

Facility:	Callaway	Scenario No.:	1	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
<p>Initial Conditions: 100% power, BOL.</p> <p>RE-52, Blowdown Discharge Pumps Discharge Monitor, is OOS.</p> <p>BB-PCV-455A PORV Leakage – Block Valve Closed.</p> <p>Motor Driven AFW Pump 'A' OOS.</p>					
<p>Turnover: Reduce power to less than 90% to remove Condensate Pump 'A' from service due to a seal leak</p>					
<p>Critical Task: Start EDG 'A' to energize Emergency Bus prior to initiation of ECA 0.0 coping steps.</p> <p>Manually Start 'A' HHSI pump prior to exit from EOP Attachment 1.</p>					
Event No.	Malf. No.	Event Type*	Event Description		
1		R – RO N – BOP, SRO	Reduce power		
2	FWM02A	I – BOP, SRO TS - SRO	SG level transmitter failure.		
3	EPS05B	C – ALL TS - SRO	4KV Bus NB02 Normal Feeder Breaker trip.		
4	PRS02A BAT	I – RO, SRO TS - SRO	Pressurizer Level Transmitter fails low Pressurizer Level Control Valve fails closed and cannot be opened.		
5	RCS06C	C – RO, SRO	RCS Leak requiring reactor trip.		
6	BAT	M – ALL	Loss of off-site power, SBLOCA.		
7	EPS06B KJS012	C – BOP	'B' DG Trips – 'A' DG fails to AUTO Start. MANUAL Start required.		
8	SBI008C	C - RO	'A' HHSI pump fails to AUTO Start – MANUAL Start required.		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description

NRC Scenario 1

The crew will assume the shift at 100% power with instructions to reduce power due to a Condensate Pump seal leak.

At approximately 95% power, a Steam Generator Level transmitter will drift low, requiring the crew to take manual control of the feedwater regulating valve for the affected steam generator in accordance with OTO-AE-3. The SRO will also refer to Technical Specifications for the appropriate action requirements.

When technical specifications have been addressed, 4KV Vital Bus NB02 normal feeder breaker will trip. 'B' EDG will automatically start and energize bus NB02. The crew will respond in accordance with alarm response procedures and OTO-SA-1 to stop AFW flow and secure unnecessary equipment started by the Shutdown Sequencer. The SRO will refer to technical specifications.

When the plant is stable, a Pressurizer Level Transmitter will fail low, causing Letdown isolation. When the crew attempts to restore letdown, one letdown control valve will fail closed, requiring the crew to reduce charging and place Excess Letdown in service in accordance with OTO-BG-1 and OTN-BG-1. The SRO will address Technical Specifications.

An RCS leak will develop when Excess Letdown is placed in service, requiring the crew to determine that the reactor must be tripped.

When the reactor is tripped, a loss of off-site power will occur. The RCS leak will progress to a SBLOCA.

Diesel Generator 'B' trips and cannot be started. Diesel Generator 'A' fails to automatically start, and must be manually started and aligned in accordance with E-0 or ECA-0.0. HHSI pump 'A' fails to automatically start, and must be manually started.

The scenario may be terminated upon entry to ES-1.2, Post LOCA Cooldown and Depressurization.

EOP flow path: E-0, ECA-0.0, E-0, E-1, ES-1.2

Scenario 1
Scenario Malfunction List

- 1) Initialize at IC-20.
- 2) Run Batch File "**iltone.txt**", and verify the actions on the following page are loaded correctly.
- 3) Ensure Immediate Boration Timer is reset.
- 4) Check RX trip switch has a RED flag.
- 5) Ensure NIS indicates 100%
- 6) Ensure step counters for Control Bank "D" are set at 215 steps and all other step counters are set for 228.
- 7) Ensure the digital display is selected to REP0480A and RET0499A.
- 8) Hang hold off tags on the "A" MDAFP.
- 9) Ensure AE-LT-519 is selected
- 10) Ensure BB-LT-459 is selected
- 11) Ensure Decrease Loading Rate Button is "ON".
- 12) Update status board for "B" Protected Train week. Record "A" MDAFP, LCO 3.7.5, 72 hours.
- 13) Place Letdown orifi A and B in service with a caution tag on C
- 14) White board has the following boron concentrations:
 - "A" MDAFP T/S 3.7.5, Action C.1. 72 Hours. OOS @ 0500 Today
 - 'A' CCP "5 days ago" 1107 ppm
 - 'B' CCP "two weeks ago" 1135 ppm
- 15) Supply turnover and log sheets, Xe Predict, Dilution/Boration calculation and OTG-ZZ-00004.
- 16) Ensure the RM-11 is on the training system.
- 17) Microphones available for each person being evaluated and a video tape is in the VCR.
- 18) Ensure chart recorders are "rolled forward".
- 19) Ensure copies of the following procedures are in the file drawers:
 - OTO-AE-00003
 - OTO-NB-00002
 - OTO-SA-00001
 - OTO-BG-00001
 - ECA-0.0
 - E-0
 - E-1

E-2

Scenario 1

Scenario Malfunction List

```
File:          iltone.TXT
>Author:   S. P. Aufdemberge
>Date:     20050504
>
>=====SCENARIO SETUP ITEMS=====
>TAGOUT "A" MDAFW PUMP
> FILE: AL01A.TXT
> Red lights stay on the ESFAS Panel
bat al01a.txt
>Simulates de-energization of "A" PORV Block valve due to PORV Leakage
ior bbhis8000a_ic (-1 0) 0
irf bbs014 (-1 0) 0
>=====
>=====EVENT PRELOAD=====
>EVENT A
>'A' S/G lev xmtr fails to 0 psig over 60 sec from trigger #1 (MANUAL)
imf fwm02a (1) 0 60
>=====
>=====EVENT PRELOAD=====
>EVENT B
>Loss of NB02 normal feeder breaker, from trigger #2 (MANUAL)
imf eps05b (2)
>=====
>=====EVENT PRELOAD=====
>EVENT C
>Pressurizer Level Transmitter Fails Low, from trigger #3 (MANUAL)
imf prs02a (3) 0 60
> Set Event 4 to automatically close and hold closed BGLCV0459 after 459 initially fails closed.
trgset 4 "x01o150g.eq.true"
ior bghis459_og (4) 0
ior bghis459_or (4) 1
ior bghis459_ic (4) 0
>=====
>=====EVENT PRELOAD=====
>EVENT D
>RCS leak requiring Reactor trip,Grows to 600gpm over 10 minutes from Manual Trigger #5
imf rcs06c (5) 600 600
>=====
>=====EVENT PRELOAD=====
>EVENT E
>Loss of Off-Site Power, from Manual trigger #6
> Incoming Lines
imf eps03a (6 0)
imf eps03b (6 3)
imf eps03c (6 20)
imf eps03g (6 5)
>Incoming Line lights
irf msb006 (6 0) 0
irf msb007 (6 5) 0
irf msb008 (6 3) 0
>=====
>=====EVENT PRELOAD=====
>EVENT F
>"B" EDG trips and "A" EDG will fail to automatically start. "B" EDG fails on the loss of off-site power
imf eps06b (7)
>Loss of off-site power "sensed" by green light on RCP control switch
trgset 7 "x21o115g.eq.0"
>Disable Automatic start of "A" EDG
irf kjs012 (-1 0) 1
>=====
>=====EVENT PRELOAD=====
>EVENT G
> "A" CCP fails to auto start, manual will be successful
irf sbi008c (-1 0) 1
>
>
>end of file
```

Scenario 1
Crew Turnover

Separate Turnover sheets provided

Op Test No.:	<u>1</u>	Scenario #	<u>1</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>38</u>
Event Description:		Reduce Power							
Time	Position	Applicant's Actions or Behavior							

	SRO	Refer to OTO-MA-00008, Rapid Load Reduction
	CREW	Determine amount of boric acid to reduce reactor power to 90%
	CREW	Record rate of turbine load change
	SRO	Discuss amount and rate of turbine load change and boric acid addition with crew
	SRO	Notify Load Dispatcher
	SRO	Notify Chemistry, Health Physics, and Radwaste
	RO	Initiate boron equalization <ul style="list-style-type: none"> • Energize at least 1 group of backup heaters • Place the PZR Master Controller in MAN • Lower PZR Master Controller output to 38% to 42% • Place the PZR Master Controller in AUTO

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Event Description: Reduce Power

Time	Position	Applicant's Actions or Behavior
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	RO	<p>Borate from the BAST using any of the following:</p> <ul style="list-style-type: none"> • Emergency Boration <ul style="list-style-type: none"> ○ Start at least 1 Boric Acid Transfer Pump ○ Open Emergency Boration to Charging Pump suction BG HIS-8104 ○ Check Emergency Borate flow is greater than 30 GPM on BG FI-183A • Borate to the VCT <ul style="list-style-type: none"> ○ Place RCS Makeup Control to STOP (BG HS-26) ○ Place RCS Makeup Control Selector to BORATE (BG HS-25) ○ Reset Boric Acid counter to 000 (BG FY-110B) ○ Set BG FY-110B for the desired gallons of boric acid to be added ○ Place BG HS-26 in RUN
	RO	Place Rod Control in AUTO
	BOP	<p>Reduce turbine load at less than or equal to 5% per minute using any of the following:</p> <ul style="list-style-type: none"> ○ Reduce turbine load using the Load Limit potentiometer ○ Reduce turbine load using the %/min loading rate <ul style="list-style-type: none"> ○ Rotate Load Limit Set potentiometer clockwise until both of the following are met: <ul style="list-style-type: none"> ▪ Load Limit light extinguished ▪ At Set Load – LIT ○ Set Loading Rate Limit %/min to desired value ○ Select Decrease Loading Rate – ON ○ Lower load set MW toward desired load using DECREASE LOAD pushbutton

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Event Description: Reduce Power									
Time	Position	Applicant's Actions or Behavior							

	BOP	Check MFP Turbine Speed control in AUTO
When power has been reduced approximately 5%, or at Lead Evaluator's discretion, proceed to Event 2		

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Event Description: SG Level Transmitter Failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert command for SG Level Transmitter failure****Indications available:**

REACTOR PARTIAL TRIP, annunciator 83C

SG A LEV DEV, annunciator 108C

SG A LEV LO, Annunciator 108B

	SRO	Refer to OTO-AE-00002 for level malfunction
	BOP	IDENTIFY failed channel by comparing steam generator level indicators.
	BOP	SELECT alternate level channel.
	BOP	STABILIZE steam generator level at its programmed level (50%).
	BOP	WHEN steam generator level is returned to programmed level and IF placed in "MANUAL" during the transient, PLACE feedwater regulating valve to automatic control.
	SRO	Refer to T/S LCO 3.3.1 TAB 3.3.1-1 Item 14 and T/S LCO 3.3.2 TAB 3.3.2-1 Item 5 and 6 and ENSURE compliance with requirement for minimum operable channels and action statements. <ul style="list-style-type: none"> ○ TS 3.3.1 and 3.3.2 apply (72 Hour Action)
	SRO	Refer to T/S LCO 3.3.4 and T/S LCO 3.3.3 and ENSURE compliance.

