: f. LOCK 3SFC*V976, fuel pool cooler A outlet valve.
		RO: reads Caution: **<u>CAUTION</u>** Do <u>not</u> exceed a flow of 8,100 gpm on any RPCCW Train.
T ≈ 3 minutes after requested, Report: “CCP flow through the ‘A’ RPCCW HX is about 1,825 gpm.”		**PEO:** g. THROTTLE 3CCP*V111, fuel pool cooler A RPCCW outlet, to adjust flow to between 1,700 and 1,900 gpm, as indicated on 3CCP-FIS255A (Fuel Bldg. mezzanine above SFP cooling pumps).
T ≈ 5 minutes after requested, Report: “3CCP*V114 is closed.”	This completes OP 3305	**PEO:** h. CLOSE 3CCP*V114, fuel pool cooler B RPCCW outlet.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: continues in AOP 3561
When contacted, REPORT that: "3CCP-RE31 aligned to Train 'B' **Trigger 9** **T = when requested** (CCR34) RE31 Sample Hdr to HDR A		**PEO:** 10.o. Locally Check RPCCW process radiation monitor (3CCP-RE31) – ALIGNED TO NON-AFFECTED TRAIN **RNO**– Locally Turn switch (3CCP-RE32) to non-affected train.
	Yes	**US:** 10.p. Check leak – LOCATED
	<u>The US should enter</u>: • T/S 3.7.3 (72 hour action statement) • TRM 7.4.1 action a (14 day action statement)	**11. US: Check RPCCW Leak Status** 11.a. Using the following, Determine any additional required actions: • Technical Specification 3.7.3, "Reactor Plant Component Cooling System" • 3TRM-7.4, Section I, "Fire Related Safe Shutdown Components" • Technical Specification for any affected component • OP 3260A, "Conduct of Outages"
	Does not apply.	**US:** 11.b. EVALUATE the incident classification using MP-26-EPI-FAP06, "Classification and PARs"

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
Once Tech Specs are addressed, move on to the next event.	No, not repaired. The US should hold at this point until the Organization develops a plan for repair / shutdown.	**US:** 11.c. Verify the affected component or line segment – ISOLATED OR REPAIRED **RNO–** WHEN The affected component or line segment is isolated or repaired, THEN Proceed to step 12.
	*********** **EVENT 4** ***********	
Trigger 10 **T = Tech Specs addressed, or as directed by Chief Examiner** (SI06B) RCS to SI LOCA (Isolable) 350 gpm, 60 sec ramp	**LOCA Outside Containment** This will cause an inter-system LOCA in the ESF Building (isolable). First indications will be radiation alarms along with PZR level lowering. "Safeguards Area Flooding" and 'A' RHR cubicle sump alarms will be received.	**US: enters AOP 3555 (Rev 017-03)** **1. Check PZR Level – DECREASING**
		US: reads Note to crew: **NOTE** Step 2. is a continuous action step and should be performed at any time additional charging flow is required to maintain pressurizer level.
	Normal lineup expected.	**RO:** **2. Increase Charging Flow** 2.a. Check charging lineup – NORMAL

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 2.b. Throttle Open charging line flow control valve to increase charging flow to maximum
	One letdown orifice isolation valve will be open.	**RO:** 2.c. Check letdown orifice isolation valves – ONLY ONE OPEN
	Lowering	**RO:** 2.d. Verify PZR level – STABLE OR INCREASING **RNO**– Perform the applicable action: • IF in operational Mode 1, 2, or 3, THEN Proceed to step 2.g.
		RO: 2.g. START second charging pump.
		US: 2.h. Proceed to step 6.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Lowering rapidly The US should direct a manual reactor trip and safety injection. ***NOTE:*** ***US should go to "Master Silence" with the reactor trip.***	**RO:** **6. Check PZR Level** 6.a. Verify PZR level – STABLE OR INCREASING **RNO**– Perform the following: 1) TRIP the reactor. 2) Initiate SI. 3) Go to E-0, Reactor Trip or Safety Injection.
		US: enters E-0 (Rev 029-00) US does not read Caution/Notes to crew prior to Immediate Actions. **CAUTION** When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve's full travel. **NOTE** • Foldout page must be open. • ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10^5 $^R/_{hr}$ in containment. • The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **1. Verify Reactor Trip** • Check reactor trip and bypass breakers – OPEN • Check rod bottom lights – LIT • Check neutron flux – DECREASING
		BOP: **2. Verify Turbine Trip** 2.a. Check all turbine stop valves – CLOSED
		BOP: **3. Verify Power To AC Emergency Busses** 3.a. Check AC emergency busses 34C and 34D – BOTH ENERGIZED
	SI annunciator will be lit.	**RO:** **4. Check If SI Is Actuated** 4.a. Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT
		RO: 4.b. By observation of ESF Group 2 Status Panel lights, Verify both trains of SI – ACTUATED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 4.c. Check Reactor trip and bypass breakers – OPEN
		BOP: 4.d. Check generator output breaker – OPEN **RNO**– IF main generator output breaker is NOT open after 30 seconds, THEN TRIP main generator output breaker. IF main generator output breaker will NOT trip, THEN *Simultaneously* Press both emergency trip pushbuttons.
		RO: **5. Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING**
	No, the ‘B’ RPCCW pump is in PTL and should remain so. Cross-connects go closed on SI, RO will recognize RCPs B & C need to be stopped per foldout page criteria from AOP 3561.	**RO:** **6. Verify RPCCW Pumps – ONE PER TRAIN RUNNING**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **7. Verify ECCS Pumps Running** • Check SI pumps – RUNNING • Check RHR pumps – RUNNING • Check two charging pumps – RUNNING
		BOP: **8. Verify AFW Pumps Running** 8.a. Check MD pumps – RUNNING
		BOP: 8.b. Check turbine–driven pump – RUNNING, IF NECESSARY

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP & RO: **9. Verify FW Isolation** • Check SG feed regulating valves – CLOSED • Check SG feed regulating bypass valves – CLOSED • Check FW isolation trip valves – CLOSED • Check TD FW pumps – TRIPPED • Check MD FW pump – STOPPED • Check SG blowdown isolation valves – CLOSED • Check SG blowdown sample isolation valves – CLOSED • Check SG chemical feed isolation valves – CLOSED
		RO: **10. Check If Main Steam Lines Should Be Isolated** 10.a. Check Ctmt pressure – GREATER THAN 18 psia OR Any SG pressure – LESS THAN 660 psig OR Annunciator “MAIN STEAMLINE ISOLATION" (MB2B 5-7) – LIT **RNO**– Proceed to Step 11.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **11. Check if CDA Required** 11.a. Check Ctmt pressure – GREATER THAN 23 psia <u>OR</u> Annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – LIT **RNO**– Proceed to Step 12.
		BOP: **12. Verify CAR Fans Operating In Emergency Mode** 12.a. Check CAR fan status: • CAR fans A and B – RUNNING • CAR fan C – STOPPED **RNO**– START/STOP CAR fans as necessary.
	No – Train 'B' supply/return header isolations were closed when the RPCCW leak was identified. Crew should <u>not</u> open valves. The safety Injection closed the RPCCW CTMT cross-connect valves. As a result, the 'B' and 'C' RCPs have no motor lube oil cooling and RCP bearing temperatures will start to increase. **The crew should identify this and trip the 'B' and 'C' RCPs.**	**RO:** 12.b. Verify RPCCW Ctmt supply and return header isolations – OPEN **RNO**– OPEN valves.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 12.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN
		RO: **13. Verify CIA** 13.a. Check ESF Group 2, columns 2 through 10 – LIT
	<u>**EVENT 5**</u> **SLCRS "A" HVR EXH FAN/SPLY DMPR (3HVR*FN12A) fails to auto start.** RO/BOP should manually start 3HVR*FN12A. **[Critical Task]** – Manually start at least one train of SLCRS ventilation system (3HVR-FN12A) to minimize radiation release to the public.	**RO:** **14. Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights – OFF • Verify ESF Group 2 lights – LIT **RNO**– Align component(s) as necessary for minimum safety function.
	US may elect to use BOP for this while RO realigns for minimum safety function.	**RO/BOP:** **15. Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature – GREATER THAN 180°F <u>OR</u> • Ctmt radiation – GREATER THAN 10^5 $^R/_{hr}$ **RNO**– DO NOT use ADVERSE CTMT parameters.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **16. Verify ECCS Flow** 16.a. Check PZR pressure – GREATER THAN 1900 psia
	Block valve 3RCS-MV8000A was previously closed due to leaking PORV. The other PORV is available, so US may decide this block valve should remain closed to minimize inventory loss. Open or closed is acceptable.	**RO:** 16.b. Check PORV block valves – OPEN **RNO**– OPEN energized block valves.
	CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.	**US:** 16.c. Proceed to step 17.
	SG 2 & 3 may have NR level > 8% if the crew stopped the B & C RCPs.	**BOP:** **17. Verify Adequate Heat Sink** 17.a. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO**– Proceed to step 17.d.
		BOP: 17.b. Control feed flow to maintain NR level – BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)
		BOP: 17.c. Proceed to step 18.
		BOP: 17.d. Verify Total AFW Flow – GREATER THAN 530 gpm

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **18. Verify AFW Valve Alignment – PROPER EMERGENCY ALIGNMENT**
		RO: **19. Verify ECCS Valve Alignment – PROPER EMERGENCY ALIGNMENT**
	CBI lit	**RO/BOP:** **20. Check If CBI Required** 20.a. Check annunciator "CONTROL BUILDING ISOLATION" (MB4D 3-6) – LIT
		BOP: 20.b. Check Train A Control Building filter fan (3HVC*FN1A) – RUNNING
		BOP: 20.c. Check recirc damper for the running Control Building filter fan (3HVC*AOD119A or B) – OPEN
		RO: 20.d. Verify ESF Group 2 CBI lights – LIT
		BOP: 20.e. Verify Control Building purge supply fan and purge exhaust fan – NOT RUNNING
		BOP: 20.f. Place kitchen exhaust fan in OFF

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when contacted for the Security Shift Supervisor **Report:** "All SLCRS doors indicate closed."		**BOP:** 20.g. Verify SLCRS doors – CLOSED
T = 3-5 min after contacted **Report as PEO:** "Control Building pressure boundary doors are Closed and Dogged or verified closed as directed."		**BOP:** 20.h. Perform the following: • CLOSE and DOG the following Control Building pressure boundary doors ○ CB west 47'6" (C-47-1A) ○ CB east 64'6" (C-64-1B) • Verify the following Control Building pressure boundary doors – closed ○ CB west 47'6" (C-47-1) ○ CB north 64'6" chiller room door (C-64-4) ○ CB north 64'6" chiller room door (C-64-5) ○ CB east 49'6" (C-49-1)
		BOP: **21. Check RCS Temperature** 21.a. Using GA-26, Dump steam as necessary to control RCS cold leg WR temperature – BETWEEN 550°F AND 560°F
		BOP: 21.b. Verify RCS cold leg WR temperature – GREATER THAN 550°F 21.c. Proceed to step 22.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: is not required to read Notes to crew: **NOTE** • If the SBO diesel auxiliaries are not repowered within an hour, the SBO diesel may be unavailable for starting. • Power to the SBO diesel auxiliaries should be monitored and if power is lost, GA-25 or GA-27, as applicable, should be used to re-establish power.
	Yes, breaker 34A1-2 is closed.	**BOP:** **22. Check Power To SBO Diesel Auxiliaries** 22.a. Verify any SBO bus tie breaker – CLOSED TO AN ENERGIZED BUS • Bus 34A: 34A1-2 • Bus 34B: 34B1-2 • Bus 24E: A505 (Unit 2)
	PORVs expected to be cycling on a solid primary. US expected to assign the RO to monitor for PORV closure and take actions as directed.	**RO:** **23. Check PZR Valves** 23.a. Verify PORVs – CLOSED **RNO**– IF PZR pressure LESS THAN 2350 psia, THEN CLOSE PORVs.
		RO: 23.b. Verify normal PZR spray valves – CLOSED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 23.c. Verify PORV block valves – AT LEAST ONE ENERGIZED VALVE OPEN
	PZR safety valve indications are expected to be flashing due to flow from cycling PORV. RO should verify safety valve discharge temperature is not elevated.	**RO:** 23.d. Verify PZR safety valves – CLOSED
		US: reads caution to crew: **CAUTION** To prevent seal damage, seal injection flow should be maintained to all RCPs.
	'A' and 'D' RCPs should be running.	**RO:** **24. Check If RCPs Should Be Stopped** 24.a. Verify RCPs – ANY RUNNING
		RO: 24.b. Verify RCS pressure – LESS THAN 1500 psia (1800 psia ADVERSE CTMT) **RNO**– Proceed to Step 25.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **25. Check If SG Secondary Boundaries Are Intact** 25.a. Check pressure in all SGs – • NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • NO SG COMPLETELY DEPRESSURIZED
		BOP: **26. Check If SG Tubes Are Intact** 26.a. Check steam generator levels – NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER
		BOP: 26.b. Verify trend history and alarm status of radiation monitors • Main steam line – NORMAL • Condenser air ejector – NORMAL • SG blowdown – NORMAL

