Scenario Outline

Facility:	Fort Calhoun		Scenario No: 1 Op-Test No			
Examiners:				Operators:		
Initial Co	Initial Conditions: IC# 1 100% Power MOC					
Turnover: Diesel Generator DG-1 and Charging Pump CH-1B are out of service. Maintain full power operation.						
Event	Malf No.	Event		E Daa	Event	
1	COP T:F908	I - sec	S/G steam flow	transmitter out	put fails low	
2	COP T:122H2	I - pri	Hot leg RTD fails high (tech spec entry)			
3	ORP X10I227	C - sec	Heater Drain Pump, FW-5B, trips			
4	COP JLB218LL	I - pri	VCT level transmitter fails low			
5	MFP CRD06 1	C - pri	CEA drop (tech	CEA drop (tech spec entry)		
6		R – pri N - sec	T. S. required p	ower reduction	L	
7	ORP X01I392	C - pri	CCW pump, AC	C-3B, trips (tec	ch spec entry)	
8	MFP CRD06 5	C - pri	Second CEA dr	ops – Manual I	Reactor Trip Required	
9	MFP SGN01A	M - all	Steam Generato	or Tube Rupture	2	
10	COP RSGH041A	C - sec	MSIV on rup tu	MSIV on rup tured S/G will not close		

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

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Op-Test No.:		Scenario No.: 1	Event No.: 1	Page 2 of 10			
Event De	Event Description: S/G steam flow transmitter output fails low						
Time	Position	App	licant's Actions or Behav	vior			
	SEC	Respond to "S/G-2B leve	el low alarm"				
	SEC	Identify and communicat	e lowering FW flow and	level in S/G "B"			
	SRO	Direct SEC to take manual	al control of feedwater (L	C-1102 in manual)			
	SEC	Take manual control and restore feedwater level before level lowers to 50% NR on "B" S/G					
	SEC	Identify FR-908 as failed	instrument				
	SRO	Inform OCC of failure of FT-908					
	SEC	Continue to monitor and control S/G level					
	PRI	Monitor primary paramet	ers				

Op-Test No.:		Scenario No.: 1	Event No.: 2	Page 3 of 10		
Event De	Event Description: Hot leg RTD fails high (tech spec entry)					
Time	Position	Арр	licant's Actions or Behav	vior		
	PRI	Responds to numerous a A4. Reports that Trip Un	larms on CB-4, panel A-2 iit's 1, 9 and 12 on Chanr	20 and CB-1,2,3, panel nel "A" are tripped		
	PRI/SEC	Reviews ARP				
	PRI	Checks power, pressure a	and temperature indicatio	ns		
	PRI	Determines that alarm causes by failed T-hot channel (C/T122H)				
	SRO	Consults T. S. 2.15 and 2.10.4 (5)				
	SRO	Obtains keys and directs PRI to bypass TU's 1,9 and 12 on affected channel				
	PRI	Bypasses TU's 1, 9 and 12 on affected channel				
	SRO	Makes notification of fail	ed transmitter and bypass	sed TU's		

Operator Actions

Form ES-D-2

Op-Test No.:		Scenario No.: 1	Event No.: 3	Page 4 of 10			
Event De	Event Description: Heater Drain Pump, FW-5B, trips						
Time	Position	App	licant's Actions or Behav	ior			
	SEC	Respond to "Heater Drain	Pump A Overload/Trip"	Alarm			
	PRI or	Refer to ARP					
	SEC	Determine that standby H	eater drain pump did not s	tart			
	SRO	Direct SEC to start standb	Direct SEC to start standby Heater Drain Pump				
	SEC	Start standby Heater Drain Pump, FW-5A					
	SEC	Dispatch Operator to check pump status					
	SRO	Report Heater Drain Pump Trip to the OCC					
	SEC	Monitor Condensate, Hear	ter Drain and Feedwater s	ystem			
	PRI	Monitor primary plant sys	tems				

Op-Test No.:		Scenario No.: 1	Event No.: 4	Page 5 of 10		
Event De	Event Description: VCT level transmitter fails low					
Time	Position	App	olicant's Actions or Behav	vior		
	PRI	Respond to "Volume Contr	ol Tank Level LO-LO" alar	m		
	PRI or SEC	Obtain ARP-CB-1,2,3/A2				
	SRO	Direct PRI to check VCT le	evel			
	PRI	Report level on channel LI	C-219 is normal			
	PRI	Report charging pump suction swapped to SIRWT				
	SRO/PRI	Determine that level switch failed				
	SRO	Direct PRI to manually ope	en LCV-218-2 and close LC	V-218-3		
	PRI	Open LCV-218-2 and close	e LCV-218-3			
	PRI	Monitor and control primar	ry parameters			
	SEC	Monitor and control secondary parameters				
	PRI	Optional: may place off-normal placard on LCV-218-2 switch				
	SRO	Notify OCC of failure				

Op-Test	Dp-Test No.:Scenario No.: 1Event No.: 5Page 6 of 1			Page 6 of 10				
Event De	Event Description: CEA drop (tech spec entry)							
Time	Position	Арр	licant's Actions or Behav	vior				
	PRI	Identify event from "Dro	pped Rod" and other alar	ms				
	PRI	Determine only one rod h	has dropped (rod #1, grp 4	4)				
	SRO	Enter AOP-02 (CEDM M	Ialfunction)					
	SRO	Direct SEC to adjust turb	ine load to match reactor	power				
	SEC	Adjust turbine load to ma	atch reactor power					
	SRO	Direct RO to control pressurizer pressure and level						
	PRI	Monitor Pressurizer pressure and level						
	SRO	Direct PRI to reset Rod Drop Bistables						
	PRI	Reset Rod Drop Bistables						
	SRO	Notify Reactor Engineer						
	SRO	Consult Tech Sec 2.10.2. (Note: Requirements of this Tech Spec are covered in the actions required by AOP-02						
	SRO	Inform RO and SEC that than 70% within one hour	Tech Specs require a pov r	ver reduction to less				
	SRO	Notify system Operations	s of impending power red	luction				
	SEC	Continue manual control	of S/G level					

Operator Actions

Form ES-D-2

Op-Test No.:		Scenario No.: 1	Event No.: 6	Page 7 of 10		
Event De	Event Description: T. S. required power reduction					
Time	Position	Appl	icant's Actions or Behavi	or		
	SRO	Direct PRI and SEC to con	nmence power reduction			
	SRO	Direct PRI on method of be shifting charging pump suc (Emergency Shutdown)	pration to use. (Options a stion to the SIRWT, or en	re normal boration, tering AOP-05		
	PRI	Begin boration				
	SEC	Reduce turbine load to con	trol RCS Tc.			
	PRI	Monitor and control prima	ry parameters during pow	er reduction		
	SEC	2 Monitor and control secondary parameters during power reduction				
	SRO	Contact chemistry to sample RCS due to downpower				
	PRI	May contact Aux Building operator about waste tank level for power reduction				

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Op-Test No.:			Scenario No.: 1	Event No.: 7	Page 8 of 10	
Event De	Event Description: CCW pump, AC-3B, trips (tech spec entry)					
Time	Position		Appli	icant's Actions or Behavi	or	
	PRI	Re	espond to numerous CCW	/ alarms on CB-1,2,3		
	PRI	Ide	entify and report CCW pu	ımp trip		
	PRI	De	etermine and report auto s	start failure of backup CC	CW pumps	
	SRO	Di	rect PRI to manually star	t a CCW pump		
	PRI	Start a CCW pump				
	SRO	Direct PRI to monitor CCW pump discharge pressure and flow				
	PRI	Verify CCW operating parameters				
	SRO	Report CCW pump trip and auto start failures to OCC				

Op-Test No.:		Scenario No.: 1	Event No.: 8	Page 9 of 10	
Event De	Event Description: Second CEA drops – Manual Reactor Trip Required				
Time	Position PRI	App Respond to alarm. Inform	licant's Actions or Behavi SRO that second CEA has	or s dropped.	
	SRO	Direct PRI to manually tri	p the reactor.		
	PRI	Manually trip the reactor			
	SRO	Following manual or auto	reactor trip, direct standar	d post trip actions	
	PRI SEC	Following manual or auto reactor trip, direct standard post trip actions Perform Standard Post Trip Actions: • Verify control rod insertion, power lowering, negative startup rate • Verify turbine trip and generator trip • Verify electrical status – 4160, D/G, instrument power, 125V DC • Verify instrument air status • Verify CCW and raw water status • Verify RCS inventory control • Verify core heat removal • Verify S/G feed • Verify containment conditions			

Op-Test No.:		Scenario No.: 1	Event No.: 9, 10	Page 10 of 10		
Event De	scription:	Steam Generator A Tube Ru	upture			
Time	Position	Applicant's Actions or Behavior				
	PRI	Identify and report RCS in	ventory loss			
	PRI or SEC	Report rising radiation leve	els on RM-054A and/or R	M-057		
	SRO	Diagnose tube rupture - en	ter EOP-04 or EOP-20			
	SRO	Direct RCS cooldown - Th	ot less than 510°F			
	SEC	Cooldown RCS Thot to less	s than 510°F			
	PRI	RI Identify and verify PPLS				
	SRO SEC	Identify most affected steam generator (A)				
	SRO	Direct SEC to isolate steam generator A				
	SEC	Isolate steam generator A				
	SEC	Report failure of S/G A's	MSIV to close			
	SRO or SEC	Direct Plant Operator to attempt local closure of MSIV				
	SRO	Direct RO to depressurize	RCS to less than 1000 psi	a		
	PRI	Depressurize the RCS				
	PRI	Maintain subcooling				
	SEC	Monitor and control secon	dary parameters. Block S	GLS during cooldown.		
	PRI	Monitor and control prima	ry parameters			
		Scenario ends with RCS and Steam Generator "A	cooldown and depressur "isolated except for it's	ization in progress MSIV		

Scenario Outline

Facility: Fort Calhoun Scenario			Scenario No: 2		Op-Test No			
Examiners:				Operators:				
Initial Conditions: IC #1 100% Power MOC								
Turnover: Diesel driven FW pump, FW-54 and charging pump CH-1B are Out of Service. Maintain power.								
Event	Malf	Event		F	went			
No.	No.	Type*		Des	cription			
1	COP T:P910	I - sec	PT-910 fails hig	PT-910 fails high causing turbine bypass valve to open				
2	COP NCVPCH 1C	C - pri	Charging Pump, CH-1C, Trips (tech spec entry)					
3	MFP TUR05F	C - sec	High turbine vibration caused by inadequate oil cooling					
4	MFP NIS02D	I - pri	Wide Range NI	Wide Range NI channel D fails (tech spec entry)				
5	COP T:P103Y	I - pri	Pressurizer Pres	ssure channel, 1	03Y, fails low			
6	MFP SWD02A SWD02B	M - all	Loss of Offsite	Loss of Offsite Power				
7	File ATWAS_ PLUS1	M - all	ATWS – manua	ATWS – manual trip required				
8	RFP AFW10A	C - sec	Emergency Fee	dwater Storage	Tank line is blocked causing a			
9		M - all	Initiate Once-T	hrough Cooling	;			

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

Op-Test No.:		Scenario No.: 2	Event No.: 1	Page 2 of 9				
Event De	scription: PT	-910 fails high causing tu	rbine bypass valve to ope	n				
<u> </u>								
Time	Position	Арр	licant's Actions or Behav	vior				
	SEC	Identify rapid decrease in (VOPT ANN will alarm	RCS T cold if uncorrected)					
	SEC	Determine cause as turbine bypass valve being open (red light on CB-10,11)						
	SRO	Direct SEC to take manua	Direct SEC to take manual control of PCV-910 and close valve					
	SEC	Take manual control of PCV-910 and close it						
	SEC	Monitor RCS Tc						
	PRI	Monitor and control RCS parameters						
	SRO	Notify I & C of failure						