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Event Description: SG Level Transmitter Failure

Time	Position	Applicant's Actions or Behavior
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	SRO	Immediately CONTACT I&C to troubleshoot problem and PERFORM requirements of appropriate Attachment, as listed in Table 1, for failed S/G level channel within SIX HOURS.
	SRO	Refer to T/S LCO 3.3.4 and T/S LCO 3.3.3 and ENSURE compliance.
	SRO	Immediately CONTACT I&C to troubleshoot problem and PERFORM requirements of appropriate Attachment, as listed in Table 1, for failed S/G level channel within SIX HOURS.

When Tech Specs have been identified, proceed to Event 3.

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Event Description: 4KV Bus NB02 Normal Feeder Breaker Trip

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert command for Bus NB02 breaker trip****Indications available:****DG B starts and supplies NB02****SHUTDOWN SEQUENCER ACTUATED TRAIN B Annunciator 21C****DIESEL GENERATOR NE02 TROUBLE Annunciator 23D****NB01 BREAKER NOT OPERABLE Annunciator 18F**

	SRO	Refer to OTO-NB-00002, Loss of Power to NB02
	RO	Ensure NB02 normal and alternate feeder breakers are open <ul style="list-style-type: none"> ○ NB0209 ○ NB0212
	RO	Go to OTA-RL-RK021, Attachment C, and verify automatic LSELS actuations <ul style="list-style-type: none"> ○ Ensure equipment is in normal alignment
	SRO	Continue in OTO-NB02 to verify DG operation and LSELS actuation.
	BOP	If discharge flow of TDAFP is not required to maintain SG level, and at SRO discretion, refer to OTN-AL-00001 and throttle or close TDAFP discharge valves to minimize thermal stresses and primary plant cooldown
	SRO	Refer to Attachment 2 for guidance concerning possible Tech Spec action statements <ul style="list-style-type: none"> ○ TS 3.8.1 applies
	CREW	Perform OSP-NE-00003

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Event Description: 4KV Bus NB02 Normal Feeder Breaker Trip

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Ensure PN08 has transferred to emergency source by MVB annunciator 14F being lit
	RO	Check pressurizer pressure is being maintained by available pressurizer heaters
	RO/BOP	Ensure "A" or "C" Service Air Compressor is running
	RO/BOP	Ensure "A" SFP Cooling Pump is in service in accordance with OTN-EC-00001
	RO/BOP	Ensure DC Busses NK04, NK02, PK02, PK04 are being supplied by their associated batteries
	SRO	Monitor battery load and contact system engineer to determine expected battery life
	SRO	If desired, cross-tie PK02 and PK04 to functional battery chargers in accordance with OTN-PK-00001
	SRO	If Swing Charger (NK26) is available, refer to OTN-NK-00001 and, as required, charge batteries NK12 and NK14
	RO/BOP	Ensure "A" Control Room Air Conditioner is running
	SRO	Ensure "A" Class 1E Air Conditioner is running and take action in accordance with FSAR 16.7.13.1 for the inoperable "B" Class 1E Air Conditioner
	RO/BOP	Verify the following ESFAS actuations in accordance with OTO-SA-00001 <ul style="list-style-type: none"> ○ SG Blowdown Isolation signal

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Event Description: 4KV Bus NB02 Normal Feeder Breaker Trip		
Time	Position	Applicant's Actions or Behavior

		<ul style="list-style-type: none"> ○ Turbine Driver Auxiliary Feed Actuation signal ○ NB02 Blackout Load Shed
<p>When TDAFP and MDAFP flow is throttled, plant is stable, and Tech Specs have been addressed, proceed to Event 4</p>		

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Event Description: PZR Level Transmitter fails low. PZR LCV fails closed

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert command for Pressurizer Level transmitter and LCV failure****Indications available:****PRESSURIZER LOW LEVEL DEVIATION Annunciator 32C****LETDOWN HEAT EXCHANGER DISCHARGE FLOW HIGH LOW Annunciator 39E****Letdown isolates**

	CREW	Identify the cause of the loss of letdown.
	CREW	Determine that PZR LVL INST FAILURE occurred. (LT-459)
	RO	Isolate letdown by closing all orifice isolation valves. (Letdown is already isolated)
	RO	Reduce charging flow to minimum required for RCP seal injection as follows:
	RO	If the CCP is in service, SLOWLY CLOSE BH HC-182 while reducing charging flow using BG FK-121. Maintain approximately 8 GPM to each RCP seal.
	RO	ENSURE BG-HC-182 is FULL CLOSED.
	RO	Verify Reactor Makeup Control System set in automatic for the correct boron concentrations and is maintaining VCT level.
	RO	STABILIZE pressure level as follows:
	CREW	Restore normal letdown per OTO-BG-00001 (Letdown CANNOT be restored).

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Event Description: PZR Level Transmitter fails low. PZR LCV fails closed

Time	Position	Applicant's Actions or Behavior	
	CREW	PLACE excess letdown in service per OTN-BG-00001, Chemical and Volume Control System.	
	SRO	INFORM HP that Excess Letdown is being placed in service.	
	SRO	INFORM Chemistry that Excess Letdown is being placed in service.	
	SRO	NOTIFY Radwaste that Excess Letdown is being directed to the RCDT for approximately 2 minute to flush the piping.	
	RO	VERIFY that the Excess Letdown Heat Exchanger is supplied with CCW by verifying flow on EG FI-128 or EG FI-129 on RL020.	
	RO	ENSURE BG HC-123, the Excess Letdown HX Outlet Flow Hand Switch, is in the CLOSED position.	
	RO	PERFORM the following to equalize boron concentration in the Excess Letdown header and the RCS.	
	RO	PLACE control switch BG HIS-8143, in the RCDT position.	
	RO	OPEN either set of Reactor Coolant to Excess Letdown HX Valves with the applicable control switches:	
		TRAIN	HANDSWITCH
		A	BG HIS-8153A and BG HIS-8154A
		B	BG HIS-8153B and BG HIS-8154B
		</	

Op Test No.: 1 Scenario # 1 Event # 4 Page 16 of 38

Event Description: PZR Level Transmitter fails low. PZR LCV fails closed

Time	Position	Applicant's Actions or Behavior
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	RO	SLOWLY TURN BG HC-123, Ex Ltdn Hx Out Flow Hand Ctrl, to the OPEN position to establish excess letdown flow.
	RO	ENSURE Excess Letdown HX Outlet temperature using BG TI-122 on panel RL002 does not exceed 175°F.
NOTE: Excess letdown and RCP seal water leak-off share a common line. This change in back pressure may cause a variation in RCP seal water leak-off flow.		
	RO	VERIFY RCP seal water leak-off flow is 1 – 5 GPM with normal RCS operating pressure as indicated on BG FR-154 through BG FR-157 on panel RL022. If RCS pressure is other than 2235 ± 15 psig, refer to OTN-BB-00003, Reactor Coolant Pumps, Attachment 1 page 4 of 4, for acceptable RCP seal water leak-off flow rates.
	RO	After approximately 2 minute, direct Excess Letdown flow to the VCT, as follows.
	RO	SLOWLY TURN BG HC-123 to the CLOSED position to secure excess letdown flow.
	RO	ENSURE BG HC-123 in the CLOSED position, and SELECT BGHV8143 to the VCT position using BG HIS-8143.
	RO	ENSURE OPEN either set of Reactor Coolant to Excess Letdown HX Valves with the applicable control switches:
		TRAINHANDSWITCH
		A BG HIS-8153A and BG HIS-8154A
		B BG HIS-8153B and BG HIS-8154B
	RO	SLOWLY TURN BG HC-123 to the OPEN position to re-

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Event Description: PZR Level Transmitter fails low. PZR LCV fails closed

Time	Position	Applicant's Actions or Behavior
		establish Excess Letdown flow.
	SRO	NOTIFY Radwaste that Excess Letdown flow is directed to the VCT.
	RO	ENSURE Excess letdown HX Outlet temperature using BG TI-122 on panel RL002 does not exceed 175°F.
	RO	VERIFY RCP seal water leak-off flow is 1 – 5 GPM with normal RCS operating pressure as indicated BG FR-154 through BG FR-157 on panel RL022. If RCS pressure is other than 2235 ± 15 psig, refer to OTN-BB-00003, Reactor Coolant Pumps, Attachment 1 page 4 of 4, for acceptable RCP seal water leak-off flow rates.
	SRO	Directs to UNLOCK and OPEN BG8482, CVCS VCT Seal Wtr In Iso, and LOG in Locked Component Deviation List of ODP-ZZ-00004, Locked Component Control.
	SRO	Directs to UNLOCK and CLOSE BG8484, CVCS Seal Wtr Hx Out Dnstrm Isok, and LOG in Locked Component Deviation List of ODP-ZZ-00004, Locked Component Control.
	SRO	NOTIFY HP that Excess Letdown is in service. Identify the flowpath for Excess Letdown so that HP can monitor rooms and components in the flowpath for increased radiation levels.
When Excess Letdown is in service, proceed to Event 5		

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert commands for remaining events as sequenced****Indications available:****PROCESS RADIATION HIGH Annunciator 61B****Rising trend on Iodine and Particulate Channels 31, 32**

