Appendix C		Job Performan Worksh	ce Measure neet	Form ES-C-1
Facility:	Shearon Ha	arris	Task No.:	001001H201
Task Title:	Perform Co Position Ind OST-1005	ntrol Rod and Rod icator Exercise per	JPM No.:	2013 NRC Exam Simulator JPM CR a
K/A Reference:	001 A2.11	RO 3.7 / SRO 4.0	ALTERNA	TE PATH -YES
Examinee:			NRC Examine	r:
Facility Evaluator:			Date:	_
Method of testing:				
Simulated Performa	ance:		Actual Perform	ance: X
Classro	om	Simulator <u>X</u>	_ Plant	
READ TO THE EX	AMINEE			
I will explain the init cues. When you co Measure will be sat	ial conditions omplete the ta isfied.	, which steps to simu ask successfully, the o	late or discuss, a objective for this .	nd provide initiating Job Performance

	 The plant is operating at 100% power.
	 OST-1005, "Control Rod and Rod Position Indicator Exercise Ouarterly Interval Modes 1 – 3" is in progress. All processing to a second sec
Initial Conditions:	perform the test have been met and a briefing has been conducted. The CRS has given permission to perform this OST.
	• 'A' PRZ backup heaters have been energized to support OST-1005.

	Continue OST-1005, commencing with Control Bank D, and continue as directed
Initiating Cue:	NOTE: During the performance of this OST you will be required to obtain DRPI position when appropriate. Another operator will stay at the Reactor console while you are obtaining these values.

Examiners Note:	To expedite the examination schedule, the candidate should review the INITIAL CONDITIONS, INITIATING CUE, and the marked up copy of OST-1005 prior to entering the simulator to perform the JPM.
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Appendix C	Job Performance Measure Worksheet	Form ES-C-1
Task Standard:	The Reactor has been manually Tripped in response rod motion with rod control in manual.	to continuous inward
Required Materials:	None	
General References:	OST-1005, Control Rod and Rod Position Indicator E Interval Modes 1 – 3, Rev. 21 AOP-001, Malfunction of Rod Control and Indication	xercise Quarterly System, Rev. 40
Handouts:	OST-1005 marked up with prerequisites and step 7.1	completed.
	To expedite the examination schedule, the candic INITIAL CONDITIONS, INITIATING CUE, and the m OST-1005 prior to entering the simulator to perfor	late should review the parked up copy of rm the JPM.
Time Critical Task:	N/A	
Validation Time:	10 minutes	

Contraction of the second

CRITICAL STEP JUSTIFICATION		
Step 4	Selecting the bank for control rod motion is a determination of the magnitude for the reactivity manipulation that is to be performed and must be controlled at all times by the operator.	
Step 5	Selecting the direction of control rod motion is a determination of the type of reactivity manipulation (Positive or Negative) that is to be performed and must be controlled at all times by the operator.	
Step 7	Selecting the direction of control rod motion is a determination of the type of reactivity manipulation (Positive or Negative) that is to be performed and must be controlled at all times by the operator.	
Step 11	Selecting the bank for control rod motion is a determination of the magnitude for the reactivity manipulation that is to be performed and must be controlled at all times by the operator.	
Step 12	Selecting the direction of control rod motion is a determination of the type of reactivity manipulation (Positive or Negative) that is to be performed and must be controlled at all times by the operator.	
Step 14	Determining Reactor Trip criteria is required to understand that the Reactor is no longer in a safe controlled condition and is critical to determine that the system is not functioning properly.	

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-166
- Password "dinner"
- Place reactivity data sheet for IC-19 on plant status board (this will be used for obtaining boron concentrations for the RCS and BAT)
- May have to update rods
- Place Restricted Access signs on swing gates
- CRT displays CRT 3: QP Startup and display QP POAH on CRT 4
- Go to RUN and wait ~ 10 seconds then silence and acknowledge alarms.

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Reset to IC-19, 100% power MOL
- o Place Rod Control Selector Switch to AUTO
- o Rod height CBD 218 steps
- Create malfunction to fail the rod selector switch to the selected bank and continuously demand rod motion on Trigger 1
 - o imf crf15a (1 00:00:00 00:00:00) TRUE
 - o ior xc1i110 (1 00:00:00 00:00:00) ASIS
- FREEZE and SNAP.
- o After the candidate is ready, place simulator in RUN.
- While Control Bank A is being inserted to 10 steps from the original position, activate Trigger 1

Page 5 of 12 PERFORMANCE INFORMATION

	· · · · · · · · · · · · · · · · · · ·
Simulator Operator:	When directed by the Lead Examiner go to Run.
Performance Step: 1	Obtain procedure.
Standard:	Reviews handout.
	Duranida dha han dan ɗ
Evaluator's Cue:	Provide the handout.
Comment:	
START TIME:	
	OST 4005 7 2 4
Procoduro Noto:	NOTE: IF in Mode 1. THEN testing of Control Dank Dara ha
Flocedure Note.	conducted during lowering of plant power per Section 7.4. and the next section may be marked N/A.
	NOTE: IF Control Bank D is less than 10 steps. THEN testing of
	Control Bank D rods can be conducted per Section 7.3. and the
	next section may be marked N/A.
	NOTE: When inserting rods, the Bank Low Insertion and Bank
	Low-Low Insertion Limit Alarm may be actuated.
Performance Step: 2	Control Bank D Testing
	For CONTROL BANK D REFER to Attachment 1 and test the
	rod bank per the following instructions:
Standard:	Circle / Slash notes to verify that notes are read and understood.
Commont	
Comment.	

1 YPI	pendix C	Page 6 of 12	Form ES-C-		
		PERFORMANCE INFORMATION			
	OST-1005, Step 7.2.4.1.a				
	Performance Step: 3	For Control Bank D, record on Attachment heights as indicated by Group Step Counter	1 the initial rod ers and DRPI.		
	Standard:	On Attachment 1, for Control Bank "D":			
		Records both Group Position indicatioRecords all DRPI position indications	ns as "218". as "216".		
ŵ	Comment:				
		OST-1005, Step 7.2.4.1.b			
\checkmark	Performance Step: 4	Rotate the Rod Bank Selector to CBD.			
	Evaluator Note:	OMM-001 Att 13 provides Stable Plant TA +/- 2° F and Trip Limit of +/- 10° F from TR in manual.	VG Control Band of EF with Rod Control		
	Standard:	Locates the ROD BANK SELECTOR switc to the "CB D" position.	h and rotates position		
		Verifies 48 steps per minute on rod speed	indicator, SI-408.		
	Comment:				
		OST-1005, Step 7.2.4.1.c			
1	Performance Step: 5	With the Rod Motion lever, insert Control E indicated by Group Step Counters.	3ank D IN 10 steps as		
	Standard:	Places the ROD MOTION lever to the "IN" Control Bank "D" rods 10 steps by observin Counters.	position and inserts ng Group Step		

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Ар	ppendix C	Page 7 of 12	Form ES-C-1
		PERFORMANCE INFORMATION	
		OST-1005, Step 7.2.4.1.d	
	Performance Step: 6	Record on Attachment 1, the rod heights fo indicated by Group Step Counters and DRF	r Control Bank D, as Pl.
	Standard:	On Attachment 1, for control Bank "D":	
		Records both Group Position indication	ıs as "208".
		Records all DRPI position indications a	is "204".
	Comment:		
		OST-1005, Step 7.2.4.1.e	
√	Performance Step: 7	With the Rod Motion lever, WITHDRAW Co steps as indicated by Group Step Counters	ontrol Bank D OUT 10
	Standard:	Places the ROD MOTION lever in the "OUT withdraws Control Bank "D" rods 10 steps b Step Counters.	⁻ " position and by observing Group
		 When completed both Control Bank Counters should read 218 steps. 	"D" Group Step
	Comment:		
		OST-1005, Step 7.2.4.1.f	
	Performance Step: 8	Record on Attachment 1, the final rod heigh as indicated by Group Step Counters and D	nts for Control Bank D, DRPI.
	Standard:	On Attachment 1, for control Bank "D":	
		Records both Group Position indication	ns as "218".
		 Records all DRPI position indications a 	s "216".
	Comment:		
	Lead Evaluator:	When control bank D rods have been ex candidate may ask which bank to exerci direct the operator as CRS to exercise C	ercised the se next. IF asked ontrol Bank A

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Appendix C	Page 8 of 12	Form ES-C-1
	PERFORMANCE INFORMATION	
	OST-1005, 7.2.1	
Procedure Note:	NOTE: When inserting rods, ALB 13/8-2, B and ALB 13/8-3, BANK LOW-LOW INSER ⁻ be actuated.	BANK LOW INSERTION TION LIMIT Alarms may
	NOTE: ALB 13/8-5, COMP ALARM ROD D will annunciate during this procedure due to and should be considered an expected ala	DEVIATION/SEQUENCE o bank out of sequence, rm.
Performance Step: 9	Control Bank A Testing	
	For CONTROL BANK A, REFER to Attachi bank per the following instructions:	ment 1 and test the rod
Standard:	Circle / Slash notes to verify that notes are	read and understood.
Comment:		
	OST-1005, Step 7.2.1.1.a	
Performance Step: 10	For Control Bank A, record on Attachment indicated by Group Step Counters and DRI	1 the rod heights as Pl.
Standard:	On Attachment 1, for Control Bank "A":	
	Records both Group Position indication	ns as "225".
	Records all DRPI position indications a	as "222".
Comment:		
	OST-1005, Step 7.2.1.1.b	
Performance Step: 11	Rotate the Rod Bank Selector to CBA.	
Standard:	Rotates the ROD BANK SELECTOR switcl position.	n to the "CB A"
Comment:		

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Form ES-C-1

PERFORMANCE INFORMATION

Si	mulator Operator:	When the rod bank selector switch is taken to "CBA" position AND rods have been inserted 2-3 steps actuate Trigger 1 (continuous demand for rod motion)
		Altornata Dath Starta Hava
		OST-1005 Step 7 2 1 1 c
√ Pe	erformance Step: 12	With the Rod Motion lever, insert Control Bank A IN 10 steps as indicated by Group Step Counters.
St	andard:	Places the ROD MOTION lever in the "IN" position and inserts Control Bank "A" rods 10 steps by observing Group Step Counters.
Co	omment:	
		Alternate Path
Pe	erformance Step: 13	Monitors Rod Motion. When Rod Motion level is released CB A rods continue to step IN.
St	andard:	 Determines rod motion continues without a demand observing: Group Step Counter continues to count in DRPI continues to lower Lowering Rx power Lowering Tavg

Comment:

Appe	endix	С
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Page 10 of 12 PERFORMANCE INFORMATION

Alternate Path AOP-001 Immediate Action

✓ Performance Step: 14 Informs the CRS of the continued rod motion with rods in manual and states entry conditions for AOP-001, (Malfunction of Rod Control and Indication System)

Standard:

- Informs the CRS.
- Initiates immediate actions of AOP-001
 - Check that < 2 control rods are dropped (YES)
 - Position Rod Bank Selector Switch to MAN (YES)
 - Check Control Bank motion STOPPED (NO)
- Trip the Reactor AND GO TO E-0
 - Locates MCB Reactor trip switch and turns switch to TRIP. ($\sqrt{}$)

• E-0

- Verify Reactor Trip
 - Rx Trip and Bypass Bkrs OPEN (YES)
 - Rod Bottom Lights LIT (YES)
 - Neutron Flux DROPPING (YES)
- Check Turbine Trip All Throttle Valves Shut (YES)

TURB	STOP	VLV	1	TSLB-2-11-1
TURB	STOP	VLV	2	TSLB-2-11-2
TURB	STOP	VLV	3	TSLB-2-11-3
TURB	STOP	VLV	4	TSLB-2-11-4

Evaluator's Cue:

Another Operator will complete the remaining actions of E-0.

Comment:

Evaluator Cue: Evalu	ation on this JPM is complete.
Direc	t Simulator Operator to place the Simulator in Freeze.

Simulator Operator:	When directed by the Lead Examiner then go to Freeze.
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STOP TIME:

	Appendix C	Page 11 of 12 VERIFICATION OF COMPLET	Form ES-C-1
Ċ	Job Performance Measure No.:	<u>2013 NRC Exam JPM CR a</u> Perform Control Rod and Rod F OST-1005	Position Indicator Exercise per
	Examinee's Name:		
	Date Performed:		
	Facility Evaluator:		
	Number of Attempts:		
	Time to Complete:		
	Question Documentation:		
Ċ	Question:		
	Response:		
	Result:	SAT UNSAT	
	Examiner's Signature:		Date:

Appendix C	Page 12 of 12	Form ES-C-1
	JPM CUE SHEET	
Initial Conditions:	 The plant is operating at 100% power. OST-1005, "Control Rod and Rod Pos Quarterly Interval Modes 1 – 3", is in p prerequisites to perform the test have has been conducted. The CRS has g perform this OST. 	ition Indicator Exercise progress. All been met and a briefing iven permission to
	 'A' PRZ backup heaters have been er OST-1005. 	ergized to support

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	Continue OST-1005, commencing with Control Bank D, and continue as directed.
Initiating Cue:	NOTE: During the performance of this OST you will be required to obtain DRPI position when appropriate. Another operator will stay at the Reactor console while you are obtaining these values.

Appendix C	Page 1 o Workshe	f 12 eet	Form ES-C-1
Facility:	Shearon Harris	Task No.:	013003H101
Task Title:	<u>Respond to the loss of the running</u> <u>CSIP</u>	JPM No.:	2013 NRC Exam Simulator JPM CR b
K/A Reference:	APE022 AA1.01 RO 3.4 SRO 3.3	ALI	ERNATE PATH - YES
Examinee:		NRC Examiner	
Facility Evaluator:		Date:	_
Method of testing:			
Simulated Performa	ance:	Actual Perform	ance: X
Classro	oom SimulatorX	Plant	

READ TO THE EXAMINEE I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied. Initial Conditions: The unit is operating at 100% power and is in a steady state alignment. Initial Conditions: The ASI system has been under clearance for the last 3 hours for scheduled maintenance and will be restored to service within the next hour.

Initiating Cue:	You are the OAC.	Maintain current plant conditions.	
initiating oue.	Tou are the OAC.		

9/3/13

Appendix C	Page 2 of 12 Worksheet	Form ES-C-1
Task Standard:	Letdown isolated, MANUAL Rx Trip, all RCP's stopp valves shut.	ed with PZR Spray
Required Materials:	None	
General References:	AOP-018, Reactor Coolant Pump Abnormal Conditio	ns, Rev. 43
Time Critical Task:	Νο	
Validation Time:	10 minutes	

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Critical Step Justification		
Step 4	Isolation of letdown is an immediate action step that is expected to be performed from memory. Isolation of letdown stops the depletion of RCS inventory.	
Step 10	When the RCPs have exceeded their trip limits described in AOP-018, Attachment 1, it is an operator expectation that the Reactor will be placed in a safe condition then the RCPs will be secured to protect valuable plant equipment from damage. Tripping the Reactor and ensuring that the Reactor is tripped is the responsibility of the OAC.	
Step 11	Determining that ALL RCPs have been affected and then stopping ALL RCPs is critical to protect the RCPs from potential damage.	

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-167
- Password "dinner"
- Go to run
- Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19
- Go to run
- Take ASI system Out of Service
 - Run AMS file "ASI OOS"
 - Verify annunciator ALB-08-2-3 is on "ASI System Trouble"
- Place a trip of the A CSIP on a trigger 1
 - o imf cvc05a (1 00:00:00 00:00:00) true
- Engage the handwheel for CC 252 and then close valve over 10 seconds
 - o irf ccw044 (2 00:00:00 00:00:00) ENGAGED
 - irf ccw045 (2 00:00:00 00:00:00) 0 00:00:10 0
- Silence Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC

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Page 4 of 12 PERFORMANCE INFORMATION

When directed by the Lead Examiner go to Run.
Approximately 10 seconds after taking shift have Simulator Operator insert Trigger 1 (Trip of the running CSIP)
Annunciator Alarms
ALB 7-1-3 "CHRG Pumps A Trip or Close CKT Trouble"
Announces annunciator and responds to alarm
CSIP discharge pressure is lowering
CSIP Amps are 0
Recognizes entry conditions to AOP-018
Acknowledges annunciator and entry into AOP-018 (using proper communications)
The Immediate Action Steps of AOP-018 are to be performed from memory WITHOUT the aid of the procedure.
Respond to CSIP trip.
Enters AOP-018.