Op-Test No.:		Scenario No.: 2	Event No.: 2	Page 3 of 9				
Event De	scription: C	'har	ging Pump, CH-1C, Tri	ps (tech spec entry)				
Time	Position		Appl	icant's Actions or Behavi	ior			
	PRI	Re	espond to "Charging Pum	p Off-Normal" Annuncia	ator on AI-30			
	PRI	Re	eport Charging Pump Trip)				
	SRO	Di	rect PRI to Start a chargi	ng pump.				
	PRI	Sta	art charging pump, CH-1	А.				
	PRI	Di en	Direct Auxiliary Building Operator to check status of charging pumps and ensure packing cooling pump running for pump that was started					
	PRI	Control pressurizer level as needed						
	SRO	Refer to Technical Specifications. Enters 72 hour LCO per Tech Spec 2.4.2(1) due to 2 charging pumps being inpoerable						

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Op-Test No.:			Scenario No.: 2	Event No.: 3	Page 4 of 9			
Event Description: High turbine vibration caused by inadequate oil cooling					g			
Time	Position		Appli	icant's Actions or Behavi	or			
	SEC	Re	spond to Turbine Buildin	ng Operator's report of v	ibration			
	SEC	Re ris	port recorder indication of ing	of rising vibration on bea	ring #6, 7 mills and			
	SRO	En	ter AOP-26					
	SEC	Re	port vibration greater that	n 8 mills				
	SRO	Di	rect power reduction					
	SEC	Re	duce turbine load					
	PRI	Control reactivity during load reduction						
	SEC	Report turbine vibration below 8 mills						
	SRO	Di	Direct PRI and SEC to maintain power					
	SRO or SEC	Dispatch Turbine Building Operator to check turbine cooling						
	SRO or SEC	Upon receiving report of high lube oil temperature, direct Turbine Building Operator to raise cooling water flow						
	SEC	Continue to monitor vibration levels						

Appendix I)
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Op-Test No.:		Scenario No.: 2	Event No.: 4	Page 5 of 9		
Event De	scription: Wi	ide Range NI channel D fa	ils (tech spec entry)			
Time	Position	Арр	licant's Actions or Behav	vior		
	PRI	Respond to "Nuclear Inst	rument Channel Inoperat	ive Alarm"		
	PRI or SEC	Refer to ARP-CB4-A20				
	SRO	Direct PRI to check operation	ation of NIS channels			
	PRI	Report failure of WR cha	nnel "D" (NON-OP light	lit)		
	SRO	Optional : may refer to AOP-15 (not required at this power level)				
	SRO	Optional: May direct PRI to bypass channel D SUR trip				
	PRI	If directed, bypass channel D SUR trip				
	SRO	Enter Technical Specification 2.15 and enter 7 day LCO because WR channel D feed AI-212 on ASD panels				

Op-Test	No.:	Scenario No.: 2	Event No.: 5	Page 6 of 9				
Event De	escription:	Pressurizer Pressure chan	nel, 103Y, fails low					
Time	Position	Ar	Applicant's Actions or Behavior					
	PRI	Respond to "PZR Pressu 1,2,3 A4	re Off Normal Hi-Lo Cha	nnel Y" alarm on CB-				
	PRI or SEC	Refer to ARP						
	PRI	Identify deviation betwe	en pressurizer pressure cha	nnels.				
	SRO	Direct PRI to swap controlling channels or to take manual control of pressurizer pressure.						
	PRI	Switch controlling channel to channel 103X or take manual control of pressurizer pressure.						
	PRI	Monitor and maintain proper pressurizer pressure.						

Appendix D

Op-Test No.:		Scenario No.: 2	Event No.: 6, 7	Page 7 of 9			
Event De	scription: Lo	ss of Offsite Power with A	ATWS				
Time	Position	Арр	licant's Actions or Behav	vior			
	PRI	Determine and communic	cate that the reactor failed	to trip.			
	SRO	Direct PRI to manually tr	ip the reactor				
	PRI	Push CB-4 manual Reactor Trip Pushbutton.					
	SEC	Determine and communicate that Trip did not actuate.					
	SRO	Direct the PRI and SEC to initiate RPS panel (AI-31) trip and DSS trip.					
	SEC	Operate DSS Trip.					
	SRO	Direct PRI or SEC to open Clutch Power Supply Breakers					
	PRI or SEC	Open Clutch Power Supply Breakers					
	PRI	Determine and communicate that the rods have inserted.					
	SRO	Direct PRI and SEC to take Standard Post Trip Actions (SPTAs).					
	PRI SEC SRO	Perform Standard Post Tr Verify control rod Verify turbine trip Verify electrical s Verify instrument Verify CCW and r Verify RCS inven Verify RCS press Verify RCS press Verify S/G Feed- Verify S/G pressu Verify containment Direct PRI or SEC to hav	rip Actions: l insertion, power lowerin and generator trip tatus – 4160, D/G, instrun air status raw water status nory control ure control emoval Report loss of feedwate are and T-cold nt conditions re EONT minimize DC lo	g, negative startup rate nent power, 125V DC r ads			
	PRI or SEC	Direct EONT to minimize	e DC loads				
	SRO	Verify completion of SPT	ľA's				

Op-Test No.:		Scenario No.: 2		Event No.: 8	Page 8 of 9	
Event De Feedwate	Event Description: Emergency Feedwater Storage Tank line is blocked causing a total loss of Feedwater (once-through cooling required)					
Time	Position		Appl	icant's Actions or Behavi	or	
	SEC	Determine and comm	unica	te Loss of All Feedwater.		
	SRO	Direct SEC to attemp	t to re	store feedwater flow.		
	SEC	Start motor driven AF	FW pt	ımp (FW-6).		
	SEC	Start turbine driven A	FW p	oump (FW-10).		
	SEC	Report AFW flow car	n not	be established.		
	SEC	Enter EOP-06 or EOF	P-20			
	SRO	Direct PRI to trip all RCPs				
	PRI	Trip all RCPs				
	SRO	Direct SEC to isolate blowdown.				
	SEC	Isolate blowdown				
	SRO	Direct SEC to monitor S/G level for Once Through Cooling.				
	SEC	Report when WR level is approaching 20% on both S/G's				
	<u> </u>					

Op-Test	No.:	Scenario No.: 2	Event No.: 9	Page 9 of 9				
Event De	Event Description: Initiate Once Through Cooling							
Time	Position	Арр	plicant's Actions or Behavi	ior				
	SRO	Enter EOP-20/HR-4.						
	SRO	Direct PRI to initiate Once	e Through Cooling.					
	PRI	Open all HPSI loop inject	ion valves.					
	PRI	Start all available HPSI and	nd Charging Pumps.					
	PRI	Open Both PORVs						
	PRI	Verify PORVs have opened.						
	PRI	Report Once Through Cooling is initiated.						
	SRO	Direct PRI and SEC to monitor parameters.						
	PRI	Monitor primary parameters.						
	SEC	Monitor secondary parameters.						
		Scenario ends with Once-Through Cooling in progress.						

Scenario Outline

Fort Calhoun		Scenario No: 3	Op-Test No		
rs:			Operators:		
nditions: ICa	# 7 50%	Power, FW-54 Ou	ut of Service		
Turnover: Diesel driven FW pump, FW-54 is out of service. Maintain power					
Scenario objective: Evaluate ISRO candidates ir				d secondary positions with a	
acting as SR	0				
Malf No.	Event		E	Event	
COD	Type*	0 (11)	Controlling pressurizer level channel 101V fails low		
COP T:L101Y	I - pri	Controlling pres	ssurizer level c	hannel, 101 Y, Tails low	
COP T:L906Y	I - sec	Steam generator	r RC-2B level o	channel, 906Y, fails high	
MFP RCP09B	C - pri	Reactor Coolan	t Pump, RC-3B	B, lower seal failure	
COP T:P210	I - pri	Letdown pressu	re transmitter I	PCV-210 fails low	
MFP RCP10B	C - pri	Reactor Coolant Pump, RC-3B, middle seal failure			
	R – pri N - sec	Emergency shutdown			
RFP BCW10A	C - sec	Running Bearin	g water pump,	AC-9A, trips	
MFP RCS01C	M - all	Loss of Coolant	Accident		
MFP EHC02	C - sec	Turbine trip fai	lure		
File HPSI- LOOP-INJ- PULL	C - pri	HPSI loop injec	ction valves fail	to open	
	Fort Calhoun rs: onditions: IC: conditions: IC: conditi	Fort Calhoun TS: TS: TS: TS: TS: TS: TS: TS	Fort CalhounScenario No: 3rs:	Fort CalhounScenario No: 3rs:	

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

Op-Test	No.:	Scenario No.: 3	Event No.: 1	Page 2 of 10		
Event De	escription: C	Controlling pressurizer level	channel, 101Y, fails low			
Time	Position	Appl	icant's Actions or Behavi	or		
	PRI	Respond to "Low Level" a	larm			
	PRI	Identify and report failure	of pressurizer level instru	ment		
	SRO	Direct PRI to transfer control channels or take manual control of controlling channel				
	PRI	Transfer control channel or	r take manual control of le	evel		
	PRI	Monitor and control pressu	ırizer level			
	SRO	Direct PRI to select Y char	nnel on the low level heat	er cutout switch		
	PRI	Select Y channel on low le	evel heater cutout switch			
	SEC	Monitor secondary parame	eters			

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Op-Test	No.:		Scenario No.: 3	Event No.: 2	Page 3 of 10
Event Description: Stea			m generator RC-2B leve	l channel, 906Y, fails hig	h
Time	Position		Appli	icant's Actions or Behavi	or
	SEC	Re	esponds to "Feedwater Co	ontrol Steam Generator R	C-2B Level Hi" alarm
	PRI or SEC	Oł	otain ARP-CB-4/A8 and o	determines actions	
	SEC	Cł	neck S/G level channels to	o determine failed channe	el
	SEC	Ide	entify regulating valve FC	CV-1102 is closed	
	SRO	Di	rect SEC to take manual	control of FCV-1102	
	SEC	Ta co	kes manual control of FC ntrol level	CV-1102 Aux controller a	nd opens valve to
	SRO	No	otifies OCC of failure		
	PRI	M	onitors primary paramete	rs	

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Op-Test	No.:	Scenario No.: 3	Event No.: 3	Page 4 of 10		
Event De	Event Description: Reactor Coolant Pump, RC-3B, lower seal failure					
Time	Position	Apr	plicant's Actions or Behav	vior		
	PRI	Identify and communicat	e high seal leakage from	alarms		
	SRO	Enter alarm response pro	cedure			
	PRI	Monitor RCP seal pressu has failed	res and determine that the	e lower seal on RCP B		
	SRO	Direct primary operator t	to continue to monitor sea	l parameters		
	PRI	Monitor RCP seal param	eters			
<u> </u>						

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Op-Test	No.:	Scenario No.: 3	Event No.: 4	Page 5 of 10			
Event Description: Letdown pressure transmitter PCV-210 fails low							
Time	Position	Арр	licant's Actions or Behav	vior			
	PRI	Respond to "Intermediate	e Letdown Pressure Alarn	n''			
	PRI	Determine and communic closed	cate loss of letdown flow	due to PCV-210 being			
	SRO	Direct PRI to isolate letde	own				
	PRI	Isolate letdown					
	SRO	Direct PRI to take manua flow per OI-CH-1	l control of PCV-210 and	l reestablish letdown			
	PRI	Take manual control of P	CV-210 and reestablish l	etdown flow.			
	SRO	Notify OCC of PC-210 fa	ailure				
	PRI	Monitor and control letdo	own				
	SEC	Monitor secondary param	neters				

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Op-Test	No.:	Scenario No.: 3	Event No.: 5	Page 6 of 10		
Event De	Event Description: Reactor Coolant Pump, RC-3B, middle seal failure					
Time	Position	Арр	licant's Actions or Behav	vior		
	PRI	Monitor RCP seal pressu on RCP B have failed	res and determine that the	e lower and middle seals		
	SRO	Direct Emergency Shutdo	own and enter AOP-05 (E	mergency Shutdown)		
	SEC	Monitor secondary paran	neters			

Operator Actions

Form ES-D-2

Op-Test]	No.:		Scenario No.: 3	Event No.: 6	Page 7 of 10		
Event Description: Emergency shutdown							
		<u> </u>					
Time	Position		Appli	cant's Actions or Behavi	or		
	SRO	En	iter AOP-05 (Emergency	Shutdown) - Direct Eme	rgency Shutdown		
	SRO	No	Notify System Operations of Power Decrease				
	SRO	Di	Direct PRI to begin boration using SIRWT				
	PRI	Sw	vitch charging pump suct	ion from the VCT to the	SIRWT		
	PRI	Di	rect SEC to control RCS	cold leg temperature by	educing turbine load		
	SEC	Re	duce turbine load to cont	rol cold leg temperature			
1	SRO	Di	rect PRI to operate contro	ol rods to control ASI			
	PRI	Op	perate Control Rods to co	ntrol ASI			
	PRI	M	Monitor and control primary parameters				
	SEC	Mo	onitor and control RCS co	old leg temperature and s	econdary parameters		
	SRO	Co	ontinue to coordinate PRI	and SEC actions during	power reduction		