	CREW	DETERMINE the approximate size of the leak. Should determine greater than 50 GPM leak
NOTE: The plant computer group tabular time trend GT-SG17 can be used to approximate the leak size.		
	RO	USE trends of VCT level (20% GAL/%) and/or PZR level (60 GAL/%).
NOTE: Only one charging pump should be in operation until PZR level is increased for the plant cooldown.		
	RO	COMPARE Charging and Letdown flow rates. Crew should determine that PZR level CANNOT be maintained.
	SRO	Direct Reactor Trip
	RO	CHECK Reactor Trip:
		• Rod Bottom Lights – ALL LIT
		• Reactor Trip and Bypass Breakers – OPEN
		• Neutron Flux – LOWERING
	BOP	CHECK Turbine Trip:

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		All turbine Stop valves – CLOSED.
	CREW	CHECK Power to AC Emergency Buses:
		AC emergency buses – AT LEAST ONE ENERGIZED
		• NB01(NO)
		OR
		• NB02(NO)
	SRO	DIRECTS Go to ECA-0.0, Loss of All AC Power, Step 1.
	RO	CHECK Reactor Trip:
		• Reactor Trip and Bypass Breakers – OPEN
		• Neutron Flux – LOWERING
	BOP	CHECK Turbine Trip:
		All Turbine Stop valves – CLOSED.
	RO	CHECK if RCS is Isolated:
		a. PZR PORVs – CLOSED
		• BB HIS-455A
		• BB HIS-456A
		b. Letdown Isolation Valves – CLOSED
		1. Letdown Orifice Isolation valves:
		• BG HIS-8149AA

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BG HIS8149BA
		<ul style="list-style-type: none"> • BG HIS-8149CA
		2. RCS Letdown to Regen HX valves:
		<ul style="list-style-type: none"> • BG HIS-459
		<ul style="list-style-type: none"> • BG HIS-460
		c. RCS to Excess Letdown HX valves – CLOSED
		<ul style="list-style-type: none"> • BG HIS-8153A
		<ul style="list-style-type: none"> • BG HIS-8154A
		<ul style="list-style-type: none"> • BG HIS-8153B
		<ul style="list-style-type: none"> • BG HIS-8154B
		CLOSE valve(s) as necessary.
		d. Reactor Head Vent Valves – CLOSED
		<ul style="list-style-type: none"> • BB HIS-8001A
		<ul style="list-style-type: none"> • BB HIS-9002A
		<ul style="list-style-type: none"> • BB HIS-8001B
		<ul style="list-style-type: none"> • BB HIS-8002B
	BOP	CHECK AFW Flow – GREATER THAN 300,000 LBM/HR
	CREW	TRY to Restore Power to Any AC Emergency Bus:
		a. ENERGIZE AC emergency bus with diesel generator:
CRITICAL TASK		1. START DG(s):
		<ul style="list-style-type: none"> • KJ HS-8A – DG – “A”

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		2. CHECK AC emergency buses – AT LEAST ONE ENERGIZED
		• NB01 – ENERGIZED
		OR
		• NB02 – NOT ENERGIZED
	CREW	b. CHECK AC emergency buses – AT LEAST ONE ENERGIZED
		• NB01 – YES
	BOP	c. CHECK ESW Pump associated with energized AC emergency bus(es) – RUNNING
		• EF HIS-55A (NB01) – YES
		d. Return to procedure and step in effect and IMPLEMENT Functional Restoration Procedures as necessary.
		• Crew will review CSF Status Trees. None currently required for implementation
	SRO	DIRECTS return to E-0.
	RO	CHECK SI Status:
		a. CHECK is SI is actuated:
		• Any SI annunciator 88A through 88D – LIT
		OR
		• SB069 SI Actuate RED light – LIT
		OR
		• LCOA Sequencer annunciators 30A or 31A – LIT

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
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		b. CHECK both Trains of SI – ACTUATED
		<ul style="list-style-type: none"> • LOCA Sequencer annunciator 30A – LIT
		<ul style="list-style-type: none"> • LOCA Sequencer annunciator 31A – LIT
		<ul style="list-style-type: none"> • SB069 SI Actuate RED light – LIT SOLID (NOT blinking)
	BOP	PERFORM Attachment A, Automatic Action Verification, while continuing with this procedure.
	RO	CHECK Generator Output Breakers – OPEN
		<ul style="list-style-type: none"> • MA ZL-3A (V55)
		<ul style="list-style-type: none"> • MA ZL-4A (V53)
	RO	CHECK Feedwater Isolation:
		a. Main Feedwater Pumps – TRIPPED
		<ul style="list-style-type: none"> • Annunciator 120A, MFP A Trip - LIT
		<ul style="list-style-type: none"> • Annunciator 123A, MFP B Trip – LIT
		b. Main Feedwater Reg Valves – CLOSED
		<ul style="list-style-type: none"> • AE ZL-510 (SG A)
		<ul style="list-style-type: none"> • AE ZL-520 (SG B)
		<ul style="list-style-type: none"> • AE ZL-530 (SG C)
		<ul style="list-style-type: none"> • AE ZL-540 (SG D)
		c. Main Feedwater Reg Bypass Valves – CLOSED
		<ul style="list-style-type: none"> • AE ZL-550 (SG A)
		<ul style="list-style-type: none"> • AE ZL-560 (SG B)
		<ul style="list-style-type: none"> • AE ZL-570 (SG C)
		<ul style="list-style-type: none"> • AE ZL-580 (SG D)

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		d. Feedwater Isolation Valves – CLOSED
		• AE HIS-39 (SG A)
		• AE HIS-40 (SG B)
		• AE HIS-41 (SG C)
		• AE HIS-42 (SG D)
	RO	CHECK AFW Pumps:
		a. MD AFW Pumps – BOTH RUNNING
		• AL HIS-23A
		• AL HIS-22A
		b. TD AFW Pump – RUNNING IF NECESSARY
	RO	CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		• MD AFP Flow Control Valves – THROTTLED
		• AL HK-7A
		• AL HK-9A
		• AL HK-11A
		• AL-HK-5A
		• TD AFP Flow Control Valves – FULL OPEN
		• AL HK-8A
		• AL HK-10A
		• AL HK-12A
		• AL HK-6A
	RO	CHECK Total AFW Flow – GREATER THAN 300,000 LBM/HR

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 24 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
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	RO	CHECK PZR PORVs and Spray Valves:
		a. PZR PORVs – CLOSED
		• BB HIS-455A
		• BB HIS-456A
		b. PZR PORVs – BOTH IN AUTO
		• BB HIS-455A
		• BB HIS-456A
		c. PORV Block Valves – BOTH OPEN
		• BB HIS-8000A
		• BB HIS-8000B
		d. Normal PZR Spray Valves – CLOSED
		• BB ZL-455B
		• BB ZL-455C
	RO	CHECK If RCPs Should Be Stopped:
		a. RCPs – ANY RUNNING (NO)
	SRO	Go to Step 13.
	RO	CHECK RCS Temperatures:
		• NO RCPs running – RCS COLD LEG TEMPERATURES STABLE AT 557°F OR TRENDING TO 557°F
	CREW	CHECK If any SG Is Faulted:

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 25 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		a. CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	SRO	Go to Step 15.
	CREW	CHECK If SG Tubes Are Intact:
		<ul style="list-style-type: none"> Levels in all SGs:
		<ul style="list-style-type: none"> NO SG NARROW RANGE LEVEL RISING IN AN UNCONTROLLED MANNER
		<ul style="list-style-type: none"> SG Steamline N16 radiation – NORMAL
		<ul style="list-style-type: none"> N16 161 (SG A)
		<ul style="list-style-type: none"> N16 162 (SG B)
		<ul style="list-style-type: none"> N16 163 (SG C)
		<ul style="list-style-type: none"> N16 164 (SG D)
		<ul style="list-style-type: none"> Condenser Air Removal radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GEG 925
		<ul style="list-style-type: none"> SG Blowdown and Sample radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> BML 256
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation – NORMAL

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 26 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AB RIC 111 (SG A)
		<ul style="list-style-type: none"> AB RIC 112 (SG B)
		<ul style="list-style-type: none"> AB RIC 113 (SG C)
		<ul style="list-style-type: none"> AB RIC 114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump exhaust radiation – NORMAL
		<ul style="list-style-type: none"> FC RIC 385
	RO	CHECK If RCS Is Intact:
		<ul style="list-style-type: none"> Containment Pressure – NORMAL (NO)
		<ul style="list-style-type: none"> GN PI-934
		<ul style="list-style-type: none"> GN PI-935
		<ul style="list-style-type: none"> GN PI-936
		<ul style="list-style-type: none"> GN PI-937
		<ul style="list-style-type: none"> GN PR-934
		<ul style="list-style-type: none"> Containment Normal Sump Level – NORMAL
		<ul style="list-style-type: none"> EJ LI-8
		<ul style="list-style-type: none"> EJ LI-7
		<ul style="list-style-type: none"> EJ LR-6
		<ul style="list-style-type: none"> Containment Normal sump Level – NORMAL
		<ul style="list-style-type: none"> LF LI-9
		<ul style="list-style-type: none"> LF LI-10
		<ul style="list-style-type: none"> Containment Radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GTG 313

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • GTG 323
		<ul style="list-style-type: none"> • GTA 591
		<ul style="list-style-type: none"> • GTA 601
	SRO	Go To E-1, Loss of Reactor or Secondary Coolant, Step 1.
NOTE: Seal injection flow should be maintained to all RCPs.		
		CHECK If RCPs Should Be Stopped:
		Loss of Power, already – TRIPPED
	BOP	CHECK If Any SG Is Faulted:
		CHECK pressures in all SGs:
		<ul style="list-style-type: none"> • ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> • ANY SG COMPLETELY DEPRESSURIZED (NO)
		Go to Step 3.
	BOP	CHECK Intact SG Levels:
		a. Narrow range levels – GREATER THAN 7% [25%]
		b. CONTROL feed flow to maintain narrow range levels between 7% [25%] and 50%
	BOP	CHECK Secondary Radiation – NORMAL