Comment:

Appendix C	Page 5 of 12	Form ES-C-1
NO	PERFORMANCE INFORMATION	
	AOP-018, Step 1	
Procedure Note:	• Step 1 is an immediate action.	
	 RCP abnormal conditions may requi SHNPP Emergency Plan. 	re implementation of the
Performance Step: 3	CHECK ANY CSIP RUNNING.	
Standard:	Answers NO and proceeds to RNO	
Comment:		

Page 6 of 12 PERFORMANCE INFORMATION Form ES-C-1

Evaluator Note:	When candidate begins to isolate letdown instruct the Simulator Operator to insert Trigger 1, 1CC-252 fails shut. ALB-5-1-2B, RCP THERMAL BAR HDR LOW FLOW, will alarm when 1CC-252 shuts. The applicant may stop activities associated with AOP-018, address the annunciator and attempt to open 1CC-252 – valve will NOT open from MCB switch.
Simulator Operator:	When directed by the Evaluator:
	Actuate trigger to fail 1CC-252 SHUT
√ Performance Step: 4	 AOP-018, Step 1 RNO ISOLATE letdown by verifying the following valves SHUT: 1CS-7, 45 GPM Letdown Orifice A 1CS-8, 60 GPM Letdown Orifice B 1CS-9, 60 GPM Letdown Orifice C
Evaluator Note:	OPS-NGGC-1000 Attachment 3 – Two Handed Operations states: When the need arises due to inability to operate the system as designed or time constraints associated with multiple switch operation with a single hand, then Two- handed Operation should be used. SM/CRS approval is required unless two-handed operation is required to meet an urgent need, or is required by procedure direction or controlling interlocks. An example of when 2 handed operation is accepted at HNP is appropriate: Letdown orifice isolation (placing and holding to SHUT) when directed by AOP/EOP immediate actions. Two handed operations is recommended (to achieve fast closure) – without having to ask permission.
Standard:	Locates MCB controls for letdown valves and shuts 1CS-7 and 1CS-8 and verifies 1CS-9 is shut.
Comment:	

ppendix C	Page 7 of 12 PERFORMANCE INFORMATION	Form	n ES-C
Evaluator Note:	After the candidate completes the immediate the candidate should obtain a MCR copy of a perform actions accordingly.	e actions of AOP-018 an	AOP-(
Performance Step: 5	Step 2: REFER TO PEP-110, Emergency C Protective Action Recommendations, AND E Matrix.	lassification	And EAL
Standard:	Informs CRS/SM.		
Evaluator Cue:	Acknowledge report.		
Comment:			
	AOP-018, Step 3		
Procedure Note:	Minimum allowable flow for a CSIP is 60 gpr by normal miniflow during normal operation a miniflow during safety injection. Maintaining than or equal to 60 gpm also satisfies this re	n which is p and alternat CSIP flow g quirement.	rovide e reater
Performance Step: 6	EVALUATE plant conditions AND GO TO the section:	e appropriat	e
	MALFUNCTION	SECTION	Page
	Loss of CCW and/or Normal Seal Injection to RCPs	3.1	5
	High Reactor Coolant Pump Vibration	3.2	8
	Reactor Coolant Pump Seal Malfunction	3.3	10
	Reactor Coolant Pump Motor Trouble	3.4	18
Standard:	Circle / Slash note to verify that notes are rea Evaluates current plant conditions and selec of CCW and/or Seal Injection to RCPs	ad and unde ts Section 3	erstoo .1: Lo
	Evaluator Note: Performance Step: 5 Standard: Evaluator Cue: Comment: Procedure Note: Performance Step: 6	PERFORMANCE INFORMATION AOP-018, Step 2 After the candidate completes the immediate the candidate should obtain a MCR copy of perform actions accordingly. Performance Step: 5 Step 2: REFER TO PEP-110, Emergency C Protective Action Recommendations, AND E Matrix. Standard: Informs CRS/SM. Evaluator Cue: Acknowledge report. Comment: AOP-018, Step 3 Procedure Note: Minimum allowable flow for a CSIP is 60 gpr by normal miniflow during normal operation a miniflow during safety injection. Maintaining than or equal to 60 gpm also satisfies this re Performance Step: 6 EVALUATE plant conditions AND GO TO the section: Materia Coolant Pump Vibration Reactor Coolant Pump Vibration Reactor Coolant Pump Notor Trouble Reactor Coolant Pump Notor Trouble	PERFORMANCE INFORMATION AOP-018, Step 2 After the candidate completes the immediate actions of the candidate should obtain a MCR copy of AOP-018 and perform actions accordingly. Performance Step: 5 Step 2: REFER TO PEP-110, Emergency Classification Protective Action Recommendations, AND ENTER the E Matrix. Standard: Informs CRS/SM. Evaluator Cue: Acknowledge report. Comment: AOP-018, Step 3 Minimum allowable flow for a CSIP is 60 gpm which is p by normal miniflow during normal operation and alternat miniflow during safety injection. Maintaining CSIP flow g than or equal to 60 gpm also satisfies this requirement. Performance Step: 6 EVALUATE plant conditions AND GO TO the appropriat section: Matrix Reactor Coolant Pump Vibration 3.2 Reactor Coolant Pump Vibration 3.2 Reactor Coolant Pump Motor Trouble 3.4

Appendix C	Page 8 of 12 Form ES-C PERFORMANCE INFORMATION
Performance Step: 7	AOP-018, Step 3.1.1 CHECK ALB-5-1-2A, RCP THERMAL BAR HDR HIGH FLOW
	alarm CLEAR.
Standard:	Answers YES
Comment:	
	AOP-001, Step 3.1.1
Performance Step: 8	CHECK ALL RCPs operating within the limits of Attachment 1 (Page 23).
Standard:	Reviews Attachment 1 conditions
	Determines Condition 4 not met and answers NO –Exceeding
	Reactor Coolant Pump Trip Limits
	NOTE
	 ALB-5/1-2B, RCP THERM BAR HDR LOW FLOW, indicates loss of CCW to RCP thermal barriers.
	 The ASI System will actuate in 2 minutes and 45 seconds from timer initiation 2 minutes and 45 seconds have not elapsed WAIT for initiation.
	4. Loss of all RCP seal injection (including ASI) when ANY of the following conditio exist:
	CCW flow is lost to the associated RCP Thermal Barrier HX PCS temporature is grapher than or equal to 100%. AND CONCUST with
	temperature is greater than 105°F
	 RCS temperature is less than 400°F AND CCW HX outlet temperature is gre than 125°F
Evaluator Note:	Applicant may make this determination without referencin Attachment 1. Also, dependent on the rate of progress through the procedure, temperature limits may be exceed
Comment:	
	AOP-001, Step 3.1.4
Performance Step: 9	CHECK the Reactor is TRIPPED.

Standard:

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Answers NO.

Comment:

✓ - Denotes Critical Steps

Appendix C			Page 9 of 12	Form ES-C-7	
		PERF	ORMANCE INFORMAT	ΓΙΟΝ	
		AOP-001, S	Step 3.1.4 RNO		
√ Pe	rformance Step: 10	TRIP the Reactor AND GO TO EOP-E-0. (Perform Steps 5 through 8 as time permits.)			
Sta	andard:	Initiate	s a MANUAL Reactor T	rip (√)	
		 Performs E-0 Immediate Actions from memory 			
		• L T	ocates MCB Reactor tri RIP. (√)	p switch and turns switch to	
		E-0			
		• Ve	rify Reactor Trip		
			 Rx Trip and Bypas 	s Bkrs – OPEN (YES)	
		 Rod Bottom Lights – LIT (YES) 		s – LIT (YES)	
			Neutron Flux – DR	OPPING (YES)	
			Check Turbine Tri	p – All Throttle Valves Shu	
			TURB STOP VLV 1	TSLB-2-11-1	
			TURB STOP VLV 2	TSLB-2-11-2	
			TURB STOP VLV 3	TSLB-2-11-3	
			TURB STOP VLV 4	TSLB-2-11-4	

(YES – All Throttle valves are Shut)

	After the applicant performs E-0 immediate action steps 1 and 2 from memory announce:
Evaluator Cue:	Another Operator will complete the remaining actions of E-0.
	Continue with the actions of AOP-018

Comment:

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Арре	endix C	Page 10 of 12	Form ES-C
		PERFORMANCE INFORMATION	
		40P-001 Step 3 1 5	
F	Performance Step: 11	STOP affected RCP(s).	
ç	Standard	Determines that ALL RCPs are affected:	
		Locates MCB switches for RCP's A B	and C
		 Takes individual control switch to STO 	P for each RCP
C	Comment:		
		AOP-001, Step 3.1.6	
F	Performance Step: 12	3.1.6: CHECK RCP A RUNNING.	
S	Standard:	 Answers NO and performs RNO steps. 	
		Locates MCB manual/auto station and places MANUAL then decreases demand to 0% to SI PRZ Spray Loop A	PK-444C.1 in HUT 1RC-107,
C	Comment:		
		AOP-001, Step 3.1.7	
F	Performance Step: 13	3.1.7: CHECK RCP B RUNNING.	
S	· Standard:	 Answers NO and performs RNO steps. 	
		Locates MCB manual/auto station and places MANUAL then decreases demand to 0% to SI PRZ Spray Loop B	PK-444D.1 in HUT 1RC-103,
c	Comment:		
		When both PRZ Spray valves have been ta	ken to MANUAL

Evaluator Cue:	and SHUT : Evaluation on this JPM is complete. Direct Simulator Operator to place the Simulator in Freeze.
Simulator Operator:	When directed by the Lead Examiner then go to Freeze.

STOP TIME:

✓ - Denotes Critical Steps

Appendix C	Page 11 of 12	Form ES-
	VERIFICATION OF COMPLETION	
Job Performance Measure No.:	2013 NRC Exam JPM CR b	
	AOP-018	
Examinee's Name:		
Data Darfarra di		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Time to complete.		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Examiner's Signature:	Date:	

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Page 12 of 12 JPM CUE SHEET

	The unit is operating at 100% power and is in a steady state alignment.
Initial Conditions:	The ASI system has been under clearance for the last 3 hours for scheduled maintenance and will be restored to service within the next hour.

Initiating Cue:	You are the OAC. Maintain current plant conditions.	
		l

Appendix C	Page 1 of 9 Work Sheet	t	Form ES-0
Facility:	Shearon Harris	Task No.:	301073H401
Task Title:	Pressurizer PORV Failure	JPM No.:	2013 NRC Exam JPM CR c
K/A Reference:	APE 027 AA1.01 RO 4.0 SRO 3.9	ALTE	RNATE PATH - YES
Examinee:	N	RC Examiner	
Facility Evaluator:	D	ate:	_
Method of testing:			
Simulated Perform	ance: A	ctual Perform	ance: X
Classro	oom SimulatorX_ Pl	lant	
I will explain the ini cues. When you co Measure will be sat	tial conditions, which steps to simulate omplete the task successfully, the obje isfied.	or discuss, a ctive for this .	nd provide initiating Job Performance
Initial Conditiona	The unit is operating at 100% pow	er steady sta	te alignment
initial Conditions:			te alignment.

	Initiating Cue: You are the OAC. Maintain current plant conditions.
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9/3/13

Appendix C	Page 2 of 9	Form ES-C-1
	Work Sheet	
Task Standard:	All steps necessary to mitigate the Pressurizer Pressure that caused a RCS low-pressure transient have been pe	Master failure rformed.
Required Materials:	None	
General References:	AOP-019, Malfunction of RCS Pressure Control, Rev. 2	24
Time Critical Task:	No	
Validation Time:	5 minutes	

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	Critical Step Justification
Step 4	 Prevent an unnecessary automatic Reactor Trip and actuation of ESF components by manually shutting the block valve to a failed open PZR PORV. Reactor Trip on OT∆T Safety Injection on Low RCS Pressure of 1850 psig

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-168
- Password "dinner"
- 100% power steady state conditions

Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19
- Create Trigger 1 Fail Pressurizer PORV 445A OPEN (25%)

NOTE: To allow the candidate ample time to respond to annunciators associated with this failure and implement the immediate actions of AOP-019 the failure of a PORV beyond 25% open will not provide enough response time for a competent operator and will cause a Reactor Trip and Safety Injection.

(With the PZR PORV failed 25% open and without an operator response the Reactor will Trip in 1 min. 25 seconds)

- o imf prs03d (1 0 0) 25 0 0
- Silence Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC

Appendix C	Page 4 of 9 Form ES-C		
	PERFORMANCE INFORMATION		
Simulator Operator:	When directed by the Evaluator place Simulator in RUN		
Evaluator Cue:	Approximately 20 seconds after taking shift have Simulator Operator insert Trigger 1 (Pressurizer PORV 445A failure)		
START TIME:			
	Annunciator Alarms		
Performance Step: 1	ALB 9-8-2, Pressurizer Relief Discharge High Temp		
	ALB 9-8-1, PRT High-Low level Press or Temp		
	ALB 9-3-3, PRZ Cont Low Press And Heaters On		
	ALB 9-5-1, Pressurizer High-Low Press		
Standard:	Announces multiple annunciators associated with Pressurize		
	and responds to alarm		
	RCS pressure is lowering		
	Both Pressurizer Spray valves are shutting		
	Light lit)		
	Recognizes entry conditions to AOP-019		
	G y where the set of the set		
Evaluator Cue:	Acknowledges annunciator and entry into AOP-019 (using proper communications)		
_			
Comment:	The Immediate Action Steps of AOP-019 are to be perfor		

Page 5 of 9 PERFORMANCE INFORMATION

Form ES-C-1

AOP-019, Step 1

Performance Step: 2	NOTE: Steps 1 through 3 are immediate actions.
	CAUTION: A pressure transmitter or indicator malfunction may exist. When referred to throughout this procedure, actual RCS pressure should be obtained by cross-checking of diverse instrumentation, such as PI-455.1, PI-456, and PI-457.
	CHECK THAT BUBBLE EXISTS IN THE PRZ.
Standard:	Verifies bubble in Pressurizer by checking parameters. (Pressure, Temperature, and Level.) (YES)
Comment:	
	AOP-019, Step 2

Performance Step: 3VERIFY ALL PRZ PORVs AND associated block valves properly
positioned for current PRZ pressure and plant conditions.

Standard: Identifies PRZ PORV PCV-445A indicates partially OPEN

Comment:

PERFORMANCE INFORMATION Alternate Path Starts Here AOP-019, Step 2 RNO ✓ Performance Step: 4 IF ANY PRZ PORV will NOT shut when required, THEN SHUT its associated block valve. Standard: Locates block valve PRZ PORV Isolation 1RC-117 MCB switch and takes switch to SHUT Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.	Appendix C	Page 6 of 9	Form ES-C-1
Alternate Path Starts Here AOP-019, Step 2 RNO Performance Step: 4 IF ANY PRZ PORV will NOT shut when required, THEN SHUT its associated block valve. Standard: Locates block valve PRZ PORV Isolation 1RC-117 MCB switch and takes switch to SHUT Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.		PERFORMANCE INFORMATION	
 ✓ Performance Step: 4 IF ANY PRZ PORV will NOT shut when required, THEN SHUT its associated block valve. Standard: Locates block valve PRZ PORV Isolation 1RC-117 MCB switch and takes switch to SHUT Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions. 		Alternate Path Starts Here	
 Performance Step: 4 IF ANY PRZ PORV will NOT shut when required, THEN SHUT its associated block valve. Standard: Locates block valve PRZ PORV Isolation 1RC-117 MCB switch and takes switch to SHUT Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions. 		AOP-019, Step 2 RNO	
Standard: Locates block valve PRZ PORV Isolation 1RC-117 MCB switch and takes switch to SHUT Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.	✓ Performance Step: 4	IF ANY PRZ PORV will NOT shut when req its associated block valve.	uired, THEN SHUT
Comment: AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.	Standard:	Locates block valve PRZ PORV Isolation 1 and takes switch to SHUT	RC-117 MCB switch
AOP-019, Step 3 Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.	Comment:		
Performance Step: 5 CHECK BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions. Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.		AOP-019, Step 3	
Standard: Determines both spray valves are properly positioned for current PRZ pressure and plant conditions.	Performance Step: 5	CHECK BOTH PRZ Spray Valves properly PRZ pressure and plant conditions.	positioned for current
	Standard:	Determines both spray valves are properly PRZ pressure and plant conditions.	positioned for current

Comment:

	A Reactor Trip and Safety Injection results in JPM Failure.
Evaluator NOTE:	IF the candidate fails to shut the failed open Pressurizer PORV block valve RCS pressure will continue to lower until a Reactor Trip from OT∆T and a Safety Injection on Low RCS Pressure. In the case of preventing a Reactor Trip the candidate should be considered to PASS the JPM.
	If the Reactor Trips - allow the candidate to perform the immediate actions of E-0 to verify that the Reactor has tripped and then end the JPM.

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Appendix C	Page 7 of 9	Form ES-C-
	PERFORMANCE INFORMATION	
	After the candidate has completed the im and goes to obtain AOP-019 inform the ca	mediate actions andidate:
Evaluator Cue:	End of JPM	
	Direct the Simulator Operator to place the Freeze.	e Simulator in

STOP TIME:

Simulator Operator:

Page 8 of 9 VERIFICATION OF COMPLETION

Form ES-C-1

Job Performance Measure No.: 2013 NRC Exam JPM c Pressurizer PORV Failure AOP-019

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result:

SAT

UNSAT

Date:

Examiner's Signature:

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JPM CUE SHEET

Initial Conditions:	The unit is operating at 100% power steady state alignment.
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Initiating Cue:	You are the OAC. Maintain current plant conditions.	

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Appendix C	Page 1 o Worksh	of 11 neet	Form ES-C-
Facility:	Shearon Harris	Task No.:	301068H401
Task Title:	<u>Perform a Max Rate Cooldown</u> for a SG Tube Rupture	JPM No.: CR-282-a	2013 NRC Exam Simulator JPM CR d
K/A Reference:	041 A4.08 RO 3.0 SRO 3.1	ALT	ERNATE PATH- YES
Examinee:		NRC Examiner	
Facility Evaluator:		Date:	_
Classro READ TO THE EX/ I will explain the init cues. When you co Measure will be sati	AMINEE	_ Plant late or discuss, and objective for this J	nd provide initiating lob Performance
Initial Conditions	 The unit was operating developed in the 'C' SG The crew manually tripp Safety Injection. The crew has transition Injection to E-3, Steam 'C' SG MSIV is shut 'C' SG AFW is isolated The CRS has determin 	at 100% power v S. ped the Reactor a ned from E-0, Rea Generator Tube ed that there is at	vhen a SG Tube Leak and actuated a manual actor Trip Or Safety Rupture. t least one intact SG

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Initiating Cue:	 You are the BOP. The CRS has directed you to continue progressing through E-3 starting at step 28.
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2013 NRC Exam Simulator JPM CR d Rev. FINAL

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Appendix C	Page 2 of 11	Form ES-C-1
	Worksheet	
Task Standard:	Determine the required core exit temperature bas ruptured SG pressure then cooldown the RCS to utilizing the Steam Dumps and SG PORVs.	ed on the lowest this target temperature
Required Materials:	EOP-E-3, Steam Generator Tube Rupture, Rev. ()
General References:	EOP-E-3, Steam Generator Tube Rupture, Rev. ()
Time Critical Task:	No	
Validation Time:	10 minutes	

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Critical Step Justification		
Step 2	Critical to determine the required core exit temperature is 515°F by identifying that ERFIS is available and the lowest ruptured SG pressure ('C' SG) is 1000 to 1100 psig. Without the correct temperature the cooldown will be either stopped too soon which will require additionally cooldown later OR later than required and delay making progress through E-3.	
Step 5	Critical to place Steam Dumps to Steam Pressure mode to allow manual control of Steam dumps to establish a Max Rate RCS Cooldown.	
Step 7	Critical to momentarily place Both Steam Dump Interlock Bypass Switches To INTLK BYP if these switches are not taken to this position the Steam Dumps will not open.	
Step 9	Critical to dump steam from intact SGs to condenser which will decrease RCS temperature which will enable the operator to depressurize the RCS to equal the ruptured SG pressure.	
Step 10	Critical to identify that the Cooldown has stopped and the Steam Dumps have closed. Then reestablishes cooldown using SG PORVs. If this is not recognized then the RCS will not be able to be depressurized to the ruptured SG pressure to stop the tube leakage.	
Step 11	Critical to identify and stop the RCS cooldown at the target temperature to allow the RCS depressurization and/or not delay the RCS depressurization.	