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	CTMT parameters will be normal.	**RO:** **27. Check If RCS Is Intact** • Verify Ctmt radiation using 3CMS*RE22 (pre-trip) – NORMAL • Verify Ctmt radiation using radiation monitoring group histogram (CTMT) – NORMAL • Verify Ctmt pressure – NORMAL • Verify Ctmt recirculation sump level – NORMAL
		US: reads Caution to crew: **<u>CAUTION</u>** Consult with ADTS and RMT prior to performing any local inspections in the Aux Building or ESF Building.
		RO: **28. Check for RCS Leakage Outside CTMT** 28.a. Check Auxiliary Building and ESF Building radiation (radiation monitoring group histograms) • Verify Auxiliary Building (AUX) – NORMAL • Verify ESF Building (ESF) – NORMAL

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Train 'A' ESF RHR CUB SUMP LEVEL HI light will be lit. SAFEGUARDS AREA FLOODING will be lit.	**RO:** 28.b. Check for Auxiliary Building or ESF Building flooding 1) Verify SUMP LEVEL HI lights (MB1) – NOT LIT • AUX BLDG PIPE TNL • ECCS PIPE CUB • ESF RHR CUB • ESF RSS CUB 2) Verify Annunciator "SAFEGUARDS AREA FLOODING" (MB1C 2-8) – NOT LIT **RNO**– <u>IF</u> the cause is a loss of RCS inventory outside containment, <u>THEN</u> Initiate monitoring of CSF Status Tress and Go to ECA-1.2, LOCA Outside Containment.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Event 6 The US should conduct a short transition brief and then **transition to ECA-1.2, LOCA Outside Containment.**	**US: enters ECA-1.2 (Rev 008-00)**
		US: reads Note to crew: **NOTE** • For some breaks, ECCS flow may cause an RCS pressure increase without break isolation, or a pressure increase may not be indicated, for example, if the RCS is cycling on the PORVs or if a cooldown is in progress. • Other means of verifying break isolation should be checked such as pressurizer level increase, reports from the field, decrease in area radiation, or an increase in PORV cycling frequency.
		US: **1. Verify Loss Of Coolant Location** 1.a. Check loss of RCS inventory determined to be – IN THE AUXILIARY BUILDING **RNO**– Proceed to CAUTION prior to step 3.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: reads Caution to crew: **CAUTION** Consult with the ADTS and RMT prior to performing any local RHR System operations.
		RO: **3. Verify Proper Valve Alignment In ESF Building** 3.a. Verify RHR suction isolation valves – CLOSED • 3RHS*MV8701A • 3RHS*MV8701B • 3RHS*MV8701C • 3RHS*MV8702A • 3RHS*MV8702B • 3RHS*MV8702C
		RO: 3.b. Verify RHR hot leg injection valve (3SIL*MV8840) – CLOSED
		RO: 3.c. Verify SI pump hot leg injection valves – CLOSED • 3SIH*MV8802A • 3SIH*MV8802B

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **4. Try To Identify And Isolate Break** 4.a. Turn the power lockout switch to ON for the following valves (MB2R): • RHR pump A cold leg injection valve (3SIL*MV8809A) • RHR pump B cold leg injection valve (3SIL*MV8809B) • SI cold leg injection valve (3SIH*MV8835)
	The leak is upstream of 3SIH*MV8835 and isolable. **[Critical Task B.32]** – Isolate the LOCA outside containment before transition out of ECA-1.2.	**RO:** 4.b. CLOSE one of the following: • RHR pump A cold leg injection valve (3SIL*MV8809A) • RHR pump B cold leg injection valve (3SIL*MV8809B) • SI cold leg injection valve (3SIH*MV8835)
	RCS pressure will increase when 3SIH*MV8835 is closed. 3SIH*MV8835 should remain closed.	**RO:** 4.c. Check RCS pressure – INCREASING **RNO** – Perform the following: 1) OPEN valve closed in step 4.b. 2) <u>IF</u> all lines have been checked, <u>THEN</u> Proceed to step 4.d. 3) Return to step 4.b.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 4.d. Turn the power lockout switch to OFF for the following valves (MB2R): • RHR pump A cold leg injection valve (3SIL*MV8809A) • RHR pump B cold leg injection valve (3SIL*MV8809B) • SI cold leg injection valve (3SIH*MV8835)
		US: **5. Check If Break Is Isolated** 5.a. Check RCS pressure – INCREASING.
When directed, FREEZE simulator.	**SCENARIO END:** When crew completes a brief for transition to E-1, simulator may be placed in FREEZE.	**US:** 5.b. Go to E-1, Loss of Reactor or Secondary Coolant.
RESTORE simulator to "training ready" conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.	**POST-SCENARIO:** a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.	

SECTION 5

EXAM GUIDE SUMMARY

Title: Steam Generator Tube Rupture

Critical Tasks

TASK DESCRIPTION	TASK #	K/A >/= 3.0	BASIS SELECTION
Manually start at least one train of SLCRS ventilation system (3HVR-FN12A) to minimize radiation release to the public.	Site specific task	013-A4.01 (4.5 / 4.8)	Failure to monitor and operate ESFAS equipment which failed to actuate results in unmonitored release to the environment.
Isolate the LOCA outside containment before transition out of ECA-1.2	ECA-1.2 – B.32	009-EA2.02 (3.5 / 3.8) 069-AA1.01 (3.5 / 3.7)	Failure to isolate a LOCA outside containment (that can be isolated) degrades containment integrity beyond the level of degradation irreparably introduced by the postulated conditions.
Note: Critical Tasks are not required for Progress Review Exams.			

SEG# 2K15 NRC-02 Rev ; 0/1

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Millstone 3 Scenario No.: 2K15 NRC-02 Op-Test No.: 2K15

Examiners:____________ Operators:____________

Initial Conditions: IC-18, 100% Power, Middle of life

Turnover:
The plant is at 100% power and at middle of life. The "B" HVK Chiller unit is out of service for planned maintenance.

Event No.	Malf. No	Event Type*	Event Description
1	RC07A	C (RO) T/S (US)	'A' PZR PORV (3RCS*PCV455A) leak. Results in closing the PORV block valve. (Annunciator response) *(Tech Spec entry)*
2	–	R (US) R (RO) N (BOP)	ISO-NE directed 300 MWe Emergency Load Reduction. (AOP 3575, *Rapid Downpower* at 5%/min)
3	CC04B	C (RO) T/S (US)	Respond to a RPCCW leak (AOP 3561, *Loss of RPCCW*). Results in taking the 'B' train of RPCCW out of service. *(Tech Spec entry)*
4	SI06B	M (ALL)	RCS to SI LOCA (isolable) outside CTMT. AOP 3555, *Reactor Coolant Leak* requires a manual Reactor Trip and Safety Injection.
5	CHLO0411 CHLO0410 CHLO0695 CHLO0694 CHLO0399 CHLO0410 ANLO1103	C (RO)	SLCRS 'A' HVR EXH FAN/SPLY DMPR (3HVR*FN12A) fails to auto start.
6	–	–	Transition to ECA-1.2, *LOCA Outside CTMT.*
7	–	–	LOCA determined to be isolable. Transition to E-1, *Loss of Reactor or Secondary Coolant*.

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

SHIFT TURNOVER REPORT

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	100%
Megawatts:	Thermal: 3649 MWTH	PZR Pressure:	2250 psia
	Electric: 1284 MWe	RCS T-AVE:	587 degF
RCS Leakage:	Identified: 0.015 gpm	Core Burnup:	10,000 MWD/MTU
	Unidentified: 0.036 gpm	Protected Train/Facility:	**"A" (Orange)**
Date/Time:	Today 0015	Intake:	**GREEN**

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.6.6.1	ACTION	yesterday	23 hours	Restore within 7 days	6 days

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
	The "B" SLCRS filter unit is out of service for planned maintenance. T/S LCO 3.6.6.1 ACTION has been entered. There are 6 days left on the 7 day allowed outage time.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

	Steady State Operation

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	CBD @ 219
Xenon Trend	Stable
Current Boron	984 ppm
Boron Pot Setting / Blend Ratio	2.81 turns / 11.25 gpm

SITE:	**Millstone Power Station**
PROGRAM:	**Unit 3 ILT**
COURSE:	**N/A**
EXAM TITLE:	**Loss of Heat Sink – Modified Bank** — **EXAM #: 2K15 NRC-04**
Total Time	**90 Minutes**

Prepared by:	John Follett		
	Printed Name	Developer	Date
Reviewed by:	Bob Royce		
	Printed Name	Technical Reviewer	Date
Approved by:	Paul Scott		
	Printed Name	Facility Reviewer	Date

SEG#_2K15 NRC-04_ Rev ; __0 / 2___

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
6-26-15	Changed method of plant shutdown from manual reactor trip to automatic trip per NRC recommendation. Crew could have interpreted a First Out without automatic trip as a T/S 3.0.3 entry with 1 hour to commence an orderly shutdown based upon a failed RPS. Replaced BOP Component Malfunction and Critical Task for manual reactor trip with new RO Component Malfunction and Critical Task for manual start of service water pumps. (No change bars)	0/1
8/13/15	Comments from NRC Validation on 7/20/15: - Pg 4, added time in life to Exam Overview. - Pg 12: Listed schedule file name. Added power level and BOL. Added BOL Curve and Data Book. - Pg 19, added instructor notes to describe how to adjust backpressure to initiate downpower, but restore it as soon as downpower is commenced. - Pg 21, documented that either section 4.2 or 4.5 of OP 3329 may be performed. Updated call back report to make it independent of section to be performed by PEO. - Pgs 23, 27 & 28: Changed/added instructor notes to describe how to control the refilling of the vacuum breaker and return backpressure below 5 INHG. - Pg 43, added steps 5 and 6 of AOP 3571 Attachment B which will be performed if Lead Examiner does not concur with triggering Event 5. - Pgs 45 & 46: moved check of generator output breaker from step 2 to step 4.d in accordance with Rev 30 of E-0. - Pg 57, modified expectations for how booth is directed to remove universal logic cards from 3RPS*RAKLOGA/B. - Pg 69, added instruction sheet to be placed at RPS photo behind Mainboard 1 to direct candidate to call x3333 for procedural directed actions. (No change bar) - Pg 70 turnover sheet updates due to Initial Condition: Thermal Power = 2269 MWTH, Electric Power = 914 MWe, Rod Height = 159 steps, Current Boron = 1129 pcm, Boron Pot setting = 3.23 turns / 13 gpm. - Various pages, added step numbers to procedures. (No change bars)	0/2

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SECTIONS LISTED IN ORDER

SEG# 2K15 NRC-04 Rev ; 0 / 2

SECTION 3

EXAM OVERVIEW

Title: Loss of Heat Sink Modified bank scenario.