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 28 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		a. PERFORM the following:
		<ul style="list-style-type: none"> PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation
		<ul style="list-style-type: none"> DIRECT Chemistry to periodically sample all SGs for activity.
		<ul style="list-style-type: none"> DIRECT Health Physics to survey steamlines in Auxiliary Building Area 5 as necessary
		b. CHECK unisolated secondary radiation monitors:
		<ul style="list-style-type: none"> SG Sample radiation:
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation:
		<ul style="list-style-type: none"> AB RIC 111 (SG A)
		<ul style="list-style-type: none"> AB RIC 112 (SG B)
		<ul style="list-style-type: none"> AB RIC 113 (SG C)
		<ul style="list-style-type: none"> AB RIC 114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump Exhaust radiation:
		<ul style="list-style-type: none"> FC RIC 385
		c. Secondary radiation – NORMAL
	RO	CHECK PZR PORVs and Block Valves:
		a. Power to Block Valves – AVAILABLE
		<ul style="list-style-type: none"> BB HIS-8000A (NO)
		<ul style="list-style-type: none"> BB HIS-8000B
		b. PZR PORVs – CLOSED
		<ul style="list-style-type: none"> BB HIS-455A

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 29 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BB HIS-456A
		c. Block Valves – BOTH OPEN
		<ul style="list-style-type: none"> • BB HIS-8000A (NO)
		<ul style="list-style-type: none"> • BB HIS-8000B
	Crew	CHECK If ECCS Flow Should Be Reduced:
		a. RCS subcooling – GREATER THAN 30°F
		b. Secondary heat sink:
		<ul style="list-style-type: none"> • Narrow range level in at least one intact SGT – GREATER THAN 7% [25%]
		OR
		<ul style="list-style-type: none"> • Total feed flow to intact SGs – GREATER THAN 300,00 LBM/HR
		c. RCS pressure – STABLE OR RISING
		d. PZR level – GREATER THAN 9% [29%] (NO)
	RO	CHECK If Containment Spray should Be Stopped:
		a. Spray Pumps – ANY RUNNING
	SRO	Go to Step 8. OBSERVE CAUTIONS prior to Step 8.
CAUTION: If RCS pressure lowers in an uncontrolled manner to less than 325 PSIG, the RHR pumps must be manually restarted to supply water to the RCS.		

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 30 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
	RO	CHECK If RHR Pumps Should Be Stopped:
		a. CHECK RCS pressure:
		1. Pressure – GREATER THAN 325 PSIG
		2. Pressure – STABLE OR RISING
		b. RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST
		c. RESET SI if necessary:
		• SB HS-42A
		• SB HS-43A
		d. STOP RHR Pumps and PLACE in standby:
		• EJ HIS-1
		• EJ HIS-2
		e. MONITOR RCS pressure
	CREW	CHECK SG and RCS Pressures:
		• CHECK pressure in all SGs – STABLE OR RISING
		• CHECK RCS pressure – STABLE OR LOWERING
	CREW	CHECK If Diesel Generators Should Be Stopped:
		a. AC emergency buses – ENERGIZED BY OFFSITE POWER
		• NB01 (NO)

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Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> NB02 (NO)
		TRY to restore offsite power to AC emergency buses using EOP Addendum 7, Restoring Offsite Power.
		b. RESET SI if necessary:
		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS-43A
		c. LOAD equipment on AC emergency bus(es) as necessary using EOP Addendum 8, Loading Equipment on AC emergency Buses.
	CREW	INITIATE Evaluation of Plant Status:
		a. CHECK cold leg recirculation capability:
		<ul style="list-style-type: none"> Train A – AVAILABLE
		<ul style="list-style-type: none"> RHR Pump A (EJ HIS-1)
		<ul style="list-style-type: none"> CCW Pump A (EG HIS-21) or CCW Pump C (EG HIS-23)
		<ul style="list-style-type: none"> RWST To RHR Pump A Suction (BN HIS-8812A)
		<ul style="list-style-type: none"> Containment Recirc Sump to RHR Pump A Suction (EJ HIS-8811A)
		<ul style="list-style-type: none"> CCW to RHR HX A (EG HIS-101)
		<ul style="list-style-type: none"> Train B – AVAILABLE
		<ul style="list-style-type: none"> RHR Pump B (EJ HIS-2)
		<ul style="list-style-type: none"> CCW Pump B (EG HIS-22) or CCW Pump D (EG HIS-24)
		<ul style="list-style-type: none"> RWST To RHR Pump B Suction (BN HIS-8812B)
		<ul style="list-style-type: none"> CCW to RHR HX B (EG HIS-102)

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 32 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		b. CHECK Auxiliary Building radiation – NORMAL
		• Aux Building Process Radiation monitor:
		• GLP 604
		• Aux Building Area Radiation monitors
		TRY to identify and isolate leakage:
		• DIRECT Health Physics and Chemistry to assist in the evaluation as necessary.
		IF the cause is a loss of RCS inventory outside containment, THEN Go To ECA-1.2, LOCA Outside Containment, Step 1.
		c. OBTAIN samples:
		1. DIRECT Chemistry to initiate post accident sampling:
		• RCS boron concentration
		• RCS activity
		• Containment atmosphere
		2. PLACE Hydrogen Analyzers in Service using EOP Addendum 16, Placing Hydrogen Analyzers In Service.
		3. CONSULT Plant Engineering Staff for assessing additional sampling requirements for fuel damage.
		d. EVALUATE plant equipment for long term recovery as necessary:
		• Hydrogen Recombiners
		• Radwaste systems
		• Radiation monitoring
		• Post accident monitoring
		• Operating safeguards equipment:
		• CCPs
		• SI Pumps

Op Test No.: 1 Scenario # 1 Event # 6, 7, & 8 Page 33 of 38

Event Description: Loss of Off-Site Power – SBLOCA – DG Trip – HHSI Pump Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • RHR Pumps
		<ul style="list-style-type: none"> • CS Pumps
		<ul style="list-style-type: none"> • ESW Pumps
		<ul style="list-style-type: none"> • CCW Pumps
		<ul style="list-style-type: none"> • Containment Cooler Fans
		<ul style="list-style-type: none"> • Containment Hydrogen Mixing Fans
		<ul style="list-style-type: none"> • AFW Pumps
		<ul style="list-style-type: none"> • Control Room ventilation
		<ul style="list-style-type: none"> • Auxiliary Building ventilation
		<ul style="list-style-type: none"> • Fuel Building ventilation
		e. START additional plant equipment to assist in recovery as directed by SS/CRS
	CREW	CHECK If RCS Cooldown And Depressurization Is Required
		a. RCS pressure – GREATER THAN 325 PSIG
		b. Go to ES-1.2, Post LOCA Cooldown And Depressurization, Step 1
Scenario may be terminated on transition to ES-1.2		

ATTACHMENT A
Automatic Action Verification

	BOP	CHECK Charging Pumps:
CRITICAL TASK	BOP	a. CCPs – BOTH RUNNING
		<ul style="list-style-type: none"> • BG HIS-1A (Must manually start HHSI Pump ‘A’)
		<ul style="list-style-type: none"> • BG HIS-2A
	BOP	b. STOP NCP:
		<ul style="list-style-type: none"> • BG HIS-3
	BOP	CHECK SI And RHR Pumps
		<ul style="list-style-type: none"> • SI Pumps – BOTH RUNNING (NO)
		<ul style="list-style-type: none"> • EM HIS-4
		<ul style="list-style-type: none"> • EM HIS-5
		<ul style="list-style-type: none"> • RHR Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EJ HIS-1
		<ul style="list-style-type: none"> • EJ HIS-2
	BOP	CHECK ECCS Flow:
	BOP	a. CCPs to Boron Inj Header – FLOW INDICATED
		<ul style="list-style-type: none"> • EM FI-917A
		<ul style="list-style-type: none"> • EM FI-917B
	BOP	b. RCS pressure – LESS THAN 1700 PSIG
	BOP	c. SI Pump Discharge – FLOW INDICATED
		<ul style="list-style-type: none"> • EM FI-918
		<ul style="list-style-type: none"> • EM FI-922
	BOP	d. RCS pressure – LESS THAN 325 PSIG

ATTACHMENT A
Automatic Action Verification

	BOP	e. RHR To Accumulator Injection Loop – FLOW INDICATED
		<ul style="list-style-type: none"> EJ FI-618
		<ul style="list-style-type: none"> EJ FI-619
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EF HIS-55A
		<ul style="list-style-type: none"> EF HIS-56A
	BOP	CHECK CCW Alignment:
	BOP	a. CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> Red Train:
		<ul style="list-style-type: none"> EG HIS-21 or EG HIS-23
		<ul style="list-style-type: none"> Yellow Train
		<ul style="list-style-type: none"> EG HIS-22 or EG HIS-24
	BOP	b. CCW Service Loop Supply and Return valves for one operating CCW pump - OPEN
		<ul style="list-style-type: none"> EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> EG ZL-16 AND EG ZL-54
	BOP	CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13
	BOP	CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> • GN HIS-2
		<ul style="list-style-type: none"> • GN HIS-4
		<ul style="list-style-type: none"> • GN HIS-1
		<ul style="list-style-type: none"> • GN HIS-3
	BOP	CHECK If Containment Spray Should Be Actuated:
	BOP	a. CHECK the following:
		<ul style="list-style-type: none"> • Containment pressure – GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • Annunciator 59A CSAS - LIT
		OR
		<ul style="list-style-type: none"> • Annunciator 59B CISB - LIT
	BOP	b. Containment Spray Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EN HIS-3
		<ul style="list-style-type: none"> • EN HIS-9
	BOP	c. ESFAS status panels CSAS sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE lights – ALL LIT
	BOP	d. ESFAS status panels CISB sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE lights – ALL LIT
	BOP	CHECK If Main Steamlines Should Be Isolated:
	BOP	a. CHECK for any of the following:
		<ul style="list-style-type: none"> • Containment pressure – GREATER THAN 17 PSIG

ATTACHMENT A
Automatic Action Verification

		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
	BOP	b. CHECK MSIVs and Bypass valves - CLOSED
	BOP	CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
	BOP	a. ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Isolation Phase A:
	BOP	a. ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK SG Blowdown Isolation:
	BOP	ESFAS status panels SGBSIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK Both Trains of control Room Ventilation Isolation:

ATTACHMENT A
Automatic Action Verification

	BOP	a. ESFAS status panels CRVIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Purge Isolation:
	BOP	a. ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	Notify CRS of the following:
		<ul style="list-style-type: none"> Manual actions taken
		<ul style="list-style-type: none"> Failed Equipment
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed

Facility:	Callaway	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
<p>Initial Conditions: 50% power, BOL.</p> <p>RE-52, Blowdown Discharge Pumps Discharge Monitor, is OOS.</p> <p>BB-PCV-455A PORV Leakage – Block Valve Closed.</p> <p>Motor Driven AFW Pump 'A' OOS.</p>					
Turnover:		Maintain stable plant conditions			
Critical Task:		<p>Insert negative reactivity by inserting control rods or initiating emergency boration prior to the end of step 4 of FR-S.1.</p> <p>Isolate AFW to faulted SG prior to occurrence of an ORANGE condition on the Integrity CSF Status Tree.</p>			
Event No.	Malf. No.	Event Type*	Event Description		
1 T+10	PRS01A	I – RO, SRO TS – SRO	Pressurizer pressure instrument fails high		
2 T+25	FWM03B	C – BOP, SRO	'B' Feedwater Control Valve fails closed in automatic		
3 T+35	PCS02B	I – ALL TS – SRO	Turbine First Stage Pressure Transmitter fails low		
4 T+50	CRF04_52 CRF04_53	M – ALL	Multiple Dropped Rods – requires reactor trip		
5	CRF13	C – ALL	ATWS		
6	MSS14A	C – BOP	Stuck open safety valve.		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description

NRC Scenario 2

The crew will assume the shift with instructions to maintain present plant conditions

Prior to actual power reduction, the controlling pressurizer pressure transmitter will fail high, requiring the crew to select an alternate pressure channel to control heaters and spray in accordance with OTO-BB-6. The SRO will also determine the appropriate technical specification action requirements.

