Fa	cility: Cooper Nuclear Station Date of Examination: 6/6/2011 Op	perating Te	est Numb	er: 1						
	1. General Criteria		Initials							
		а	b*	c#						
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	101	Å,							
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	TA,	Ø,							
C.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	A	Ø.							
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	A	A							
e.	It appears that the operating test will differentiate between competent and less-than- competent applicants at the designated license level.	Ø	Ø							
	2. Walk-Through Criteria									
u.	 a. Each JPM includes the following, as applicable: initial conditions initiating cues references and tools, including associated procedures reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee operationally important specific performance criteria that include: detailed expected actions with exact criteria and nomenclature system response and other examiner cues statements describing important observations to be made by the applicant criteria for successful completion of the task identification of critical steps and their associated performance standards restrictions on the sequence of steps. if applicable 									
b.	Ensure that any changes from the previously approved systems and administrative walk- through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2.	A	A							
3.	Simulator Criteria									
Th wit	e associated simulator operating tests (scenario sets) have been reviewed in accordance h Form ES-301-4 and a copy is attached.	Ø	Ø							
a. b. c. d.	MicHAEL BARTON MicHAEL BARTON Facility Reviewer(*) MicHAEL BARTON MicHAEL BARTON Michael Barton NRC Chief Examiner (#)	<u>5</u> <u>5</u>	Date -//-//							
NC # 1	TE: * The facility signature is not applicable for NRC-developed tests.									

Facilit	y: Cooper Nuclear Station	Date of Exam: 6/6/11 Scenario Numbers:	1/2/3 Operating Te	est No.: 1		
		QUALITATIVE ATTRIBUTES		Ini	tials	
				a b	* c#	¥
1.	The initial conditions are rea of service, but it does not cu	listic, in that some equipment and/or instrument e the operators into expected events.	ation may be out	919		
2.	The scenarios consist mostly	of related events.		1/2 4	7	
3.	Each event description cons the point in the scenario the malfunction(s) that the symptoms/cues tha the expected operator a the event termination point	ists of o when it is to be initiated are entered to initiate the event t will be visible to the crew actions (by shift position) oint (if applicable)		PA &	4	
4.	No more than one non-mech without a credible preceding	nanistic failure (e.g., pipe break) is incorporated incident such as a seismic event.	into the scenario	Alt	1×	
5.	The events are valid with reg	ard to physics and thermodynamics.		Ø,	9	
6.	Sequencing and timing of eve complete evaluation results c	ents is reasonable, and allows the examination to ommensurate with the scenario objectives.	team to obtain	A	Ø	
7.	If time compression technique Operators have sufficient time Cues are given.	es are used, the scenario summary clearly so in e to carry out expected activities without undue	dicates. time constraints.	A	4	
8.	The simulator modeling is not	t altered.		AL	7	
9.	The scenarios have been val performance deficiencies or to ensure that functional fide	idated. Pursuant to 10 CFR 55.46(d), any oper deviations from the referenced plant have been slity is maintained while running the planned sce	n simulator evaluated enarios.	N-1 A	5-1	
10.	Every operator will be evalu All other scenarios have bee	ated using at least one new or significantly mod en altered in accordance with Section D.5 of ES	lified scenario. -301.	A	Å	
11.	All individual operator comp (submit the form along with	etencies can be evaluated, as verified using Fo the simulator scenarios).	rm ES-301-6	A	A	
12.	Each applicant will be signif specified on Form ES-301-5	icantly involved in the minimum number of trans ((submit the form with the simulator scenarios).	sients and events	A	Ø,	
13.	The level of difficulty is appro	opriate to support licensing decisions for each c	rew position.	X 1	9	
	Target Quantitative Attribut	tes (Per Scenario; See Section D.5.d)	Actual Attributes	-/		
1.	Total malfunctions (5-8)		6 / 7 / 7	RA1	A	
2.	Malfunctions after EOP entry	(1–2)	1/2/2	A	Ø,	
3.	Abnormal events (2-4)		2/3/2	A/	Ø.	
4.	Major transients (1-2)		1/2/1	M	9	
5.	EOPs entered/requiring subs	stantive actions (1-2)	2/2/3	1/1	R/	
6.	EOP contingencies requiring	substantive actions (0-2)	1/1/2	19	A.	
7.	Critical tasks (2-3)		2/2/3	A	2	

N-1: THE SCENARIOS WERE VALIDATED BUT MUST BE REVALIDATED SINCE THE EXAM EXTENDED PASS THE OUTAGE, AND THERE WAS A NEW CORE MODEL INSTALLED. ES-301, Page 25 of 27

Transient and Event Checklist

Form ES-301-5

Facility:	Сооре	er Nucle	Nuclear Station Date of				Date of Exam: 6/06/2011 Operating Test No.: 1										
A	E							Şc	enari	os							
P	V						· · · · · · · · · · · · · · · · · · ·							- 1		м	
Р	E		1			2			3	-		4				ï	
L	N															N T	
	Т		CREW			CREW	'		CREW	/		CREW	1			M	
C		PI	ositio	N	PC	DSITIC	N	P	OSITIC	DN	P	OSITIC	DN			U M	
A						•					~		П			17	
1 IN 1 T	r D	2	A	В	2	A T	В	2		В	2	A T	В		D	1	
	E	R O	C	P	к О	C	P	к О	C	P	к О	C	P		n	I	0
	RX					4,5								2	1		
20	NOR			1										1	1		
	I/C			3,5,6,7		3					:			4	4		
1,3,5	MAJ			8		6,9								3	2		
	TS													0	0		
	RX		2											1	1		
	NOR						1							1	1		
RO 7	I/C		4,5,6,7				3,5,7,8							8	4		
	MAJ		8				6,9							3	2		
	ΤS													0	0		
	RX		2											1	1		
RO	NOR						1							1	1		
2.4.6	I/C		3,6,7				3,5,7,8			2,4,6,9				10	4		
	MAJ		8				6,9			6				4	2		
	TS													0	0		
	RX	2			5				5,7					3		1	
SRO-I	NOR				0.4.5					<u> </u>				1			
1,2,3		3,4,5,6,7			2,4,5				3,4,5,	/		 		12		4	1
		8			6,9				6					4		2	
Instruction	<u>s:</u>	3,4,5			2,4				<u>l</u>			I		3			l

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO additionally serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

¹

Transient and Event Checklist

Facility:	Сооре	per Nuclear Station Date of Exam: 6/06/2011 Operating Test No.: 1															
A	E							Sc	enario	os						_	
P														Т			
	E		1			2			3			4		Ó		M	
														Т		N	
			CREW			CREW			CREW	,		CREW	1	A		I M	
A	Т	P	OSITIO	N	PC	OSITIO	N	P	OSITIC	N	P	OSITIC	N	L		U M	
N	Y		٨	D			n	c	٨	D	c	٨	D			141	
Т	P	5															
	E	к О	L C	P		C	P	0	C	P	0	C	P			1	
	RX	2				4,5								3		1	
	NOR													0		1	
SRO-I 4	1/C	3,4,5,6,7				3								6		4	
1	MAJ	8				6,9								3		2	
	TS 3,5 2 2 2																
		<u> </u>															
					. <u> </u>							~~~~					
														<u> </u>			
														<u> </u>			
																	1
											1						
Instruction	ns:	1			1	<u></u>		·			<u></u>						
1. Chec	ck the an	olicant le	vel and	enter th	ne opera	ting tes	t numb	er and I	Form ES	6-D-1 ev	ent nui	nbers f	or each	ł			
even	nt type; T	'S are not	applica	ble for F	O appli	cants. R	Os mus	t serve	in both	the "at	-the-co	ntrols (ATC)"				
and	"balance	e-of-plant	(BOP)"	position	s; Instar	nt SROs	must se	erve in k	oth the	e SRO ai	nd the <i>i</i>	ATC po:	sitions,				
inclu	iding at l	east two	instrum	ent or co	ompone	nt (I/C)	malfur	ctions a	nd one	major t	ransier	it, in th	e ATC				
posit	tion. If ai	n Instant . wo I/C m	SKO ado alfunctiv	artionally	/ serves ired for	in the B	OP pos Coositie	ition, oi on.	ie I/C n	nairunct	ion can	i pe cre	uned				
2. Read	toward the two I/C mailunctions required for the ATC position. 2. Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to																
Secti	ion D.5.c	l) but mu	st be sig	nificant	per Sec	tion C.2	.a of Ag	pendix	D. (*) R	eactivit	y and n	ormal					
evol	utions m	ay be rep	laced w	ith addi	tional in	strume	nt or co	mpone	nt malf	unction	s on a 1	-for-1 l	oasis.				
3. Whe	enever pi	ractical, b	oth inst	rument	and con	nponen	t malfu	nctions	should	be inclu	ided; oi	nly tho: ward H	se he mini	mum			
that requ	require irement	vermable s specifie	actions d for th	i nat pro e applica	ant's lice	inse lev	el in the	e right-h	and co	lumns.	ount to	พลเฉเ	is⊂ tiltilt	mun			
							2										

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Transient and Event Checklist

Form ES-301-6

Facility: Cooper Nuclear Station Date of Exam: 6/06/2011 Operating Test No.: 1																
										S						
Competencies		RO ■ SRO-I □ SRO-U □				RO SRO SRO-	-I []			RO SRO SRO-	-I [] -U []			RO SRO- SRO-		
	SCARENIO			SCARENIO				SCARENIO					SCAR	enio		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	4	3	2	N/A	4	3	2	N/A	3	2	N/A	N/A	3	2	N/A	N/A
Comply With and Use Procedures (1)	2,4	1,3	2	N/A	2,4	1,3	2	N/A	1,3	2,9	N/A	N/A	1,3	2,9	N/A	N/A
Operate Control Boards (2)	2	6,7	2,8	N/A	2	6,7	2,8	N/A	5	2,9	N/A	N/A	5	2,9	N/A	N/A
Communicate and Interact	2	1,5	3,8	N/A	2	1,5	3,8	N/A	3	2,5	N/A	N/A	3	2,5	N/A	N/A
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comply With and 4 4 3 N/A 4 4 3 N/A 3 2 N/A N/A 3 2 N/A 3 2 N/A N/A																
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U.																

(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Transient and Event Checklist

Form ES-301-6

Facility: Cooper Nuclear S	te of	of Exam: 6/06/2011 Operating Test No.: 1														
					·····			APPLI	CANT	S						
	RO ■ SRO-I □				RO SRO	-			RO SRO				RO SRO-			
Competencies	SRO-U 🗆			SRO-U 🗆					SRO-	υ 🗆		SRO-U 🗆				
		SCARENIO			SCARENIO				SCARENIO				SCARENIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	_4
Interpret/Diagnose Events and Conditions	3	3	3	N/A	4,6	3,6	3	N/A	4,6	3,6	3	N/A	N/A	2	6,7	N/A
Comply With and Use Procedures (1)	1,3	1,3	1,3	N/A	2,5	3,9	1,3	N/A	2,5	3,9	1,3	N/A	N/A	2,9	2,8	N/A
Operate Control Boards (2)	5	6,7	1,3	N/A	N/A	N/A	1,3	N/A	N/A	N/A	1,3	N/A	N/A	2,9	N/A	N/A
Communicate and Interact	3	1,5	5	N/A	5	6,9	5	N/A	5	6,9	5	N/A	N/A	2,5	3,6	N/A
Demonstrate Supervisory Ability (3)	N/A	N/A	N/A	N/A	5,6	6,9	N/A	N/A	5,6	6,9	N/A	N/A	N/A	N/A	3,6	N/A
Comply With and Use Tech. Specs. (3) 3 4 3 N/A						2,4	3	N/A	3,4	2,4	3	N/A	3,4	2	2,3	N/A
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

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Transient and Event Checklist

Form ES-301-6

Facility: Cooper Nuclear	ite of	of Exam: 6/06/2011 Operating Test No.: 1														
					APPL	ICANT	ſS									
Competencies	RO □ SRO-I ■ SRO-U □				RO SRO SRO-	-1 [] -U []			RC SRC SRO) [])- [] -U []			RO SRO- SRO-	-1 [] -1 [] U []		
		SCAR	ENIO		SCARENIO					SCAF	RENIO			SCAR	ENIO	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	4	3,6	N/A	N/A												
Comply With and Use Procedures (1)	2,4	3,9	N/A	N/A												
Operate Control Boards (2)	2	N/A	N/A	N/A												
Communicate and Interact	4,6	6,9	N/A	N/A												
Demonstrate Supervisory Ability (3)	N/A	6,9	N/A	N/A												
Comply With and Use Tech. Specs. (3) 4 2,4 N/A N/A																
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Administrative Topics Outline

Form ES-301-1

Facility: Cooper Nuclear Stat	lion	Date of Examination: 06/06/11						
Examination Level: RO	SRO	Operating Test Number:1						
Administrative Topic (see Note)	Type Code*	Describe activity to be performed						
Conduct of Operations	N,R	Document the Maintenance of your active Reactor Operator License						
Conduct of Operations	D,C	Perform RO (SRO) Review of Daily Logs						
Equipment Control	N,R	Initiate an Operator Aid request.						
Radiation Control	D,R	Determine Dosage On Workers For ALARA						
Emergency Procedure/Plan		N/A						
NOTE: All items (5 total) are re retaking only the administrative	quired for SR topics, then a	Os. RO applicants require only 4 items unless they are all 5 are required.						
* Type Codes & Criteria:	(C)ontrol roo (D)irect from (N)ew or (M) (P)revious 2	m, (S)imulator, or Class(R)oom bank (\leq 3 for ROs; \leq 4 for SROs & RO retakes) odified from bank (\geq 1) exams (\leq 1; randomly selected)						

Administrative Topics Outline

Form ES-301-1

Facility: Cooper Nuclear Stat	tion	Date of Examination:06/06/2011
Examination Level: RO	SRO 🗙	Operating Test Number:1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N,R	Determine If A Working Hour Waiver Is Required
Conduct of Operations	N,R	Determine if Mode Change is Allowed
Equipment Control	D,R	Determine Refueling LCO for CRD Drive Removal
Radiation Control	D,R	Determine Dosage On Workers For ALARA
Emergency Procedure/Plan	D,R	Reportable Occurrence to NRC
NOTE: All items (5 total) are re retaking only the administrative	quired for SR topics, then a	Os. RO applicants require only 4 items unless they are all 5 are required.
* Type Codes & Criteria:	(C)ontrol roo (D)irect from (N)ew or (M) (P)revious 2	m, (S)imulator, or Class(R)oom bank (\leq 3 for ROs; \leq 4 for SROs & RO retakes) odified from bank (\geq 1) exams (\leq 1; randomly selected)

ES-301 Control Room/In Plant Systems Outline Form ES-301-2

Facility: Cooper Nuclear Station	Date of Examination: 6/06/11					
Exam Level: RO 🔀 SRO-I 🗌 SRO-U	Operating T	est No.:	1			
Control Room Systems $_{@}$ (8 for RO); (7 for SRO-I); (2 c	or 3 for SRO-U, i	ncluding 1 ESF)				
System / JPM Title		Type Code*	Safety Function			
a. SKL034-20-100 SLC RWCU fails to isolate	(Alt Path)	A,D,S	1			
 b. SKL034-20-XXX Withdraw SRMs during a S Path) 	Start-up (Alt	A,N,L,S	7			
c. SKL034-20-XXX Shift REC Heat Exchangers	6	N,S	8			
d. SKL034-21-47 Operate RCIC in Press Cont	rol (Alt Path)	A,D,S	3			
e. SKL034-21-06 Respond to a HPCI System A Initiation.(Alt Path)	Automatic	A,D,En,S	4			
 f. SKL034-20-XX Monitor SGT System Follow Automatic Initiation (Alt Path) 	ing	A,N,S	9			
g. SKL034-20-XXX Placing SDG In Service Control Room	From	N, S	6			
h. SKL034-21-XXX Vent Primary Containment	using 2.4PC	N, S	5			
In-Plant Systems $^{@}$ (3 for RO); (3 for SRO-I); (3 o	or 2 for SRO-U)					
i. SKL034-XX-XX Reboot OPC A Computer Se	erver	Ν	7			
 j. SKL034-10-XX Transfer CPP power supply to (normal) to CDP-1A (emergency) 	from CDP-1B	Ν	6			
 k. SKL034-10-85 Place standby CRD Flow Co Service When In service Valve Fails Closed 	ntrol Valve in	D,R	1			
All RO and SRO-I control room (and in-pla safety functions; all 5 SRO-U systems mus systems and functions may overlap those f	nt) systems mu at serve differer tested in the co	ist be different and it safety functions; ntrol room.	serve different in-plant			
* Type Codes	Criter	ia for RO / SRO-I /	/ SRO-U			
 (A)Iternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator 		$4-6 / 4-6 / 2-3$ $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $- / - / \geq 1 (contribute)$ $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2 (random)$	rol room system) domly selected)			

ES-301 Control Room/In Plant Systems Outline Form ES-301-2

Facility: Cooper Nuclear Station	Date of Examination: 6/06/11					
Exam Level: RO SRO-I X SRO-U	Operating T	est No.:	1			
Control Room Systems $_{@}$ (8 for RO); (7 for SRO-I); (2 c	or 3 for SRO-U, i	ncluding 1 ESF)				
System / JPM Title		Type Code*	Safety Function			
a. SKL034-20-100 SLC RWCU fails to isolate	(Alt Path)	A,D,S	1			
 b. SKL034-20-XXX Withdraw SRMs during a S Path) 	Start-up (Alt	A,N,L,S	7			
c. SKL034-20-XXX Shift REC Heat Exchanger	S	N,S	8			
d. SKL034-21-47 Operate RCIC in Press Cont	rol (Alt Path)	A,D,S	3			
e. SKL034-21-06 Respond to a HPCI System A Initiation (Alt Path)	Automatic	A,D,En,S	4			
 f. SKL034-20-XX Monitor SGT System Follow Automatic Initiation(Alt Path) 	ing	A,N,S	9			
g. SKL034-20-XXX Placing SDG In Service Control Room	From	N, S	6			
h.						
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 c	or 2 for SRO-U)					
i. SKL034-XX-XX Reboot OPC A Computer Se	erver	Ν	7			
 j. SKL034-10-XX Transfer CPP power supply to (normal) to CDP-1A (emergency) 	from CDP-1B	Ν	6			
k. SKL034-10-85 Place standby CRD Flow Co Service When In service Valve Fails Closed	ntrol Valve in	D,R	1			
All RO and SRO-I control room (and in-pla safety functions; all 5 SRO-U systems mus systems and functions may overlap those the systems and functions may overlap those the system of	nt) systems mu st serve differer tested in the co	ist be different and it safety functions; ntrol room.	serve different in-plant			
* Type Codes	Criter	ria for RO / SRO-I /	/ SRO-U			
 (A)Iternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA 		$4-6 / 4-6 / 2-3$ $\geq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $- / - / \geq 1 (contribute)$ $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2 (random)$	rol room system) domly selected)			

Scenario Outline

IC-121

Facility: <u>C</u>	ooper Nucle	ear Station	_ Scenario No.: <u>NRC 1</u>	Op-Test No.: <u>1</u>
Examiners			Operators:	
Initial Con Main Turb	ditions: <u>The</u> ine Governc	plant is ope or Valves. It	rating at approximately 85% pc is a red light day because reco	wer in single valve control with the rd grid loads are expected.
Turnover: <u>Dispatcher</u> per minute	<u>After turnov</u> r has been r e. Maintena	ver, the crew notified) and nce will be c	v is to place the governor valves continue the power ascension calling to start the HPCI Aux Oil	<u>s in Sequential GV control (Load</u> to 747 MWE net ~95% at <10 MWe Pump for Pump PM later in shift.
Event No.	Malf. No.	Event Type*	D	Event escription
1	N/A	N	Place MT Gov Valves into se	quential valve control
2	N/A	R	Raise power with RR flow	
3	3	C,TS	HPCI Aux Oil system leak	
4	4	I,TS	CRD FC-301 Auto Output fail	s low, three CRDs with High Temps
5	5	C,TS	SRV Fails Open	
6	6	C,ψ	Two Rods Drift In, Manual Sc	ram Failure, Manual ARI inserts rods
7	7	M,ψ	Earthquake; Suppression Poo	ol Rupture: ED on Low SP/L
* (N)ormal, (R)e	eactivity, (I)	nstrument, (C)omponent, (M)a	or

 ψ Critical Tasks are located in Events 6 and 7.

Scenario Objective

Evaluate the crew's ability to perform normal operations and raise power during nonemergency operations.

Evaluate the crew's response to a lowering Suppression Pool Level and their ability to emergency depressurize the Reactor to suppress the steam in the torus before level gets too low and its energy is released into the Reactor Building.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 80% power
- No equipment out of service.
- It is a red light day because record grid loads are expected.

Events:

- Place MT Gov Valves into sequential valve control
- Raise power with RR flow
- HPCI Aux Oil System Leak, TS
- CRD FC-301 Auto Output fails low, three CRDs with High Temperatures, TS
- SRV Fails Open, TS
- Two Rods Drift In, Manual Scram Failure Manual ARI works
- Earthquake; Suppression Pool Rupture: ED on Low SP/L

Scenario Sequence

- Normal evolution Place MT into Sequential Gov. Valve Control
- Reactivity manipulation Raise Power with RR Flow
- Component Failure before the EOPs HPCI Aux Oil System Leak
- Instrument Failure CRD Flow Controller Auto signal fails, three CRDs with High Temperatures
- Component Failure before the EOPs SRV Partial opening
- Component Failure before the EOPs Two Rods Drift In, Manual Scram Failure Manual ARI works
- Major Event Earthquake;
- Component Failure after the EOPs Suppression Pool leak, below the water line: Emergency Depressurization on low Suppression Pool Level.

Event One: Place MT Gov Valves into sequential valve control

Malfunction Required:

No malfunction required; this is a normal manipulation for the BOP.

Objective:

Evaluate the crew's ability to select the Digital Electro Hydraulic Controller and perform the required manipulations on the touch screen to shift the main turbine valve governor control to a Sequential alignment.

Success Path:

The Operator, in accordance with Procedure 2.2.77.1, performs the steps necessary to make the Turbine Governor Valves transition smoothly from single valve control to sequential valve control which causes turbine efficiency improvement (MWatts increase).

Event Two: Raise Power with Reactor Recirc to 737 MWE Net ~ 90%

Malfunction Required:

No malfunction required, this is a normal manipulation for the BOP.

Objective:

Evaluate the RO ability to adjust Reactor Recirculation Pump flows to make power increase from ~80% to ~90%, by alternately raising flow on one RR Pump, letting the plant respond then making a similar adjustment on the other pump's controller.

Success Path:

Both Reactor Recirculation Pump's speeds are raised from ~65 to ~80; maintaining them within the required 5% allowed by Tech Specs, and it is done in accordance with Procedure 2.1.10.

Event Three: HPCI Aux Oil System Leak

Malfunction Required:

HP12 Active set at 100%, at the start of the scenario. This failure will not start until the HPCI Aux Oil Pump is started.

Objective:

Evaluate the crew's response to an oil leak in the HPCI control oil system while performing the section of the Operating Procedure for the HPCI system 2.2.33 to start

Appendix D Required Operator Actions Form ES-D-1

the Aux Oil Pump for maintenance. During this event the Operator will be required to secure the pump.

Evaluate the CRS's ability to determine that HPCI is Inoperable.

Success Path:

The HPCI system is declared Inoperable per TS 3.5.1. Condition "C" 14 day LCO. RCIC is checked to be operable within 1 hour and the Aux Oil Pump is secured to prevent operation.

Event Four: CRD FC-301 Auto Signal Failure

Malfunction Required:

Override 03A35A1 CRD-FC-301 CRD System Flow Control Setpoint set at 0%. Malfunction PMIS N200 set at 380, N213 set at 402 and N214 set at 480.

Objective:

Evaluate the crew's response to CRD-FC-301 Automatic control signal failure resulting in high charging water pressure and low cooling water flow.

Evaluate the RO's ability to diagnose the controller has failed.

Evaluate the SRO's ability to determine if the CRDs which have high temperatures should be declared slow or inoperable.

Success Path:

CRD-FC-301 placed in Manual and CRD system flows and pressures returned to normal. SRO addresses CRDs with high temperatures.

Event Five: SRV Fails Open

Malfunction Required:

AD06b set at 50% to start the relief valve leaking then it is modified to 20% to minimize the heat addition to the torus.

Objective:

Evaluate the crew's performance of Abnormal Procedure 2.4SRV for a leaking SRV which has the Operator cycle the leaking valve to reseat it.

Evaluate the CRS addressing Technical Specification 3.6.2.1 for Suppression Pool Average Temperature, if the SRV is not closed within a short period of time.

Success Path:

The Operator notices and responds to the leaking SRV in accordance with Annunciator Procedures and 2.4SRV. The SRV will be cycled open then taken back to the closed position to reseat the valve. Once the valve has been cycled the tail pipe temperature starts lowering and the heat addition into the Torus is secured. The CRS determines

Required Operator Actions

Form ES-D-1

that Technical Specification 3.6.2.1 for Suppression Pool Average Temperature may apply depending on whether Suppression Pool Temperature at 95°F.

Event Six: Two Rods Drift In, Manual Scram Failure Manual ARI works

Malfunction Required: RD162615 CRD 26-15 Slow Scram Time RD162623 CRD 26-23 Slow Scram Time RD162615 CRD 26-15 Scrammed RD162623 CRD 26-23 Scrammed Override Reactor Manual Scram Push Button position "Push Out" Override Reactor Manual Scram Push Button light "Off"

Objective:

Evaluate the crew's response in accordance with Abnormal Procedure 2.4CRD and their ability to recognize Scram Actions with more than one rod is drifting in. Also to recognize that the One Channel's Manual Scram Push Button failed to work and the need to manually initiate ARI.

Success Path:

The Operator determines the ATWS when a manual scram fails to work when more than one rod is drifting and initiates ARI manually.

Event Seven: Earthquake; Suppression Pool leak: ED on low SP/L

Malfunction Required: HV02b Major Earthquake set to 25% PC08 Suppression Pool Water Leak 25% level lowers at -0.2"/min

Objective:

Evaluate the crew's response to a major earthquake in accordance with Emergency Procedure 5.1Quake.

Evaluate the crew's ability to monitor and control the consequences of an Unisolable leak in the torus below the normal water level.

Evaluate the crew's ability to anticipate emergency depressurization and transfer as much energy to the condenser prior to emergency depressurizing the Reactor.

Success Path:

The crew emergency depressurizes the reactor when suppression pool level lowers to 9.6'.

Scenario Termination:

When the reactor is depressurized (50 psig above Torus pressure) and level is being maintained between +3" to +54" and the lead examiner has seen enough, the scenario may be stopped.

Scenario Outline

IC -122

1							
Facility: Cooper Nuclear Station Scenario No.: NRC 2 Op-Test No.: 1							
Examiner	Examiners: Operators:						
Initial Conditions: The plant is operating at approximately 100% with Surveillance 6 1DG101							
in progress:							
Turnover: After turnover, the crew is to secure DG#1 following its monthly test; LCO 3.8.1 Condition B is in effect.							
Event No.	Malf. No.	Event Type*	Event Description				
1	N/A	N	DG-1 Monthly Surveillance				
2	2	I,TS	RR Pump speed lowers				
3	3	С	Combustion in the Off-Gas system				
4	4	I,TS	FW and Main Turbine high water level instruments fail				
5	5	М	Loss of Turbine High Pressure Fluid, requiring Manual Scram				
6	6	С	Loss of Emergency Transformer, Loss of Critical Bus 1F				
7	7	С,ψ	DG-1 Fails to Auto Start				
8	8	Μ,ψ	Small Break LOCA, Containment Sprays				
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor							

 ψ Critical Tasks are located in Events 7 and 8.

Scenario Objective

Evaluate the crew's ability to perform normal surveillances and to respond to instrument and component failures during non-emergency conditions.

Evaluate the crew's response to a rising reactor power level and a lowering Turbine High Pressure Fluid Reservoir.

Evaluate the crew's response to a small break LOCA which causes Drywell temperatures and pressures to rise and before 280°F in the Drywell the crew initiates Drywell Sprays to maintain temperature below 280°F.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 100% power
- No equipment out of service.
- 6.1DG.101 is in progress.
- DG-1 load was lowered to 1000 kW 5 minutes ago.

Events:

- DG-1 Monthly Surveillance
- RR Pump speed lowers TS
- Combustion in the Off-Gas system
- FW and Main Turbine high water level instrument fails- TS
- High Pressure Fluid leak requiring Manual Scram
- Loss of Emergency Transformer, Loss of Critical Bus 1F
- DG-1 Fails to Auto Start
- Small Break LOCA, Containment Sprays

Scenario Sequence

- Normal activity DG-1 Monthly Surveillance
- Instrument Failure RR speed lowers
- Component Failure before EOPs Combustion in the Off-Gas System
- Instrument Failure FW and Main Turbine high water level instrument fails
- Major Failure Loss of Turbine High Pressure Fluid, requiring Manual Scram
- Component Failure after EOPs Loss of Emrg Transfmr, Loss of Critical Bus 1F
- Component Failure after EOPs DG-1Fails to Auto Start
- Major Failure Small break LOCA, with raising DW temperature and pressure
- Accident mitigation strategy Containment Sprays

Event One: DG-1 Monthly Surveillance

Malfunction Required:

No malfunction required; this is a normal manipulation for the BOP.

Objective:

Evaluate the crew during normal surveillance activities. Evaluate the BOP Operator unloading and securing DG1 in accordance with 6.1DG.101, 31 day load test.

Success Path:

The #1 DG is unloaded from 1000 KW and the engine is secured in accordance with the surveillance procedure.

Event Two: RR Pump speed lowers

Malfunction Required: RR17b set at 70%. Override ZDIRRMGSWS16B(1) set to ON.

Objective:

Evaluate the crew's response to a failed Jordan RR controller. Evaluate the CRS addressing Technical Specifications for RR loop mismatch.

Success Path:

RR Pump A speed is lowered until both loop flows are balanced within specification. The CRS will review Tech Specs LCO 3.4.1 and consider RR Pump B not in service until pump speeds are matched.

Event Three: Combustion in the Off-Gas System

Malfunction Required: OG02 SUSTAINED H2 BURN

Objective:

Evaluate the crew's response to combustion in the off-gas train as indicated by Annunciator B-3 / E-3 AUG OFFGAS TROUBLE and elevated temperatures on the Off-gas lines.

Evaluate the BOP Operator's ability to accurately communicate steps of the Abnormal Procedure to the Turbine Building Station Operator.

Success Path:

The steps on the Abnormal are performed and the combustion is extinguished.

Event Four: FW and Main Turbine high water level instruments fail

Malfunction Required: RR27a set at 0%. RR27c set at 0%.

Objective:

Evaluate the crew's response to the failure 2 of the 3 RFP Turbine and Main Turbine high water level trip instrumentation.

Evaluate the CRS addressing Technical Specifications.

Success Path:

With only one instrument available (NBI-LT-52B) the crew will recognize that there is a loss of the two out of three logic for the high level trip for the RFP Turbines and the Main Turbine

The CRS declares the instruments inoperable in accordance with Tech Specs LCO 3.3.2.2. Condition A. Required Action A.1 Place channel in trip within 7 days, and Condition B Required Action B.1 Restore feedwater and main turbine high water level trip capability within 2 hours.

Event Five: Loss of Turbine High Pressure Fluid, requiring a Manual Scram

Malfunction Required:

TC10 Turbine High Press Fluid leak increased from 75%.

Objective:

Evaluate the pre-staging and conservative decision making prior to the need to scram the Reactor prior to losing Turbine High Pressure Fluid Pumps and control of Turbine GVs, Stop Valves and Bypass Valves.

Success Path:

Reactor is scrammed and pressure control is transferred to HPCI and SRVs.

Event Six: Loss of Emergency Transformer, Loss of Critical Bus 1F

Malfunction Required: ED06 LOSS OF POWER (EMERGENCY 69KV TRANSFORMER) ED08A 4160 BUS 1A FAILURE

Objective:

Evaluate the crew's response to the loss of the Emergency Transformer and a subsequent loss of 1F Critical Bus, during the Scram recovery.

Evaluate the BOP's ability to enter Procedure 5.3EM-PWR and ensure the Critical Busses are powered by an emergency power source.

Evaluate the crew's ability to shift RPV level control to the High Pressure ECCS and RCIC systems due to a loss of all Condensate and Booster pumps.

Success Path:

Startup Transformer is supplying the Critical Busses until a fault causes the loss of 1F. RPV Level is being controlled within the +3 to 54 inch range with RCIC, CRD and HPCI.

Event Seven: DG-1 Fails to Auto Start

Malfunction Required:

DG06A Diesel Generator #1 Fails to Auto Start

Objective:

Evaluate the crew recognition that Diesel 1failed to auto start when required and to perform the necessary steps to start Diesel 1 and energize the Critical Bus.

Success Path:

Both Critical Busses are Energized; one from the Diesel Generator, the other from the Startup Transformer.

Event Eight: LOCA Containment Sprays

Malfunction Required:

RR20A Coolant Leakage Inside Primary Containment @ 12% with a ramp time of 10 minutes.

Objective:

Evaluate the crew response to a slow increase in Drywell Temperature and pressure and to vent Primary Containment in an attempt to control the pressure rise. Evaluate the crew's ability to spray the Drywell in accordance with the EOPs to control pressure and temperature, as the LOCA gradually worsens.

Success Path:

Torus and Drywell Sprays are initiated prior to DW temperature reaching 280°F.

Scenario Termination:

When Reactor water level is being controlled between +3 and +54 inches and Drywell Sprays are controlling Drywell Pressure between 2 and 10 psig.

Scenario Outline

Facility: Cooper Nuclear Station Scenario No.: NRC 3 On-Test No.: 1							
Examiners: Operators:							
· · · · · · · · · · · · · · · · · · ·							
Initial Conditions: The plant is operating at approximately 2.0% power, holding here to perform the 500 psig Reactor Building walkdown. After turnover, the crew is to shift CRD Pumps.							
Event No.	Malf. No.	Event Type*	Event Description				
1	N/A	N	Shift CRD Pumps				
2	2	C,TS	REC Pump B trip				
3	3	I	IRM Inop Trip				
4	4	I,TS	Drywell Radiation Monitor Isolation				
5	5	C,R	Rod drop and stuck rods non-EOP rod driving				
6	6	М	RCIC Steam Line Leak				
7	7	C,ψ	Fuel failure ATWS EOP rod driving				
8	8	C,ψ	Reactor Recirc Pump speed fails high				
9	9	C,ψ	ED on Secondary Containment 2 Areas				
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor							

 ψ Critical Tasks are located in Events 7, 8 and 9.

Scenario Objective

Evaluate the Crew's ability to operate at low power levels.

Evaluate the Crew's response to a rod drop accident and fuel failure.

Evaluate the crew's actions when RCIC develops a steam line leak that will not fully isolate and when two areas in Secondary Containment exceed their Max Safe values the RPV is Emergency Depressurized to limit the release of highly radioactive steam through the RCIC steam line break.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 2.0% power
- The 500 psig Reactor Building walkdown is in progress.
- Shift CRD Pumps following turnover.

Events:

- Shift CRD Pumps
- REC Pump B trip
- IRM Inop Trip
- DW Vent Radiation Monitor Isolation
- Rod drop and stuck rods requiring EOP rod driving
- RCIC Steam Line Leak
- Fuel failure, ATWS EOP rod driving
- Reactor Recirc Pump speed fails high
- ED on Secondary Containment 2 Areas

Scenario Sequence

- Normal activity Shift CRD Pumps "B" to "A"
- Component Failure before EOPs REC Pump "B" Trip
- Instrument Failure before EOPs IRM "C" Failure
- Instrument Failure before EOPs DW Vent Radiation Monitor Isolation
- Component Failure before EOPs Rod drop and stuck control rods requiring non-EOP driving
- Major Event RCIC Steam Line Leak
- Component Failure after EOPs Fuel failure ATWS EOP rod driving
- Component Failure after EOPs Reactor Recirc Pump speed fails high
- Accident mitigation strategy Emergency Depressurize the RPV

Event One: Shift CRD Pumps

Malfunction Required:

No malfunction required; this is a normal manipulation for the RO.

Objective:

Evaluate the crew during normal equipment shifting.

Evaluate the Reactor Operator shifting from the "B" CRD Pump running to the "A" CRD Pump running and securing the "B" Pump.

Success Path:

The "A" CRD Pump is running and the "B" CRD Pump is secured. All CRD parameters indicated on Panel 9-5 restored to within their normal band.

Event Two: REC Pump B trip

Malfunction Required: SW11B – REC Pump Trip 1B.

Objective:

Evaluate the crew's response to the tripping of one of the three Reactor Equipment Cooling Pumps and takes appropriate action in accordance with the Annunciator Procedure to restart another pump prior to receiving an REC Isolation. Evaluate the CRS addressing Technical Specifications.

Success Path:

The BOP Operator either responds quickly enough (within 1 minute) to the tripping of the pump and starts an additional REC Pump in accordance with the Annunciator Card. Or, the REC system isolation is reset following the restart of the third REC Pump and system flows and pressures are returned to normal.

The SRO will address Tech Specs and determine that LCO 3.7.3 Condition B, a 30 day LCO on one sub system.

Event Three: IRM Inop trip

Malfunction Required: Malfunction NM13C – IRM INOP Channel-C. NM06G IRM G Stuck and fully withdrawn

Objective:

Evaluate the crew's response to a failed Intermediate Range Monitor (IRM). Evaluate the At the Controls (ATC) Operator's actions to determine the cause of the ½ Scram, and bypasses the failed IRM. This allows resetting the half-scram. Evaluate the CRS addressing Technical Specifications for the failed IRM.

Success Path:

IRM - C is bypassed, and the CRS initiates an LCO on IRM C in accordance with Technical Specifications 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 1. Also TRM T3.3.1 Function 2 potential LCO with one INOP IRM there remains the minimum number required of 6.

Event Four: Drywell Vent Radiation Monitor isolation

Malfunction Required:

Override 02S87 ZDIRMARA10AV[1] = CLOSE Drywell Vent Rad Mon. Isol VIv. Override 12A2AR1 RMV-RR-4 DW Vent Rad Monitor – Gas to 4.0E-006

Objective:

Evaluate the CRS addressing Technical Specifications for the failed Drywell Radiation Monitor.

Success Path:

CRS initiates an LCO on DW Radiation Monitor in accordance with Technical Specifications 3.4.5 (RCS Leakage Detection Instrumentation) b. Condition B, Required Action B.1 Grab Sample once per 12 hours and B.2 Restore within 30 days.

Event Five: Rod drop and stuck rods non-EOP rod driving

Malfunction Required: RD02B ATWS South Bank set at 75% CR023827 Increased Rod Worth on rod 38-27 set at 40% RD133827 Rod Uncoupled RD123827 Rod Stuck – Delete CR01 Fuel Failure at 100%

Objective:

Evaluate the crew's response to approximately half of the control rod insertion on a reactor scram signal.