Appendix I)
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Op-Test No.:		Scenario No.: 3	Event No.: 7	Page 8 of 10			
Event De	Event Description: Running Bearing water pump, AC-9A, trips						
Time	Position	Арр	licant's Actions or Behav	vior			
	SEC	Respond to "Cooling Wa	ter Pressure Low" alarm				
	SEC	Report that AC-9A trippe	ed				
	SRO	Direct SEC to start AC-9	Direct SEC to start AC-9B				
	SEC	Start AC-9B	Start AC-9B				
	SRO	Direct SEC to verify operation of air compressor					
	SEC	Verify operation of air compressors (CA-1C stops and restarts)					
	PRI	Continue to monitor parameters associated with reactor startup					
	SRO	May enter AOP-20					

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Op-Test No.:		Scenario No.: 3	Event No.: 8, 9	Page 9 of 10					
Event De	Event Description: Loss of Coolant Accident with turbine trip failure								
Time	Position	App	licant's Actions or Behavi	or					
	PRI	Identify and communicate	lowering of pressurizer le	vel and pressure.					
	SRO	May direct RO to manually	y trip the reactor.						
	PRI	Manually trip the reactor in	f directed by SRO.						
	SRO	Direct Standard Post Trip	Actions (SPTAs)						
	PRI	Perform SPTAs							
	SEC	Perform SPTAs							
	SEC	Determines that stop and in	ntercept valves have not c	losed					
	SEC	Manually trips the turbine							
	SEC	Report that turbine did not	trip						
	SEC	Places both EHC pumps in	ı pullout						
	SEC	Closes both MSIVs if steam	m generator pressure lowe	rs to 500 psia					
	PRI	Secure 1 RCP in each loop at 1350 psia.							
	PRI	Secure remaining RCPs on loss of NPSH							
	SRO	Transition to EOP-03 (LO	CA).						

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Op-Test No.:		Scenario No.: 3	Event No.: 10	Page 10 of 10				
Event De	Event Description: HPSI loop injection valves fail to open							
Time	Position		Appl	icant's Actions or Behavi	or			
	PRI	Mo	onitor for automatic PPL	S actuation.				
	PRI	De	etermine and report that H	HPSI loop injection valves	s did not open.			
	SRO	Di	rect PRI to manually ope	n HPSI loop injection va	lves			
	PRI	Ma	anually open HPSI loop i	injection valves				
	PRI	Ve	erify and report meeting I	HPSI flow criteria.				
		Sc	enario ends with HPSI	flow in progress				

Scenario Outline

Facility: Fort Calhoun		Scenario No: 4 (s	pare)	Op-Test No	
Examiners:				Operators:	
Initial Co	onditions: IC#	1 1009	% Power MOC E	Insure FW-5B a	and FW-5C are the running Heater
Diamiru	mps.				
Turnover	: LPSI pump	SI-1B	is Out of Service for	or bearing repla	acement
Frend	N - 16 N -	E		T	2
Event No.	Mair No.	Event Type*		Des	cription
1	MFP NIS03F	I - pri	Power range nu	clear instrumer	ntation channel "C" fails (tech
2	COP T:F1101	I - sec	FW flow chann	el on RC-2A fa	ils low
3	MFP DSG06A	C - sec	Diesel Generato	or, D/G-1, radia	tor leak (tech spec entry)
4	COP T:T2897	I - pri	Letdown HX C	CW outlet temp	perature transmitter fails low
5	MFP SWD02B	C -sec	Loss of 161 KV	7	
6	MFP MSS01B	M - all	Steam line brea	k inside contair	nment
7	RFP CWS10N	C -sec	CW-1C breaker closing	fails to trip pro	eventing D/G-2 breaker from
8	MFP ESF02A ESF 02B	C - pri	CPHS fails to a	ctuate	

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

Ap	bendix	D
- • P	Jonanz	$\boldsymbol{\nu}$

Op-Test No.:		Scenario No.: 4	Event No.: 1	Page 2 of 9			
Event De	Event Description: Power range nuclear instrumentation channel "C" fails (tech spec entry)						
Time	Position PRI	App Identify the failure from 1	licant's Actions or Behav	rior I, panel A20 anr Trip			
	ab o	Units 9 and 12 on channe	1 "C"				
	SRO	Reference AOP-15					
	SRO	Determine the need to place "C" channel trip units 1,9 & 12 in the bypassed condition, 1 hour LCO, and 48 hour LCO for repair of one channel (T.S. 2.15)					
	SRO	Obtain the keys and direct the PRI to place the 1, 9 & 12 trip units on "C" RPS channel in "bypass"					
	PRI	Place 1, 9 and 12 trip units in bypass					
	SEC	Enter channel bypass in control room log					
	SEC	Monitor Secondary Parameters					

Operator Actions

Form ES-D-2

Op-Test No.:			Scenario No.: 4	Event No.: 2	Page 3 of 9			
Event De	scription: F	W f	flow channel on RC-2A f	ails low				
Time	Position		Appli	icant's Actions or Behavi	lor			
	SEC	Re	spond to S/G-2B level lo	ow alarm				
	SEC	Ide lov	entify and communicate r wering level in S/G "B"	rising FW flow and level	in S/G "A" and			
	SRO	Di	rect SEC to take manual	control of feedwater				
	SEC	Ta	ke manual control and re	store feedwater level				
	SEC	Ide	Identify FT-1101 as the failed instrument or channel					
	SRO	Inf	Inform OCC of failure of FT-1101					
	SEC	Co	Continue to monitor and control S/G level					
	PRI	Mo	onitor primary parameter	s				

Appendix I	D
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Op-Test No.:		Scenario No.: 4	Event No.: 3	Page 4 of 9				
Event De	Event Description: Diesel Generator, D/G-1, radiator leak (tech spec entry)							
Time	Position	App	olicant's Actions or Behav	vior				
	PRI or	Respond to "Diesel Troul	ble Alarm" and LS-4, "Ta	ank Level Low"				
	SEC	indicator light						
	PRI or	Refer to ARP-AI-30A/A3	30					
	SEC		0					
	PRI or SEC	Dispatch Turbine Buildin	ig Operator to determine s	status of D/G.				
	PRI or	Inform SRO of report of	water leak					
	SEC	D' (DDI OFO						
	SRO	Direct PRI or SEC operator to disable D/G-1						
	SRO	Refer to Technical Specification 2.7. Enter Technical Specification 2.0.1						
		due to $D/G-1$ (1A3) and S	SI-IB (IA4) both being ir	noperable. Plant must be				
		placed in not shutdown w	iumi o nours					
	SRO	Direct PRI and SEC to make preparations for plant shutdown						
	SRO	Notify Station Management of Tech Spec required shutdown						

Op-Test No.:		Scenario No.: 4	Event No.: 4	Page 5 of 9				
Event De	Event Description: Letdown HX CCW outlet temperature transmitter fails low							
Time	Position	Арр	licant's Actions or Behav	vior				
	PRI	Respond to "Letdown He CB-1,2,3 panel A2	at Exchanger Tube Outle	t Temp HI" Alarmon				
	PRI	Determine that TCV-211	-2 has repositioned to byp	bass ion exchangers				
	PRI	Determine high temperature due to reduced CCW flow to letdown heat exchanger following closure of TCV-2897						
	SRO	Direct PRI to manually co 2897	ontrol CCW flow to letdo	wn HX using TCV-				
	PRI	Manually control TCV-2897 to restore letdown temperature using TIC- 211 for indication						
	SRO	May direct PRI to reposit	ion TCV-211-2 and main	tain 100°F – 120°F				
	PRI	Reposition TCV-211-2 if	directed					
	PRI	Monitor primary parameters						
	SEC	Monitor secondary parameters						

Op-Test No.:			Scenario No.: 4	Event No.: 5	Page 6 of 9			
Event Description: Loss of 161 KV								
Time	Position		Appli	cant's Actions or Behavi	or			
	SEC	Di SR	agnose loss of 161 KV fr O	om annunciators and boa	rd indications. Inform			
	SRO	Enter AOP-31 and Direct SEC operator						
	SEC	Ensure 2 FW pumps, 2 CND pumps and 2 HD pumps are running						
	SEC	Ensure Main Generator terminal voltage less than 22,000 volts						
	SEC	En	Ensure FW-2A, FW-4A and FW-5A are operating. Start FW-5A, shutdown 1 other HD pump					
	SEC	Verify 480V bus voltage						
	SEC	Match flags on breakers 110, 111, 1A31, 1A33, 1A42, 1A44						
	SRO or SEC	Direct that signs be placed at switchgear room entrances						

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Op-Test No.:		Scenario No.: 4	Event No.: 6, 7, 8	Page 7 of 9		
Event Description: Steam line break inside Containment, No Power to either vital bus. Failure of CPHS.						
Time	Position	Applicant's Actions or Behavior				
	ALL	 Recognizes that a HELB has occurred in S/G RC-2B: \$ Lowing pressure in S/G RC-2B. \$ Initiation of a Steam Generator Low Signal (SGLS). \$ Lowering RCS Tav. \$ Raise in feedwater flow until Steam Generator Isolation Signal (SGIS) occurs. \$ Containment Isolation Actuation Signal (CIAS) due to raising containment pressure. 				
	SRO	Directs entry into EOP-00				
	SEC	Reports no power to busses 1A3 and 1A4				
	SEC	Identify failure of CW-1C breaker to open				
	SEC/SRO	Direct EONT to manually trip CW-1C breaker				
	SRO	Direct SEC to verify restoration of power to bus 1A4				
	SEC	Verify power to bus 1A4				
	PRI	Monitor containment pressure and determine that CPHS did not actuate at setpoint				
	SRO	Direct PRI to manually actuate CPHS				
	PRI	Manually actuate CPHS a	and verify containment sp	oray flow		
	SRO	Enters EOP-05 or EOP-2	0			
Op-Test No.:		Scenario No.: 4	Event No.: 6,7,8 con't	Page 8 of 9		
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Event Description: CW-1C breaker fails to trip preventing D/G-2 breaker from closing						
Time	Position	Applicant's Actions or Behavior				
	SEC	Verifies break location in	accordance with EOP-20) to mitigate HELB.		
	PRI	Verifies that all containment vent fans (VA-3A, 3B, 7C, 7D) have started and ensures that they are supplied from CCW.				
	SEC	Ensures that SGIS valves	have closed (e.g., MSIV	s and FWIVs).		
	PRI	Ensures that emergency b Operator to open HCV-26	oration is in progress by 58 and/or close LCV-218	directing Aux Building -2		
	SRO/PRI	Ensures that SI flow is acceptable PER Attachment 3, Safety Injection Flow vs. Pressurizer Pressure.				
	PRI SEC	Maximizes safety injection and charging flows by operating: \$ HPSI Pumps SI-2A/B/C \$ LPSI Pumps SI-1A/B \$ Charging Pumps CH-1A/B/C				
	PRI	 Verifies normal CCW/RW system operation: \$ 2 CCW pumps operating \$ CCW pump discharge pressure ≥ 60 psig \$ 2 RW pumps operating \$ 3 CCW heat exchangers in service \$ RCP cooler valves HCV-438A/B/C are open 				
	LSO SEC	Confirms that S/G RC-2B is affected S/G by downward trends in steam pressure, S/G level, and RCS Tc.		ward trends in steam		
	SRO	Direct SEC to establish steam flow from intact steam generator prior to dryout of faulted steam generator				
	SEC	Establish steam flow from intact steam generator and control RCS temperature.		nd control RCS		

Appendix D

Operator Actions

Op-Test No.:		Scenario No.: 4	Event No.: 6,7,8 con't	Page 9 of 9
Event Description: CPI		CPHS fails to actuate	·	
Time	Position	Appl	licant's Actions or Behavi	or
	SRO	Directs SEC to Isolate faul	ted S/G	
	SEC	Isolates faulted S/G		
	SRO	Direct PRI to monitor subcooling and pressurizer level to determine when HPSI "stop and throttle" criteria are met		
	PRI	Monitor subcooling and pr throttle" criteria are met	essurizer level and report	when "stop and
	SRO	Direct primary operator to	throttle and/or stop HPSI	flow
	PRI	Throttle and/or stop HPSI flow		
	SRO	Direct PRI to monitor and control RCS pressure to maintain subcooling between 20° and 200°F		
	PRI	Monitor and control pressure to maintain subcooling between 20° and 200° F		
		Scenario ends with D/G-2 supplying power to bus 1A4, Containment spray in progress and HPSI flow throttled or terminated.		5 1A4, Containment ninated.