Page 3 of 11 Worksheet

WUIKSHEEL

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Password "dinner"
- Set MCB screen #4 to QP TUBERUP C
- Set MCB screen #5 to QP SGPRESS
- Go to run
- Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19
- Go to run
- Insert a 420 gpm SG Tube Leak on the 'C' SG
 - imf sgn05c (n 00:00:00 00:00:00) 420 00:00:00 0
- Manually trip the Rx and insert a Safety Injection
- Perform actions of E-0 then transition to E-3
- Perform actions of E-3 up to step 28 (determine required core exit temperatures based on lowest ruptured SG pressure)
- Isolate 'C' SG and shut 'C' SG MSIV
- Allow the Simulator to run to obtain the following conditions (approximately)
 - o RCS temp 546°
 - PZR Pressure ~1800 psig
 - o 'C' SG Pressure ~ 1010 psig

(To get the above PZR pressure we opened the PZR PORV a few times to lower RCS pressure down otherwise you will have problems with RCS pressure causing an SI signal and a distraction that you would not want during the JPM. Also opened the 'C' SG PORV to bring down pressure to be at the low end of the 1100 – 1000 range.)

- Develop Trigger 1 to cause the Steam Dumps to fail closed
 - o Imf mss07 (1 00:00:00 00:00:00) 3 0.0
- Silence Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC
Page 4 of 11 PERFORMANCE INFORMATION

Simulator Operator: When directed by the Lead Examiner go to Run.

START TIME:

Performance Step: 1	OBTAIN PROCEDURE
Standard:	Obtains current copy of E-3, Steam Generator Tube Rupture (May review steps prior to step 28) Prepares to proceed with E-3 step 28.
Comment:	
	EOP-E-3, Step 28
Performance Step: 2	Determine required core exit temperature based on lowest ruptured SG pressure:
Standard:	Obtains SG 'C' pressure from MCB pressure instruments and determines that the pressure is between 1000 and 1100 psig Determines ERFIS is available and the required core exit temperature is 515°F

Comment:

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Page 5 of 11 PERFORMANCE INFORMATION

EOP-E-3, Step 29

Performance Step: 3 Condenser Available For Steam Dump:

Condenser Available Requirements Any Intact SG MSIV - OPEN Condenser Available (C-9) - LIT (BPLB 3-3) Steam Dump Contol - AVAILALBE

Standard:

Determines that the 'A' and 'B' MSIVs are OPEN Condenser is Available Steam Dump Control is Available

Comment:

EOP-E-3, Step 30

- Performance Step: 4
 Place Steam Dump Pressure Controller In MANUAL AND Lower Output To 0%.
- Standard:Locates Steam Dump Pressure Controller, places controller to
manual and lowers output to 0%

Comment:

EOP-E-3, Step 31

Performance Step: 5 Place Steam Dump Mode Select Switch In STEAM PRESS.

Standard:Locates Steam Dump Mode Selector switch and turns switch to
the right from Tavg to STEAM PRESS

Comment:

✓ - Denotes Critical Steps

Page 6 of 11 PERFORMANCE INFORMATION

Form ES-C-1

EOP-E-3, Step 32

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г	- HI	10		di	ILE.	ວມ	EU.	0

Check RCS Temperature $\leq 553^{\circ}$ F (P-12)

BPLB-4-4
LOW-LOW TAVG STEAM DUMP BLOCKED (P-12)

Standard:

Identifies that RCS temperature is < 553°F and locates BPLP-4-4 and determines that Low-Low Tavg Stem Dump Blocked (P-12) is OFF

Reviews RNO actions for RCS temperature is < 553°F RNO:

- a. Dump steam from intact SGs to condenser to lower RCS temperature to 553°F (N/A temp is already < 553°F)
- b. WHEN temperature < LOW-LOW TAVG 553°F (P-12), THEN continue with STEAM DUMP Step 33 (to bypass P-12).

Comment:

EOP-E-3, Step 33

✓ **Performance Step: 7** Momentarily Place Both Steam Dump Interlock Bypass Switches To INTLK BYP.

 Standard:
 Locates the Steam Dump Interlock Bypass switches and turns

 BOTH switches to INTLK BYP

Comment:

Page 7 of 11 PERFORMANCE INFORMATION

Form ES-C-1

EOP-E-3, Step 34

Performance	Step:	8
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Check LOW-LOW STEAM DUMP (P-12) BYPASSED Status Light – ILLUMINATED

BPLB-5-4 LOW-LOW TAVG STEAM DUMP BLOCKED (P-12) BYPASSED

Standard:

Locates BPLB-5-4 and checks that the LOW-LOW STEAM DUMP (P-12) BYPASSED Status Light is ILLUMINATED

Comment:

EOP-E-3, Step 35

Dump Steam From Intact SGs To Condenser At Maximum Rate. Performance Step: 9 Standard: Raises Steam Dump controller to OPEN the Steam Dumps to start a Max Rate Cooldown. Monitors RCS temperature during cooldown until Core Exit TCs are at the required target temperature. Candidate may increase AFW flow to 'A' and 'B' SGs • to maintain SG levels and help RCS cooldown When the Steam Dumps are indicating OPEN on Status **Evaluator Note:** Light Box #1 instruct the Simulator Operator to insert Trigger #1 to cause the Steam Dumps to CLOSE. NOTE: Trigger 1 will take ~ 10 seconds from initiation to close the Steam Dumps.

Simulator Operator: When instructed by the Evaluator insert Trigger #1 to clo all Steam Dumps.	se
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Comment:

✓ - Denotes Critical Steps

Appendix C	Page 8 of 11	Form ES-C-1
·	PERFORMANCE INFORMATION	
·	EOP-E-3, Step 35 continued – ALTERNAT	E PATH
✓ Performance Step: 10	 Identifies that the Cooldown has stop Identifies Steam Dumps have closed Identifies Steam Dump control is unav Determines 'A' and 'B' SG PORVs mu continue Max Rate Cooldown 	ped vailable ust be used to
Standard:	Informs the CRS that the Steam Dumps have dump control is Unavailable) and restores the Cooldown by opening the 'A' and 'B' SG POF with step 29 RNO actions.	e closed (steam e RCS Max Rate RVs in accordance
	Step 29: Dump steam from intact SGs at max any of the following (Listed in order of prefere	kimum rate using ence):
	a) SG PORVs – Locates controls for ONLY the PORVs and places controls to manual the BOTH PORVs	ne 'A' and 'B' SG n 100% to fully open
	Verifies that the cooldown rate is again estab temperature is lowering towards the core exit 515°F at the maximum rate.	lished and RCS temperature of

Comment:

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Appendix C	Page 9 of 11 PERFORMANCE INFORMATION	Form ES-C-1
	EOP-E-3, Step 36	
✓ Performance Step: 11	Core Exit TCs – LESS THAN REQUIRED 1	EMPERATURE
Standard:	Identifies that ERFIS core exit temperatures then secures the cooldown by shutting both the 'A' and 'B' SG PORVs to maintain the c temperature based on Operator Aid 01-016 temperature by either:	s indicate < 515°F n PORVs. Then sets urrent RCS then controls RCS
	 Placing BOTH 'A' and 'B' SG PORV Placing BOTH 'A' and 'B' SG PORV ~ 57% to maintain BCS temperature 	to AUTO in MANUAL / open to
	 (May also decrease AFW flo previously increased to main cooldown efforts.) 	w if AFW flow was tain SG levels during
	Control of the PORV's should be set for ma Legs @ 500° - 520°F (about 57% open per	intaining RCS Cold PORV)
	Informs the CRS that the core exit temperate the required temperature.	tures are less than
Evaluator Cue:	CRS acknowledges that the core exit ten than the required temperature with 'A' an controlling RCS temperature. End of JPM	nperatures are less nd 'B' SG PORV
	Direct Simulator Operator to place the Si	imulator in Freeze.

Comment:

Terminating Cue:	After core exit temperatures are less than required and the 'A' and 'B' SG PORVs are adjusted to maintain the current RCS temperature: Evaluation on this JPM is complete.
	END OF JPM

STOP TIME:

Appendix C	Page 10 of 11	Form ES-C
	VERIFICATION OF COMPLETION	
Job Performance Measure I	No.: 2013 NRC Exam JPM CR d	
	Perform a Max Rate Cooldown for a SG T	ube Rupture
	E-3, Steam Generator Tube Rupture	
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Eveniner's Signature	Data	

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Appendix C	Page 11 of 11	Form ES-C-
	JPM CUE SHEET	
	 The unit was operating at 100% power Leak developed in the 'C' SG. The grow manually tripped the Read 	er when a SG Tube
Initial Conditions:	 The crew manually impled the React manual Safety Injection. The crew has transitioned from E-0, F Safety Injection to E-3, Steam Genera 'C' SG MSIV is shut 'C' SG AEW is isolated 	Reactor Trip Or ator Tube Rupture.
	 The CRS has determined that there is SG available for RCS cooldown. 	s at least one intact

Initiating Cue:	• You are the BOP.
	 The CRS has directed you to continue progressing through E-3 starting at step 28.

Appendix C Page 1 of 13		f 13	Form ES-C-1	
Worksheet				
Facility:	Shearon-Harris	Task No.:	022001H101	
Task Title:	Return the Containment Fan Coolers to normal following an SI actuation.	JPM No.:	2013 NRC Exam Simulator JPM CR e	
K/A Reference:	022 A4.01 RO 3.6 / SRO 3.6	ALTERNA	TE PATH - NO	
Examinee:		NRC Examine	r:	
Facility Evaluator:	y Evaluator:		Date:	
Method of testing:				
Simulated Performa Classro	ance: oom SimulatorX	Actual Perform Plant	nance: X	

READ TO THE EXAMINEE

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

Initial Conditions:	•	An automatic SI initiation occurred due to a combination of equipment failure and technician error
	•	SI has been terminated

Initiating Cue:	You have been directed to return Containment Fan Coolers to the normal alignment per ES-1.1, SI TERMINATION, Attachment 1 step 6.a using OP-169, CONTAINMENT COOLING AND VENTILATION, Section 8.4. The A-SA train will be used for normal operation.
-----------------	---

Appendix C	Page 2 of 13 Worksheet	Form ES-C-1
Task Standard:	Containment Fan Coolers are returned to NORMAL line	up.
Required Materials:	None	
General References:	ES-1.1, SI TERMINATION, Revision 0 OP-169, CONTAINMENT COOLING AND VENTILATIO	N, Revision 23
Handout:	ES-1.1 Attachment 1 Sheet 3 of 6 OP-169 Section 5.1 and 8.4	
Time Critical Task:	No	
Validation Time:	15 Minutes	

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CRITICAL STEP JUSTIFICATION		
Step 7	To comply with OP-169, Precaution and Limitation #11 After any fan cooler is started in low speed, the fan should be allowed to come up to speed for approximately 15 seconds before shifting to fast speed. This reduces the starting current required for high speed operation.	
Step 8	The fan must be stopped in order to change fan speed from low speed to high speed.	
Step 9	The fan must be running in high speed in order to be in the correct operating mode for the current plant condition.	

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-170
- Password "dinner"
- Go to RUN and wait ~ 10 seconds then silence and acknowledge alarms.

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Reset to IC-19, 100% power MOL
- o Insert a Manual SI or MALF for Inadvertent SI
- Perform actions of E-0, transition to ES-1.1 and perform actions up to step 35 which is Realign Plant Systems for Normal Ops using Attachment 1 (where restoration of Containment Fan Coolers is performed)
- Leave Fan Coolers in SI Mode
- o FREEZE and SNAP.
- After the candidate is ready, place simulator in RUN.

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Page 4 of 13 PERFORMANCE INFORMATION

Simulator Operator: When directed by the Lead Examiner go to Run. START TIME: OP-169, 8.4.1 **Performance Step: 1** Review applicable procedure. Standard: Verifies Initial Conditions are met. SI Reset (YES) Instrument Air restored to dampers (YES) Comment: OP-169, 8.4.2 Caution prior to step 1 and step 1 Failure of equipment to secure in this section will result in the **Procedure Caution:** associated EDG being inoperable. Tech Spec 3.8.1.1 is applicable until the breaker for the affected load is opened. Performance Step: 2 Circle the train Select train for normal operation and place the control switches for that trains Air Handling Units to STOP. **Evaluator Cue:** The CRS designates Train "A" for normal operation.

Standard:

- Circles Caution, reads Caution and slashes circle after reading.
 - Places AH-2 A-SA control switch in STOP.
 - Places AH-2 B-SB control switch in STOP.
 - Places AH-3 A-SA control switch in STOP.
 - Places AH-3 B-SB control switch in STOP.

Comment:

ppendix C	Page 5 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-169, 8.4.2.3	
Performance Step: 3CHECK the following post-accident discharge SHUT on Status Light Box 5 (6) for the select a. CV-D3 for AH-2 (CV-D1 for AH-1) b. CV-D5 for AH-3 (CV-D7 for AH-4)		ge nozzle dampers ected train of fans:
Standard:	Verifies CV-D3 and CV-D5 indicate SHUT of	on Status Light Box 5
Comment:		
	OP-169, 8.4.2.4	
Performance Step: 4	Place the train secured in Step 8.4.2.2 in or 5.1.	peration per Section
Standard:	Proceeds to Section 5.1.	

✓ - Denotes Critical Steps

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Appendix C	Page 6 of 13	Form ES-C-1	
	PERFORMANCE INFORMATION		
	OP-169, 5.1.1		
Procedure Note:	Where the Operator has a choice between this procedure will list Train A number and with Train B in parentheses.	Train A or Train B, letter identification firs	
Evaluator Cue:	Attachments 1 and 2 have been completed.		
Performance Step: 5	Circles Note, reads Note and slashes circle Verify Initial Conditions:	e after reading.	
	• Attachments 1 and 2 are completed.		
	• ESW train is in service which correspo train to be started.	nds to the AH unit	
Standard:	Acknowledges cue for Attachments 1 a	and 2.	

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Appendix C	Page 7 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-169, 5.1.2.1	
Procedure Note:	When changing Containment Cooling mo Containment Fan Cooler Trains, care mu the following:	odes, or swapping ist be taken to prevent
	 Entering Technical Specification 3.6.7 Containment pressure (1 hour action) 	1.4 at -1.0 inwg).
	 Opening the Containment Vacuum Br Containment pressure. 	reakers at -2.25 inwg
	This may be accomplished by performing monitoring CNMT pressure effects using Also, placing the Containment Normal Pu controller (FK-7624) in manual and shutt CNMT pressure to slowly rise, thus comp pressure drop that will occur during each	g the evolution slowly, ERFIS point PCP7611. urge Exhaust flow ing CP-B9, will allow bensating for the CNMT fan start.
Procedure Caution	Failure of equipment to secure in this sec associated EDG being inoperable. Tech applicable until the breaker for the affect	ction will result in the Spec 3.8.1.1 is ed load is opened.
Performance Step: 6	IF CNMT Normal Purge needs to be rest the performance of this procedure sectio following:	ored at any time during n, THEN PERFORM the
	(1) IF CNMT Normal Purge has NOT trip FK-7624 to AUTO.	ped, THEN RESTORE
x	(2) IF CNMT Normal Purge has tripped, Normal Purge per OP-168.	THEN STARTUP CNMT
Standard:	Circles Note, reads Note and slashes cir Circles Caution, reads Caution and slash	cle after reading. les circle after reading.
	Checks CNMT Normal Purge secure	ed and N/A's steps 1.a,

Evaluator Cue:	CNMT Normal Purge will be restored by another operator per ES-1.1 Attachment 1 step 12.
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Comment:

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Appendix C	Page 8 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-169, 5.1.2.2	
Procedure Note	In winter months, the operating train should Section 7.1 prior to starting the idle train, to potential for entering Technical Specificatio Containment pressure (1 hour action), or o Containment Vacuum Breakers at -2.25 inv pressure.	d be secured per o minimize the on 3.6.1.4 at -1.0 inwg pening the wg Containment
√ Performance Step: 7	Place the control switches for both fans in cooler unit AH-2 A-SA (AH-1 B-SB) and AH to LO-SPD.	each Containment 1-3 A-SA (AH-4 B-SB)
Standard:	 Circles Note, reads Note and slashes circle Places control switch for AH-2 A-SA in Places control switch for AH-2 B-SA in Places control switch for AH-3 A-SA in Places control switch for AH-3 B-SA in 	e after reading. LO-SPD. LO-SPD. LO-SPD. LO-SPD.
Comment:		

Comment:

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Appendix C		Page 9 of 13	Form ES-C-1
		PERFORMANCE INFORMATION	
		OP-169, 5.1.2.3	
Procedure Note:		After any fan cooler is started in low speed, allowed to come up to speed for approxima before shifting to fast speed. This reduces required for high speed operation. Step 5.1.2.4 must be performed without de	the fan should be tely 15 seconds the starting current ay following Step
		5.1.2.3. The fan should not be allowed to co being started in fast speed. These two step performed together, one fan at a time.	bast down before os should be
√ Performa	ance Step: 8	Place the control switch for the fans started STOP.	in Step 5.1.2.2 to
Standard	I:	Circles Note, reads Note and slashes circle	after reading.
		 Places control switch for AH-2 A-SA in 	STOP.
		 Places control switch for AH-2 B-SA in 	STOP.
		 Places control switch for AH-3 A-SA in 	STOP.
		 Places control switch for AH-3 B-SA in 	STOP.
Commen	t:		
		OP-169, 5.1.2.4	
√ Performa	ince Step: 9	Place the control switches for the fans stop HI-SPD.	ped in Step 5.1.2.3 to
Standarc	:	• Places control switch for AH-2 A-SA in	HI-SPD.
		 Places control switch for AH-2 B-SA in 	HI-SPD.
		 Places control switch for AH-3 A-SA in 	HI-SPD.
		Places control switch for AH-3 B-SA in	HI-SPD.

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Comment:

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Appendix C	Page 10 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	١
	OP-169, 8.4.2.5, .6, and .7	
Performance Ste	• IF FK-7624 was taken to MAN THEN RESTORE FK-7624 to	IUAL in Step 5.1.2.1.a, AUTO.
	 IF CNMT Normal Purge is not desired to place CNMT Norma STARTUP CNMT Normal Pure 	in service, AND it is al Purge in service, THEN ge per OP-168.
	 IF both trains of Containment l running (such as during a train PROCEED to Section 7.1 to section 	Fan Cooler fans are swap evolution), THEN ecure the desired train.
Standard:	Reviews steps 5, 6, and 7 and marks Returns to Section 8.4.2 and proceed	these steps N/A s with step 5
Comment:		
	OP-169, 8.4.2.5	
Performance Ste	p: 11 PLACE the following control switches STOP:	for the standby train to
	• AH-1 A-SB (AH-2 A-SA)	
	• AH-1 B-SB (AH-2 B-SA)	
	• AH-4 A-SB (AH-3 A-SA)	
	• AH-4 B-SB (AH-3 B-SA)	
Standard:	Takes control switches for fans and S	tops fans
	AH-1 A-SB (Stop)	
	AH-1 B-SB (Stop)	
	AH-4 A-SB (Stop)	
Comment:		

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Appendix C	Page 11 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-169, 8.4.2.6	
Performance Step: 12	CHECK the following post-accident dischar SHUT on Status Light Box 5 (6) for the star	ge nozzle dampers ndby train of fans:
	b. CV-D7 for AH-4 (CV-D5 for AH-3) (Shut)	
Standard:	Checks CV-D1 for AH-1 and CV-D7 for AH- Status Light Box 6.	-4 indicate SHUT on
Comment:		
	OP-169, 8.4.2.7	
Performance Step: 13	If containment temperature is greater than cooling is desired, refer to Section 8.1, Star Units (Maximum Cooling mode).	118 °F or if additional t-Up of Fan Cooler
Standard:	Verifies containment temperature is less that (Maybe > 118° but trending DOWN at this	an 118 °F. s time.)
	Marks step 7 as N/A	
Evaluator Cue:	It is not desired to start up additional co	oling.