Evaluate the RO's ability to perform 2.4CRD and drive control rods using RMCS. Evaluate the CRS implementing strategy for reactivity controls outside the EOPs. Evaluate the crew's teamwork in installing jumpers and controlling Reactor Pressure and level.

Success Path: Control Rods are inserted using RMCS.

Event Six: RCIC Steam Line Leak

Malfunction Required:

RC06 RCIC Steam Line Break in at 100% RC07 Failure of RCIC Auto-Isolation OR ZDIRCICSWS2(2) MO-16 C/S to OPEN OR ZDIRCICSWS1(2) MO-15 C/S to OPEN RF RC06A RCIC-MO-16 Control Power De-energized

Objective:

Evaluate the crew's response to a failure of RCIC to fully isolate during a RCIC Steam Line Break.

Evaluate the BOP's ability to monitor and report Secondary Containment Temperatures and Radiation Levels to the CRS.

Evaluate the crew's ability to continue Control Rod insertion in accordance with 2.4CRD and Emergency Depressurize the RPV when 2 Areas in Secondary Containment exceed Max Safe values.

Success Path:

RPV Level is being controlled within the +3 to 54 inch range with CRD and HPCI and Condensate. The Reactor is depressurized to <50 psig above Torus Pressure when two areas in Secondary Containment reach and exceed Max Safe values.

Event Seven: Fuel Failure ATWS EOP rod driving

Malfunction Required: None

Objective:

Evaluate the crew recognition of two areas being above Max Safe Operating Temperature and entry into EOP 5A.

Evaluate the crew's ability work through EOP 5A to the point where it transitions to EOP 1A and eventually to 6A and 7A to give directions to drive control rods.

Success Path:

The Crew will enter EOPs and start driving control rods full in with EP 5.8.3 versus 2.4CRD.

Event Eight: Reactor Recirc Pump speed fails high

Malfunction Required: RR17B RR MGSet Jordan Controller failure to 100 ZDIRRSWS2B[1] = ON Reset Scooptube Lockout

Objective:

Evaluate the crew recognition of the increasing speed of the B RR Pump. Evaluate the crew's ability to monitor nuclear instrumentation and RR Pump speed.

Success Path:

The Crew will trip the RR Pump when it is determined that either it is at full speed or that the scoop tube lock will not stop the increase.

Event Nine: ED on Secondary Containment 2 Areas

Malfunction Required: None

Objective:

Evaluate the crew response to a slow increase in Reactor Building Temperatures and Radiation levels to the point where the RPV must be Emergency Depressurized. Evaluate the crew's ability to manually open 6 SRVs and reduce RPV Pressure to less than 50 psig above Torus pressure, in accordance with the EOPs.

Success Path: RPV is depressurized to 50 psig above Torus pressure.

Scenario Termination:

When Reactor water level is being controlled between +3 and +54 inches and the RPV has been Emergency Depressurized and all but one Control Rod have been inserted.

Scenario Outline

Facility: <u>Cooper Nuclear Station</u> Scenario No.: <u>NRC 4 (Spare)</u> Op-Test No.: <u>1</u>							
Examiners: Operators:							
Initial Conditions: The plant is operating at approximately 100% power. There are thunderstorms in the area and Nemaha Co. is in a thunderstorm watch. After turnover, the crew is to continue with the Core Spray Surveillance.							
Event No.	Malf. No.	Event Type*	Event Description				
1	N/A	N,TS	CS Surveillance				
2	2	С	CS Pump Trip				
3	3	C,TS	Torus to Drywell Vacuum Breaker Opens				
4	4	Ν	Severe Thunderstorm Warning, increased winds, shift Air Comps.				
5	5	C,TS	Lightning Strike – 125V B Ground loss of HPCI Starter Rack				
6	6	M,ψ	Lightning Strike – Both Reactor Feed Pump Suction Pressure Trip				
7	7	С	Loss of 125VDC A				
8	N/A	ψ	Emergency Depressurization to restore level with low pressure systems				
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor							

 ψ Critical Task are located in Event 5 and 7.

Scenario Objective

Evaluate the crew's ability to perform surveillance and normal operations and respond to instrument failure which has an input to the Reactor Vessel Level Control System.

Evaluate the crew's response to a loss of RPV level indication and entry into the RPV Flooding procedures.

Evaluate CRS ability to determine Tech Spec LCOs are not met and take appropriate Required Actions.

Scenario Summary

Initial Conditions:

- 100% Power
- Surveillance Procedure 6.1CS.101, CORE SPRAY TEST MODE SURVEILLANCE OPERATION (IST) (DIV 1) (92 day) is due to be performed at the beginning of shift.

Events:

- CS Surveillance
- CS Pump Trip
- Torus to Drywell Vacuum Breaker Opens
- Severe Thunderstorm Warning, increased winds, shift Air Comps.
- Lightning Strike 125V B Ground loss of HPCI Starter Rack
- Lightning Strike Both Reactor Feed Pump Suction Pressure Trip
- Loss of 125VDC A
- Emergency Depressurization to restore level with low pressure systems

Scenario Sequence

- Normal activity CS Surveillance
- Component Failure before EOPs CS Pump Trip
- Component Failure before EOPs Torus to Drywell Vacuum Breaker Opens
- Abnormal event with Normal Activity Severe TS Warning, shift Station Air Compressors.
- Component Failure before EOPs Lightning Strike 125VB Ground loss of HPCI Starter Rack
- Major Event Lightning Strike Both Rx Feed Pump Suction Pressure Trip circuit initiates
- Component Failure after EOPs 125VDC Bus A failure
- Accident mitigation strategy Alternate RPV Injection to control level

Event One: CS Surveillance

Malfunction Required: None

Objective: Evaluate the crew during normal equipment surveillance. Evaluate SRO Tech Spec entry for CS surveillance

Success Path: The A Core Spray Pump is started and the minimum flow valve is verified to close as flow is raised. The SRO will address Tech Specs for inoperable subsystem and pump.

Event Two: CS Pump Trip

Malfunction Required: CS01a Core Spray A pump trip.

Objective: Evaluate the crew's response to the tripping of the CS Pump. Evaluate the CRS directing the steps of the surveillance that must be performed and those to be N/Aed.

Success Path: The Crew places the "A" Core Spray system valves back to the normal alignment.

Event Three: Torus to Drywell Vacuum Breaker NRV-21 opens

Malfunction Required: PC02b Torus To Drywell Vacuum Breaker Failure NRV-21 (open) set at 100%

Objective: Evaluate the crew's response to a vacuum breaker failing open. Evaluate the CRS addressing Technical Specifications for inoperable vacuum breaker.

Success Path: The SRO addresses Tech Specs and declares the vacuum breaker inoperable.

Event Four: NAWAS issues Severe Thunderstorm Warning

Malfunction Required: HV03 Lightning Strike

Objective:

Evaluate the crew's response to a weather emergency and performance of mitigating steps.

Success Path:

The Crew enters 5.1Weather and prepares the site for severe weather. The crew shifts the Station Air Compressors and aligns REC to the running compressor. The CRS ensures that a safety announcement is made over the Gaitronics to help protect the personnel on site.

Event Five: Lightning Strike - Lightning Strike – 125VB Ground loss of HPCI Starter Rack TS-3.0.3 Shutdown

Malfunction Required: HV03 Lightning Strike ED12A HPCI Starter Rack Loss of Power OR RA:MUX01C072 125V DC B Bus Ground Annunciator

Objective:

Evaluate the crew's response to a ground on the 125 V DC System and subsequent loss of HPCI Starter Rack.

Evaluate the CRS addressing Technical Specifications.

Success Path: The Crew identifies the loss of the HPCI Starter Rack by walking down the control board. The CRS determines that HPCI is inoperable

Event Six: Lightning Strike – Both Rx Feed Pump Suction Pressure Trip circuit initiates

Malfunction Required: HV03 Lightning Strike FW01A Time Delay 10 seconds FW01B Time Delay 15 seconds Override Annunciator A1/A6 RFP A Suction Pressure Low ON Override Annunciator A2/A3 RFP B Suction Pressure Low ON

Scenario Outline

Objective:

Evaluate the crew's response to the failure of the suction pressure switches for both Reactor Feed Pumps and timed sequence of tripping. This Results in the subsequent loss of feedwater to the vessel.

Success Path:

The Crew identifies the loss of feedwater and scrams the reactor prior to the automatic trip. The Crew should use their only available injection sources to maintain and recover level.

Event Seven: 125VDC Bus A failure

Malfunction Required:

ED12D Loss of 125 VDC Bus Distribution Panel

Objective:

Evaluate the crew's ability to recognize the loss of RCIC and inability of the remaining high pressure injection sources to restore level.

Success Path:

The Crew identifies the loss of RCIC and the inability to restore level. The Crew transitions to Alternate RPV Injection using SLC and CRD.

Event Eight: Anticipate emergency depressurization, or emergency depressurizes

Malfunction Required: None

Objective:

Evaluate the crew's ability to recognize the inability of remaining high pressure injection sources to restore RPV water level and either Alternate Emergency Depressurizes or Emergency Depressurizes the RPV to allow low pressure systems to restore level.

Success Path:

The Crew identifies the loss of loss of RCIC to restore level. The Crew transitions to Alternate RPV Injection using SLC then to Emergency Depressurization to refill the vessel.

Scenario Termination:

When the rate of level decrease has slowed because of the use of alternate injection sources or the crew has emergency depressurized the vessel and injected with low pressure systems or at the direction of the lead examiner.

Task No.: None

RO Active Status Maintenance							
Trai Pas	ainee: Exami uss Fail Examiner Signature:	ner: Date:					
ALTERNATE PATH							
Additional Program Information:							
1. 2. 3. 4. 5.	Appropriate Performance Locations: Classroom Appropriate Trainee level: RO / SRO / STE Evaluation Method: Perform Performance Time: 10 minutes NRC K/A 2.1.4 (3.3 / 3.8)						
Directions to Examiner:							
1. 2. 3. 4.	This JPM evaluates the trainee's ability to perform an assessment of their license active status maintenance in accordance with Procedure 2.0.7. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below. Brief the trainee and tell the trainee to begin.						
Not	otes/Comments:						

Task No.: None

RO Active Status Maintenance

Directions to Trainee:

When I tell you to begin, you are to perform an assessment of your license for active status maintenance in accordance with Procedure 2.0.7. Licensed Operator Active / Reactivation / Medical Status Maintenance Program. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

2.

- 1. You currently are maintaining your active status of your Reactor Operator License
 - You stood a 12 hr shift on the following days:
 - RO 2/20/2011 Day Shift
 - BOP 2/21/2011 Day Shift
 - RO 2/22/2011 Day Shift
 - WACO 2/23/2011 Day Shift
 RO 2/24/2011 Day Shift
 - RO 2/24/2011 Day Shift
 DO 2/25/2014 Day Shift
 - RO 2/25/2011 Day Shift

General References:

1. Procedure 2.0.7, LICENSED OPERATOR ACTIVE/REACTIVATION/MEDICAL STATUS MAINTENANCE PROGRAM

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by **bold step**.

Task Standards:

- 1. The operator will correctly complete the RO Active Status Maintenance Attachment 1 of Procedure 2.0.7 containing: His/her name and signature; 5 digit identification number; the 5 12 hour on-shift RO/BOP positions.
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Task No.: None

RO Active Status Maintenance

Initiating Cue(s):

The Shift Manager directs you to perform an assessment of your license for active status maintenance in accordance with Procedure 2.0.7. Licensed Operator Active / Reactivation / Medical Status Maintenance Program. And complete Attachment 1 and return it to the evaluator.
Initials

[] YES; [X] N/A

Task No.: None

RO Active Status Maintenance

KEY

ATTACHMENT 1 RO ON-SHIFT TIME

Lesson No.: CNS001-01-87 BET 1395	Lesson Title:Rev:License Operator Active Status Maintenance01					Completic Date: 02	on / 25/2011		
Name (Print)						Ch		Records	Records
(X) Signature	Identification Number	SAT	UNSAT	INC	REG	Exam	Remarks	Input	Verify
Student's Name printed	A E disit sumber	/							
Student's Signature	A 5 digit number	v							

RO Licensee's is performing on-shift license authorized (RO and/or BOP) position tasks. Document time below. **EXTRA FIFTH LICENSE POSITION TIME IS EXCLUDED**.

Fill in above required information; Name (Print), Identification Number, Completion Date, and Signature.

DATE	SHIFT	POSITION WORKED (excluding extra license)
2/20/2011	Days	RO
2/21/2011	Days	BOP
2/22/2011	Days	RO
2/24/2011	Days	RO
* 2/25/2011	Days	RO

* Also, enter this date in COMPLETION DATE block (upper right-hand corner).

PRESCRIPTION RESPIRATOR GLASSES VERIFICATION

Corrective respirator glasses are part of my NRC license condition: [] YES; [] NO

If YES, then I have verified my corrective respirator glasses are located in Control Room repository.

I have submitted Attachment 2 of NTP8.1 to immediate Supervisor due to change in Licensed Status. Refer to Section Error! Reference source not found. as required.	d Operator Medical
	[] YES; [X] N/A

I have notified the Operations Training Clerk of a resident address change.

Send completed form to **OPERATIONS TRAINING CLERK**.

Task No.: None

RO Active Status Maintenance

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain procedure 2.0.7.	Current revision of procedure 2.0.7 obtained Section 5 and Attachment 1.		
2. Ensure compliance with active License definition.	The Operator will ensure compliance with active definition above completed prior to or during reactivation.		
3. Document proficiency time	The Operator will document proficiency time on Attachment 1 for RO.		
 Answer question concerning corrective lenses 	The Operator will assess the need to document corrective lenses; ensure prescriptive respiratory glasses are located in Control Room repository and document on Attachment. CUE: If asked, perform the step for your		
	current requirements.		
5. Forward Attachment to Operations, Department Clerk	The Operator will forward Attachment to Operations, Department Clerk.		
	CUE: I will take it.		

Stop Time: _____ Total Time: _____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform an assessment of your license for active status maintenance in accordance with Procedure 2.0.7. Licensed Operator Active / Reactivation / Medical Status Maintenance Program. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. You currently are maintaining your active status of your Reactor Operator License
- 2. You stood a 12 hr shift on the following days;
 - RO 2/20/2011 Day Shift
 - BOP 2/21/2011 Day Shift
 - RO 2/22/2011 Day Shift
 - WACO 2/23/2011 Day Shift
 - RO 2/24/2011 Day Shift
 - RO 2/25/2011 Day Shift

Initiating Cue(s):

The Shift Manager directs you to perform an assessment of your license for active status maintenance in accordance with Procedure 2.0.7. Licensed Operator Active / Reactivation / Medical Status Maintenance Program. And complete Attachment 1 and return it to the evaluator.

Task Title: Perform RO Review of Daily Logs (Alternate Path)

Trainee:		Examiner:	
Pass Fail Ex	xaminer Signature:		Date:

ALTERNATE PATH

Additional Program Information:

- 1. Appropriate Performance Locations: CR, SIM, EOF
- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: <u>Simulate</u> Perform
- 4. Performance Time: 10 minutes
- 5. NRC K/A 2.1.23 (3.9/4.0)

Directions to Examiner:

NOTE: This is an **Alternate Path** JPM. The Div I torus average temperature will exceed operability limits.

- 1. This JPM evaluates the trainee's ability to perform an RO review of the daily logs.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to perform an RO review of the daily logs. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task Title: Perform RO Review of Daily Logs (Alternate Path)

General Conditions:

- 1. The plant is operating at 100% power.
- 2. All Channels are operable.
- 3. The 21:00 readings from PC-TR-24 are:
 - CH 1 = 97°F
 - CH 2 = 94°F
 - CH 3 = 94°F
 - CH 4 = 98°F
 - CH 5 = 93°F
 - CH 6 = 95°F
 - CH 7 = 95°F
 - CH 8 = 96°F

General References:

1. Procedure 6.LOG.601

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Critical checks denoted **bold steps**.
- 2. Simulator cues denoted by "#".

Task Standards:

- 1. The operator determines the OPERABILITY LIMIT of the Div I Torus Average Temperature is exceeded.
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Initiating Cue(s):

You are to fill out Attachment 15, Torus Average Temperature and Drywell Bulk Average Temperature, for Div I, using the data provided and complete an RO review of the log sheet per 6.LOG.601. Inform the CRS when the review is complete.

Task Title: Perform RO Review of Daily Logs (Alternate Path)

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Refer to 6.LOG.601.	Refers to 6.LOG.601 Attachment 15.		
2. Record Values.	Records PC-TR-24 reading on Attachment 15.		
3. Sums OPERABLE channels.	Sums reading from PC-TR-24 in appropriate block.		
4. Calculates Average Temperature.	Divides Sum by total number of OPERABLE channels and records that value in appropriate block.		
5. Performs a review of the Data.	While reviewing the data the trainee should indicate that the OPERABILITY Limit has been exceeded.		
6. Notifies CRS.	The trainee informs the CRS that the Div I Average Torus Temperature is above the OPERABILITY Limit		
NOTE: It is not necessa	ry to sign the sign-off and review sheet.		

Stop Time: _____ Total Time: _____

KEY

ATTACHMENT 15 TORUS AVERAGE TEMPERATURE AND DRYWELL BULK AVERAGE TEMP

LOC	INSTRUMENT NUMBER	0700-1000 READING	1900-2200 READING	OPERABILITY LIMIT	MAX Δ	MODES	ATT. 22 NOTES
VBD-J	PC-TR-24 CH 1	MCO	97				
VBD-J	PC-TR-24 CH 2	MCO	94				
VBD-J	PC-TR-24 CH 3	MCO	94				
VBD-J	PC-TR-24 CH 4	MCO	98	≥ 4 RTDs OPERABLE with		1 0 0	77
VBD-J	PC-TR-24 CH 5	MCO	93	no 2 adjacent RTDs INOP		1, 2, 3	21
VBD-J	PC-TR-24 CH 6	MCO	95				
VBD-J	PC-TR-24 CH 7	MCO	95				
VBD-J	PC-TR-24 CH 8	MCO	96				
Sum o channe	of OPERABLE Is for PC-TR-24	MCO	762	N/A	N/A	N/A	N/A
Divide s by to OPER	um of PC-TR-24 tal number of ABLE channels	мсо	95.25	≤ 95°F	N/A	1, 2, 3	57

^(a) For MAX ∆ check, compare like channel points. Examples: Compare PC-TR-24 CH 1 to PC-TR-25 CH 1 or compare PC-TR-24 CH 1 to PMIS Point N031 (PMIS Point to TR-25 channel number relationship is available in Surveillance Procedure 6.2PC.303.).

This is above the Operability Limit.

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to enter the data on the appropriate log sheet and complete the RO review of the daily log. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

General Conditions:

- 1. The plant is operating at 100% power.
- 2. All Channels are operable.
- 3. The 21:00 readings from PC-TR-24 are:
 - CH 1 = 97°F CH 2 = 94°F CH 3 = 94°F CH 4 = 98°F CH 5 = 93°F CH 5 = 93°F CH 6 = 95°F
 - CH 7 = 95°F
 - CH 8 = 96°F

Initiating Cues:

You are to fill out Attachment 15, Torus Average Temperature and Drywell Bulk Average Temperature, for Div I, using the data provided and complete an RO review of the log sheet per 6.LOG.601. Inform the CRS when the review is complete.

Title: Initiate an Operator Aid Request					
Trainee:	_ Examiner:				
Pass Fail Examiner Signature:		Date:			
Additional Program Information:					
1. Appropriate Performance Locations: Any I	ocation.				

- 2. Appropriate Trainee level: RO / SRO / STE
- 3. Evaluation Method: Perform
- 4. Performance Time: 10 minutes
- 5. NRC K/A 2.2.14 (3.9/4.3)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to perform an Operator Aid request in accordance with Procedure 2.0.9 Control of Operator Aids.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) and a copy of Procedure 2.0.9 Attachment 1 and Procedure 2.2.76 when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments: _____

Directions to Trainee:

When I tell you to begin, you are to perform the steps to request the posting of an Operator Aid for shifting the TEC Pumps and have it mounted on Control Room Panel M. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Title: Initiate an Operator Aid Request

General Conditions:

- 1. You want an Operator Aid to be developed and posted on Panel M for Shifting of the TEC Pumps during normal operations.
- 2. Your reason is to prevent having to take a copy of the procedure back to perform basically three steps.
- 3. You are the requester.

General References:

- 1. Procedure 2.2.76 Turbine Equipment Cooling Water System.
- 2. Procedure 2.0.9 Control of Operator Aids.

General Tools and Equipment:

1. None.

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by **bold step**.

Task Standards:

- 1. The operator correctly completes Procedure 2.0.9 Attachment 1, Section 1 describing the aid is for shifting TEC pumps with a reference to Procedure 2.2.76 as an approved procedure to be placed on Panel M in the control room along with the preparer's name.
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Initiating Cue(s):

You are the WACO and would like an Operations Aid posted for shifting TEC Pumps during normal operation to prevent having to carry a controlled copy of Procedure 2.2.76, TURBINE EQUIPMENT COOLING WATER SYSTEM, back to Panel M each time the pumps are shifted.

Provide Attachment 1 of Procedure 2.0.9 to the examiner when completed with the requester portion.

Title: Initiate an Operator Aid Request

Key

ATTACHMEN	1 OPERATOR AID REQUEST	ъ <i>"</i>
SECTION 1	OP A PREPARER	ID #
1. Descrip	tion: Operator Aid for Shifting TEC Pumps during normal of	operations
2. Reasor <u>the thre</u> time	For Request (Attach Proposed Operator Aid): <u>To allow the</u> e steps for shifting TEC Pumps without having to get a copy	operator to check off of the procedure every
3. Referei	nces: Procedure 2.2.76	
4. Operate Proced	or Aid Part of An Approved Procedure? YES <u>X</u> NO ure No(s): <u>2.2.76</u>	
5. Locatio <u>Switche</u>	n(s): Panel M in the control room back panels, near the TEC es	C Pump control
6. Reques	ted By: <u>Candidate's Name</u>	_ Date: <u>Today's Date</u>
7. Superv	sor:	_ Date:
SECTION 2	APPROVAL	
 The Property Addition The Property AOM - SECTION 3 	oposed Operator Aid Is Technically Correct: YES NO _ nal Reviews Performed (SORC, 50.59, 72.48, etc.): YES oposed Operator Aid Is: Approved Disapproved Operating Shift: INSTALLATION	NO Date:
 Posted Copies Proced TSG No Operation Log Inc 	By: To Simulator Supervisor: ures Marked As Required: otified If Required: ons Department Procedure Distribution List Updated: ex Updated:	_ Date: Date: Date: Date: Date: Date: Date:

Task No.: ______Title: Initiate an Operator Aid Request

Start Time: _____

Performance Checklist	Standards	SAT	Unsat
1. Obtain procedure 2.0.9.	Current revision of procedure 2.0.9 and Attachment 1 obtained.		
2. Fills out Section 1 of Attachment 1 of Procedure 2.0.9.	Operator fills in Section 1, steps 1 through 6 of Attachment 1 Operator Aid Request to match the key (exact words are not necessary).		
3. Inform CRS that Attachment 1 Operator Aid Request has	The Operator notifies the CRS that the Operation Aid Request form has been filled out and says that it needs his signature next.		
been generated and presents it to him.	CUE: Respond to the Operator and tell him that you will review it, sign it and pass it on to the AOM – Operating Shift for approval.		

Stop Time: _____

Total Time: _____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform the steps to request the posting of an Operator Aid for shifting the TEC Pumps and have it mounted on Control Room Panel M. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. You want an Operator Aid to be developed and posted on Panel M for Shifting of the TEC Pumps during normal operations.
- 2. Your reason is to prevent having to take a copy of the procedure back to perform basically three steps.
- 3. You are the requester.

Initiating Cue(s):

You are the WACO and would like an Operations Aid posted for shifting TEC Pumps during normal operation to prevent having to carry a controlled copy of Procedure 2.2.76, TURBINE EQUIPMENT COOLING WATER SYSTEM, back to Panel M each time the pumps are shifted.

Provide Attachment 1 of Procedure 2.0.9 to the examiner when completed with the requester portion.

Determine Dosage On Workers For ALARA

Trainee:	Examiner:		
Pass:	Fail: Examiner signature:	Date:	

Additional Program Information:

- 1. Appropriate Performance Locations: Classroom
- 2. Appropriate Trainee Level: RO/SRO
- 3. Evaluation Method: Perform
- 4. Performance Time: 20 minutes
- 5. NRC K/A 2.3.7 3.5/3.6

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to read a RWP map and make an ALARA recommendation.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) and copy of the Survey Map when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to trainee:

When I tell you to begin, you are to determine dosage on a job for ALARA. Before you start, I will state the initiating cues and answer any questions you may have.

General Conditions:

1. NA

Determine Dosage On Workers For ALARA

General References:

- 1. Procedure 9.ALARA.1
- 2. 9 .ENN-RP-106 RADIOLOGICAL SURVEY DOCUMENTATION

General Tools and Equipment:

1. Calculator.

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: NA
- 2. Critical checks denoted by **bold step.**
- 3. Simulator cues denoted by "#".

Task Standards:

- 1. The total job dose is correctly determined and the scenario with the lowest total dose is clearly identified.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios, determine the dose(s) that would be received for the worker(s) in each scenario, and the total job dose. Record your calculated dose for each scenario, and mark the scenario which would result in the least amount of total job dose.

Note: Working on MO-14 will require the worker(s) to be very close to the valve, approximately 1 foot from the valve.

Determine Dosage On Workers For ALARA

Start Time: _____

	Performance Checklist	Standards	Sat	Unsat
1.	Reviews survey map	Operator reviews survey map and notes dose rates in the HPCI room.		
2.	Determines Scenario #1 dose	Operator records Scenario #1 total dose is 195mrem ±10mrem.		
3.	Determines Scenario #2 dose	Operator records Scenario #2 total dose is 141mrem ±10mrem. (Worker A dose = 90 mrem ±10mrem) (Worker B dose = 51 mrem ±10mrem)		
4.	Determines Scenario #3 dose	Operator records Scenario #3 total dose is 165mrem ±10mrem. (Worker A dose = 150 mrem ±10mrem) (Worker B dose = 15 mrem ±10mrem)		
5.	Determines lowest dose	Operator marks Scenario #2 as the lowest total job dose.		
6.	Submits Attachment 1.	Operator turns in his evaluation to the Evaluator.		

Stop Time: _____ Total Time: _____

Determine Dosage On Workers For ALARA

KEY

- Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to complete the job.
- 1 Worker X 6.5 hours = 6.5 total man hours at the valve.
- 6.5 mh X 30 mr/hr = 195 mr dose for the job.
- Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to complete the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to complete the job.
- 1 Worker X 3 hours = 3 mh + 1 Worker X 1.5 hours = 1.5 mh = 4.5 total mh at valve.
- 4.5 man hours X 30 mr/hr = 135 mr dose at valve Plus 1 Worker X 0.5 hours in a 12 mr/field by door = 6 mr dose at door
- = 141 mr dose for the job. <u>This is the lowest dose of the three options</u>
- Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to complete the job. Worker B will take 0.5 hours in the vicinity of the valve to complete the job.

1 Worker X 5 hours = 5 + 1Worker X 0.5 hours = 5.5 total man hours at the valve.

5.5 mh X 30 mr/hr = 165 mr dose for the job.

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to determine dosage on a job for ALARA. Before you start, I will state the initiating cues and answer any questions you may have.

Initiating Cues:

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios, determine the dose(s) that would be received for the worker(s) in each scenario, and the total job dose. Record your calculated dose for each scenario, and mark the scenario which would result in the least amount of total job dose.

Note: Working on MO-14 will require the worker(s) to be very close to the valve, approximately 1 foot from the valve.

Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to complete the job.

Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to complete the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to complete the job.

Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to complete the job. Worker B will take 0.5 hours in the vicinity of the valve to complete the job.

Nebraska Public Power District Cooper Nuclear Station Job Performance Measure for Operations





Task No.: N/A

Determine If A Working Hour Waiver Is Required				
Trainee: Examiner:				
Pass	Pass Fail Examiner Signature: Date:			
Additional Program Information:				
1. A 2. A 3. E 4. P 5. N	Appropriate Performance Locations: Any loc Appropriate Trainee level: SRO Evaluation Method: Perform Performance Time: 10 minutes NRC K/A 2.1.5 (SRO 3.9)	ation		

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to determine if a working hours waiver is required when the on-shift personnel report to work.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1 and 2) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to determine if one of your Reactor Operators (Bob Jones) needs a working hours waiver before he starts his shift this morning. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Task No.: N/A

Determine If A Working Hour Waiver Is Required

General Conditions:

- 1. Timeway Computer program is not functioning.
- 2. Bob Jones (RO) has worked dayshift for the past 3 days
- 3. Bob Jones was called out to participate in an unplanned EP Drill last night
- 4. The EP drill lasted from 21:00 to 23:00.
- 5. Bob arrived this morning on dayshift and reported that he had participated in the EP Drill last night.
- 6. In anticipation, Bob started filling out Procedure 0.12 Attachment 1 and has presented that to you.

General References:

1. Procedure 0.12 Working Hour Limitations and Personnel Fatigue Management.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by **bold steps**.

Task Standards:

- 1. The operator determines a working hour waver is NOT required.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

As the Shift Manager on Dayshift, you are to determine if Bob Jones needs a working hours waiver before he starts his shift this morning. Document your evaluation on Attachment 1 provided.

Task No.: N/A

Determine If A Working Hour Waiver Is Required

Start Time: _____

	Performance Checklist	Standards	Sat	Unsat
1.	Obtains Procedure 0.12	The SRO obtains the most recent copy of Procedure 0.12.		
2.	Evaluates the Reactor Operator's working time	The SRO evaluates the Reactor Operator's working time against the requirements located in Procedure 0.12.		
3.	Determines that a response to an Unplanned EP Drill does not apply to the Working hour limitations.	The SRO determines that a response to an Unplanned EP Drill does not apply to the Working hour limitations.		
4.	Completes Attachment 1 of this JPM	The SRO identifies that a Working Hours Waiver is not required and writes his evaluation and signs it on the provided Attachment 1.		
5.	Provides the JPM Attachment 1 back to the Evaluator.	The SRO turns in his evaluation to the Evaluator.		

Stop Time: _____

Total Time: _____

KEY

The SRO evaluates the Reactor Operator's working time against the requirements located in Procedure 0.12.

Evaluation:

A Working Hour Waiver **is** required.

A Working Hour Waiver **is not** required.

Justification: Response to an Unplanned EP Drill does not apply to the Working hour limitations

Signature

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine if one of your Reactor Operators (Bob Jones) needs a working hours waiver before he starts his shift this morning. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

- 1. Timeway Computer program is not functioning.
- 2. Bob Jones (RO) has worked dayshift for the past 3 days
- 3. Bob Jones was called out to participate in an unplanned EP Drill last night
- 4. The EP drill lasted from 21:00 to 23:00.
- 5. Bob arrived this morning on dayshift and reported that he had participated in the EP Drill last night.
- 6. In anticipation, Bob started filling out Procedure 0.12 Attachment 1 and has presented it to you.

Initiating Cue(s):

As the Shift Manager on Dayshift, you are to determine if Bob Jones needs a working hours waiver before he starts his shift this morning. Document your evaluation on this Attachment.

Evaluation: A Working Hour Waiver **is** required.



A Working Hour Waiver is not required.

Justification:

Signature

ATTACHMENT 2

ATTACHMENT 1 WORKING HOUR WAIVER REQUEST SECTION 1 - REQUEST

(This attachment should only be used if TimeWay is not available)

Condition adverse to safety or site security requiring resolution: Worked 2 hours in the OSC last night between 21:00 and 23:00. So I have not had 12 hours off between shifts. I worked 12 hours and had a turnover of 1 hour at the end of shift yesterday and came in 45 minutes early today.

Use of a waiver authorizing work hours in excess of 10CFR26, Subpart I, approved by:

Operations Shift Manager, Security Manager, or Security Shift Supervisor, or designated Site Senior-Level Manager:

	Print Name	Signature	Date/Time		
1.	Identify the individual who v Name:	vill exceed a Fatigue Rule Limit:	· 		
	Date/Time Waiver to Start:	/			
	Date/Time Waiver to End:	1			
	Duration (covered work hou	urs beyond rule limits):			
2.	2. State the work to be completed:				
3.	Identify the limit(s) that will	be exceeded by placing a check mark by the limit(s):			
	[] > 16 work hours in any 2	24 hour period.			
	[] > 26 work hours in any 48 hour period.				
	[] > 72 work hours in any ⁻	7 day period.			
	[X] < 10 hour (consecutive	hours) break between successive work periods.			
	[] < 34 hour (consecutive hours) break in any 9 day period.				

[] Minimum required days off: _____ On-line _____ Outage

Required numbers of days off: _____

Shift schedule applied to individual: _____ hour shift

PROCEDURE 0.12

REVISION 26

PAGE 26 OF 47

SECTION 2 - SUPERVISORY ASSESSMENT

NOTE – A face-to-face supervisory assessment is to be completed no more than four (4) hours prior to exceeding fatigue rule limits by a trained assessor who is qualified to direct or oversee the work required to be performed.

- 1. Based on review of Section 1 and a face-to-face assessment (Fatigue Assessment Form) of the individual who will be exceeding 10CFR26 Fatigue Rule work hour limits, **should any restrictions be placed on the individual being assessed**?
 - [] NO, the individual may perform work with no restrictions.
 - [] YES, the individual may perform work as described above with the following conditions, limitations, or oversight.
- 2. Is there a reasonable assurance that the individual will be able to safely and competently perform duties during the additional work period for which the waiver is to be granted?

		[] YES; [] NO
Assessing Supervisor:		
Print Name	Signature	Date/Time

SECTION 3 - SUPERVISOR CLOSE-OUT REVIEW (to be completed by immediate Supervisor promptly after waiver period)

Was the waiver required to perform the indicated work scope? [] YES; [] NO

Time actually worked beyond limits under this waiver:

_____to _____ on _____

Time Time Date

Ensure time is appropriately tracked in the time reporting system: ______ time recorded and coded.

Did individual perform satisfactorily? [] YES; [] NO

Initiate Condition Report for tracking. CR Number:

Immediate Supervisor:

Print Name

Signature

Date/Time

Distribution: Security Services Supervision

PROCEDURE 0.12	
----------------	--

Title: Determine if Mode Change is Allowed		
Trainee:	Examiner:	
Pass Fail Examiner Signature:		Date:

Additional Program Information:

- 1. Appropriate Performance Locations: SIM or Classroom
- 2. Appropriate Trainee level: SRO / STE
- 3. Evaluation Method: Perform
- 4. Performance Time: 10 minutes
- 5. NRC K/A 2.2.35 (SRO 4.5)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to determine if a Reactor Mode change is allowed in accordance with Tech Specs
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 2 and 3) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments: _____

Directions to Trainee:

When I tell you to begin, you are to determine if a Reactor Mode change is allowed in accordance with Technical Specifications. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Title: Determine if Mode Change is Allowed

General Conditions:

- 1. The Plant is in MODE 3 with Reactor Pressure 600 psig.
- 2. RCIC is inoperable and is in day 10 of a 14 day LCO.

General References:

1. Tech Specs

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by **bold steps**.

Task Standards:

- 1. The operator determines a Reactor Mode change to MODE 2 is NOT allowed.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

You are the Shift Manager and need to determine if a Reactor Mode change to MODE 2 allowed in accordance with Technical Specifications with the inoperable equipment listed in the General Conditions above.

Provide the answer on Attachment 3 and present it to the examiner when complete.

Task No.: 341033W0303

Title: Determine if Mode Change is Allowed

Start Time: _____

Performance Checklist		Standards		Unsat
1.	Obtain a copy of Tech Specs and Tech Spec Bases	Current revision of Tech Specs and Tech Spec Bases		
Note: There is an Operations Expectation that both Tech Specs and Bases be referenced when making Tech Spec calls, this will not result in a failure, however it needs to be noted if the Operator fails to reference both.			ed be	
2.	References Tech Specs and Bases	The Operator references Tech Specs and Bases 3.5.3 RCIC System.		
3.	Addresses Note	The Operator recognizes that there is a NOTE applicable to RCIC concerning LCO 3.0.4.b.		
4.	Reads TS 3.0.4	The Operator reads Tech Spec 3.0.4 and Bases for 3.0.4		
5.	Determines that a MODE change is not allowed for RCIC.	The Operator determines that a Mode change to MODE 2 is not allowed in accordance with Tech Spec 3.5.3 and LCO 3.0.4.		
6.	Documents findings on Attachment 3.	The Operator documents his findings on Attachment 3 and provides them to the examiner.		

Stop Time: _____

Stop Time: _____

Title: Determine if Mode Change is Allowed

ATTACHMENT 1

ANSWER KEY

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System							
LCO 3.5.3 The RCIC System shall be OPERABLE.			stem shall be OPERABLE.	For RCIC in MODE 3 and 600 psig, Tech Spec 3.0.4.b is not applicable and a Mode change cannot be made.			
APP	LICABILITY:	MODE 1, MODES 2 and	3 with reactor steam come press	ure > 150 psig.			
			NOTE		1		
	3.0.4.D IS NOL 8						
	CONDIT	ION	REQUIRED ACTION	COMPLETION TIME			
A. RCIC System inoperable.		inoperable.	A.1 Verify by administrative mea High Pressure Coolant Injection System is OPERABLE.	ans 1 hour			
			AND				
			A.2 Restore RCIC System to OPERABLE status.	14 days			
В.	Required Action associated Co Time not met.	on and ompletion	B.1 Be in MODE 3.	12 hours			
			B.2 Reduce reactor steam dome pressure to ≤ 150 psig.	e 36 hours			

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to determine if a Reactor Mode change is allowed in accordance with Technical Specifications. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

- 1. The Plant is in MODE 3 with Reactor Pressure 600 psig.
- 2. RCIC is inoperable and is in day 10 of a 14 day LCO.

Initiating Cue(s):

You are the Shift Manager and need to determine if a Reactor Mode change to MODE 2 allowed in accordance with Technical Specifications with the inoperable equipment listed in the General Conditions list above.

Provide the answer on Attachment 3 and present it to the examiner when complete.

ATTACHMENT 3

Signature

Determine Required Tech Specs Actions for Removal of a Single CRD During Refueling

Trainee:	Examiner:	
Pass Fail Examiner Signature:		_ Date:

Additional Program Information:

- 1. Appropriate Performance Locations: Any location
- 2. Appropriate Trainee level: SRO / STE
- 3. Evaluation Method: Perform
- 4. Performance Time: 10 minutes
- 5. NRC K/A 2.2.40 (SRO 4.7)

Directions to Examiner:

- This JPM evaluates the trainee's ability to determine the Control Rods associated with a 5X5 array during a single CRD Removal during Refueling in accordance with Tech Specs 3.10.5.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachments 2 and 3) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to determine the requirements for the removal of CRD 38-19 during Refueling in accordance with Technical Specifications. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Determine Required Tech Specs Actions for Removal of a Single CRD During Refueling

General Conditions:

- 1. The Reactor is in MODE 5 (Refuel).
- 2. Each control rod cell contains fuel.

General References:

1. Technical Specifications 3.10.5

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by **bold steps**.