JPM No: JPM-0003

JPM Title: Realign Misaligned CEA

Location: Simulator Control Room

Approximate Time: 10 minutes Actual Time: _____

Reference(s): AOP-02 (R2.1) K/A 001000 A2.03 (3.5/4.2)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0003

JPM Title: Realign Misaligned CEA

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
Eraldator o Orginataror	B 01(0)

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set 3 Alternate Path JPM

JPM No: JPM-0003

JPM Title: Realign Misaligned CEA

INITIATING CUE:	The plant is operating at 50% power. During the performance of OP-ST-CEA-0003, CEA Partial
	Movement Check, a malfunction occurred which resulted in inserting CEA #41 to a position of 90 inches withdrawn. The other CEAs in the group are 110 inches withdrawn.

AOP-02 was entered and the malfunction has been repaired. The CEA has been misaligned for 25 minutes.

You have been directed to realign the CEA with its group using AOP-02, Section III Step 22. Another operator has been assigned to make any required changes in boron concentration.

START

STEP ELEMENT STANDARD Determine group that CEA #41 belongs to group "4" 1 misaligned CEA belongs to. Place Rod Control Mode 2 CB-4 Selector Switch in "Manual Individual" Position Mode Selector Switch in "Manual Individual" Position 3 Select the group containing the CB-4 misaligned CEA using the Control Rod Group Selector Control Rod Group Selector Switch Switch selected to Group "4" 4 Select the misaligned CEA CB-4 using the Rod Selector Switch for the misaligned group. Group "4" Rod Selector Switch selected to CEA #41

Critical Steps shown in gray

JPM No: JPM-0003

JPM Title: Realign Misaligned CEA

	STEP	ELEMENT	STANDARD
5		Place the Rod Block Bypass	<u>CB-4</u>
		Switch in Dypass	Switch in BYPASS position
6		Operate the Manual Rod	<u>CB-4</u>
		selected CEA	Move the IN-OUT-HOLD to the OUT position is short increments (3 inches or less)
7		Monitor the CEA withdrawal	<u>CB-4</u>
			Verify CEA movement using both Primary (Dial) and Secondary (CRT) indications
8	Terminate CEA movement when the CEA has been realigned with its group.	<u>CB-4</u>	
		IN-OUT-HOLD switch released	
			Simulator Operator will insert a malfunction that causes an uncontrolled CEA withdrawal.
9		Places the Mode Selector Switch in "OEE" Position	<u>CB-4</u>
			Mode Selector Switch in "OFF" Position
10		Manually Trips the Reactor	<u>CB-4</u>
			Presses RED Manual Reactor Trip Pushbutton

JPM No: JPM-0003

JPM Title: Realign Misaligned CEA

STEP	ELEMENT	STANDARD
11	Verifies Reactivity Control Safety Function is satisfied.	<u>CB-4</u>
	-	Verifies:
		 Trippable CEAs inserted. Reactor Power is lowering. Negative startup rate.

Termination Criteria: Reactor has been manually tripped and Reactivity Control Safety Function is satisfied.

JPM No: JPM-0003

INITIATING CUE:	The plant is operating at 50% power. During the performance of OP-ST-CEA-0003, CEA Partial Movement Check, a malfunction occurred which resulted in inserting CEA #41 to a position of 90 inches withdrawn. The other CEAs in the group are 110 inches withdrawn.
	AOP-02 was entered and the malfunction has been repaired. The CEA has been misaligned for 25 minutes.
	You have been directed to realign the CEA with its group using AOP-02, Section III Step 22. Another operator has been assigned to make any required changes in boron concentration.
	START

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

Location: SI Pump Rooms

Approximate Time: 5 minutes Actual Time: _____

Reference(s): AOP-11 (R7) K/A 076000 A4.04 (3.5/3.5)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM	No:	JPM-0010RW
	110.	

JPM Title: Establish RW Backup Cooling to SI Pumps

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Reason, if unsatisfactory:

Tools & Equipment: NONE

Safety Considerations: Requires RCA entry

Comments:

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

INITIATING CUE: The reactor has been tripped from 100% power. A total loss of CCW has occurred and all of the Safety Injection Pumps and Containment Spray Pumps are operating.

You are directed to establish Raw Water backup cooling to the HPSI, LPSI and CS pumps in both of the SI Pump Rooms.

The Control Room has placed the SI Pump AC Valves SIAS Override Switches, HC-2809/11/14/15 and HC-2808/10/12/13, in OVRRD.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
	Establish RW flow to CS Pump SI-3A	<u>Room 21</u>
1	Close HCV-2813A/B	Close valves fully
2	Unlock and release the hand jacks from: • HCV-2813C • HCV-2813D	Remove locking device and back off valve operator wheel
3	Locally open HCV-2813C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2813C-TV • IA-HCV-2813D-TV	Place 3-way instrument air supply valves in the OPEN position.

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

STEP	ELEMENT	STANDARD
	Establish RW flow to LPSI Pump SI-1A	<u>Room 21</u>
4	Close HCV-2808A/B	Close valves fully
5	Unlock and release the hand jacks from: • HCV-2808C • HCV-2808D	Remove locking device and back off valve operator wheel
6	Locally open HCV-2808C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2808C-TV • IA-HCV-2808D-TV	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to HPSI Pump SI-2A	<u>Room 21</u>
7	Close HCV-2810A/B	Close valves fully
8	Unlock and release the hand jacks from: • HCV-2810C • HCV-2810D	Remove locking device and back off valve operator wheel
9	Locally open HCV-2810C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2810C-TV • IA-HCV-2810D-TV	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to HPSI Pump SI-2C	<u>Room 21</u>
10	Close HCV-2812A/B	Close valves fully

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

STEP	ELEMENT	STANDARD
11	Unlock and release the hand jacks from: • HCV-2812C • HCV-2812D	Remove locking device and back off valve operator wheel
12	Locally open HCV-2812C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2812C-TV • IA-HCV-2812D-TV •	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to CS Pump SI-3B	<u>Room 22</u>
13	Close HCV-2814A/B	Close valves fully
14	Unlock and release the hand jacks from: • HCV-2814C • HCV-2814D	Remove locking device and back off valve operator wheel
15	Locally open HCV-2814C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2814C-TV • IA-HCV-2814D-TV	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to CS Pump SI-3C	<u>Room 22</u>
16	Close HCV-2815A/B	Close valves fully
17	Unlock and release the hand jacks from: • HCV-2815C • HCV-2815D	Remove locking device and back off valve operator wheel

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

STEP	ELEMENT	STANDARD
18	Locally open HCV-2815C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2815C-TV • IA-HCV-2815D-TV	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to LPSI Pump SI-1B	<u>Room 22</u>
19	Close HCV-2809A/B	Close valves fully
20	Unlock and release the hand jacks from: • HCV-2809C • HCV-2809D	Remove locking device and back off valve operator wheel
21	Locally open HCV-2809C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2809C-TV • IA-HCV-2809D-TV	Place 3-way instrument air supply valves in the OPEN position.
	Establish RW flow to HPSI Pump SI-2B	<u>Room 22</u>
22	Close HCV-2811A/B	Close valves fully
23	Unlock and release the hand jacks from: • HCV-2811C • HCV-2811D	Remove locking device and back off valve operator wheel
24	Locally open HCV-2811C/D by placing the following 3-way valves in "OPEN" • IA-HCV-2811C-TV • IA-HCV-2811D-TV	Place 3-way instrument air supply valves in the OPEN position.

JPM No: JPM-0010RW

JPM Title: Establish RW Backup Cooling to SI Pumps

Termination Criteria: Raw Water backup cooling is being supplied to all of the HPSI, LPSI and CS Pumps

JPM No: JPM-0010RW

INITIATING CUE:	The reactor has been tripped from 100% power. A total loss of CCW has occurred and all of the Safety Injection Pumps and Containment Spray Pumps are operating.
	You are directed to establish Raw Water backup cooling to the HPSI, LPSI and CS pumps in both of the SI Pump Rooms.
	The Control Room has placed the SI Pump AC Valves SIAS Override Switches, HC-2809/11/14/15 and HC-2808/10/12/13, in OVRRD.
	START

JPM No: JPM-0026

JPM Title: Restoration of Offsite Electrical Power

Location:	Simulator Contro	I Room	
Approximate Time:	10 minutes	Actual Time:	
Reference(s): EO K/A	P/AOP Attachment 064000 A4.07 (3.	: 17 (R15) 4/3.4)	

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0026

JPM Title: Restoration of Offsite Electrical Power

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set # 1

JPM No: JPM-0026

JPM Title: Restoration of Offsite Electrical Power

INITIATING CUE: A reactor trip from 100% power and loss of offsite power has occurred. EOP-00 immediate actions have been carried out and plant conditions stabilized. DG #1 and DG#2 are running supplying power to busses 1A3 and 1A4. 161 KV is available.

> You have been directed to restore offsite power to bus 1A3 using 161 KV per EOP/AOP Attachment 17

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Verify NONE of the following Lockout Relays are tripped:	<u>AI-24</u>
	 86/1A13 86/1A33 86/1A3-TFB 	Lockout relays in RESET position
2	Ensure both of the following breakers are tripped:	<u>CB-20</u>
	1A131A33	GREEN lights lit
3	Ensure Transfer Switch 43/1A1-1A3 is in "Manual"	<u>CB-20</u>
		Switch in "Manual" position
4	Verify None of the following Lockout relays are tripped:	<u>AI-30A/B</u>
	 86A/OPLS 86B/OPLS 	Relays in RESET position AMBER lights lit

JPM No: JPM-0026

JPM Title: Restoration of Offsite Electrical Power

STEP	ELEMENT	STANDARD
		CUE: System Operations reports offsite power is stable. PCMMINT shows 161 KV @ 162.3 volts
5	Ensure Lockout Relay 86/161 is RESET	<u>AI-22</u>
		Lockout relay in RESET position
6	Ensure all of the following lockout relays are reset:	<u>AI-25, AI-24, AI-46</u>
	 861/T1A-4 86-2/TIA -4 861/T1A-3 86-2/TIA -3 86X/FT161 	Lockout relays in RESET position
7	Synchronize and close at least	<u>CB-20</u>
	 Breaker 110 Breaker 111 	Place synch switch in sync position
		One or both control switches to CLOSE RED light lit
8	Check that T1A3 secondary	<u>CB-20</u>
	to 4160V	Verify voltage on meters
9	Verify "TRANS TiA-3 Secondary I ow Voltage" alarm	<u>CB-20, A17, A2</u>
	is clear	Annunciator window OFF
10	Ensure all of the following	<u>AI-24</u>
	 86/1A33 86/1A13 	Lockout relays in RESET position

JPM No: JPM-0026

JPM Title: Restoration of Offsite Electrical Power

STEP	ELEMENT	STANDARD
	• 86/1A3-TFB	
11	Synchronize and close breaker 1A33	<u>CB-20</u> Place synch switch in synch position Adjust D/G load as necessary
		Place control switch for breaker 1A33 in CLOSE position then release RED light lit
		CUE: Diesel Generator #1 load is 280 KW
12	Open Breaker 1AD1	<u>CB-20</u> Breaker control switch to trip GREEN light lit
		CUE: Another Operator will shutdown the Diesel- Generator

Termination Criteria: Bus 1A3 is power from 161 KV Offsite Power.