When the plant is stable, a Feedwater Control Valve will fail closed in automatic, requiring manual operation to restore SG level.

When SG level is restored, PT-506 will fail low, requiring the RO to place Rod Control in manual to stop rod motion, the BOP to select PT-505 for control, reset C-7, and place steam dumps in the Steam Pressure mode in accordance with OTO-AC-3. The SRO will also address Technical Specifications.

Multiple control rods will drop. A reactor trip is required but an ATWS occurs. The crew must take action to initiate RCS emergency boration and de-energize rod drive MG sets. A SG safety valve will stick open, requiring the crew to isolate AFW flow to the SG and attempt isolation.

The scenario may be terminated when the crew transitions to ES-1.1, SI Termination.

EOP Flow Path: E-0, FR-S.1, E-0, E-2, ES-1.1

Scenario 2

Scenario Malfunction List

- 1) Initialize at IC-17, 50%.
- 2) Run Batch File ilttwo.txt and verify the actions on the following page are loaded correctly.
- 3) Ensure immediate boration timer is reset.
- 4) Ensure BB PT-455 is selected as the controlling channel.
- 5) Ensure NIS indicates 50% power.
- 6) Check Rx Trip switch has a red flag.
- 7) Ensure step counters for Control Bank "D" are set at 150 steps and all other step counters are set at 228 steps.
- 8) Ensure the digital display is selected to REP0480A and RET0499A.
- 9) Place 'A' MDAFP in PTL and hand a Hold Off tag on handswitch ALHIS23A.
- 10) Ensure Decrease Loading Rate Button is "ON".
- 11) Update the status board for "B" train week.
- 12) Update Status Board – 'A' MDAFP, TS 3.7.5, Condition C, 72 hrs. Current outage time is 16 hours.
- 13) Ensure Letdown orifi A and B are in service, and a caution tag placed on C
- 14) Ensure AEHV38 is appropriately throttled
- 15) White board has the following boron concentrations:
 - "A" CCP 5 days ago 1105 ppm
 - "B" CCP 15 days ago 1132 ppm
 - RCS boron = 1090
 - PZR boron = 1093
- 16) Ensure chart recorders are "rolled forward".
- 17) Microphones are available for each person being evaluated and a videotape is in the VCR.
- 18) Ensure the RM-11 is on the training system.
- 19) Ensure turnover sheets and log sheets are on the desks.
- 20) Ensure copies of the following procedures are in the file drawers:
 - OTO-BB-00006
 - OTO-AE-00001
 - OTO-AC-00003
 - E-0
 - FR-S.1
 - E-2
 - ES-1.1

Scenario 2

Scenario Malfunction List

```
File:                ilttwo.TXT
>Author:   S. P. Aufdemberge
>Date:     20050504
>
>
>=====SCENARIO SETUP ITEMS=====
>Remove 'A' MDAFP from service
>FILE  AL01A.TXT
>Simulates tag out of the MD AFP A in the Pull-to-lock position
bat al01a.txt
>Simulates de-energization of "A" PORV Block valve due to PORV Leakage
ior bbhis8000a_ic (-1 0) 0
irf bbs014 (-1 0) 0
>=====
>=====EVENT PRELOAD=====
>EVENT 1
>Pressurizer Pressure Channel BBPT0455 fails to 2500 over 60 seconds
>Manually Input Event 1
imf prs01a (1 0) 2500 60
>=====
>=====EVENT PRELOAD=====
>EVENT 2
>"B" Feed Reg Valve fails closed in Automatic over 90 seconds
>Manually Input Event 2
imf fwm03b (2 0) 0 90
>=====
>=====EVENT PRELOAD=====
>EVENT 3
>ACPT0506 fails low over 60 second ramp
>Manually Input Event 3
imf pcs02b (3 0) 0 60
>=====
>=====EVENT PRELOAD=====
> EVENT 4
>Multiple Dropped Rods
>Manually Input Event 4
imf crf04_52 (4)
imf crf04_53 (4)
>=====
>=====EVENT PRELOAD=====
>EVENT 5
>PROTECTIVE SYSTEM FAILURE (ATWS) Preloaded into scenario. No Manual Input >required
imf crf13 (-1 0) both
>=====
>=====EVENT PRELOAD=====
>EVENT 6
>Main Steam Safety Valve Fails 100% Open, with a 10 sec delay, and a 1 sec >ramp from trigger #6 (CONDITIONAL)
trgset 6 "sac.le.10"
imf mss14a (6 10) 100 1
>=====
>end of file
```

Scenario 2
Crew Turnover

Separate Turnover Sheets provided

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>27</u>
Event Description: Pressurizer Pressure Instrument Failure									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**When directed, insert command for PT-455 failure****Indications Available:****PRESSURIZER HIGH PRESSURE DEVIATION Annunciator 33B****PRESSURIZER PRESSURE LOW HEATERS ON Annunciator 33C****REACTOR PARTIAL TRIP Annunciator 83C****PT-455 indicates high**

	SRO	Refer to OTO-BB-0006, Pressurizer Pressure Control System Instrument Failures
	RO	Select an alternate channel
	RO	Check RCS pressure 2200 – 2250 psig
	RO	Check P-11 (Not Lit) correct state
	BOP	Select recorder to valid channel
	SRO	Direct I&C to trip the affected bistables
	SRO	Refer to Tech Specs
		<ul style="list-style-type: none"> • 3.3.1, Condition E, M • 3.3.2 Condition D, L • 3.3.4 Item 3 • 3.4.1 (DNB)

After Technical Specifications have been addressed, proceed to Event 2

Op Test No.: 1 Scenario # 2 Event # 2 Page 7 of 27

Event Description: "B" Feedwater Control Valve fails closed in automatic

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert command for Feedwater Control Valve failure****Indications Available:****'B' FRV failing closed****Feedwater flow to "B" SG Lowering****STEAM GENERATOR B FLOW MISMATCH Annunciator 109D**

	BOP	Determines SG "B" level is lowering.
	BOP	Place AE-FK-520, SG "B" MFW Reg Valve Control, in MANUAL, and restore SG level.
	SRO	Refer to OTO-AE-0001, Feedwater System Malfunctions.
	BOP	Check Main Feed Pump tripped (NO)
	BOP	Check Main Feed Pump Speed controlling in auto and stable
	BOP	Check Main Feed Reg Valves controlling in Auto (NO) <ul style="list-style-type: none"> • Ensure Manual control
	BOP	<ul style="list-style-type: none"> • Check Main Feed Reg Bypass Valves in service (NO) • Check Condensate Pump operation • Check Heater Drain Pump operation
	BOP	Verify SG NR level trend 45 – 55%
	RO	Monitor or operate rod control to maintain Tave/Tref +/- 5 °F
	BOP	Check MFP Oil Pressure normal

Op Test No.: <u>1</u> Scenario # <u>2</u> Event # <u>2</u> Page <u>8</u> of <u>27</u>		
Event Description: "B" Feedwater Control Valve fails closed in automatic		
Time	Position	Applicant's Actions or Behavior

	SRO	Perform communications per Ops Communications-01
	SRO	Verify Power change less than 15% in 1 hour
When the plant is stable, proceed to Event 3		

Op Test No.: 1 Scenario # 2 Event # 3 Page 9 of 27

Event Description: Turbine First Stage Pressure Transmitter Fails Low

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:

When directed, insert command for First Stage Pressure Channel PT-506 failing low

Indications Available:

PT-506 indication failing low

Control Rods stepping in if in auto

	SRO	Refer to OTO-AC-00003, Turbine Impulse Pressure Channel Failure
	RO	Place Rod Control in MANUAL
	BOP	Identify the failed channel by comparing meter indications and identifying alarmed annunciators. (PT-506)
	BOP	Select the alternate impulse pressure channel by utilizing the Impulse Pressure selector switch AC PS-505Z.
	RO	Check Tave within 1.5°F of Tref
	RO	Check Rod Control in AUTO <ul style="list-style-type: none"> Will place in AUTO if directed by SRO and Tave and Tref are matched
	RO	Maintain Tavg at the corresponding Tref value for existing plant power. Ensure RX power is less than 3565 MWth.
	BOP	Place the Steam Dump Interlock Selector switches (AB-HS-64 and AB-HS-63) to the OFF/RESET position.
	BOP	Check C-7, Load Loss Stm Dump Armed - Extinguished

Op Test No.: 1 Scenario # 2 Event # 3 Page 10 of 27

Event Description: Turbine First Stage Pressure Transmitter Fails Low

Time	Position	Applicant's Actions or Behavior
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	BOP	Transfer Steam Dumps to the Steam Pressure Mode: <ul style="list-style-type: none"> Set the AB PK-507, Steam Header Pressure controller for 7.28 turns (1092 psig) Place the Steam Dump Select to STEAM PRESS
	BOP	Place the Steam Dump Bypass Interlock switches to ON
	CREW	Check the following permissives are in their correct state within 1 hour of the channel failure per Attachment B, permissives: <ul style="list-style-type: none"> P-7 P-13
	SRO	Refer to T/S LCO 3.3.1 (Improved T/S LCO 3.3.1) to ensure compliance with the requirements for minimum channels. <ul style="list-style-type: none"> Condition T
When Tech Specs have been addressed, proceed to Event 4		

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 11 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
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Booth Instructor Instructions:

When directed, insert commands to initiate remainder of events as sequenced

Indications Available:

Two dropped control rods

Rod Bottom lights

Multiple annunciators

	CREW	Recognizes more than one control rod dropped.
	SRO	Directs reactor trip.
	RO	Attempts to trip reactor. Reactor will not trip.
	SRO	Directs entry to FR-S.1
	RO	CHECK Reactor Trip:
		• Rod Bottom Lights – ALL LIT
		• Reactor Trip and Bypass Breakers –OPEN
		• Neutron Flux – LOWERING (NO)
		Manually TRIP Reactor:
		• SB HS-1
		• SB-HS-42 (BOP)
		IF reactor will NOT trip, THEN PERFORM the following:
CRITICAL TASK		a. Manually INSERT control rods when AUTO slows below 48 SPM.