Comment:

Evaluator Cue:	After containment temperature is verified at or trending to less than 118 °F: Evaluation on this JPM is complete.	
	Direct Simulator Operator to place the Simulator in Freeze.	

Simulator Operator:	When directed by the Lead Examiner then go to Freeze.

STOP TIME:

✓ - Denotes Critical Steps

Appendix C	Page 12 of 13 VERIFICATION OF COMPLETION	Form ES-C-1
Job Performance Measure No.:	<u>2013 NRC Exam Simulator JPM CR e</u> Return the Containment Fan Coolers t SI actuation. OP-169	o normal following an
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Examiner's Signature:	Date:	

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Appendix C	Page 13 of 13	Form ES-C-1
	JPM CUE SHEET	
	 An automatic SI initiation occurred due to a co equipment failure and technician error 	ombination of
Initial Conditions:	SI has been terminated	

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Initiating Cue:	You have been directed to return Containment Fan Coolers to the normal alignment per ES-1.1, SI TERMINATION, Attachment 1 step 6.a using OP-169, CONTAINMENT COOLING AND VENTILATION, Section 8.4. The A-SA train will be used for normal operation.
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	Page 1 o Worksh	of 18 Form ES-C- heet
Facility:	Shearon Harris	Task No.:
Task Title:	Loss Of All AC While Paralleling EDG from MCB for Testing	JPM No.: 2013 NRC Exam Simulator JPM CR f
K/A Reference:	064 A4.06 RO 3.9 SRO 3.9	ALTERNATE PATH - YES
Examinee:		NRC Examiner:
Facility Evaluator:		Date:
Method of testing:		
Simulated Performa	Ince:	Actual Performance: X
Classro	om SimulatorX	Plant
Initial Conditions	 The plant is operating a Emergency Diesel Gen ready to be paralleled t An operator is on static with OP-155 attachmer 	at 100% power. herator 1B-SB has been started and is to the grid. on to locally monitor B EDG in accordanc nts.
· · · ·		
Initiating Cue:	 You are the BOP, and 1B-SB to the grid in acc All initial conditions of S The monthly voltage ar to be performed. 	the CRS has directed you to parallel ED cordance with OP-155, section 5.3. Section 5.3.1 have been completed. nd governor controls exercise are require

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Appendix C	Page 2 of 18	Form ES-C-1
	Worksheet	
Task Standard:	EDG 1B-SB output breaker 126 is operated in accor breaker closed per section 5.3, manually opened per Limitation 4.0.24 upon LOSP AND manually closed p 8.a RNO.	dance with OP-155; r Precaution and per ECA-0.0 step
Required Materials:	OP-155 Rev. 67, sections 3.0, 4.0, 5.3, Att.9, and At (pp.1-13, 25-29,178,190)	t.15
General References:	OP-155, Rev. 67 ECA-0.0, Rev. 2	
Time Critical Task:	Νο	
Validation Time:	15 minutes	

Critical Step Justification		
Step: 4	Without Sync, EDG output breaker will not close on energized bus	
Step: 15	Must recognize the implications of LOSP without EDG output breaker 126 tripping: Sequencer fails to load.	
Step: 33	Required to restore on power to one emergency bus to support stabilization of the plant.	

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-171
- Password "dinner"
- Go to RUN
- Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Reset to IC-19
- Start EDG B
- Insert malfunction to prevent EDG B breaker 126 from automatically opening on subsequent LOSP (allowing manual operation to open)
 - o imf ZCR31748 FAIL_ASIS
- Set up a failure of the 'A' EDG to trip once the sequencer sends a start signal
 - o EDG 'A' Trips after EDG 'A' start signal is received from sequencer
 - imf dsg01 (n 00:00:00 00:00:00) A
 - o 1B-SB Bus Undervoltage 86UV fails to close EDG B breaker 126 automatically
 - imf dsg06b (n 00:00:00 00:00:00) TRUE
- Set Trigger 1 for a loss of Offsite power to the plant
 - imf eps01 (1 0 0) W/O_DELAY
 - Assign conditional trigger file B EDG MW Meter to trigger 1
 - When EDG is loaded to 2 MW the malfunction of loss of Offsite power will actuate
- Go to RUN
- Silence and Acknowledge annunciators
- Freeze and Snap these conditions to your exam IC

Page 4 of 18 PERFORMANCE INFORMATION

Form ES-C-1

Simulator Operator:	When directed by the Lead Examiner go to Run.	
START TIME:		
	OP-155	
Performance Step: 1	Implements OP-155, Section 5.3, Diesel Synchronizing and Paralleling at MCB	
Standard:	Reviews Prerequisites, Precautions and Limitations and Initial Conditions (Previously informed that all initial conditions have been satisfied)	
Comment:		
	OP-155, Section 5.3.2 Step 1	
Performance Step: 2	1. NOTIFY Load Dispatcher EDG 1A-SA (1B-SB) will be loaded.	
Standard:	Contacts Load Dispatcher	
Simulator Communicator:	Acknowledge as the Load Dispatcher notification has bee completed.	

Comment:

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Appendix C	Page 5 of 18	Form ES-C-
	PERFORMANCE INFORMATION	
	OP-155, Section 5.3.2 Step 2	
Performance Step: 3	 2. PERFORM the following: REVIEW Precaution 4.0.21 to determine to its normal power source. REVIEW Precaution 4.0.22 to determine REVIEW Precautions 4.0.24 and 4.0.2 	ne if UPP-1A is aligned ne if ALB-15-4-1 is unli 5 before paralleling.
Standard:	Reviews precautions	
Evaluator Cue:	(If asked when reviewing Precaution 4 UPP-1A is aligned to its normal source	.0.21) Ə.
Comment:		
	OP-155, Section 5.3.2 Step 3	
✓ Performance Step: 4	3. PLACE DIESEL GEN A-SA (B-SB) SY switch to SYNC.	NCHRONIZER contro
Standard:	Places Key in B-SB EDG sync swChecks that Sync scope is on.	itch and turns to SYN0
Comment:		
	OP-155, Section 5.3.2 Note prior to Ste	p 4
Performance Step: 5	NOTE: Steps 5.3.2.4.a, 5.3.2.4.b, 5.3.2.5 exercise the Voltage and Governor adjus accomplished once per month.	.a, and 5.3.2.5.b, whic tment, only need to be
Standard:	Reviews and circle/slashes note. Recogi per the Initiating Cue.	nizes steps are require
Comment:		
_		

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ppendix C Page 6 of 18 Forr		Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-155, Section 5.3.2 Steps 4.a.b	
Performance Step: 6	Step: 6 4. POSITION DIESEL GEN A-SA (B-SB) AUTO VOLTAGE ADJUST control switch to RAISE or LOWER as necessa perform the following:	
	a. Lower voltage to 6.6kV b. Raise voltage to 7.2kV	
Standard:	Lowers EDG B Auto Voltage Adjus	st until EDG voltage
	Raises EDG B Auto Voltage Adjus	t until EDG voltage
	indicates 7.2 kV.	t until EDG voltage
Comment:		
	OP-155, Section 5.3.2 Note prior to Step	o 4.c
D	NOTE: EL-60534 SA (B SB) has a scaling	factor of v200
Ferformance Step: 7	Therefore the range of the meter r voltage range of -9000 VAC to +9	reflects an actual 000 VAC.
Standard:	Reviews and Circle/Slash Note	
Comment:		
	OP-155, Section 5.3.2 Step 4.c	
Performance Step: 8	c. ADJUST EDG voltage to match the ass 6.9KV Bus voltage as indicated by zero indicated on EI-6953 A SA (B SB), A (B)	ociated Emergency differential voltage SYNC Δ VOLTS.
Standard:	Precisely adjusts EDG B Auto Voltage Adj matches 6.9KV Bus 1B-SB voltage (0 Δ V	ust until EDG voltage OLTS).
Comment:		

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	Appendix C	Page 7 of 18	Form ES-C-1
		PERFORMANCE INFORMATION	
C		OP-155, Section 5.3.2 Step 5	
	Performance Step: 9	 POSITION DIESEL GEN A-SA (B-SB) GONTROL switch to RAISE or LOWER perform the following: a. LOWER frequency to 59hz b. RAISE frequency to 61hz c. ADJUST EDG speed until the synchrosystem of the FAST direction (CLOCKWI) 	OVERNOR as necessary to scope is rotating SE).
	Standard:	 Adjusts EDG B Governor Control until E indicating 59 Hz. 	DG B frequency is
		 Adjusts EDG B Governor Control until E indicating 61 Hz. 	DG B frequency is
		 Adjusts EDG B Governor Control until E indicating slow CW movement. 	DG B sync scope is
	Comment:		
		OP-155, Section 5.3.2 Step 6	
	Performance Step: 10	 CHECK synchronizing lights are cycling (synchroscope is at the 12 o'clock position the synchroscope rotation. 	OUT when the n) in agreement with
-	Standard:	Checks sync lights are cycling properly.	
	Comment:		
		OP-155, Section 5.3.2 Note Prior to Step	7
	Performance Step: 11	NOTE: EI-6955A SA (B SB), EMERGENO VOLTAGE, compared with EI-695 EMERGENCY BUS VOLTAGE, conditional diverse indications to verify different indicated in the next step	CY DIESEL OUTPUT 6A1 SA (B1 SB), an be used as ential voltage
	Standard:	Reviews and Circle/Slash Note	
C	Comment:		

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Appendix C	Page 8 of 18	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-155, Section 5.3.2 Step 7	
Performance Step: 12	 As necessary, POSITION DIESEL AUTO VOLTAGE ADJUST control voltage to zero differential voltage i EI-6953A-SA (B SB), A (B) SYNC A 	GEN A- SA (B-SB) switch to adjust EDG s indicated on \ VOLTS.
Standard:	Verifies precisely 0 Δ VOLTS, using AUT control switch as needed.	O VOLTAGE ADJUST
Comment:		
	OP-155, Section 5.3.2 Caution Prior to	Step 8
Performance Step: 13	Performing the following three steps in rapprevent a reverse power trip of the EDG or reverse power trip relay has a 30 second the breaker is closed until trip.	pid succession will output breaker. The time delay from when
Standard:	 Reviews and Circle/Slash Caution The candidate should review the next flagging to promptly pick up load sync 	few steps and may use
Commont		

Comment:

Page 9 of 18 PERFORMANCE INFORMATION

Evaluator Note:	When B EDG is loaded to 2.0 MW the malfunction of loss of Offsite power will actuate
	OP-155, Section 5.3.2 Steps 8,9,10,11
Performance Step: 14	 WHEN the synchroscope reaches the 12 o'clock position and the synchronizing lights are TOTALLY DARK, THEN PLACE the DIESEL GEN A-SA (B-SB) BREAKER 106 S/ (126 SB) control switch to CLOSE. CHECK DIESEL GEN A-SA (B-SB) BREAKER 106 SA (126 SB) is <i>CLOSED</i>. POSITION DIESEL GEN A-SA (B-SB) GOVERNOR CONTROL switch to increase generator load to 2.2 to 2.4 MW on EI-6957A1-SA-(B1 SB), A (B) POWER.
Standard:	 Makes PA announcement Closes Breaker 126 when synchroscope is at 12 o'clock Promptly checks Breaker 126 is closed Promptly raises generator load to 2.2 – 2.4 MW
Comment:	At 2.0 MW a loss of Offsite Power occurs
	Loss of Off-site Power / Alternate Path Begins Here
✓ Performance Step: 15	Recognize LOSP and evaluate proper response of breaker 12 IAW P&L 4.0.24 (breaker 126 should automatically trip and re-close to allow the sequencer to start loading)
Standard:	 Recognize LOSP condition
	 Determines breaker 126 does not automatically trip as expected
	Notify CRS of breaker status
	Place breaker 126 to TRIP
	After LOSP, candidate may respond to Rx Trip and perfor immediate actions of E-0.
Evaluator Note:	However, breaker 126 should be tripped prior to referring E-0 which will result in the Loss Of All AC requiring entry into ECA-0.0 requiring the candidate to respond

Page 10 of 18 PERFORMANCE INFORMATION

Comment: ECA-0.0, Step 1 Performance Step: 16 1. VERIFY Reactor Trip: REACTOR TRIP CONFIRMATION Reactor Trip AND Bypass BKRs - OPEN Neutron Flux - DROPPING Standard: Verifies the Reactor Trip and Bypass Breaker OPEN AND Neutron Flux is dropping. **Comment:** ECA-0.0, Step 2 Performance Step: 17 VERIFY Turbine Trip – ALL Throttle Valves Shut: 2. TURB STOP VLV 1 TSLB-2-11-1 TURE STOP VLV 2 TSLB-2-11-2 TURB STOP VLV 3 TSLB-2-11-3 TURE STOP VLV 4 TSLB-2-11-4 Standard: Verifies ALL the Throttle Valves are shut. Comment:

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	ECA-0.0, Step 3.a Check If RCS Isolated:
Performance Step: 18	3.a Check letdown isolation valves - Shut: 1CS-1 (LCV-460) 1CS-2 (LCV-459)
Standard:	Check letdown isolation valves are shut. If not Shut then perform RNO 3.a 1) Shut all orifice isloation valves: 1CS-7 1CS-8 1CS-9 2) Shut letdown isloation valves: 1CS-1 (LCV-460) 1CS-2 (LCV-459)
Comment:	
	ECA-0.0, Step 3.b Check If RCS Isolated:
Performance Step: 19	3.b Check PRZ PORVs - Shut: 1RC-118 (PCV-445A) 1RC-114 (PCV-444B) 1RC-116 (PCV-445B)
Standard:	Checks ALL PRZ PORVs are shut. 1RC-118 (PCV-445A) 1RC-114 (PCV-444B) 1RC-116 (PCV-445B)
Comment:	

Page 12 of 18 PERFORMANCE INFORMATION

	ECA-0.0, Step 3.c Check If RCS Isolated:	
Performance Step: 20	3.c Verify excess letdown valves - SHUT: 1CS-460 1CS-461	
Standard:	Verify excess letdown valves are shut. 1CS-460 1CS-461	
Comment:		
	ECA-0.0, Step 4.a Verify AFW Flow AND Control SG Levels:	
Performance Step: 21	4.a Verify AFW Flow - GREATER THAN 210 KPPH	
Standard:	Verifies AFW Flow greater than 210 KPPH.	
Comment:		
	ECA-0.0, Step 4.b Verify AFW Flow AND Control SG Levels:	
Performance Step: 22	4.b Any level - GREATER THAN 25%[40%]	
Standard:	Checks All SG levels	
Comment:		
	ECA-0.0, Step 4.c Verify AFW Flow AND Control SG Levels:	
Performance Step: 23	4.c Control AFW flow to maintain all intact level between 25% and 50% [40% and 50%]	
Standard:	Adjusts AFW flow as required to maintain 25% to 50% on ALL SGs.	
Comment:		

✓ - Denotes Critical Steps

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Page 13 of 18 PERFORMANCE INFORMATION Form ES-C-1

	ECA-0.0, Step 5
Performance Step: 24	Evaluate EAL Matrix
Standard:	Notifies the SM to evaluate the EAL Matrix
Comment:	
	ECA-0.0, Step 6
Performance Step: 25	Verify AC Emergency Bus Cross-Ties to Non-Emergency AC Buses - OPEN
Standard:	 Verify any cross tie to Bus 1A-SA - OPEN Breaker 104 Breaker 105 AND Verify any cross tie to Bus 1B-SB - OPEN Breaker 124 Breaker 125
Comment:	
	ECA-0.0, caution prior to Step 7
Performance Step: 26	Emergency stopping an EDG will de-energize the field flashing circuit and prevent a fire in the GCP control section.
	Do NOT start any EDG that is emergency stopped OR close any tripped EDG output breaker until problem corrected.
Standard:	Reviews and Circle/Slash Caution
Comment:	

	Appendix C	Page 14 of 18	Form ES-C-1
		PERFORMANCE INFORMATION	
		ECA-0.0, Step 7.a	
		Check EDGs 1A-SA AND 1B-SB - AVAILABLI FROM MCB)	E (FOR START
	Performance Step: 27	 7.a Check all of the following for EDG 1A-SA: DIESEL GENERATOR A TRIP annunciate [ALB-024-3-1] - CLEAR (NOT PRESENT) DIESEL GENERATOR A START FAILUR [ALB-024-3-3] - CLEAR (NOT PRESENT) Breaker 106 – NORMAL (NOT TRIPPED) 	or E annunciator
	Standard:	 7.a Check all of the following for EDG 1A-SA: DIESEL GENERATOR A TRIP annunciate [ALB-024-3-1] - CLEAR (NOT PRESENT) 	or YES
		 DIESEL GENERATOR A START FAILUR annunciator [ALB-024-3-3] - CLEAR (NOT PRESENT) Breaker 106 – NORMAL (NOT TRIPPED) 	E NO
		Operator performs RNO: Places the EDG 1A-SA emergency 1A-SA: stop to EMERG STOP and verifies the EDG has sto	switch
Ċ	Comment:		
		ECA-0.0, Step 7.b	
	Performance Step: 28	 Check EDGs 1A-SA AND 1B-SB - AVAILABLE FROM MCB) 7.b Check all of the following for EDG 1B-SB: DIESEL GENERATOR B TRIP annunciate [ALB-025-3-1] - CLEAR (NOT PRESENT) DIESEL GENERATOR B START FAILUR [ALB-025-3-3] - CLEAR (NOT PRESENT) Breaker 126 – NORMAL (NOT TRIPPED) 	E (FOR START or E annunciator
	Standard:	 7.a Check all of the following for EDG 1B-SB: DIESEL GENERATOR B TRIP annunciate [ALB-025-3-1] - CLEAR (NOT PRESENT) 	or YES
		 DIESEL GENERATOR A START FAILUR annunciator [ALB-025-3-3] - CLEAR (NOT PRESENT) Breaker 126 NOBMAL (NOT TRUPPED) 	E YES
	Comment:	· DIEAREI 120 - NORIVIAL (NOT TRIPPED)	YES

✓ - Denotes Critical Steps

	Appendix C	Page 15 of 18	Form ES-C-1
(ECA-0.0, Step 7.c	
	Performance Step: 29	Check EDGs 1A-SA AND 1B-SB - AVAILA FROM MCB) 7.c Check any EDG - AVAILABLE (NOT EM STOPPED)	BLE (FOR START ERGENCY
	Standard:	Determines EDG 1B-SB - AVAILABLE(NOT STOPPED)	EMERGENCY
	Comment:		
		ECA-0.0, Step 7.d	
		Check EDGs 1A-SA AND 1B-SB - AVAILA FROM MCB)	BLE (FOR START
	Performance Step: 30	7.d Check any EDG – RUNNING	
C	Standard:	Determines EDG 1B-SB – RUNNING	
	Comment:		
		ECA-0.0, Step 7.e	
		Check EDGs 1A-SA AND 1B-SB - AVAILA FROM MCB)	BLE (FOR START
	Performance Step: 31	7.e GO TO Step 8.	
	Standard:	Goes to Step 8	
	Comment:		

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Appendix C Page 16 of 18 Form ES-C-1 PERFORMANCE INFORMATION ECA-0.0, Step 8.a Energize AC Emergency Buses using EDGs: Performance Step: 32 8.a Check any AC emergency bus - ENERGIZED: □ 1A-SA bus voltage □ 1B-SB bus voltage □ 1A-SA bus voltage Standard: NO □ 1B-SB bus voltage NO Comment: ECA-0.0, Step 8.a RNO Energize AC Emergency Buses using EDGs: 8.a RNO: Perform any of the following (listed in ✓ Performance Step: 33 order of preference): 1) At the MCB manually close running EDG output breaker: □ EDG 1A-SA: Breaker 106 Not Running . □ EDG 1A-SA: Breaker 126 Running 1) At the MCB manually close running EDG Standard: output breaker: EDG 1A-SA: Breaker 106 □ EDG 1A-SA: Breaker 126 Operator closes EDG 1A-SA: Breaker 126 Comment: **Evaluator Note:** After candidate closes EDG output breaker 126 to restore power to the 'B' Emergency Bus, the JPM is complete. **Evaluator Cue:** Evaluation on this JPM is complete. Direct Simulator Operator to place the Simulator in Freeze.