1. The Session will begin with the plant at 74% power, BOL. The Turbine Driven Auxiliary Feedwater Pump has been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

   Event 1: Loop 4 Thot instrument (RCS-TE441A) will fail high causing rods to step in and Pressurizer Level setpoint to increase by 13%. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to confirm a turbine runback is not in progress and place rods in manual. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The US will direct the RO to take manual control of Charging Flow to stabilize pressurizer level. Next the crew will defeat the failed temperature channel, restore pressurizer level to setpoint, restore $T_{AVE} - T_{REF}$ error to within 1°F, and request I&C to trip bistables. The US will refer to Technical Specification 3.3.1 and log into Action 6 (FU# 7&8). The US will refer to Technical Specification 3.3.2 and log into Action 20 (FU# 5.d) and Action 21 (FU# 9.b).

   Event 2: Once actions of AOP 3571 are complete, a leak will occur at condenser vacuum breaker 3ARC-MOV20C. The crew enters AOP 3559, *Loss Of Condenser Vacuum,* which will direct a rapid load reduction of 5%/min in accordance with AOP 3575, *Rapid Downpower*. Load will be lowered at least 15% before condenser backpressure will stabilize and the crew can stop the load reduction.

   Event 3: Main steam header pressure transmitter, 3MSS-PT507, fails high. Turbine driven feedwater pumps will increase speed, steam generator water levels will rise, and steam dump valves will be inoperable in Auto while in the Steam Pressure Mode. The BOP will perform immediate actions of AOP 3581 to take feedwater pump speed control to manual and make corrections before significant transients occur. The US will enter AOP 3571, *Instrument Failure Response* and direct the BOP to restore feed pump differential pressure to the normal operating band of 40-175 psid. (Setpoint ≈ 110 psid @ 50% power.)

   Event 4: The controlling channel of pressurizer pressure RCS*PT455 will fail high. Pressurizer spray valves will open and RCS pressure will lower. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to place the master pressure controller in manual and return the output to ≥ 50% to stabilize pressure. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The crew will defeat the failed pressure channel and restore pressurizer pressure to setpoint. The crew will be unable to trip bistables, since doing so would cause an automatic reactor trip on 2/4 channels of OTΔT. The US should recognize that Technical Specification 3.0.3 applies. The US should contact plant management for maintenance assistance and guidance. Other Technical Specifications applicable are 3.3.1 Action 6 (FU# 7, 9 & 10) and 3.3.2 Action 20 (FU# 1.d) and Action 21 (FU# 9.a).

   Event 5: The faulted Pressurizer Pressure loop transitions from failed high to failed low, causing a 2/4 Reactor Trip on OTDT.

   Event 6: The turbine will not trip. The BOP will attempt to run back the turbine but fail. Neither MSI pushbutton will function. The BOP must manually close the Main Steam Isolation Valves. Auto MSI is failed, manual isolation of steam line drains is required after safety injection actuation.

   Event 7: A Safety Injection is expected to occur from low steamline pressure. Train ‘B’ of Safety Injection is failed requiring manual Safety Injection.

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Event 8: Running Service Water Pumps trip on the reactor trip. Stand-by Service Water Pumps fail to auto start and must be started manually. **[Critical Task B.9]** – Manually start one service water pump per train before exiting E-0.

Event 9: The ‘A’ MDAFW pump fails to start, and the ‘B’ MDAFW pump discharge valve is shut with a stem/disc separation. As previously stated, the TDAFW pump is out of service for governor maintenance.

Event 10: The crew will proceed through E-0 to step 17 and then transition to FR-H.1. The MDFW pump will not start. The crew will reset Safety Injection and Feedwater Isolation circuits, open the feedwater isolation trip valves and feed at least one steam generator from the condensate pumps. **[Critical Task B.43]** – Establish condensate flow into at least one SG before RCS bleed and feed is required.

The session will end with condensate flow established.

2. The SRO candidate (US) should classify this event as **ALERT Charlie One** based on RCS Barrier failure, BA1: Heat Sink Red and required feedwater flow cannot be established within 15 minutes, RCB1.

3. Duration of Exam: 90 minutes

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

INPUT SUMMARY						
RESET SIMULATOR TO IC-356						
Either **INPUT** or **Load** Schedule **NRC-04.sch** AND **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
ED11E	D/G A Seq Fail 20.5 sec (Follow "A" Train SWP Pump Auto Start)					
ED12E	D/G B Seq Fail 20.5 sec (Follow "B" Train SWP Pump Auto Start)					
FW07A	FW Pump Trip (Motor) P1					
FW18A	MDAFW Pump Trip (P1A)					
FW19	TDAFW Pump Trip					
FW20A	MDAFW Pp Fails to Auto Start (P1A)					
FW21B	MDAFW Disch VV Closed P1B (V18)					
FW37	MD FW Pp Auto Start Failure					
RP07B	SI Train B Auto Actuate Fail					
RP08A	MSI Train A Auto Actuate Fail					
RP08B	MSI Train B Auto Actuate Fail					
SW02A	SW Pump Fail to Auto Start (P1A, low pressure)					
SW02B	SW Pump Fail to Auto Start (P1B, low pressure)					
TC03	Turbine Fails to Trip					
TC04	Turbine Fails to Runback					

INPUT SUMMARY						
RESET SIMULATOR TO IC-356						
Either **INPUT** or **Load** Schedule **NRC-04.sch** AND **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
TC06A	Turb Stop VV Fails in Pos MSV					
TC06B	Turb Stop VV Fails in Pos MSV					
TC06C	Turb Stop VV Fails in Pos MSV					
TC06D	Turb Stop VV Fails in Pos MSV					
RX05_4A	RCS Loop 4 NR HL TE441A Fail	1				650 °F
FW01	Lowering Condenser Vacuum (Initial)	2				600 CFM
RX15	MS Hdr Press PT507 Fail	3		30 sec		0%
RX09A	Pzr PT455 Fail (high)	4				2500 psi
RX09A	Pzr PT455 Fail (low)	5				1700 psi
TC07A	Turbine CV-1 FAI (Fail As Is)	5				37%
TC07B	Turbine CV-2 FAI (Fail As Is)	5				37%
TC07C	Turbine CV-3 FAI (Fail As Is)	5				37%
TC07D	Turbine CV-4 FAI (Fail As Is)	5				0%
MB4C-A04T	SSPS A Door Open (deletes in 45 sec to close door)	8			45 sec	ON
MB4C-A04B	SSPS B Door Open (deletes in 45 sec to close door)	9			45 sec	ON
FW07B	FW Pump Trip (Steam) P2A	30				
FW07C	FW Pump Trip (Steam) P2B	30				

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INPUT SUMMARY						
RESET SIMULATOR TO IC-356						
Either **INPUT** or **Load** Schedule **NRC-04.sch** AND **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
SW01C	SW Pump Trip P1C	30				
SW01D	SW Pump Trip P1D	30				
REMOTE FUNCTIONS						
RXR05	OTDT Loop 1 B/S TB411C	5			2 sec	TRIP
RXR34	OTDT Loop 1 B/S TB411D (C3)	5			2 sec	TRIP
RPR44	RPS*RAKLOGA [Train A A213 Card]	8	30 sec			OUT
RPR45	RPS*RAKLOGB [Train B A213 Card]	9	30 sec			OUT
RXR109	Prot Set Door 4 (open)	10				OPEN
RXR04	OPDT Loop 4 B/S TB441G	10	14 sec			TRIP
RXR33	OPDT Loop 4 B/S TB441H (C4)	10	16 sec			TRIP
RXR08	OTDT Loop 4 B/S TB441C	10	18 sec			TRIP
RXR37	OTDT Loop 4 B/S TB441D (C3)	10	20 sec			TRIP
RXR113	RX: T442G Lo Tavg Loop4	10	25 sec			TRIP
RXR117	RX: T442D Lo Lo Tavg Loop4 (P12)	10	27 sec			TRIP
RXR109	Prot Set Door 4 (close)	10	35 sec			CLOSE
RXR106	Prot Set Door 1 (open)	14				OPEN

INPUT SUMMARY						
RESET SIMULATOR TO IC-356						
Either **INPUT** or **Load** Schedule **NRC-04.sch** AND **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
RXR40	RX:P455A PB455A Hi Pzr Press Trip	14	14 sec			TRIP
RXR120	PZR Press Lo PB-455B (P-11)	14	16 sec			TRIP
RXR48	RX:P455C PB455C Lo Pzr Press Trip	14	18 sec			TRIP
RXR44	RX:P455D PB455D Lo Pzr Press SI	14	20 sec			TRIP
RXR05	OTDT Loop 1 B/S TB411C (Trip)	14	30 sec			TRIP
RXR34	OTDT Loop 1 B/S TB411D (C-3)	14	32 sec			TRIP
RPR40	PB455H – Hi Press PORV Act (PS455E)	14	35 sec			TRIP
RXR106	Prot Set Door 1 (close)	14	40 sec			CLOSE
SGR01	SG “A” Drain 1%/min NR LVL	30				Start
SGR02	SG “B” Drain 1%/min NR LVL	30				Start
SGR03	SG “C” Drain 1%/min NR LVL	30				Start
SGR04	SG “D” Drain 1%/min NR LVL	30				Start
OVERRIDES						
RPDI0071	PB2 MSI Isolate -MB2					NACTUATE
RPDI0140	PB1 MSI 3MSS**SLI –MB5					NACTUATE
MSLO0069	3MSS*MOV17A Green AFD-TD Stm Sply Iso 1					OFF

INPUT SUMMARY						
RESET SIMULATOR TO IC-356						
Either **INPUT** or **Load** Schedule **NRC-04.sch** AND **VERIFY** the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MSLO0070	3MSS*MOV17A Red AFD-TD Stm Sply Iso 1					OFF
MDSI0027	3MSS*MOV17A AFD-TD Stm Sply Iso 1					CLOSE
MSLO0071	3MSS*MOV17B Green AFD-TD Stm Sply Iso 2					OFF
MSLO0072	3MSS*MOV17B Red AFD-TD Stm Sply Iso 2					OFF
MDSI0028	3MSS*MOV17B AFD-TD Stm Sply Iso 2					CLOSE
MSLO0073	3MSS*MOV17D Green AFD-TD Stm Sply Iso 4					OFF
MSLO0074	3MSS*MOV17D Red AFD-TD Stm Sply Iso 4					OFF
MDSI0029	3MSS*MOV17D AFD-TD Stm Sply Iso 4					CLOSE
MSLO0041	3MSS*AOV31A Green TDAFW Stm Sply S/G 1					OFF
MSLO0042	3MSS*AOV31A Red TDAFW Stm Sply S/G 1					OFF
MDSI0017	3MSS*AOV31A TDAFW Stm Sply S/G 1					CLOSE
MSLO0045	3MSS*AOV31B Green TDAFW Stm Sply S/G 2					OFF
MSLO0046	3MSS*AOV31B Red TDAFW Stm Sply S/G 2					OFF
MDSI0019	3MSS*AOV31B TDAFW Stm Sply S/G 2					CLOSE
MSLO0049	3MSS*AOV31D Green TDAFW Stm Sply S/G 4					OFF
MSLO0050	3MSS*AOV31D Red TDAFW Stm Sply S/G 4					OFF
MDSI0021	3MSS*AOV31D TDAFW Stm Sply S/G 4					CLOSE