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 12 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		b. OPEN supply breakers to PG19 and PG20:
		• PG HIS-16
		• PG HIS-18
		WHEN reactor is tripped, THEN CLOSE supply breakers to PG19 and PG20.
	BOP	CHECK Turbine trip:
		All Turbine Stop valves – CLOSED
	BOP	CHECK AFW Pumps Running:
		a. MD AFW Pumps – BOTH RUNNING (Must start)
		• AL HIS-23A
		• AL HIS-22A
		b. TD AFW Pump – RUNNING IF NECESSARY (May need to start)
CRITICAL TASK	RO	INITIATE Emergency Boration of RCS:
		Note: If SI is actuated, HHSI will be providing boration flow via the RWST
		a. CHECK charging pumps – AT LEAST ONE RUNNING
		• CCP(s):
		• BG HIS-1A
		• BG HIS-2A
		OR
		• NCP:
		• BG HIS-3

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 13 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		b. ALIGN emergency boration flow path:
		1. START Boric Acid Transfer Pumps:
		• BG HIS-5A
		• BG HIS-6A
		2. OPEN Emergency Borate to Charging Pump Suction valve:
		• BG HIS-8104
		3. CHECK Emergency Boration Flow – GREATER THAN 30 GPM
		• BG FI-183A
		4. MAINTAIN charging flow – GREATER THAN EMERGENCY BORATION FLOW
		c. CHECK PZR Pressure – LESS THAN 2335 PSIG
	CREW	CHECK Containment Purge Isolation:
		a. ESFAS status panels CPIS sections:
		• SA066X WHITE lights – ALL LIT
		• SA066Y WHITE lights – ALL LIT
	RO	CHECK If the Following Trips Have Occurred:
		a. Reactor trip:
		• Rod Bottom Lights – ALL LIT

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 14 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux - LOWERING
	BOP	b. Turbine trip:
		<ul style="list-style-type: none"> All Turbine Stop Valves - CLOSED
	RO	CHECK If Reactor Is Subcritical:
		a. Power Range channels – LESS THAN 5% (POST ACCIDENT PR – LESS THAN 5%)
		b. Intermediate Range channels – NEGATIVE STARTUP RATE (POST ACCIDENT PR – STABLE OR LOWERING)
	SRO	Go to Step 16. OBSERVE CAUTION prior to Step 16. Directs entry to E-0.
	RO	CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux - LOWERING
	BOP	CHECK Turbine Trip:
		a. All turbine Stop Valves - CLOSED
	BOP	CHECK Power to AC Emergency Buses:
		a. AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 15 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		OR
		<ul style="list-style-type: none"> NB02
		b. AC emergency buses – BOTH ENERGIZED
	CREW	CHECK SI Status:
		a. CHECK if SI is actuated:
		<ul style="list-style-type: none"> Any SI annunciator 88A through 88D - LIT
		OR
		<ul style="list-style-type: none"> SB069 SI Actuate RED light - LIT
		OR
		<ul style="list-style-type: none"> LOCA Sequencer annunciators 30A or 31A - LIT
		b. CHECK both Trains of SI – ACTUATED
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 30A – LIT
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 31A – LIT
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT SOLID (NOT blinking)
	BOP	PERFORM Attachment A, Automatic Action Verification, while continuing with this procedure.
	BOP	CHECK Generator Output Breakers - OPEN
		<ul style="list-style-type: none"> MA ZL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
	BOP	CHECK Feedwater Isolation:
		a. Main Feedwater Pumps - TRIPPED

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 16 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip – LIT
		b. Main Feedwater Reg Valves – CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)
		c. Main Feedwater Reg Bypass Valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> AE ZL-560 (SG B)
		<ul style="list-style-type: none"> AE ZL-570 (SG C)
		<ul style="list-style-type: none"> AE ZL-580 (SG D)
		d. Feedwater Isolation Valves - CLOSED
		<ul style="list-style-type: none"> AE HIS-39 (SG A)
		<ul style="list-style-type: none"> AE HIS-40 (SG B)
		<ul style="list-style-type: none"> AE HIS-41 (SG C)
		<ul style="list-style-type: none"> AE HIS-42 (SG D)
	BOP	CHECK AFW Pumps:
		a. MD AFW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> AL HIS-23A
		<ul style="list-style-type: none"> AL HIS-22A
		b. TD AFW Pump – RUNNING IF NECESSARY

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 17 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
	BOP	CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> MD AFW Flow Control Valves – THROTTLED
		<ul style="list-style-type: none"> AL HK-7A
		<ul style="list-style-type: none"> AL HK-9A
		<ul style="list-style-type: none"> AL HK-11A
		<ul style="list-style-type: none"> AL HK-5A
		<ul style="list-style-type: none"> TD AFW Flow Control Valves – FULL OPEN (May isolate to faulted SG)
		<ul style="list-style-type: none"> AL HK-8A
		<ul style="list-style-type: none"> AL HK-10A
		<ul style="list-style-type: none"> AL HK-12A
		<ul style="list-style-type: none"> AL HK-6A
	BOP	CHECK total AFW Flow – GREATER THAN 300,000 LBM/HR
	RO	CHECK PZR PORVs and Spray Valves:
		a. PZR PORVs - CLOSED
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		b. PZR PORVs – BOTH IN AUTO
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		c. PORV Block Valves – BOTH OPEN (NO)
		<ul style="list-style-type: none"> BB HIS-8000A (CLOSED)
		<ul style="list-style-type: none"> BB HIS-8000B

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 18 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
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		d. Normal PZR Spray Valves - CLOSED
		<ul style="list-style-type: none"> • BB ZL-455B
		<ul style="list-style-type: none"> • BB ZL-455C
		NOTE: Seal injection flow should be maintained to all RCPs.
		CHECK If RCPs Should Be Stopped:
		a. RCPs – ANY RUNNING
		b. ECCS Pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> • CCP
		OR
		<ul style="list-style-type: none"> • SI Pump
		c. RCS pressure – LESS THAN 1425 PSIG (NO)
	CREW	CHECK RCS Temperatures:
		<ul style="list-style-type: none"> • Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F (NO)
		If TEMPERATURE IS LESS THAN 557°F and LOWERING, then perform THE FOLLOWING:
		a. STOP dumping steam.
		b. IF cooldown continues, THEN CONTROL total feed flow:
		<ul style="list-style-type: none"> • MAINTAIN total feed flow greater than 300,000 LBM/HR until narrow range level is greater than 7% [25%] in at least one SG.

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 19 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		c. IF cooldown continues, THEN FAST CLOSE all MSIVs and Bypass valves: (May have been performed)
		• AB HS-79
		• AB HS-80
	BOP	CHECK If Any SG Is Faulted:
		a. CHECK pressures in all SGs:
		• ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER ("A" SG)
		OR
		• ANY SG COMPLETELY DEPRESSURIZED
		b. Go To E-2, Faulted Steam Generator Isolation, Step 1.
CAUTIONS: At least one SG must be maintained available for RCS cooldown. Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown.		
	BOP	CHECK MSIVs and Bypass Valves - CLOSED
	BOP	CHECK If Any SG Secondary Pressure Boundary Is Intact:
		a. CHECK pressures in all SGs – ANY STABLE OR RISING
	BOP	IDENTIFY Faulted SG(s):
		a. CHECK pressures in all SGs:
		• ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER ("A")
		OR

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 20 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
		ISOLATE Faulted SG(s):
CRITICAL TASK		a. ISOLATE AFW flow to faulted SG(s):
		<ul style="list-style-type: none"> CLOSE associated MD AFP Flow Control Valve(s):
		<ul style="list-style-type: none"> AL HK-7A (SG A)
		<ul style="list-style-type: none"> CLOSE associated TD AFP Flow Control Valve(s):
		<ul style="list-style-type: none"> AL HK-8A (SG A)
		b. CHECK ASD from faulted SG(s) - CLOSED
		<ul style="list-style-type: none"> AB PIC-1A (SG A)
		c. Locally CLOSE TDAFP Steam Supply From Main steam Loop Manual Isolation valve from faulted SG(s):
		<ul style="list-style-type: none"> ABV0085 (SG B)
		<ul style="list-style-type: none"> ABV0087 (SB C)
		d. CHECK Main Feedwater valves to faulted SG(s) - CLOSED
		<ul style="list-style-type: none"> Main Feedwater Reg Valves:
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> Main Feedwater Reg Valves:
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> Feedwater Isolation Valve:
		<ul style="list-style-type: none"> AE HIS-39 (SG A)
		e. CHECK SG Blowdown containment Isolation Valve from faulted SG(s) - CLOSED
		<ul style="list-style-type: none"> BM HIS-1A (SG A)

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 21 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
		f. CLOSE Steamline Low Point Drain valve from faulted SG(s):
		<ul style="list-style-type: none"> AB HIS-9 (SG A)
	BOP	CHECK CST To AFP Suction Header Pressure – GREATER THAN 2.7 PSIG
	CREW	CHECK Secondary Radiation:
		a. PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation
		<ul style="list-style-type: none"> PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation
		<ul style="list-style-type: none"> DIRECT Chemistry to periodically sample all SGs for activity
		<ul style="list-style-type: none"> DIRECT Health Physics to survey steamlines in Auxiliary Building Area 5 as necessary
		b. CHECK unisolated secondary radiation monitors:
		<ul style="list-style-type: none"> SG Sample radiation:
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation:
		<ul style="list-style-type: none"> AB RIC 111 (SG A)
		<ul style="list-style-type: none"> AB RIC 112 (SG B)
		<ul style="list-style-type: none"> AB RIC 113 (SG C)
		<ul style="list-style-type: none"> AB RIC 114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump Exhaust radiation:
		<ul style="list-style-type: none"> FC RIC 385
		c. Secondary radiation - NORMAL