JPM No: JPM-0026

INITIATING CUE:	A reactor trip from 100% power and loss of offsite power has occurred. EOP-00 immediate actions have been carried out and plant conditions stabilized. DG #1 and DG#2 are running supplying power to busses 1A3 and 1A4. 161 KV is available.
	You have been directed to restore offsite power to bus 1A3 using 161 KV per EOP/AOP Attachment 17

START

JPM No: JPM-0156

JPM Title: Operate the Containment Hydrogen Analyzer

Location:	Simulator or Control Room
Eeeanorn	

Approximate Time: 15 minutes Actual Time: _____

Reference(s): EOP-AOP Attachment 16 (R15) K/A 028000 A1.01 (3.4/3.8)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0156

JPM Title: Operate the Containment Hydrogen Analyzer

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
Eraldator o Orginataror	B 01(0)

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set #1

JPM No: JPM-0156

JPM Title: Operate the Containment Hydrogen Analyzer

INITIATING CUE: A LOCA has occurred and an analysis for hydrogen concentration is required. You are directed to place the Hydrogen analyzers in service per the EOP/AOP Attachments and sample the upper level of containment via HCV-820C and HCV-883C.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Open HCV-820C	<u>AI-65A/B</u>
		RED light lit
2	Open HCV-883C	<u>AI-65A/B</u>
		Control switch to OPEN RED light lit
3	Place all of the following switches in Override:	<u>AI-43A/B</u>
	 HCV-820A/821A HCV-883A/884A HCV-820B/821B HCV-883B/884B 	Control switches to O'RIDE RED lights lit
4	Place recorders, HR-81A/B in service	<u>AI-65A/B</u>
		Turn recorders on
5	Ensure Range Selector switches are in "0-10%"	<u>AI-65A/B</u>
		Selector switch in "0-10%" position

JPM No: JPM-0156

JPM Title: Operate the Containment Hydrogen Analyzer

STEP	ELEMENT	STANDARD
6	Place the Hydrogen Analyzer Power On Selector Switches to "ANALYZE"	AI-65A/B Switches to "ANALYZE" position
7	Ensure the Function Selector Switches are in "SAMPLE"	<u>AI-65A/B</u> Switches in "SAMPLE" position
8	Press "REMOTE" selector pushbuttons	<u>AI-65A/B</u> Depress pushbuttons
9	Verify the following:	<u>AI-65A/B</u>
	 Containment H₂ Sampling System Remote/Local Off Normal Annunciator in Alarm 	Alarm Window Lit
	 0-10% Range Amber indicating light is ON 	AMBER light lit
	 The Sample Indicating light is ON 	Light is lit
10	Press Alarm Reset Push	AI-65A/B
	bullons	Depress push buttons
		CUE: 5 minutes have elapsed
11	Obtain hydrogen concentration reading	<u>AI-65A/B</u>
		Report reading from meters

JPM No: JPM-0156

JPM Title: Operate the Containment Hydrogen Analyzer

Termination Criteria: Containment hydrogen concentration has been determined

JPM No: JPM-0156

INITIATING CUE: A LOCA has occurred and an analysis for hydrogen concentration is required. You are directed to place the Hydrogen analyzers in service per the EOP/AOP Attachments and sample the upper level of containment via HCV-820C and HCV-883C.

START

JPM No: JPM-0304

JPM Title: Minimizing DC Loads

Location:	Switchgear Room	, Turbine Building and Control Room
Approximate Time:	15 minutes	Actual Time:
Reference(s): EOP/AOP Attachment 6 (R15) K/A 063000 A1.01 (2.5/3.3) This is identified as a risk signifi operator action in the Fort Calhoun PRA. Therefore, the FCS importance factor is significantly higher than the values giver		6 (R15) /3.3) This is identified as a risk significant fort Calhoun PRA. Therefore, the FCS phificantly higher than the values given in

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM Title: Minimizing DC Loads

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature: _____ Date: _____

Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	This is a Time Critical JPM

JPM No: JPM-0304

JPM Title: Minimizing DC Loads

INITIATING CUE: The plant has tripped due to a station blackout event. The CRS has directed you to Minimize DC Loads using EOP/AOP Attachment 6.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
		EXAMINER NOTE START TIME
1	 Place BOTH of the following Breakers in OFF: Computer 400 Cycle Cabinet Emergency Lighting PNL Transfer Switch in OFF 	Switchgear Room DC Bus 2 EE-8G-CB12 to OFF EE-8G-CB8 to OFF
2	Place Emer Lighting PNL Transfer Switch in OFF	<u>Switchgear Room</u> DC Bus 1 EE-8F-CB-11 to OFF
3	Place Emerg Lighting at Panel NO 5 in OFF	Turbine Building West Wall Breaker #15 to OFF Elapsed time must be 15 minutes or less
		Note: The remainder of this JPM is performed in the Control Room and is not

time critical.

JPM No: JPM-0304

JPM Title: Minimizing DC Loads

STEP	ELEMENT	STANDARD
		CUE: The turbine has stopped rolling
4	Stop LO-4, DC Oil Pump	<u>CB-10,11</u> LO-4 Control Switch in Pull- Out, RED and GREEN lights OFF.
		CUE: Two hours have elapsed
5	Ensure the following are closed:	<u>AI-42A</u>
	 Main Disconnect I1 -1 Circuit #1 AI-53 Feed 	Switches in CLOSED position
6	 Place ALL of the following breakers in OFF: Circuit #2 Al-56 Feed Circuit #3 Al-100 Feed Circuit #4 IB -1A Feed Circuit #5 CB-10,11 Feed Circuit #7 CB-1,2,3 Feed Circuit #8 Al-195 Feed Circuit #9 Al-44 Feed Circuit #10 Al-58 & Al-59 Feed Circuit #11 CB-20 Feed Circuit #12 Al-42 & Al-60 Feed Circuit #13 CB-4 Feed Circuit #18 Al-43A & Al-33C Feed 	<u>AI-42A</u> Breakers in OFF

JPM No: JPM-0304

JPM Title: Minimizing DC Loads

STEF	P ELEMENT	STANDARD
7	Ensure Both of the following breakers are closed: • Main Disconnect I2-1 • Circuit #1 AI-53 Feed	<u>AI-42B</u> Switches in CLOSED position
8	 Place all of the following breakers in OFF: Circuit #2 AI-50 Feed Circuit #3 AI-105 & AI- 107 Feed Circuit #4 AI-55 Feed Circuit #5 AI-101B Feed Circuit #6 IB -2A Feed Circuit #6 IB -2A Feed Circuit #7 CB-10,11 Feed Circuit #8 Nuclear Emergency Feed Circuit #9 CB-4 Feed Circuit #10 Fire Emergency Feed Circuit #11 AI-44 Feed Circuit #12 AI-187 Feed Circuit #13 CB-1,2,3 Feed Circuit #15 PC Punp Vibr. Sys Circuit #16 AI-43A & AI- 65B Feed Circuit #17 CB-20 Feed 	AI-42B All listed breakers in OFF
9	Stop LO-12B, DC Seal Oil Pump	<u>CB-10,11</u> LO-12B switch in Pull OUT, GREEN and RED lights OFF

JPM No: JPM-0304

JPM Title: Minimizing DC Loads

Termination Criteria: DC Loads have been minimized

JPM No: JPM-0304

INITIATING CUE: The plant has tripped due to a station blackout event. The CRS has directed you to Minimize DC Loads using EOP/AOP Attachment 6.

START

JPM No: JPM-0450

JPM Title: Emergency Start of the Diesel Fire Pump

Location: Intake Structure

Approximate Time: 5 minutes Actual Time: _____

Reference(s): OI-FP-1 Attachment 3 (R53) K/A 086000 A4.01 (3.3/3.3)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	
JPM No: JPM-0450

JPM Title: Emergency Start of the Diesel Fire Pump

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
	<u> </u>

Reason, if unsatisfactory:

Tools & Equipment:NoneSafety Considerations:Potential tripping hazards
Do NOT operate any controls

Comments:

JPM No: JPM-0450

JPM Title: Emergency Start of the Diesel Fire Pump

INITIATING CUE: The electric fire pump is out of service. Transformer deluge has activated due to a fire but the diesel fire pump did not start automatically.

You are directed to perform an emergency manual start of the diesel fire pump.

START

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Ensure the following are on:	<u>AI-183</u>
		 AI-183-CB1, Fire Pump EP-1B Batt 1 Switch 	Battery 1 is ON
		 AI-183-CB2, Fire Pump FP-1B Batt 2 Switch 	Battery 2 is ON
2		Place HC/FP-1B-MS control	<u>AI-183</u>
		Switch to Manual 1	Select Manual #1
3	Press HC/FP-1B-1, Crank 1 start button	AI-183	
		Push Crank 1 pushbutton	
			CUE: Engine did not start
4		Place HC/FP-1B-MS control	<u>AI-183</u>
	Switch to Manual 2	Select Manual #2	
5	Press HC/FP-1B-1, Crank 2 start button	AI-183	
		Push Crank 2 pushbutton	
			CUE: Engine did not start

JPM No: JPM-0450

JPM Title: Emergency Start of the Diesel Fire Pump

STEP	ELEMENT	STANDARD
6	Open FO-169, Fuel Oil Solenoid Valve	South side of Engine
		Turn Knob clockwise to full in position
7	Open FP-161, Pressure control valve bypass valve	South side of Engine
		Cooling water bypass valve to OPEN
8	Engage the starter using either of the two starter contactors	North side of Engine
		Raise lever 1 or 2
		CUE: Engine has started
		Release lever

Diesel Fire Pump has been started

Termination Criteria:

JPM No: JPM-0450

INITIATING CUE:	The electric fire pump is out of service. Transformer deluge has activated due to a fire but the diesel fire pump did not start automatically.
	You are directed to perform an emergency manual start of the diesel fire pump.
	START

JPM No: JPM-0613M

JPM Title: Shutdown a Reactor Coolant Pump

Location: Simulator Control Room

Approximate Time: 5 minutes Actual Time: _____

Reference(s): OI-RC-9, Attachment 2 (R49) K/A 003000 A4.06 (2.9/2.9)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM Title: Shutdown a Reactor Coolant Pump

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
Evaluation of originations.	Duito.

Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	JPM set #2 which has RC-3D's 90% speed switch failed
	This is an Alternate Path JPM

JPM No: JPM-0613M

JPM Title: Shutdown a Reactor Coolant Pump

INITIATING CUE: The reactor is in Hot Shutdown and is being cooled down to go into refueling. The RCS T-cold is 505°F and lowering approximately 30°F per hour.

You, the LO, are directed to shutdown Reactor Coolant Pump RC-3D.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Ensure the reactor is shutdown prior to stopping a RCP.	<u>CB-4</u>
		inserted
2	Ensure Zero Power Mode Bypass switches are in Bypass	<u>AI-31 A/B/C/D</u>
		Keys installed and AMBER lights lit
3	Stop Reactor Coolant Pump RC-3D	<u>CB-1,2,3</u>
		Control switch to AFTER- STOP position and release GREEN light lit
4	Ensure the Oil Lift Pump starts automatically as pump speed	<u>CB-1,2,3</u>
	lowers.	Determines pump did not start. Manually starts lift oil pump by placing control switch in START position and verifying RED light on.

JPM No: JPM-0613M

JPM Title: Shutdown a Reactor Coolant Pump

STEP	ELEMENT	STANDARD
5	Holds Lift Oil Pump control switch in the START position	If the control switch is released, the lift pump will stop. It should then be returned to the START position.
		The control switch should be held in the START position until the zero speed light comes on.
6	Ensure Reverse Rotation Annunciator is clear.	<u>CB-1,2,3, A6 D-5</u>
		Annunciator is OFF
7	Confirm Zero Speed light is on	<u>CB-1,2,3</u>
		RC-3D GREEN light on
8	Confirm RCP tachometer indicates zero	CUE: Local Operator reports RC-3D speed is zero rpm.
9	Stop oil lift pump.	<u>CB-1,2,3</u>
		Control switch to AFTER- STOP GREEN light lit

Termination Criteria: Reactor Coolant Pump RC-3D is secured

JPM No: JPM-0613M

INITIATING CUE:	The reactor is in Hot Shutdown and is being cooled down to go into refueling. The RCS T-cold is 505°F and lowering approximately 30°F per hour.
	You, the LO, are directed to shutdown Reactor Coolant Pump RC-3D.
	START

JPM No: JPM-0621M

JPM Title: Raise RCS Pressure with a Steam Bubble in the Pressurizer

Location: Simulator

Approximate Time: 10 minutes Actual Time: _____

Reference(s): OI-RC-7, attachment 2 (rev 9) K/A 010000 A2.03 (4.1/4.2)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0621M

JPM Title: Raise RCS Pressure with a Steam Bubble in the Pressurizer

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
Eraldator o orginataror	B 01(0)

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set 3

JPM No: JPM-0621M

JPM Title: Raise RCS Pressure with a Steam Bubble in the Pressurizer

INITIATING CUE: The plant is operating at 100% power when you, the LO, are directed to raise pressure to 2140 psia using manual controls. All prerequisites are met.