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><td colspan="2">❑ COMPLETE Simulator Setup and Readiness Checklist.
❑ SELECT appropriate IC: IC-356, 74% power, BOL.
❑ LOAD and RUN applicable Schedule, NRC-04.sch.
❑ As necessary, ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous ‘Input Summary’ page.
❑ As necessary, PERFORM verification of Initial Malfunctions / I/Os / Remote Functions entered.
❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable.
❑ The MB4 Loop Temp Cutout switches (ΔT and Tavg) are seldom used and require wiping/exercising during exam setup to ensure proper operation. Steam Dump indications and alarms sometimes experience intermittent operation when switches are used in the Loop 4 position.
❑ As necessary, REMOVE the following Equipment from service and tag accordingly:
▪ YCT 3MSS*MOV17A, B, D for TDAFW pump out of service.
▪ YCT 3MSS*AOV31A, B, D for TDAFW pump out of service.
❑ Place instruction sheet (pg 69) on back of MB1 at RPS photos.
❑ Use Beginning of Life curve and data books.</td><td>N/A</td></tr>
<tr><td>❑ CONDUCT briefing with evaluators.</td><td colspan="2">PRE-SCENARIO:
❑ BRIEF the crew initial plant conditions and provide a shift turnover.
❑ <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew.
❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.</td></tr>
<tr><td></td><td></td><td>(All) Walk down control boards and conduct shift briefing.</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
*********** **EVENT 1 Loop 4 Th Fails Hi** ***********		
<u>Event 1</u> **Trigger 1** **T = ≈ 1 min after taking shift** (RX05_4A) Loop 4 NR Thot TE441A fails hi Alarms: MB4A 4-1 Pzr Lvl Dev MB4C 4-5 ΔT/Auct ΔT Dev MB4C 4-6 Overtemp ΔT MB4C 4-7 Overtemp ΔT Runback Rod Block MB4C 5-5 Tave/Auct Tave Dev MB4C 5-5 Tref/Auct Tave Dev MB4D 5-7 Turb Byp VV Tripped Open	Notes on Event 1: (1) Rods will step in. (2) Pzr Level Setpoint will increase by approximately 13%, causing an alarm on MB4A 4-1, PRESSURIZER LEVEL DEVIATION. (3) The US may direct the RO to place 3CHS*FCV121 in manual IAW the Dominion Nuclear Operations Standards and Expectations Handbook, page 114.	**RO:** Identifies uncontrolled rod motion and performs Immediate Actions of AOP 3581, Attachment A, from memory: **Check Turbine Runback – IN PROGRESS** a. Check the following: • Main Generator MWE – NOT AT EXPECTED VALUE • Main Generator MWE – CHANGING **RNO**– Perform the following: 1) Place rod control SEL switch in MAN. 2) Proceed to step 2.
		RO: **Check Rod Motion Stopped** The RO will focus brief immediate actions are complete.
	The RO will report a failure of Loop 4 Tavg.	**US: Enters AOP 3581** **(Rev 001-00)** **Using Appropriate Attachment, Perform Immediate Actions** **<u>EVENT</u>** **<u>Attachment</u>** **Uncontrolled Rod Motion** **A**
		US: Proceeds to Attachment A and confirms with RO that step 1 Immediate Actions are complete.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **3. Check Initiating Event – INSTRUMENT FAILURE** • Tavg • Nuclear Instrument • Turbine Impulse Pressure
		US: **4. Go to AOP 3571, "Instrument Failure Response"**
		US: Enters AOP 3571 (Rev 011-01) and reads Caution / Note to crew: **CAUTION** Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. **NOTE** If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
	Rods are already in manual. RO should also identify an increase in pressurizer level setpoint and place 3CHS*FCV121 in manual.	**RO:** **1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL**
	Pressurizer level will be rising due to the setpoint increase. If Pressurizer level rises 6% above program level before the event, the RO should communicate this to the US. The US should then enter T/S 3.4.3.1 Action b (2 hours to correct).	**RO:** **2. Stabilize The Plant Parameters**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Note to crew: **NOTE** It is desired that I&C personnel trip the bistables specified in this procedure. If, during off–hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.
		US: **3. Perform Corrective Actions Using Appropriate Attachment** **Instrument Failure — Attachment** RCS Narrow Range Temperature Channel Failure — A
		BOP: 1. Place one condenser interlock selector switch to OFF.
	Switch taken to Loop D and pulled out. Switch taken to Loop D and pulled out. Any position other than Chan 4.	**RO:** 2. Defeat the failed channel input. Loop Temp Cutout – ΔT 3RCS–TS411F Loop Temp Cutout – TAVG 3RCS–TS412T OT/OPΔT Record Select 3RCS–TS411E
		RO: 3. Check the following annunciators NOT LIT: TREF/AUCT TAVE DEVIATION MB4C 6–5 TAVE HI MB4C 5–6
		BOP: 4. Check steam dump demand indicator indicating approximately 0%.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 5. Place both steam dump interlock selector switches to "ON."
	"HOLD" light should not be lit.	**BOP:** 6. If main turbine "HOLD" light lit, Refer To OP 3323A, "Main Turbine," and Perform recovery from main turbine hold condition.
		RO: 7. Restore TAVE – TREF error to within 1°F and return rod control to automatic.
		RO: 8. Monitor PZR level until stable. If PZR level controller is in manual, Restore pressurizer level to program level and Place PZR level controller in automatic.
		US: Reads Note to self: **NOTE** If RCS loop 3 cold leg narrow range Temperature channel computer point (RCS-T431E) is X-tagged, the plant calorimetric program will automatically shift to an NI based output.
	Loop 4 failure, step is NA.	**US:** 9. If RCS loop 3 cold leg narrow range temperature channel affected by instrument failure, Determine if plant calorimetric program should be shifted to NI based output or a point substitution performed using SP 31002, "Plant Calorimetric."

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO & BOP: 10. When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the Shift Manager.
		US: 11. Trip the associated Reactor Protection System bistable(s): 11.a. Place a check mark in the box above the appropriate channel that requires tripping on page 6 or 7 of this Attachment.
	The US should enter: • 3.3.1, Action 6 (FU# 7&8) • 3.3.2, Action 20 (FU# 5.d) Action 21 (FU# 9.b)	**US:** 11.b. Refer to T/S 3.3.1 and T/S 3.3.2.
	The RO should do a lamp check to ensure all bistable lights are functional, then verify no coincidence would be met when bistables are tripped.	**RO:** 11.c. Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.
		US: Reads Caution/Note to self: **CAUTION** If the General Warning lamp is lit on 3RPS*RAKLOGB, Placing train A SSPS “Multiplexer Test” switch in “A+B” will cause the reactor to trip. **NOTE** The following step will distinguish whether the failure is within SSPS or the Protection channel.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Channel indication is not normal. The US should N/A this section and proceed to next step.	**US:** 11.d. If bistable status light(s) (MB4F) indicate that a single bistable input has tripped and channel indication is normal, PERFORM the following:
T = When requested: **Report to the Control Room as I&C.**		**US:** 11.e. Request the I&C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment A and Attachment S.
Trigger 10 T = After I&C brief Trip Bistables (RXR109, RXR04, RXR33, RXR08, RXR37, RXR113, RXR117)	**Trigger 2 can be put in after crew requests B/S to be tripped**	**RO:** 11.f. Verify the appropriate bistable status light(s) are lit.
	N/A until channel inspection results obtained.	**US:** Reads Note to self: **NOTE** Following corrective action by the I&C Department, the channel may be declared OPERABLE if it complies with the guidelines provided in the Table found on page 5 of this Attachment.
		RO: 12. Request I&C perform corrective maintenance on failed instrument.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
*********** **EVENT 2 Loss of Condenser Vacuum** ***********		
Trigger 2 **T = after request for I&C to trip bistables** (FW01) Lowering Condenser Vacuum (initial leak) Initial backpressure ≈ 2.7 INHG **FW01 leak size must be reduced** to allow the crew time to perform the downpower, without reaching the Turbine Trip Setpoint of 7.6 INHG. Intent is to quickly get to 5 INHG backpressure to force the downpower, then slow the rate of rise to remain close to 5 INHG. The empty vacuum breaker will be reported and refilled as soon as the downpower is started. It is crucial that backpressure drop below 5 INHG so that the crew can stop the downpower.	<u>Notes for event 2</u>: 1) A leaking vacuum breaker, 3ARC-MOV20C, is the cause of the in-leakage. 2) Backpressure will raise 1 INHG in ≈ 4 minutes. 3) A computer priority alarm @ 3.5 INHG will be the first indication. 4) Lo Vacuum alarms take about 10 min to come in @ 5.1 INHG increasing. • Crew will reduce power IAW AOP 3575, Rapid Downpower, to reduce/stop the backpressure rise. • MB4D 5-6, Condenser Available for Steam Dump C-9 will go out with low vacuum alarms. 5) Crew may enter ARP or go straight to AOP 3559.	**BOP:** Identifies condenser backpressure increasing. **Crew:** Enters one of the following ARP: • MB6A 4-4, Condenser A Vacuum Low • MB6A 4-5, Condenser A Vacuum Low • MB6A 4-6, Condenser A Vacuum Low **<u>CORRECTIVE ACTIONS</u>** 1. CHECK 3CNM-PR21, condenser backpressure recorder, to confirm alarm (MB7). 2. Go To AOP 3559, "Loss Of Condenser Vacuum."
		US: Enters AOP 3559, Loss Of Condenser Vacuum (Rev. 011-00) and reads Note to crew: **<u>NOTE</u>** The Foldout Page must be open.
		US: **1. Check Reactor Power Greater Than 3%**

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **2. Check If Turbine Load Should Be Reduced** 2.a. Verify condenser backpressure – LESS THAN OR EQUAL TO 7.5 inches Hg Absolute
	Flow path assumes crew will catch the backpressure increase with a computer priority alarm before the low vacuum alarm, and proceed to step 3. Once the alarm comes in the crew will have to go to step 2.c to reduce load. **Go to step 2.c on page 24 for the downpower steps.**	**BOP:** 2.b. Verify condenser backpressure – GREATER THAN 5 inches Hg Absolute **RNO**– Proceed to step 3. AND IF condenser backpressure increases to GREATER THAN 5 inches Hg Absolute THEN Proceed to step 2.c.
		US: Reads Note to crew: **NOTE** Steps 3. through 10. May be performed in any order.
		BOP: **3. Check Circulating Water System Operation** 3.a. Verify circulating water pumps – ONE PER CONDENSER RUNNING
		BOP: 3.b. Verify water box outlet isolation valves – OPEN
		BOP: 3.c. Verify all circulating water pumps – RUNNING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 3.d. Verify the traveling screen differential pressure – LESS THAN 12 inches H_20
	3ASS–AOV22 located on MB6, horizontal section, upper right.	**BOP:** **4. Check Condenser Air Removal Alignment** 4.a. Verify steam jet air ejector auxiliary steam supply valve (3ASS–AOV22) – OPEN
T ≈ 6 min after request **Contact control room and report:** "Actions in AOP 3559 are complete. No evidence of backfiring exists. Two SJAE are in service. Two first stage jets are in service for each SJAE."	The crew may direct PEO to perform a specific section of OP 3329, either 4.2 or 4.5 is acceptable. Preferred method is 4.5. OP 3329: • Section 4.2, "Place Steam Jet Air Ejectors in Service" • Section 4.5, "Place a Second Steam Jet Air Ejector in Service"	**PEO:** 4.b. Using OP 3329, "Condenser Air Removal," locally Perform the following" 1) Verify both sets of steam jet air ejectors in service 2) Verify two first stage jets in service on each air ejector 3) Verify air ejectors – NOT BACKFIRING 4) Maintain condenser backpressure in the prescribed band determined by the procedure in effect
	Dampers located at VP1A and VP1B	**BOP:** 4.c. Verify isolation dampers for gaseous waste to Millstone stack (3GWS*AOD78A and 3GWS*AOD78B) – OPEN
T ≈ 3 min after request **Contact control room and report:** "Fan 3GWS-FN1A is running; fan 3GWS-FN1B is stopped."		**PEO:** 4.d. At Gas Waste Panel (3GWS-PNL01), Verify process vent fans (3GWS-FN1A or 3GWS-FN1B) – ONE RUNNING