Op Test No.: 1 Scenario # 2 Event # 4,5,6 Page 22 of 27

Event Description: Multiple dropped rods, ATWS, Stuck Open Main Steam Safety Valve

Time	Position	Applicant's Actions or Behavior
	CREW	CHECK If ECCS Flow Should Be Reduced:
		a. RCS subcooling – GREATER THAN 30°F
		b. Secondary heat sink:
		<ul style="list-style-type: none"> Narrow range level in at least one intact SG – GREATER THAN 7% [25%]
		OR
		<ul style="list-style-type: none"> Total feed flow to intact SGs – GREATER THAN 300,000 LBM/HR
		c. RCS pressure – STABLE OR RISING
		d. PZR level – GREATER THAN 9% [29%]
	RO	RESET SI:
		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS-43A
	RO	STOP All But One CCP:
		<ul style="list-style-type: none"> BG HIS-1A
		OR
		<ul style="list-style-type: none"> BG HIS-2A
	SRO	Go To ES-1.1, SI Termination, Step 3.
Scenario may be terminated upon transition to ES-1.1		

ATTACHMENT A
Automatic Action Verification

	BOP	CHECK Charging Pumps:
	BOP	a. CCPs – BOTH RUNNING
		• BG HIS-1A
		• BG HIS-2A
	BOP	b. STOP NCP:
		• BG HIS-3
	BOP	CHECK SI And RHR Pumps
		• SI Pumps – BOTH RUNNING
		• EM HIS-4
		• EM HIS-5
		• RHR Pumps – BOTH RUNNING
		• EJ HIS-1
		• EJ HIS-2
	BOP	CHECK ECCS Flow:
	BOP	a. CCPs to Boron Inj Header – FLOW INDICATED
		• EM FI-917A
		• EM FI-917B
	BOP	b. RCS pressure – LESS THAN 1700 PSIG
	BOP	c. SI Pump Discharge – FLOW INDICATED
		• EM FI-918
		• EM FI-922
	BOP	d. RCS pressure – LESS THAN 325 PSIG
	BOP	e. RHR To Accumulator Injection Loop – FLOW INDICATED
		• EJ FI-618

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> EJ FI-619
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EF HIS-55A
		<ul style="list-style-type: none"> EF HIS-56A
	BOP	CHECK CCW Alignment:
	BOP	a. CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> Red Train:
		<ul style="list-style-type: none"> EG HIS-21 or EG HIS-23
		<ul style="list-style-type: none"> Yellow Train
		<ul style="list-style-type: none"> EG HIS-22 or EG HIS-24
	BOP	b. CCW Service Loop Supply and Return valves for one operating CCW pump - OPEN
		<ul style="list-style-type: none"> EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> EG ZL-16 AND EG ZL-54
	BOP	CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13
	BOP	CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-2
		<ul style="list-style-type: none"> GN HIS-4

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> GN HIS-1
		<ul style="list-style-type: none"> GN HIS-3
	BOP	CHECK If Containment Spray Should Be Actuated:
	BOP	a. CHECK the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> Annunciator 59A CSAS - LIT
		OR
		<ul style="list-style-type: none"> Annunciator 59B CISB - LIT
	BOP	b. Containment Spray Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EN HIS-3
		<ul style="list-style-type: none"> EN HIS-9
	BOP	c. ESFAS status panels CSAS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	d. ESFAS status panels CISB sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK If Main Steamlines Should Be Isolated:
	BOP	a. CHECK for any of the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS

ATTACHMENT A
Automatic Action Verification

		BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
	BOP	b. CHECK MSIVs and Bypass valves - CLOSED
	BOP	CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
	BOP	a. ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Isolation Phase A:
	BOP	a. ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK SG Blowdown Isolation:
	BOP	ESFAS status panels SGBSIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK Both Trains of control Room Ventilation Isolation:
	BOP	a. ESFAS status panels CRVIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Purge Isolation:
	BOP	a. ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	Notify CRS of the following:
		<ul style="list-style-type: none"> Manual actions taken
		<ul style="list-style-type: none"> Failed Equipment
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed

Facility:	Callaway	Scenario No.:	3	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____
<p>Initial Conditions: 5 – 10% power, BOL.</p> <p style="padding-left: 40px;">RE-52, Blowdown Discharge Pumps Discharge Monitor, is OOS.</p> <p style="padding-left: 40px;">BB-PCV-455A PORV Leakage – Block Valve Closed.</p>					
<p>Turnover: Increase power to 100% at 3% per hour</p>					
<p>Critical Task: Isolate ruptured SG in step 3 of E-3.</p> <p style="padding-left: 40px;">Establish and Maintain RCS temperature below that required for depressurization of the ruptured SG.</p>					
Event No.	Malfunction No.	Event Type*	Event Description		
1 T+0		R – RO N – BOP, SRO	Raise power.		
2 T+10	NIS03D	I – ALL TS – SRO	Power Range NI failure.		
3 T+30	MSS13B	I – BOP, SRO	Steam Dump pressure setpoint failure.		
4 T+40	BBV001	C – RO, SRO TS - SRO	RCP high vibration.		
5 T+60	RCS02A	M – ALL	SGTR. Reactor trip required.		
6	MSS07A	C – BOP	Atmospheric dump valve fails open, requiring manual isolation.		
7	Component Override KAHIS29	C – RO	Instrument air to containment fails closed, requiring alternate RCS depressurization.		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description

NRC Scenario 3

The crew will assume the shift with instructions to raise reactor power in preparation for returning the unit to full power.

When the power ascension is in progress, a power range instrument will fail high, requiring the crew to respond in accordance with OTO-SE-1. The crew will manually control feedwater bypass flow and remove the failed channel from service. The SRO will also determine the appropriate technical specification action requirements.

When the plant is stable and technical specifications have been addressed, a steam dump pressure setpoint failure will require the crew to place steam dumps in off/reset and control reactor power and Tave manually in accordance with OTO-AB-1 and OTO-AB-4.

When the plant is stable, increasing RCP vibration will require the crew to enter OTO-BB-2 to determine that the RCP must be stopped in accordance with OTN-BB-3. The crew will stop the affected RCP after determining reactor power is below P-8. Actions of OTO-BB-4 will also be performed to defeat Loop Delta T and Tave inputs. The SRO will also determine the appropriate technical specification action requirements.

When the plant is stable, a SGTR develops, requiring the crew to trip the reactor and initiate Safety Injection. An atmospheric dump valve will fail open in automatic and require manual closure. Instrument Air to containment will fail closed, requiring alternate RCS depressurization.

The scenario may be terminated when ECCS pumps are stopped in E-3, Steam Generator Tube Rupture.

EOP Flow Path: E-0, E-3

Scenario Malfunction List

- 1) Initialize at IC-13.
- 2) Run Batch File "**iltthree.txt**", and verify the actions on the following page are loaded correctly.
- 3) Ensure Immediate Boration Timer is reset.
- 4) Check RX trip switch has a RED flag.
- 5) Ensure NIS indicates 10%
- 6) Ensure step counters for Control Bank "D" are set at 114 steps and all other step counters are set for 228.
- 7) Ensure the digital display is selected to REP0480A and RET0499A.
- 8) Ensure Decrease Loading Rate Button is "ON".
- 9) Update status board for "B" Protected Train week.
- 10) Place Letdown orifi A and B in service with a caution tag on C
- 11) White board has the following boron concentrations:
 - "A" MDAFP T/S 3.7.5, Action C.1. 72 Hours. OOS @ 0500 Today
 - 'A' CCP "5 days ago" 1107 ppm
 - 'B' CCP "two weeks ago" 1135 ppm
- 12) Supply turnover and log sheets, Xe Predict, Dilution/Boration calculation and OTG-ZZ-00003.
- 13) Ensure the RM-11 is on the training system.
- 14) Microphones available for each person being evaluated and a video tape is in the VCR.
- 15) Ensure chart recorders are "rolled forward".
- 16) Ensure copies of the following procedures are in the file drawers:
 - OTO-SE-00001
 - OTO-AB-00004
 - OTO-AB-00001
 - OTO-BB-00002
 - OTN-BB-00003
 - E-0
 - E-3

Scenario 3

```
>File:          iltthree.txt
>Author:   S. P. Aufdemberge
>Date:     20050517
>
>=====SCENARIO SETUP ITEMS=====
>Simulates de-energization of "A" PORV Block valve due to PORV Leakage
irf bbs014 (-1 0) 0
>BMRE52 OOS Pre-Setup
imf rms6_08 (-1 0)
>=====
>=====EVENT PRELOAD=====
>EVENT A
>Fail N44 to full scale high
imf nis03d (1 0) 200 10
>=====
>=====EVENT PRELOAD=====
>EVENT B
>Steam Dump Pressure Setpoint Failure
imf mss13b (2 0) 1500 100
>=====
>=====EVENT PRELOAD=====
>EVENT C
>RCP Hi Vibration
irf bbv001 (3 0) 6.1 30
>=====
>=====EVENT PRELOAD=====
>EVENT D
>SGTR A Leak grows from 0 to 300 over 100 seconds AUTOMATICALLY inserted when >BBHIS37 taken to stop or PTL.
trgset 4 "x21i115s"
imf rcs02a (4 120) 300 100
>=====
>=====EVENT PRELOAD=====
>EVENT E
> "A" ASD fails open requiring manual isolation
trgset 5 "x04o9o"
imf mss07a (5 0)
>=====
>=====EVENT PRELOAD=====
>EVENT F
>Instrument Air Fails closed requiring Alternate RCS Depressurization
trgset 6 "jstsis.eq.1"
ior kahis29_ic (6) on
ior kahis29_io (6) off
ior kahis29_og (6) on
ior kahis29_or (6) off
>=====
>=====
To FAST CLOSE "A" MSIV ONLY:
SAS013A set to "OFF"
SAS013B set to "OFF"
SAS013C set to "OFF"
SAS017 set to "ENABLE"
SAS018A set to "FC"
>end of file
```