STOP TIME:

Simulator Operator:

When directed by the Lead Examiner go to Freeze.

✓ - Denotes Critical Steps

Appendix C	Page 17 of 18	Form ES-C
	VERIFICATION OF COMPLETION	
Job Performance Measure No.:	2013 NRC Exam Sim CR JPM f	
	Loss Of All AC While Paralleling EDG fro	m MCB for Testin
	OP-155, E-0, ECA-0.0	
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	

Appendix C	Page 18 of 18	Form ES-C-1
	JPM CUE SHEET	
	[
Initial Conditions:	 The plant is operating at 100% pow Emergency Diesel Generator 1B-S is ready to be paralleled to the grid 	ver. B has been started and
	An operator is on station to locally accordance with OP-155 attachme	nts.

Initiating Cuo	• You are the BOP, and the CRS has directed you to parallel EDG 1B-SB to the grid in accordance with OP-155, section 5.3.
Initiating Cue:	 All initial conditions of Section 5.3.1 have been completed. The monthly voltage and governor controls exercise are
	required to be performed.

<u>core NI Channel to</u> ver, NI failed low)) 3.8 SRO 3.9	Task No.: JPM No.: ALTE	015005H401 2013 NRC JPM CR g RNATE PATH - NO	
<u>core NI Channel to</u> ver, NI failed low)) 3.8 SRO 3.9	JPM No.: ALTE	2013 NRC JPM CR g	
) 3.8 SRO 3.9	ALTE	RNATE PATH - NO	
	NRC Examiner	r:	
acility Evaluator:		Date:	
	· · ·		
	Actual Perform	nance: X	
Simulator X	Plant		
	Simulator X	Actual Perform Simulator <u>X</u> Plant	

READ TO THE EXAMINEE:

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

Initial Conditions:	The plant is at 100 percent power. NI-43 has failed low earlier this shift. I&C have completed the repairs to NI-43. All other parameters are normal.
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Initiating Cue:	The CRS has directed you to return NI-43 to service in accordance with OWP-RP-25.
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Appendix C	Page 2 of 15 Worksheet	Form ES-C-1
Task Standard:	NI-43 returned to service.	
Required Materials:	OWP-RP-25, Rev. 16	
General References:	OWP-RP (Rev. 16)	
Handout:	None	
Time Critical Task:	No	
Validation Time:	15 minutes	

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	Critical Step Justification		
Step 4	Must place Rod Control System to Manual to prevent inadvertent reactivity changes while implementing the OWP.		
Step 7	Must select correct switch and correct switch position for NI-43 to restore upper detector comparator		
Step 8	Must select correct switch and correct switch position for NI-43 to restore rod stop bypass and power mismatch		
Step 9	Must select correct switch and correct switch position for NI-43 to restore comparator channel defeat		
Step 19	Must return NI-43 to processing for correct alarms and indication on ERFIS		

Form ES-C-1

Appendix C

Page 3 of 15 Worksheet

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator

- Reset to IC-171
- Password "dinner"
- Load 2013 exam AMS file from the portable hard drive
 "OWP-RP-25-NRM Part 1"
- Place OWP-RP "Bistables Tripped OWP-RP in Affect" signs on NI 43 drawer
- Go to Run
- Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19, stay in freeze
- Insert a malfunction to fail low PRNIS Channel 43
 o imf NIS08C 0.0
- Go to RUN
- Silence and Acknowledge annunciators
- FREEZE and SNAP these conditions for future use

NOTE: Running AMS file APP-rps-OWP-NI-07-TST (PIC-3) will simulate tripping bistables BS3 and BS4 in PIC-3 on Card C3-822.

• Run AMS file APP-rps-OWP-NI-07-TST (PIC-3)

NOTE: Running AMS file APP-rps-OWP-NI-07-TST (NI Drawer A) will simulate disconnecting P312 from J312 at the rear of N43 Drawer A.

- Run AMS file APP-rps-OWP-NI-07-TST (NI Drawer A)
- FREEZE and SNAP

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Page 4 of 15 PERFORMANCE INFORMATION

Simulator Operator:	When directed by the Lead Examiner go to Run.
START TIME:	
Performance Step: 1	Obtain procedure (Provided by Examiner)
Standard:	Obtains OWP-RP-Section 25.
Comment:	
	OWP-RP-25 Sheet 1
Performance Step: 2	Sheet 1 contains information on which component the OWP is written for, the scope, applicable requirements, precautions, the component lineup, testing requirements, testing action, component lineups restore, remarks and reviewed by.
Standard:	Reads sheet 1 to ensure the correct component and scope is fo N-43
Comment:	
Evaluator Cue:	If needed, "LCO actions have already been addressed."
	OWP-RP-25 Sheet 2
Performance Step: 3	Reviews NOTE: This OWP must be performed in order to prevent possible spurious rod motion or level control swings.
Standard:	Reads and circles / slashes note
Comment:	

Page 5 of 15 PERFORMANCE INFORMATION

OWP-RP-25 Sheet 2 continued

✓ Performance Step: 4

On Main Control Board Check position:

Rod Bank Selector switch – MANUAL

Standard:

Places Rod Bank Selector Switch from Auto to MANUAL. Reads / reviews OMM-001 Attachment 13 control bands and trip

Controller	Control Band	Trip L	Trip Limit	
		Low	High	
Rod Control Stable Plant	T Avg within 2° of T Ref	T Avg Within 10° of T Ref.	T Avg Within 10° of T Re	
Rod Control Transient Plant	T Avg within 5° of T Ref	T Avg Within 10° of T Ref and the trend show no sign of turning	T Avg Withir 10° of T Ref and the trent show no sign turning	

the CRS: Acknowledge the OMM-001 Rod Control - and trip limits.

Comment:

OWP-RP-25 Sheet 2 continued

Performance Step: 5 On Main Control Board check position:

FW Reg BYP Valve Controllers:

- FK-479.1 MANUAL
- FK-489.1 -- MANUAL
- FK-499.1 MANUAL

Standard: Verifies FK-479.1, FK-489.1, and FK-499.1 controllers all in MANUAL.

Comment:

Appendix C	Page 6 of 15	Form ES-C-
	PERFORMANCE INFORMATION	
	OWP-RP-25 Sheet 2 continued	
Performance Step: 6	NOTE: Concurrent verification is preferred bistables.	in while tripping
	In PIC 3 on Card C3-822 position:	
	 BS3 (TB/432C1 OT∆T) – to NORM. 	AL
	• BS4 (TB/432C2 OT∆T C-3) – to NC	DRMAL
	Contact Maintenance to restore the trip bis	tables to NORMAL
Standard:	Calls Maintenance to trip bistables to NOR C3-822 and requests that second I&C pers person tripping bistables to NORMAL to pe verification	MAL in PIC 3 on Car on accompanies erform Concurrent
	If candidate calls for Maintenance - ack with proper communications.	nowledge request
	* Inform the applicant that time compres for I&C to report to MCR and that I&C is trip bistables to NORMAL in PIC 3 on Ca	ssion is being used ready to restore th ard C3-822
Evaluator / Simulator Operator Cue:	(Contact Simulator Operator to run AMS NRM - Part 1" to simulate restoring bista to NORMAL)	6 file "OWP-RP-25- ables BS3 and BS4
	NOTE: The applicant may request that t the tripped bistables to NORMAL is initi continuing.	he step for restorin aled prior to
	IF SO then cue them to assume that the	step is initialed.
ţ		
	Run AMS file: APP-rps-"OWP-RP-25-NR	M - Part 1"
	This file simulates restoring the tripped	bistables BS3 and
Simulator Operator:	BS4 in PIC-3 on Card C3-822.	
onnulator operator.	After the file is completed wait 10 secor	ids then report bac

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Appendix C	Page 7 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OWP-RP-25 Sheet 2 continued	
 ✓ Performance Step: 7 	 On Detector Current Comparator Drawer po Upper Section Switch – to NORMAL Lower Section Switch – to NORMAL 	osition: - -
Standard:	Selects NORMAL on UPPER SECTION SV Selects NORMAL on LOWER SECTION S\	VITCH MITCH
Evaluator Note:	Channel Defeat lights on drawer will exti	nguish.
Comment:		
✓ Performance Step: 8	 On Miscellaneous Control and Indication Pa Rod Stop Bypass Switch – to OPER Power Mismatch Bypass Switch – to 	anel position: ATE O OPERATE
Standard:	Selects OPERATE on ROD STOP BYPASS Selects OPERATE on POWER MISMATCH	S SWITCH I BYPASS SWITCH
Comment:		

Appendix C	Page 8 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OWP-RP-25 Sheet 2 continued	
✓ Performance Step: 9	On Comparator and Rate Drawer position: Comparator Channel Defeat Switch – to NOF	RMAL.
Standard:	Selects NORMAL on the COMPARATOR CH switch	ANNEL DEFEAT
Evaluator Note:	Defeat light on drawer extinguishes.	
Comment:		
	OWP-RP-25 Sheet 2 continued	
	On Power Range Drawer N43A	
Performance Step: 10	NOTE: The purpose of the sign installed belo personnel of tripped bistables that may not be drawer. The wording in quotations is the reco but similar words may also be used.	w is to alert obvious at the NI mmended wording,
Standard:	Reviews and circle / slashes Note	
Comment:		
	OWP-RP-25 Sheet 2 continued	
Performance Step: 11	Removed - Sign stating "Bistables Tripped - 0	OWP-RP in Affect"
Standard:	Locates sign and removes it from the obvious drawer for NI-43.	position on the NI
Comment:		

Appendix C	Page 9 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OWP-RP-25 Sheet 3	
Performance Step: 12	NOTE: Concurrent verification is preferred	d in the following step.
	At the rear of N43 Drawer A, disconnect F	P312 from J312
	Contact Maintenance to disconnect leads	
Standard:	Calls Maintenance to connect leads at rea requests that second I&C person accomp leads to perform Concurrent verification	ar of N43 Drawer A and anies person landing
Evaluator / Simulator Operator Cue:	If candidate calls for Maintenance - ack with proper communications.	knowledge request
	* Inform the applicant that time compre for I&C to report to MCR and that I&C is leads.	ession is being used s ready to connect
	(Contact Simulator Operator to insert r "nis031 connect" to simulate landing l	remote function eads)
	NOTE: The applicant may request that the lead is initialed prior to continuing.	the step to connect
	IF SO then cue them to assume that the	e step is initialed.
Simulator Operator:	When contacted by Evaluator	
•	irf nis031 connect	
	This file simulates connecting P312 fro	om J312.
	After the file is completed wait 10 seco	onds then report back

that the connecting of P312 from J312 has been completed.

	Appendix C	Page 10 of 15	Form ES-C-1
		PERFORMANCE INFORMATION	
C		OWP-RP-25 Sheet 3 continued	
		On completion of the above lineup, check the	e following.
	Performance Step: 13	On TSLB-3 C TRIP O/TEMP ∆T - TB432C1 (Window 9-	1) DE-ENERGIZED
	Standard:	Locates window 9-1 and initials "DE-ENERG	SIZED" line
	Comment:		
		OWP-RP-25 Sheet 3 continued	
	Performance Step: 14	On TSLB-3 C RUN BK O/TEMP ∆T - TB432C2 (Window	9-3) DE-ENERGIZED
for the second s	Standard:	Locates window 9-3 and initials "DE-ENERG	IZED" line
C	Comment:		
		OWP-RP-25 Sheet 3 continued	
		*Circle required state as determined by pres	ent plant conditions.
	Performance Step: 15	On TSLB-4 PR LO PWR HI FLUX NC 43P (Window 5-3) DE-ENERGIZED) * ENERGIZED OR
	Standard:	Locates window 5-3, circles current status of initials "* ENERGIZED OR DE-ENERGIZED	f Window 5-3 and " line
	Comment:		

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Page 11 of 15 PERFORMANCE INFORMATION

Form ES-C-1

	OWP-RP-25 Sheet 3 continued
Performance Step: 16	On TSLB-4 PR HI PWR HI FLUX NC 43R (Window 6-3) DE-ENERGIZED
Standard:	Locates window 6-3 and initials "DE-ENERGIZED" line
Comment:	
	OWP-RP-25 Sheet 3 continued
	** May require manual reset of rate trips at drawer
Performance Step: 17	On TSLB-4
	PR HI FLUX RATE NC 43U/K (Window 7-3) ** DE-ENERGIZED
Standard:	Locates window 7-3 and initials "DE-ENERGIZED" line Resets the PR rate trip (if required) at PR A N43A drawer by placing the rate mode switch to the reset position. Verifies that the rate trip is reset.
Comment:	
	OWP-RP-25 Sheet 3 continued
Performance Step: 18	On BYPASS PERMISSIVE LIGHTS Panel. PR OVERPWR ROD WTHDRWL BLK BYPASS CHAN III (Window 3-7) DE-ENERGIZED
Standard:	Locates window 3-7 and initials "DE-ENERGIZED" line
Comment:	

Appendix C	Page 12 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OWP-RP-25 Sheet 4	
✓ Performance Step: 19	On ERFIS Computer - After status lights hat perform the following using the DR function ANM0122M - PWR RNG CHANNEL N43 C RESTORE TO PROCESSING	ave been checked, n. Q1 1-MIN AVG
Standard:	Logs onto ERFIS Computer using DR func ANM0122M - PWR RNG CHANNEL N43 C processing	tion and restores Q1 1-MIN AVG to
Comment:		
	OWP-RP-25 Sheet 4 continued	
Performance Step: 20	On MAIN CONTROL BOARD: Circle appro determined by plant conditions. ROD BANK SELECTOR Switch MAN/AUT	opriate position as O+
Standard:	Checks Rod Bank Selector Switch position (can circle MAN after cue provided)	•
Evaluator Cue:	The applicant may determine that AUTO accomplished - CUE them prior to obtain	rod control can be ning the procedure:
	The CRS directs that the Rod Bank Sele MANUAL until a second operator is avai	ctor Switch be left in ilable in the MCR.

Page 13 of 15 PERFORMANCE INFORMATION

OWP-RP-25 Sheet 4 continued

Performance Step: 21FW Reg Byp Valve Controllers:
Circle appropriate position as determined by plant conditions:
FK-479.1FK-479.1MAN/AUTO+
FK-489.1FK-499.1MAN/AUTO+

Standard:(Per current plant conditions)Circles MAN for FK-479.1, FK-489.1 and FK-499.1

Comment:

OWP-RP-25 Sheet 4 continued

Evaluator Cue:	The CRS acknowledges that N43 has been returned to
Standard:	Reports to CRS that N43 has been returned to service IAW OWP-RP-25
Performance Step: 22	Reports to CRS

service IAW OWP-RP-25

Comment:

Lead Evaluator Cue:	After lineup has been completed and the report provided to CRS then: Evaluation on this JPM is complete.
	Inform the Simulator Operator to place the Simulator in Freeze.

Simulator Operator:	When directed by the Lead Examiner then go to Freeze.