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T ≈ 2 min after request **Contact control room and report:** "Steam jet air ejector exhaust valves 3ARC-AOV36A and 3ARC-AOV36B are open."		**PEO:** 4.e. Locally (Turbine Bldg 38' southwest) Verify steam jet air ejector exhaust valves (3ARC-AOV36A and 3ARC-AOV36B) – OPEN
	3TME-PI27 located on MB7	**BOP:** **5. Check Gland Seal Pressure – BETWEEN 2 And 6 psig**
		BOP: **6. Verify Auxiliary Steam Pressure In Required Band** a. Check Auxiliary Steam header pressure – 140 to 155 PSIG (MB6, ASS-PIC20)
		US: reads Note to crew: **NOTE** Locked valve key is required for some local operations.
		BOP: **7. Check Condensate Surge Tank Level** • GREATER THAN 18,000 gal • NOT DECREASING IN AN UNEXPECTED MANNER
		US: reads Note to crew: **NOTE** A turbine trip occurs if the exhaust hood temperature exceeds 225°F.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **8. Check Exhaust Hood Temperature Annunciators EXH HOOD A, B, And C TEMP HI (175°F) (MB6A 5–4, 5–5, And 5–6) – NOT LIT**
		BOP: **9. Check For Condenser In-Leakage** 9.a. Verify condenser vacuum breakers (MB7) (3ARC-MOV20A-B-C) – CLOSED
T = 3CHS*MV8104 open (downpower commenced) **FW01 = zero or reduced to stop backpressure rise in condenser.** **T ≈ 5 minutes after crew dispatches PEO** **Contact the control room and report:** • "Loop seal on vacuum breaker 3ARC-MOV20C found empty" **<u>WHEN</u> 3CHS*MV8104 is open, make the following report:** • "I refilled the seal and will monitor level." • "Air in-leakage noises stopped when the water seal was refilled.	**<u>NOTE</u>** • Crew must start the downpower before the empty loop seal can be reported and vacuum breaker refilled. • Backpressure must remain above 5 INHG until the boration is complete, otherwise the crew may stop the downpower too early.	**PEO:** 9.b. Locally Check vacuum breaker loop seals (Turbine Bldg 60' west) – FILLED **RNO**– Locally Fill loop seals. 9.c. Locally Check for no unusual noises indicative of air in-leakage
		BOP: 9.d. Check seal water supply pressure annunciator EXT STM NRV SEAL PRES LO (30 psig) (MB6A 3-6B) – NOT LIT

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 9.e. Contact Engineering to assist in locally checking condenser penetrations for air in-leakage
		US: **10. Review Current Maintenance And Testing Activities**
		BOP: **11. Verify Condenser Backpressure – STABLE OR DECREASING**
		RO & BOP: **12. Verify MB Annunciators And Parameters – AS EXPECTED**
	Proceed to page 35 for Event 3	**US:** **13. Continue With Normal Plant Evolutions Using Applicable Plant Procedures** **–FINAL–**
*********** **AOP 3559 is complete** ***********		
*********** **Commence Downpower using AOP 3575** ***********		
	Crew will jump here to step 2.c of AOP 3559 to reduce load when backpressure increases above 5 inhgA	**US: using AOP 3559** 2.c. Verify turbine load – GREATER THAN 389 Mwe.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 2.d. Using AOP 3575, "Rapid Downpower," Lower turbine load at 5%/min. Proceed to step 3. AND WHEN one of the following occurs: • Backpressure LESS THAN OR EQUAL TO 5 inches Hg Absolute OR • Turbine load at 389 Mwe THEN Proceed to step 2.e.
		US: enters AOP 3575 (Rev 020-00) and reads Note to crew: **NOTE** If at any time either of the following annunciators is received Immediately perform step 7.: • ROD CONTROL BANKS LIMIT LO (MB4C 3-9) • ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)
		RO: **1. Check Rod Control - IN AUTO**
	Load set is normally desired.	**BOP:** **2. Align EHC Panel** 2.a. Check load reduction using load set – DESIRED
		BOP: 2.b. Using Attachment E align EHC panel for LOAD SET operation

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **<u>Att E Align EHC Panel</u>** **1. Align EHC Panel** a. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT b. Rotate LOAD LIMIT SET adjust know at least one full turn in raise direction c. Select DECREASE LOADING RATE to ON – FINAL –
		US: Reads Note to self **<u>NOTE</u>** ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
	5% / min downpower required per AOP 3559.	**US:** **3. Determine Power Reduction Rate (% / min)** 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN
		US: reads Caution to crew: **<u>CAUTION</u>** If SI actuation occurs during this procedure, go to E-0, Reactor Trip or Safety Injection and restore from rapid boration lineup.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = 3CHS*MV8104 open **FW01 = zero or reduced to stop backpressure rise in condenser.** **T = <u>WHEN</u> 3CHS*MV8104 is open** **Contact the control room and report:** • "Loop seal on vacuum breaker 3ARC-MOV20C found empty" • "I refilled the seal and will monitor level." • "Air in-leakage noises stopped when the water seal was refilled.	**<u>NOTE</u>** • Backpressure must remain above 5 INHG until the boration is complete, otherwise the crew may stop the downpower too early.	**RO:** **4. Initiate Rapid Boration** 4.a. Verify RCS makeup system in – AUTO 4.b. START one boric acid transfer pump 4.c. OPEN emergency boration valve (3CHS*MV8104)
		RO: 4.d. Verify direct boric acid flow (3CHS-FI183A) – INDICATED
		RO: 4.e. OPEN charging line flow control valve, to match indicated boric acid flow (3CHS-FI 183A)
		US: 4.f. Record time boration started Time _____________
		RO: 4.g. Check Rod Control – AVAILABLE FOR ROD INSERTION

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	US will use RNO. Curve and Data Book contains rapid downpower reactivity plans; however they all begin at 100% power.	**RO:** 4.h. Check use of "Rapid Downpower Summary Sheet" (RE-H-17) in the RE Curve and Data Book – DESIRED **RNO**– Proceed To step 4.k.
		RO: 4.k. Use 18 gal BA/% Power to determine boration time in step 4.l.
Crew will probably select 50% power as the point for this boration.	Numbers will vary with the power change selected by the crew…. 24% (pwr change) x 18 (gal per % pwr) equals **432 gallons**	**RO:** 4.l. Using formula, Determine boration time (If gravity borating, use net charging flow (chg + seal inj – seal return total flow) for BA flow rate:
432 gallons at 80 gpm equals ≈ **5:24 min**	<u>Total Power Change (Δ%)x ________</u>(gal BA/% Power) = ________ min Boration Time BA Flow Rate	
T = 3CHS*MV8104 closed **FW01 = zero**		**BOP:** 4.m. Proceed to step 6. and <u>WHEN</u> Boration has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: • Attachment G • OP 3304C, Primary Makeup and Chemical Addition
		US: Reads Note to crew: **<u>NOTE</u>** If at any time the power reduction rate or final desired power level must be changed, Return to step 1.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **6. Initiate Load Reduction** 6.a. Check Rapid or gravity boration – IN PROGRESS
		BOP: 6.b. Check turbine OPERATING MODE – MANUAL
		BOP: 6.c. Check load reduction using load set – DESIRED
	5% required in AOP 3559	**BOP:** 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)
	730 MWe on load set meter = 550 MWe desired load	**BOP:** 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
		RO: 6.f. Energize all PZR heaters
		RO: 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><td></td><td></td><td>RO:
6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain:
• Rods above the Rod Insertion Limit (RIL)
• Tavg – Tref error/deviation –5°F to +5°F
• AFD within COLR limits
• Desired downpower rate</td></tr>
<tr><td>Answer phone as CONVEX:

Inform caller to maintain VAR loading at 100 MVARs out</td><td></td><td>US:
6.i. Check power reduction – CONVEX REQUESTED
RNO– Inform CONVEX of load reduction rate (MWe/min) and final MWe level.</td></tr>
<tr><td></td><td></td><td>RO:
7. Verify Rod Position Above RIL
7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT
RNO– Proceed to step 7.j. and,
<u>IF</u> at any time, the annunciator is received,
<u>THEN</u>
Perform steps 7.c. through 7.h.</td></tr>
<tr><td></td><td></td><td>RO:
7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT
RNO– Proceed to step 8. and,
<u>IF</u> the annunciator is received,
<u>THEN</u>
Perform step 7.k. and 7.l.</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO and BOP: **8. Using Attachment C, "Rapid Downpower Parameters" MONITOR parameters**
		US: **9. Degrade Condenser Backpressure** 9.a. Verify Final Desired Turbine Load (MWe) - LESS THAN 70% (907 MWe)
	This step N/A since we are reducing power in an attempt to improve condenser backpressure.	**US:** 9.b. Using OP 3329, "Condenser Air Removal", Degrade condenser backpressure to between 2.0 in. HgA and 4.0 in. HgA.
		US: **10. Align One Feedwater Pump For Removal from Service** 10.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 50% (648 MWe) **RNO**– Proceed to step 11.
		US: 10.b. Verify removing a feedwater pump from service during the downpower – DESIRED **RNO**– Proceed to step 11.
		US: 10.c. Verify both TD FW pumps – OPERATING IN AUTO
		US: directs BOP to perform Attachment A(B) 10.d. Using the applicable Attachment, Remove one TD FW Pump from service: • Attachment A (A TD FW Pump) • Attachment B (B TD FW Pump)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	• Steps shown for Attachment A • (B) signifies parameter from Attachment B	**BOP:** performs Attachment A(B) **<u>Attachment A</u>** **<u>Removing A(B) TD FW Pump From Service</u>**
		BOP: reads Note: **<u>NOTE</u>** The following step places B(A) TD FW pump in manual while allowing the A(B) TD FW pump to automatically unload during the downpower.
		BOP: **1. Align A(B) Feedwater Pump For Automatic Unloading** 1.a. Verify the feedwater pump master speed controller (3FWS–SK509A) – IN AUTO
		BOP: 1.b. Verify the turbine driven feedwater pumps – BOTH OPERATING IN AUTO
		BOP: 1.c. Place the B(A) speed controller, 3FWS–SK46B(A), in MAN
		BOP: 1.d. During the downpower, Adjust speed controller, 3FWS–SK46B(A), in MAN, as necessary to: • Ensure speed and load reduction of the TD FW pump in Auto • Maintain SG NR levels – BETWEEN 45% and 55%