START

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Verify PRC-103Y in MANUAL	CB-1,2,3 Controller selected to MANUAL position
2		Ensure Spray Control Switches in AUTO	<u>CB-1,2,3</u> HC-103-1, HC-103-2 in AUTO
3		Ensure Proportional Heater Control in AUTO	<u>CB-1,2,3</u> HC-103-7 and HC-103-8 in AUTO RED lights lit
4		Energize Backup Heaters	CB-1,2,3 Place any or all listed to ON with RED lights lit: • HC-103-3 • HC-103-4 • HC-103-5 • HC-103-6
5		Increase Proportional Heater Output	CB-1,2,3 Move Manual Control lever for

JPM No: JPM-0621M

JPM Title: Raise RCS Pressure with a Steam Bubble in the Pressurizer

STEP	ELEMENT	STANDARD
		PRC-103Y to the left
		CUE: Return RCS pressure to 2100 psia.
6	Place Backup Heater Control in	CUE: Select AUTO
		<u>CB1,2,3</u>
		Switches in AUTO GREEN and AMBER lights lit
7	Adjust Manual Control Lever to	CB-1,2,3
	Returns to Normal Operating Pressure.	PRC-103Y output adjusted to approximately 67%
		Simulator Operator will fail PCV-102-1 open
8	Respond to annunciator alarms	CB-1,2,3/A4 A-2 and C-4
		Refers to ARP CB-1,2,3/A4
9	Closes block valves HCV-150 and HCV-151 one at a time	<u>CB-1,2,3</u>
	Identifies that PCV-102-1 has opened and ensures that HCV-151 is closed.	Control switch for HCV-151 to CLOSE GREEN light lit

Termination Criteria: Pressure is returning to 2100 psia and PORV PCV-102-1 is isolated by Block valve HCV-151

JPM No: JPM-0621M

INITIATING CUE: The plant is operating at 100% power when you, the LO, are directed to raise pressure to 2140 psia using manual controls. All prerequisites are met.

START

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

Location: Simulator Control Room

Approximate Time: 15 minutes Actual Time: _____

Reference(s): OP-ST-RPS-0008 K/A 012000 A4.01 (4.5/4.5)

JPM Prepared by:	Jerry Koske	_ Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
Eraldator o orginataror	B 01(0)

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set #2 Ensure D/G trip links closed

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

INITIATING CUE: As a portion of the preparations for a Reactor Startup, you, the LO ,are directed to verify the operation of the Reactor Protective System manual trip circuits by performing OP-ST-RPS-0008. All prerequisites and initial conditions are met. Both D/G's have been Barred over

START:

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Verify BW-20-TS and	AI-31B AND AI-31C
	CW-20-TS switches are CLOSED.	Cue: Switches are CLOSED.
2	Display Y-3466 (Reactor Trip Digital Point) on ERF CRT.	ERF CRT
		Display DVD or GRA.
3	Ensure Reactor is Reset.	<u>CB-4</u>
		Verify Reactor Trip Alarm is CLEAR
4	Push Manual Reactor Trip pushbutton on RPS.	<u>AI-31B/C</u>
		Push RED button.
5	Verify the following:	
	CEDM clutch power supply	<u>AI-57</u>
	are open	Both breakers mid position
6	Clutch power supplies are	<u>AI-3</u>
	aconorgizou	RED trip light on for each power supply

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

STEP	ELEMENT	STANDARD
7	Turbine Trip circuits are actuated	<u>AI-31B/C</u>
		K1, K2, K3 and K4 indicating lights are OFF
8	Diesel Generator Start Circuits are actuated:	
	D/G-1:	AI-30A
	 86A/D1 lockout relay tripped 86B/D1 lockout relay 	Relays tripped AMBER lights off
	trippedYI-6048B at idle speed	Tachometer @ 500 RPM
	 D/G-1: 86A/D2 lockout relay tripped 86B/D2 lockout relay tripped YI-6148B at idle speed 	AI-30A
		Relays tripped AMBER lights off
		Tachometer @ 500 RPM
9	REACTOR TRIP annunciator in	<u>CB-4, A20, A-7</u>
		Alarm panel lit
10	ERF Y3466 indicates tripped	ERF terminal
		Y-3466 tripped
11	Sequence of Events Log has	PC-22 (line printer)
	printed	Post trip review printed
12	RESET and CLOSE Breakers CB-AB and CB-CD.	<u>AI-57</u>
		OPEN breaker and then CLOSE.

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

STEP	ELEMENT	STANDARD
13	RESET Reactor Trip.	Depress Reactor Trip Reset Button on CB-4
14	Verify the following:	On Panel Al-3
	Clutch power supplies are energized.	PS-1, 2, 3,& 4 trip lights OFF.
	Turbine trip reset.	AI-31B (Behind Panel) K1 & K3 lights lit
		AI-31C (Behind Panel) K2 & K3 lights lit.
	Reactor Trip Alarm CLEARS.	<u>On Panel CB-4,</u> Alarm A-20 A-7 Resets
	Y-3466 RESETS	Y-3466 Reset on ERF CRT.
15	RESET:	On Panel AI-30 A/B:
	 86A/D1 86B/D1 86A/D2 86B/D2 	Reset Lockouts AMBER lights lit.
16	Push Manual Reactor Trip on	<u>CB-4</u>
	Main Control Board.	Depress RED Trip Button.
17	Attempt to RESET the	<u>CB-4</u>
	Neadion.	Push Manual Reactor Trip Reset pushbutton. Verify system will <u>NOT</u> reset within ~ 30 seconds

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

STEP	ELEMENT	STANDARD
		CUE: Operator at AI-3 reports that the trip lamps on the clutch power supplies stayed on for approximately 30 seconds.
18	Reset Reactor Trip.	<u>CB-4</u> Depress BLACK Reactor Trip Reset Pushbutton.
19	Push Manual Reactor Trip on Main Control Board.	<u>CB-4</u>
		Depress RED Trip Button.
20	Verify the following:	<u>AI-3</u>
	M1, 2, 3 and 4 are deenergized.	Voltage indicates ZERO for M1, 2, 3 and 4.
21	Clutch power supply PS 1, 2, 3 and 4 Trip Lights ON.	<u>AI-3</u>
		One RED trip light ON for each clutch power supply
22	Turbine Trip Circuit	Behind AI-31B/C
		K1, K2, K3 and K4 indicating lights off
23	The Diesel Start Circuit ACTUATED:	<u>AI-30A/B</u>
	 86A/D1 Tripped 86B/D1 Tripped 	Verify both diesels are at idle speed Lockout relays Tripped
	 86A/D2 Tripped 86A/D2 Tripped 	AMBER light out.

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

STEP	ELEMENT	STANDARD
24	Reactor trip annunciator operated	Reactor Trip Alarm on CB 4. (A20, A7)
25	Y-3466 is Tripped.	ERF CRT Y-3466 TRIPPED.
26	Post Trip Review is printed.	Line Printer.
27	RESET the reactor.	<u>CB-4</u>
		Push Reactor Trip Reset.
28	Verify the following:	On Panel Al-3:
	Clutch power supplies are	PS-1, 2, 3 & 4 trip lights OFF.
	Turbine trip reset.	AI-31B/C (Behind Panel)
		K1, K2, K3 and K4 lights ON
	Reactor Trip Alarm Clears.	<u>CB-4:</u>
		Alarm A-20, A-7 Resets.
	Y-3466 Resets.	Alarm Point Y-3466 on the ERF CRT reset.
29	RESET:	<u>AI-30A/B</u>
	 86B/D1 86A/D2 86B/D2 	Reset Lockout relays AMBER lights lit.
		CUE: Another Operator will shutdown the Diesel

Generators

JPM No: JPM-0654

JPM Title: Perform Manual Trip Check

Termination Criteria: Reactor Trip circuits have been tested.

JPM No: JPM-0654

INITIATING CUE: As a portion of the preparations for a Reactor Startup, you, the LO ,are directed to verify the operation of the Reactor Protective System manual trip circuits by performing OP-ST-RPS-0008. All prerequisites and initial conditions are met. Both D/G's have been Barred over

START:

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

 Location:
 Control Room

 Approximate Time:
 15 minutes
 Actual Time:

 Reference(s):
 OI-VA-1, Attachment 8 (rev 49) K/A 029000 A2.03 (2.7/3.1)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature: _	 Date:
0 –	

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments: JPM set 2 Alternate Path JPM

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

INITIATING CUE: The plant is in a refueling shutdown condition. A containment purge permit has been delivered to the Shift Manager by the C/RP group. Maximum purge flow is not to exceed 20,000 SCFM. The Shift Manager has signed the permit and authorized the release. You, the LO, are to start up a containment purge using VA-24A and VA-32A. Process monitors RM-050, RM-051, RM-052 (aligned to stack) and RM-062 are all operable, VA-3A is running and VA-40B is in service. This is a Step #3 Purge. All prerequisites are met.

START.

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Record the FC-212 count rate limit for the in service Containment Radiation Monitor	Records count rate for RM- 050/51
2		Set the FC-212 count rate limits	CUE: Setpoints have been entered
3		Perform check source test on the following radiation monitors: • RM-051 • RM-052 • RM-062	<u>AI-33</u> Depress check source button and verify rising count rate for each monitor.
4		Verify Alert and Alarm setpoints.	CUE: Setpoints have been verified
5		Ensure FR-758, Ventilation Stack Flow, is less than or equal to the FC-212 value	<u>AI-44</u> Verify Stack Flow on FR-758

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

STEP	ELEMENT	STANDARD
6	Verify the following are closed: • HCV-749 • HCV-750 • HCV-753 • HCV-754 • HIC-751	<u>AI-44</u> GREEN damper position lights lit
7	Ensure the following permissive key switches are in OPEN • HC-742-2C • HC-742-2D • HC-742-1C • HC-742-1D	<u>AI-44</u> Key switches in OPEN position
8	Ensure the TOTAL display is selected on QQI-755	<u>AI-60</u> TOTAL selected
9	Reset QQI-755	<u>AI-60</u>
		Push RESET pushbutton
10	Turn on FR-755/6600/6601, Containment Purge Air Flow	<u>AI-60</u>
		Recorder FR-755 is ON and recording
11	Record FC-212 initial readings and mark recorders with date, time and release number • RR-049A • FR-758 • PR-745 • FR-755/6600/6601	Recorder charts marked as specified RR-049A (AI-31E) FR-758 (AI-44) PR-745 (AI-44) FR-755 (AI-60)
12	Place HC-745 to HAND	AI-44

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

STEP	ELEMENT	STANDARD
		Switch placed in HAND position
13	Station an Operator to monitor RM-052 and/or RM-062	CUE: Operator has been stationed
14	Place the following valves in OPEN:	<u>AI-44</u> Switches on OREN
	 PCV-742C PCV-742D PCV-742A PCV-742B HIC-751 	RED lights lit
		CUE: Operator monitoring RM-052 and RM-062 reports no change in count rate
15	Monitor for change in	<u>AI-65A/B</u>
		Cue: PR-785 and PR-786 show steady containment pressure
16	Throttle the following purge fan dampers:	<u>AI-44</u>
	 HCV-753 HCV-754 HCV-749 HCV-750 	Rotate controllers to approximately 10% open
17	Start VA-24A and VA-32A	<u>AI-44</u>
		VA-24A control switch to start and RED light lit
		VA-32A control switch to start and RED light lit