STOP TIME:

✓ - Denotes Critical Steps

Appendix C	Page 14 of 15 VERIFICATION OF COMPLE	Form ES-C-1 TION
Job Performance Measure No.:	2013 NRC JPM CR g	
	Restore an Excore NI Channe low)	el to Service (at power, NI failed
	OWP-RP-25	
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Examiner's Signature:		Date:

2013 NRC Exam Simulator JPM CR g Rev. FINAL

Appendix C	Page 15 of 15	Form ES-C-1
	JPM CUE SHEET	
Initial Conditions:	The plant is at 100 percent power. NI-43 has failed I&C have completed the repairs to NI-43. All other p normal.	low earlier this shift. parameters are

Initiating Cue:	The CRS has directed you to return NI-43 to service per OWP-RP-25.
-----------------	--

Appendix C	Job Performance Measure Worksheet		Form ES-C-1
Facility:	Shearon Harris	Task No.:	008010H101
Task Title:	Align CCW to Support RHR Initiation (OP-145)	JPM No.:	2013 NRC Exam Simulator JPM CR h
K/A Reference:	008 A4.01 RO 3.3 / SRO 3.1	ALTERNA	TE PATH - NO
Examinee:		NRC Examine	r:
Facility Evaluator:		Date:	
Method of testing:			
Simulated Perform	ance:	Actual Perform	nance: X
Classro	oom SimulatorX	Plant	
READ TO THE EX	AMINEE		
l will explain the ini cues. When you co Measure will be sat	tial conditions, which steps to simu omplete the task successfully, the o tisfied.	late or discuss, a objective for this	and provide initiating Job Performance
Initial Conditions	 The unit is in Mode 4, goin Preparations are underway Both ESW Trains are in set of CCW Pump "A" is running 	ng to Mode 5 ay to place both ti ervice	rains of RHR in service
Initiating Cue:	Align CCW to support RHR op COMPONENT COOLING WA met.	peration in accord TER. All Section	lance with OP-145, a 3.0 Prerequisites are
	To expedite the examinativ	an schedule, the	candidate should be

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Examiners Note:	 To expedite the examination schedule, the candidate should be briefed outside of the Simulator prior to performing this JPM. Provide a copy of OP-145, Rev. 69, pages 1-11, 15-16, and 43-47. The initial conditions should be signed off and section 5.2 initial conditions signed off. This will allow them time to task preview and mark up prior to entering the Simulator to perform the JPM. Inform them that ALL initial conditions are satisfied. This will allow them to review the Precautions and Limitations associated with OP-145 and have time for a task preview of the steps to accomplish aligning CCW to support RHR operation. Expect that the candidates will take about 10 - 15 minutes to complete this review.
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Appendix C	Job Performance Measure	Form ES-C-1
	Worksheet	
Task Standard:	Two CCW Pumps running and the required CCW flo through both RHR Heat Exchangers	w rate established
Required Materials:	None	
General References:	OP-145, COMPONENT COOLING WATER, Rev 69	
Handout:	 OP-145, Sections 1.0-4.0 OP-145, Section 5.2 with the Initial Conditions OP-145, Section 8.9 with the Initial Conditions (pages 1-11, 15-16, and 43-47) 	s signed off s signed off
Time Critical Task:	Νο	
Validation Time:	25 minutes	

CRITICAL STEP JUSTIFICATION		
Step 2	Must direct AO to throttle shut 1CC-508 to prevent pump runout when aligning CCW flow to the RHR Hx due to flow rate not within band.	
Step 5	Critical because two CCW Pumps are required to support two RHR Trains and other loads.	
Step 9	Critical to align flow through RHR HX "A" or heat exchanger will not provide cooling.	
Step 11	Critical to isolate Train "A" from Non-Essential Header.	
Step 12	Critical to isolate Train "A" from Non-Essential Header.	
Step 14	Critical to align flow through RHR HX "B".	

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Worksheet

2013 NRC Exam - SIMULATOR SETUP

Simulator Operator – NOTE: The setup time for this JPM may take \geq 5 minutes

- Reset to IC-172
- Password "dinner"
- Go to RUN and wait ~ 10 seconds then silence and acknowledge alarms.

GO TO FREEZE and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Reset to IC-16
- Place LTOPS in NORMAL and establish feed with AFW to prevent distracting alarms
- Start both ESW Pumps
- Throttle 1CC-575 irf ccw080 (n 0 0) 50 0 0
- Shut 1CC-522 irf ccw122 (n 0 0) 0 0 0
- Open 1CC-512 irf ccw083 (n 0 0) 100 0 0
- Check FI-652.1 in normal band 10,000 gpm to 11,000 gpm
- IF VCT makeup occurs during this set up allow the VCT to fill
- Return CCW to normal lineup per OP-145
- Stabilize the plant including AFW flows
- FREEZE and SNAP

Page 4 of 15 PERFORMANCE INFORMATION

Simulator Operator: When directed by the Lead Examiner go to Run.

START TIME:

OP-145

Performance Step: 1 Implements procedure

Standard:

- Reviews Sections 1.0 through 4.0.
- Proceeds to Section 8.9.
- Reviews the initial conditions for 8.9 (RHR System operation desired)

Comment:

Appendix C	Page 5 of 15	Form ES-C-1
•	PERFORMANCE INFORMATION	
	OP-145, 8.9.2.1	
Procedure Notes:	 The purpose of this section is to ensur- does not occur. Maximum flow through 12,650 gpm. This section will ensure the not supplying both essential cooling loo essential loop simultaneously. 	e CCW pump runout h one CCW pump is nat one CCW pump is ops and the non-
	 Normally it is desirable to place both R operation in Mode 4. This will require be in operation and one train of non-es return valves to be shut. 	HR cooling trains in both CCW pumps to sential supply and
Procedure Caution:	To prevent pump runout when aligning CCV verify flow rate to the Non-essential header running is less than 8500 gpm, as indicated (FI-653.1) prior to opening 1CC-147 (1CC-	W flow to the RHR Hx, with one pump on FI-652.1 167).
Performance Step: 2	PERFORM the following to verify total CCV 7850 gpm and 8500 gpm:	V flow rate is between
	 IF SFP 2&3A is in service, THEN TI 1CC-508, SFP HX 2&3A CCW OutI 	HROTTLE SHUT et Isolation Valve.
	 IF SFP 2&3B is in service, THEN TI 1CC-521, SFP HX 2&3B CCW OutI 	HROTTLE SHUT et Isolation Valve.
✓ Standard:	Reads and circle / slashes notes and caution	on
ì	Determines flow is NOT within band and co to throttle shut 1CC-508 to their mark	ontacts Aux Operator
Simulator Operator / Communicator:	When contacted to throttle shut 1CC-508 u CCW07 / open window for 1CC-508 and ac in three increments to allow the candidate t progress on ERFIS – you should be in open the candidate during this evolution 41% to 25% with a 10 second ramp 25% to 10% with a 10 second ramp	se Simulator Drawing djust the percent open o monitor the n communication with
	This last adjustment will get flow to be with be instructed to stop.	n band and you will
	 10% to 4% with a 10 second ramp 	

	FI-652.1 reads 8400 gpm and 8200 gpm on ERFIS
Evaluator Note:	FI-652.1 Tolerance is <u>+</u> 200 gpm
	Band 8200 / 8600 gpm outside of this band is not acceptable

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✓ - Denotes Critical Steps

Appendix C	Page 6 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-145, 8.9.2.2	
Performance Step: 3	IF both trains of RHR cooling are to be plac the second CCW pump per Section 5.2.	ced in service, START
Standard:	Proceeds to Section 5.2 to start CCW Pum	р "В".
Comment:		
	OP-145, 5.2.1	
Performance Step: 4	Verifies Initial Conditions	
Standard:	Notes all Initial Conditions are signed (inclu checks)	iding the prestart
	Contacts Aux Operator to standby for "B" C	CW pump start
Simulator Communicator:	When requested: Report you are standing	by.

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Appendix C	Page 7 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-145, 5.2.2.1	
Procedure Notes:	 Starting the second pump could cau across REM-01CC-3501ASA (BSB) solenoid valves 1CC-23 and 1CC-40 	se ΔP fluctuations which may shut).
	 Starting the second pump may caus could shut 1CC-252. Re-opening of attempted until the second pump is s 	e flow oscillations which 1CC-252 should not be secured.
	 APP-ALB-005 Windows 1-3, 2-1, an alarms when starting the second CC 	d 3-2 are expected W Pump.
Procedure Caution:	 With one CCW pump running and th capable of an automatic start, ensure 7850 gpm exists as indicated on FI-6 CCW pumps are running OR the CC a minimum of 3850 gpm per pump is flowrate should only be allowed for s accomplish pump swapping or syste 	e standby pump e a minimum flowrate of 552.1 (FI-653.1). If both W trains are separated, s required. This lower short durations to m realignment.
Performance Step: 5	Reviews and circle / slashes notes and c	aution
	Makes PA announcement for pump start At the MCB, START CCW Pump Train B	then: -SB.
√ Standard:	Selects CCW Pump "B" to start and relea Verifies pump start indications (not critica Contacts Aux Operator to ensure good s	ases (critical) al) tart (not critical)
Simulator Communicato	 IF contacted OR asked to report on "B" O Report the "B" CCW pump had a good st to monitor during pump warm up to full o 	CCW pump start art and you will continue perating conditions.

Appendix C	Page 8 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-145, 5.2.2.2	
Performance Step: 6	VERIFY flow is greater than or equal to 38 and FI- 652.1.	50 gpm on FI-653.1
Standard:	Verifies ≥ 3850 gpm on FI-653.1 and FI-65	2.1.
Comment:		
	OP-145, 5.2.2.3	
Performance Step: 7	VERIFY OPEN, 1CC-23 and 1CC-40, REM Solenoid Valve and REM 3501 B CCW Inle respectively.	1 3501 A CCW Inlet et Solenoid Valve
Standard:	Contacts Aux Operator for verification	
Simulator Communicator:	Report: 1CC-23 and 1CC-40 are OPEN	

OP-145, 5.2.2.4 and 5.2.2.5

Performance Step: 8

IF 1CC-23 or 1CC-40 shut as a result of starting the CCW pump, THEN INITIATE a CR.

PERFORM one of the following:

- SECURE a second CCW Pump using Section 7.1
- ALIGN CCW to support RHR cooling using Section 8.9

Standard:

N/As step 4 and step 5

Comment:

✓ - Denotes Critical Steps

Ар	ppendix C	Page 9 of 15 PERFORMANCE INFORMATION	Form ES-C-1
		OP-145, 8.9.2.3	
	Procedure Note:	If A (B) train RHR cooling is placed in servic CCW pump will only supply the A (B) CCW (A) CCW pump will supply the non-essentia the B (A) CCW essential header.	e first, the A (B) essential header. B I CCW header and
\checkmark	Performance Step: 9	OPEN 1CC-147 (1CC-167), CCW FROM RI EXCHANGER A-SA (B-SB).	HR HEAT
	Standard:	Reads and circle / slashes note Places 1CC-147 in OPEN (RED indication).	
	Comment:		
		OP-145, 8.9.2.4	
	Procedure Caution:	With one CCW pump running and the stand an automatic start, ensure a minimum flowra exists as indicated on FI-652.1 (FI-653.1). If are running OR the CCW trains are separate 3850 gpm per pump is required. This lower be allowed for short durations to accomplish system realignment. (Reference 2.6.6)	by pump capable of ate of 7850 gpm both CCW pumps ed, a minimum of flowrate should only pump swapping or
	Performance Step: 10	VERIFY RHR HX A (B) out flow is 5600 to 8 FI-688A1 (FI-689A1).	150 gpm on
	Standard:	Reads circle / slashes caution Verifies RHR HX A out flow is 5600 to 8150	gpm on FI-688A1.
	Comment:		

✓ - Denotes Critical Steps

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Appendix C	Page 10 of 15 PERFORMANCE INFORMATION	Form ES-C-1
	OP-145, 8.9.2.5	
Procedure Note:	If a leak occurs, and surge tank level is less divider plate), make up water for the B CCW supplied by demin water. Makeup water for must be supplied by the Reactor Makeup Wa	than 40% (below the ' header will be the A CCW header ater System.
Procedure Caution:	Shutting both 1CC-99 and 1CC-113 will resu Nonessential Header.	ult in the loss of the
$\sqrt{1}$ Performance Step: 11	IF both CCW pumps are in service, CLOSE CCW HEAT EXCHANGER A(B) TO NONES	1CC-99 (1CC-113), SENTIAL SUP.
Standard:	Closes only 1CC-99 (GREEN indication).	
Comment:		
	OP-145, 8.9.2.6	
Procedure Caution:	Shutting both 1CC-128 and 1CC-127 will res Nonessential Header.	sult in the loss of the
Performance Step: 12	IF both CCW pumps are in service, CLOSE CCW NONESSENTIAL RETURN TO HEAD	1CC-128 (1CC-127), ER A(B).
Standard:	Reads circle / slashes note Closes 1CC-128 (GREEN indication).	
Comment:		

✓ - Denotes Critical Steps

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Appendix C	Page 11 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-145, 8.9.2.7	
Performance Step: 13	VERIFY the following:	
	 a. IF both CCW Pumps are in service, THE following: 	EN PERFORM the
	 CHECK CCW Pump A-SA (B-SB) 1 8050 gpm on MCB indicator FI-688 	flow between 7850 and BA1 (FI-689A1).
	 IF necessary, THEN ADJUST and (1CC-166), RHR Hx A (B) Outlet T desired flow. 	LOCK 1CC-146 hrottle Valve, to obtain
Standard:	Verifies flow between 7850 and 8050 gpm	on FI-688A1
	 Determines that there is no need to 	adjust 1CC-246
	• Determines steps 7.a.2 and 7.b.1 a	nd 2 are N/A
Simulator Operator:	If asked to adjust flow then reduce the 1CC-146 on Sim drawing for CCW03 fro slightly lower flow rate on FI-688A1	percent open of m 46 to 44 to obtain
Comment:	·	
	OP-145, 8.9.2.8	
Procedure Caution:	Do not supply CCW to both RHR Heat Exc simultaneously with only one CCW pump r	changers running.
Performance Step: 14	IF both trains of RHR cooling are to be pla 1CC-167 (1CC-147), CCW FROM RHR H SB (A-SA).	ced in service, OPEN EAT EXCHANGER B-

Standard: Opens 1CC-167 (RED indication).

Comment:

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OP-145, 8.9.2.9

Performance Step: 15	 VERIFY CCW Pump B-SB (A-SA) flow rate in the required range, as follows: CHECK CCW Pump B-SB (A-SA) flow rate is between 10,000 and 12,500 gpm on MCB indicator FI-653.1 (FI-652.1). IF flow rate is not between 10,000 and 12,500 gpm, THEN ADJUST the applicable valve.
Standard:	Verifies flow rate is between 10,000 and 12,500 gpm on FI-653.1 and there is NO need for flow adjustment and N/As step 9.b.
Comment:	
	OP-145, 8.9.2.10
Performance Step: 16	Locally VERIFY FI-693, CCW Flow Gross Failed Fuel Detector, is between 8 and 12 gpm.
Standard:	Contacts Aux Operator to verify flow on FI-693 between 8 and 12 gpm
Simulator Communicator:	Flow on FI-693 reads 10 gpm

Comment:

Appendix C	Page 13 of 15	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-145 89211	
Performance Step: 17	WHEN CCW is no longer required for RHR (PERFORM the following steps:	Operation,
Standard:	Step is N/A at this time.	
Comment:		
	When Stop 9.0.2.11 is ready Evolution of	
Evaluator Cue:	complete.	n this JPIVI IS
	Direct Simulator Operator to place the Sir	nulator in Freeze.

Simulator Operator:	When directed by the Lead Examiner then go to Freeze.

STOP TIME:

Appendix C	Page 14 of 15 VERIFICATION OF COMPLETIO	Form ES-C-
Job Performance Measure No.:	2013 NRC Exam Simulator JPM (CR h
	Align CCW to Support RHR Initiat	ion
	OP-145	
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Examiner's Signature:	Da	te:

. .

Appendix C	Page 15 of 15	Form ES-C-1
	JPM CUE SHEET	
	The unit is in Mode 4, going to Mode 5	
Initial Conditions:	Preparations are underway to place both trains	s of RHR in service
	Both ESW Trains are in service	
	CCW Pump "A" is running	

1

Initiating Cue:	Align CCW to support RHR operation in accordance with OP-145, COMPONENT COOLING WATER. All Section 3.0 Prerequisites are met.
-----------------	---

Appendix C	Page 1 c Worksh	of 13 eet	Form ES-C-1
Facility:	Shearon Harris	Task No.:	121001H404
Task Title:	Place the ASI System in Standby Alignment (OP-185)	JPM No.:	2013 NRC Exam In-Plant JPM i
K/A Reference:	AA2.67 RO 2.9 SRO 3.1	ALT	ERNATE PATH - NO
Examinee:		NRC Examiner	
Facility Evaluator:		Date:	-
Method of testing:			
Simulated Perform Classr	ance: <u>X</u> oom Simulator	Actual Performa Plant X	ance:

READ TO THE EXAMINEE

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

 A Normal Plant Heatup is in progress in accordance with Normal Plant Heatup From Cold Solid To Hot Subcride Mode 5 To Mode 3. Current RCS temperature is 335°F The 'A' CSIP is in service and providing 10 gpm to all Seals.
--

	 The MCR has directed you to perform OP-185, Alternate Seal Injection, Section 5.1, Automatic Standby Alignment Prior to MODE 3.
Initiating Cue:	 Initial Conditions have been met with the exception of step 5.1.1.6.
	• You are to complete initial conditions and perform section 5.1.2.
	For this task you can assume you have the AO RAB rounds keys.

Appendix C	Page 2 of 13 Worksheet	Form ES-C-1
Task Standard:	Place the ASI System in Standby Alignment (OP-185)	
Required Materials:	OP-185 Section 5.1	
General References:	OP-185 Section 5.1 Rev. 7	
Time Critical Task:	No	
Validation Time:	10 minutes	

Critical Task Justification		
Step 4	Required to ensure proper Alternate Seal Injection Standby Alignment Prior to entering Mode 3.	
Step 9	Must locate CS-210.1 switch and place CS-210.1, ASI PUMP, in the AUTO position in order for the ASI pump to work when required.	
Step 10	Must locate CS-210.2, SQUIB VALVE 1ASI-21 BYPASS, switch and place the switch to NORMAL for the squib valve to work when required.	