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Hold point and end of Attachment A(B)	**BOP:** 1.e. Check reactor power – LESS THAN 50% **RNO**– Continue power reduction and, <u>WHEN</u> Power LESS THAN 50%, <u>THEN</u> Perform steps 2. – FINAL –
		RO: **11. Verify Power Related Interlock Status** 11.a. Check reactor power - LESS THAN THE P-9 SETPOINT **RNO**– Proceed to step 12. and, <u>WHEN</u> Power LESS THAN P-9, <u>THEN</u> Return to step 11.
		US: **12. Align Plant Systems for less than 30% Power Operation** 12.a. Verify Final Desired Power Level - LESS THAN 30% **RNO**– Proceed to step 13.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
Adjust FW01 as necessary to stabilize backpressure to between 2.0 in. HgA and 4.0 in. HgA. **Event 3, failure of 3MSS-PT507, takes up to 10 minutes to reveal itself. Insert Trigger 3 when Turbine is "At Set Load."**		**US:** **13. Check Plant Status** 13.a. Verify – AT FINAL DESIRED POWER LEVEL **RNO**– Continue power reduction and, WHEN Actual load is within 200 MWe of final desired load, THEN • Adjust "LOAD SET" to decrease loading rate as necessary to stabilize power level. • Check the following "LOAD MONITORING" indications: ○ "AT SET LOAD" light *lit* ○ "DECREASING LOAD" light *not* lit
		RO: 13.b. Refer to OP 3304C, "Primary Makeup and Chemical Additions." and Borate or Dilute as necessary to maintain the following: • Tavg – Tref error/deviation -1.5°F to +1.5°F • AFD within the target band
	US will resume AOP 3559 at step in progress. **Step 3 is located on page 20.**	**US:** 13.c. If desired, Place rod control SEL switch in AUTO
*********** **Downpower is complete** ***********		

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><th colspan="3">*********** EVENT 3 Main Steam Header Pressure Fails High ***********</th></tr>
<tr><td>Trigger 3 T = Turbine "At Set Load" or as directed by Lead Examiner

(RX15) MS Hdr Press PT507 fails low over 30 sec</td><td><u>Notes on Event 3</u>:
(1) This event will develop slowly and may take more than 10 minutes to reveal itself.
(2) MB5A 4-4, TDFW PP A/B SPEED MISMATCH will alarm on failure, but may already be in due to downpower.
(3) Any turbine driven feedwater pump in Auto will very slowly reduce speed.
(4) Feedwater regulating valves will open slowly, masking failure.
(5) Steam generator water levels will eventually lower and cause level deviation alarms.
(6) Feedwater regulating valves should not need to be taken out of AUTO.
(7) Steam dump valves will be inoperable in Auto while in the Steam Pressure Mode. Plant Trip mode is unaffected.</td><td>BOP:
Identifies alarm MB5A 4-4, TDFW PP A/B SPEED MISMATCH and performs Immediate Actions of AOP 3581, Attachment B, from memory:
Check Steam Generator Narrow Range Level – STABLE AT 50%
RNO– IF SG level is changing in an uncontrolled manner,
<u>THEN</u>
Perform the following:
a. As necessary, Shift affected SG feedwater flow control to MAN and Throttle affected SG feedwater flow control valve to maintain SG narrow range level stable between 45% and 55%:
• 3FWS–FK510 for SG A
• 3FWS–FK520 for SG B
• 3FWS–FK530 for SG C
• 3FWS–FK540 for SG D</td></tr>
<tr><td></td><td>Placing the master speed control in MANUAL and restoring the output should correct the malfunction without need to take any feedwater regulating valve out of AUTO.</td><td>BOP:
b. As necessary, Place feed pump MASTER SPEED CONTROL (3FWS–SK509A) in MANUAL and Restore Feed Pump differential pressure to normal operating band (program: 40–175 psid)</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: c. As necessary, Shift affected feed pump speed controller to MANUAL and Restore feed pump differential pressure to normal operating band (program: 40–175 psid): • 3FWS–SK46A for TDFW pump A • 3FWS–SK46B for TDFW pump B The BOP will focus brief immediate actions are complete.
	The BOP will report a failure of 3MSS-PT507, Main Steam Pressure.	**US: Enters AOP 3581 (Rev 001-00)** **3. Check Initiating Event – INSTRUMENT FAILURE** • SG Narrow Range Level • SG Feedwater Flow • SG Steam Flow • SG Pressure • Main Steam Pressure • Main Feed Header Pressure
		US: **4. Go to AOP 3571, "Instrument Failure Response"**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Enters AOP 3571 (Rev 011-01) and reads Caution / Note to crew: **CAUTION** Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. **NOTE** If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
		BOP: **1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL**
		BOP: **2. Stabilize The Plant Parameters**
		US: Reads Note to crew: **NOTE** It is desired that I&C personnel trip the bistables specified in this procedure. If, during off–hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.
		US: **3. Perform Corrective Actions Using Appropriate Attachment** **Instrument Failure** — **Attachment** Main Steam Header Pressure Channel Failure (PT507) — J

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	BOP will have to use alternate indication for Main Steam Header Pressure. Master Pressure Controller will remain in MANUAL for remainder of scenario.	**BOP: using Attachment J** 1. Verify feedwater pump A and B master speed control (3FWS–SK509A) in MANUAL and Restore feed pump differential pressure to normal operating band (Program: 40 to 175 psid).
		BOP: 2. Place steam generator pressure controller (3MSS–PK507) in MANUAL and reduce the output to minimum. (The steam dump STEAM PRESSURE mode is inoperable until the channel is restored.)
		RO & BOP: 3. When conditions have stabilized, Observe MB annunciators and parameters and immediately report any unexpected or unexplained conditions to the Shift Manager.
		US: reads Note to self: **NOTE** There are no Technical Specifications or bistables associated with 3MSS–PT507.
		US: 4. Request I&C Department perform corrective maintenance on failed instrument.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
*********** **EVENT 4 Pressurizer Pressure Fails High** ***********		
Trigger 4 **T = power increase complete** (RX09A) 3RCS*PT455 fails high	Notes on Event 4: (1) The controlling channel of pressurizer pressure RCS*PT455 will fail high. (2) Pressurizer spray valves will open, variable heaters will go to minimum current and RCS pressure will lower. (3) Returning Master Pressure Controller output to ≥ 50% output will close the spray valves.	**RO:** Recognizes spray valves are open and performs Immediate Actions of AOP 3581, Attachment E, from memory: **Terminate Pressurizer Spray** a. Check pressurizer spray valves – BOTH CLOSED • RCS*PCV455B • RCS*PCV455C **RNO**– IF pressurizer pressure is less than 2270 psia, THEN Place Master Pressure Controller in "MAN" and Adjust to >50% output. IF spray valves do NOT close, THEN Manually CLOSE spray valves (MB4): • 3RCS*PCV455B • 3RCS*PCV455C The RO will focus brief immediate actions are complete.
		US: Enters AOP 3581 (Rev 001-00) **2. Check Pressurizer Spray – TERMINATED** 2.a. Check Pressurizer pressure – STABLE OR INCREASING
	The RO will report a failure of 3RCS*PT455.	**3. Check Initiating Event – INSTRUMENT FAILURE** • Pressurizer pressure

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **4. Go to AOP 3571, "Instrument Failure Response"**
		US: Enters AOP 3571 (Rev-011-01) and reads Caution/Note to crew: **<u>CAUTION</u>** Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. **<u>NOTE</u>** If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
		RO: **1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL**
		RO: **2. Stabilize The Plant Parameters**
		US: Reads Note to crew: **<u>NOTE</u>** It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: **3. Perform Corrective Actions Using Appropriate Attachment** **Instrument Failure — Attachment** Pressurizer Pressure Channel Failure — B
	RO directed to select Channel 3–4 RO should select a channel other than Ch 1 (likely channel 3). RO should select a channel other than Ch 1	**RO: using Attachment B** 1. Defeat the failed channel input. Pressurizer Press Select – Control — 3RCS-PS455F Pressurizer Press Select – Record — 3RCS-PS455G OT/OP Delta T Record Select — RCS-TS411E
		RO: 2. Restore RCS pressure to normal, then Place PZR pressure control in automatic.
		RO & BOP: 3. When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the Shift Manager.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 4. Trip the associated Reactor Protection System bistable(s): 4.a. Place a check mark in the box above the appropriate channel that requires tripping on pages 5 or 6 of this Attachment.
The US should contact plant management, report the failure and the T/S 3.0.3 entry, and request guidance. **T = when contacted** Inform the US to make preparations to perform an orderly plant shutdown using OP 3204 at 1/2 %/min.	Log into 3.3.1 Action 6 (FU #7, 9 &10) and 3.3.2 Actions 20 & 21 (FU #1.d, 9.a & 11). NOTE: • T.S. 3.3.1 FU #7 Action 6 for Overtemperature ΔT cannot be met, T.S. 3.0.3 applies. • Bistables cannot be tripped without causing a reactor trip on 2/4 Overtemperature ΔT	**US:** 4.b. Refer to T/S 3.3.1, T/S 3.3.2, and T/S 3.3.3.5.
	Log into TRM 3.3.2.1, Action 27.A.	**US:** 4.c. Refer to Technical Requirement 3.3.2.1.
	• The RO should do a lamp check to ensure all bistable lights are functional. • If not previously recognized by the crew, the RO should identify at this time that tripping bistables will generate a reactor trip.	**RO:** 4.d. Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: Reads Caution/Note to crew: **CAUTION** If the General Warning lamp is lit on 3RPS*RAKLOGB, placing train A SSPS "Multiplexer Test" switch in "A+B" will cause the reactor to trip. **NOTE** The following step will distinguish whether the failure is within SSPS or the Protection channel.
	Channel indication is not normal. The US should N/A this section and proceed to next step.	**US:** 4.e. If bistable status light(s) (MB2D or MB4F) indicate that a single bistable input has tripped and channel indications are normal, PERFORM the following:
T = When requested: **Report to the Control Room as I&C.**	When requested, report to the Control Room as I&C. The crew should NOT request I&C to trip bistables at this time, as doing so would generate a Reactor Trip.	**US:** 4.f. Request the I&C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment B and Attachment S.
Trigger 14 **T = Only if directed to trip bistables** Trip Bistables (RXR106, RXR40, 120, 48, 44, 05, 34, 40)	**IF PERFORMED, this trigger will cause a Reactor Trip.**	**RO:** 4.g. Verify the appropriate bistable status light(s) are lit.
	Move on to next event with concurrence from Lead Examiner	**US:** 5. If indicator 3RCS*PI 455B is failed, Refer to TRM Table 7.4.1, Fire Related Safe Shutdown Components, "Reactor Coolant System."
		US: 6. Request I&C Department perform corrective maintenance on failed instrument.