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

STEP	ELEMENT	STANDARD
18	Adjust following dampers as necessary to the desired flows: • HCV-753 • HCV-749 • HIC-751	<u>Al-44</u> Adjust dampers, purge flow must remain below FC-212 maximum release rate. Containment pressure should remain steady
19	Ensure FI-756 Purge Air DIL Flow is greater than equal to FC-212 Dilution flow value	<u>AI-44</u> Indicated flow greater than FC- 212 value
		CUE: Operator reports that RM-052 and RM-062 indications are rising and approaching the high alarm setpoint
20	Stop VA-32A and VA-24A	<u>AI-44</u>
		VA-24A control switch to stop and GREEN light lit
		VA-32A control switch to stop and GREEN light lit
21	Ensure the following dampers are closed: • HCV-753 • HCV-754 • HCV-749 • HCV-750 • HIC-751 • PCV-742C • PCV-742D • PCV-742A	<u>AI-44</u> Control switches in CLOSE GREEN lights lit
	PCV-742BFCV-6601B	SP-6601 @ zero SP-6601 @ zero

JPM No: JPM-0704

JPM Title: Start up the Containment Purge System

STEP	ELEMENT	STANDARD
	 FCV-6600B HCV-6602 HCV-6603 	Control switches in CLOSE GREEN lights lit
		CUE :
		RCS temperature will be maintained below 200°F.
22	Notify shift RP that containment purge has been secured	CUE: Shift RP notified
23	Place HC-745 to AUTO	<u>AI-144</u>
24	Turn off FR-755/6600/6601, Containment Purge Air Flow	Switch in AUTO <u>AI-60</u> Recorder FR-755 is OFF

Termination Criteria: Purge has been terminated due to observed rising count rate on RM-052 and RM-062

JPM No: JPM-0704

INITIATING CUE: The plant is in a refueling shutdown condition. A containment purge permit has been delivered to the Shift Manager by the C/RP group. Maximum purge flow is not to exceed 20,000 SCFM. The Shift Manager has signed the permit and authorized the release. You, the LO, are to start up a containment purge using VA-24A and VA-32A. Process monitors RM-050, RM-051, RM-052 (aligned to stack) and RM-062 are all operable, VA-3A is running and VA-40B is in service. This is a Step #3 Purge. All prerequisites are met.

START.

JPM No: jpm-1135

JPM Title: Simultaneous Hot and Cold Leg Injection

Location: Control Room

Approximate Time: 15 minutes Actual Time: _____

Reference(s): EOP/AOP Attachment 9 EOP/AOP Attachment 10 K/A 006000 A4.05 (3.9/3.8)

JPM Prepared by:	Jerry Koske	Date:	12/29/2003
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: jpm-1135

JPM Title: Simultaneous Hot and Cold Leg Injection

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:

Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	Use JPM set#1 which has HCV-238 failed open This is an alternate path JPM.

JPM No: jpm-1135

JPM Title: Simultaneous Hot and Cold Leg Injection

INITIATING CUE: A Large LOCA occurred 8.5 hours ago. RAS is in progress. Containment Spray is operating per TSC recommendation. All three HPSI pumps are operating.

The Control Room Supervisor has directed you to initiate Simultaneous Hot and Cold Leg Injection.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Enter EOP/AOP Attachment 9	Attachment 9 entered
2	Open at least one of the Charging Pumps HPSI Header	<u>CB-1,2,3</u>
	Isolation Valves: • HCV-308 • HCV-2988	At least one valve's control switch to OPEN with RED light lit.
3	Ensure HCV-238 and HCV-239 are closed	Determines that HCV-238 is open. Goes to EOP/AOP Attachment 10.
4	Ensure both Charging Isolation valves are open.	<u>CB-1,2,3</u>
	HCV-247HCV-248	RED lights lit
5	Ensure HCV-238 and HCV-239 are closed	Determines that HCV-238 and HCV-239 are open.
6	Close both Charging Isolation	<u>CB-1,2,3</u>
	 HCV-247 HCV-248 	Control switch to CLOSE GREEN lights lit

JPM No: jpm-1135

JPM Title: Simultaneous Hot and Cold Leg Injection

STEP	ELEMENT	STANDARD
7	Open at least one of the PZR Auxiliary Spray Isolation Valves • HCV-240 • HCV-249	<u>CB-1,2,3</u> At least one valve's control switch to OPEN with RED light lit.
8	Close all of the following HPSI Loop Injection Valves: • HCV-315 • HCV-318 • HCV-312 • HCV-321	<u>AI-30A/B</u> Control Switches to CLOSE (pull out, counter-clockwise) until GREEN lights lit.
9	Close HCV-2987 HPSI Header Isolation Valve	<u>AI-30A/B</u> Control Switch to CLOSE GREEN light lit RED light off
10	 Throttle HPSI Loop Injection Valves until all of the following criteria are satisfied: Charging flow greater than 140 gpm Total HPSI flow greater than 140 gpm 	AI-30A/BOne or more control switches toward openGreater than 140 gpm total flow on FI-313, FI-316, FI-319 or FI-322CB-1,2,3Greater than 140 gpm flow on FIA-236Note: Plant computer may also be used to verify flows

JPM No: jpm-1135

JPM Title: Simultaneous Hot and Cold Leg Injection

	Simultaneous Hot and Cold Leg Injection
Termination Criteria:	Established with greater than 140 gpm flow through
	charging (Hot Leg) and greater than 140 gpm flow
	through HPSI Header (Cold Legs).
JPM No: jpm-1135

INITIATING CUE: A Large LOCA occurred 8.5 hours ago. RAS is in progress. Containment Spray is operating per TSC recommendation. All three HPSI pumps are operating.

The Control Room Supervisor has directed you to initiate Simultaneous Hot and Cold Leg Injection.

START

JPM No: RO-2004-1

JPM Title: Determine Dilution Volume for Power Change

Approximate Time: 10 minutes Actual Time: _____

Reference(s): TDB-II, Figure II.A.2 (R27) TDB-V.12 (R6) K/A 2.1. 25 (RO Imp 2.8)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: RO-2004-1

JPM Title: Determine Dilution Volume for Power Change

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:

Reason, if unsatisfactory:

Tools & Equipment:	Calculator
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Safety Considerations: None

Comments: Use the TDB sections provided for this JPM. The plant TDB may use different figures due to the power uprating.

JPM No: RO-2004-1

JPM Title: Determine Dilution Volume for Power Change

JPM No: RO-2004-1

JPM Title: Determine Dilution Volume for Power Change

INITIATING CUE:	The plant has been operating at 80% power for a week due to some limitations on the secondary side. Repairs have been made and power will be raised to 95%.
	The CRS has asked you to determine how many gallons of water will be required for the power change. The ERF computer is not available.
	The plant conditions are:
	Reactor Power = 80% RCS Boron Concentration = 512 ppm RCS T-cold is 540°F RCS T-hot is 581°F All CEAs are fully withdrawn Note: Ignore the effect of xenon concentration changes for this calculation.

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Determines the boron concentration change for a power increase from 80% to	Enters TDB-II, refers to figure II.A.2.
		95% power.	Determines that boron concentration must be lowered approximately 50 ppm, from 512 ppm to 462 ppm
2		Determines the amount of dilution water required.	Enters TDB-V.12
			Uses the dilution formula to determine that approximately 3880 gallons of water is required.
			Acceptable range is between 3680 – 4080 gallons

JPM No: RO-2004-1

JPM Title: Determine Dilution Volume for Power Change

STEP	ELEMENT	STANDARD
GAL WATER = [67250. = [67250. = 3883 ga	.044 — 52.562 x (T 044 — 52.562 x (5 al	⁻ -avg)] Ln (CI/CF) 40+581)/2] Ln (512/462)
Termination Criteria:	Determination of made.	of required dilution volume has been

JPM No: RO-2004-1

INITIATING CUE:	The plant has been operating at 80% power for a week due to some limitations on the secondary side. Repairs have been made and power will be raised to 95%.
	The CRS has asked you to determine how many gallons of water will be required for the power change. The ERF computer is not available.
	The plant conditions are:
	Reactor Power = 80% RCS Boron Concentration = 512 ppm RCS T-cold is 540°F RCS T-hot is 581°F All CEAs are fully withdrawn Note: Ignore the effect of xenon concentration changes for this calculation.

JPM No: RO-2004-2

JPM Title: Diesel Generator Hot Weather Operability

Approximate Time: 10 min Actual Time: _____

Reference(s): TDB-III.26A K/A 2.1.32 (RO Imp 3.4)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: RO-2004-2

JPM Title: Diesel Generator Hot Weather Operability

Operators' Name:	Employee #	

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature: _		Date:
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Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments:

JPM No: RO-2004-2

JPM Title: Diesel Generator Hot Weather Operability

INITIATING CUE: It is night shift. Both Diesel Generators are operable. Both are using an Ethylene Glycol solution for cooling.

The forecasted high temperature for tomorrow is 103°F.

The CRS has asked you to determine if the high temperature will affect the operability of the diesel generators. If so, what action could be taken to ensure operability.

Critical Steps shown in gray

STE	P ELEMENT	STANDARD
1	Refer to TDB-III.26A	Enters TDB-III.26.A
2	Determines DG-1 Operability with Ethylene Glycol Coolant	Refers to Figure 1
		Determines that DG-1 would be inoperable at 103°F.
3	Determines DG-1 Operability if Ethylene Glycol solution was	Refers to Figure 2
	replaced with water.	Determines that DG-1 would be operable with water coolant. Recommends coolant replacement
4	Determines DG-2 Operability with Ethylene Glycol Coolant	Refers to Figure 3
		Determines that DG-2 would be operable at 103°F.

JPM No: RO-2004-2

JPM Title: Diesel Generator Hot Weather Operability

Termination Criteria: DG operability at 103°F has been determined and recommendation made to replace DG-1 coolant with water.

JPM No: RO-2004-2

INITIATING CUE:	It is night shift. Both Diesel Generators are operable. Both are using an Ethylene Glycol solution for cooling.
	The forecasted high temperature for tomorrow is 103°F.
	The CRS has asked you to determine if the high temperature will affect the operability of the diesel generators. If so, what action could be taken to ensure operability.

JPM No: RO-2004-3

JPM Title: Determine equipment affected by isolation of Instrument Air Valve

Approximate Time: 10 minutes Actual Time: _____

Reference(s): P&ID 11405-M 264 sheet 1 P&ID 11405-M 264 sheet 4 K/A 2.2.13 (RO Imp 3.6)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: RO-2004-3

JPM Title: Determine equipment affected by isolation of Instrument Air Valve

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature: _____ Date: _____

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments:

JPM No: RO-2004-3

JPM Title: Determine equipment affected by isolation of Instrument Air Valve

INITIATING CUE: Maintenance has requested that instrument air valve, IA-525 be isolated for approximately 2 hours to repair a small leak. The CRS has asked you to provide him with a written list of equipment that would be affected by isolation of this valve.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
		CUE: Provide candidate with a blank sheet of paper to list the equipment on.
1	Refers to P&ID to determine affected Instrument Air Riser.	Uses P&ID 11405-M 264 sheet 1, to determine that IA - 525 isolates riser "AY".
2	Refers to P&ID to determine affected equipment.	Uses P&ID 11405-M 264 sheet 4 to determine equipment affected.
3	Provides list of equipment affected.	List includes: • HCV-818B • HCV-2603A • HCV-2604A • HCV-425B • HCV-425D • A/HCV-742 • B/HCV-742 • C/HCV-742 • D/HCV-742

JPM No: RO-2004-3

JPM Title: Determine equipment affected by isolation of Instrument Air Valve

Termination Criteria: List of affected equipment has been provided.

JPM No: RO-2004-3

INITIATING CUE: Maintenance has requested that instrument air valve, IA-525 be isolated for approximately 2 hours to repair a small leak. The CRS has asked you to provide him with a written list of equipment that would be affected by isolation of this valve.

START

JPM No:	RO-2004-4
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JPM Title: RCA Entry and Exit

Approximate Time: 10 minutes Actual Time: _____

Reference(s): GET-Radiation Worker Training Standing Order G-101 K/A 2.3.1 (RO Imp 2.6)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: RO-2004-4

JPM Title: RCA Entry and Exit

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:	Date:
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Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	This JPM will be performed in the Training Center. Entry into Room 29 (VCT Room) will be simulated.

JPM No: RO-2004-4

JPM Title: RCA Entry and Exit

INITIATING CUE: You have been directed to enter Room 29 to ensure that CH-216, VCT to gas analyzer, is OPEN.