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Page 3 of 13 PERFORMANCE INFORMATION

SAFETY CONSIDERATION	IS: Do NOT operate actual plant equipment. Follow standa ALARA practices in the RCA.
START TIME:	
Performance Step: 1	OBTAIN PROCEDURE
Standard:	Obtain OP-185 Section 5.1 and review procedure.
Evaluator Cue:	Provide operator with a copy of predetermine pages for OP-185, marked-up procedure with all initial conditions completed except 5.1.1.6.
Comment:	
	OP-185, 5.1.1 Caution prior to Step 1
Performance Step: 2	CAUTION: If normal seal injection flow to 2/3 RCPs (FIS-7207 7208, 7209) is less than 4.0 gpm for 150 seconds the squib valves will fire; the ASI pump will start after a 15 second delay.
Standard:	Circle, reads then slashes Caution
Comment:	
Appendix C

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Form ES-C-1

Evaluator Note:	In accordance with PRO-NGGC-0200, Initial Conditions ma be performed in any order.
	OP-185, 5.1.1 Step 6
Performance Step: 3	ASI Tank level is 99% or greater (LI-7206 at ASI Tank)
Standard:	Locates LI-7206 and reads ASI Tank level.
Evaluator Cue:	LI-7206 reads 99%.
Evaluator Note:	LI-7206 should read 99% or greater.
	OP-185, 5.1.2 Note prior to step 1
Performance Step: 4	The valves in step 5.1.2.1 and 5.1.2.2 are located in the CVCS Filter Valve Gallery.
Standard:	Circle, reads then slashes Note
Comment:	

Appendix C	Page 5 of 13	Form FS-C-
••	PERFORMANCE INFORMATION	
	OP-185, 5.1.2.1	
Performance Step: 5	Verify Locked Open 1CS-828, ASI Supply H Isolation Vlv.	eader Upstream
Evaluator Note:	The location of 1CS-828 and 1CS-827 may when following the candidate into the CV gallery since the area to stand in is small candidate show you where the valves are valve map outside the CVCS filter gallery area. * There may have be a change in dose co	y be difficult to see CS filter valve . Have the located on the before entering th onditions from whe
	this JPM was validated. DO NOT ENTER IDENTIFY THE VALVES IF YOU WILL REC >1milliRem during the performance of thi the valve map exclusively and conduct a what would be done.	THE AREA TO CEIVE A DOSE OF is JPM. Instead us reverse brief on
Standard:	Locates 1CS-828, ASI Supply Header Upstr (or on the valve map outside the CVCS filte (#51 on the map).	eam Isolation valve er valve gallery)
Evaluator Cue:	Provide feedback that 1CS-828 as found open.	position is locked
Comment:		
	OP-185, 5.1.2.2	
Performance Step: 6	Verify Locked Open 1CS-827, ASI Supply H Isolation Vlv.	eader Downstream
Standard:	Locates 1CS-827, ASI Supply Header Dowr valve (or on the valve map outside the CVC (#50 on the map).	nstream Isolation CS filter valve galler
Evaluator Cue:	Provide feedback that 1CS-827 as found open.	position is locked

✓ - Denotes Critical Steps

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Appendix C

Page 6 of 13 PERFORMANCE INFORMATION

OP-185, 5.1.2.3

Evaluator Cue:	Provide feedback as each component is checked that the associated light indication is OFF.
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Performance Step: 7

CHECK the ASI System Control Panel for the following:

Title	Indication	Status Initials
ASI Pump Auto Start Timer Initiated	Red	OFF
ASI Pump Not in Aulo	Amber	OFF
24VDC Control Fwr Available	White	OFF
120VAC Control Pwr Available	White	OFF
Squib Valves in Bypass	Amber	OFF
1ASI-21 Firing Circuit Available	Green (×2)	огг
1ASI-22 Firing Circuit Available	Green (x2)	OFF
ASI Pump Running	Red	OFF
ASI Pump Stopped	Green	OFF

Standard:

Locates each indication in step 3 and checks that all lights are off.

Comment:

OP-185 section 5.1.2 Note prior to step 4

Performance Step: 8The actions in Step 5.1.2.4 will clear ALB-8-2-3, ASI SYSTEM
TROUBLE, if no other inputs to the ALB are active.

Standard: Circle, reads then slashes Note

Comment:

Appendix C	Page 7 of 13	Form ES-C-
	PERFORMANCE INFORMATION	
	OP-185 section 5.1.2.4.a	
✓ Performance Step: 9	At the ASI System Control Panel, PERFOR a. PLACE CS-210.1, ASI PUMP, in AU	RM the following: JTO.
Evaluator Cue:	The initial switch position of CS-210.1 is	OFF
Standard:	Locates CS-210.1 and places CS-210.1, A AUTO position.	SI PUMP, in the
	NOTE: Both lights are OUT and both lig OUT when CS-210.1 is placed in AUTO	hts will STILL BE
Evaluator Cue:	Once the switch is turned provide feedb	ack:
	CS-210.1 is now in AUTO	

Comment:

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Page 8 of 13 PERFORMANCE INFORMATION

OP-185 section 5.1.2.4.b (Begin Critical Steps)

✓ Performance Step: 10 Place CS-210.2, SQUIB VALVE 1ASI-21 BYPASS, in NORMAL

Evaluator Cue:	The initial switch position of CS-210.2 is in BYPASS
Standard:	Identifies that this step is a critical step. Locates CS-210.2 and determine that switch is in the bypass position. Repositions switch to NORMAL
Evaluator Cue:	NOTE: Both lights are OUT and both lights will STILL BE OUT when CS-210.2 is placed in NORMAL
	Once the switch is turned: CS-210.2 is now in NORMAL.

Comment:

OP-185 section 5.1.2.4.c

✓ Performance Step: 11 Place CS-210.3, SQUIB VALVE 1ASI-22 BYPASS, in NORMAL

Evaluator Cue:	The initial switch position of CS-210.3 is in BYPASS
Standard:	Locates CS-210.3 and determine that switch is in the bypass position. Repositions switch to NORMAL
	NOTE: Both lights are OUT and both lights will STILL BE OUT when CS-210.3 is placed in NORMAL
Evaluator Cue:	Once the switch is turned:
	CS-210.3 is now in NORMAL.

Comment:

✓ - Denotes Critical Steps

Appendix C	Page 9 of 13	Form ES-C-1
	PERFORMANCE INFORMATION	
	OP-185 section 5.1.2.5	
✓ Performance Step: 12	PLACE breaker PP-1D232-6, Feed to ASI S to ON.	System Control Panel,
Evaluator Cue:	PP-1D232-6, Feed to ASI System Control is OFF	l breaker Panel
Standard:	Locates PP-1D232-6 and determines that the Places breaker to the ON position.	he breaker is OFF.
	Once the breaker is manipulated: The breaker is now ON	
Evaluator Cue:	NOTE: Candidate may go back to the pa is ON to check light conditions. IF they response for the light indications then c	anel after the breaker do and they want a ue:
	24VDC control power available (white lig 120VAC control power available (white li ALL 4 Green lights on Firing Circuit Ava	ht ON) ight ON) ilable (green ON)

Comment:

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Appendix C

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OP-185 section 5.1.2.6

✓ Performance Step: 13 PLACE breaker 1D23-1B, Alternate Seal Injection Pump, to ON.

Evaluator Cue:	1D23-1B, Alternate Seal Injection Pump breaker is OFF
•	IF ASKED: (both red and green lights should be OFF)
Standard:	Locates breaker 1D23-1B, Alternate Seal Injection Pump is OFF and once the breaker is manipulated provide feedback that breaker is now ON.
Evolution Que	Once the breaker is manipulated: The breaker is now ON.
Evaluator Cue:	IF ASKED: green light is LIT on breaker AND above the Auto switch 210.1 on the panel

Comment:

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End Critical Steps OP-185 section 5.1.2.7

Performance Step: 14	Check the ASI system control Panel for the following:			
	Title	Indication Color	Status	Initials
	ASI Pump Auto Start Timer Initiated	Red	OFF	
	ASI Pump Not in Auto	Amber	OFF	
	24VDC Control Pwr Available	White	ON	
	120V/AC Control Dur Available	Minito	ON	

	Alibei	OFF	
24VDC Control Pwr Available	White	ON	
120VAC Control Pwr Available	White	ON	
Squib Valves in Bypass	Amber	OFF	
1ASI-21 Firing Circuit	Green	AN	
Available	(X2)		
1ASI-22 Firing Circuit	Green	ON	
Available	(X2)	UN	
ASI Pump Running	Red	OFF	
ASI Pump Stopped	Green	ON	

Evaluator Cue:	As each indicator is read, provide feedback that each light is properly lit as determined from the table in this step.
Standard:	Locates each indication listed in step 7 and verifies that the lights are indicating properly.
Evaluator Cue:	Once Student reads step 5.1.2.8, Announce

End of JPM.

STOP	TIME:	

Appendix C	Page 12 of 13 VERIFICATION OF COMPLETION	Form ES-C-
Job Performance Measure No.:	2013 NRC Exam In-Plant JPM i	
	Place the ASI System in Standby Alignm	ent (OP-185)
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Despense		
Nespunse.		
Result:	SAT UNSAT	
Examiner's Signature:	Date:	

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Appendix	С
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Page 13 of 13 JPM CUE SHEET

SAFETY CONSIDERATIONS:	Do NOT	operate	actual	plant	equipmer	nt unless
	specifically ALARA pra	authoriz	zed to the RC/	do so A.	. Follow	standard

Initial Conditions:	A Normal Plant Heatup is in progress in accordance with GP-002, Normal Plant Heatup From Cold Solid To Hot Subcritical Mode 5 To Mode 3.		
	 Current RCS temperature is 335°F The 'A' CSIP is in service and providing 10 gpm to all 3 RCP Seals. 		

	 The MCR has directed you to perform OP-185, Alternate Seal Injection, Section 5.1, Automatic Standby Alignment Prior to MODE 3.
Initiating Cue:	 Initial Conditions have been met with the exception of step 5.1.1.6.
	• You are to complete initial conditions and perform section 5.1.2.
	For this task you can assume you have the AO RAB rounds keys.

Appendix C	Page 1 of 24 Form Worksheet		
Facility:	Shearon Harris	Task No.:	301117H401
Task Title:	Local Inspection of Annunciator Cabinets	JPM No.:	2013 NRC Exam Inplant JPM j
K/A Reference:	2.1.23	ALTERNA	TE PATH: NO
Examinee:		NRC Examiner	
Facility Evaluator:		Date:	_
Method of testing:			
Simulated Performa	ance: X	Actual Perform	ance:
Classro	oom Simulator	_ PlantX	

Measure will be satisfied.

Initial Conditions:	ALB-03-4-5, Annunciator System 2 Power Supply Failure, has alarmed in the Main Control Room. The crew has entered AOP-037, "Loss of Main Control Room Annunciators."
---------------------	--

Initiating Cue:	You have been directed by the CRS to check the status of System 2 annunciator power supplies per Attachment 2.

Provide the candidate a blank copy of AOP-037, Attachment 2 – System 2 Annunciator Power Supply Status Determination, Sheets 1 and 2.

Appendix C	Page 2 of 24	Form ES-C-1
	Worksheet	
Task Standard:	Determine Status of Annunciator power supplies a annunciators affected and report to the Main Cont	ind number of rol Room.
Required Materials:	Annunciator cabinet key #48	
General References:	AOP-037, Attachment 2, Rev. 21	
Time Critical Task:	No	
Validation Time:	15 Minutes	

• N/A In-Plant JPM

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Critical Task Justification		
Step 4	Without proper diagnosis of the affected power supplies, the MCR will not be able to fully determine total number of affected annunciators.	
Step 5	Without proper diagnosis of the affected power supplies, the MCR will not be able to fully determine total number of affected annunciators.	
Step 6	Without proper diagnosis of the affected power supplies, the MCR will not be able to fully determine total number of affected annunciators.	
Step 7	Without proper diagnosis of the affected power supplies, the MCR will not be able to fully determine total number of affected annunciators.	
Step 9	Critical to determine the number of annunciators that are affected since this determination could be used for an EAL declaration.	

Examiners Note: Key #48 is required to open the Annunciator power supply cabinets.

Prior to exam administration, the key will be checked out by someone from the Exam Development team and given to the NRC Lead Examiner. The key will be checked back in at the end of the day by the person that originally checked the key out.

Details of how to obtain a key will be left to the Examiner. One method to obtain a key and return it after use is listed below:

- Obtain Safety Key Locker key from the CRS's desk
- Identify which key is required based on the Key Locker Index in key locker area
- Unlock the Safety Key Locker door and obtain proper key
- Sign key out
- Return the Safety Key Locker key to the CRS's desk
- At conclusion of task the key to the Safety Key Locker should again be obtained from the CRS's desk
- Unlock the Safety Key Locker and return key to its Safety Key Locker location and re-lock the locker door
- The key should be signed back in
- The Safety Key Locker CRS key should be returned to the desk

By getting a key ahead of time and just asking the candidates how to obtain a key will alleviate the need to check out and check in the key each time the JPM is administered to the candidates for this JPM. This will reduce the overall time required to perform this JPM

2013 NRC Exam InPlant JPM j Rev. FINAL

Appendix C	Page 4 of 24	Form ES-C-1
	PERFORMANCE INFORMATION	
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	Note: The candidate will need to check out key #48 to open the Annunciator power supply cabinets.
Evaluator Cue:	 Allow the candidate to either start to obtain a cabinet door key OR go to the cabinets then realize the need for a key when the cabinets are attempted to be opened.
	• When the need for a key is determined ask the candidate how to obtain the proper key and note the response. (See details on page 2 for obtaining a cabinet door key). Then provide the candidate with the correct cabinet key.

AOP-037, Attachment 2 – System 2 Annunciator Power **Supply Status Determination** Step 1

Performance Step: 1	OBTAIN Annunciator Cabinet key				
	 NOTE: the candidate may proceed to the cabinet without a key and determine a key is needed when they try to open the locked door. 				

Discuss how to obtain key - (see page 2 write up). Obtains key Standard: from CRS's desk to unlock Safety Key locker and checks out key #48.

Proceeds to Annunciator Power Supply Cabinet door area.

Comment:

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Page 5 of 24 PERFORMANCE INFORMATION





START TIME:

Evaluator Note: Start time should begin when candidate has opened the Annunciator power supply cabinet to begin the first check

Appendix C	Page 6 of 24 Form ES-C-1
	PERFORMANCE INFORMATION
	NOTE prior to Step 2
Performance Step: 2	 All power supplies are located in the east side of the cabinets. Indicating lights for the 24 VDC and 12 VDC are on the top side of the power supply.
	 Equipment designators used below in brackets [] are those listed in the MCB Annunciator Reference Guide. The equipment is not labeled in the field.
Standard:	Circles, Reads and slashes Note:
	Locates annunciator cabinet, System 2, Bay 1 unlocks and opens door.
Comment:	
Evaluator Note:	The candidate MAY start in a different order than System 2 Bay 1 then Bay 3 then Bay 5 then Bay 4. IF they do go out of order then make sure you are providing them with the correct drawing for each cabinet that they are in.
	Attachment 2, Step 2
Performance Step: 3	CHECK the indicated lights for each of the following Annunciator Cabinets (drawing page 2 of attachment) AND INITIAL if LIT .
Standard:	Reviews table (may check operator aid posted inside cabinet door which is the same drawing as sheet 2 in procedure)
	Once candidate opens the cabinet door for System 2, Bay 1 and identifies the first indication, give candidate marked-up attachment for Bay 1 and Cue:
Evaluator Cue:	Indications for this Bay are as shown on this attachment.
	Performance steps 4-7 have the candidate check the appropriate indicating lights and record the findings on Attachment 2 Sheet 1.

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Appendix C	Page 7 of 24	Form ES-C-
······	PERFORMANCE INFORMATION	
	Attachment 2, Step 2 (continued)	
✓ Performance Step: 4	Checks appropriate indicating lights in SYST	⁻ EM 2, BAY 1
Standard:	Checks appropriate indicating lights in Bay 1 Bay 1 spaces on Attachment 2	and INITIALS all
Comment:		
	Attachment 2, Step 2 continued	
✓ Performance Step: 5	Checks appropriate indicating lights in SYST	EM 2, BAY 3

Evaluator Cue:	Once candidate opens the cabinet door for System 2, Bay 3 and identifies the first indication, give candidate the marked-up attachment for Bay 3 and Cue: Indications for this Bay are as shown on this attachment.
----------------	--

Standard:

Checks appropriate indicating lights in Bay 3 and INITIALS all Bay 3 spaces on Attachment 2 except left 12 VDC power supply (2C#1)

Comment:

Appendix C	Page 8 of 24	Form ES-C-
	PERFORMANCE INFORMATION	
	Attachment 2, Step 2 continued	
✓ Performance Step: 6	Checks appropriate indicating lights in SYS	TEM 2, BAY 5
Evaluator Cue:	Once candidate opens the cabinet door and identifies the first indication, give ca attachment for Bay 5 and Cue:	for System 2, Bay { andidate marked-up
	Indications for this Bay are as shown on	this attachment.
Standard:	Checks appropriate indicating lights in Bay Bay 5 spaces on Attachment 2 except left 2 supply (2E#1)	5 and INITIALS all 24 VDC power
Comment:		
	Attachment 2, Step 2 continued	
✓ Performance Step: 7	Checks appropriate indicating lights in SYS	TEM 2, BAY 4
Evaluator Cue:	Once candidate opens the cabinet door and identifies the first indication, give ca attachment for Bay 4 and Cue:	for System 2, Bay 4 andidate marked-u
	Indications for this Bay are as shown on	this attachment.
Standard:	Checks appropriate indicating lights in Bay Bay 4 spaces on Attachment 2	4 and INITIALS all
Comment:		

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	Attachment 2, Step 2 continued					
Performance Step: 8	Report findings to MCR					
Evaluator Note:	Since the MCR is close by the candidate may start moving in the direction of the MCR to report their findings. Have them stay in the location they are in and simulate a phone call to the MCR.					
Standard:	Candidate calls the MCR using local phone and reports that all power supply indicating lights are lit for System 2 Annunciators except 12 VDC power supply (2C#1) in Bay 3 and the left 24 VDC power supply in Bay 5.					
Evaluator Cue:	Acknowledge call: Repeat back the information the candidate provides. The CRS now want you to determine the total number of AFFECTED annunciator WINDOWS that are affected based on the indications you have identified in Attachment 2 sheet 1 using AOP-037, Attachment 3 then report your finding. (Now provide the candidate a copy of Attachment 3 and the sheet they can write their name and answer on).					