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<tr><th colspan="3">*********** EVENT 5 Reactor Trip on OTDT ***********</th></tr>
<tr><td>Trigger 5 — T = when directed by Lead Examiner
(RX09A) 1700 psi
(RXR05) TRIP (2 sec then NORM)
(RXR34) TRIP (2 sec then NORM)
(TC07A) 37%
(TC07B) 37%
(TC07C) 37%
(TC07D) 0%</td><td><u>Notes on Event 5</u>:
1) The faulted PZR Press loop will fail low, causing a 2/4 Reactor Trip on OTDT.
2) Turbine Stop Valves fail open
3) 3 of 4 Turbine Control Valves fail as is at 37%.
4) Neither MSI pushbutton will function
5) Safety Injection is expected to occur from low steamline pressure</td><td>Crew: recognizes Reactor Trip and perform immediate actions of E-0.</td></tr>
<tr><td></td><td></td><td>US: enters E-0 (Rev 029-00)
US does <u>not</u> read Caution/Notes to crew prior to Immediate Actions.
<u>CAUTION</u>
When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve’s full travel.
<u>NOTE</u>
• Foldout page must be open.
• ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10^5 R/hr in containment.
The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.</td></tr>
</table>

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **1. Verify Reactor Trip** • Check reactor trip and bypass breakers – OPEN • Check rod bottom lights – LIT • Check neutron flux – DECREASING
	<u>Event 6</u> **Turbine fails to trip or runback.** **BOP must close MSIVs.**	**BOP:** **2. Verify Turbine Trip** 2.a. Check all turbine stop valves – CLOSED **RNO**– TRIP the turbine. <u>IF</u> the turbine will <u>NOT</u> trip, <u>THEN</u> Runback the turbine to close the control valves. <u>IF</u> the turbine can <u>NOT</u> be runback, <u>THEN</u> CLOSE the MSIVs and MSIV bypass valves.
		BOP: **3. Verify Power To AC Emergency Busses** 3.a. Check AC emergency busses 34C and 34D – BOTH ENERGIZED
	SI annunciator is expected to be lit.	**RO:** **4. Check If SI Is Actuated** 4.a. Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT
	<u>Event 7</u> **Train 'B' of SI did not auto actuate, manual SI required.**	**RO:** 4.b. By observation of ESF Group 2 Status Panel lights, Verify both trains of SI –

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		ACTUATED **RNO**– Manually Initiate SI.
		RO: 4.c. Check Reactor trip and bypass breakers – OPEN
		BOP: 4.d. Check main generator output breaker – OPEN **RNO**– IF main generator output breaker is NOT open after 30 seconds, THEN TRIP generator output breaker. IF main generator output breaker will NOT trip, THEN *Simultaneously* Press both emergency trip pushbuttons.
	Event 8 **No Service Water Pumps are running.** RO will manually start both stand-by pumps. **[Critical Task B.9]** – Manually start one service water pump per train before exiting E-0.	**RO:** **5. Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING** **RNO**– START pump(s).
		RO: **6. Verify RPCCW Pumps - ONE PER TRAIN RUNNING**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **7. Verify ECCS Pumps Running** • Check SI pumps – RUNNING • Check RHR pumps – RUNNING • Check two charging pumps – RUNNING
	EVENT 9 • **'A' MDAFW pump fails to start.** • **'B' MDADW pump discharge valve is shut with a stem/disc separation.** • **TDAFW pump is out for governor maintenance.**	**BOP:** **8. Verify AFW Pumps Running** 8.a. Check MD pumps – RUNNING **RNO**– START pump(s). 8.b. Check turbine–driven pump – RUNNING, IF NECESSARY **RNO**– OPEN steam supply valves.
		BOP: **9. Verify FW Isolation** • Check SG feed regulating valves – CLOSED • Check SG feed regulating bypass valves – CLOSED • Check TD FW pumps – TRIPPED • Check MD FW pump – STOPPED
		RO: (step 9 continued) • Check SG blowdown isolation valves – CLOSED • Check SG blowdown sample isolation valves – CLOSED • Check SG chemical feed isolation valves – CLOSED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **10. Check If Main Steam Lines Should Be Isolated** 10.a. Check Ctmt pressure – GREATER THAN 18 psia OR Any SG pressure – LESS THAN 660 psig OR Annunciator "MAIN STEAMLINE ISOLATION" (MB2B 5-7) – LIT
		BOP: 10.b. Verify MSIVs and MSIV bypass valves – CLOSED
	Event 6 **Auto MSI is failed, manual alignment of steam line drains required.**	**BOP:** 10.c. Check ESF Group 3 lights – LIT **RNO**– Align steam line drains for minimum safety function.
		RO: **11. Check if CDA Required** 11.a. Check Ctmt pressure – GREATER THAN 23 psia OR Annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – LIT **RNO**– Proceed to Step 12.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **12. Verify CAR Fans Operating In Emergency Mode** 12.a. Check CAR fan status: • CAR fans A and B – RUNNING • CAR fan C – STOPPED **RNO**– START/STOP CAR fans as necessary.
		RO: 12.b. Verify RPCCW Ctmt supply and return header isolations - OPEN
		RO: 12.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN **RNO**– OPEN valves.
		RO: **13. Verify CIA** 13.a. Check ESF Group 2, columns 2 through 10 – LIT
		RO: **14. Verify Proper ESF Status Panel Indication** • Verify ESF Group 1 lights – OFF • Verify ESF Group 2 lights – LIT

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO/BOP: **15. Determine If ADVERSE CTMT Conditions Exist** • Ctmt temperature – GREATER THAN 180°F OR • Ctmt radiation – GREATER THAN 10^5 $^R/_{hr}$ **RNO**– DO NOT use ADVERSE CTMT parameters.
		RO: **16. Verify ECCS Flow** 16.a. Check PZR pressure - GREATER THAN 1900 psia
		RO: 16.b. Check PORV block valves – OPEN
	CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.	**US:** 16.c. Proceed to step 17.
		BOP: **17. Verify Adequate Heat Sink** 17.a. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO**– Proceed to step 17.d.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 17.d. Verify Total AFW Flow – GREATER THAN 530 gpm **RNO**– START pumps and Align valves as necessary. IF AFW Flow GREATER THAN 530 gpm can NOT be established, THEN Initiate monitoring of CSF Status Trees and Go to FR–H.1, Response to Loss of Secondary Heat Sink.
	Event 10 The US should conduct a short transition brief and then **transition to FR–H.1, Response to Loss of Secondary Heat Sink.**	**US: enters FR–H.1 (Rev 024-01)** and reads Caution to crew: **CAUTION** • Feed flow must NOT be reestablished to any faulted SG if a non-faulted SG is available. • With all steam generators faulted and total feed flow LESS THAN 530 gpm due to operator action, DO NOT perform this procedure.
		BOP: **1. Check If Secondary Heat Sink Is Required** 1.a. Verify RCS pressure – GREATER THAN ANY NON-FAULTED SG PRESSURE
		BOP: 1.b. Verify RCS hot leg WR temperature – GREATER THAN 350°F

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 1.c. Verify a secondary heat sink established • Check WR level in at least one SG – INCREASING • Check Core exit TCs – STABLE <u>OR</u> DECREASING **RNO**– Proceed to step 2.
		RO: **2. Check Charging Pump Status – AT LEAST ONE RUNNING**
		US: reads Caution to crew: **<u>CAUTION</u>** • Steps 10. through 14. (bleed and feed) of this procedure must be immediately initiated if either of the following occur: WR level in any 3 SGs is LESS THAN 21% (24% ADVERSE CTMT) <u>OR</u> PZR pressure is GREATER THAN OR EQUAL TO 2350 psia due to loss of secondary heat sink • If offsite power is lost after SI reset, manual action to restart safeguards equipment may be required.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: **3. Try To Establish AFW Flow To At Least One SG** 3.a. Check SG blowdown isolation • Verify SG blowdown isolation valves – CLOSED • Verify SG blowdown sample isolation valves – CLOSED
		BOP: 3.b. Verify AFW valve alignment – PROPER EMERGENCY ALIGNMENT
		BOP: 3.c. Check DWST level – LESS THAN 80,000 gal **RNO**– Proceed to step 3.f. and, IF DWST level decreases to LESS THAN 80,000 gal, THEN Perform step 3.d.
		BOP: 3.f. Verify DWST suction valves – OPEN • 3FWA*AOV61A • 3FWA*AOV61B
T ≈ 5 min after contacted **Call the control room and report:** "The breaker for the 'A' MDAFW pump tripped on overcurrent."	**EVENT 9** **'A' MDAFW pump fails to start.** Crew should dispatch PEO to investigate switchgear for 'A' pump.	**BOP:** 3.g. Check MD AFW pumps – RUNNING **RNO**– START pumps. IF the MD AFW pump(s) do NOT start, THEN Restore power to the pumps (MB or locally)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when contacted **Report status as follows:** "The governor for the TDAFW pump is disassembled, estimated return is approximately 8 hours."	**TDAFW pump is out for governor maintenance.**	**BOP:** 3.h. Check TD AFW pump – RUNNING
T ≈ 5 min after contacted **Call the control room and report:** "The stem for discharge valve 3FWA*V18 for the 'B' MDAFW pump is in the up position, but it is vibrating as if it is not attached to the valve internals."	**EVENT 9** **'B' MDADW pump discharge valve is shut with a stem/disc separation.**	**BOP:** 3.i. Check total feed flow to SGs – GREATER THAN 530 gpm **RNO**– Perform the applicable action: • IF any AFW is flow indicated, THEN Proceed to step 3.k. • IF no AFW flow is indicated, THEN 1) Using GA-31, Locally Restore AFW flow, *if required* 2) Proceed to step 4. and, IF AFW flow is established prior to step 10. THEN Return to step 3.i.
		BOP: 3.k. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO**– Proceed to step 3.m.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 3.m. Verify a secondary heat sink established • Check WR level in at least one SG – INCREASING • Check Core exit TCs – STABLE OR DECREASING **RNO**– Perform the following: 1) Maintain feed flow to restore NR level to GREATER THAN 8% (42% ADVERSE CTMT). 2) Proceed to step 4. and, IF a secondary heat sink is established prior to step 10. as indicated by: • WR level in at least one SG INCREASING AND • Core exit TCs STABLE OR DECREASING THEN Return to step 3.n.
		RO: **4. STOP ALL RCPs**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: reads Caution to crew: **<u>CAUTION</u>** • DO NOT reinstall the A213 logic cards until an adequate heat sink has been made available. Reinstallation of a logic card may cause actuation of the FWI circuit. • Removal of the A213 logic cards defeats the low steam pressure SI from Loops 1 and 2. Manual action may be required to initiate safety injection for a low steam pressure condition.
		BOP: **5. Try To Establish Main FW Flow To At Least One SG** 5.a. Verify condensate pumps – AT LEAST ONE RUNNING
		BOP&RO: 5.b. Check FW isolation trip valves – OPEN **RNO**– Perform the following: 1) <u>IF</u> SI <u>OR</u> P–14 has actuated, <u>WHEN</u> SG levels LESS THAN the P–14 setpoint, <u>THEN</u> RESET SI