START

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Review RWP	Reads RWP
2		Determine Radiological Conditions in Room 29.	Checks survey maps and/or discusses radiological conditions with RP personnel.
3		Obtains Dosimetry	Verify TLD attached to security badge. Obtain EAD.
4		Sign in on appropriate RWP	Insert EAD in reader. Scan PID and RWP number
5		Enter RCA	RCA entered
6		Enter Room 29	Enters simulated Room 29
			CUE: EAD is Alarming on high dose rate
7		Exits Room and Contacts RP	Leaves Room Immediately and Contacts RP
			CUE: RP will provide coverage for Room 29 entry.

JPM No: RO-2004-4

JPM Title: RCA Entry and Exit

STEP	ELEMENT	STANDARD
8	Enter Room 29 with RP Tech	Enters room
		CUE: CH-216 is OPEN
9	Exits Room 29 with RP Tech	Exits room
10	Monitor for personnel contamination prior to exiting RCA	Monitor for contamination using PCM
11	Sign out of RCA	Insert EAD in reader, enter PID number and confirm dose
10 11	Monitor for personnel contamination prior to exiting RCA Sign out of RCA	Monitor for contamination using PCM Insert EAD in reader, enter PID number and confirm dose

Termination Criteria: RCA has been exited

JPM No: RO-2004-4

INITIATING CUE: You have been directed to enter Room 29 to ensure that CH-216, VCT to gas analyzer, is OPEN.

START

JPM No: SRO-2004-1

JPM Title: Review Shutdown Margin Calculation

Approximate Time: 15 minutes Actual Time: _____

Reference(s): TDB-V.9 (R35) TDB-II (R27) K/A 2.1.7 (SRO Imp 3.7)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: SRO-2004-1

JPM Title: Review Shutdown Margin Calculation

Operators' Name:	Employee #
	_

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:		Date:
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Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	Use provided TDB sections. Plant values may have changed due to power uprating

JPM No: SRO-2004-1

JPM Title: Review Shutdown Margin Calculation

INITIATING CUE: CEAs 22 and 29 have just been declared inoperable (untrippable) following a surveillance test. The STA has determined that shutdown margin is adequate and has asked you to review his SDM calculation. The plant conditions are as follows:

> Reactor Power: 50% CEA position: GRP 4 @ 100", all other CEAs fully withdrawn Boron concentration: 860 ppm Burnup: 6000 MWD/MTU

START

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
1		Reviews shutdown margin calculation	Determines that least conservative CEA worth was mistakenly used in step 9.c.(2) instead of the most conservative
2		Calculates shutdown margin using corrected values.	Determines that shutdown margin is not adequate. (SDM is 3.13%)

Termination Criteria: SRO has determined that shutdown margin is not adequate

JPM No: SRO-2004-1

INITIATING CUE:	CEAs 22 and 29 have just been declared in operable (untrippable) following a surveillance test. The STA has determined that shutdown margin is adequate and has asked you to review his SDM calculation. The plant conditions are as follows:
	Reactor Power: 50% CEA position: GRP 4 @ 100", all other CEAs fully withdrawn Boron concentration: 860 ppm Burnup: 6000 MWD/MTU

START

JPM No: SRO-2004-2

JPM Title: Raw Water Operability Determination

Approximate Time: 10 minutes Actual Time: _____

Reference(s): TDB III.41 (R1) Technical Specifications K/A 2.1.12 (SRO Imp 4.0)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: SRO-2004-2

JPM Title: Raw Water Operability Determination

Operators' Name: _____ Employee # _____

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature: _____ Date: _____

Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments:

JPM No: SRO-2004-2

JPM Title: Raw Water Operability Determination

INITIATING CUE:	The plant has entered a Technical Specification LCO due to the inoperability of Raw Water Heat Exchanger AC-1A and Raw Water Pump, AC-10C.
	Raw Water Pump, AC-10A has just been declared inoperable. The river conditions are as follows:
	River temperature = 64°F River level = 984 feet
	Determine the applicable Technical Specification and required actions, if any, to be taken.

START

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Refers to TDB-III.41	Enters TDB-III-41
2	Refers to Table and Chart number 4 to determine applicable LCO	Determines that T.S. 2.0.1 applies with these river conditions
3	Determines Tech Spec. 2.0.1 required Action Statement	Plant must be in Hot Shutdown within 6 hours

JPM No: SRO-2004-2

JPM Title: Raw Water Operability Determination

Termination Criteria: Technical Specification 2.0.1 has been entered.

JPM No: SRO-2004-2

INITIATING CUE:	The plant has entered a Technical Specification LCO due to the inoperability of Raw Water Heat Exchanger AC-1A and Raw Water Pump, AC-10C.
	Raw Water Pump, AC-10A has just been declared inoperable. The river conditions are as follows:
	River temperature = 64°F River level = 984 feet
	Determine the applicable Technical Specification and required actions, if any, to be taken.
	START

JPM No: SRO-2004-3

JPM Title: Shift Manager Review of Surveillance Test Results

Approximate Time: 10 minutes Actual Time: _____

Reference(s): OP-ST-CCW-3002 K/A 2.2.12 (SRO Imp 3.4)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: SRO-2004-3

JPM Title: Shift Manager Review of Surveillance Test Results

Operators' Name:	Employee #
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All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:		Date:
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Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments:

JPM No: SRO-2004-3

JPM Title: Shift Manager Review of Surveillance Test Results

INITIATING CUE: You are acting as the Shift Manager. OP-ST-CCW-3002, AC-3A Component Cooling Water Pump Inservice Test, has been completed today. The STA has completed his evaluation of the test data and forwarded the test procedure to you for approval. Review the test documentation and approve, if warranted. Take any required actions.

START

Critical Steps shown in gray

	STEP	ELEMENT	STANDARD
			CUE: Provide candidate with a partially filled out copy of the surveillance test procedure.
1		Reviews procedure for completion.	Procedure filled in up to point of Shift Manager approval.
2		Reviews the results in Attachment 1 and Figure 1.	Determines that the data point was incorrectly plotted on Figure 1. Results are in the High Required Action Range.
3		Applies acceptance criteria	Declares AC-3A inoperable

JPM No: SRO-2004-3

JPM Title: Shift Manager Review of Surveillance Test Results

Termination Criteria: Test results have been reviewed.

JPM No: SRO-2004-3

INITIATING CUE: You are acting as the Shift Manager. OP-ST-CCW-3002, AC-3A Component Cooling Water Pump Inservice Test, has been completed today. The STA has completed his evaluation of the test data and forwarded the test procedure to you for approval. Review the test documentation and approve, if warranted. Take any required actions.

START
JPM No: SRO-2004-4

JPM Title: Determine Primary to Secondary Leak Rate

Approximate Time: 10 minutes Actual Time: _____

Reference(s): Standing Order G-105 Standing Order O-43 K/A 2.3.11 (SRO Imp 3.2)

JPM Prepared by:	Jerry Koske	Date:	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: SRO-2004-4

JPM Title: Determine Primary to Secondary Leak Rate

Operators' Name:	Employee #
	_

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:		Date:
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Reason, if unsatisfactory:

Tools & Equipment: None

Safety Considerations: None

Comments:

JPM No: SRO-2004-4

JPM Title: Determine Primary to Secondary Leak Rate

INITIATING CUE: The plant is operating at 100% power. The RCS chemistry is:

- Total RCS Activity = 4.4 mCi/g
- RCS Leak Check gas concentration = 3.8 mCi/cc
- DEI-131 Activity = 0.02 mCi/g
- Boron Concentration = 835 ppm
- RM-057 has increased from 3500 cpm to 4000 cpm over the last hour.

The Condenser Evacuation pumps are in recirc mode.

The Shift Manager directs you, the CRS, to estimate the primary to secondary leakrate and determine what actions, if any, are required.

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Obtain copy of Standing Order G-105	Obtains copy of Standing Order G-105
2.	Use S.O. G-105 to estimate primary to secondary leakage	Estimates leakage between 75 and 80 gpd using G-105.
3	Determine Action level	Action level 3
4	Determine required actions	 Commence controlled plant shutdown using OP-4 Align condenser evacuation discharge to aux building stack.
5	Obtain copy of Standing Order O-43	Obtains S.O. O-43

JPM No: SRO-2004-4

JPM Title: Determine Primary to Secondary Leak Rate

STEF	P ELEMENT	STANDARD
6	Determine fuel action level	Action level 2
7	Determine desired blowdown operation	Blowdown Operation should be continued

Termination Criteria: A determination of primary to secondary leakrate and required actions has been performed.

JPM No: SRO-2004-4

INITIATING CUE:	 The plant is operating at 100% power. The RCS chemistry is: Total RCS Activity = 4.4 mCi/g RCS Leak Check gas concentration = 3.8 mCi/cc DEI-131 Activity = 0.02 mCi/g Boron Concentration = 835 ppm RM-057 has increased from 3500 cpm to 4000 cpm over the last hour.
	The Condenser Evacuation pumps are in recirc mode.
	The Shift Manager directs you, the CRS, to estimate the primary to secondary leakrate and determine what actions, if any, are required.

JPM No: SRO 2004-5

JPM Title: Emergency Plan Classification and PARs

Approximate Time: 10 minutes Actual Time: _____

Reference(s): EPIP-OSC-1 EPIP-EOF-7 K/A 2.4.41 (SRO Imp 4.1) K/A 2.4.44 (SRO Imp 4.4)

JPM Prepared by:	Jerry Koske	Date:	
		Data	
JPM Reviewed by:		Date:	
JPM Approved by:		Date:	

JPM No: SRO 2004-5

JPM Title: Emergency Plan Classification and PARs

Operators' Name:	Employee #	

All Critical Steps (shaded) must be performed or simulated in accordance with the standards contained in this JPM

The Operator's performance was evaluated as (circle one):

SATISFACTORY UNSATISFACTORY

Evaluator's Signature:		Date:
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Reason, if unsatisfactory:

Tools & Equipment:	None
Safety Considerations:	None
Comments:	Do not perform this JPM before Simulator Scenario Number 1

JPM No: SRO 2004-5

JPM Title: Emergency Plan Classification and PARs

INITIATING CUE:

A 800 gpm steam generator tube rupture has occurred in RC-2A. EOP-00 and EOP-04 have been entered. The MSIV for RC-2A could not be closed. A plant cooldown is being performed using both steam generators. The EAGLE output is attached.

The meteorological indications are as follows:

- Indicated 10m wind speed 12 mph, 14 mph
- Indicated wind direction 120°, 128°
- Indicated ?T is -1.8°C/100m, -1.6°C/100m
- It is raining, 0.4 inches daily total

You are directed to enter the Emergency Plan, classify the event and determine offsite Protective Action Recommendations.

Complete page 1 of form FC-1188.

Critical Steps shown in gray

STEP	ELEMENT	STANDARD
1	Refer to Emergency Plan	Refer to EPIP-OSC-1
2	Classify the event	The event should be classified as a Site Area Emergency per EAL 2.7 (Primary to Secondary Leakage > 40 gpm with an ongoing release) on form FC-1188
3	Determine Protective Action Recommendations	Refer to EPIP-EOF-7 and determine that there are no PARs for this situation. Document on form FC-1188

JPM No: SRO 2004-5

JPM Title: Emergency Plan Classification and PARs

STEP	ELEMENT	STANDARD
4 Do	cument other items on form FC-	 Wind from – 120° - 128° Wind Speed – 12 mph Precipitation – yes Stability class – C There is an airborne
118	38	radioactive release Prognosis is unstable Plant is shutdown

Termination Criteria:	Event has been classified and PARs determined

JPM No: SRO-2004-5

INITIATING CUE: A 800 gpm steam generator tube rupture has occurred in RC-2A. EOP-00 and EOP-04 have been entered. The MSIV for RC-2A could not be closed. A plant cooldown is being performed using both steam generators. The EAGLE output is attached.

The meteorological indications are as follows:

- Indicated 10m wind speed 12 mph, 14 mph
- Indicated wind direction 120°, 128°
- Indicated ?T is -1.8°C/100m, -1.6°C/100m
- It is raining, 0.4 inches daily total

You are directed to enter the Emergency Plan, classify the event and determine offsite Protective Action Recommendations.

Complete page 1 of form FC-1188.