Task Standards:

- 1. The operator determines Technical Specification LCO 3.10.5 is applicable. The correct LCO requirements a through d and the correct 5X5 array of control rods are clearly indicated on this JPM's Attachment 3.
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Shift Manager directs you to determine the requirements for the removal of CRD 38-19 during Refueling in accordance with Technical Specifications. On Attachment 3 provided, write those requirements and indicate on the core map any effected control rods.

Determine Required Tech Specs Actions for Removal of a Single CRD During Refueling

Start Time: _____

Р	Performance Checklist	Standards	Sat	Unsat
1. Ot Ba	btain Tech Specs and ases.	The SRO or STE obtains a copy of Tech Specs and Bases.		
Note:	There is an Operations Expo when making Tech Spec ca noted if the Operator fails to	ectation that both Tech Specs and Bases be refe lls, this will not result in a failure, however it need reference both.	erence ds to b	d e
2. De	etermines correct Spec.	The SRO or STE determines that TS 3.10.5 applies in this case.		
3. Fir	nds list of requirements.	The SRO or STE reads the LCO and determines that the requirements of that LCO are listed on page 3.10-13.		
4. Fills out Attachment with information. The SRO or ST with the require		The SRO or STE fills out Attachment 3 with the requirements listed.		
5. Inf tha pro	forms the Shift Manager at the requirements are as ovided.	The SRO or STE provides the Attachment to the evaluator.		
NOTE	NOTE: The following step is completed by the JPM evaluator ONLY.			
6. Co or by re A1	ompares the requirements In the hard copy provided If the candidate to the Equirements on TTACHMENT 1.	The SRO or STE Data provided on the hard copy matches the data in ATTACHMENT 1.		

Stop Time: _____

Total Time: _____

Determine Required Tech Specs Actions for Removal of a Single CRD During Refueling

ATTACHMENT 1 ANSWER KEY

NOTE TO EXAMINER: Text in **bold** is required for successful completion of this JPM.

The requirements of LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation"; LCO 3.3.8.2, "Reactor Protection System (RPS) Electric Power Monitoring"; LCO 3.9.1, "Refueling Equipment Interlocks"; LCO 3.9.2, "Refuel Position One-Rod-Out Interlock"; LCO 3.9.4, "Control Rod Position Indication"; and LCO 3.9.5, "Control Rod OPERABILITY— Refueling," may be suspended in MODE 5 to allow the removal of a single CRD associated with a control rod withdrawn from a core cell containing one or more fuel assemblies, provided the following requirements are met:

- a. All other control rods are fully inserted;
- b. All other control rods in a five by five array centered on the withdrawn control rod are disarmed;
- c. A control rod withdrawal block is inserted, and LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 5 requirements may be changed to allow the single control rod withdrawn to be assumed to be the highest worth control rod; and

OR

d. No other CORE ALTERATIONS are in progress.



Rods list:		
30-27 30-23 30-19 30-15 30-11 34-27 34-23 34-19 34-15 34-11 38-27 28 22	42-27 42-23 42-19 42-15 42-11 46-27 46-23 46-19 46-15 46-11	
38-15 38-11		
ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to determine the requirements for the removal of CRD 38-19 during Refueling in accordance with Technical Specifications. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Reactor is in MODE 5 (Refuel).
- 2. Each control rod cell contains fuel.

Initiating Cue(s):

The Shift Manager directs you to determine the requirements for the removal of CRD 38-19 during Refueling in accordance with Technical Specifications. On Attachment 3 provided, write those requirements and indicate on the core map any effected control rods.

ATTACHMENT 3



Signature

Determine Dosage On Workers For ALARA

Trainee:	Examiner:		
Pass:	Fail: Examiner signature:	Date:	

Additional Program Information:

- 1. Appropriate Performance Locations: Classroom
- 2. Appropriate Trainee Level: RO/SRO
- 3. Evaluation Method: Perform
- 4. Performance Time: 20 minutes
- 5. NRC K/A 2.3.7 3.5/3.6

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to read a RWP map and make an ALARA recommendation.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) and copy of the Survey Map when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to trainee:

When I tell you to begin, you are to determine dosage on a job for ALARA. Before you start, I will state the initiating cues and answer any questions you may have.

General Conditions:

1. NA

Determine Dosage On Workers For ALARA

General References:

- 1. Procedure 9.ALARA.1
- 2. 9 .ENN-RP-106 RADIOLOGICAL SURVEY DOCUMENTATION

General Tools and Equipment:

1. Calculator.

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: NA
- 2. Critical checks denoted by **bold step.**
- 3. Simulator cues denoted by "#".

Task Standards:

- 1. The total job dose is correctly determined and the scenario with the lowest total dose is clearly identified.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios, determine the dose(s) that would be received for the worker(s) in each scenario, and the total job dose. Record your calculated dose for each scenario, and mark the scenario which would result in the least amount of total job dose.

Note: Working on MO-14 will require the worker(s) to be very close to the valve, approximately 1 foot from the valve.

Determine Dosage On Workers For ALARA

Start Time: _____

	Performance Checklist	Standards	Sat	Unsat
1.	Reviews survey map	Operator reviews survey map and notes dose rates in the HPCI room.		
2.	Determines Scenario #1 dose	Operator records Scenario #1 total dose is 195mrem ±10mrem.		
3.	Determines Scenario #2 dose	Operator records Scenario #2 total dose is 141mrem ±10mrem. (Worker A dose = 90 mrem ±10mrem) (Worker B dose = 51 mrem ±10mrem)		
4.	Determines Scenario #3 dose	Operator records Scenario #3 total dose is 165mrem ±10mrem. (Worker A dose = 150 mrem ±10mrem) (Worker B dose = 15 mrem ±10mrem)		
5.	Determines lowest dose	Operator marks Scenario #2 as the lowest total job dose.		
6.	Submits Attachment 1.	Operator turns in his evaluation to the Evaluator.		

Stop Time: _____ Total Time: _____

Determine Dosage On Workers For ALARA

KEY

- Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to complete the job.
- 1 Worker X 6.5 hours = 6.5 total man hours at the valve.
- 6.5 mh X 30 mr/hr = 195 mr dose for the job.
- Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to complete the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to complete the job.
- 1 Worker X 3 hours = 3 mh + 1 Worker X 1.5 hours = 1.5 mh = 4.5 total mh at valve.
- 4.5 man hours X 30 mr/hr = 135 mr dose at valve
 Plus
 1 Worker X 0.5 hours in a 12 mr/field by door = 6 mr dose at door
- = 141 mr dose for the job. <u>This is the lowest dose of the three options</u>
- Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to complete the job. Worker B will take 0.5 hours in the vicinity of the valve to complete the job.

1 Worker X 5 hours = 5 + 1Worker X 0.5 hours = 5.5 total man hours at the valve.

5.5 mh X 30 mr/hr = 165 mr dose for the job.

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to determine dosage on a job for ALARA. Before you start, I will state the initiating cues and answer any questions you may have.

Initiating Cues:

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios, determine the dose(s) that would be received for the worker(s) in each scenario, and the total job dose. Record your calculated dose for each scenario, and mark the scenario which would result in the least amount of total job dose.

Note: Working on MO-14 will require the worker(s) to be very close to the valve, approximately 1 foot from the valve.

Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to complete the job.

Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to complete the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to complete the job.

Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to complete the job. Worker B will take 0.5 hours in the vicinity of the valve to complete the job.

Nebraska Public Power District Cooper Nuclear Station Job Performance Measure for Operations





Task Title: Reportable Occurrences to the NRC (#2)								
Trainee:	Examiner:							
Pass Fail Examiner Signature:		Date:						
Additional Program Information:								
1. Appropriate Performance Locations: SIM	1							

- 2. Appropriate Trainee Level: SRO / STE
- 3. Evaluation Method: Perform
- 4. Performance Time: 15 Minutes
- 5. NRC K/A 2.4.30 (SRO 4.1)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to perform the required actions for a 4 hour nonemergency NRC notification due required TS Shutdown.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to determine NRC reportability and fill out any associated form(s). Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Any check of your work by another person will always be in agreement, regardless of the accuracy of your information or action.

Task Title: Reportable Occurrences to the NRC (#2)

General Conditions:

- 1. The plant was operating at rated power 5 minutes ago.
- 2. The Reactor Recirc Pump speeds are being reduced to start the shutdown and current power is 95% (Current Time).
- 3. The CRS has just determined that a Technical Specification Limiting Condition for Operation involving the #1 Emergency Diesel Generator has just been exceeded (the diesel generator has been inoperable for the preceding 7 days due to a failure of the governor system) and the reactor must be in Mode 3 within the next 13 hours and Mode 4 within 37 hours.
- 4. Maintenance is still working to repair the governor on the #1 DG. Estimated completion is 4 Days.
- 5. All other operators are unavailable to support you. The Shift Manager is unavailable and has delegated you to handle this situation in his place.
- 6. NRC Resident Inspector has been informed of the Technical Specification Limiting Condition for Operation required shutdown.

General References:

- 1. Conduct of Operations Procedure 2.0.5
- 2. NUREG 1022

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Critical checks denoted by **bold steps**
- 2. NUREG 1022

Task Standards:

- Operator determines a 4 hour report to the NRC is required and NRC Form 361 contains the correct technical information (50.72 non-emergency classification; 10 CFR 50.72(b)(2) (I) TS Required S/D; Description stating DG 1 TS LCO Completion Time exceeded and the requirement for the reactor to be in Mode 3 within the next 13 hours and Mode 4 within 37 hours).
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Task Title: Reportable Occurrences to the NRC (#2)

Initiating Cue(s):

Determine what notification requirements exist for the NRC (if any) and complete any forms required by this event (if any).

Task No.341014O0303

Task Title: Reportable Occurrences to the NRC (#2)

Start Time: _____

	Performance Checklist	Standards	Sat	Unsat
1.	Refers to 2.0.5.	Refers to body of procedure 2.0.5, Attachment 1 and Attachment 2.		
2.	Determine appropriate reporting category per NUREG 1022.	Determines a 4 hour report is required.		
3.	Starts filling out NRC Form 361 with info provided.	#CUE: If asked the time is currently the time displayed on the control room clock.		
4.	Ensure report is accurate.	#CUE: Another qualified person has reviewed the report and has confirmed that it has been completed and is accurate. He is now unavailable.		
5.	Submits NRC Form 361.	Provides NRC Form 361 to the Evaluator.		
6.	The Form submitted by the student matches the Key	The information contained in the Form submitted by the student matches the Technical Information (bolded) provided in the Key		

Stop Time: _____ Total Time: _____

Task Title: Reportable Occurrences to the NRC (#2)

ANSWER KEY

NRC F	NRC FORM 361 U.S. NUCLEAR REGULATORY COMMISSION												
OPERATIONS CENTER													
								 	r				
				EVEN		IIFICATION W	UKKSI	TEE	I EN	N #			
NRC OPERATION TELEPHONE NUMBER: PRIMARY – 301-816-5100 or 800-532-3469*, BACKUPS – [1 st] 301-951-0550 or 800-449-3694* [2 nd] 301-415-0550 and [3 rd]301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers													
NOT	IFICATION TIME		F.	ACILITY OR C	RGANIZ	ATION	UNIT		NAM	IE OF (CALLER	CALL I	BACK #
		C	Coop	er Nuc	lear	Station	1		Stude	ent's	s Name	402-82	5-5253
Event tim Curre	ent Time – 5	Event d	^{late} ay's [Date	Power	/mode before 1% / Mode 1				Powe	r/mode after % / Mode 1		
Even	t classification				1-Hr	Non-Emergency 10	CFR 50.72	(b)(1)			(v)(A) Safe S/D C	apability	AINA
2.000	GENERAL EMERGEN	ICY	GEI	N/AAEC		TS Deviation		AI	DEV		(v)(B) RHR Capal	bility	AINB
	SITE AREA EMERGE	NCY	SI	T/AAEC	4-Hr	Non-Emergency 10	CFR 50.72	(b)(2)			(v)(C) Control of F	Rad Release	AINC
	ALERT		AL	E/AAEC	X	(i) TS Required	I S/D	AS	SHU		(v)(D) Accident M	litigation	AIND
	UNSUAL EVENT		UN	J/AAEC		(iv)(A) ECCS Dischar	ge to RCS	A	CCS		(xii) Offsite Medic	al	AMED
X	50.72 NON-EMER	GENCY	(See N	ext Column		(iv) (B) RPS Actuation	n (Scram)	А	RPS		(xiii) Loss Comm/	Asmt/Resp	ACCM
	PHYSICAL SECURITY	Y (73.71)		DDDD		(xi) Offsite Notificatio	n	A	PRE	60-[Day Optional 10 C	CFR 50.73(a)(1)	
	MATERIAL/EXPOSUR	RE		B???	8-Hr	. Non-Emergency 10	CFR 50.72	(b)(3)			Invalid Specified S	System Actuation	AINV
	FITNESS FOR DUTY			HRT		(ii)(A) Degraded Con	dition	A	DEG	EG Other Unspecified Requirement (Identify)			
	OTHER UNSPECIFIE	D REQMI	Г. (See La	st Column)		(ii)(B) Unanalyzed Co	ondition	A	UNA				NONR
	INFORMATION ONLY			NNF		(iv)(A) Specified Syst	em Actuation	A	AESF				NONR
						DESCRI	PTION						
A Te Dies	chnical Sp el Generat	ecifi or ha	catic as ju	on Limi st beer	ting ting	Condition f ceeded (the	or Op diesel	erat gen	ion in erator	volv has	ving the # s been ino	1 Emerge perable fo	ency or the
prec	eding 7 day	s due	e to a	a failure	of the	ne governor	systen	n) ai	nd the	rea	ictor must	t be in Mo	ode 3
with	in the next	12 h	ours	and N	lode	4 within 36	hours	3 .					
NOTIFIC	ATIONS	YES	NO	WILL BE			ют						
NRC RE	SIDENT	X			UND	ERSTOOD?		YES	S (Explain ab	oove)	NO NO		
STATE(s	3)		X		DID	ALL SYSTEMS FUNCTI	on 🗆	YE	S			(Explain above)	
	GOV AGENCIES		X		MOR				ESTIMATE	ED			
MEDIA/F	RESS RELEASE		X		UNT	L CORRECTED: 4			RESTART unknown a	DATE	E: Date + 4 or	YES NO	
		·											

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine NRC reportability and fill out the appropriate form(s) associated with this reportability. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Any check of your work by another person will always be in agreement, regardless of the accuracy of your information or action.

General Conditions:

- 1. The plant was operating at rated power 5 minutes ago.
- 2. The Reactor Recirc Pump speeds are being reduced to start the shutdown and current power is 95% (Current Time).
- 3. The CRS has just determined that a Technical Specification Limiting Condition for Operation involving the #1 Emergency Diesel Generator has just been exceeded (the diesel generator has been inoperable for the preceding 7 days due to a failure of the governor system) and the reactor must be in Mode 3 within the next 13 hours and Mode 4 within 37 hours.
- 4. Maintenance is still working to repair the governor on the #1 DG. Estimated completion is 4 Days.
- 5. All other operators are unavailable to support you. The Shift Manager is unavailable and has delegated you to handle this situation in his place.
- 6. NRC Resident Inspector has been informed of the Technical Specification Limiting Condition for Operation required shutdown.

Initiating Cue(s):

Determine what notification requirements exist for the NRC (if any) and complete any forms required by this event (if any).

Nebraska Public Power District Cooper Nuclear Station Job Performance Measure for Operations

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NRC FORM 361

U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER

REACTOR PLANT EVENT NOTIFICATION WORKSHEET EN

NRC OPERATION TELEPHONE NUMBER: PRIMARY – 301-816-5100 or 800-532-3469*, BACKUPS – [1 st] 301-951-0550 or 800-449-3694* [2 nd] 301-415-0550 and [3 rd]301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers									
NOTIFICATION TIME	F	ACILITY OR O	RGANIZATION	UNIT		NAME OF (ME OF CALLER		ACK #
Event time and zone	Event date		Power/mode before			Powe	r/mode after		
Event classification			1-Hr. Non-Emergency 1	0 CFR 50.72(b)(1)		(v)(A) Safe S/D C	apability	AINA
GENERAL EMERGEN	ICY GE	N/AAEC	TS Deviation		ADEV		(v)(B) RHR Capal	bility	AINB
SITE AREA EMERGE	NCY S	SIT/AAEC	4-Hr. Non-Emergency 1	0 CFR 50.72(b)(2)		(v)(C) Control of F	Rad Release	AINC
ALERT	Al	_E/AAEC	(i) TS Required S/D		ASHU		(v)(D) Accident M	litigation	AIND
UNSUAL EVENT	U	IU/AAEC	(iv)(A) ECCS Discha	arge to RCS	ACCS		(xii) Offsite Medic	al	AMED
50.72 NON-EMERGEI	NCY (See Net	xt Columns)	(iv) (B) RPS Actuation	on (Scram)	ARPS		(xiii) Loss Comm/	Asmt/Resp	ACCM
PHYSICAL SECURITY	Y (73.71)	DDDD	(xi) Offsite Notificati	on	APRE	60-0	Day Optional 10 C	CFR 50.73(a)(1)	
MATERIAL/EXPOSUF	RE	B???	8-Hr. Non-Emergency 1	0 CFR 50.72(b)(3)		Invalid Specified S	System Actuation	AINV
FITNESS FOR DUTY		HRT	(ii)(A) Degraded Co	ndition	ADEG	Oth	er Unspecified Re	equirement (Ident	ify)
OTHER UNSPECIFIE	D REQMT. (See L	ast Column)	(ii)(B) Unanalyzed C	Condition	AUNA				NONR
INFORMATION ONLY	,	NNF	(iv)(A) Specified Sys	stem Actuation	AESF				NONR
			DESCR	IPTION					
NOTIFICATIONS	YES NO	WILL BE	ANYTHING UNUSUAL OR	NOT	VE0 /5	alata al	NO		
					YES (Exp	piain above)			
LOCAL			AS REQUIRED?		YES		NO NO	(Explain above)	
OTHER GOV AGENCIES			MODE OF OPERATION		ES	TIMATED	. AC		N BACK
MEDIA/PRESS RELEASE									

Nebraska Public Power District

Cooper Nuclear Station

Job Performance Measure for Operations

Task No. 21100500101

Initiate SLC (Alt Path RWCU fails to Isolate)

Trainee:	Examiner:		
Pass Fail Examiner Signature:		Date:	
THIS IS AN ALTERNATE PATH JPM			

Additional Program Information:

- 1. Appropriate Performance Locations: Simulator
- 2. Appropriate Trainee Level: RO/SRO
- 3. Evaluation Method: **Perform**
- 4. Performance Time: 5 Minutes
- 5. NRC K/A 211000 A4.06 (3.9/3.9) and 223002 A1.02 (3.7/3.7); A2.06 (3.0/3.2)

Note: When SLC pumps are started, the RWCU system isolation valves will not close, and must be manually closed and the pumps secured.

Directions to Examiner:

- 1. This JPM evaluates the Trainee's ability to perform the actions for initiating SLC and verifying RWCU isolation and completing required actions.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

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Initiate SLC (Alt Path RWCU fails to Isolate)

Directions to Trainee:

When I tell you to begin, you are to initiate Standby Liquid Control (SLC) using both pumps. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. An ATWS occurred.
- 2. Plant conditions require that SLC be initiated.

General References:

1. 2.2.74, STANDBY LIQUID CONTROL SYSTEM

General Tools and Equipment:

1. Key to operate the SLC pumps.

Special Conditions, References, Tools, Equipment:

- 1. Critical checks denoted by **bold step**.
- 2. Simulator Setup: See Attachment 1
- 3. Alternate path steps are denoted by •

Task Standards:

- 1. The operator starts both SLC pumps, recognizes RWCU does not isolate and closes RWCU isolation valves with their control switches.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

An ATWS has occurred and the CRS has directed you to initiate SLC notify the CRS when you have completed the required actions.

Note: Tell the trainee to begin.

Initiate SLC (Alt Path RWCU fails to Isolate)

Start Time: _____

Pe	rformance Checklist	Standards	Sat	Unsat		
NC per	NOTE to Examiner: Initiating SLC is a Mitigating Task and may be performed from performed from memory, actions shall be verified with applicable procedure (2.2.74					
1.	Obtain the SLC Keys.	Keys obtained.				
2.	Starts Both SLC pumps.	Operator places SLC PUMP A and SLC PUMP B keylock switches on Panel 9-5 are in the START position.				
		CUE: Both keylock switches remain in START position.				
3.	Check both SLC numps	Check that both SLC pump RED Pump Running lights on Panel 9-5 are illuminated.				
	start.	CUE: Both SLC pump RED running lights are ON and the GREEN lights are OFF.				
4.	Checks both squib valves fired.	Checks both white SQUIB VALVE READY DS- 3A (1106A) and SQUIB VALVE READY DS-3B (1106B) lights are OFF and Annunciator 9-5- 2/G-7, LOSS OF CONT TO SQUIB VLVS, alarms.				
		CUE: Both white SQUIB VALVE READY DS- 3A (1106A) and SQUIB VALVE READY DS-3B (1106B) lights are OFF and Annunciator 9-5-2/G-7, is alarming.				
5.	Verify SLC pump	Compares SLC pump discharge pressure (SLC- PI-65) to reactor pressure.				
	discharge pressure is greater than reactor pressure.	CUE: SLC pump discharge pressure is slightly greater than reactor pressure.				

Initiate SLC (Alt Path RWCU fails to Isolate)

Performance Ch	ecklist		Sat	Unsat		
		Checks MO-18	position of RWCU-MO-15 and RWCU- and the status of the RWCU pumps.			
6. Verify RWCU	isolates.♦	CUE:	The RED indicating lights for both RWCU-MO-15 and 18 are ON and the GREEN Lights are OFF. RWCU pump A RED light is ON and the GREEN light is OFF.			
7 Informs CBS	that DWCU	CRS inf	ormed.			
failed to isola	failed to isolate.		Acknowledge as the CRS that RWCU failed to isolate.			
8. Isolates RWC	CU.+	Operate and 18	Operator momentarily places RWCU-MO-15 and 18 control switches to CLOSE.			
		Checks 15, RW RWCU	the position indication for RWCU-MO- CU-MO-18, and checks the indication for pump 1A.			
9. Verifies RWC isolated.♦	U is	CUE:	RWCU-MO-15 and 18 GREEN position indicating lights are ON and the RED position indicating lights are OFF. The RWCU pump 1A GREEN light is ON and the RED light is OFF.			
10. Ensures RWC DEMIN SUCT	CU-MO-74, FION	Operato control s	or momentarily places RWCU-MO-74 switch to OPEN.			
BYPASS VLV open.	BYPASS VLV is throttled open.		RWCU-MO-74 RED and GREEN lights are ON.			
11. Informs the C	RS That the	CRS inf	ormed			
SLC system h initiated.	SLC system has been initiated.		Acknowledge as the CRS that SLC has been initiated.			

Stop Time: _____

Total Time: _____

Initiate SLC (Alt Path RWCU fails to Isolate)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None						
B. Initialize the Simulator in	n IC	Any						
C. Run Batch File		None						
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial	
1. Triggers	None							
2. Malfunctions	RP-12	Group 3 Isolation Failure	N/A					
	RD02A	ATWS	N/A		90			
	RD02B	ATWS	N/A		90			
3. Remotes	None							
	N/A	N/A						
4. Overrides	None							
	N/A	N/A						
5. Panel Setup	 a. Place b. Ensure c. Insert d. Scrame e. Compension f. Place 	Place Simulator in Run Ensure RWCU Pump A running. Insert Malfunctions Scram Reactor Complete Actions from EOPs up to order to initiate SLC Place the Simulator in FREEZE						
Note: If this JPM is to be p is complete.	performed m	nore than once, take a	I SNAF	SHO	F after i	the panel	setup	

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to initiate Standby Liquid Control (SLC) using both pumps. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. An ATWS occurred.
- 2. Plant conditions require that SLC be initiated.

Initiating Cue(s):

An ATWS has occurred and the CRS has directed you to initiate SLC notify the CRS when you have completed the required actions.

Nebraska Public Power District	SKL034-20->	XX(xxxxxx)								
Cooper Nuclear Station		Page 1 of 9								
Job Performance Measure for Operations			Revision 00							
Task N	o.: None									
Title: Withdraw SRMs during a Start-up (Alternate Path)										
Trainee:	_ Examiner: _									
Pass Fail Examiner Signature:		Date:								
ALTERNATE PATH										

Additional Program Information:

- 1. Appropriate Performance Locations: CR / SIM
- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: Simulate Perform
- 4. Performance Time: 10 minutes
- 5. NRC K/A 215004.K4.04 (2.8/2.9)

Note: When withdrawing SRM detectors the "B" SRM will stick requiring the Operator to perform Section 6 of procedure 4.1.1 and free it up and when it will not move will bypass it so the startup can continue.

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to select and drive the SRM detectors out of the core during a Start-up.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Title: Withdraw SRMs during a Start-up (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to withdraw the SRMs in accordance with Step 4.15 of Procedure 2.1.1 Start-up Procedure. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The plant is starting up.
- 2. IRMs are on Range 5 or 6.
- 3. Steps up to 4.15 of Procedure 2.1.1 have been completed.

General References:

- 1. Procedure 2.1.1
- 2. Instrument Procedure 4.1.1

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold steps**.
- 3. Simulator cues denoted by "#".
- 4. Alternate path steps are denoted by \blacklozenge

Title: Withdraw SRMs during a Start-up (Alternate Path)

Task Standards:

- 1. The operator withdraws all SRM detectors to the full out position except B and that SRM is bypassed.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

You are the Reactor Operator during a Start-up and the SRMs are required to be fully withdrawn in accordance with step 4.15 of Procedure 2.1.1. You are to fully withdraw all four SRM detectors.

Notify the CRS when all four SRM detectors have been fully withdrawn.

NOTE: Ensure the Simulator is in RUN and tell the trainee to begin.

Title: Withdraw SRMs during a Start-up (Alternate Path)

Start Time: _____

Pe	rformance Checklist	Standards	Sat	Unsat
		The Operator will obtain a copy of Procedure 2.1.1.		
1.	Obtains Procedure	#CUE: When the Operator demonstrates that he can get a copy of the most current revision of the procedure, provide a copy that can be marked on.		
2.	Checks all IRMs are on Range 3, or	The Operator checks that all OPERABLE IRMs are on Range 3 or above.		
	higher	CUE: All eight IRMs are on Range 5.		
3.		The Operator fully withdraws all SRM detectors in accordance with Procedure 4.1.1.		
	Pulis IP 4.1.1	# CUE: Provide a copy of Procedure 4.1.1 for the Operator to fill out.		
4.	SRM POWER button is turned on.	The Operator momentarily presses and releases SRM/IRM DETECTOR POS display (POWER ON) button and check DETECTOR POSITION light(s) turns on.		
		CUE: The Power Light is lit and the detector position lights are also lit.		
5.	Selects all four SRM detectors	The Operator selects all four SRM detectors by momentarily pressing each SELECT switch.		
		CUE: The lights are lit for all four SRMs		
6.	Checks all four Select lights are on.	The Operator checks all four SRM SELECT switch lights are on.		

Title: Withdraw SRMs during a Start-up (Alternate Path)

Per	formance Checklist	Standards	Sat	Unsat
7.	Press and hold the DRIVE OUT switch	The Operator presses and holds the DRIVE OUT switch.		
		CUE: The Drive Out switch is depressed.		
8.	Monitor each SRM's count rate	The Operator will monitor each SRM's count rate to determine whether it is moving or not. CUE: Indicate by pointing a lowering count rate on SRMs A, C and D. Indicate that B is remaining at a high value.		
9.	Determines that SRM B is not driving out ♦	The Operator determines that SRM B is not driving out with the other three SRM detectors.		
10.	Refers to Procedure 2.1.1 Step 4.15.1 ♦	The Operator refers to Procedure 2.1.1 Step 4.15.1 If SRM(s) cannot be withdrawn, then enter Procedure 4.1.1. #CUE: If the Operator does not have a copy of Procedure 4.1.1 provide him one.		
11.	Checks with the CRS about Technical Specifications ♦	The Operator enters Procedure 4.1.1 section 6. RESPONDING TO STUCK SRM DETECTOR; and checks with the CRS about the conditions and required actions of Technical Specifications LCO 3.3.1 .2 and Technical Requirements Manual TLCO 3.3.1 are met. #CUE: As the CRS, report back to the Operator that the conditions and required actions of both T.S 3.3.1.2 and TRM 3.3.1 are met.		

Title: Withdraw SRMs during a Start-up (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
	The Operator contacts the Station Operator to check the following breakers closed:		
12. Contacts the Station Operator to check the breakers are closed	Breaker 5, RACK 25-14 (IRM-SRM DRIVE CONTROL), on CPP-2. Breaker 5CL, FEED TO PANEL 25-14 S/U RANGE DETECTOR DRIVE CONTROL SYS.		
and fuses are okay. ♦	Local breaker left of Panel 25-14 (R-903-SW.		
	Check detector drive fuses in Panel 25-14.		
	#CUE: After one minute contact the Operator back and report that there are no blown fuses or tripped breakers in the panel.		
13. Attempt to move	The Operator attempts to move SRM drive in both directions to free it.		
Skivi urive. •	CUE: SRM B Count Rate remains the same.		
14. Notifies the CRS that the drive will not	The Operator notifies the CRS that the drive will not move and there are no problems with the Power supplies.		
move. ♦	#CUE: The detector drive cannot be repaired in a timely manner.		
15. places B SRM to	The Operator places the SRM BYPASS joystick to B SRM to bypass it.		
bypass♦	CUE: Indicate that the SRM Bypass Switch is in the SRM B Position.		

Task No.: None

Title: Withdraw SRMs during a Start-up (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
16. Turns off SRM/IRM DETECTOR POS POWER.	The Operator will momentarily press and release SRM/IRM DETECTOR POS display (POWER ON) button and check DETECTOR POSITION light turns off.		
	CUE: Light is off		
17. Deselects the SRMs	The Operator determines that the SRM detector withdraw operation is no longer required, and momentarily presses and releases all of lighted SELECT buttons and check they turn off. CUE: Light is off		
18. Inform the Control Room Supervisor	Inform the Control Room Supervisor that SRMs A,C, and D have been fully withdrawn, and that SRM B is stuck and is bypassed. #CUE: The CRS acknowledges the report.		

Stop Time: _____

Total Time: _____

Title: Withdraw SRMs during a Start-up (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials	A. Materials Required None									
B. Initialize t	B. Initialize the Simulator in IC IC-7									
C. Run Batc	h File									
D. Change t	he simulato	or condition	ons as follows:							
1. Trigg	1. Triggers									
<u>Number</u>	File Name	2	Description							
None										
2. Malfu	unctions									
<u>Number</u>		<u>Title</u>		<u>Trigge</u>	<u>er</u>	<u>TD</u>	<u>Severity</u>	Ra	<u>mp</u>	<u>Initial</u>
NM04B	SRM B St	uck		Active		N/A	N/A	N	N/A TRUE	
3. Remo	otes									
Number			<u>Title</u>		Tr	rigger	<u>TD</u>	Valu	<u>ne</u>	<u>Ramp</u>
None										
4. Overi	rides									
<u>Instrument</u>	Tag		<u>Trigger</u>		<u>TD</u>		Value		Ramp	
None										
5. Panel	5. Panel Setupa. Insert All four SRM detectors until the first High Alarm is received and deselect the SRMs and Turn the Drive Power off.									
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.										

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to withdraw the SRMs in accordance with Step 4.15 of Procedure 2.1.1 Start-up Procedure. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The plant is starting up.
- 2. IRMs are on Range 5 or 6.
- 3. Steps up to 4.15 of Procedure 2.1.1 have been completed.

Initiating Cue(s):

You are the Reactor Operator during a Start-up and the SRMs are required to be fully withdrawn in accordance with step 4.15 of Procedure 2.1.1. You are to fully withdraw all four SRM detectors.

Notify the CRS when all four SRM detectors have been fully withdrawn.

Nebraska Public Power District	
Cooper Nuclear Station	

Job Performance Measure for Operations

	Task No.: None
Titlo	Shift DEC Heat Exchangers

Trainee:	Examiner:			
Pass Fail Examiner Signature:		Date:		
Additional Program Information:				

- 1. Appropriate Performance Locations: CR / SIM
- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: Simulate Perform
- 4. Performance Time: 15 minutes
- 5. NRC K/A 400000.A4.01 (3.1/ 3.0)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to shift REC Heat Exchangers.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Directions to Trainee:

When I tell you to begin, you are to place the "A" REC Heat Exchanger in service and remove "B" from service in accordance with Section 10.1 of Procedure 2.2.65.1 REC Operation. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

Title: Shift REC Heat Exchangers

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. REC-TIC-451A is available.
- 2. RMP-RM-3514, SWA EFFLUENT RAD MON, is operable.
- 3. Station Operators are available for field operations.
- 4. Small REC Leak on the "B" REC Heat Exchanger within the isolation valves.

General References:

1. Procedure 2.2.65.1REC Operation

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold steps**.
- 3. Simulator cues denoted by "#".
- 4. Alternate path steps are denoted by •

Task Standards:

- 1. The operator places the "A" REC Hx in service and removes "B" REC Hx from service while maintaining REC Pressures and temperatures within limits.
- 2. 100% of critical elements successfully completed without error.

Title: Shift REC Heat Exchangers

Initiating Cue(s):

You are the Balance of Plant Operator during a transient and you are to shift REC Heat exchangers because of a leak on the "B" heat exchanger.

Notify the CRS when the "B" REC Heat exchanger has been removed form service.

NOTE: Ensure the Simulator is in RUN and tell the trainee to begin.

Title: Shift REC Heat Exchangers

Start Time: _____

Pe	rformance Checklist	Standards	Sat	Unsat
1.	Obtains Procedure	The Operator obtains a copy of Procedure 2.2.65.1. #CUE: When the Operator demonstrates that he can get a copy of the most current revision of the procedure, provide a copy that can be marked on.		
2.	Ensures REC HX A is in standby	The Operator verifies status tag on Panel M. CUE: It states it's in Standby Alignment		
3.	Determine level of REC surge tank	The Operator contacts the Station Operator to perform steps to determine local REC surge tank level. # CUE: As the Station Operator, report that REC Surge Tank Level is 20 inches from the bottom of the tank.		
4.	Slowly throttles open the SW-MO- 650	The Operator while maintaining SW pressure > 38 psig on SW-PI-2715A, SW LOOP A PRESSURE, and SW-PI-2715B, SW LOOP B PRESSURE, slowly throttles open the SW-MO- 650, REC HX A SERVICE WATER OUTLET, to match REC HX B SW flow rate. CUE: Indicate that A flow is rising and B is lowering and finally match.		
5.	Stations an Operator	The Operator stations an Operator in R-931-REC HX area until REC-MO-713 is closed. # CUE: Report that the Station Operator is standing by in the Heat Exchanger area.		

Title: Shift REC Heat Exchangers

Pe	rformance Checklist	Standards	Sat	Unsat
6.	Slowly throttles open REC-MO-712	The Operator while maintaining REC header pressure > 65 psig, slowly throttles open REC- MO-712, HX A OUTLET VLV		
7.	Contacts the station operator and instructs him to adjust the setpoint value in lower display to the temperature indicated in upper display.	The Operator contacts the station operator at the REC-TIC-451A, and asks if the controller is in AUTO and instructs him to adjust the setpoint value in lower display to the temperature indicated in upper display using up/down arrows. # CUE: The REC-TIC-451A is in AUTO and the setpoint and temperature match.		
8.	Place SW-TCV-451A switch to AUTO	The Operator Place SW-TCV-451A switch to AUTO. CUE: Indicate that the switch is pointing to the AUTO Position.		
9.	Slowly throttle open SW-MO-650	The Operator slowly throttles open SW-MO- 650 and check SW-TCV-451A is controlling SW flow through REC HX A. CUE: Indicate the SW-MO-650 red and green lights are on.		
10.	Fully open SW-MO- 650.	The Operator When SW-TCV-451A is observed to be controlling SW flow through REC HX A, fully open SW-MO-650. CUE: Red light is ON Green light is OFF.		

Title: Shift REC Heat Exchangers

Performance Checklist	Standards	Sat	Unsat
11. Close REC-MO-713	The Operator Close REC-MO-713, HX B OUTLET VLV. CUE: Green light is ON Red light is OFF.		
12. Close SW-MO-651	The Operator Close SW-MO-651, REC HX B SERVICE WATER OUTLET. CUE: Green light is ON Red light is OFF.		
13. Contacts the station operator	The Operator contacts the station operator to Ensure REC-TIC-451B is in AUTO and maintain SW-TCV-451B closed by adjusting setpoint value above temperature indicated in upper display using up/down arrows. Do <u>not</u> adjust setpoint value > 98°F # CUE: Station Operator reports the REC-TIC- 451B is in AUTO and the setpoint for the temperature is above the indicated temperature.		
14. Place SW-TCV-451B switch to OPEN	The Operator Place SW-TCV-451B switch to OPEN CUE: Red light is ON Green light is OFF		
15. Position tags to indicate REC HX A is in service and REC HX B is in standby	The Operator positions the status tags to indicate REC HX A is in service and REC HX B is in standby CUE: The in service tag is hanging by the "A" Heat Exchanger; the standby tag is hung by the "B" Heat Exchanger.		
Title: Shift REC Heat Exchangers

Performance Checklist	Standards	Sat	Unsat
16. Ensure REC-TIC- 451A and REC-TIC- 451B MODE labels are marked	The Operator Ensure REC-TIC-451A and REC- TIC-451B MODE labels are marked to indicate position of controller (AUTO or MANUAL) CUE: As Displayed		
17. Adjust REC HX A outlet temperature	The Operator Adjust REC HX A outlet temperature per Section Error! Reference source not found. Or Error! Reference source not found. if needed. CUE: Temperature is being maintained at desired setpoint.		
 Contacts the Station Operator to determine the level of REC surge tank 	The Operator contacts the Station Operator to determine the level of REC surge tank. # CUE: Report that the REC Surge Tank Level has not changed and the sight glass has been isolated.		
19. Inform the Control Room Supervisor	Informs the Control Room Supervisor that the "A" REC Heat Exchanger is in service and "B" has been removed form service. #CUE: The CRS acknowledges the report.		

Stop Time: _____

Total Time: _____

Title: Shift REC Heat Exchangers

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials	Required		None							
B. Initialize	the Simulate	or in IC	112							
C. Run Bato	h File									
D. Change t	he simulato	r conditio	ons as follows:							
1. Trigg	ers									
<u>Number</u>	File Name	<u>)</u>	Description							
None										
2. Malfu	unctions									
<u>Number</u>		<u>Title</u>		<u>Trigge</u>	<u>er</u>	<u>TD</u>	<u>Severity</u>	<u>Ra</u>	<u>mp</u>	<u>Initial</u>
3. Remo	otes									
<u>Number</u>			<u>Title</u>		<u>Tr</u>	rigger	TD	Valu	<u>ne</u>	<u>Ramp</u>
None										
4. Over	rides						· · · · ·			
<u>Instrument</u>	Instrument Tag		<u>Trigger</u>		TD		<u>Valu</u>	<u>e</u>		Ramp
None										
5. Panel Setup a. Ensure that the B REC Heat Exchanger is in service										
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.										