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
T = when contacted **Trigger 8 for Train A** **Trigger 9 for Train B** (MB4C-A04T) SSPS A Door Open (RPR44) Train A A213 Out (MB4C-A04B) SSPS B Door Open (RPR45) Train B A213 Out	To remove the A213 cards the candidate must contact the booth operator. Historically, candidates came to the hallway outside the booth to direct the actions to be taken. In an effort to improve realism, simulator training from earlier this year included a set of photos behind mainboard 1 showing the cabinet and card locations. A sign at the photographs instructs the candidate to **call x3333** on a nearby phone and direct the actions to be taken. Either method is acceptable.	**RO:** 2) Remove universal logic card A213 from the following: • 3RPS*RAKLOGA • 3RPS*RAKLOGB
		RO: 3) WHEN both A213 logic cards are removed, <u>THEN</u> RESET FWI at MB2.
		BOP: 4) RESET FWI at MB5.
		BOP: 5) Adjust SG feed regulating and SG feed regulating bypass valve controllers to zero output.
		BOP: 6) OPEN the FW isolation trip valves.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: 7) IF a FW isolation trip valve can NOT be opened, THEN Proceed to step 9.
		BOP: 5.c. Adjust SG feed regulating and SG feed regulating bypass valve controllers to zero output.
		BOP: 5.d. CLOSE the FW control isolation valves: • 3FWS–MOV35A • 3FWS–MOV35B • 3FWS–MOV35C • 3FWS–MOV35D
	The MDFW pump will not start	**BOP:** 5.e. Perform the following to start the MD FW pump: 1) Place the FW pumps P4 trip bypass selector switch to BYPASS 2) Place the MD FW pump control switch in STOP 3) START the MD FW pump **RNO**– Proceed to CAUTION prior to step 7.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		US: reads Caution/Note to crew: **CAUTION** • PZR level may decrease off scale low due to SG depressurization. • Following block of automatic SI actuation, manual SI actuation may be required if conditions degrade beyond operator control. **NOTE** • If AFW flow is restored during the performance of the next step, stabilize RCS and SG pressures prior to returning to step 3.i. • The number of SGs to depressurize may be limited to one or two, to reduce the likelihood of reaching the bleed and feed criteria.
		RO: **7. Try To Establish Feed Flow From Condensate System** 7.a. Place control switches for all PZR heaters to OFF
		RO: 7.b. Verify normal letdown – IN SERVICE **RNO**– Perform the following: 1) Depressurize the RCS to LESS THAN 1950 psia using one PORV. IF a PZR PORV is NOT available, THEN Proceed to step 7.c. 2) Proceed to step 7.e.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		RO: 7.c. Using GA-28, Depressurize the RCS to LESS THAN 1950 psia using auxiliary spray
		RO: 7.d. Check the following: • RCS pressure LESS THAN 1950 psia • Annunciator PRESSUREIZER PRESSURE LO INTERLOCK P–11 (MB4D 3–5) – LIT **RNO**– Return to step 7.b
		RO: 7.e. Block SI actuations • BLOCK Steam Line Isolation SI • BLOCK PZR Pressure SI
		RO: 7.f. Maintain RCS pressure EQUAL TO OR LESS THAN 1950 psia
	Crew should depressurize 2 of 4 generators to ensure Bleed and Feed criteria are not met.	**US:** 7.g. Check limiting the number of SGs to be depressurized – DESIRED
		BOP: 7.h. CLOSE MSIV(s) for SG(s) to be conserved *(SGs NOT selected for depressurization)*
	US continues in FR-H.1 at step 7.j on page 64.	**BOP:** 7.i. Using GA–26, Dump steam at the maximum rate to depressurize the selected SG(s) to establish condensate flow

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: enters GA-26 (Rev. 001) **<u>NOTE</u>** • Auxiliary feed flow directly impacts RCS heatup and cooldown rates and must be considered along with dumping steam. • Steam line pressure changes more rapidly if fewer than four SGs are used. • After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded. • Instrument air compressor B is tripped by SI, CDA and LOP.
		BOP: **1. Verify Plant Conditions** 1.a. Check instrument air compressors – AT LEAST ONE RUNNING
		BOP: 1.b. Check Annunciator "MAIN STEAM LINE ISOLATION" (MB2B 5-7) – NOT LIT **RNO**– Perform the following: 1) <u>IF</u> shifting from condenser steam dump to atmospheric steam dump, <u>THEN</u> Proceed to NOTE prior to step 4. 2) Place both trains of steam dump interlock selector switches in OFF. 3) Proceed to NOTE prior to step 4.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **NOTE** Following MSI reset, an actuation signal will re-initiate MSI.
		BOP: **4. Determine SG Atmospheric Relief Valves Availability** 4.a. Check using SG atmospheric relief valves – DESIRED 4.b. Place SG atmospheric relief valve controllers in MANUAL and Adjust to zero output 4.c. Check Annunciator “MAIN STEAM LINE ISOLATION” (MB2B 5-7) – LIT **RNO**– Proceed to step 5.
		BOP: **NOTE** If RCS temperature increases above 553°F, the Lo-Lo Tave interlock (P-12) will be reinstated.
		BOP: **5. Dump Steam to Atmosphere Using SG Atmospheric Relief Valves** 5.a. Check RCS cooldown or SG depressurization – DESIRED
	Maximum rate	**BOP:** 5.b. Check the procedure in effect requires steam dump - AT A MAXIMUM RATE

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
	Crew should depressurize 2 of 4 generators to ensure Bleed and Feed criteria are not met.	**BOP:** 5.c. Adjust each selected SG atmospheric relief valve controller evenly over an approximate one minute time period to open the associated valve • 3MSS-PIC20A1 • 3MSS-PIC20B1 • 3MSS-PIC20C1 • 3MSS-PIC20D1
		BOP: 5.d. Proceed to step 8.
		BOP: **8. Check If RCS Temperature Or Steam Generator Pressures Should Be Stabilized** 8.a. Check RCS temperature or SG pressures – AT DESIRED VALUE **RNO**– Continue dumping steam as specified by the procedure in effect and, WHEN RCS temperature or SG pressures are at the desired value, THEN Proceed to step 8.b.
		BOP: 8.b. Check condenser steam dumps - IN USE **RNO**– Perform the applicable action: • IF SG atmospheric relief valves are in use, THEN Proceed to step 10.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: **10. Stabilize Using SG Atmospheric Relief Valves** 10.a. Adjust each selected SG atmospheric relief valve controller as necessary to stabilize and maintain RCS temperature or SG pressures as specified by the procedure in effect
	<u>**Event 9**</u> **[Critical Task B.43]** – Establish condensate flow into at least one SG before RCS bleed and feed is required.	**US continues in FR-H.1:** 7.j. Establish condensate flow alignment to selected SG(s) 1) OPEN the TD FW pump discharge isolation valves • 3FWS-MOV23B • 3FWS-MOV23C 2) Throttle OPEN (25%–50%) the FW regulating bypass valve(s) to selected SG(s) as desired
		BOP: 7.k. Verify condensate flow – ESTABLISHED **RNO**– Perform the Following: 1) <u>IF</u> selected SG(s) pressure is LESS THAN 400 psig, <u>THEN</u> Using GA–26, Stop dumping steam and Proceed to step 9. 2) Return to step 7.i

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**FLOOR INSTRUCTOR**	**STUDENTS**
		BOP: 7.l. Using GA–26, Control selected SG(s) pressure LESS THAN required to maintain desired condensate flow
		BOP: 7.m. Maintain condensate flow to the selected SG(s) using the FW regulating bypass valve(s)
		BOP: **8. Check SG Levels** 8.a. Verify NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO**– Perform the following: 1) Verify a secondary heat sink established, • WR level in at least one SG is increasing AND • Core Exit TCs are stable OR decreasing IF a secondary heat sink can NOT be verified, THEN Proceed to step 9. 2) Maintain feed flow to restore NR level to GREATER THAN 8% (42% ADVERSE CTMT).

<table>
<tr><th colspan="3">SCENARIO TIME LINE</th></tr>
<tr><th>BOOTH INSTRUCTOR</th><th>FLOOR INSTRUCTOR</th><th>STUDENTS</th></tr>
<tr><td></td><td></td><td>RO:
8.b. Check PZR level – GREATER THAN 9%
RNO– Perform the following:
1) <u>IF</u> SI is actuated,
<u>THEN</u>
Go to procedure and step in effect.
2) Control charging flow to restore PZR level and,
<u>WHEN</u>
PZR level is GREATER THAN 9%.
<u>THEN</u>
Go to procedure and step in effect.
<u>IF</u> PZR level can NOT be restored,
<u>THEN</u>
Initiate SI and Go to E–0, Reactor Trip or Safety Injection.</td></tr>
<tr><td></td><td></td><td>BOP:
8.c. Go to procedure and step in effect</td></tr>
<tr><td>T = when directed

FREEZE simulator</td><td>SCENARIO END: When objectives for session have been met OR at discretion or floor instructor or lead evaluator, direct simulator be placed in FREEZE.</td><td></td></tr>
<tr><td>RESTORE simulator to “training ready” conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.</td><td>POST-SCENARIO:
a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.</td><td></td></tr>
</table>

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SECTION 5
EXAM GUIDE SUMMARY

Title: Loss of Heat Sink

Critical Tasks

TASK DESCRIPTION	**TASK #**	**K/A >/= 3.0**	**BASIS SELECTION**
Manually start one service water pump per train before exiting E-0.	E-0 – B.9	076-A2.01 (3.5 / 3.7)	Failure to manually start the minimum required number of SW pumps in an operating safeguards train represents a failure by the crew to demonstrate the following abilities: • Effectively direct or manipulate ESF controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario • Recognize a failure or an incorrect automatic actuation of an ESF system or component
Establish condensate flow into at least one SG before RCS bleed and feed is required	FR-H.1 – B.43	002-A2.04 (4.3 / 4.6)	Failure to establish feedwater flow to any SG results in the crew's having to rely upon the lower-priority action of establishing RCS bleed and feed to minimize core uncovery. This constitutes incorrect performance that fails to prevent "degradation of any barrier to fission product release."
Note: Critical Tasks are not required for Progress Review Exams.			

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Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Millstone 3 Scenario No.: 2K15 NRC-04 Op-Test No.: 2K15

Examiners: ____________________ Operators: ____________________

Initial Conditions: 74% Power, Beginning of life, Equilibrium Xe.
Turnover:
The plant is at 74% power. The Turbine Driven Auxiliary Feedwater Pump has been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

Event No.	Malf. No	Event Type*	Event Description
1	RX05_4A	I (RO) T/S (US)	Narrow Range Loop 4 Thot instrument (RCS-TE441A) fails high. (AOP 3581 / 3571) *(Tech Spec entry)*
2	FW01	R (US) R (RO) N (BOP)	Condenser vacuum leak requiring load reduction. (AOP 3575 at 5%/min)
3	RX15	I (BOP)	Main Steam header pressure (MSS-PT507) fails low. (AOP 3571)
4	RX09A	I (RO) T/S (US)	Primary channel of Pressurizer Pressure (RCS*PT455) fails high. (AOP 3581 / 3571) *(Tech Spec entry)*
5	RX09A RXR05 RXR34	M (ALL)	Pressurizer Pressure (RCS*PT455) fails low, causing 2/4 Reactor Trip on OTDT.
6	TC03 TC04 TC06A/B/C/D TC07A/B/C/D RP08AB RPDI0071 RPDI0140	C (BOP)	Automatic Turbine Trip failed, turbine will not run back. Auto MSI failed, both Manual MSI pushbuttons failed, MSIVs and steam traps must be closed manually. Results in automatic Safety Injection.
7	RP07B	C (RO)	Train ‘B’ of auto SI failed.
8	SW01C/D SW02A/B ED11E ED12E	C (RO)	Running Service Water pumps trip on the reactor trip. Stand-by Service Water Pumps fail to auto start.
9	FW20A FW18A FW21B FW19	–	The ‘A’ MDAFW pump fails to start in auto or manual. The ‘B’ MDAFW pump discharge valve is shut with a stem/disc separation. The TDAFW pump is out of service for governor maintenance.
10	FW07A FW37	C (BOP)	Crew enters FR-H.1. MDFW pump will not start; SG feedwater flow will be established from the condensate pumps.

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

3RPS*RAKLOGA & 3RPS*RAKLOGB
And Associated
Reactor Protection Cabinets

Call x3333 to perform any procedural directed activities in these panels.

Provide the person who answers with the actions to be taken.

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SHIFT TURNOVER REPORT

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	74%
Megawatts:	Thermal: 2269 MWTH	PZR Pressure:	2250 psia
	Electric: 914 MWe	RCS T-AVE:	580 degF
RCS Leakage:	Identified: 0.078 gpm	Core Burnup:	150 MWD/MTU
	Unidentified: 0.108 gpm	Protected Train/Facility:	**"A" (Orange)**
Date/Time:	Today 0015	Intake:	**GREEN**

Active Tracking Records and Action Statements
Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.7.1.2.b	c	Today	12 hours	Restore within 72 hours	60 hours

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
3FWA*P2	TDAFW Pump has been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADTL INFO)

Current Rod Height	159 steps
Xenon Trend	Building in at -90 pcm per hour
Current Boron	1129 pcm
Boron Pot Setting / Blend Ratio	3.23 turns / 13 gpm