Comment:

Appendix C	Page 10 of 24	Form ES-C
	PERFORMANCE INFORMATION	
	AOP-037 section 3.0 step 9	
Performance Step: 9	Based on indication identified in attachment number of affected annunciators using AOP and report findings to the MCR.	2. Determine the -037 attachment 3
✓ Standard:	Candidate that since all power supply indicate System 2 Annunciators except	ting lights are lit fo
	 Bay 3 left 12 VDC power supply (2C# 	#1)
	 Bay 5 left 24 VDC power supply (2E# 	± 1)
	A total of 262 annunciators would be affected failures.	d from these 2
	Reason: Since there are overlapping ALBs a NOT count the (10 of 24) with ALB 18 and th ALB 24 that are identified in the 2C#1 24VD failure again.	affected you would ne (8 of 10) with C power supply
	A total of 18 annunciator windows would hav from the 198 affected windows in the 2C#1 f	re to be subtractec ailure.
	2E#1 (82 windows) + 2C#1 (198 windows –	18 windows)

Evaluator Cue:	candidate provides (it may be different than the key).
	At the conclusion of the communication announce: End of JPM

Comment:

STOP TIME:

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Form ES-C-1

PERFORMANCE INFORMATION

KEY

					LOSS OF	MAIN C	ONTROL R	OOM	ANNUNCIAT	ORS				
			Atta	achme	ent 2 - Syste	m 2 Anı	nunclator P Sheet 1 (ower ! of 2	Supply Statu	ıs Det	ermination			
□1. OB	tain A	\nnun	ciator C	abine	t key.									
• All top • Eq eq	 <u>NOTE</u> All power supplies are located in the east side of the cabinets. Indicating lights for the 24 VDC and 12 VDC are on the top side of the power supply. Equipment designators used below in brackets [] are those listed in the MCB Annunciator Reference Guide. The equipment is not labeled in the field. 													
□2. CHI LIT.	ECK th	ne india	cated li	ghts fo ***J0	or each of the	followir EVALU 96 the	ng Annuncia ATORS NOT blocks t	tor Cai E hat r	binets (drawi needs to b	ng pac e ini	e 2 of attac	hment)	and initial	if
CABINET	ET INV		A (Top Ro	C w Leff)	125 VDC PWR ON		12 (Second	12 VDC PWR ON			(Sec	24 VDC PWR ON		
	Light	Initial	Light	Initial	Light (Loc)	Initial	Light (Loc)	Initial	Light (Loc)	Initial	Light (Loc)	Initial	Light (Loc)	Imitial
System 2 Bay 1	LIT	JŎ	LIT	JQ	LIT ([2A#1] right)	JQ	LIT ([2A#1] left)	JQ	LIT ([2A#2] right)	JQ	LIT ([2A#1] left)	JQ	LIT ([2A#2] right)	ЪŐ
System 2 Bay 3	LIT	JQ	LIT	JQ	LIT {[2C#1] right}	JQ	LIT {[2C#1] left}		LIT ([2C#2] right)	ĴŎ	LIT ([2C#1] left)	JQ	LIT ([2C#2] right)	ЪŐ
System 2 Bay 5	LIT	JQ	LIT	JQ	LIT ([2E#1] right)	JQ	LIT ([2E#1] left)	JQ	N/A	N/A	LIT ([2E#1] left)		N/A	N/A
	N/A	N/A	N/A	N/A	LIT ([2D#1] left)	JQ	N/A	N/A.	N/A	N/A	N/A	N/A	N/A	N/A
System 2 Bay 4	N/A	N/A	N/A	N/A	LIT ([2D#2] right)	JQ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	LIT ([2D#3] second row)	ЪŐ	N/A	N/A.	N/A	N/A	N/A	N/A	N/A	N/A
AOP-037	AOP-037				Rev. 21 Page 12 of 52									

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Form ES-C-1

PERFORMANCE INFORMATION

KEY

A11000					
Z4 VUC System 2					
2A#1 134		13, 14, 15, 20			
2A#2	87	17, 21, 30			
2C#1	124	23, 25, 26,			
20#2	90	22, 27, 28, 29			
2E#1	82	16, 18, 19, 24			
POWER SUPPLIES	AFFECTED WINDOWS	AFFECTED ALBs			
12 VDC	System 1				
1A#1	164	1, 2, 3, 4, 5 (51 of 52), 7 (3 of 18), 8 (3 of 23), 9 (4 of 29), 10 (6 of 45)			
1A#2	193	2 (4 of 39), 4 (15 of 21), 5, 6, 7, 8, 9 (21 of 29), 10 (36 of 45)			
1C#1	104	1 (3 of 33), 9, 10, 11, 12			
12 VDC	System 2				
2A#1	171	13, 14, 15, 16 (7 of 12), 17 (8 of 16), 20, 21 (22 of 37)			
2A#2 192		13 (3 of 32), 14 (5 of 41), 16 (5 of 12), 17 (15 of 16), 19, 20 (37 of 39), 21, 22 (15 of 47), 24 (2 of 10), 25 (2 of 10), 26 (1 OF 14), 30			
2C#1	198	14 (3 of 41), 15 (20 of 22), 18 (10 of 24), 22 (29 of 47), 23, 24 (8 of 10), 25, 26, 27 (4 of 15)			

All System 2 power supplies are initialed EXCEPT - left 12 VDC power supply (2C#1) in Bay 3 and left 24 VDC power supply (2E#1) in Bay 5. Candidate determines that 262 annunciators are affected.

Appendix C	Page 13 of 24 VERIFICATION OF COMPLETION	Form ES-C-7
Job Performance Measure No	2013 NRC Exam InPlant IPM i	
sob i chomance measure no		
	Local inspection of Annunciator Cabinets	
	AOP-037	
Examinee's Name:		
Date Performed:		
Facility Evaluator:		
Number of Attempts:		
Time to Complete:		
Question Documentation:		
Question:		
Response:		
Result:	SAT UNSAT	
Examiner's Signature	Date	

C

Name: _____

Date: _____

Identify the number of AFFECTED annunciators WINDOWS based on your findings

Answer:

Appendix C

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LOSS OF MAIN CONTROL ROOM ANNUNCIATORS Attachment 3 - Affected ALB Determination Sheet 3 of 3 General Description of Systems Associated with ALBs: ALB-1..... Containment Spray & Accumulator System ALB-2..... Emergency Service Normal Service Water System ALB-3..... Miscellaneous Systems ALB-4..... RHR/RWST System ALB-5..... Component Cooling Water System ALB-6..... Chemical Volume Control System ALB-7..... Chemical Volume Control System ALB-8..... RCP System ALB-9..... Pressurizer System ALB-10..... Reactor Coolant System ALB-11..... Reactor First Out System ALB-12..... Reactor First Out System ALB-13...... Nuclear Instrumentation System and Rod Control System ALB-14..... Steam Generator System ALB-15...... Various Protective Panels Trouble Alarms ALB-16..... Feedwater System ALB-17..... Auxiliary Feedwater System ALB-18...... Turbine First Out System ALB-19...... Heater Drain Pump & Condensate System ALB-20..... MSR & Turbine System ALB-21...... LP/HP Heaters & Circulating Water System ALB-22...... Generator Exciter, Startup & Unit Transformer ALB-23...... Various Area & Room Ventilation & Equipment, Fuel Pool System ALB-24..... Diesel Generator - A System ALB-25..... Diesel Generator - B System ALB-26...... Control Panels Trouble Alarm System ALB-27..... HVAC System (DG & Containment) ALB-28..... HVAC System (Containment) ALB-29..... HVAC System (Containment) ALB-30..... HVAC System (Control Room) -- END OF ATTACHMENT 3--

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LOSS OF MAIN CONTROL ROOM ANNUNCIATORS			
Attachment 3 - Affected ALB Determination			
Sheet 2 of 5			
2E#1	82	16, 18, 19, 24	
	AFFECTED WINDOWS	AFFECT	ED ALBS
12 VDC	System 1		
1A#1	164	1, 2, 3, 4, 5 (51 of 52), 7 (3 of 10 (6 of 45)	18), 8 (3 of 23), 9 (4 of 29),
'1A#2	193	2 (4 of 39), 4 (15 of 21), 5, 6, 7	7, 8, 9 (21 of 29), 10 (36 of 45)
1C#1	104	1 (3 of 33), 9, 10, 11, 12	
12 VDC	System 2	•	
2A#1	171	13, 14, 15, 16 (7 of 12), 17 (8 c	of 16), 20, 21 (22 of 37)
2A#2	192	13 (3 of 32), 14 (5 of 41), 16 (5 20 (37 of 39), 21, 22 (15 of 47 26 (1 OF 14), 30	5 of 12), 17 (15 of 16), 19,), 24 (2 of 10), 25 (2 of 10),
2C#1	198	14 (3 of 41), 15 (20 of 22), 18 (24 (8 of 10), 25, 26, 27 (4 of 15	(10 of 24), 22 (29 of 47), 23, 5)
2C#2	125	22, 23 (8 of 100), 26 (9 of 14),	27, 28, 29, 30 (17 of 31)
2E#1	208	16, 18, 19, 20 (2 of 39), 21 (13 23 (92 of 100), 24, 30 (14 of 3	of 37), 22 (3 of 47), 1)
		·	
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LOSS OF MAIN CONTROL ROOM ANNUNCIATORS			
Attachment 3 - Affected ALB Determination			
Sheet 1 of 3			
1			
		<u>NOTE</u>	
• When ()	follow the ALB	number, this indicates the number of windows affected.	
 Total nur 5 - 6 (AL 26 - 28 a 	mber of annunc Bs 1, 2, 4 - 13, ind 30).	iators is 834 in Modes 1 - 4 (ALBs 1 - 30) and 607 in Modes 15, 22, 23, either 24 or 25 based on EDG operability,	
A given / taken NC	ALB has 3 powe	er supplies. For multiple power supply failures, care must be ALB more than once.	
Only one associate	e 125 VDC pow ed ALBs inoper	er supply is required. (Loss of only 1A#1 does not make able if 1C#1 remains in service.)	
POWER SUPPLIES	AFFECTED WINDOWS	AFFECTED ALBs	
125 VDC System 1			
1A#1 and 1C#1	315	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
125 VDC	System 2		
2A#1 and 2D#3	217	13, 14 (38 of 41), 15 (2 of 22), 16, 17, 19, 20 (37 of 39), 21 (24 of 37), 22 (15 of 47), 24 (2 of 10), 25 (2 of 10), 26 (1 of 14)	
2C#1 and 2D#1 160 14 (3 of 41), 15 (20 of 22), 18 (10 of 24), 22 (29 of 47), 23 (8 of 100), 24 (8 of 10), 25 (8 of 10), 26 (13 of 14), 27, 24 (29, 30 (17 of 31))			
2E#1 and 2D#2	140	18 (14 of 24), 20 (2 of 39), 21 (13 of 37), 22 (3 of 47), 23 (92 of 100), 30 (14 of 31)	
24 VDC	System 1		
1A#1	97	1, 2, 3, 4	
1A#2	117	5, 6, 7, 8	
1C#1	101	9, 10, 11, 12	
24 VDC	24 VDC System 2		
2A#1	134	13, 14, 15, 20	
2A#2	87	17, 21, 30	
2C#1	124	23, 25, 26,	
2C#2	90	22, 27, 28, 29	
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BAY 4

INDICATES LIGHT IS LIT



BAY 5

INDICATES LIGHT IS LIT



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BAY 3

INDICATES LIGHT IS LIT



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BAY 1 INDICATES LIGHT IS LIT



Appendix C

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Form ES-C-1



Appendix C

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Form ES-C-1

JPM CUE SHEET

LOSS OF MAIN CONTROL ROOM ANNUNCIATORS Attachment 2 - System 2 Annunciator Power Supply Status Determination Sheet 1 of 2 **D1.** OBTAIN Annunciator Cabinet key. NOTE All power supplies are located in the east side of the cabinets. Indicating lights for the 24 VDC and 12 VDC are on the top side of the power supply. Equipment designators used below in brackets [] are those listed in the MCB Annunciator Reference Guide. The ٠ equipment is not labeled in the field. 2. CHECK the indicated lights for each of the following Annunciator Cabinets (drawing page 2 of attachment) AND INITIAL if LIT. CABINET INV AC 125 VDC PWR ON 12 VDC PWR ON 24 VDC PWR ON (Top Row Left) (Top Row Left) (Top Row) (Second Row, Outside [Smaller]) (Second Row, Inner [Langer]) Light initial Light Initial Light (Loc) Initial System 2 LIT LIT LIT LIT LIT LIT LIT Bay 1 ([2A#1] right) ([2A#1] left) ([2A#2] right) ([2A#1] left) ([2A#2] right) LIT LIT ЦT System 2 LIT LIT LIT LIT Bay 3 ([2C#1] right) ([2C#1] left) ([2C#2] right) ([2C#1] left) ([2C#2] right) LIT System 2 LIT LIT LIT N/A NIA LIT N/A N/A Bay 5 ([2E#1] right) ([2E#1] left) ([2E#1] left) N/A N/A. N/A N/A LIT N/A N/A N/A NA N/A N/A N/A N/A ([2D#1] left) System 2 N/A N/A. NIA NA LIT N/A N/A N/A N/A NA N/A N/A N/A Bay 4 ([2D#2] right) LIT N/A. N/A ([2D#3] second row) AOP-037 Rev. 21 Page 12 of 52

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JPM CUE SHEET

Initial Conditions:	ALB-03-4-5, Annunciator System 2 Power Supply Failure, has alarmed in the Main Control Room. The crew has entered AOP-037, "Loss of Main Control Room Annunciators."
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Initiating Cue:	You have been directed by the CRS to check the status of System 2 annunciator power supplies per Attachment 2.

Appendix C	Page 1 c Workshe	of 7 eet	Form ES-C-1
Facility:	Shearon Harris	Task No.:	078008H404
Task Title:	Perform An Instrument Air System Leak Isolation Locally	IPM No.:	2013 NRC Exam In-Plant JPM k
K/A Reference:	2.1.30 RO 3.9 SRO 3.4	AL	FERNATE PATH - NO
Examinee:		NRC Examine	r:
Facility Evaluator:		Date:	_
Method of testing:			
Simulated Perform Classr	ance: <u>X</u> oom Simulator	Actual Perform Plant X	iance:

READ TO THE EXAMINEE

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

Initial Conditions:	The plant was manually tripped due to lowering instrument air pressure. MCR personnel have implemented AOP-017.

Initiating Cue:	The CRS has directed you to implement Attachment 3 of AOP-017 due to reduced plant air capacity. Contact the MCR after each valve is isolated for leak isolation determination
	Isolated for leak isolation determination.

Evaluator: Provide operator with a copy of AOP-017 Attachment 3.	Evaluation in Torride Operator with a copy of AOT - OTT Attachment 5.
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Appendi	x C	Page 2 of 7 Worksheet	Form ES-C-1
Task Sta	andard:	Valves listed in Attachment 3 of AOP-017 have been l simulated shut.	ocated and
Required	d Materials:	AOP-017, Attachment 3, Rev 35	
General	References:	AOP-017, Attachment 3	
Time Cri	tical Task:	No	
Validatic	n Time:	15 minutes	

Critical Task Justification		
Step 2	Isolating selected portions of the system may reduce demand enough to allow the air header pressure to recover. Shutting 1IA-500 first has the least effect on plant operations as it supplies IA to yard loads.	
Steps 4,5,6	Isolating selected portions of the system may reduce demand enough to allow the air header pressure to recover. Isolating these valves could possibly isolate the leaking instrument air and restore plant control back to the MCR. Communicating to MCR after each isolation allows the MCR to evaluate Instrument Air pressure and prevent isolating more than is absolutely necessary.	

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Appendix C

Page 3 of 7 PERFORMANCE INFORMATION

START TIME:		
	Performance Step: 1	OBTAIN PROCEDURE
	Standard:	Reviews AOP-017 Attachment 3 for Reducing Instrument Air header Loads.
	Comment:	
		AOP-017, Attachment 3
		Shutting any of the following will reduce Instrument Air demand (in order of preference):
		AOP-017, Attachment 3, Step 1
√	Performance Step: 2	1IA-500, Instrument Air to Yard Piping (north of Turb Bldg elevator Machine Rm).
	Standard:	Locates and SHUTS, 1IA-500, Instrument Air to Yard Piping, then contacts the Main Control Room to inform them 1IA-500 is SHUT.
		The MCR acknowledges 1IA-500 is SHUT. Instrument air system pressure is still lowering.
	Evaluator Cue:	Another Operator completed step 2 and reported back to the MCR that 3IA-300 is shut. Instrument Air pressure is still lowering and you have been directed to continue with step 3.

Comment:

Appendix C	Page 4 of 7 Form E	S-C-
	PERFORMANCE INFORMATION	
	AOP-017, Attachment 3, Caution prior to Step 3	
Performance Step	: 3 CAUTION: Items 3 through 5 must NOT be shut if the Reacritical, because they isolate Instrument Air to the FW reguvalves, steam dumps, MSIVs, and CVCS valves.	actor Ilatin
Standard:	Circle, reads then slashes caution	
	Bullets in Step 3 don't have to be performed in a partic order.	ular
Evaluator Note:	IF the candidate shuts the valves in a different order th listed only cue that "Instrument Air header pressure ha stabilized" AFTER all 3 valves in Step 3 have been shu	ian as t.
Comment:		
	AOP-017, Attachment 3, step 3 Turbine Bldg valves:	
	AOP-017, Attachment 3, step 3.a	
✓ Performance Step	4 1IA-42, Instrument Air to 261 TB Loop (north of 1A Compre	esso
	1IA-42 is located ~13 feet above 261 TB floor.	
Evaluator Note:	Do NOT let the candidate remove a ladder from it's har Let the candidate show you which ladder he/she would to reach 1IA-42 and then simulate use of the ladder.	nger. I use
Standard:	Locates a ladder that is tall enough to reach 1IA-42, positio ladder, climbs up then SHUTS, 1IA-42, Instrument Air to 26 TB Loop, then contacts the Main Control Room to inform th 1IA-42 is SHUT.	ons 51 1em
Evaluator Cue:	The MCR acknowledges 1IA-42 is SHUT. Instrument ai	r

Comment:

δ_{0.} ...

✓ - Denotes Critical Steps

Appendix C	Page 5 of 7	Form ES-C-1
	PERFORMANCE INFORMATION	
	AOP-017, Attachment 3, step 3.b	
 ✓ Performance Step: 5 	1IA-59, Instrument Air to 261 TB Loop (above corner of the alternate area [OSC])	e the southwest
Standard:	Locates and SHUTS, 1IA-59, Instrument Air t then contacts the Main Control Room to infor is SHUT.	o 261 TB Loop, m them 1IA-59
Evaluator Cue:	When the Candidate identifies 1IA-59 from Feed Pumps on 261' or attempts to climb onto the Alternate OSC roof present the p	n north of the Main from the stairs icture of 1IA-59.
	The MCR acknowledges 1IA-59 is SHUT. I system pressure is still lowering.	nstrument air

Comment:

AOP-017, Attachment 3, step 3.c

Performance Step: 6 1IA-67, Instrument Air to 286 And 314 TB Loop (North Of CVPETS)
 Standard: Locates and SHUTS, 1IA-67, Instrument Air to 286 And 314 TB Loop, then contacts the Main Control Room to inform them 1IA-67 is SHUT.

Evaluator Cue:	The MCR acknowledges 1IA-67 is SHUT. Instrument air system pressure has stabilized. END OF JPM
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Comment:

STOP TIME:

✓ - Denotes Critical Steps

Appendix C

Page 6 of 7 VERIFICATION OF COMPLETION

Form ES-C-1

Job Performance Measure No.: <u>2013 NRC Exam In-Plant JPM k</u>

Perform An Instrument Air System Leak Isolation Locally

AOP-017 Attachment 3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result:

SAT

UNSAT

Examiner's Signature:

Date:

Appendix	С	
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JPM CUE SHEET

SAFETY CONSIDERATIONS:	Do Not operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA.

Initial Conditions:	The plant was manually tripped due to lowering instrument air pressure. MCR personnel have implemented AOP-017.

Initiating Cue:	 The CRS has directed you to perform Attachment 3 of AOP-017 due to reduced plant air capacity. Contact the MCR after each valve is isolated for leak isolation determination.