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to place the "A" REC Heat Exchanger in service and remove "B" from service in accordance with Section 10.1 of Procedure 2.2.65.1 REC Operation. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. REC-TIC-451A is available.
- 2. RMP-RM-3514, SWA EFFLUENT RAD MON, is operable.
- 3. Station Operators are available for field operations.
- 4. Small REC Leak on the "B" REC Heat Exchanger within the isolation valves.

Initiating Cue(s):

You are the Balance of Plant Operator during a transient and you are to shift REC Heat exchangers because of a leak on the "B" heat exchanger.

Notify the CRS when the "B" REC Heat exchanger has been removed form service.

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

Trainee:	Examiner:	
Pass Fail Examiner Sig	nature:	Date:

ALTERNATE PATH

Additional Program Information:

- 1. Appropriate Performance Locations: CR/SIM
- 2. Appropriate Trainee level: RO/SRO
- 3. Evaluation Method: Perform ____ Simulate ____
- 4. Performance Time: 8 minutes
- 5. NRC K/As 217000 A2.10 (3.1/3.1)

Directions to Examiner:

NOTE: This is an **Alternate Path** JPM. The flow controller will fail to operate in automatic and must be placed in manual.

- 1. This JPM evaluates the trainee's ability to operate RCIC in the "pressure control mode" per the hard card in procedure 2.2.67.1, Reactor Core Isolation Cooling System Operations.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Brief the trainee and tell the trainee to begin.

Notes/Comments: _____

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to operate RCIC in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Reactor is shutdown following a scram.
- 2. Reactor water level is being controlled by another licensed operator.
- 3. Reactor pressure is currently being maintained by Low-Low Set.
- 4. Suppression Pool Cooling will be placed in service by another licensed operator.

General References:

1. Procedure 2.2.67.1, Reactor Core Isolation Cooling System Operation.

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical steps denoted by **bold step**.
- 3. Simulator cues denoted by "#".
- 4. Alternate Path denoted by

Task Standards:

- 1. The trainee places RCIC in the "pressure control mode" per the hard card and when the controller fails, recognizes a controller failure and takes manual control and adjusts RCIC Flow to rated.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The Control Room Supervisor directs you to place RCIC in the pressure control mode using the hard card. Inform the CRS when RCIC is operating in the pressure control mode.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

Start Time: _____

Per	formance Checklist	Standards	Sat	Unsat
1.	Ensure RCIC auto initiation signal is clear.	The operator checks RCIC for indications of an auto initiation signal present and verifies RPV water level above -42".		
		CUE : RPV water level is +20" on the narrow range.		
2.	Open RCIC-MO-33, ECST TEST LINE SHUTOFE VI V	The operator places the control switch for RCIC-MO-33 to OPEN.		
		CUE: RCIC-MO-33 red light is on, green light is off.		
3.	Start GLAND SEAL VACUUM PUMP.	The operator places the control switch for GLAND SEAL VACUUM PUMP to START.		
		CUE : The GLAND SEAL VACUUM PUMP red light is on, green light is off.		
4.	Open RCIC-MO-132, TURB OIL COOLING	The operator places the control switch for RCIC-MO-132 to OPEN.		
	WIR SUPP VLV.	CUE: RCIC-MO-132 red light is on, green light is off.		
5.	Open RCIC-MO-30, TEST BYP TO ECST VLV.	The operator places the control switch for RCIC-MO-30 to OPEN.		
		CUE: RCIC-MO-30 red light is on, green light is off.		
Exp	pect Alarm 9-4-1 C-2 RCIC	PRESS MAINT SUPPLY LOW PRESSURE		

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

Per	formance Checklist	Standards		Unsat				
6.	Open RCIC-MO-131, STM SUPP TO TURB	The operator places the control switch for RCIC-MO-131 to OPEN.						
	V_V.	CUE: RCIC-MO-131 red light is on, green light is off.						
7.	Adjust RCIC-FIC-91, RCIC FLOWOperator attempts to control RCIC flow with the Set Tape.CONTROLLER, asOperator attempts to control RCIC flow with the Set Tape.							
	required, to maintain desired RPV pressure.♦	CUE : RCIC flow remains almost zero, irrespective of Set Tape setting.						
8.	Operator recognizes and reports failed controller♦	Operator reports to CRS that RCIC controller has failed in automatic.						
		#CUE : CRS acknowledges, directs operator to continue to place RCIC in Pressure Control.						
9.	Operator places RCIC controller in manual.♦	Operator turns RCIC controller AUTO/BAL/MAN switch to MAN.						
		CUE: RCIC controller AUTO/BAL/MAN switch is in MAN.						
10.	Operator adjusts RCIC controller in manual to control flow and	Operator turns RCIC controller manual knob clockwise to raise flow, counter- clockwise to lower flow.						
	Cooldown rate.♥	CUE: RCIC flow responds to manual control knob adjustment as appropriate and maintain turbine speed ≥ 2200 RPM.						
Not	Note to Examiner: tell the Operator that the REC-MO-711 is open and does not need to							

be checked.

Task Number: 217004O0101

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
11. Operator reports RCIC is in pressure control mode.	Operator reports to the CRS that RCIC is in pressure control mode per the hard card. #CUE : The CRS acknowledges the report.		

Stop Time: _____ Total Time: _____

Operate RCIC In Pressure Control (Hard Card) (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

- A. Materials required None
- B. Initialize the Simulator in any IC that will support RCIC pressure control mode after a scram (IC-18, 19 or 20 suggested) Batch File name none.
- C. Change the Simulator conditions from those of the IC as follows:
 - 1. Triggers
 - 2. Malfunctions

<u>Number</u>	<u>Title</u>	<u>Trigger</u>	<u>TD</u>	<u>Severity</u>	<u>Ramp</u>	<u>Initial</u>
RC01	Failure to Auto Start	А	N/A	N/A	N/A	N/A

- 3. Remotes
- 4. Overrides

<u>Instrument</u>	<u>Tag</u>	<u>Trigger</u>	TD	<u>Value</u>	<u>Ramp</u>
RCIC Set Tape Setpoint	ZAIRCICFIC91[2]	А	0	20	0

5. Panel Set-up (suggested. Any setup is allowed that supports performance of the RCIC pressure control mode)

- a. Place the Simulator in RUN.
- b. Manually scram the Reactor using 9-5 pushbuttons. Leave the Reactor Mode Switch in RUN until low Reactor pressure Group 1 isolation is received, then place RMS in SHUTDOWN.
- c. Trip both RFPs when RPV water level is rising.
- d. Trip the CRD pump after RPV water level is rising.
- e. Place MSIV control switches in CLOSE.
- f. Maintain RPV water level below +20" on the Narrow Range and above -20" on the Wide Range.
- g. Let the simulator run until the first SRV opens.
- h. Reset all high level trip signals (if present).
- i. Place the Simulator in FREEZE.
- j. Insert Malfunction and Override

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to operate RCIC in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Reactor is shutdown following a scram.
- 2. Reactor water level is being controlled by another licensed operator.
- 3. Reactor pressure is currently being maintained by Low-Low Set.
- 4. Suppression Pool Cooling will be placed in service by another licensed operator.

Initiating Cue(s):

The Control Room Supervisor directs you to place RCIC in the pressure control mode using the hard card. Inform the CRS when RCIC is operating in the pressure control mode.

Task Title: Respond To HPCI System Automatic Initiation (Alt. Path)

Trainee:	 Examiner:	
	-	

Pass	Fail	Examiner Signature:	Date:
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ALTERNATE PATH

Additional Program Information:

- 1. Appropriate Performance Locations: CR/SIM
- 2. Appropriate Trainee Levels: RO/SRO
- 3. Evaluation Method: _____Simulate _____Perform
- 4. Performance Time: 15 minutes
- 5. NRC K/A 206000 K4.07(4.3/4.3); A2.17 (3.9/4.3)

Note: This is an inadvertent initiation of HPCI and the Operator must determine that it is inadvertent by checking that Rx Water Level is normal and that Drywell Pressure in still in the normal range, then take actions in accordance with Abnormal Procedure 2.4CSCS or the Annunciator Card.

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to respond to HPCI system automatic initiation.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Task Title: Respond To HPCI System Automatic Initiation (Alt. Path)

Directions to Trainee:

When I tell you to begin, you are to respond to Panel 9-3 conditions. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Plant is operating at approximately 90%.
- 2. You are the Operator responsible for the 9-3 panel.

General References:

1. Procedure 2.4CSCS

General Tools and Equipment:

1. None.

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold step**.
- 3. Simulator cues denoted by "#".
- 4. Alternate path steps are denoted by

Task Standards:

- 1. The operator will determine a HPCI initiation is inadvertent, and take manual action to trip and secure HPCI.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

When you are ready to begin, notify the evaluator and be ready to respond to any condition that presents itself on that panel.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Task Title: Respond To HPCI System Automatic Initiation (Alt. Path)

Start Time: _____

Performance Checklist	Standards	Sat	Unsat				
 Respond to annunciator "HPCI Logic Actuated". 	The Operator will respond to the Annunciator Panel 9-3-2/A-1						
2. Verify that it is an inadvertent	The Operator will check Drywell Pressure and Reactor Water Level to determine if the initiation is inadvertent.						
initiation ♦	CUE: Indicate DW Pressure is 0.4 psig. Indicate RPV level is 35 inches (NR)						
Note: Steps 3 through 6 and are performe	Note: Steps 3 through 6 Immediate Operator Actions of Abnormal Procedure 2.4CSCS and are performed from memory. They must be performed in this order.						
3. Place Aux Oil	The Operator will start the HPCI Aux Oil Pump by placing its control switch to the START position.						
Pump to Start.	CUE: RED light is ON then OFF GREEN light is OFF then ON.						
4. Press and hold Turbine Trip Pushbutton ▲	The Operator will depress and hold the HPCI Turbine Trip Pushbutton while monitoring Turbine speed.						
T usingutton.	CUE: Turbine Trip Button is depressed.						
5. Place Aux Oil	The Operator will place the control switch for the HPCI Aux Oil Pump in the Pull to Lock position when HPCI Turbine speed is zero (0).						
	CUE: Indicate Turbine Speed is 0 rpm. GREEN light is ON RED light is OFF						

Task Title: Respond To HPCI System Automatic Initiation (Alt. Path)

Pe Cl	erformance necklist	Standards	Sat	Unsat
6.	Release the Turbine Trip Pushbutton.♦	 The Operator will then release the HPCI Turbine Trip Pushbutton and ensure that the Turbine's speed remains at zero (0). CUE: Turbine Push Button returns to the normal out position. 		
7.	Inform CRS that HPCI is inoperable and is in Pull to Lock.	The Operator will inform the CRS that HPCI system has been tripped and placed the Aux Oil Pump in Pull to Lock due to an inadvertent initiation.		

Stop Time: _____ Total Time: _____

Task Title: Respond To HPCI System Automatic Initiation (Alt. Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

- B. Initialize the Simulator in any high power IC.
- C. Change the simulator conditions as follows:
 - 1. Triggers

None

2. Malfunctions

<u>Description</u>	<u>Trigger</u>	<u>TD</u>	<u>Severity</u>	<u>Ramp</u>	<u>Initial</u>
HP-05	N/A	N/A	А	N/A	N/A

3. Remotes

None

4. Overrides

None

- 5. Panel Setup
 - a. Adjust Reactor Power to approximately 90% using Reactor Recirc.
- Note: <u>If</u> this JPM is to be performed more than once, snap the simulator into IC-0 after the panel setup is complete.

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to respond to Panel 9-3 conditions. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Plant is operating at approximately 90%.
- 2. You are the Operator responsible for the 9-3 panel.

Initiating Cue(s):

When you are ready to begin, notify the evaluator and be ready to respond to any condition that presents itself on that panel.

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

Trainee: Examiner:

Pass Fail Examiner Signature:_____ Date: _____

ALTERNATE PATH

Additional Program Information:

- 1. Appropriate Performance Locations: CR/SIM
- 2. Appropriate Trainee level: RO/SRO
- 3. Evaluation Method: _____ Simulate _____ Perform
- 4. Performance Time: 15 minutes
- 5. NRC K/A 261000A3.01(3.2/3.3), A3.02(3.2/3.1), A3.03(3.0/2.9)

Directions to Examiner:

NOTE: This is an Alternate Path JPM; The flow through the preferred train will be restricted, requiring the other train to be started to re-establish building d/p.

- 1. This JPM evaluates the trainee's ability to monitor the Standby Gas Treatment System following automatic initiation
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of selfchecking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

Directions to Trainee:

When I tell you to begin, you are to respond to the Standby Gas Treatment system following automatic initiation. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to monitor the Standby Gas Treatment system following automatic initiation. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The plant is Shutdown.
- 2. A Spurious Group 6 isolation occurred 10 minutes ago.
- 3. Procedure 2.1.22, Recovering from a Group Isolation, is in progress and requires the performance of procedure 2.2.73.

General References:

- 1. Procedure 2.1.22
- 2. Procedure 2.2.73

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold step**.
- 3. Simulator cues denoted by "#".

Task Standards:

- 1. The operator determines the Preferred SGT train cannot develop desired flow and starts the standby SGT train and establishes secondary containment pressure.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The Control Room Supervisor directs you to respond to an automatic initiation of the Standby Gas Treatment System per procedure 2.2.73. Inform the CRS when proper operation of standby gas treatment has been verified.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

Start Time: _____

Performance Checklist		Standards	Sat	Unsat
1.	Check Reactor Building D/P	The Operator checks Reactor Building D/P on HV-DPR-835 on VBD-R.		
		CUE: D/P is -030" H ₂ O		
2.	Place the preferred train of SGT in RUN	The Operator places to RUN the fan control switch for "A" SGT.		
		CUE: Switch is in RUN.		
3. Place the other train of SGT in Standby		The Operator places to OFF then back to STANDBY the fan control switch for "B" SGT.		
		CUE: Switch is positioned to standby.		
4.	Check that EF-R-1F	The Operator checks that EF-R-1F stops.		
	Stops	CUE: RED light OFF. GREEN light ON.		
5. Check SGT	Check SGT-AO-250,	The Operator verifies CLOSED SGT-AO-250, SGT B INLET.		
	CLOSED	CUE: GREEN light ON. RED Light OFF.		
6.	Check SGT-AO-252	The Operator verifies CLOSED SGT-AO-252, SGT B DISCHARGE.		
	CLOSED	CUE: GREEN light ON. RED Light OFF.		
7.	Check Reactor Building D/P♦	The Operator checks Reactor Building D/P on HV-DPR-835 on VBD-R.		
		CUE: D/P is - 0.20" Wg.		
8.	Place switch for	The Operator places to RUN control switch for EF-R-1F.		
	SGT fan selected for standby to RUN♦	CUE: Switch is positioned to RUN. CUE: After fan start and damper L/U verification, inform operator that D/P is -0.30Wg.		

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

Performance Checklist	Standards	Sat	Unsat
9. Check that EF-R1F starts ♦	The Operator checks that EF-R-1F starts.		
	CUE: RED light ON. GREEN light OFF.		
10. Check SGT-AO-250	The Operator checks OPEN SGT-AO-250, SGT B INLET.		
is OPEN ♦	CUE: RED light ON. GREEN light is OFF.		
11. Check SGT-AO-252 is OPEN♦	The Operator checks OPEN SGT-AO-252, SGT B DISCHARGE.		
	CUE: RED light ON. GREEN light is OFF.		
12. Close SGT-AO- 270.♦	The Operator places to CLOSE the control switch for SGT-AO-270, SGT A DILUTION AIR.		
	CUE: GREEN light ON. RED light OFF.		
13. Close SGT-AO- 271.♦	The Operator places to CLOSE the control switch for SGT-AO-271, SGT B DILUTION AIR.		
	CUE: GREEN light ON. RED light OFF.		
14. Monitor Carbon Filter	The Operator observes SGT-TI-537A to be <200°F.		
	CUE: Indicating 158°F.		
NOTE: The Annunciator flow be secured.	Card directs that the train with the high d/p ar	nd low s	system
15. Secures other fan	The Operator may secure the other fan in accordance with the Alarm Card for low system flow.		

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

Performance Checklist	Standards	Sat	Unsat
16. Inform the CRS that the task is complete.	The Operator informs the Control Room Supervisor that the proper operation of the SGT system has been verified.		
	#CUE: The CRS acknowledges the report.		

Stop Time: _____

Total Time: _____

Monitor The Standby Gas Treatment System Following Automatic Initiation (Alt Path).

SIMULATOR SET-UP

ATTACHMENT 1

A. Materials Required		None					
B. Initialize the Simulator	in IC	Any Power IC following a Scram					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	PC06a	SGT "A" flow Restriction			100		
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	 a. Place Simulator in Run b. Insert MF PC06a c. Place the "Preferred" tag on "A" train of SGT. d. Place the Simulator in FREEZE. e. Ensure that there is a Group 6 present. 						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to respond to the Standby Gas Treatment system following automatic initiation. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to monitor the Standby Gas Treatment system following automatic initiation. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The plant is Shutdown.
- 2. A Spurious Group 6 isolation occurred 10 minutes ago.
- 3. Procedure 2.1.22, Recovering from a Group Isolation, is in progress and requires the performance of procedure 2.2.73.

Initiating Cue(s):

The Control Room Supervisor directs you to respond to an automatic initiation of the Standby Gas Treatment System per procedure 2.2.73. Inform the CRS when proper operation of standby gas treatment has been verified.

Title: Placing SDG In Service From Control Room						
Trainee:	Examiner:					
Pass Fail Examiner Signature:		Date:				
Additional Program Information:						
1. Appropriate Performance Locations: CR	/ SIM					

- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: Simulate Perform
- 4. Performance Time: 20 minutes
- 5. NRC K/A 262001.K4.06 (3.6 / 3.9) and 264000.A4.04 (3.7/3.7)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to start and place in service the Supplemental Diesel Generator from the Control Room in accordance with Procedure 2.2.99.
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 4. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to place the Supplemental Diesel Generator in service from the Control Room. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Title: Placing SDG In Service From Control Room

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Plant is Shutdown.
- 2. Critical 4160 Bus 1F is de-energized
- 3. Emergency Diesel Generator #1 is Inoperable and cannot be placed in service.
- 4. The Emergency Transformer Supply Breaker to Bus 1FS will not close.

General References:

1. Procedure 2.2.99 Supplemental Diesel Generator System

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold steps**.
- 3. Simulator cues denoted by "#".

Task Standards:

- 1. The operator starts the Supplemental Diesel Generator and ties it to Critical Bus 1F and re-energizes the bus.
- 2. 100% of critical elements successfully completed without error.
- 3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to place the Supplemental Diesel Generator in service from the Control Room in accordance with Procedure 2.2.99 Supplemental Diesel Generator System and supply Critical Bus 1F.

Notify the CRS when the SDG is running and has energized the Bus.

NOTE: Ensure the Simulator is in RUN and tell the trainee to begin.

Title: Placing SDG In Service From Control Room

Start Time: _____

Per	formance Checklist	Standards	Sat	Unsat
1.	Obtain Procedure	The Operator obtained the current revision of Procedure 2.2.99 Supplemental Diesel Generator System. Selects Section 5.		
2.	Place the SDG switch to Start	The Operator placed the SUPPLEMENTAL DIESEL GENERATOR control switch to START.		
3.	Close the SDG Output breaker	The Operator closed SDG OUTPUT BKR SG1 and check that the switch is red flagged.		
4.	Open Breaker 480S(12.5)	On Switchgear Display Screen, the Operator transferred Bus 480S to the SDG by Opening Breaker 480S (12.5).		
5.	Close Breaker 480S(4160S)	On Switchgear Display Screen, the Operator transferred Bus 480S to the SDG by Closing Breaker 480S (4160S).		
6.	Checks annunciators in section 8	Operator checked following Annunciators clear: 8.2.1 C-1/C-6, 4160V BUS 1F BKR 1FA 8.2.2 C-1/C-7, 4160V BUS 1F BKR 1FS 8.2.3 C-1/E-7, 4160V BUS 1F BKR 1FE LOCKOUTS.		
7.	Pulls to lock the pumps on 9-3.	 The Operator at Panel 9-3, placed the following switches to PULL-TO-LOCK: RHR PUMP A. CS PUMP A. RHR PUMP B. 		

Title: Placing SDG In Service From Control Room

Per	formance Checklist	Standards	Sat	Unsat
8.	Pulls to lock the pumps on Panel A	 The Operator at Panel A, placed the following switches to PULL-TO-LOCK: SERVICE WATER PUMP A. SERVICE WATER PUMP C. 		
9.	Pulls to lock the pumps on Panel C	 The Operator at Panel C, placed the following breaker switches to PULL-TO-LOCK: BUS 1A TIE BKR 1FA. EMERGENCY XFMR BKR 1FS. DIESEL GEN 1 BKR EG1. EMERGENCY XFMR BKR 1GS. 		
10.	Places MODS Power to ON	The Operator at SUPPLEMENTAL DIESEL GENERATOR PANEL placed the MODS POWER switch to ON.		
11.	Places XFMR MODS switch to Open	The Operator placed EMERGENCY XFMR MODS switch to OPEN.		
12.	Places SDG MODS switch to Close	The Operator placed SDG MODS switch to CLOSE.		
13.	Places MOD POWER to OFF	The Operator placed MODS POWER switch to OFF.		
14.	Close Breaker 1SS	The Operator closed BUS 1S TIE BKR 1SS and check switch spring returns to NORMAL AFTER CLOSE (red flagged).		

Title: Placing SDG In Service From Control Room

Per	formance Checklist	Standards	Sat	Unsat			
NO	NOTE – Breaker 1FS will close immediately when its control switch is taken out of PTL.						
15.	Closes Emergency XFRM BKR 1FS	The Operator at Panel C; placed EMERGENCY XFMR BKR 1FS to CLOSE, then release and check switch spring returns to NORMAL AFTER CLOSE (red flagged).					
16.	Notifies the CRS	The Operator informs the CRS that the Supplemental Diesel Generator has been started and is aligned to the bus. #CUE: As the CRS, acknowledge the report.					

Stop Time: _____ Total Time: _____

Title: Placing SDG In Service From Control Room

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials	als Required None									
B. Initialize t	he Simulate	or in IC	IC 1							
C. Run Batc	h File									
D. Change t	he simulato	or conditio	ons as follows:							
1. Triggers										
<u>Number</u>	File Name	<u>)</u>	Description							
2. Malfu	unctions									
<u>Number</u>		<u>Title</u>		<u>Trigge</u>	<u>er</u>	TD	<u>Severity</u>	Ra	mp	<u>Initial</u>
DG02A	Diesel Ge	nerator #	1Trip	N/A		0	N/A		0	N/A
ED03D	4160V BU 52B/1AF)	S 1F (52	B/1FA,	N/A		0	N/A		0	N/A
3. Remo	otes									
<u>Number</u>			<u>Title</u>		Tr	rigger	TD	Valu	ue	<u>Ramp</u>
							0			N/A
4. Overi	rides									
<u>Instrument</u>	Tag		<u>Trigger</u>		TD	-	<u>Valu</u>	<u>e</u>		Ramp
None										
5. Panel	Setup								·	
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.										

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to place the Supplemental Diesel Generator in service from the Control Room. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. The Plant is Shutdown.
- 2. Critical 4160 Bus 1F is de-energized
- 3. Emergency Diesel Generator #1 is Inoperable and cannot be placed in service.
- 4. The Emergency Transformer Supply Breaker to Bus 1FS will not close.

Initiating Cue(s):

The Control Room Supervisor directs you to place the Supplemental Diesel Generator in service from the Control Room in accordance with Procedure 2.2.99 Supplemental Diesel Generator System and supply Critical Bus 1F.

Notify the CRS when the SDG is running and has energized the Bus.

Nebraska Public Power District Cooper Nuclear Station Job Performance Measure for Operations Task Numbe	er: 200043C0401	SKL034-21-XX	XX (XXXXXX) Page 1 of 8 Revision 00
Vent Primary Co	ntainment per 2.4PC		
Trainee:	Examiner:		
Pass Fail Examiner Signature:		Date:	

Additional Program Information:

- 1. Appropriate Performance Locations: CR / SIM
- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: Perform _____Simulate _____
- 4. Performance Time: 15 minutes
- 5. NRC K/As 223001 A2.07 (4.2/4.3)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to vent the primary containment per the guidance of procedure 2.4PC, "Primary Containment Control" and 2.2.60, "Primary Containment Cooling and Nitrogen Inerting System, Hard Card."
- 2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
- 3. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
- 4. Brief the trainee, place the Simulator in RUN, and tell the trainee to begin.

Notes/Comments: _____

Directions to Trainee:

When I tell you to begin, you are to maintain Drywell pressure by venting the primary containment. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to

Vent Primary Containment per 2.4PC

complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. Primary containment pressure has risen over the last shift.
- 2. The crew has begun implementing procedure 2.4PC, Primary Containment Control.

General References:

1. Procedure 2.2.60 Primary Containment Cooling and Nitrogen Inerting System

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical steps denoted by **bold steps**.
- 3. Simulator cues denoted by "#".

Vent Primary Containment per 2.4PC

Task Standards:

- 1. The trainee vents the primary containment per the guidance of procedure 2.2.60, "Primary Containment Cooling and Nitrogen Inerting System, Hard Card." And when the Drywell vent line isolation valves do not function, will proceed to the Torus and vent it, thus lowering the pressure in Primary Containment
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The Control Room Supervisor directs you to reduce Primary Containment pressure by venting the Drywell in accordance with 2.2.60 Hard Card. Inform the CRS when drywell pressure is lowering.

Vent Primary Containment per 2.4PC

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
NOTE: Drywell pressure may in that another operator wi	crease above 0.75 psig. If it does, inforn Il perform the required power reduction.	ו the ca	ndidate
1. Obtain a copy of 2.2.60 Hard Card.	The Operator obtains a copy of Procedure 2.2.60 Hard Card located attached to vertical board H.		
2. Ensure AD-R-1A is closed	The Operator ensures AD-R-1A is closed. CUE: AD-R-1A green light is lit, red light is out.		
3. Ensure AD-R-1B is open.	The Operator ensures AD-R-1B is open. CUE: AD-R-1B green light is out, red light is lit.		
4. Start either SGT fan, EF-R- 1E(1F), SGT A(B) EXHAUST FAN	The Operator starts the preferred SGT fan, EF-R-1E(1F). CUE: The preferred SGT fan, EF-R- 1E(1F) red light is lit, green light is out.		
5. Open DPCV associated with running SGT fan, SGT- DPCV-546A(B), SGT A(B) FLOW/RX BLDG DP CONT.	The Operator opens DPCV associated with running SGT fan, SGT-DPCV- 546A(B) CUE: SGT-DPCV-546A(B) green light is out, red light is lit.		
6. Open PC-AO-246, DW EXH OUTBD ISOL VLV	The Operator opens PC-AO-246. CUE: PC-AO-246 green light is out, red light is lit.		

Vent Primary Containment per 2.4PC

Performance Checklist	Standards	Sat	Unsat
7. Attempt to open PC-MO- 306, VALVE MO 231 BYPASS VLV.	The Operator attempts to open PC- MO-306 and notes that it does not change position, and that Drywell Pressure is not lowering.		
	CUE: PC-MO-306 green light is lit, red light is off.		
Note: The Operator my contact the CRS and inform him that venting from the Drywell is not possible due to a problem with the PC-MO-306			
If asked for the CRS' recommendation, tell the student to "Vent primary containment."			
 Proceeds to next step to vent through the Torus. 	The Operator proceeds to the next step for venting the Torus.		
9. Ensure PC-MO-1308 is closed.	The Operator ensures that the PC-MO- 1308 is closed.		
	CUE: PC-AO-1308 green light is lit, red light is off.		
10. Open PC-AO-245AV.	The Operator opens PC-AO-245.		
	CUE: PC-AO-245 green light is out, red light is lit.		
11.Open PC-MO-305MV.	The Operator opens PC-MO-305.		
	CUE: PC-MO-306 green light is off, red light is lit.		
Note to Examiner: The pressure drop is in the hundredths (0.01) range and that detail can only be seen on PC-PR-20 Panel J			
Task Number: 200043C0401

Vent Primary Containment per 2.4PC

Performance Checklist	Standards	Sat	Unsat
12. Verifies Primary Torus Pressure is lowering.	The Operator checks the following to ensure that Torus Pressure is lowering.		
	- PC-PR-20 Panel J		
13. Operator reports Primary Containment pressure is lowering.	Operator reports Primary Containment pressure is lowering. #CUE: The CRS acknowledges the report.		

Stop Time: _____

Total Time: _____

Task Number: 200043C0401

Vent Primary Containment per 2.4PC

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None						
B. Initialize the Simulator in IC		any IC that will support venting the primary containment (IC-18, 19 or 20 suggested)						
C. Run Batch File		None	9					
D. Change the simulator conditions as follows:	Number	Title		Tgr	TD	Sev	Ramp	Initial
1. Triggers	None							
2. Malfunctions	2. Malfunctions RR20A		ant Leakage e Primary ainment	A	0	0.1	0	0
	N/A	N/A						
3. Remotes	None							
	N/A	N/A						
4. Overrides ZDIPCS	WCS306M	V[1]	PC-MO-306 Control Switch to closed	А	0	0	0	0
N/A			N/A					
5. Panel Setup	a. Place S b. Insert n c. RR20A 0.7 to 1		ator in Run nctions as listed ecessary to obt sig.	l ain an	d mair	ntain dr	ywell pres	ssure ~
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.								

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to maintain Drywell pressure by venting the primary containment. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

- 1. Primary containment pressure has risen over the last shift.
- 2. The crew has begun implementing procedure 2.4PC, Primary Containment Control.

Initiating Cue(s):

The Control Room Supervisor directs you to reduce Primary Containment pressure by venting the Drywell in accordance with 2.2.60 Hard Card. Inform the CRS when drywell pressure is lowering.

Task Title: Reboot the OPC Computer

Trainee:		Examiner:	
Pass Fail E	xaminer Signature:		Date:
Additional Program In	formation:		
 Appropriate Performance Appropriate Train Evaluation Method Performance Time NRC K/A 2.1.19 	ormance Locations: Plan nee Level: RO / SRO od: Simulate ne: 15 minutes (3.9 / 3.8)	nt	
Directions to Examine	r:		
1. This JPM evaluat	tes the trainee's ability to	reboot the Open Process	Control (OPC)
2. Give the trainee I start the JPM.	nis copy of the Directions	s to the Trainee (Attachmer	nt 1) when ready to
3. Check off either s	atisfactory or unsatisfac	tory performance. If Unsat	state why in the
4. Brief the trainee a	and tell the trainee to be	gin.	
Notes/Comments:			

Directions to Trainee:

When I tell you to begin, you are to simulate rebooting OPC Server A in accordance with 2.6.3OPC. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Task Title: Reboot the OPC Computer

General Conditions:

- 1. PMIS UPS in service per Procedure 2.2.63.
- 2. HV-AC-C-1E is in service per Procedure 2.2.37.
- 3. Computer Room temperature is 75°F.
- 4. Computer Room humidity is 50%.

General References:

- 1. Procedure 2.6.3OPC
- 2. 2.4COMP

General Tools and Equipment:

1. Pen or Small Screwdriver

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by **bold steps**.

Task Standards:

- 1. OPC Server A has been successfully rebooted.
- 2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

The CRS directs you to reboot the "A" OPC Server Computer. Notify the CRS when the A OPC Server has been rebooted.

Task Title: Reboot the OPC Computer

Start Time: _____

Ре	rformance Checklist	Standards	Sat	Unsat
		The Operator obtains Procedure 2.6.3OPC, Section 4.		
1.	Obtain Procedure	CUE: After the Operator has demonstrated he can obtain the procedure, provide him with a copy to mark up.		
2.	Obtain key to unlock cabinet in computer room	The Operator obtains keys to Cabinet LRP- PNL-COMM1A from the Control Room Key Depository.		
3.	Unlocks east door	The Operator unlocks and opens the east door of Cabinet LRP-PNL-COMM1A.		
4.	Pulls out keyboard and screen	The Operator in Cabinet LRP-PNL- COMM1A, pulls out the rack mounted keyboard and screen and flips the screen up into a vertical position.		
		The Operator depresses the PrtScn button located in the upper right corner of the keyboard.		
5.	Depresses Print Screen button	CUE: The PrtScr button depresses in while being pressed and pops back out when released.		
		Display picture #1		
6.	Selects OPC Server A	The Operator using the Up and Down arrows, selects OPC Server A.		
		CUE: OPC Server A selected.		
		The Operator selects the Enter key.		
7.	Selects Enter	CUE: OPC Server A is displayed in the upper center of the screen.		

Task Title: Reboot the OPC Computer

Performance Checklist	Standards	Sat	Unsat
	The Operator hits "Enter" key to activate screen.		
8. Hits Enter	CUE: Windows logon displayed on screen.		
	Display picture #2		
9. Locates Computer	The Operator locates the OPC Server A computer In Cabinet LRP-PNL-COMM1A.		
10. Locates Power switch	The Operator using Attachment 1 Figure 1 locates the OPC Server A POWER switch.		
11. Depresses the power	The Operator using a pen or small screwdriver, presses and holds in the POWER button for at least 5 seconds.		
button for 5 seconds	CUE: The screen goes black.		
	The Operator releases the POWER switch.		
12. Releases the power switch	CUE: The light adjacent to the POWER switch is blinking.		
	The Operator presses and then releases the POWER switch again.		
13.Momentarily depresses and then releases the	CUE: Initially, the fans in the server are running at high speed. More noise is being generated than during normal operation.		
Power switch	CUE: The screen is now displaying messages.		
	Display picture #3		
	CUE: 5 minutes has elapsed.		

Task No: None

Task Title: Reboot the OPC Computer

Performance Checklist	Standards	Sat	Unsat
	The Operator contacts the control room operator and verifies the OPC A server is operational using the NETWORK HARDWARE display on any of the RVLC/RFPTC HMI screens in the Control Room.		
14 Verifies the OPC Server	CUE: Respond as the Control Room Operator and report that the OPC A server is operating on the HMIs		
Computer is functioning	<u>OR</u>		
	The Operator goes to the control room and verifies the OPC A server is operational using the NETWORK HARDWARE display on any of the RVLC/RFPTC HMI screens in the Control Room.		
	CUE: The OPC A Network icon in the lower left corner of the HMI numbers 1 and 2 are alternating from black to green.		
15.Turns off the screen	The Operator turns off the screen. The POWER switch is located at the bottom center of the screen. The switch is marked with the following symbol: Φ		
	CUE: The Screen goes black.		
16.Notifies the CRS	The Operator notifies the CRS that the OPC Server A has been rebooted.		
	CUE: Acknowledge the report.		

Stop Time: _____

Total Time: _____

Nebraska Public Power District Cooper Nuclear Station Job Performance Measure for Operations

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Picture #1

Welcome to Windows					
Wednesday, 23 February - 15:48				Host Name:	CNSDCS03
				OS Version: Service Pack:	Windows XP Service Pack 2
				IP Address:	192.168.220.103
	IBM Main	? X		MAC Address:	00-14-5E-2B-53-C3
	Name	Port			00-14-0E-2B-00-62
	Network Monitor	01 02			
	OPC Server B	03 🔾	ndowe ^{XD}		
	TriStation	04	ssional Microsoft		
			s been locked.		
			or an administrator can unlock this		
	Clear	Setup			
	Disconnect	Commands			
			OK Cascel		
			b		

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Picture #2

Welcome to Windows		Host Name:	CNSDCS03
Wednesday, 23 February - 15:48		OS Version: Service Pack:	Windows XP Service Pack 2
		IP Address:	192.168.220.103 192.168.220.73 00.14.55.28.53.03
		MAC Address.	00-14-5E-2B-53-C2
	Unlock Computer		
	This computer is in use and has been locked. Only CNSDC503(Administrator or an administrator can unlock this computer.		
	User name: Administrator Password: OK Cancel		
	X		

Picture #3



ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to simulate rebooting OPC Server A in accordance with 2.6.3OPC. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

- 1. PMIS UPS is in service per Procedure 2.2.63.
- 2. HV-AC-C-1E is in service per Procedure 2.2.37.
- 3. Computer Room temperature is 75°F.
- 4. Computer Room humidity is 50%.

Initiating Cue(s):

The CRS directs you to reboot the "A" OPC Server Computer. Notify the CRS when the A OPC Server has been rebooted.

Task No.: No	one
--------------	-----

Title: Transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency)					
Trainee:	_ Examiner:				
Pass Fail Examiner Signature:		Date:			
Additional Program Information:					
1. Appropriate Performance Locations: Plan	nt				

- 2. Appropriate Trainee level: RO / SRO
- 3. Evaluation Method: Simulate
- 4. Performance Time: 10 minutes
- 5. NRC K/A 262001 K4.06 (3.6/3.9)

Directions to Examiner:

- 1. This JPM evaluates the trainee's ability to transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency) in accordance with Procedure 2.2.23.
- 2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency) in accordance with Procedure 2.2.23. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Title: Transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency)

General Conditions:

1. Steps of Section 8 have been completed through step 8.1.5.

General References:

1. Procedure 2.2.23 120/240 VAC Instrument Power Distribution System

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

- 1. Simulator Setup: See Attachment 1.
- 2. Critical checks denoted by **bold steps**.
- 3. Simulator cues denoted by "#".

Task Standards:

- 1. CPP power supply is successfully transferred from CDP-1B (normal) to CDP-1A (emergency).
- 2. 100% of critical elements successfully completed without error.
- 2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency) in accordance with Procedure 2.2.23. You are to perform the in-plant steps and coordinate with the control room for them to perform the control room steps.

Notify the CRS when the in-plant steps have been completed.

Title: Transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency)

Start Time: _____

Pe	rformance Checklist	Standards	Sat	Unsat
1.	Obtain Procedure	The Operator obtains the current revision of Procedure 2.2.23 120/240 VAC Instrument Power Distribution System. Selects Section 8.		
2.	Gets Key 43	The Operator obtains Key 43 from Shift Manager's key locker. CUE: Key 43 obtained.		
3.	Closes Breaker 1 on CDP-1A	The Operator unlocks and closes Breaker 1 on CDP-1 A, Emergency Feeder To Critical Instrument And Control Panel CPP (RPS MG Set A Room). CUE: Breaker 1 on CDP-1A is pointing to the		
4.	Notifies the Control Room to Make announcement	The Operator notifies the Control Room to make following Gaitronics announcement: ATTENTION, DISREGARD AREA RADIATION ALARMS WHILE TRANSFERRING POWER. CUE: Reply and state that the Announcement has been made.		
5.	Verifies Emergency Power Available Light	The Operator at CPP TRANSFER SWITCH (Cable Spreading Room), checks the EMERGENCY POWER AVAILABLE light is on. CUE: The light is illuminated.		
6.	Presses Emergency button	The Operator presses the EMERG button and checks CPP FED FROM CDP-1A light is on and CPP FED FROM CDP-1B light is off. CUE: CPP FED FROM CDP-1A light is illuminated CPP FED FROM CDP-1B light is Off.		

Title: Transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency)

Pe	rformance Checklist	Standards	Sat	Unsat
7.	Notifies the Control Room to reset ARMs	 The Operator notifies the control room to reset the ARMs. CUE: Respond to the report and inform the Operator that the ARMs are reset and the announcement about regarding further ARMs has been made as well. 		
8.	Opens and locks Breaker 2	The Operator opens and locks Breaker 2 on CDP-1B, Normal Feeder To Critical Instrument And Control Panel CPP (RPS MG Set B Room). CUE: Breaker 2 on CDP-1B pointing to the OFF position, and lock is installed.		
9.	Notifies CRS the In- plant actions have been completed.	 The Operator reports that all of the in-plant actions have been completed through step 8.1.12 of Procedure 2.2.23. CUE: Respond to the report and tell the Operator that the Control Room Operator will complete the rest of the procedure. 		

Stop Time: _____

Total Time: _____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency) in accordance with Procedure 2.2.23. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

1. Steps of Section 8 have been completed through step 8.1.5.

Initiating Cue(s):

The Control Room Supervisor directs you to transfer CPP power supply from CDP-1B (normal) to CDP-1A (emergency) in accordance with Procedure 2.2.23. You are to perform the in-plant steps and coordinate with the control room for them to perform the control room steps.

Notify the CRS when the in-plant steps have been completed.

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

Trainee:	Examiner:
Pass Fail Examiner Signature:	Date:
Additional Program Information:	
 Appropriate Performance Locations: Pla Appropriate Trainee Level: SO / RO / SF Evaluation Method: Simulate Performance Time: 15 minutes NRC K/A: 201003 A2.06 (3.0/3.1) 	nt ₹O

Directions to Examiner:

- 1. This JPM evaluated the examinee's ability to place the standby CRD flow control valve in-service when the in-service valve fails closed.
- 2. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
- 3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
- 4. Brief the trainee and tell the trainee to begin.

Notes/Comments:

Directions to Trainee:

When I tell you to begin, you are to place the standby CRD flow control valve in-service. The in-service valve has just failed Closed. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

General Conditions:

- 1. The in-service FCV is indicating full closed in the Control Room.
- 2. Attempts to maintain cooling water flow at 50 gpm by operating CRD-FC-301 in manual have not been successful.
- 3. Drive water d/p is indicating at the bottom of the scale and cooling water flow is indicating low in the Control Room.

General References:

- 1. Abnormal Procedure 2.4CRD
- 2. 2.2.8

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by **bold steps**.

Task Standards:

- 1. The standby CRD flow control valve has successfully been placed in-service
- 2. 100% of critical elements successfully completed without error.
- 2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to perform the Reactor Building actions to place the standby CRD flow control valve in-service because the in-service CRD flow control valve failed closed. Notify the CRS when the task is complete.

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

Start Time: _____

Performance Checklist	Standard	Sat	Unsat
Note: This JPM is written to accommodate which ever FCV is in service in the plant and can be used for either.			
1. Obtains Procedure	The Operator obtains Procedure 2.2.8 Section 18.CUE: When the Operator has demonstrated that he can obtain the current revision of the procedure, provide him with a copy of 2.2.8 Section 18 to mark up.		
2. Contacts Control Room Operator	The Operator contacts the Reactor Operator and ensures that CRD-FC-301 is in BAL with set-tape adjusted, as required, for obtaining 50 gpm cooling water flow. CUE : RO reports controller in Auto at 50 gpm.		
3. Establishes Communication	The Operator establishes communications between Control Room and FCVs (R-903-SE). CUE : RO Acknowledges communication		
4. Ensures CRD- MA-245A or B is in MAN adjusted to 0.	 The Operator ensures CRD-MA-245A or B, SYSTEM FLOW CONTROL MANUAL/AUTO STATION, is in MAN with manual output (upper pointer) adjusted to zero. CUE: Indicate that the controller is positioned to manual with upper pointer is adjusted to 0. 		

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

Performance Checklist	Standard	Sat	Unsat
	The Operator slowly opens the CRD-24, FLOW CONTROL VALVE AO-19A INLET.		
5 Slowly opens	Or		
CRD-24 or 26	The Operator slowly opens the CRD-26, FLOW CONTROL VALVE AO-19B INLET.		
	CUE: The hand wheel is full counter-clockwise. The stem is raised up from the hand wheel.		
	The Operator slowly opens the CRD-25, FLOW CONTROL VALVE AO-19A OUTLET		
6 Slowly opens	Or		
CRD-25	The Operator slowly opens the CRD-27, FLOW CONTROL VALVE AO-19B OUTLET		
	CUE: The hand wheel is full counter-clockwise. The stem is raised up from the hand wheel.		
NOTE – If in service F	CV has failed, adjusting its manual output may have r	10 effec	:t.
	The Operator slowly lowers the manual output of CRD-MA-245B, SYSTEM FLOW CONTROL		
	MANUAL/AUTO STATION, and raises manual output of CRD-MA-245A to establish 50 gpm cooling water flow.		
7. Slowly lowers the manual output of	Or		
CRD-MA-245B or 245A	The Operator slowly lowers the manual output of CRD-MA-245A, SYSTEM FLOW CONTROL MANUAL/AUTO STATION, and raises manual output of CRD-MA-245B to establish 50 gpm cooling water flow.		
	CUE: The upper pointer is at the far left of the scale on CRD-MA-245B or 245A.		

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

Performance Checklist	Standard	Sat	Unsat
	The Operator continues to raise the output on CRD-MA-245A until upper pointer is matched to lower pointer (manual and auto signals are matched).		
	Or		
 Continues to raise the output on CRD-MA-245A or 245B 	The Operator continues to raise the output on CRD-MA-245B until upper pointer is matched to lower pointer (manual and auto signals are matched).		
	CUE : Upper pointer is matched to lower pointer for CRD-MA-245A or 245B		
	CUE : As the Control Room Operator tell the Operator that the flows are matched at 50 gpm.		
	The Operator places CRD-MA-245A to AUTO.		
9. Places	Or		
245B to AUTO	The Operator places CRD-MA-245B to AUTO.		
	CUE : Switch is pointing to AUTO.		
NOTE – If in service FCV has failed, adjusting its manual output may have no effect.			
10. Slowly lowers the	The Operator slowly lowers the manual output of CRD-MA-245B or 245A to zero and checks		
manual output of CRD-MA-245B or 245A	CRD-AOV-19A or 19B opens to maintain cooling water flow 45 to 50 gpm.		
	CUE: With a pointer indicate that flow is 50 gpm.		

Place Standby CRD Flow Control Valve A In Service When In Service Valve Fails Closed

	The Operator closes CRD-27, FLOW CONTROL CRD-AOV-AO19B OUTLET.	
11. Closes CRD-27 or 25.	Or	
	The Operator closes CRD-25, FLOW CONTROL CRD-AOV-AO19A OUTLET.	
	CUE : Hand wheel is fully clockwise. The stem is flush with the hand wheel.	
	The Operator closes CRD-26, FLOW CONTROL CRD-AOV-AO19B INLET.	
12 Closes CPD 26 or	Or	
24.	The Operator closes CRD-24, FLOW CONTROL CRD-AOV-AO19A INLET.	
	CUE : Hand wheel is fully clockwise. The stem is flush with the hand wheel.	
13. Informs the CRS	The Operator informs the CRS that the standby CRD flow control valve A or B is in-service.	
	CUE: The CRS acknowledges the report.	

Stop Time _____

Total Time: _____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to place the standby CRD flow control valve in-service. The in-service valve has just failed Closed. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

- 1. The in-service FCV is indicating full closed in the Control Room.
- 2. Attempts to maintain cooling water flow at 50 gpm by operating CRD-FC-301 in manual have not been successful.
- 3. Drive water d/p is indicating at the bottom of the scale and cooling water flow is indicating low in the Control Room.

Initiating Cue(s):

The Control Room Supervisor directs you to perform the Reactor Building actions to place the standby CRD flow control valve in-service because the in-service CRD flow control valve failed closed. Notify the CRS when the task is complete.

Scenario Outline

IC-121

Facility: <u>C</u>	ooper Nucle	ear Station	_ Scenario No.: <u>NRC 1</u>	Op-Test No.: <u>1</u>
Examiners			Operators:	
Initial Con Main Turb	ditions: <u>The</u> ine Governc	plant is ope or Valves. It	rating at approximately 85% pc is a red light day because reco	wer in single valve control with the rd grid loads are expected.
Turnover: <u>Dispatcher</u> per minute	<u>After turnov</u> r has been r e. Maintena	ver, the crew notified) and nce will be c	v is to place the governor valves continue the power ascension calling to start the HPCI Aux Oil	<u>s in Sequential GV control (Load</u> to 747 MWE net ~95% at <10 MWe Pump for Pump PM later in shift.
Event No.	Malf. No.	Event Type*	D	Event escription
1	N/A	N	Place MT Gov Valves into se	quential valve control
2	N/A	R	Raise power with RR flow	
3	3	C,TS	HPCI Aux Oil system leak	
4	4	I,TS	CRD FC-301 Auto Output fail	s low, three CRDs with High Temps
5	5	C,TS	SRV Fails Open	
6	6	C,ψ	Two Rods Drift In, Manual Sc	ram Failure, Manual ARI inserts rods
7	7	M,ψ	Earthquake; Suppression Poo	ol Rupture: ED on Low SP/L
* (N)ormal, (R)e	eactivity, (I)	nstrument, (C)omponent, (M)a	or

 ψ Critical Tasks are located in Events 6 and 7.

Scenario Objective

Evaluate the crew's ability to perform normal operations and raise power during nonemergency operations.

Evaluate the crew's response to a lowering Suppression Pool Level and their ability to emergency depressurize the Reactor to suppress the steam in the torus before level gets too low and its energy is released into the Reactor Building.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 80% power
- No equipment out of service.
- It is a red light day because record grid loads are expected.

Events:

- Place MT Gov Valves into sequential valve control
- Raise power with RR flow
- HPCI Aux Oil System Leak, TS
- CRD FC-301 Auto Output fails low, three CRDs with High Temperatures, TS
- SRV Fails Open, TS
- Two Rods Drift In, Manual Scram Failure Manual ARI works
- Earthquake; Suppression Pool Rupture: ED on Low SP/L

Scenario Sequence

- Normal evolution Place MT into Sequential Gov. Valve Control
- Reactivity manipulation Raise Power with RR Flow
- Component Failure before the EOPs HPCI Aux Oil System Leak
- Instrument Failure CRD Flow Controller Auto signal fails, three CRDs with High Temperatures
- Component Failure before the EOPs SRV Partial opening
- Component Failure before the EOPs Two Rods Drift In, Manual Scram Failure Manual ARI works
- Major Event Earthquake;
- Component Failure after the EOPs Suppression Pool leak, below the water line: Emergency Depressurization on low Suppression Pool Level.

Event One: Place MT Gov Valves into sequential valve control

Malfunction Required:

No malfunction required; this is a normal manipulation for the BOP.

Objective:

Evaluate the crew's ability to select the Digital Electro Hydraulic Controller and perform the required manipulations on the touch screen to shift the main turbine valve governor control to a Sequential alignment.

Success Path:

The Operator, in accordance with Procedure 2.2.77.1, performs the steps necessary to make the Turbine Governor Valves transition smoothly from single valve control to sequential valve control which causes turbine efficiency improvement (MWatts increase).

Event Two: Raise Power with Reactor Recirc to 737 MWE Net ~ 90%

Malfunction Required:

No malfunction required, this is a normal manipulation for the BOP.

Objective:

Evaluate the RO ability to adjust Reactor Recirculation Pump flows to make power increase from ~80% to ~90%, by alternately raising flow on one RR Pump, letting the plant respond then making a similar adjustment on the other pump's controller.

Success Path:

Both Reactor Recirculation Pump's speeds are raised from ~65 to ~80; maintaining them within the required 5% allowed by Tech Specs, and it is done in accordance with Procedure 2.1.10.

Event Three: HPCI Aux Oil System Leak

Malfunction Required:

HP12 Active set at 100%, at the start of the scenario. This failure will not start until the HPCI Aux Oil Pump is started.

Objective:

Evaluate the crew's response to an oil leak in the HPCI control oil system while performing the section of the Operating Procedure for the HPCI system 2.2.33 to start

Appendix D Required Operator Actions Form ES-D-1

the Aux Oil Pump for maintenance. During this event the Operator will be required to secure the pump.

Evaluate the CRS's ability to determine that HPCI is Inoperable.

Success Path:

The HPCI system is declared Inoperable per TS 3.5.1. Condition "C" 14 day LCO. RCIC is checked to be operable within 1 hour and the Aux Oil Pump is secured to prevent operation.

Event Four: CRD FC-301 Auto Signal Failure

Malfunction Required:

Override 03A35A1 CRD-FC-301 CRD System Flow Control Setpoint set at 0%. Malfunction PMIS N200 set at 380, N213 set at 402 and N214 set at 480.

Objective:

Evaluate the crew's response to CRD-FC-301 Automatic control signal failure resulting in high charging water pressure and low cooling water flow.

Evaluate the RO's ability to diagnose the controller has failed.

Evaluate the SRO's ability to determine if the CRDs which have high temperatures should be declared slow or inoperable.

Success Path:

CRD-FC-301 placed in Manual and CRD system flows and pressures returned to normal. SRO addresses CRDs with high temperatures.

Event Five: SRV Fails Open

Malfunction Required:

AD06b set at 50% to start the relief valve leaking then it is modified to 20% to minimize the heat addition to the torus.

Objective:

Evaluate the crew's performance of Abnormal Procedure 2.4SRV for a leaking SRV which has the Operator cycle the leaking valve to reseat it.

Evaluate the CRS addressing Technical Specification 3.6.2.1 for Suppression Pool Average Temperature, if the SRV is not closed within a short period of time.

Success Path:

The Operator notices and responds to the leaking SRV in accordance with Annunciator Procedures and 2.4SRV. The SRV will be cycled open then taken back to the closed position to reseat the valve. Once the valve has been cycled the tail pipe temperature starts lowering and the heat addition into the Torus is secured. The CRS determines

Required Operator Actions

Form ES-D-1

that Technical Specification 3.6.2.1 for Suppression Pool Average Temperature may apply depending on whether Suppression Pool Temperature at 95°F.

Event Six: Two Rods Drift In, Manual Scram Failure Manual ARI works

Malfunction Required: RD162615 CRD 26-15 Slow Scram Time RD162623 CRD 26-23 Slow Scram Time RD162615 CRD 26-15 Scrammed RD162623 CRD 26-23 Scrammed Override Reactor Manual Scram Push Button position "Push Out" Override Reactor Manual Scram Push Button light "Off"

Objective:

Evaluate the crew's response in accordance with Abnormal Procedure 2.4CRD and their ability to recognize Scram Actions with more than one rod is drifting in. Also to recognize that the One Channel's Manual Scram Push Button failed to work and the need to manually initiate ARI.

Success Path:

The Operator determines the ATWS when a manual scram fails to work when more than one rod is drifting and initiates ARI manually.

Event Seven: Earthquake; Suppression Pool leak: ED on low SP/L

Malfunction Required: HV02b Major Earthquake set to 25% PC08 Suppression Pool Water Leak 25% level lowers at -0.2"/min

Objective:

Evaluate the crew's response to a major earthquake in accordance with Emergency Procedure 5.1Quake.

Evaluate the crew's ability to monitor and control the consequences of an Unisolable leak in the torus below the normal water level.

Evaluate the crew's ability to anticipate emergency depressurization and transfer as much energy to the condenser prior to emergency depressurizing the Reactor.

Success Path:

The crew emergency depressurizes the reactor when suppression pool level lowers to 9.6'.

Scenario Termination:

When the reactor is depressurized (50 psig above Torus pressure) and level is being maintained between +3" to +54" and the lead examiner has seen enough, the scenario may be stopped.

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 1 Event No.: 1
When initiate	to e:	When the Crew has assumed the watch and at the direction of the lead examiner.
Event	Descriptio	n: Place MT Gov Valves into sequential valve control
Time	Position	Applicant's Action or Behavior
	CRS	Direct BOP to transfer Main Turbine Governor valves to Sequential valve control per Procedure 2.2.77.1
	Role Play	If contacted as the Load Dispatcher, that there will be rise in power from the Cooper Station, acknowledge the report.
		Transfers Main Turbine Governor valves from Single into Sequential valve control per Procedure 2.2.77.1, Section 14:
		NOTE – Valve transfer takes ~ 3 minutes.
		14.2.1 On open GOV VALVE SINGLE SEQ TRANSFER control on the MODE 4 - TURBINE FOLLOW REACTOR MANUAL screen, perform following:
		14.2.1.1 Press SEQ VALVE button.
	BOP	14.2.1.2 Verify HOLD button backlights yellow.
		NOTE – HOLD button may be pressed at any time to pause transfer.
		14.2.1.3 Press GO button to start transfer.
		14.2.1.4 When governor valves reach their sequential positions, verify GO button is not backlit.
		14.2.2 Contact Reactor Engineering to change CPRLIM for sequential valve operation.
	RO	Performs peer checks as requested.
	BOP	Monitors MT Governor valves position and Main Generator output rise on HMI.

Appen	dix D	Required Operator Actions Form ES-D-2
Ор-Те	st No .: 1	Scenario No.: 1 Event No.: 1
When initiate	to e:	When the Crew has assumed the watch and at the direction of the lead examiner.
Event	Descriptio	n: Place MT Gov Valves into sequential valve control
Time	Position	Applicant's Action or Behavior
	RO	Monitors Reactor power and communicates any changes in Reactor power to the rest of the crew.
	BOP	Provides an Update to the Crew on the status of the evolution.
	Role Play	As Reactor Engineer, state you will change CPRLIM for sequential valve operation.
		END OF EVENT
	Notes	
Proceed to the next event at direction of the lead examiner.		

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 1 Event No.: 2
Event	Event Description: Raise reactor power to 747 MWE Net ~90% with RR flow.	
Time	Position Applicant's Action or Behavior	
	CRS	Direct reactor power raise with RR flow per Procedure 2.1.10.
	CRS	Take position of Reactivity Manager. Ensure reactivity brief has been completed with involved Control Room personnel. (Completed prior to entering the simulator).
	CRS/RO	Monitor various independent/redundant parameters and power indications for proper plant response during all power changes; utilize the list below (as a minimum) as dictated by plant conditions: Reactor Water Level. Reactor Steam Pressure and Flow. Reactor Power, APRMs, RBMs, IRMs, or SRMs, as required. Reactor Recirc Speed, Jet Pump, and Loop Flows. Total Core Flow and Core Support Plate DP. Reactor Feed Pump Flow and Speed. Main Generator Output (Gross and Net).
	CRS/RO	Ensures APRM indicated power versus actual power from other indications does not result in non-conservative protective trip setpoints (indicated power + allowable gain adjustment tolerances less than actual power)

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 1 Event No.: 2	
Event	Event Description: Raise reactor power to 747 MWE Net ~90% with RR flow.		
Time	Position	Applicant's Action or Behavior	
	Role Play	If called to monitor and adjust RRMG Lube Oil Temperatures, tell them you will monitor and adjust the temperatures as necessary. If called to monitor Condensate Filter Demineralizer flows, tell them you will monitor and adjust flows as necessary.	
	RO	Ensure RR Subsystem flows are balanced, by alternately raising flow on one RR Pump, letting the plant respond then making a similar adjustment on the other pump's controller. Both Reactor Recirculation Pump's speeds are raised from ~65 to ~80; maintaining them within the required 5% allowed by Tech Specs, and it is done at a rate not to exceed 10 MWE per minute.	
	RO	Raise power by raising RR pump flow as follows: Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits.	
	RO	Monitor core thermal limits (MFLCPR, MFLPD, and MAPRAT), per Procedure 6.LOG.601, to ensure compliance with Technical Specifications Section 3.2.	
	BOP	Monitor plant equipment for power change and peer checks RO.	
		END OF EVENT	

Appendix D	
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Ор-Те	est No.: 1	Scenario No.: 1 Event No.: 2	
Event	Event Description: Raise reactor power to 747 MWE Net ~90% with RR flow.		
Time	Position	Applicant's Action or Behavior	
	Notes		
	Proceed to the next event at direction of the lead examiner.		

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 3
Event Description: HPCI Aux Oil System Leak		
Time	Position	Applicant's Action or Behavior
	Booth Operator	This failure will start as soon as the BOP Operator starts the HPCI Aux Oil Pump.
	Role Play	As Mechanical Maintenance personnel, contact CRS and ask to start HPCI Aux Oil pump so a PM on pump vibration can be performed per Work Order 3890219, per procedure 2.2.33. Also report that Maintenance personnel are standing by in the room.
	CRS	Direct BOP operator to start HPCI Aux Oil Pump per Procedure 2.2.33.
	BOP	 Starts HPCI Aux Oil Pump per Procedure 2.2.33 Section 7. AUXILIARY OIL PUMP OPERATIONS Start AUXILIARY OIL PUMP by placing control switch in START. Check TURBINE STOP VALVE opens. NOTE – Governor valve may partially open, then close and re open if HPCI Oil System has not operated recently. Check TURBINE GOVERNOR VALVE open. Allow auxiliary oil pump to run to support operational requirements.
Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 3	
Event	Event Description: HPCI Aux Oil System Leak		
Time	Position	Applicant's Action or Behavior	
	Role Play	Call the BOP Operator, as Mechanical Maintenance, and report there is a large oil leak on the HPCI Aux Oil Pump discharge piping.	
	BOP	Place HPCI Aux Oil Pump control switch in Pull-To-Lock and inform CRS of oil leak.	
	BOP	Provides Update to the Crew that HPCI is in Pulled to Lock.	
	CRS	Review TS LCO 3.5.1- ECCS-Operating. LCO 3.5.1 Each ECCS injection spray subsystem and the Automatic Depressurization System (ADS) function of six safety relief valves shall be OPERABLE. APPLICABILITY: MODE 1, MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig. Condition C- HPCI System inoperable. Required Actions- C. 1 Verify by administrative means RCIC System is OPERABLE. Completion time- 1 Hour. C.2 Restore HPCI System to OPERABLE status. Completion time- 14 days.	
	CRS	Contacts Work Control to confirm that RCIC surveillance was successful and within periodicity and to notify them of the oil leak on the HPCI Oil System.	

Form ES-D-2 Appendix D **Required Operator Actions** Scenario No.: 1 Event No.: 3 Op-Test No.: 1 Event Description: HPCI Aux Oil System Leak Time **Applicant's Action or Behavior** Position As either Work Control or Management, respond to the report about the HPCI oil leak and the fact that HPCI is inoperable. **Role Play** Report that all surveillances are current for RCIC. CRS Updates Crew with status of HPCI. Event ends with system declared inoperable and RCIC verified operable. END OF EVENT Notes Proceed to the next event at the direction of the lead examiner.

Op-Test No.: 1		Scenario No.: 1 Event No.: 4		
Event	Event Description: CRD Flow Controller Auto output fails low.			
Time	Position	Applicant's Action or Behavior		
		When directed by lead examiner, insert Override: Insert Trigger 3		
	Booth	03A35A1 CRD-FC-301 CRD SYSTEM FLOW CONTROL		
	Operation	Mal NXXXXX for CRD Temperatures ramp in over 1 minute.		
		Respond to alarm 9-5-2/E-6. CRD CHARGING HEADER HIGH PRESSURE		
		1. OPERATOR OBSERVATION AND ACTION		
	RO	1.1 Check drive water flow control valves for proper operation.		
		1.2 Adjust CRD-MO-20 to maintain following:		
		1.2.1 Drive water DP of ~ 265 psid.		
		1.2.2 Cooling water DP of ~ 20 psid.		
		1.3 Adjust charging water pressure manually with CRD- 170, PUMP DISCHARGE MANUAL PRESSURE CONTROL VALVE, per Procedure 2.2.8.		
		1.4 If annunciator due to CRD flow degradation, enter Procedure 2.4CRD.		
	BOP/RO	Reports Alarm Typer indicates that three CRDs have high temperatures.		
		Recognize CRD system parameters not normal and report to CRS:		
	RO	High Charging Water Pressure Low Drive Water DP Low Cooling Water DP Low Cooling Water flow		
		AND		
		System Flow Control Valve AO 19A closed.		
		AND		

Op-Test No.: 1		Scenario No.: 1 Event No.: 4		
Event	Description	: CRD Flow Controller Auto output fails low.		
Time	Position	Applicant's Action or Behavior		
		CRD-FC-301 output downscale.		
	RO/BOP	Direct Reactor Building operator to check CRD Flow Control Valve AO-19 for proper operation.		
	Role Play	As reactor building operator wait 3 minutes and report back the CRD Flow Control valve appears to be operating normally.		
	CRS	Enter 2.4CRD and direct RO perform Subsequent Operator Actions.		
	RO	Enter 2.4CRD Attachment 5 and perform actions to place CRD-FC- 301 in Manual.		

Required Operator Actions



Required Operator Actions

Op-Test No.: 1		Scer	nario No.: 1 E	vent No.: 4
Event	Event Description: CRD Flow Controller Auto output fails low.			
Time	Position	Арр	olicant's Action or B	ehavior
	RO	Displays CRD Temperatures on PMIS by typing in CRD into the input field. And determines that CRD 30-19, 30-23, and 26-23's temperatures are above 350 degrees, and reports that information to the CRS.		
	CRS	Will contact the RE to evaluate the CRDs with elevated temperatures in accordance with Procedure 10.35.		
		As the Reactor Engi report the following	neer, wait 2 minutes information:	and call the CRS and
	Role Play	Current corrected Scram Times for 26-23 are:	Current corrected Scram Times for 30-19 are:	Current corrected Scram Times for 30-23 are:
		36 1.13 sec. 26 1.91 sec. 06 3.50 sec.	36 1.85 sec. 26 2.76 sec. 06 4.10 sec.	36 1.79 sec. 26 2.70 sec. 06 4.00 sec.
	CRS	Based on the RE's ev Slow. Tech Spec 3.1.4 Cont Action A Requirement hours.	valuation the CRS will trol Rod Scram Times ts of the LCO not me	call the three Rods s will be addressed. t. Be In Mode 3 in 12
	CRS	Briefs the Crew on the LCO Call and the requirement to be in Hot Shutdown in 12 hours.		
		END OF EVENT		

Appendix D	Ap	pen	dix	D
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Op-Test No.: 1		Scenario No.: 1 Event No.: 4	
Event	Event Description: CRD Flow Controller Auto output fails low.		
Time	Position	Applicant's Action or Behavior	
	Notes		
	Proceed to	the next event at direction of the lead examiner.	

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 5	
Event	Event Description: SRV Fails Open		
Time	Position	Applicant's Action or Behavior	
	Booth Operation	When directed by lead examiner, insert following Malfunction: AD06b SRV Fails Open set at 50%. Insert Trigger 5	
	BOP	Reports following alarms to CRS: 9-3-1/A-2 RELIEF VALVE OPEN 9-3-1/C-1 SAFETY/RELIEF VALVE LEAKING	
	Booth Operation	After SRV open alarms come in Modify Malfunction AD06b severity to 30%.	
	BOP	Reports event is an entry condition for Procedure 2.4SRV.	
	CRS	Enters 2.4SRV and assigns subsequent actions to BOP.	
	BOP	 Enters 2.4SRV 4. SUBSEQUENT OPERATOR ACTIONS 4.1 Place stuck open relief valve (SORV) control switch to OPEN. 	
	Booth Operation	When SRV B control switch taken to OPEN, Delete Malfunction AD06b .	
	Note: Oper the Aux Re	ator may stage Building Operator to pull fuses in panel 9-45 in lay Room.	

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 5			
Event	Event Description: SRV Fails Open				
Time	Position	Applicant's Action or Behavior			
		4.2 Rapidly reduce reactor power to $\leq 90\%$.			
		4.3 If at any time, average suppression pool temperature cannot be maintained below 110°F, SCRAM and concurrently enter Procedure 2.1.5.			
		4.4 Monitor reactor power while attempting to close relief valve.			
		4.5 If ADS or LLS logic testing in progress, perform following:			
		4.5.1 Remove all SURVEILLANCE TEST switches.			
	BOP	4.5.2 Place SORV control switch to AUTO. This will close the SRV.			
		4.5.3 If SRV remains open, place SORV control switch to OPEN.			
		4.6 If an ADS valve affected, perform following:			
		4.6.1 Place ADS INHIBIT A and B to INHIB.			
		4.6.2 Place SORV control switch to AUTO.			
		Note to Examiner: Step 4.7 is N/A (not a LLS valve).			
		4.8 Concurrently place RHR Subsystem closest to SORV in Suppression Pool Cooling per Procedure 2.2.69.3.			
	CRS	May direct RHR be placed into Suppression Pool Cooling if torus water temperature rising.			
	RO	Performs rapid power reduction if reactor power >90% in accordance with Procedure 2.1.10.			

Op-Test No.: 1		Scenario No.: 1 Event No.: 5		
Event	Event Description: SRV Fails Open			
Time	Position	Applicant's Action or Behavior		
	CRS	Review TS LCO 3.6.2.1-Suppression Pool Average Temperature. APPLICABILITY: MODES 1, 2, and 3 If average temperature reaches 95°F: Enter Condition A Suppression pool average temperature > 95°F but $\leq 110°F$ <u>AND</u> THERMAL POWER is >1% RTP <u>AND</u> Not performing testing that adds heat to the suppression pool Required Actions A.1 Verify suppression pool average temperature $\leq 110°F$ Completion Time of Once per hour <u>AND</u> A.2 Restore suppression pool average temperature to $\leq 95°F$ Completion Time of 24 hours.		
		 The RO will pull the Suppression Pool Cooling Hard Card and perform the following steps. NA this section if Suppression Pool Cooling is not placed in service. 1.1 Place RHR SW System in service: 1.1.1 Start SWBP(s). 1.1.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm . 1.2 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 1.3 If required, place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL. 		

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 5		
Event	Event Description: SRV Fails Open			
Time	Position	Applicant's Action or Behavior		
		1.4 Open RHR-MO-39A(B).		
		1.5 If reactor pressure ≤ 300 psig and injection not desired, close RHR-MO-27A(B), OUTBD INJECTION VLV.		
		NOTE — If directed by EOP 3A, maximize cooling.		
		1.6 Ensure RHR PUMP running.		
		NOTE — RHR pump operation at minimum flow should be limited to < 15 minutes or pump damage may result.		
		1.7 Throttle RHR-MO-34A(B), as required to obtain desired cooling flow .		
		1.8 Throttle RHR-MO-66A(B), as required to obtain desired cooling rate .		
		1.9 If PCIS Group 6 lights lit on Panel 9-5, ensure one of following open :		
		1.9.1 REC-MO-711 ; or		
		1.9.2 REC-MO-714.		
		1.10 If additional cooling required, initiate cooling in non-running RHR Loop and start additional pumps.		

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 5		
Event	Description	: SRV Fails Open		
Time	Position	Applicant's Action or Behavior		
		If Suppression Pool Cooling is placed in service, the CRS will declare that loop of RHR Inoperable for LPCI in accordance with Tech Spec 3.5.1, and with HPCI inoperable will enter an LCO for Condition D HPCI System inoperable And Condition A entered. This is a 72 hour LCO.		
		END OF EVENT		
	Notes			
	Proceed to	the next event at direction of the lead examiner.		

Required Operator Actions

Op-Test No.: 1		Scenario No.: 1 Event No.: 6
Event Description: Two Rods Drift In, Manual Scram Failure Manual ARI works		
Time	Position	Applicant's Action or Behavior
	Booth Operation	When directed by lead examiner, insert Trigger 6 with the following Malfunctions: RD162615 CRD 26-15 Slow Scram Time RD162623 CRD 26-23 Slow Scram Time RD162615 CRD 26-15 Scrammed RD162623 CRD 26-23 Scrammed Time delay 30 seconds Override Reactor Man Scram Push Button position "Push Out" Override Reactor Manual Scram Push Button light "Off" Override Rx Mode Switch to Run.
	RO	 Reports following alarms to CRS: 9-5-1 C-4 Rod Drift 9-5-2 G-6 Accumulator Low Pressure
	CRS	Enters 2.4CRD for Drifting Rod. And assigns the RO the Scram Actions if more than one rod is drifting, scram the reactor.
	RO	Monitors the Full Core Display looking for other drifting control rods. 30 seconds after the first rod drifts, the second one will drift and the RO is expected to catch it and attempt to scram the unit by pressing both Manual Scram Push Buttons on Panel 9-5
	RO	Reports that more than one rod is drifting and that he is manually scramming the plant.

Appendix D		Required Operator Actions Form ES-D-2
Ор-Те	st No.: 1	Scenario No.: 1 Event No.: 6
Event	Description	: Two Rods Drift In, Manual Scram Failure Manual ARI works
Time	Position	Applicant's Action or Behavior
	RO	Reports that ATWS conditions exist, and that the manual scram pushbutton failed to work on the B Channel.
	RO	 Performs the MITIGATING TASK SCRAM ACTIONS of Procedure 2.1.5 (Attachment 1); 1. MITIGATING TASK SCRAM ACTIONS Press both RX SCRAM buttons. Place REACTOR MODE switch to REFUEL. Reports ATWS Conditions exist. 1.3 Announce reactor scram and reactor status to Control Room including controlling systems for critical parameters
	CRS	Assign Procedure 2.1.5 Attachments to RO and BOP (if not assigned earlier).
	CRS	 Enters EOP 1A and EOP 6A and 7A where he directs the RO to Place the Mode Switch to Shutdown Initiate ARI.

Appen	dix D	Required Operator Actions Form ES-D-	-2			
Ор-Те	Op-Test No.: 1 Scenario No.: 1 Event No.: 6					
Event	Event Description: Two Rods Drift In, Manual Scram Failure Manual ARI works					
Time	Position	Applicant's Action or Behavior				
		Performs Procedure 2.1.5, Attachment 2 Reactor Power Control actions:				
		1. REACTOR POWER CONTROL				
		1.1 Ensure REACTOR MODE switch is in SHUTDOWN.	-			
		 1.2 Verify all SDV vent and drain valves are closed. <u>NOTE</u> – RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated. 				
		1.3 Ensure operating RR pumps have run back to 22% speed.				
		NOTE – Steps 1.4 and 1.5 may be performed concurrently.				
	RO	1.4 Verify all control rods are fully inserted.				
		1.4.1 If necessary, insert control rods as directed b	y			
		1.5 Observe nuclear instrumentation and perform following:				
		1.5.1 Insert SRM detectors.				
		1.5.2 Insert IRM detectors.				
		1.5.3 Change APRM recorders to IRMs.				
		1.5.4 Range IRMs on scale.				
		1.5.5 Check reactor power is lowering.				

Appen	dix D	Required Operator Actions Form ES-D-2			
Ор-Те	Op-Test No.: 1 Scenario No.: 1 Event No.: 6				
Event	Event Description: Two Rods Drift In, Manual Scram Failure Manual ARI works				
Time	Position	Applicant's Action or Behavior			
		Performs Procedure 2.1.5, Attachment 4 Reactor Pressure Control, actions:			
		1. REACTOR PRESSURE CONTROL			
		NOTE – Steps 1.1 through 1.5 may be performed concurrently.			
	BOP	 If necessary to stabilize or reduce reactor pressure, BPVs can be operated in manual by performing following: 			
		1.1.1 Transfer bypass valve control from AUTO to MANUAL by pressing BPV MANUAL button and check it backlights.			
		1.1.1.1 Press BPV RAISE or LOWER buttons to adjust impulse pressure or reactor pressure.			
		1.2 Maintain RPV pressure in the prescribed band by using the following systems based on plant conditions:			
		1.2.1 DEH per Procedure 2.2.77.1.			
		1.2.2 SRVs per Procedure 2.2.1.			
		1.2.3 HPCI per Procedure 2.2.33.1.			
		1.2.4 RCIC per Procedure 2.2.67.1.			

Appen	dix D	Required Operator Actions	Form ES-D-2			
Ор-Те	Op-Test No.: 1 Scenario No.: 1 Event No.: 6					
Event	Event Description: Two Rods Drift In, Manual Scram Failure Manual ARI works					
Time	Position	Applicant's Action or Behavior				
		Performs Procedure 2.1.5, Attachment 5 Balance of	Plant, actions:			
		1. BALANCE OF PLANT ACTIONS				
		1.1 Verify main turbine automatically trippe following when main generator output 8	d or perform 30 MWe:® ⁵			
		1.1.1 At Panel B, press TURB TRIP 1 TRIP 2 buttons for ~ 10 seconds	and TURB			
	wing valves					
		1.3.1 Both stop valves.				
	BOP	1.3.2 All governor valves.				
		1.3.3 All reheat stop valves.				
		1.3.4 All interceptor valves.				
1.4 Verify station service is transferred Transformer.			Startup			
		1.5 Ensure PCB-3310 open (Panel C).				
		1.6 Ensure PCB-3312 open (Panel C).				
		1.7 Ensure GEN EXCITER FIELD BKR is	open (Panel C).			

Appendix D		Required Operator Actions Form ES-D-2
Op-Test No.: 1 Event Descriptior		Scenario No.: 1 Event No.: 6 I: Two Rods Drift In, Manual Scram Failure Manual ARI works
Time	Position	Applicant's Action or Behavior
	Critical Task	The Control Rods are inserted by manually initiating Alternate Rod Insertion (ARI) when the RPS system fails to prevent exceeding HCTL limits.
		END OF EVENT
	Notes	

Appendix D		Required Operator Actions	Form ES-D-2		
Ор-Те	est No.: 1	Scenario No.: 1 Event N	o. : 7		
Event	Description: Earl	hquake, Suppression Pool Leak, ED on low S	SP/L		
Time	Position	vior			
		When directed by lead examiner, insert Ma	alfunctions:		
	Booth	IMF HV02b Major Earthquake set to 25%).		
	Operation	IMF PC08 Suppression Pool Water Leak 25% level lowers at -0.2"/min.			
		Respond to alarms:			
	BOP/RO	B-3/A-1, EMERGENCY SEISMIC HIGH L B-3/B-1, SEISMIC EVENT	EVEL		
	CRS	Enters Procedure 5.1QUAKE and assigns Operator Actions to BOP.	Subsequent		
		Performs 5.1QUAKE Subsequent Operato	r Actions:		
		1.1 Validate seismic alarm(s) by any or	all of following:		
		1.1.1 Physical sensation of earth m	novement.		
		1.1.2 Seismic instrumentation jarrin personnel or equipment (met of Intake).	າg/vibration by al enclosure north		
	BOP	1.1.3 Contact Ft. Calhoun Station ((402) 533-6623.	Control Room -		
		1.1.4 Contact National Earthquake Center at (303) 273-8500.	Information		
		1.2 If seismic event false and seismic m go to Step 4.18.	ionitor actuated,		
		1.3 If only B-3/B-1, SEISMIC EVENT, is be shown false, continue normal op	valid or cannot eration.		

Op-Test No.: 1			Sce	nario No	.: 1	Event No.: 7
Event Description: Earthquake			Suppr	ession Po	ol Leak, El	D on low SP/L
Time	Position			Applica	nt's Actio	n or Behavior
		1.4	lf both false,	i following enter Pro	alarms are cedure 2.1	e valid or cannot be shown .4.
			1.4.1	B-3/B-1,	SEISMIC E	EVENT.
			1.4.2 LEVE	B-3/A-1, L.	EMERGE	NCY SEISMIC HIGH
		1.5	lf eart	hquake in	npacted pla	ant site, perform following:
			1.5.1 Visually inspect Independent Spent Fuel Storage Installation (ISFSI) for signs of Horizontal Storage Module (HSM) damage.			
			1.5.2 If any HSMs are damaged, direct Radiation Protection to perform a dose survey of ISFSI.			
			1.5.3	Concurre	ently enter	Procedure 5.1HSM.
		1.6	Conta surve	ct RP De ys and as	partment to sist with fie	o conduct radiological Id walkdowns as necessary.
		1.8	Walk down main Control Room panels to check for abnormal conditions/indications.			
			1.8.1	Specific	items to ch	eck include following:
				1.8.1.1	Reactor p	ower.
				1.8.1.2	RPV press	sure.
				1.8.1.3	RPV level flooded up	, including cavity level if).

Required Operator Actions

Op-Test No.: 1 Scenario No.: 1 Event No.: 7					
Event	ol Leak, ED on low SP/L				
Time	Position	Applica	Applicant's Action or Behavior		
		1.8.1.4	Core flow.		
		1.8.1.5	Primary and secondary containment isolation status.		
		1.8.1.6	Primary and secondary containment radiation levels.		
		1.8.1.7 Primary and secondary containment temperatures.			
		1.8.1.8	Vibration monitoring equipment.		
		1.8.1.9	Tank levels (ECST A, ECST B, CST A, CST B, etc.).		
		1.8.1.10	Balance of plant and support systems for actuations.		

Appendix D		Required Operator Actions	Form ES-D-2		
Ор-Те	est No.: 1	Scenario No.: 1 Event No.:	7		
Event	: Description: Earth	nquake, Suppression Pool Leak, ED on low SP/	L		
Time	Position	Applicant's Action or Behavio	Applicant's Action or Behavior		
	Role Play	If sent to investigate damage in the Reacto call back and report that the Suppression I leak at a weld below the water line and wat out.	er Building, Pool has a Per is pouring		
	BOP	1.10 Notify Chemistry to sample and analyz	e RPV coolant.		
	BOP	Report lowering SP Level.			
	CRS	 When SP (torus) water level below -2 in, ente Direct BOP maintain PC level above 11 ft with systems, EOP 5.8.14: RCIC HPCI RHR-A RHR-B CS-A CS-B. 	r EOP 3A. 1 following		
	BOP	Contacts the Reactor Building Station Operate section 10 of Emergency Procedure 5.8.14.	or to perform		
	Role Play	Respond as the RB Station Operator that I section 10 of Emergency Procedure 5.8.14	will perform		

Appendix D		Required Operator Actions	Form ES-D-2
Ор-Те	est No.: 1	Scenario No.: 1 Event No.:	7
Event	Description: Earth	iquake, Suppression Pool Leak, ED on low SP/	L
Time	Position Applicant's Action or Behavior		
	BOP	Enter Procedure 5.8.14: If using HPCI and/or RCIC, the system Minim will be opened: • HPCI-MO-25 • RCIC-MO-27 If using CS and/or RHR the test return path is • RHR-MO-39 and RHR-MO-34 • CS-MO-26	um flow valve used:
	CRS	When PC water level cannot be maintained a direct BOP to:1. Stop and prevent HPCI.2. Maintain PC water level above 9.6 ft.	bove 11 ft,
	BOP	Report when PC water level is approaching 1	1 ft.
	CRS	Direct stop and prevent with HPCI.	
	BOP	Place HPCI Aux Oil Pump control switch in Puther System will be in Pulled to Lock. No acti	ull-To-Lock. on is required
	CRS	Direct BOP maintain PC water level above 9.0	6 ft.

Appendix D		Required Operator Actions	Form ES-D-2			
Ор-Те	Op-Test No.: 1 Scenario No.: 1 Event No.: 7					
Event	Description: Earth	quake, Suppression Pool Leak, ED on low SP/	L			
Time	Position	Applicant's Action or Behavio)r			
	BOP	Report when PC water level approaches 9.6 f	t.			
Note t Overri	Note to examiner: CRS may Anticipate Emergency Depressurization per EOP 1A Override Step RC/P-1.					
	CRS	Direct BOP to anticipate or perform Emergent Depressurization. If anticipating ED, direct BOP to fully open MT valves. If ED with SRVs, then verify PC water level is direct BOP open 6 SRVs.	y bypass above 6 ft. and			
	BOP	If directed to anticipate ED, then rapidly depresentations using Main Turbine Bypass valves per Proced Attachment 3 (Hard Card): 3. MANUAL BPV CONTROL 3.1 On BYPASS VALVE POSITION OPEN to access controls. 3.2 Press MANUAL button and check yellow. 3.3 On BYPASS VALVE POSITION OPEN to access controls. 3.4 Press MANUAL button and check yellow. 3.5 On BYPASS VALVE POSITION OPEN to access controls.	ssurize RPV lure 2.2.77.1, control, press k it backlights control, use l and YPASS VALVE			
	BOP	If directed to ED, open 6 SRVs by taking their switches to OPEN.	control			

Appen	dix D	Required Operator Actions	Form ES-D-2		
Ор-Те	Op-Test No.: 1 Scenario No.: 1 Event No.: 7				
Event	Description: Earth	quake, Suppression Pool Leak, ED on low S	SP/L		
Time	Position	Applicant's Action or Beha	avior		
	BOP	Report RPV pressure as it lowers.			
	RO	Control RPV water level during ED with av systems.	ailable injection		
	Critical Task	When PC water level cannot be maintain either Anticipate Emergency Depressur with the bypass valves or Emergency D RPV with the SRVs.	ned above 9.6 ft., ization the RPV epressurize the		
		END OF EVENT			
	Notes				
	When ED is complete (RPV pressure < 50 psig above Torus pressure), RPV level is controlled in desired band and lead examiner has observed enough of the scenario, then terminate the scenario.				
	END OF THE SCENARIO.				

Simulator Setup

Initialize the simulator in IC121 (EOC)

Triggers and Malfunctions

- E1 None
- E2 None
- E3 HP12 Active set at 100%
- E4 PMIS N200 set at 380, N213 set at 402 and N214 set at 480, ramped in over 1 minute.
- E5 AD06b set at 50% to start the relief valve leaking then it is modified to 20% to minimize the heat addition to the torus.
- E6 RD162615 CRD 26-15 Slow Scram Time
 - RD162623 CRD 26-23 Slow Scram Time
 - RD162615 CRD 26-15 Scrammed
 - RD162623 CRD 26-23 Scrammed
- E7 HV02b Major Earthquake set to 25%
 - PC08 Suppression Pool Water Leak 25% level lowers at -0.2"/min

Overrides

- 03A35A1 CRD-FC-301 CRD System Flow Control Setpoint set at 0%.
- Reactor Manual Scram Push Button position "Push Out"
- Reactor Manual Scram Push Button light "Off"

Panel Set-up

- Ensure PMIS IDTs are blank.
- Place the Shutdown EOC Rod Sequence Book on Panel 9-5
- Reduce Reactor Power with Rx Recirc to 85%
- Balance Master Feedwater Controller
- Balance Main Generator voltage regulator
- Ensure Recirc Controllers are selected to "S"

Procedures Needed

Work Order for HPCI Aux Oil Pump vibration

Tags Hung

None

Turnover Sheet:

Plant Status: The plant is operating at approximately 85%.

Risk: Green

Activities in Progress: Recovery from being in single valve control.

LCOs in effect: None

Equipment out of service: None

Activities for the Shift: After turnover, the crew is to transfer Main Turbine Governor Valve control from single to sequential.

After the Governor Valves have been transferred, continue the power ascension to 747 MWE net in accordance with the load schedule and procedure 2.1.10.

Scenario Outline

IC -122

1					
Facility: Cooper Nuclear Station Scenario No.: NRC 2 Op-Test No.: 1					
Examiners: Operators:					
Initial Conditions: The plant is operating at approximately 100% with Surveillance 6 1DG101					
in progress:					
Turnover: After turnover, the crew is to secure DG#1 following its monthly test; LCO 3.8.1 Condition B is in effect.					
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N	DG-1 Monthly Surveillance		
2	2	I,TS	RR Pump speed lowers		
3	3	С	Combustion in the Off-Gas system		
4	4	I,TS	FW and Main Turbine high water level instruments fail		
5	5	М	Loss of Turbine High Pressure Fluid, requiring Manual Scram		
6	6	С	Loss of Emergency Transformer, Loss of Critical Bus 1F		
7	7	С,ψ	DG-1 Fails to Auto Start		
8	8	Μ,ψ	Small Break LOCA, Containment Sprays		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

 ψ Critical Tasks are located in Events 7 and 8.

Scenario Objective

Evaluate the crew's ability to perform normal surveillances and to respond to instrument and component failures during non-emergency conditions.

Evaluate the crew's response to a rising reactor power level and a lowering Turbine High Pressure Fluid Reservoir.

Evaluate the crew's response to a small break LOCA which causes Drywell temperatures and pressures to rise and before 280°F in the Drywell the crew initiates Drywell Sprays to maintain temperature below 280°F.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 100% power
- No equipment out of service.
- 6.1DG.101 is in progress.
- DG-1 load was lowered to 1000 kW 5 minutes ago.

Events:

- DG-1 Monthly Surveillance
- RR Pump speed lowers TS
- Combustion in the Off-Gas system
- FW and Main Turbine high water level instrument fails- TS
- High Pressure Fluid leak requiring Manual Scram
- Loss of Emergency Transformer, Loss of Critical Bus 1F
- DG-1 Fails to Auto Start
- Small Break LOCA, Containment Sprays

Scenario Sequence

- Normal activity DG-1 Monthly Surveillance
- Instrument Failure RR speed lowers
- Component Failure before EOPs Combustion in the Off-Gas System
- Instrument Failure FW and Main Turbine high water level instrument fails
- Major Failure Loss of Turbine High Pressure Fluid, requiring Manual Scram
- Component Failure after EOPs Loss of Emrg Transfmr, Loss of Critical Bus 1F
- Component Failure after EOPs DG-1Fails to Auto Start
- Major Failure Small break LOCA, with raising DW temperature and pressure
- Accident mitigation strategy Containment Sprays

Event One: DG-1 Monthly Surveillance

Malfunction Required:

No malfunction required; this is a normal manipulation for the BOP.

Objective:

Evaluate the crew during normal surveillance activities. Evaluate the BOP Operator unloading and securing DG1 in accordance with 6.1DG.101, 31 day load test.

Success Path:

The #1 DG is unloaded from 1000 KW and the engine is secured in accordance with the surveillance procedure.

Event Two: RR Pump speed lowers

Malfunction Required: RR17b set at 70%. Override ZDIRRMGSWS16B(1) set to ON.

Objective:

Evaluate the crew's response to a failed Jordan RR controller. Evaluate the CRS addressing Technical Specifications for RR loop mismatch.

Success Path:

RR Pump A speed is lowered until both loop flows are balanced within specification. The CRS will review Tech Specs LCO 3.4.1 and consider RR Pump B not in service until pump speeds are matched.

Event Three: Combustion in the Off-Gas System

Malfunction Required: OG02 SUSTAINED H2 BURN

Objective:

Evaluate the crew's response to combustion in the off-gas train as indicated by Annunciator B-3 / E-3 AUG OFFGAS TROUBLE and elevated temperatures on the Off-gas lines.

Evaluate the BOP Operator's ability to accurately communicate steps of the Abnormal Procedure to the Turbine Building Station Operator.

Success Path:

The steps on the Abnormal are performed and the combustion is extinguished.

Event Four: FW and Main Turbine high water level instruments fail

Malfunction Required: RR27a set at 0%. RR27c set at 0%.

Objective:

Evaluate the crew's response to the failure 2 of the 3 RFP Turbine and Main Turbine high water level trip instrumentation.

Evaluate the CRS addressing Technical Specifications.

Success Path:

With only one instrument available (NBI-LT-52B) the crew will recognize that there is a loss of the two out of three logic for the high level trip for the RFP Turbines and the Main Turbine

The CRS declares the instruments inoperable in accordance with Tech Specs LCO 3.3.2.2. Condition A. Required Action A.1 Place channel in trip within 7 days, and Condition B Required Action B.1 Restore feedwater and main turbine high water level trip capability within 2 hours.

Event Five: Loss of Turbine High Pressure Fluid, requiring a Manual Scram

Malfunction Required:

TC10 Turbine High Press Fluid leak increased from 75%.

Objective:

Evaluate the pre-staging and conservative decision making prior to the need to scram the Reactor prior to losing Turbine High Pressure Fluid Pumps and control of Turbine GVs, Stop Valves and Bypass Valves.

Success Path:

Reactor is scrammed and pressure control is transferred to HPCI and SRVs.

Event Six: Loss of Emergency Transformer, Loss of Critical Bus 1F

Malfunction Required: ED06 LOSS OF POWER (EMERGENCY 69KV TRANSFORMER) ED08A 4160 BUS 1A FAILURE

Objective:

Evaluate the crew's response to the loss of the Emergency Transformer and a subsequent loss of 1F Critical Bus, during the Scram recovery.

Evaluate the BOP's ability to enter Procedure 5.3EM-PWR and ensure the Critical Busses are powered by an emergency power source.

Evaluate the crew's ability to shift RPV level control to the High Pressure ECCS and RCIC systems due to a loss of all Condensate and Booster pumps.

Success Path:

Startup Transformer is supplying the Critical Busses until a fault causes the loss of 1F. RPV Level is being controlled within the +3 to 54 inch range with RCIC, CRD and HPCI.

Event Seven: DG-1 Fails to Auto Start

Malfunction Required:

DG06A Diesel Generator #1 Fails to Auto Start

Objective:

Evaluate the crew recognition that Diesel 1failed to auto start when required and to perform the necessary steps to start Diesel 1 and energize the Critical Bus.

Success Path:

Both Critical Busses are Energized; one from the Diesel Generator, the other from the Startup Transformer.

Event Eight: LOCA Containment Sprays

Malfunction Required:

RR20A Coolant Leakage Inside Primary Containment @ 12% with a ramp time of 10 minutes.

Objective:

Evaluate the crew response to a slow increase in Drywell Temperature and pressure and to vent Primary Containment in an attempt to control the pressure rise. Evaluate the crew's ability to spray the Drywell in accordance with the EOPs to control pressure and temperature, as the LOCA gradually worsens.

Success Path:

Torus and Drywell Sprays are initiated prior to DW temperature reaching 280°F.

Scenario Termination:

When Reactor water level is being controlled between +3 and +54 inches and Drywell Sprays are controlling Drywell Pressure between 2 and 10 psig.

Op-Test No.: 1		Scenario No.: 2 Event No.: 1				
When to initiate:		When the Crew has assumed the watch and at the direction of the lead examiner.				
Event	Event Description: Secure DG-1 after monthly surveillance.					
Time	Position	Applicant's Action or Behavior				
	CRS	Direct BOP operator to continue in SP 6.1DG.101.				
	BOP	Makes plant announcement over the Gaitronics that the Diesel Generator is being unloaded and secured.				
	Role Play	If called as the Turbine Building Operator indicate that you are ready for the diesel to be secured.				
		Continue in 6.1DG.101 to complete surveillance:				
		After DG1 has run required time, perform following:				
		When DG1 has run for ≥ 5 minutes at 1000 kW:				
		Lower DG1 load to 400 kW.				
	BOF	Lower DG1 kVARs as low as possible.				
		Open DIESEL GEN 1 BKR EG1 and ensure switch spring returns to AFTER TRIP (green flagged).				
		4.81 Record date/time DG1 unloaded on Attachment 2.				
	BOP	Contacts the TB Station Operator to place the DROOP PARALLEL switch to ISOCH.				
	Booth Operator	Insert Remote Function DG03 to place the DROOP PARALLEL switch to ISOCH.				

Op-Test No.: 1		Scenario No.: 2 Event No.: 1		
When to initiate:		When the Crew has assumed the watch and at the direction of the lead examiner.		
Event Description: Secure DG-1 after monthly surveillance.				
Time	Position	Applicant's Action or Behavior		
	Role Play	As the TB Operator call the BOP and report that the DROOP PARALLEL switch has been placed in ISOCH.		
		Adjust DG1 frequency to ~ 60 Hz.		
	BOP	Adjust DG1 voltage to 4200 VAC.		
		Ensure DG1 has been unloaded \geq 5 minutes.		
	Booth Operator	CUE the BOP Operator that 5 minutes has elapsed		
		Secure DG1 by performing one of following:		
	BOP	Place and hold DIESEL GEN 1 STOP/START switch to STOP for 1 to 2 seconds, then release; or		
	RO	Monitor Panel 9-5 and provide peer checks as requested.		
		END OF EVENT		
	Notes			
	Proceed to the next event at direction of the lead examiner.			

Op-Test No.: 1		Scenario No.: 2 Event No.: 2			
Event Description: RR Pump speed lowers					
Time	Position	Applicant's Action or Behavior			
	Booth Operation	When directed by lead examiner, insert following Malfunction and Override: Insert Trigger 2			
		RR17b RR Pump B Jordan Controller failure set at 70%.			
		Override ZDIRRMGSWS16B(1) RR Scoop Tube Lockout Set to OFF (prevents locking out RR Pump B).			
		Respond to RR Pump B lowering in speed and reports event to CRS			
		Take Immediate Operator Actions of Procedure 2.4RR.			
		3.3 If recirculation flow is not stable, perform following:			
	RO	3.3.1 If recirculation flow is rising: N/A			
		3.3.1.1 Press SCOOP TUBE LOCKOUT button. N/A			
		3.3.1.2 If flow still has not stabilized, trip affected RR pump and enter Attachment 1 (Page 3). N/A			
		3.3.2 If recirculation flow is lowering, press SCOOP TUBE LOCKOUT button.			
	RO	Updates the Crew entry into Abnormal Procedure 2.4RR.			
Note to Examiner: when the operator presses the Scoop tube lock pushbutton he would expect to see speed change stop and the scoop tube lock alarm. This will not happen if he presses the pushbutton.					
	RO	Reports the failure of the SCOOP TUBE LOCKOUT to CRS.			
	RO	Reports both RR Loop pump speeds and flows.			

Op-Test No.: 1		Scenario No.: 2 Event No.: 2		
Event Description: RR Pump speed lowers				
Time	Position	Applicant's Action or Behavior		
	RO	May send the Building Operator out to investigate and might call security to report possible saboteur.		
	Role Play	As the Building Operator report that you will go investigate the RR Speed loss and report back		
		As Security report that you will send a team to investigate the incident.		
		Two recirculation loops with matched flows shall be in operation outside of the Stability Exclusion Region of the power/flow map specified in the COLR.		
	Role Play	OR One recirculation loop shall be in operation outside of the Stability Exclusion Region of the power/flow map specified in the COLR with the following limits applied when the associated LCO is applicable:		
		 a. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," single loop operation limits specified in the COLR; 		
		 b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," single loop operation limits specified in the COLR; and 		
		 LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," Function 2.b (Average Power Range Monitor Neutron Flux—High (Flow Biased)), Allowable Value of Table 3.3.1.1-1 is reset for single loop operation. 		
		APPLICABILITY: MODES 1 AND 2.		
		Condition B. Requirements of the LCO not met for reasons other than Condition A.		
Op-Test No.: 1		Scenario No.: 2 Event No.: 2		
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Event	Description	: RR Pump speed lowers		
Time	Position	Applicant's Action or Behavior		
		Required Action Satisfy the requirements of the LCO		
		Completion Time 24 hours		
	CRS	Considers RR Pump B not in service and addresses Single Loop Operation.		
	CRS	Contact FRED to manually insert single loop operation limits into GARDEL.		
	ROLE PLAY	As Reactor Engineering tell CRS you will insert single loop operation limits into GARDEL.		
	RO	Lower RRMG A so both loop flow are within 7.35x10 ⁶ lbs/hr of each other on NBI-FI-92A and NBI-FI-92B (Panel 9-4-3).		
	Role Play	As Building Operator report that you do not see anything that would have caused the speed to lower on the MG Set. As Security report that you are still investigating, but there is no obvious signs of sabotage at this time.		
		END OF EVENT		

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Op-Test No.: 1		Scenario No.: 2 Event No.: 2
Event	Description	: RR Pump speed lowers
Time	Position	Applicant's Action or Behavior
	Notes	
	Proceed to	the next event at direction of the lead examiner.

Op-Test No.: 1		Scenario No.: 2 Event No.: 3
Event	Event Description: Combustion in the Off-Gas train	
Time	Position	Applicant's Action or Behavior
	Booth Operation	When directed by lead examiner, insert Malfunction: Trigger 3 OG02 SUSTAINED H2 BURN
	BOP	Reports Off-Gas Trouble alarm Panel B3 window E3 and possible Combustion in the Off-gas line. Entry Conditions into Abnormal Procedure 2.4Off-Gas is required.
	BOP	Sends the Turbine Building Operator to AOG to investigate
	CRS	Enters Abnormal Procedure 2.40G OFF-GAS ABNORMAL May also enter 2.4VAC and 2.4TURB.
	BOP	NOTE – SJAE drain temperatures > 200°F indicates burn (combustion) in progress. Enters Attachment 2 If off-gas combustion is suspected, perform following: Monitor PMIS Points F040, STM JET AIR EJECT 1A DRAIN, and F041, STM JET AIR EJECT 1 B DRAIN (PMIS Group BURN), throughout remaining actions. If temperatures indicated on both points are trending above 200 °F, go directly to Step 1.3. If combustion in SJAE B, both SJAEs, or cannot be extinguished due to hydrogen flame jumping from one air ejector to the other, perform following: NOTE – Annotate which valves in Step 1.3.1 were closed. Ensure following valves closed (PANEL B) : AR-AO-165, SJAE A SUCT (BLUE) FM CNDR A VLV.

Op-Test No.: 1		Scenario No.: 2 Event No.: 3	
Event Description		: Combustion in the Off-Gas train	
Time	Position	Applicant's Action or Behavior	
		AR-AO-151, SJAE A SUCT (RED) FM CNDR B VLV.	
		AR-AO-152, SJAE B SUCT (RED) FM CNDR A VLV.	
		AR-AO-166, SJAE B SUCT (BLUE) FM CNDR B VLV.	
		AR-AO-153, CNDR A AIR REMOVAL VLV.	
		AR-AO-154, CNDR A AIR REMOVAL VLV.	
	BOP	Contact the Turbine Building Station Operator to perform Steps 1.3.2 through 1.3.4.2 (close SJAE condenser out let drain valves, AR-14 and 15, and open SJAE suction sample test valves (bleed air)) and call him back when they are completed.	
	Role Play	Call the BOP Operator and notify him that steps 1.3.2 through 1.3.4.2 are completed.	
Time for the direct opera	Time Compression: There is no need to have the operators wait the five minutes for the combustion to extinguish; this period of time can be compressed as directed by the lead examiner. A call from the booth operator to the panel operator will be made to indicate that five minutes has elapsed.		
		Monitor condenser vacuum closely.	
	BOP	After \approx 5 minutes, contacts the TB Station Operator to close the valves CD-545 and CD-526 and to replace the caps.	
	Role Play	As the Station Operator report CD-545 and CD-526 are closed and the caps have been replaced.	
	Booth Operator	Delete Malfunction OG02	

Op-Test No.: 1		Scenario No.: 2 Event No.: 3
Event Description: Combustion in the Off-Gas train		
Time	Position	Applicant's Action or Behavior
	BOP	Open valves closed in Step 1.3.1. If combustion stopped, drain temperature will stabilize at a lower value. Ensure condenser vacuum returns to normal value.
	BOP	Contacts the TB Station Operator to perform Steps 1.3.11 and 1.3.12 to reopen AR-14 and 15
	Role Play	As the TB Station Operator, call the BOP and inform him that Steps 1.3.11 and 1.3.12 are complete. Both the AR-14, and 15 are Open.
	BOP	Reports to the CRS that the Off-Gas Burn has been extinguished and that 2.40G can be exited.
		END OF EVENT
	Notes	
	Proceed to	the next event at direction of the lead examiner.

Op-Test No.: 1		Scenario No.: 2 Event No.: 4	
Event Description		 Feedwater and Main Turbine high water level trip instrumentation fails downscale (NBI-LT-52A & C) 	
Time	Position	Applicant's Action or Behavior	
		When directed by lead examiner, insert Malfunction: Insert Trigger 4.	
	Booth Operation	RR27b NBI-LT-52A (NR Failure) (LI-94A) at 0% fails instrument downscale.	
		RR27c NBI-LT-52C (NR Failure) (LI-94C) at 0% fails instrument downscale.	
		Respond to alarm 9-5-2/G-4 RVLC SYSTEM TROUBLE:	
		OPERATOR OBSERVATION AND ACTION	
		Stop any power changes in progress.	
		Verify reactor water level is stable. If reactor water level is unstable, enter Procedure 2.4RXLVL.	
	BOP	At a RVLC/RFPT HMI, perform following:	
		Select RVLC System.	
		Select ACT. ALARM screen.	
		Determine cause of alarm.	
		Refer to Procedure 4.4.1, Attachment 2, for resolution of condition(s).	
	RO	Report RFC-LI-94A and RFC-LI-94C downscale and RFC-LI-94B steady at 35 inches.	
	RO	Calls Reactor Building Operator to send him to Racks 25-5 and 25- 6 and see if there is any maintenance or work activities going on in the area that might have caused the instruments to fail.	
	BOP	Report RFPs speed and feedwater flow not changed and steady.	

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Op-Test No.: 1		Sc	cenario No.: 2 Event No.: 4
Event	Description	: Feedwater and Ma fails downscale (N	ain Turbine high water level trip instrumentation IBI-LT-52A & C)
Time	Position	A	pplicant's Action or Behavior
	BOP	Report LCO 3.3.2.2 Trip Instrumentatio Water Level Contro	2, Feedwater and Main Turbine High Water Level n, and Abnormal Procedure 2.4RXLVL, RPV of Trouble referenced in alarm procedure.
	Role Play	Call back as the R maintenance in th caused the instru	eactor Building Operator that there is no e area and there are no leaks that might have ments to fail.
	CRS	Review TS LCO 3.3 LCO: Three channed level trip instrument Condition A Required Action Condition B Required Action	 3.2.2. a) s of feedwater and main turbine high water tation shall be OPERABLE. One feedwater and main turbine high water level trip channel inoperable. A.1 Place channel in trip <u>Completion Time</u> 7 days Two or more feedwater and main turbine high water level trip channels inoperable. Restore feedwater and main turbine high water level trip capability. <u>Completion Time</u> 2 hours.
	CRS	Declare NBI-LT-52 Enter Condition A f Enter Condition B f	A & C inoperable. or each instrument. or both instruments being inoperable.

Op-Test No.: 1		Scenario No.: 2 Event No.: 4
Event	Description	: Feedwater and Main Turbine high water level trip instrumentation fails downscale (NBI-LT-52A & C)
Time	Position	Applicant's Action or Behavior
	CRS	Review Abnormal Procedure 2.4RXLVL, RPV WATER LEVEL CONTROL TROUBLE and recognize no entry conditions met.
	BOP	Review RVLC HMI for alarm codes: mLT0052A_INVALID mLT0052C_INVALID
	BOP	 Review procedure 4.4.1, Reactor Vessel Level Control System (Attachment 2) for plant impact and expected operator response : CODE: mLT0052A_INVALID mLT0052C_INVALID PLANT IMPACT: If all level transmitters fail, the system will fail all RFPs in AUTO to MDEM. OPERATOR RESPONSE: 1) Verify other level instruments are functioning properly. 2) Determine cause for alarm and correct.
	CRS	Brief crew of inability of the high water level trip function and manual turbine trips will be required should RPV level reach the high water level trip setpoint.
		END OF EVENT

Op-Test No.: 1		Scenario No.: 2 Event No.: 4
Event Description:		: Feedwater and Main Turbine high water level trip instrumentation fails downscale (NBI-LT-52A & C)
Time	Position	Applicant's Action or Behavior
	Notes	
	Proceed to	the next event at direction of the lead examiner.

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event Description		: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		When directed by lead examiner, insert Malfunctions: Insert Trigger 5
	Booth Operation	TC10 Turbine High Press Fluid leak set at 75%.
	Operation	TC09d Governor Valve #4 Failure to 0% delayed 3.2 minutes.
		Respond to alarm B-1/D-7, TURB EH FLUID RESERVOIR
		ABNORMAL LVL and report to CRS.
		1. OPERATOR OBSERVATION AND ACTION
		1.1 Check fluid reservoir level at one of following to ensure alarm is valid:
	BOP	1.1.1 DEH TANK screen.
		1.1.2 Locally at T-932-N top of EH unit.
		1.2 Check system for leakage.
		1.3 Add oil, as necessary, to raise level to operating range.
	BOP	Reports Annunciator B-1/C- 7 TURB EH FLUID RESERVOIR LEVEL LOW
		1. OPERATOR OBSERVATION AND ACTION
		1.1 Check fluid reservoir level atone of following to ensure alarm is valid :
		1.1.1 DEH TANK screen.
		1.4 Review Procedure 2.1.5.

Op-Test No.: 1		Scenario No.: 2 Event No.: 5	
Event Description		: Loss of Turbine High Pressure Fluid	
Time	Position	Applicant's Action or Behavior	
	Crew	With the Governor Valves hunting causing fluctuations in the Generator, Reactor Power, Pressure and Level. The crew may elect to SCRAM here.	
	Booth Operator	If the plant is scrammed, increase the EH leak to 100% to drive the closure of the bypass valve.	
	CRS	Assign 2.1.5 Attachment responsibilities to RO and BOP.	
	BOP	 Respond to alarm B-1/B-7, TURB EH FLUID RESERVOIR LOW-LOW LEVEL 1.OPERATOR OBSERVATION AND ACTION Check fluid reservoir level at one of following to ensure alarm is valid: 1.1 DEH TANK screen. Locally at T-932-N top of EH unit. Check system for leaks. Add oil, as necessary, to raise level to operating level. If level cannot be maintained and continues to drop, perform following: A.1 Enter Procedure 2.1.5. Place STANDBY DEH Pump control switch to PULL-TO-LOCK. 	
	CRS	Directs the Reactor Operator to Manually Scram the Reactor.	

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event Description: Loss		: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		Performs the Mitigating Task Scram Actions of Procedure 2.1.5 (Attachment 1);
		1. INITIGATING TASK SCRAIM ACTIONS
		1.1 FIESS DOLLI RA SCRAIM DULLOIIS.
	RO	1.2 Place REACTOR MODE switch to REFUEL.
		 Announce reactor scram and reactor status to Control Room including controlling systems for critical parameters.
		Reactor Power All Rods In
		Reactor Water Level.
		Reactor Pressure.
		Performs Procedure 2.1.5, Attachment 2 Reactor Power Control actions:
		1. REACTOR POWER CONTROL
		1.1 Ensure REACTOR MODE switch is in SHUTDOWN.
		1.2 Verify all SDV vent and drain valves are closed.
	RO	NOTE – RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated.
		 Ensure operating RR pumps have run back to 22% speed.
		<u>NOTE</u> – Steps 1.4 and 1.5 may be performed concurrently. 1.4 Verify all control rods are fully inserted.

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event	Description	: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		 1.4.1 If necessary, insert control rods as directed by CRS. 1.5 Observe nuclear instrumentation and perform following: 1.5.1 Insert SRM detectors. 1.5.2 Insert IRM detectors.
		1.5.3 Change APRM recorders to IRMs.
		1.5.4 Range IRMs on scale.
		1.5.5 Check reactor power is lowering.
		Performs Procedure 2.1.5, Attachment 3 Reactor Water Level Control, actions:
	RO	1.1. After FW Sequence has reached Mode 2 or level has stabilized, place RFC-SW-S1, SETPOINT SETDOWN, switch to DISABLE/RESET.
		1.2. Maintain RPV level in prescribed band using following systems, as required, based on plant conditions:
		1.2.1. Verify preferred RFP is controlling level in FW Sequence Mode 2 with controlling RFP in RX PRESS FOLLOW Mode.
		1.2.2. Note to examiner, Step is N/A.
		1.2.3. If EMER CLOSE button is yellow, press EMER CLOSE button on either FCV 11AA or FCV-11BB.
		1.2.4. Ensure the following controllers are in AUTO:

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event	Description	: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		1.2.4.1. FCVs 11AA and 11BB.
		1.2.4.2. STARTUP MASTER CONTROL.
		1.2.5. Note to examiner, Step is N/A.
		<u>CAUTION</u> – Condensate booster pumps can only provide makeup for reactor water level control when reactor pressure is under control and < 500 psig. \mathbb{P}^2
		1.2.6. Adjust STARTUP MASTER controller using UP/DOWN arrows or RAMP FUNCTION to adjust LEVEL SETPOINT as desired.
		1.2.7. HPCI per Procedure 2.2.33.1.
		1.2.8. RCIC per Procedure 2.2.67.1.
		1.3. Trip non-preferred RFP, if not needed, or minimum flow is isolated.
		1.4. Trip all but one condensate booster pump.
		1.5. Trip all but one condensate pump.
		Performs Procedure 2.1.5, Attachment 4 Reactor Pressure Control, actions:
	BOP	1. REACTOR PRESSURE CONTROL
		NOTE – Steps 1.1 through 1.5 may be performed concurrently.
		1.1 If necessary to stabilize or reduce reactor pressure, BPVs can be operated in manual by performing

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event	Description	: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		following:
		1.1.1 Transfer bypass valve control from AUTO to MANUAL by pressing BPV MANUAL button and check it backlights.
		1.1.1.1 Press BPV RAISE or LOWER buttons to adjust impulse pressure or reactor pressure.
		1.2 Maintain RPV pressure in the prescribed band by using the following systems based on plant conditions:
		1.2.1 DEH per Procedure 2.2.77.1.
		1.2.2 SRVs per Procedure 2.2.1.
		1.2.3 HPCI per Procedure 2.2.33.1.
		1.2.4 RCIC per Procedure 2.2.67.1.
		Performs Procedure 2.1.5, Attachment 5 Balance of Plant, actions:
		1. BALANCE OF PLANT ACTIONS
	BOP	1.1 Verify main turbine automatically tripped or perform following when main generator output 80 MWe: P ⁵
		1.1.1 At Panel B, press TURB TRIP 1 and TURB TRIP 2 buttons for ~ 10 seconds.
		1.2 Note to examiner, Step is N/A.

Ор-Те	st No.: 1	Scenario No.: 2 Event No.: 5
Event Description: Loss of Turbine High Pr		: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		1.3 When main turbine trips, observe following valves close:
		1.3.1 Both stop valves.
		1.3.2 All governor valves.
		1.3.3 All reheat stop valves.
		1.3.4 All interceptor valves.
		1.4 Verify station service is transferred to Startup Transformer.
		1.5 Ensure PCB-3310 open (Panel C).
		1.6 Ensure PCB-3312 open (Panel C).
		1.7 Ensure GEN EXCITER FIELD BKR is open (Panel C).
	CRS	Enter EOP 1A if RPV level lowers below + 3 in.
	CRS	Direct RO to maintain RPV level +3 in. to +54 in.
	CRS	Direct BOP to stabilize RPV pressure below 1050 psig with SRVs/HPCI/RCIC.
	BOP	Monitor torus water level and temperature while controlling RPV pressure. If torus water level is above +2 in. or average torus water temperature is > 95°F report EOP 3A entry condition to CRS.

Op-Test No.: 1		Scenario No.: 2 Event No.: 5
Event	Description	: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
	CRS	Enter EOP 3A if entry conditions met. Direct torus water level maintained below 16 ft Direct RHR placed into suppression pool cooling.
		Place RHR in Suppression Pool Cooling per 2.2.69.2 (Hard Card) 1.1 Place RHR SW System in service:
		1.1.1 Start SWBP(s).
		1.1.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm.
		1.2 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD.
	BOP	1.3 If required, place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL.
		1.4 Open RHR-MO-39A(B).
		1.5 If reactor pressure \leq 300 psig and injection not desired, close RHR MO 27A(B), OUTBD INJECTION VLV.
		 <u>NOTE</u> – If directed by EOP 3A, maximize cooling. 1.6 Ensure RHR PUMP running.
		NOTE – RHR pump operation at minimum flow should be limited to < 15 minutes or pump damage may result.
		1.7 Throttle RHR-MO-34A(B), as required to obtain desired cooling flow.

Ор-Те	st No.: 1	Scenario No.: 2 Event No.: 5
Event	Description	: Loss of Turbine High Pressure Fluid
Time	Position	Applicant's Action or Behavior
		1.8 Throttle RHR-MO-66A(B), as required to obtain desired cooling rate.
		1.9 If PCIS Group 6 lights lit on Panel 9-5, ensure one of following open:
		1.9.1 REC-MO-711; or
		1.9.2 REC-MO-714.
		1.10 If additional cooling required, initiate cooling in non-running RHR Loop and start additional pumps.
		END OF EVENT
	Notes	
	Proceed to	the next event at direction of the lead examiner.

Op-Test No.: 1		Scenario No.: 2 Event No.: 7
Event Description		Loss of Emergency Transformer and Critical Bus 1F.
Time	Position	Applicant's Action or Behavior
		The following Malfunctions are set to automatically happen when the Turbine Trips. PCB 3310 Open light on
	Booth	ED06 Loss of Power (Emergency Transformer)
	Operation	ED08A 4160 Bus 1A Failure
		DG06A Diesel Generator #1 Fails to Auto Start (This the next event)
	BOP	 Respond to alarms and report to CRS: 1.1 Ensure 5.3GRID has been entered.©¹ NOTE – If a reactor scram occurs while SSST is de-energized, 4160V Bus 1A, 1B, and 1E will de-energize and remain de-energized following scram. 4160V Buses 1F and 1G will de-energize, then re-energize from the ESST or associated Emergency Diesel Generator. 1.2 Review Procedure 5.3EMPWR or 5.3AC-OUTAGE, as applicable, to plant conditions. 1.3 If reactor scrams, enter Procedure 2.1.5. 1.4 If RR pump(s) trip, enter Procedure 2.4RR. 1.5 Ensure transformer removed from service per Procedure 2.2.15.
	CRS	Enter Procedure 5.3GRID and 5.3EMPWR and assign actions and priorities to BOP.

Op-Test No.: 1		Scenario No.: 2 Event No.: 7
Event	Description	: Loss of Emergency Transformer and Critical Bus 1F.
Time	Position	Applicant's Action or Behavior
	BOP	Reports that DG 1 did not Automatically Start and takes the actions to Start the DG and tie it to Bus 1F.
	Critical Task	Critical Bus is re-energized by manually starting the Diesel and Tying to Bus 1F.
	BOP	 Performs 5.3EMPWR Attachment 2 actions: 1. BALANCE OF PLANT GUIDELINE The following limits apply throughout this attachment: <u>NOTE</u> – Attachment 6 (Page 26) provides an approximate equipment load guideline. 1.1.1 Maximum load on Emergency Transformer is 10.7 MWe. 1.1.2 Maximum load on DG is 4000 kW and 694 amps; DG may be overloaded to 4400 kW and 763 amps for 2 hours in a 24 hour period. <u>NOTE</u> – Initial DG fuel consumption may be greater than desired (outside acceptable region of Attachment 4, Graph 1) until plant stabilizes. 1.1.3 If a single DG is supplying a critical bus, loads may be added if DG load limits and Attachment 4, Graph 1 (Page 13) limits are satisfied.

Op-Test No.: 1		Scenario No.: 2 Event No.: 7
Event Description: Loss of Eme		Loss of Emergency Transformer and Critical Bus 1F.
Time	Position	Applicant's Action or Behavior
		NOTE – Following steps are performed at VBD-M.
		1.2 If REC System has isolated, perform following:
		1.2.1 Ensure two REC pumps are running.
		1.2.2 Place DRYWELL REC ISOL VALVE CONTROL switch to OPEN.
		1.2.3 Throttle open REC HX outlet valve for a HX that was in service to maintain REC-PI-452, REC HEADER PRESSURE, in green band.
		1.2.3.1 REC-MO-712, HX A OUTLET VLV;
		1.2.3.2 REC-MO-713, HX B OUTLET VLV.
		1.2.4 Start third REC pump, if necessary.
	BOP	1.2.5 Throttle open REC HX outlet valve to maintain REC HEADER PRESSURE in top of green band.
		1.2.5.1 REC-MO-712; or
		1.2.5.2 REC-MO-713.
		1.2.6 Ensure following valves are closed:
		1.2.6.1 REC-AO-701, RRMG SET OIL HX INLET.
		1.2.6.2 REC-AO-710, RWCU NON-REGEN HX INLET.
		1.2.7 Perform following concurrently:
		1.2.7.1 Open REC-MO-700, NON-CRITICAL HEADER SUPPLY.
		1.2.7.2 Continue throttling open REC HX outlet

Op-Test No.: 1		Scenario No.: 2 Event No.: 7
Event	Description	: Loss of Emergency Transformer and Critical Bus 1F.
Time	Position	Applicant's Action or Behavior
		valve to maintain REC HEADER PRESSURE in green band.
		a. REC-MO-712; or
		b. REC-MO-713.
		1.2.8 Ensure REC HX outlet valve full open.
		1.2.8.1 REC-MO-712; or
		1.2.8.2 REC-MO-713.
		1.2.9 Place DRYWELL REC ISOL VALVE CONTROL switch to AUTO.
		NOTE – Following steps are performed at SW Pump Room.
	BOP	Verify Startup Transformer and Diesel #1 carrying loads.
		END OF EVENT
	Notes	
	Note to lea active	d examiner: Next event (DG-1 Auto Start Failure) is already

Op-Test No.: 1		Scenario No.: 2 Event No.: 8
Event Description: DG-1		
Time	Position	Applicant's Action or Behavior
		The following Malfunction is already active:
		DG06A Diesel Generator #1 Fails to Auto Start
	BOP	Recognize failure of DG-1 to auto start and reports to CRS.
	BOP	Manually starts DG-1 from control room.
	BOP	Direct Turbine Building operator to check out DG-1 operating properly.
	Role Play	After 5 minutes report as Turbine Building Station Operator that DG #1 is running fine.
	CRS/BOP	Contact WCC and request electrical maintenance investigate DG failure to start.
	Role Play	As WCC SRO tell CRS/BOP you will get electrical maintenance to investigate DG auto start failure.
		END OF EVENT
	Notes	
	Proceed to the	ne next event at direction of the lead examiner

Op-Test No.: 1		Scenario No.: 2 Event No.: 9
Event	Description:	LOCA/Containment Sprays
Time	Position	Applicant's Action or Behavior
	Booth Operation	When directed by lead examiner, insert Malfunction: Insert Trigger 9 RR20A Coolant Leakage Inside Primary Containment 1.5%
	RO/BOP	Report drywell pressure and temperature raise and provide trend to CRS.
	CRS	Enter EOP 3A and direct BOP to place Torus Spray in service before Torus pressure reaches 10 psig.
	Booth Operator	When Torus pressure reaches 5 psig take the leak to 12% no time delay.
	RO/BOP	 Place RHR in Torus Spray per 2.2.69.3 (Hard Card): 2.1 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 2.2 If required, place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL. 2.3 Ensure RHR-MO-39A(B) open. 2.4 If reactor pressure ≤ 300 psig and injection not desired, close RHR MO 27A(B), OUTBD INJECTION VLV. 2.5 Ensure RHR PUMP(s) running. <u>NOTE</u> – RHR pump operation at minimum flow should be limited to < 15 minutes or pump damage may result. 2.6 Throttle RHR-MO-38A(B) to maintain desired containment
		2.6 Throttle RHR-MO-38A(B) to maintain desired containment pressure.

Op-Test No.: 1		Scenario No.: 2 Event No.: 9		
Event	Description:	LOCA/Containment Sprays		
Time	Position	Applicant's Action or Behavior		
		2.7 Throttle RHR-MO-66A(B) to obtain desired cooling rate.		
		2.9 If PCIS Group 6 lights lit on Panel 9-5, ensure one of following open:		
		2.9.1 REC-MO-711; or		
		9.2 REC-MO-2.714.		
		2.10 Place RHR SW System in service:		
		2.10.1 Start SWBP(s).		
		2.10.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm.		
		2.11 Throttle RHR-MO-66A(B) to maintain desired cooling rate.		
	CRS	When torus pressure exceeds 10 psig or before average drywell temperature reaches 280°F, direct RO/BOP to spray the drywell with RHR.		
	CRS	Direct drywell FCUs secured if running.		
	RO/BOP	Secure drywell FCUs by placing their control switches to STOP.		

Op-Test No.: 1		Scenario No.: 2 Event No.: 9		
Event	Event Description: LOCA/Containment Sprays			
Time	Position	Applicant's Action or Behavior		
	RO/BOP	 Place RHR in Drywell Spray per Procedure 2.2.69.3 (Hard Card): 2.8 If Drywell Spray required: 2.8.1 Open RHR-MO-31A(B). 2.8.2 Throttle RHR-MO-26A(B) to maintain desired containment pressure. 		
	RO./BOP	Maintain drywell pressure band as directed by CRS. Typically 2 to 10 psig.		
	Critical Task	Before average drywell temperature reaches 280°F or when Torus pressure reaches 10 psig, spray the drywell with RHR.		
		END OF EVENT		
	Notes			
	When RPV water level is being controlled between +3 in. to +54 in. and Drywell Sprays are controlling Drywell pressure in required band and lead examiner has observed enough of the scenario, then terminate the scenario.			
	END OF SCENARIO			

Simulator Setup

Initialize the simulator in IC122 (EOC)

Triggers and Malfunctions

- E1 None
- E2 RR17b set at 70%
- E3 OG02
- E4 RR27A set at 0%
 - RR27C set at 0%
- E5 TC10 set at 75%
 - TC09D set at 0% with a 3.2 minute time delay
- E6 ED06 set to actuate when the 3310 breaker opens with a 10 second time delay ED08A
- E7 DG06A set ACTIVE
- E8 RR20 set at 12% with a 10 minute ramp.

Overrides

ZDIRRMGSWS16B[1] set to ON to prevent locking the B RR MG Set Scoop tube on the runback.

Panel Set-up

- Ensure PMIS IDTs are blank.
- Place the Shutdown EOC Rod Sequence Book on Panel 9-5
- Update Safety System Status Panel (9-5) to reflect that DG 1 is in Test.
- Balance Master Feedwater Controller.
- Balance Main Generator voltage regulator.
- Ensure Recirc Controllers are selected to "S".

Procedures Needed

6.1DG.101 marked up to step 4.79.5

Tags Hung None

Turnover Sheet:

Plant Status: The plant is operating at approximately 100%

Risk: Yellow

Activities in Progress: Surveillance 6.1DG101 in progress at step 4.79.5.

LCOs in effect: 7 Day Diesel Generator LCO on T.S. 3.8.1 Condition B

Equipment out of service: None

Activities for the Shift: After turnover, the crew is to continue the surveillance and secure DG#1. The initial 6.EE.610 off-site A/C Power Alignment has been performed and is due again in 5 hours.

Appendix D

Scenario Outline

Eacility: Cooper Nuclear Station Scenario No.: NRC 3 On-Test No.: 1						
Facility. <u>Cooper Nuclear Station</u> Scenario No <u>NRC 5</u> Op-Test No <u>1</u>						
Examiners	Examiners: Operators:					
Initial Conditions: The plant is operating at approximately 2.0% power, holding here to perform the 500 psig Reactor Building walkdown. After turnover, the crew is to shift CRD Pumps.						
Event No.	Malf. No.	Event Type*	Event Description			
1	N/A	N	Shift CRD Pumps			
2	2	C,TS	REC Pump B trip			
3	3	I	IRM Inop Trip			
4	4	I,TS	Drywell Radiation Monitor Isolation			
5	5	C,R	Rod drop and stuck rods non-EOP rod driving			
6	6	М	RCIC Steam Line Leak			
7	7	C,ψ	Fuel failure ATWS EOP rod driving			
8	8	C,ψ	Reactor Recirc Pump speed fails high			
9	9	C,ψ	ED on Secondary Containment 2 Areas			
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor						

 ψ Critical Tasks are located in Events 7, 8 and 9.

Scenario Objective

Evaluate the Crew's ability to operate at low power levels.

Evaluate the Crew's response to a rod drop accident and fuel failure.

Evaluate the crew's actions when RCIC develops a steam line leak that will not fully isolate and when two areas in Secondary Containment exceed their Max Safe values the RPV is Emergency Depressurized to limit the release of highly radioactive steam through the RCIC steam line break.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 2.0% power
- The 500 psig Reactor Building walkdown is in progress.
- Shift CRD Pumps following turnover.

Events:

- Shift CRD Pumps
- REC Pump B trip
- IRM Inop Trip
- DW Vent Radiation Monitor Isolation
- Rod drop and stuck rods requiring EOP rod driving
- RCIC Steam Line Leak
- Fuel failure, ATWS EOP rod driving
- Reactor Recirc Pump speed fails high
- ED on Secondary Containment 2 Areas

Scenario Sequence

- Normal activity Shift CRD Pumps "B" to "A"
- Component Failure before EOPs REC Pump "B" Trip
- Instrument Failure before EOPs IRM "C" Failure
- Instrument Failure before EOPs DW Vent Radiation Monitor Isolation
- Component Failure before EOPs Rod drop and stuck control rods requiring non-EOP driving
- Major Event RCIC Steam Line Leak
- Component Failure after EOPs Fuel failure ATWS EOP rod driving
- Component Failure after EOPs Reactor Recirc Pump speed fails high
- Accident mitigation strategy Emergency Depressurize the RPV

Event One: Shift CRD Pumps

Malfunction Required:

No malfunction required; this is a normal manipulation for the RO.

Objective:

Evaluate the crew during normal equipment shifting.

Evaluate the Reactor Operator shifting from the "B" CRD Pump running to the "A" CRD Pump running and securing the "B" Pump.

Success Path:

The "A" CRD Pump is running and the "B" CRD Pump is secured. All CRD parameters indicated on Panel 9-5 restored to within their normal band.

Event Two: REC Pump B trip

Malfunction Required: SW11B – REC Pump Trip 1B.

Objective:

Evaluate the crew's response to the tripping of one of the three Reactor Equipment Cooling Pumps and takes appropriate action in accordance with the Annunciator Procedure to restart another pump prior to receiving an REC Isolation. Evaluate the CRS addressing Technical Specifications.

Success Path:

The BOP Operator either responds quickly enough (within 1 minute) to the tripping of the pump and starts an additional REC Pump in accordance with the Annunciator Card. Or, the REC system isolation is reset following the restart of the third REC Pump and system flows and pressures are returned to normal.

The SRO will address Tech Specs and determine that LCO 3.7.3 Condition B, a 30 day LCO on one sub system.

Event Three: IRM Inop trip

Malfunction Required: Malfunction NM13C – IRM INOP Channel-C. NM06G IRM G Stuck and fully withdrawn

Objective:

Evaluate the crew's response to a failed Intermediate Range Monitor (IRM). Evaluate the At the Controls (ATC) Operator's actions to determine the cause of the ½ Scram, and bypasses the failed IRM. This allows resetting the half-scram. Evaluate the CRS addressing Technical Specifications for the failed IRM.

Success Path:

IRM - C is bypassed, and the CRS initiates an LCO on IRM C in accordance with Technical Specifications 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 1. Also TRM T3.3.1 Function 2 potential LCO with one INOP IRM there remains the minimum number required of 6.

Event Four: Drywell Vent Radiation Monitor isolation

Malfunction Required:

Override 02S87 ZDIRMARA10AV[1] = CLOSE Drywell Vent Rad Mon. Isol VIv. Override 12A2AR1 RMV-RR-4 DW Vent Rad Monitor – Gas to 4.0E-006

Objective:

Evaluate the CRS addressing Technical Specifications for the failed Drywell Radiation Monitor.

Success Path:

CRS initiates an LCO on DW Radiation Monitor in accordance with Technical Specifications 3.4.5 (RCS Leakage Detection Instrumentation) b. Condition B, Required Action B.1 Grab Sample once per 12 hours and B.2 Restore within 30 days.

Event Five: Rod drop and stuck rods non-EOP rod driving

Malfunction Required: RD02B ATWS South Bank set at 75% CR023827 Increased Rod Worth on rod 38-27 set at 40% RD133827 Rod Uncoupled RD123827 Rod Stuck – Delete CR01 Fuel Failure at 100%

Objective:

Evaluate the crew's response to approximately half of the control rod insertion on a reactor scram signal.

Evaluate the RO's ability to perform 2.4CRD and drive control rods using RMCS. Evaluate the CRS implementing strategy for reactivity controls outside the EOPs. Evaluate the crew's teamwork in installing jumpers and controlling Reactor Pressure and level.

Success Path: Control Rods are inserted using RMCS.

Event Six: RCIC Steam Line Leak

Malfunction Required:

RC06 RCIC Steam Line Break in at 100% RC07 Failure of RCIC Auto-Isolation OR ZDIRCICSWS2(2) MO-16 C/S to OPEN OR ZDIRCICSWS1(2) MO-15 C/S to OPEN RF RC06A RCIC-MO-16 Control Power De-energized

Objective:

Evaluate the crew's response to a failure of RCIC to fully isolate during a RCIC Steam Line Break.

Evaluate the BOP's ability to monitor and report Secondary Containment Temperatures and Radiation Levels to the CRS.

Evaluate the crew's ability to continue Control Rod insertion in accordance with 2.4CRD and Emergency Depressurize the RPV when 2 Areas in Secondary Containment exceed Max Safe values.

Success Path:

RPV Level is being controlled within the +3 to 54 inch range with CRD and HPCI and Condensate. The Reactor is depressurized to <50 psig above Torus Pressure when two areas in Secondary Containment reach and exceed Max Safe values.

Event Seven: Fuel Failure ATWS EOP rod driving

Malfunction Required: None

Objective:

Evaluate the crew recognition of two areas being above Max Safe Operating Temperature and entry into EOP 5A.

Evaluate the crew's ability work through EOP 5A to the point where it transitions to EOP 1A and eventually to 6A and 7A to give directions to drive control rods.

Success Path:

The Crew will enter EOPs and start driving control rods full in with EP 5.8.3 versus 2.4CRD.

Appendix D

Event Eight: Reactor Recirc Pump speed fails high

Malfunction Required: RR17B RR MGSet Jordan Controller failure to 100 ZDIRRSWS2B[1] = ON Reset Scooptube Lockout

Objective:

Evaluate the crew recognition of the increasing speed of the B RR Pump. Evaluate the crew's ability to monitor nuclear instrumentation and RR Pump speed.

Success Path:

The Crew will trip the RR Pump when it is determined that either it is at full speed or that the scoop tube lock will not stop the increase.

Event Nine: ED on Secondary Containment 2 Areas

Malfunction Required: None

Objective:

Evaluate the crew response to a slow increase in Reactor Building Temperatures and Radiation levels to the point where the RPV must be Emergency Depressurized. Evaluate the crew's ability to manually open 6 SRVs and reduce RPV Pressure to less than 50 psig above Torus pressure, in accordance with the EOPs.

Success Path: RPV is depressurized to 50 psig above Torus pressure.

Scenario Termination:

When Reactor water level is being controlled between +3 and +54 inches and the RPV has been Emergency Depressurized and all but one Control Rod have been inserted.

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: 1		Scenario No.: 3 Event No.: 1
When to initiate:		When the Crew has assumed the watch and at the direction of the lead examiner.
Event	Description	: Shift CRD Pumps
Time	Position	Applicant's Action or Behavior
	CRS	Directs CRD pumps shifted per Procedure 2.2.8.
	RO/BOP	Makes plant announcement about starting the CRD Pump.
	RO/BOP	 Shift CRD pumps per Procedure 2.2.8, Section 14: 1.1 At Panel 9-5, place CRD-FIC-301, CRD FLOW CONTROL, in MAN as follows: 1.1.1 Adjust manual output knurled knob until DEVIATION needle centered (aligned with redline on set-tape). 1.1.2 Place selector to MAN. 1.2 Start standby CRD pump. CAUTION – Exceeding 1510 psig charging water pressure could cause CRDM damage during a scram. Check locally for normal pump operation. 1.4 Shut down CRD pump to be removed from service. Slowly adjust manual control on CRD-FC-301 to obtain flow of 50 gpm. Balance CRD-FC-301 as follows: Adjust SETPOINT thumbwheel until DEVIATION needle centered (aligned with redline on set-tape). 2.2 Place selector to BAL.
		1.6.2 Place selector to BAL.

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Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 1				
When to initiate:		When the Crew has assumed the watch and at the direction of the lead examiner.				
Event	Event Description: Shift CRD Pumps					
Time	Position	Applicant's Action or Behavior				
		1.7 At Panel 9-5, check charging water pressure and drive water ΔP , and adjust if needed.				
	RO/BOP	Provide peer checks as required.				
		END OF EVENT				
	Notes					
	Proceed to the next event at direction of the lead examiner.					
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Required Operator Actions

Form ES-D-2

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Ор-Те	est No.: 1	Scenario No.: 3 Event No.: 2		
Event Description: REC Pump B trip				
Time	Position	Applicant's Action or Behavior		
	Booth Operation	When directed by lead examiner insert Malfunction: SW11B – REC Pump Trip 1B.		
Note press He ma opera	BOP to examiner: sure isolatior ay perform to ator actions of	 Respond to alarm M-1/B-2, REC PUMP B FAILURE. From the Annunciator Panel Procedure the Operator will 1. OPERATOR OBSERVATION AND ACTION Start another REC pump. Start another REC pump discharge pressures and ensure valve line-up is correct. 1.3 For multiple loss of REC pumps, enter Procedure 5.2REC. If operator starts another REC pump before the system low times out (~40 seconds), the following BOP actions are N/A. he actions to start another pump from memory as immediate of Abnormal Procedure 5.2REC or he may perform the steps 		
from	BOP	If alarm M-1/A-1, REC SYSTEM LOW PRESSURE, remains in for > 40 seconds (REC system will isolate), operator will respond per alarm card: 2. OPERATOR OBSERVATION AND ACTION 2.1 If available, start additional REC pumps. 2.2 Ensure REC-MO-711, NORTH CRITICAL LOOP SUPPLY, or REC-MO-714, SOUTH CRITICAL LOOP SUPPLY (associated with an in service HX), is open to obtain critical subsystem pressure indication. 2.3 If REC System header pressure on REC-PI-452, REC HEADER PRESSURE, remains ≤ 62 psig, enter Procedure 5.2REC.		

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Required Operator Actions

Form ES-D-2

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Op-Test No.: 1		Scenario No.: 3 Event No.: 2	
Event	Event Description: REC Pump B trip		
Time	Position	Applicant's Action or Behavior	
		2.4 If REC HX or Drywell header isolated and restoration desired, take action per REC Restoration Hard Card (2.2.65.1).	
		If REC system isolated restore per REC Restoration Hard Card:	
		1.1 Ensure low pressure isolation not due to leakage or leak isolated.	
		1.2 Ensure two REC pumps are running.	
		1.3 Ensure one of following valves are OPEN:	
		1.3.1 REC-MO-711, NORTH CRITICAL LOOP SUPPLY. 1.3.2 REC-MO-714, SOUTH CRITICAL LOOP SUPPLY.	
	BOP	CAUTION – Restoring REC flow to drywell FCUs with drywell temperature > 260°F could result in a breach of FCU tubing.® ¹	
		1.4 If drywell temperature $\leq 260^{\circ}$ F on PC-TI-505A through PC-TI-505E, place DRYWELL REC ISOL VALVE CONTROL switch to OPEN.® ¹	
		NOTE – REC-MO-712 and REC-MO-713 are throttle open only. If REC HX OUTLET PRESSURE alarm is received, REC-MO-712 or REC MO 713 must be fully closed prior to recommencing pressurization of REC non-critical header.	
		1.5 Throttle open REC HX outlet valve for a HX that was in service, as necessary, while maintaining REC CRIT LOOP SUPPLY PRESS in green band.	
		1.5.1 REC-MO-712, HX A OUTLET VLV.	

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Required Operator Actions

Ор-Те	st No.: 1		Scenario No.: 3 Event No.: 2
Event	Description	: REC	Pump B trip
Time	Position		Applicant's Action or Behavior
			1.5.2 REC-MO-713, HX B OUTLET VLV.
		1.6	Start third REC pump.
		1.7	Throttle open REC HX outlet valve, as necessary, to obtain following conditions:
			1.7.1 REC CRIT LOOP SUPPLY PRESS \geq 62 psig.
			1.7.2 REC HEADER PRESSURE in top of green band.
		1.8	Perform following simultaneously:
			1.8.1 Open REC-MO-700, NON-CRITICAL HEADER SUPPLY.
			1.8.2 Continue throttling open REC HX outlet valve, as necessary, to maintain REC HEADER PRESSURE in green band.
		1.9	Ensure REC HX outlet valve full open.
		1.10	If REC-AO-710, RWCU NON-REGEN HX INLET, not closed for leak isolation, open REC-AO-710.
		1.11	If REC-MO-1329, AUGMENTED RADWASTE SUPPLY, not closed for leak isolation and cooling desired, open REC-MO-1329.
		1.12	Place DRYWELL REC ISOL VALVE CONTROL switch to AUTO.
		Revie	w TS LCO 3.7.3 REC System
	CRS	LCO :	3.7.3 Two REC subsystems shall be OPERABLE.
		APPL	ICABILITY: MODES 1, 2, 3

Required Operator Actions

Form ES-D-2

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Op-Test No.: 1		Scenario No.: 3 Event No.: 2		
Event	Event Description: REC Pump B trip			
Time	Position	Applicant's Action or Behavior		
		Enter Condition B One REC subsystem inoperable for reasons other than Condition A. Required Actions B.1 Restore the REC subsystem to OPERABLE status. Completion Time of 30 Days. Declare REC Pump B INOPERABLE.		
		END OF EVENT		
	Notes			
	Proceed to the next event at direction of the lead examiner.			

Required Operator Actions

Op-Test No.: 1				Scenario	o No.:	3	Event No.: 3
Event Description: IRM Inop			Inop				
Time	Position		Applicant's Action or Behavior				
	Booth Operation	Wher	directe BC, IRN	ed by lead ex I INOP Chan	aminer, i nel C.	nsert	Malfunction:
		Resp INOP	ond to a and re	alarm 9-5-2/D port to CRS.	0-7, IRM	RPS (CH A UPSCALE TRIP OR
		1.	AUTC	MATIC ACT	IONS		
			1.1	Reactor scr tripped.	am if bot	h RPS	S Channels A and B are
		2.	OPEF	RATOR OBSE	ERVATIC	N AN	D ACTION
			2.1	Check Read determine if	ctor Scra half scra	m Gro am or	oup A and B lights to full scram has occurred.
	RO		2.2	If full scram	occurred	l, ente	er Procedure 2.1.5.
			2.3	If half scran	n occurre	d, det	ermine following:
				2.3.1 If IRM	/l is upsc	ale:	
				2.3.1.1	Uprang	e IRM	1.
				2.3.1.2	Reset h	nalf so	ram per Procedure 2.1.5.
			2.3.2	If IRM is ino	p:		
				2.3.2.1	Bypass	IRM.	
				2.3.2.2	Reset h	nalf sc	ram per Procedure 2.1.5.
Note	to examiner:	:					
Other alarms		9-5-1 9-5-2 9-5-2	/E-7 IR /A-1 R /B-1 NI	M UPSCALE X SCRAM CH EUTRON MC	E HANNEL INITORII	A NT TR	IP
The guidance in these alarms is collectively covered in 9-5-2/D-7 above.							

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 3
Event	Description	: IRM Inop
Time	Position	Applicant's Action or Behavior
	RO	Report other IRM readings indicating steady and IRM C is upscale.
	CRS	Direct IRM C bypassed and half scram reset.
	RO	At Panel 9-5, use Joystick for IRMs and bypass IRM C.
	RO	 Enter Procedure 2.1.5 Section 4 and reset half scram: 4.1 Place REACTOR SCRAM RESET switch to Group 1 and 4, Group 2 and 3, then back to NORM. 4.2 Ensure eight SCRAM GROUP lights (Panels 9-15 and 9-17) or SCRAM INDICATIONS GROUP A and GROUP B lights are on.
	CRS	Review Tech Specs LCO 3.3.1.1The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.APPLICABILITY:According to Table 3.3.1.1-1.Condition AOne or more required channels inoperable.Required ActionA.1 Place channel in trip. Completion Time: 12 hoursORA.2 Place associated trip system in trip. Completion Time: 12 hoursTable 3.3.1.1-1 Further to IRMs.

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Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 3			
Event	Event Description: IRM Inop				
Time	Position	Applicant's Action or Behavior			
		Table 3.3.1.1-1 Function 2d applies to APRMs. Declare IRM C inoperable.			
	CRS	Review TRM TLCO 3.3.1 The control rod block instrumentation for each Function in Table T3.3.1-1 shall be OPERABLE. APPLICABILITY: According to Table T3.3.1-1. Determine this is a potential TLCO (6 channels required)			
		END OF EVENT			
	Notes				
	Proceed to	the next event at direction of the lead examiner.			

Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 4			
Event Description		: Drywell Radiation Monitor Isolation			
Time	Position	Applicant's Action or Behavior			
	Booth Operation	When directed by lead examiner, insert Malfunctions: Insert Trigger 4. Override the control switch for the RMV-AO-10 and 12 to close to isolate the DW Rad Monitor. Override 12A2AR1 RMV-RR-4 DW Vent Rad Monitor – Gas to 4.0E-006			
Note to examiner: There are no panel manipulations for the BOP; this is just a Tech Spec Activity for the SRO.					
	BOP	Responds to Alarms Q-1 / D-1 Drywell Monitor Trouble and notes that the Annunciator screen located in the back panels indicates that the trouble alarm is from "5003" Drywell Monitor Flow Disturbance.			
	BOP	Reports the alarm to the CRS and tells him that (5003) caused alarm Check Drywell monitor sample pump running. <u>NOTE</u> 1 – Monitor is inoperable if all detector channels are <u>not</u> functioning properly. Determine OPERABILITY.			
	CRS	Addresses Operability of the DW Rad Monitor Tech Spec 3.4.5 RCS Leakage Detection Instrumentation LCO 3.4.5 The following RCS leakage detection instrumentation shall be OPERABLE: a. Drywell floor drain sump flow monitoring system; and b. One channel of the drywell atmospheric particulate or atmospheric gaseous monitoring system. APPLICABILITY: MODES 1, 2, and 3. B. Required drywell system inoperable.			

Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 4		
Event	Event Description: Drywell Radiation Monitor Isolation			
Time	Position	Applicant's Action or Behavior		
	CRS	 B.1 Analyze grab samples of atmospheric monitoring drywell atmosphere. Once per 12 hours AND B.2 Restore required drywell atmospheric monitoring system to OPERABLE status. Within 30 days. Updates the Crew on the LCO 		
		Contacts the Work Control Center and reports the problem.		
	Role Play	As the WCC acknowledge the report and tell the CRS that a work order will be generated.		
		END OF EVENT		
	Notes			
	Note to lea	d examiner: Next event (Failure to Scram) is already active.		

Required Operator Actions

On-Te	st No · 1	Scenario No : 3 Event No : 5			
Event Description		: Rod Drop and stuck rods. non-EOP rod driving			
T :	Desition	Angliagetta Action on Debouier			
Time	Position	Applicant's Action or Benavior			
		When directed by lead examiner, insert Malfunctions:			
	Booth Operation	CR023827 Increased Rod Worth on rod 38-27 set at 40% RD133827 Rod Uncoupled RD123827 Rod Stuck CR01 Fuel Failure at 5% The ATWS is active			
Note t Radia slowly	Note to examiner: The radiation level rise in the drywell, Main Steam Line Radiation monitors and Reactor Building Area Radiation Monitors will build in slowly and be more evident during next event.				
	RO	Responds to Alarms 9-5-1 D-7 and D-8 IRM RPS CH A UPSCALE TRIP OR INOP and IRM RPS CH B UPSCALE TRIP OR INOP			
	RO	Reports Reactor Scram on high neutron flux IRM Trip. Announces ATWS conditions exist and reports Reactor Power ATWS Conditions Reactor Pressure Level			
	RO	 Performs the MITIGATING TASK SCRAM ACTIONS of Procedure 2.1.5 (Attachment 1); 1. MITIGATING TASK SCRAM ACTIONS Press both RX SCRAM buttons. Place REACTOR MODE switch to REFUEL. 1.3 Announce reactor scram and reactor status to Control Room including controlling systems for critical parameters. 			

Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 5		
Event Descriptior		: Rod Drop and stuck rods, non-EOP rod driving		
Time	Position	Applicant's Action or Behavior		
	CRS	Enter Procedure 2.4CRD, CRD TROUBLE ENTRY CONDITIONS Control rod fails to insert when given a SCRAM signal.		
	CRS	Assign 2.4CRD Subsequent Operator Actions RO.		
	RO	Perform 2.4CRD actions: NOTE – Step 4.1 is applicable until procedure is exited. Concurrently perform applicable Attachment: Rod(s) Not Full-In Attachment 2. Notify Reactor Engineering and CRD System Engineer that their support is required.		
	RO	Manually inserts control rods per 2.4CRD Attachment 2. Examiners Note: See flowchart below.		

Required Operator Actions



Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 5		
Event	Descriptior	: Rod Drop and stuck rods, non-EOP rod driving		
Time	Position	Applicant's Action or Behavior		
	RO	 Performs Procedure 2.1.5, Attachment 2 Reactor Power Control actions: REACTOR POWER CONTROL Ensure REACTOR MODE switch is in SHUTDOWN. Verify all SDV vent and drain valves are closed. NOTE – RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated. Ensure operating RR pumps have run back to 22% speed. Observe nuclear instrumentation and perform following: Insert SRM detectors. Insert IRM detectors. Range IRMs on scale. Check reactor power is lowering. 		
	BOP	 Performs Procedure 2.1.5, Attachment 3 Reactor Water Level Control, actions: After FW Sequence has reached Mode 2 or level has stabilized, place RFC-SW-S1, SETPOINT SETDOWN, switch to DISABLE/RESET. Maintain RPV level in prescribed band using following systems, as required, based on plant conditions: Verify preferred RFP is controlling level in FW Sequence Mode 2 with controlling RFP in RX PRESS FOLLOW Mode. 		

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 5								
Event	Description	Rod Drop and stuck rods, non-EOP rod driving								
Time	Position	Applicant's Action or Behavior								
	BOP	Adjust STARTUP MASTER controller using UP/DOWN arrows or RAMP FUNCTION to adjust LEVEL SETPOINT as desired.								
	BOP	 Performs Procedure 2.1.5, Attachment 4 Reactor Pressure Control, actions: REACTOR PRESSURE CONTROL If necessary to stabilize or reduce reactor pressure, BPVs can be operated in manual by performing following: Transfer bypass valve control from AUTO to MANUAL by pressing BPV MANUAL button and check it backlights. Press BPV RAISE or LOWER buttons to adjust impulse pressure or reactor pressure. Maintain RPV pressure in the prescribed band by using the following systems based on plant conditions: DEH per Procedure 2.2.77.1. SRVs per Procedure 2.2.1. 								
		END OF EVENT								
	Notes									
	Note to lea	d examiner: Next event (Failure to Scram) is already active.								

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 6								
Event	Description	: RCIC Steam Line Leak								
Time	Position	Applicant's Action or Behavior								
		When directed by lead examiner, insert Malfunctions/ Overrides/Remote Function: Insert Trigger 7.								
	Booth Operation	RC06 RCIC Steam Line Break in at 100% RC07 Failure of RCIC Auto-Isolation Override ZDIRCICSWS2(2) MO-16 C/S to OPEN Override ZDIRCICSWS1(2) MO-15 C/S to OPEN Remote Function RC06A RCIC-MO-16 Control Power De- energized								
	CREW	Report Secondary Containment temperatures rising.								
	BOP	Respond to alarm 9-3-1/E-10 AREA HIGH TEMP and report to CRS. OPERATOR OBSERVATION AND ACTION Dispatch Operator to alarming area to determine cause. Attempt to isolate leaks. If a leak is identified to be from through-wall leakage in a Class 1 System (Reactor Coolant Pressure Boundary) and leak cannot be isolated, then enter Condition and Required Actions of Technical Specifications LCO 3.4.4. Start additional HVAC coolers, as required, to maintain normal building temperatures and humidity.								
	BOP	Report temperatures in Torus area and SE Quad rising.								
	CRS	Enter EOP 5A SECONDARY CONTAINMENT CONTROL								

Required Operator Actions

Ор-Те	est No.: 1	Scenario No.: 3 Event No.: 6
Event	Description	: RCIC Steam Line Leak
Time	Position	Applicant's Action or Behavior
	CRS	Direct Operable area coolers and Reactor Building HVAC be operated to control area temperatures
	BOP	At Vertical Board R place following room coolers control switches to RUN: SE CS-B RM FC-R-1E NE CS-A RM FC-R-1F SW RHR B&D RM FC-R-IH NW RHR A&C RM FC-R-1J HPCI RM FC-R-1G
	CREW	Determine leak in RCIC system.
	BOP	Report status of RCIC valves : • RCIC-MO-15 Open • RCIC-MO-16 De-energized Send Reactor Building operator to investigate.
	CRS	Contacts WCC to have them help determine the reason the RCIC valves appear to be closed but are not.

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 6
Event	Description	: RCIC Steam Line Leak
Time	Position	Applicant's Action or Behavior
	Role Play	If directed to investigate RCIC isolation as the WCC, respond to the request and tell the CRS that a team is being put together to investigate and correct the problem.
	Role Play	If directed to investigate RCIC leak, wait 6 minutes, then report you hear a steam leak in the torus area and you cannot get close enough to tell where it is coming from.
	BOP	Send Reactor Building operator to manually close RCIC-MO-16.
	CRS	When any area temperature exceeds is Max Normal Operating level (9-3-1/E-10 alarm in) direct isolating all system discharging into its area except systems required to suppress a fire and systems required to support EOPs.
	CRS	When it is determined a primary system (RCIC Steam leak) is discharging into secondary containment, enter EOP 1A RPV CONTROL.
	CRS	Enter EOP 1A and transition to EOP 6A RPV PRESSURE and REACTOR POWER (FAILURE-TO-SCRAM) AND EOP 7A RPV LEVEL (FAILURE-TO-SCRAM)
	CRS	Direct RPV level be maintained between -183 in and +54 in.

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 6
Event	Description	: RCIC Steam Line Leak
Time	Position	Applicant's Action or Behavior
	CRS	Direct RO to insert control rods per Procedure 5.8.3.
	Critical Task	Switch from Non-EOP Rod driving strategies to EOP Rod Driving strategies and place the reactor in a safe condition by manually inserting Control Rods to achieve a shutdown condition.
	CRS	Direct BOP continue to stabilize RPV pressure below 1050 psig.
	Role Play	If directed to manually close RCIC-MO-16, wait 10 minutes and report you cannot get the valve to move.
	RO/BOP	Report rising Secondary Containment temperature levels or alarm 9-3-1/E-19 AREA HIGH TEMP to CRS. OPERATOR OBSERVATION AND ACTION Dispatch Operator to alarming area to determine cause. Attempt to isolate leaks. If a leak is identified to be from through-wall leakage in a Class 1 System (Reactor Coolant Pressure Boundary) and leak cannot be isolated, then enter Condition and Required Actions of Technical Specifications LCO 3.4.4. Start additional HVAC coolers, as required, to maintain normal building temperatures and humidity.

Required Operator Actions

Ор-Те	est No.: 1	Scenario No.: 3 Event No.: 6										
Event	Descriptior	: RCIC Steam Line Leak										
Time	Position	Applicant's Action or Behavior										
		END OF EVENT										
	Notes											
		·										

Required Operator Actions



Required Operator Actions

Ор-Те	est No.: 1					Sce	enari	o No) .:	3	E	ven	t No	.: 7	7		
Event	Event Description: ATWS, EOP Rod driving																
Time	Position		Applicant's Action or Behavior														
	RO	Plac	Place both CRD Pumps in service.														
	RO	Ens appi	Ensure CRD-FC-301 is in Manual to maintain drive water d/p approximately 265 psid.														
	RO	Sele patte	ects t ern ι	the re using	ods : the	start 5.8.	ing ir 3 Bo	n the ard (cen depi	ter a	and v belo	vork: w.	s out	in a	ı spir	al	
		51					58		59		60						
		47				42		43		44		45					
		43			41		26		27		28		29				
		39		57	2	25		14		15		16		46			
		35	69		40		13		6		7		30		61		
		31		56		24		5		2		17		47			
	BOP	27	68		39		12		1		8		31		62		
		23		55		23		4		3		18		48			
		19	67		38		11		10		9		32		63		
		15		54		22		21		20		19		49			
		11			37	52	36	50	35	F 4	34		33				
		07				55	66	52	65	51	64	50					
		05	02	06	10	14	00 18	22	05 26	30	34	38	42	46	50		
		END) OF	EVE	ENT				20					-10			
	Notes																
	Proceed to the next event at direction of the lead examiner.																

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 8								
Event	Event Description: "B" Reactor Recirc Pump runs away to 100%.									
Time	Position	Applicant's Action or Behavior								
	Booth Operation	This is an automatic trigger that will Insert Trigger 7 on the ARI Control switch.								
	RO/BOP	Reports Annunciator Panel 9-5-1 / F-8 SRM Period and an increase in power as seen on the IRMs. Ranges IRMs if necessary.								
	BOP	Reports Recirc Pump B has increased in speed and attempts to lock the scoop tube.								
	CRS	Direct the BOP to Trip the RR Pump.								
	BOP	Opens Breaker DRIVE MOTOR BKR 1DS. NOTE –Annunciator 9-4-3/E-7, RECIRC LOOP B OUT OF SERVICE, will alarm when generator field breaker opens. Ensure RRMG Set B GEN FIELD BKR opens in – 30 seconds.								
	RO/BOP	Monitors and reports that Core Flow is lowering and power is returning to pre-event values.								
	Critical Task	Trips the B Reactor Recirc Pump to mitigate the increase in Reactor Power during an ATWS.								
		END OF EVENT								

Required Operator Actions

Ор-Те	est No.: 1	Scenario No.: 3 Event No.: 8					
Event	Event Description: "B" Reactor Recirc Pump runs away to 100%.						
Time	e Position Applicant's Action or Behavior						
	Notes						
	Proceed to	o the next event at direction of the lead examiner.					

Required Operator Actions

Ор-Те	est No.: 1	Scenario No.: 3 Event No.: 9
Event	Description	: ED on Secondary Containment 2 Areas
Time	Position	Applicant's Action or Behavior
		Note no malfunctions necessary for this event.
	CRS	When any two Secondary Containment parameter reaches it Max Safe Operating Value: Temperature 195°F Radiation 1000 mR/hr Water Level 9.5 ft. in RB Quads <u>OR</u> 4.5 ft. in Torus Area <u>AND</u> Primary system discharging into Secondary Containment (RCIC leak) Direct Emergency Depressurization. Note to Examiner: This report may come from anyone on the crew by looking at PMIS and checking that two areas contain temperatures above 195°F. PMIS will backlight red blocks for values that have been exceeded.
	CRS	Enter EOP 6B EMERGENCY RPV DEPRESSURIZATION (FAILURE-TO-SCRAM)
	CRS	Direct BOP stop and prevent injection per Hard Card.

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 9								
Event	Description	ED on Secondary Containment 2 Areas								
Time	Position	Applicant's Action or Behavior								
		Perform stop and prevent: STOP INJECTION Stop HPCI by performing one of following:								
		TRIP HPCI turbine:								
		When the Turbine is at zero rpm, place AUXILIARY OIL PUMP switch to PULL-TO-LOCK.								
		Stop Feedwater by performing following:								
	BOP	Ensure REP B is tripped. If Reactor pressure ≤ 600 psig, ensure all condensate booster pumps are tripped. CBP C.								
		Stop Core Spray by ensuring following: CS System A secured with pump in PULL-TO-LOCK. CS System B secured with pump in PULL-TO-LOCK.								
		Stop RHR by ensuring one of following: Both RHR Systems secured with pumps in PULL-TO-LOCK.								
		Prevent Feedwater by performing following:								
		At a RVLC/RFPT HIM, select STARTUP VALVE screen, press EMER CLOSE button, and confirm "YES" in pop-up box.								
		Ensure RF-MO-29 is closed.								
		Ensure RF-MO-30 is closed.								
		Trip condensate and condensate booster pump(s), as required.								

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 3 Event No.: 9									
Event	Description	ED on Secondary Containment 2 Areas									
Time	Position	Applicant's Action or Behavior									
		Prevent CS by performing following:									
		Ensure CS-MO-12A is closed.									
		Ensure CS-MO-12B is closed.									
	BOP	When directed to ED BOP will verify PC water level is above 6 ft. and open 6 SRVs by taking their control switches to OPEN.									
	BOP	Report RPV pressure as it lowers.									
	RO	When RPV Pressure below MSCP Table 14 14 MINIMUM STEAM COOLING PRESSURE No. of RPV Pressure Open SRVs (psig) 6 or more 135 5 160 4 205 3 280 2 425 1 860 Start and slowly raise injection into the RPV using Outside Shroud Injection Systems. LPCI RCIC HPCI MC/RF CRD CRD									

Required Operator Actions

Op-Test No.: 1		Scenario No.: 3 Event No.: 9					
Event Description: ED on Secondary Containment 2 Areas							
Time	Position	Applicant's Action or Behavior					
	RO	Raise RPV level between -183 in. and +54 in.					
	Critical Task	When primary system discharging into secondary containment and secondary containment exceeds its maximum safe operating value 195°F in 2 or more areas for high temperature, emergency depressurize the RPV to lessen the radioactive release into the Reactor Building.					
		END OF EVENT					
	Notes						
	When ED is complete (RPV pressure < 50 psig above Torus pressure), RPV level is controlled in desired band, all but one Control Rod has been inserted and lead examiner has observed enough of the scenario, then terminate the scenario.						
END OF SCENARIO							

Simulator Setup

Initialize the simulator in IC123 (BOC)

Triggers and Malfunctions

- E1 None
- E2 SW11B REC Pump Trip 1B
- E3 NM13C IRM INOP Channel-C
- E4 DW Radiation Monitor Isolation
- E5 CR023827 Increased Rod Worth on rod 38-27 set at 40%
 - RD133827 Rod Uncoupled
 - RD123827 Rod Stuck
 - CR01 Fuel Failure at 100%
- E6 RC06 RCIC Steam Line Break in at 15%
 - RC07 Failure of RCIC Auto-Isolation
 - RF RC06A RCIC-MO-16 Control Power De-energized.
- Active RD02B ATWS South Bank set at 75% Active
- E8 RR17B RR MG Set Jordan Controller failure to 100%

Events

When ARI is initiated inserts automatic trigger E7

Remotes

E5 – RC06A RCIC-MO-16 Control Power De-energized.

Overrides

- OR ZDIRCICSWS1(2) MO-15 C/S to OPEN
- OR ZDIRCICSWS2(2) MO-16 C/S to OPEN
- ZDIRRSWS2B[1] = ON Reset Scoop-tube Lockout
- 03A04 Rod Full Out Core Display Light 38-27 ON
- 03A04 Rod Full In Core Display Light 38-27 OFF
- 03A07DS2 4 Rod Display BCD 2³(MSB) OFF
- 03A07DS2 4 Rod Display BCD 2² ON
- 03A07DS2 4 Rod Display BCD 2¹ ON
- 02S87 DW Vent Mon Inboard Sample Switch (ZDIRMARA10AV[1] = CLOSE) E4
- 12A2AR1 RMV-RR-4 Drywell Vent Rad Monitor Gas set to 4.0E-006 E4

Panel Set-up

- Reset to IC07
- Drive in Rod 38-27
- Insert Malfunction RD123827 to stick control rod
- Insert Malfunction RD133827 to uncouple control rod
- Pull Drive out to position **46** to prevent over-travel alarm and indication

- Override full out light ON on full core display
- Override full in light OFF on full core display
- Override the 4 Rod Display for Rod 38-27 by inserting the following overrides:
 - 03A07DS2 4 Rod Display BCD 2³(MSB) OFF
 - 03A07DS2 4 Rod Display BCD 2² ON
 - 03A07DS2 4 Rod Display BCD 2¹ ON
- Ensure that the four rod display indicates 48 for the position of Rod 38-27
- Insert Malfunction CR072 Control Rod 38-27 PMIS indication to 48
- Place the Startup BOC Rod Sequence Book on Panel 9-5

Procedures Needed

2.1.1 marked up to steps 4.13.2, 4.17, 5.24.

Tags Hung

Condensate Pump Discharge Valve Closed tags on the non-running pumps. Condensate Booster Pump Discharge Valve Closed tags on the non-running pumps. Danger Tag on Breakers: 1AN, 1BN, 1CN, 1DN

Turnover Sheet:

Plant Status: The plant is starting up following a refueling outage. Reactor Power is approximately 2%. Reactor Pressure is approximately 525 psig controlled by the Main Turbine Bypass Valves.

Risk: Green

Activities in Progress: Procedure 2.1.1 Start up has been completed up to steps

- 4.13.2 - 4.17 - 5.24

500 psig walkdown is in progress in the Reactor Building and Turbine Building. Hold at this power level until the walkdown is completed.

LCOs in effect: None

Equipment out of service: None

Activities for the Shift: After turnover, the crew is to shift CRD Pump in accordance with Procedure 2.2.8.

Maintain current power level until contacted that the 500 psig walkdown is completed.

Scenario Outline

Facility: <u>Cooper Nuclear Station</u> Scenario No.: <u>NRC 4 (Spare)</u> Op-Test No.: <u>1</u>								
Examiners: Operators:								
Initial Conditions: The plant is operating at approximately 100% power. There are thunderstorms in the area and Nemaha Co. is in a thunderstorm watch. After turnover, the crew is to continue with the Core Spray Surveillance.								
Event No.	Malf. No.	Event Type*	Event Description					
1	N/A	N,TS	CS Surveillance					
2	2	С	CS Pump Trip					
3	3	C,TS	Torus to Drywell Vacuum Breaker Opens					
4	4	Ν	Severe Thunderstorm Warning, increased winds, shift Air Comps.					
5	5	C,TS	Lightning Strike – 125V B Ground loss of HPCI Starter Rack					
6	6	M,ψ	Lightning Strike – Both Reactor Feed Pump Suction Pressure Trip					
7	7	С	Loss of 125VDC A					
8	N/A	ψ	Emergency Depressurization to restore level with low pressure systems					
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor								

 ψ Critical Task are located in Event 5 and 7.

Scenario Objective

Evaluate the crew's ability to perform surveillance and normal operations and respond to instrument failure which has an input to the Reactor Vessel Level Control System.

Evaluate the crew's response to a loss of RPV level indication and entry into the RPV Flooding procedures.

Evaluate CRS ability to determine Tech Spec LCOs are not met and take appropriate Required Actions.

Scenario Summary

Initial Conditions:

- 100% Power
- Surveillance Procedure 6.1CS.101, CORE SPRAY TEST MODE SURVEILLANCE OPERATION (IST) (DIV 1) (92 day) is due to be performed at the beginning of shift.

Events:

- CS Surveillance
- CS Pump Trip
- Torus to Drywell Vacuum Breaker Opens
- Severe Thunderstorm Warning, increased winds, shift Air Comps.
- Lightning Strike 125V B Ground loss of HPCI Starter Rack
- Lightning Strike Both Reactor Feed Pump Suction Pressure Trip
- Loss of 125VDC A
- Emergency Depressurization to restore level with low pressure systems

Scenario Sequence

- Normal activity CS Surveillance
- Component Failure before EOPs CS Pump Trip
- Component Failure before EOPs Torus to Drywell Vacuum Breaker Opens
- Abnormal event with Normal Activity Severe TS Warning, shift Station Air Compressors.
- Component Failure before EOPs Lightning Strike 125VB Ground loss of HPCI Starter Rack
- Major Event Lightning Strike Both Rx Feed Pump Suction Pressure Trip circuit initiates
- Component Failure after EOPs 125VDC Bus A failure
- Accident mitigation strategy Alternate RPV Injection to control level

Event One: CS Surveillance

Malfunction Required: None

Objective: Evaluate the crew during normal equipment surveillance. Evaluate SRO Tech Spec entry for CS surveillance

Success Path: The A Core Spray Pump is started and the minimum flow valve is verified to close as flow is raised. The SRO will address Tech Specs for inoperable subsystem and pump.

Event Two: CS Pump Trip

Malfunction Required: CS01a Core Spray A pump trip.

Objective: Evaluate the crew's response to the tripping of the CS Pump. Evaluate the CRS directing the steps of the surveillance that must be performed and those to be N/Aed.

Success Path: The Crew places the "A" Core Spray system valves back to the normal alignment.

Event Three: Torus to Drywell Vacuum Breaker NRV-21 opens

Malfunction Required: PC02b Torus To Drywell Vacuum Breaker Failure NRV-21 (open) set at 100%

Objective: Evaluate the crew's response to a vacuum breaker failing open. Evaluate the CRS addressing Technical Specifications for inoperable vacuum breaker.

Success Path: The SRO addresses Tech Specs and declares the vacuum breaker inoperable.

Event Four: NAWAS issues Severe Thunderstorm Warning

Malfunction Required: HV03 Lightning Strike

Objective:

Evaluate the crew's response to a weather emergency and performance of mitigating steps.

Success Path:

The Crew enters 5.1Weather and prepares the site for severe weather. The crew shifts the Station Air Compressors and aligns REC to the running compressor. The CRS ensures that a safety announcement is made over the Gaitronics to help protect the personnel on site.

Event Five: Lightning Strike - Lightning Strike – 125VB Ground loss of HPCI Starter Rack TS-3.0.3 Shutdown

Malfunction Required: HV03 Lightning Strike ED12A HPCI Starter Rack Loss of Power OR RA:MUX01C072 125V DC B Bus Ground Annunciator

Objective:

Evaluate the crew's response to a ground on the 125 V DC System and subsequent loss of HPCI Starter Rack.

Evaluate the CRS addressing Technical Specifications.

Success Path: The Crew identifies the loss of the HPCI Starter Rack by walking down the control board. The CRS determines that HPCI is inoperable

Event Six: Lightning Strike – Both Rx Feed Pump Suction Pressure Trip circuit initiates

Malfunction Required: HV03 Lightning Strike FW01A Time Delay 10 seconds FW01B Time Delay 15 seconds Override Annunciator A1/A6 RFP A Suction Pressure Low ON Override Annunciator A2/A3 RFP B Suction Pressure Low ON

Scenario Outline

Objective:

Evaluate the crew's response to the failure of the suction pressure switches for both Reactor Feed Pumps and timed sequence of tripping. This Results in the subsequent loss of feedwater to the vessel.

Success Path:

The Crew identifies the loss of feedwater and scrams the reactor prior to the automatic trip. The Crew should use their only available injection sources to maintain and recover level.

Event Seven: 125VDC Bus A failure

Malfunction Required:

ED12D Loss of 125 VDC Bus Distribution Panel

Objective:

Evaluate the crew's ability to recognize the loss of RCIC and inability of the remaining high pressure injection sources to restore level.

Success Path:

The Crew identifies the loss of RCIC and the inability to restore level. The Crew transitions to Alternate RPV Injection using SLC and CRD.

Event Eight: Anticipate emergency depressurization, or emergency depressurizes

Malfunction Required: None

Objective:

Evaluate the crew's ability to recognize the inability of remaining high pressure injection sources to restore RPV water level and either Alternate Emergency Depressurizes or Emergency Depressurizes the RPV to allow low pressure systems to restore level.

Success Path:

The Crew identifies the loss of loss of RCIC to restore level. The Crew transitions to Alternate RPV Injection using SLC then to Emergency Depressurization to refill the vessel.

Scenario Termination:

When the rate of level decrease has slowed because of the use of alternate injection sources or the crew has emergency depressurized the vessel and injected with low pressure systems or at the direction of the lead examiner.

Required Operator Actions

Op-Test No.: 1		Sc	enario No.: 4 Event No.: 1			
When to initiate:		When the Crew has assumed the watch and at the direction of the lead examiner.				
Event Description: CS Surveillance 6.1CS.101						
Time	Position	Position Applicant's Action or Behavior				
		Enter Tech Spec LC	CO 3.5.1			
		Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.				
		APPLICABILITY:	MODE 1,			
	CRS		MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure < 150 psig.			
		Condition A	One low pressure ECCS injection/spray subsystem inoperable.			
		Required Action A.	1 Restore low pressure ECCS injection/spray subsystem(s) to operable status.			
		Completion Time	7 days			
		Declare CS Subsys	tem A inoperable.			
	BOP	Make plant announcement and then start CS Pump A.				
	BOP	Wait ~ 40 seconds a	and ensure Min flow valve MO-5A remains open.			
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Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 1
When	to initiate:	When the Crew has assumed the watch and at the direction of the lead examiner.
Event	Description	: CS Surveillance 6.1CS.101
Time	ime Position Applicant's Action or Behavior	
		Crack open CS-MO-26A, TEST LINE RECIRC VLV, by jogging valve in open direction for 1/2 second. After allowing system to run for a minimum of 10 seconds, slowly jog CS-MO-26A full open Check flow on CS-FI-50A ≥ 5000 gpm. NOTE - CS-MO-5A closes when subsystem flow has been ≥2120 gpm for - 8 seconds. Check CS-MO-5A closes. Throttle CS-MO-26A until flow on CS-FI-50A is 5000 gpm and then record data on Attachment 1, Table 1.
		END OF EVENT
	Notes	
	Proceed to	the next event at direction of the lead examiner.

Appen	ıdix D	Required Operator Actions Form ES-D-2
Ор-Те	est No.: 1	Scenario No.: 4 Event No.: 2
When	to initiate:	This event will occur when Core Spray flow is raised above 4500 gpm.
Event	Description	I: CS Surveillance, CS A Pump Trip
Time	Position	Applicant's Action or Behavior
	Booth Operation	Ensure that Malfunction CS01A, Core Spray Pump A trip, occurs at a flow rate of <u>></u> 4500 gpm.
	BOP	Respond to alarm 9-3-1/C-7 CORE SPRAY PUMP A TRIP and report condition to CRS.
	CRS	Direct surveillance be halted and contact WCC for support.
	CRS/BOP	Reviews the surveillance and determines the steps that must be performed and which can be N/Aed.
		The Operator will N/A the following step of Surveillance 6.1CS.101 Throttle CS-MO-26A until flow on CS-FI-50A is 5000 gpm and then record data on Attachment 1, Table 1. N/A Check PMIS indicates N906 CS PUMP A STATUS ON. N/A
		Check locally FC-R-1 F (R-881-NE Quad) is running. N/A
	BOP	Maintain 5000 gpm flow on CS-FI-50A for 2 minutes to allow system to stabilize. N/A
		NOTE - Steps 4 .26 through 4 .28 may be performed during 2 minute flow stabilization period. N/A
		Record motor amps for CS Pump A N/A
		Record press and status of RB aux cond pump. N/A
		Check press change Steps 4.7 and 4.27 < 20 psig . N/A

Appen	idix D	Required Operator Actions Form ES-D-2
Op-Te	est No.: 1	Scenario No.: 4 Event No.: 2
When	to initiate:	This event will occur when Core Spray flow is raised above 4500 gpm.
Event	Description	I: CS Surveillance, CS A Pump Trip
Time	Position	Applicant's Action or Behavior
		NOTE - Vibration data shall be taken Figure 1, N/A
		After 2 min flow stable period and while maintaining flow on CS-FI- 50A at 5000 gpm, record data on Att 1, Table 2 . N/A
		Record Post-Start data on Attachment 1, Table 3 . N/A
	BOP	Performs steps 4.31 and 4.32 4.31 Close CS-MO-26A. 4.32 Check CS-MO-5A opens.
		The Operator will N/A the following step of Surveillance 6.1CS.101
		4.33 Operate CS Pump A for ~40 sec to est. min flow cond. N/A
		4.34 If CS-MO-5A closes during 40 second run, stop CS Pump A immediately and terminate procedure; N/A
	BOP	4.35 After CS Pump A has run for ~40 seconds on min flow, check CS-MO-5A is still open and did not close during this time. N/A
		4.36 Stop CS Pump A and ensure its switch spring returns to NORMAL AFTER STOP (green flagged). N/A
		4 .37 Check PMIS indicates N906 CORE SPRAY PUMP A STATUS OFF. N/A
	BOP	Have IAC perform following:

Appen	dix D	Required Operator Actions Form ES-D-2
Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 2
When	to initiate:	This event will occur when Core Spray flow is raised above 4500 gpm.
Event	Description	: CS Surveillance, CS A Pump Trip
Time	Position	Applicant's Action or Behavior
		Close CS-78. Remove 0 to 400 psig gauge. Notify Shift Manager that CS Subsystem A has been returned to standby status. N/A 4.40 Close REC-MO-711 or REC-MO-714 if no longer required.
	Role Play	As WCC SRO receive CS Pump A status and provide support as requested by CRS.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Required Operator Actions

Ор-Те	st No.: 1	Sc	enario No.: 4 Event No.: 3
Event	Description	: Torus to Drywell Va	acuum Breaker, NRV-21 fails open
Time	Position	A	pplicant's Action or Behavior
	Booth Operation	When directed by le PC02b Torus to D	ead examiner, insert Malfunction r ywell Vacuum Breaker Failure NRV-21
		Respond to alarm and report to CRS.	J-1/B-1 TORUS-DW VACUUM RELIEF OPEN
		OPERATOR OBSE	RVATION AND ACTION
	BOP	Observe sup	pression chamber and drywell pressures.
		Ensure mast	er control switch to CLOSE.
		Ensure contr AOV-NRV31	ol switches for PC-AOV-NRV20 through PC- to CLOSE.
	BOP	Report to CRS the	valve will not close with its control switch.
		Enter Tech Spec LO	CO 3.6.1.8
		LCO 3.6.1.8	Nine suppression chamber-to-drywell vacuum breakers shall be OPERABLE for opening.
			AND
	CRS		Twelve suppression chamber-to-drywell vacuum breakers shall be closed, except when performing their intended function.
		APPLICABILITY:	MODES 1, 2, and 3.
		Condition B	One suppression chamber-to-drywell vacuum breaker not closed.
		Required Action	B.1 Close the open vacuum breaker.

Required Operator Actions

Ор-Те	est No.: 1	Scenario No.: 4 Event No.: 3
Event	Description	: Torus to Drywell Vacuum Breaker, NRV-21 fails open
Time	Position	Applicant's Action or Behavior
		Completion Time 12 hours
		Declare NRV-21 inoperable.
		END OF EVENT
	Notes	
	Proceed to	the next event at direction of the lead examiner.

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Required Operator Actions

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Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 4	
Event	Description	cription: Report of severe thunderstorm warning Lightning Strike.	
Time	Position	Applicant's Action or Behavior	
	Booth Operation	When directed by lead examiner, make the following announcement.	
	Role Play	Sound tone then "The National Weather Service in Omaha Nebraska has issued a Severe Thunderstorm Warning for the following counties in Southeastern Nebraska and Northwestern Missouri; Johnson and Nemaha in Nebraska and Atchison Co. in Missouri effective until today. Strong winds and possibly large hail can be expected during these storms." Repeat announcement.	
	CRS	Announces entry into 5.1Weather and assigns the BOP Operator the Subsequent Operator Actions, Attachment 2.	
	CRS	Contacts Operation's Management of the Severe Thunderstorm Warning and entry into 5.1Weather.	
	BOP	Contacts Doniphan Control Center about the potential threat to continued generation or switchyard reliability.	
	Role Play	As Doniphan Control Center acknowledge the report.	
	CREW	Reviews 5.3EMPWR, 5.3GRID, 5.3SBO and 5.7.1	
	Booth Operation	Insert Malfunction HV03 Lightning Strike. Insert Remote HV02 to raise wind speed to 55 mph.	
	BOP	Sound emergency alarm for 10 seconds. Make following Gaitronics announcement: Attention, high winds are in the area, if weather conditions permit, personnel should seek shelter in the following areas: TSC, communications building, CAS, first floor west warehouse, Training classrooms H, I, J, or any area within the power block.	

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 4
Event Description: Report of severe thunderstorm warning Lightning Strike.		: Report of severe thunderstorm warning Lightning Strike.
Time	Position	Applicant's Action or Behavior
		Contact Security and have them conduct a sweep of areas to augment Gaitronics announcement.
	Booth Operation	Insert Malfunction HV03 Lightning Strike.
		If SAC 1A is not load carrying compressor, place control switch (PANEL A) to OFF.
	BOP	If SAC 1A is load carrying compressor, place SAC 1B control switch to OFF (PANEL A).
		Align SAC 1B to REC per Procedure 2.2.76.
	CRS	 Contacts the Work Control Center and instructs them to ensure following: Inner RR Airlock Door closed. Ceiling Plugs installed in both DG Rooms. SW Pump Room Ceiling Plugs installed. If handling loads with Reactor Building crane: Place load in a safe location. Have Maintenance ensure crane tornado latches are engaged.
	Role Play	As WCC Operator acknowledge the report.
		END OF EVENT
	NOTE	Over the next 15 minutes the storm will pass and the wind speed will lower.

Required Operator Actions

Ор-Те	p-Test No.: 1 Scenario No.: 4 Event No.: 4		
Event	nt Description: Report of severe thunderstorm warning Lightning Strike.		
Time	Position	Applicant's Action or Behavior	
	Notes		

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Op-Te Event	st No.: 1 Description	Scenario No.: 4 Event No.: 4 : Lightning Strike – 125V DC Bus B Ground and HPCI Starter Rack	
loss of	power.		
Time	Position	Applicant's Action or Behavior	
		When directed by lead examiner insert Malfunction and Overrides:	
	Booth	HV03 Lightning Strike ED12A HPCI Starter Rack Loss of Power	
	Operation	OR RA:MUX01C072 125V DC Bus Ground Annunciator	
		5 seconds later remove the Ground Alarm Annunciator.	
		Responds to the Annunciator and reports that there is a Ground on 125V DC.	
	BOP	Attempts to locate and isolate ground per Procedure 2.0.1, by calling the Station Operator to investigate.	
		If 125 VDC Bus 1B de-energized, enter Procedure 5.3DC125. N/A	
	Role Play	As the Station Operator report back that the ground has appeared to have cleared.	
	Booth Operation	Modify Remote HV02 Wind Speed to lower back to approximately 10 mph over the next ten minutes.	
	CREW	Recognizes that the lights have gone out for the HPCI system. Determine that the HPCI Starter Rack is de-energized.	
		Declares HPCI Inoperable in accordance with Tech Spec 3.5.1	
	CRS	Condition C. HPCI System inoperable. C.1 Verify by administrative means RCIC System is OPERABLE within 1 hour; <u>AND</u> C.2 Restore HPCI System to OPERABLE status within 14 days.	
		AND	
		Condition D. HPCI System inoperable. <u>AND</u> Condition A entered. D.1Restore HPCI System to OPERABLE status within 72 hours. <u>OR</u> D.2 Restore low pressure ECCS injection/spray subsystem to	

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 4
Event loss of	Description power.	: Lightning Strike – 125V DC Bus B Ground and HPCI Starter Rack
Time	Position	Applicant's Action or Behavior
		OPERABLE status within 72 hours.
	CRS	Briefs the Crew on HPCI's unavailability
		END OF EVENT
	Notes	

Op-Test No.: 1 Event Description:		Scenario No.: 4 Event No.: 5 Lightning strike and both Reactor Feed Pump Suction Pressure		
Time	Position	Applicant's Action or Behavior		
	Booth Operation	When directed by lead examiner, insert the following Malfunctions. Insert Trigger 5. HV03 Lightning Strike FW01A Time Delay 10 seconds FW01B Time Delay 15 seconds Override Annunciator A1/A6 RFP A Suction Pressure Low ON Override Annunciator A2/A3 RFP B Suction Pressure Low ON		
	CREW	Recognizes the loss of 1A Reactor Feed Pump.		
	BOP	Reports the loss of one Feed Pump and that that is a condition that requires entry into 2.4MC-RF		
	BOP	Announces the tripping of the B Feed Pump as well and reports reactor water level is dropping.		
	CRS	Directs the RO to scram the plant.		
	RO	 Performs the Mitigating Task Scram Actions of Procedure 2.1.5 (Attachment 1); 1. MITIGATING TASK SCRAM ACTIONS Press both RX SCRAM buttons. Place REACTOR MODE switch to REFUEL. Announce reactor scram and reactor status to Control Room including controlling systems for critical parameters. Reactor Power All Rods In Reactor Water Level Reactor Pressure 		

Op-Test No.: 1		Scenario No.: 4 Event No.: 5		
Event Description: Trip		Lightning strike and both Reactor Feed Pump Suction Pressure		
Time	Position	Applicant's Action or Behavior		
		Performs Procedure 2.1.5, Attachment 2 Reactor Power Control actions:		
		REACTOR POWER CONTROL		
		Ensure REACTOR MODE switch is in SHUTDOWN.		
		Ensure operating RR pumps have run back to 22% speed.		
	RO	NOTE – Steps 1.4 and 1.5 may be performed concurrently.		
		Verify all control rods are fully inserted.		
		Observe nuclear instrumentation and perform following: Insert SRM detectors. Insert IRM detectors. Change APRM recorders to IRMs. Range IRMs on scale. Check reactor power is lowering.		
		Performs Procedure 2.1.5, Attachment 3 Reactor Water Level Control, actions:		
	RO	Trip all but one condensate booster pump.		
		Trip all but one condensate pump.		
	BOP	Performs Procedure 2.1.5, Attachment 4 Reactor Pressure Control, actions:		
		REACTOR PRESSURE CONTROL If necessary to stabilize or reduce reactor pressure, BPVs can be operated in manual by performing following:		
		Transfers bypass valve control from AUTO to MANUAL by pressing BPV MANUAL button and check it backlights.		

Op-Test No.: 1 Event Description:		Scenario No.: 4 Event No.: 5 Lightning strike and both Reactor Feed Pump Suction Pressure	
Time	Position	Applicant's Action or Behavior	
		Press BPV RAISE or LOWER buttons to adjust impulse pressure or reactor pressure.	
		Maintain RPV pressure in the prescribed band by using the following systems based on plant conditions:	
		• DEH per Procedure 2.2.77.1.	
		SRVs per Procedure 2.2.1.	
		RCIC per Procedure 2.2.67.1.	
	CRS	Enter EOP 1A if RPV level lowers below + 3 in.	
	CRS	Direct RO to maintain RPV level +3 in. to +54 in.	
	CRS	Direct BOP to stabilize RPV pressure below 1050 psig with SRVs/RCIC.	
	RO	Reports Reactor Water level and that he cannot restore it to the current band. And request a new band.	
	CRS	Directs the RO to maintain water level above -150 inches with normal (RCIC) and alternate injection systems (SLC and CRD).	
	CRS	Directs the BOP or RO to Inhibit ADS.	
		END OF EVENT	

Op-Te Event Trip	st No.: 1 Description:	Scenario No.: 4 Event No.: 5 Lightning strike and both Reactor Feed Pump Suction Pressure
Time	Position	Applicant's Action or Behavior
	Notes	

Required Operator Actions

Op-Test No.: 1		Scenario No.: 4 Event No.: 6	
Event Description		: Loss of 125V DC Distribution Bus A	
Time	Position	Applicant's Action or Behavior	
	Booth Operation	When directed by lead examiner, insert the following Malfunctions. Insert Trigger 6. HV03 Lightning Strike ED12D Loss of 125 VDC Bus Distribution Bus A	
	BOP/RO	Recognizes the loss of indications for Division 1 battery supplied equipment and several alarms indicating that 125 VDC Bus is de- energized. The following Annunciators will alarm: Panel C-1/ A-2 125 VDC SWGR BUS 1A BLOWN FUSE Panel C-1/ D-3 DG-1 DC CONTROL POWER FAILURE Panel A-1/ G-1 ANNUNCIATOR SYSTEM TROUBLE Panel A-1/ G-2 RVLC/RFPT NETWORK TROUBLE Panel 9-5-2/ E-7 ARI & ATWS RPT LOGIC POWER FAILURE Panel 9-5-2/ G-4 RVLC SYSTEM TROUBLE Panel 9-5-2/ G-4 RVLC SYSTEM TROUBLE Panel 9-4-1/ A-3 RCIC LOGIC POWER FAILURE Panel 9-4-1/ B-1 RCIC TURBINE TRIP Panel 9-3-1/ A-5 RHR LOGIC A POWER FAILURE Panel 9-3-1/ B-7 CORE SPRAY A LOGIC POWER FAILURE Panel 9-3-1/ E-1 ADS CONTROL POWER FAILURE	
	CRS	Enters 5.3DC125 LOSS OF 125 VDC DISTRIBUTION PANEL A Attachment 1 Page 3	
	BOP/RO	Updates the crew that RCIC has tripped and there are no more normal high pressure injection sources.	
		LOSS OF 125 VDC DISTRIBUTION PANEL A	
		If 1AE, BUS 1E TIE BKR, is flagged closed, place 1 BE, BUS 1E TIE BKR, to PULL-TO-LOCK.	
		Send Operator to R-976-W to stand by to open RRMG A field	

Required Operator Actions

Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 6			
Event	Event Description: Loss of 125V DC Distribution Bus A				
Time	Position	Applicant's Action or Behavior			
		breaker locally.			
		Send Operator to Non-Critical Switchgear Room to stand by to open RRMG A drive motor breaker locally.			
		When Operators in place, perform following simultaneously:			
	Open RRMG A drive motor Breaker EE-CB-4160C(1 CN) or EE-CB-4160C (1CS) by depressing TRIP button below and to of shutter slide.				
		Open RRMG A field breaker by depressing TRIP button on RRMG-CB-CB11A.			
		Enter Procedure 2ARR for RR Pump Trip.			
		Secure SAC 1A.			
	Transfer 4160V Bus 1B to Startup Transformer per Proced 2.2.18.				
		Transfer 4160V Bus 1D to Startup Transformer per Procedure 2.2.18.			
		NOTE — ARI retains logic power, but AUTO and MANUAL modes are lost due to solenoid power loss.			
		At 125 VDC Switchgear 1A, open NORMAL FEEDER TO 125 VDC DISTRIBUTIO N PANEL A, EE-DSC-125A (PNL-A).			

Required Operator Actions

Op-Test No.: 1		Scenario No.: 4 Event No.: 6		
Event Description		: Loss of 125V DC Distribution Bus A		
Time	Position	Applicant's Action or Behavior		
		ALTERNATE RPV INJECTION WITH CRD SYSTEM		
		Ensure a full scram exists.		
		Place standby CRD discharge filter in service. Contacts RX Building Station Operator to perform his actions in the Rx Building for CRD Flow Maximization.		
	Role Play	Wait 4 minutes and call the RO or BOP Operator back and inform him that the Reactor Building Steps have been completed.		
	BOP/RO	Contacts the Rx Building Station Operator to perform the necessary steps of Procedure 5.8.4 to inject with SLC with Demin Water.		
	BOP/RO	ALTERNATE RPV INJECTION WITH SLC SYSTEM FROM DEMINERALIZED WATER		
		Notify Radwaste Operations Supervisor or available Water Treatment personnel that makeup to demineralized water storage tank will be required.		
		Inform CRS that A and B SLC pumps are ready for Alternate RPV Injection from demineralized water.		
		When CRS directs, commence Alternate RPV Injection as follows (PANEL 9-5) :		
		Place one keylock switch to START.		
		SLC Pump A; or		
		SLC Pump B.		
		Verify red indicating light for pump illuminates.		

Required Operator Actions

Op-Test No.: 1		Scenario No.: 4 Event No.: 6		
Event	Event Description: Loss of 125V DC Distribution Bus A			
Time	Position	Applicant's Action or Behavior		
		Verify SLC-14A, LOOP A SQUIB VALVE, fired if SLC Pump A was started by observing that SQUIB VALVE READY Light 1106A has extinguished.		
		Verify SLC-14B, LOOP B SQUIB VALVE, fired if SLC Pump B was started by observing that SQUIB VALVE READY Light 1106B has extinguished.		
		Observe SLC pump discharge pressure rises above RPV pressure as read on SLC-PI-65, PUMP PRESS (PANEL 9-5).		
		If EOP 1A, RPV LEVEL, Step RC/L-9 is reached, disregard any demineralized water low pressure alarms and perform Steps 6.13.1 through 6.13.5 for other SLC pump.		
		Inform CRS that Alternate RPV Injection with demineralized water using SLC System has commenced.		
	BOP/RO	Periodically reports Reactor Water Level.		
	CRS	When Reactor Water level drops to -158 inches, ensures with the BOP and RO that there is an injection system is available. Will update the crew to maintain RPV Water Level above -183 inches.		
	CRS	Directs the BOP/RO to mark reactor water level at <u>>-183</u> inches.		
		END OF EVENT		

F

Required Operator Actions

Op-Test No.: 1		Scenario No.: 4 Event No.: 6			
Event	Event Description: Loss of 125V DC Distribution Bus A				
Time	Time Position Applicant's Action or Behavior				
	Notes				
	Note:	The next event happens when the crew has determined that RPV water level cannot be restored and maintained above -183 inches.			

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Required Operator Actions

Op-Test No.: 1		Scenario No.: 4 Event No.: 7
When to initiate:		This will occur when RPV water level cannot be restored and maintained above -183 in.
Event systen	Description	: Emergency Depressurize the vessel to inject with low pressure
Time	Position	Applicant's Action or Behavior
	BOP	Reports RPV Water level is dropping with all available high pressure Alternate Injection Sources running and injecting.
	CRS	Determines that a means of RPV injection is available and updates the crew that EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. Enters EOP 2A
	CRS/BOP	From EOP 2A - Determines that high drywell pressure ECCS initiation signal does not exist (<1.84 psig)
	BOP	Reports Primary Containment level, and the CRS continues if Torus water level is above 6 ft.
	CRS	Directs the BOP to Open 6 SRVs and restore IA/N2 supply if necessary Maintain RPV pressure less than 50 psig above torus pressure
	BOP	Opens 6 SRVs on Panel 9-4 and reports RPV Pressure is dropping rapidly.
	CRS	Directs the RO or BOP to inject with Low Pressure Systems to restore level within the given level band.
		END OF EVENT

Appendix D		Required Operator Actions F	Form ES-D-2
Ор-Те	st No.: 1	Scenario No.: 4 Event No.: 7	
When to initiate:		This will occur when RPV water level cannot be restored maintained above -183 in.	d and
Event systen	Description	: Emergency Depressurize the vessel to inject with low p	ressure
Time	Position	Applicant's Action or Behavior	
	Notes		
	When the le Depressuriz with low pre	ead examiner has seen enough or the Crew has Emergen red the vessel and injected to restore level in the normal le essure systems, the scenario can be stopped.	icy evel band
		END OF SCENARIO	

Simulator Setup

Initialize the simulator in IC124 (EOC)

Triggers and Malfunctions

- E1 None
- E2 CS01A Core Spray Pump Trip
- E3 PC02B Torus to Drywell Vacuum Breaker Failure (open).
- E4 HV03 Lightning Strike
- E5 HV03 Lightning Strike
 - ED12A HPCI Starter Rack Loss of Power
- E6 HV03 Lightning Strike
 - FW01A Feed Pump 1A Trip; Time Delay 10 Seconds
 - FW01B Feed Pump 1B Trip; Time Delay 15 Seconds
- E7 HV03 Lightning Strike
 - ED12D Loss of 125V DC Bus Distribution Panel
- E8 None

Events

When Core Spray flow exceeds 4500 gpm this will insert trigger 2 automatically.

Remotes

E4 – HV02 Wind Speed set to 55mph

Overrides

- E5 RA:MUX01C072 125V DC B Bus Ground Annunciator
- E6 RA:MUX10C002 Annunciator A1/A6 RFP A Suction Pressure Low ON
- E6 RA:MUX10C003 Annunciator A2/A3 RFP B Suction Pressure Low ON

Panel Set-up

- Reset to IC 124
- Depress the CS A in Test button on the Status panel.

Procedures Needed

6.1CS.101 marked up through step 4.11

Tags Hung

None

Turnover Sheet:

Plant Status: The plant is operating at 100% power in May, there are severe Thunderstorms in the area and Nemaha Co. is in a Severe Thunderstorm Watch.

Risk: Green

Activities in Progress: Core Spray A surveillance 6.1CS.101 has been started and is completed through step 4.11. The pump is in standby and has been filled and vented.

LCOs in effect: None

Equipment out of service: None

Activities for the Shift: After turnover, the crew will continue the "A" Core Spray Surveillance.