Scenario 3

Crew Turnover

Separate Turnover sheets provided

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>31</u>
Event Description: Raise Power									
Time	Position	Applicant's Actions or Behavior							

	SRO	Refer to OTG-ZZ-0003, Plant Startup Hot Zero Power to 30% Power, section 6.3
	CREW	<p>Perform a Pre-Job Brief of power ascension:</p> <ul style="list-style-type: none"> • General strategy for proceeding to 30% Power. • Any items not completed as expected to this point. • Applicable Precautions and Limitations • Activities that can be performed at any time during the next sections(s) of this procedure such as Stroking MFRV's and Placing Reboiler in service. • MFP and MFRV control status • Extraction Steam Line Drain and FW Preheating status • Steam Dump strategy <p>Discuss the use of Optional Parameter Alarms as an aid to avoid undesired challenges to legal or system requirements</p>
	BOP	Initiate a 3% per hour loading rate
	RO	Commence raising reactor power
	RO	When power is >10%, verify P-7 and P-10 permissives are illuminated
When control of the plant is demonstrated during startup, proceed to the next event		

Op Test No.: 1 Scenario # 3 Event # 2 Page 7 of 31

Event Description: Power Range NI Failure

Time	Position	Applicant's Actions or Behavior
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Booth Instructor Instructions:**When directed, insert command for Power Range NI failure****Indications Available:****PRNI N-44 failing HIGH****Annunciators 78A, 78E, 82A for Power Range Channel deviation****REACTOR PARTIAL TRIP Annunciator 83C**

	BOP	Refer to Annunciator Response procedures
	SRO	Refer to OTO-SE-00001, Nuclear Instrument Malfunction
	RO	Check Power Range Instruments normal. <ul style="list-style-type: none"> N-44 is failing high
	RO	Ensure Rod Control is in MANUAL
	BOP	Place SG Main Feed Reg Bypass valves in MANUAL
	BOP	Control SG levels from 45 – 55%
	BOP	Stop any Main Turbine load changes (None in progress)
	RO	Maintain Tave/Tref within 1.5°F using manual rod control
	CREW	Check the following permissives are in their required state <ul style="list-style-type: none"> P-7 P-8 P-9 P-10
	CREW	Select an operable channel on the NI Recorder

Op Test No.: 1 Scenario # 3 Event # 2 Page 8 of 31

Event Description: Power Range NI Failure

Time	Position	Applicant's Actions or Behavior
	CREW	Bypass the malfunctioning channel at the Detector Current Comparator Drawer <ul style="list-style-type: none"> Place UPPER SECTION switch to N-44 Place LOWER SECTION switch to N-44 Place ROD STOP BYPASS switch to N-44 Place POWER MISMATCH BYPASS switch to N-44
	CREW	At the Comparator and Rate drawer, place Comparator Channel Defeat switch to N-44
	CREW	Ensure the following annunciator windows are extinguished: <ul style="list-style-type: none"> 78A, PR CHANNEL DEV 78B, PR UPPER DETECTOR FLUX DEV 78C, PR LOWER DETECTOR FLUX DEV 82A, PR OVER PWR ROD STOP
	RO	Check Rod Control in AUTO <ul style="list-style-type: none"> Rod Control is in MANUAL
	BOP	Return Feed Reg Bypass valves to automatic operation as required by the SRO
	BOP	Control SG levels at 45 – 55%
	CREW	Check Reactor Power >10% (NO) <ul style="list-style-type: none"> Perform Attachment B, Low Power Trips Enabled, within the time limit specified in TS
	SRO	Refer to applicable Tech Specs <ul style="list-style-type: none"> TS 3.3.1 Condition D, E, S

Op Test No.: <u>1</u> Scenario # <u>3</u> Event # <u>2</u> Page <u>9</u> of <u>31</u>		
Event Description: Power Range NI Failure		
Time	Position	Applicant's Actions or Behavior

When Tech Specs have been identified, proceed to Event 3		

Op Test No.: 1 Scenario # 3 Event # 3 Page 10 of 31

Event Description: Steam Dump Pressure Setpoint Failure

Time	Position	Applicant's Actions or Behavior
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Booth Instructor Instructions:**When directed, insert command for the Steam Dump pressure transmitter failure****Indications Available:****Steam Dumps start to open**

	SRO	Refers to OTO-AB-00004, Steam Header Pressure Channel Failure
	BOP	Check Steam header pressure indicator AB PI-507 indicating significantly different than SG pressure indicators
	BOP	Check Feed Pump Speed Changing due to failed channel <ul style="list-style-type: none"> • Must control feed pump speed using GE potentiometers with speed controller in manual, due to PT-507 failure • Restore programmed DP
	BOP	Check Steam Dump Control in Pressure Mode
	BOP	Place Steam Header Pressure Controller in MANUAL
	BOP	Check steam dumps responding in MANUAL
	BOP	Manually control SG pressure to the desired value
	SRO	Initiate actions to repair failed transmitter
	SRO	Perform notifications per OPS-Communications-01

When steam pressure is under manual control, proceed to the next event

Op Test No.: 1 Scenario # 3 Event # 4 Page 11 of 31

Event Description: RCP High Vibration

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:**When directed, insert command to initiate RCP high vibration****Indications Available:****RCP VIB DANGER Annunciator 70A****RCP VIB/SYS ALERT Annunciator 70B****NOTE:**

In Modes 1 & 2 when a RCP is stopped, the idle loop RTD channel is INOPERABLE and the actions of OTO-BB-00004, RTD Channel Failures, should be performed.

	SRO	Refer to OTO-BB-00002, Reactor Coolant Pump Off-Normal
	RO	Check RCP Vibrations
		a. RCP Vibration level;
		<ul style="list-style-type: none"> ALL RCPs Less than 5 MILS on the frame
		AND
		<ul style="list-style-type: none"> ALL RCPs Less than 20 MILS on the shaft (at RP312, B YI-471) (NO)
		IF Reactor power LESS THAN 48%
		(P-8 extinguished on SB069)
	RO	SECURE the affected RCP IAW OTN-BB-00003.
	RO	Continue to MONITOR RCP parameters for all RCPs.
	SRO	REFER to OTG-ZZ-00004, Power Operations, to shutdown the plant.
	SRO	Refer to T/S LCO 3.3.1, T/S LCO 3.3.2, and T/S LCO 3.4.4.

Op Test No.: 1 Scenario # 3 Event # 4 Page 12 of 31

Event Description: RCP High Vibration

Time	Position	Applicant's Actions or Behavior
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	CREW	Verify that permissive P8 is extinguished.
CAUTION: Consider the effects of securing the RCP WILL have on S/G level and Pzr Pressure control. The FRV in Auto should handle the transient but will later need to be closed and the FRV Bypass placed in service to prevent a high level Turbine Trip. If the "D" RCP is secured, Pzr Press control is accomplished by cycling heaters.		
	RO	STOP the Reactor Coolant Pump.
	CREW	In Modes 1, and 2, when a RCP is stopped, the idle loop RTD channel is INOPERABLE. PERFORM actions of OTO-BB-00004, RTD CHANNEL FAILURES, for the INOPERABLE RTD channel and refer to T/S LCO 3.3.1, T/S LCO 3.3.2, T/S LCO 3.4.4 and CARS 199601236.
	CREW	GO TO OTG-ZZ-00005, Plant Shutdown 20% Power to Hot Standby.

The next event is initiated on a trigger from RCP trip

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 13 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
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Indications Available:**PRESSURIZER LOW LEVEL DEVIATION Annunciator 32C****PRESSURIZER PRESSURE LOW HEATERS ON Annunciator 33C**

	RO	Determines PZR level dropping rapidly.
	SRO	Directs Reactor Trip and Safety Injection actuation.
	RO	CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux – LOWERING
	BOP	CHECK Turbine Trip:
		a. All Turbine Stop valves – CLOSED
	CREW	CHECK Power To AC Emergency Buses:
		a. AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01
		OR
		<ul style="list-style-type: none"> NB02
		b. AC emergency buses – BOTH ENERGIZED
		CHECK SI Status:
		a. CHECK if SI is actuated:
		<ul style="list-style-type: none"> Any SI annunciator 88A through 88D – LIT

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 14 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		OR
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT
		OR
		<ul style="list-style-type: none"> LOCA Sequencer annunciators 30A or 31A – LIT
		b. CHECK both Trains of SI – ACTUATED
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 30A – LIT
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 31A – LIT
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT SOLID (NOT blinking)
	BOP	PERFORM Attachment A, Automatic Action Verification, while continuing with this procedure.
	BOP	CHECK Generator Output Breakers – OPEN
		<ul style="list-style-type: none"> MA ZL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
	BOP	CHECK Feedwater Isolation:
		a. Main Feedwater Pumps – TRIPPED
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip - LIT
		b. Main Feedwater Reg Valves – CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL 520 (SG B)
		<ul style="list-style-type: none"> AE ZL 530 (SG C)
		<ul style="list-style-type: none"> AE ZL 540 (SG D)

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 15 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		c. Main Feedwater Reg Bypass Valves – CLOSED
		• AE ZL-550 (SG A)
		• AE ZL 560 (SG B)
		• AE ZL 570 (SG C)
		• AE ZL 580 (SG D)
		d. Feedwater Isolation valves - CLOSED
		• AE HIS-39 (SG A)
		• AE HIS-40 (SG B)
		• AE HIS-41 (SG C)
		• AE HIS-42 (SG D)
	RO	CHECK AFW Pumps:
		a. MD AFW Pumps – BOTH RUNNING
		• AL HIS-23A
		• AL-HIS-22A
		b. TD AFW Pumps – RUNNING IF NECESSARY
	RO	CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		• MD AFP Flow Control Valves – THROTTLED
		• AL HK-7A
		• AL HK-9A
		• AL HK-11A
		• AL HK-5A
		• TD AFP Flow Control Valves – FULL OPEN
		• AL HK-8A
		• AL HK-10A

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 16 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AL HK-12A
		<ul style="list-style-type: none"> AL HK-6A
	RO	CHECK Total AFW Flow – GREATER THAN 300,00 LBM/HR
	RO	CHECK PZR PORVs and Spray Valves:
		a. PZR PORVs – CLOSED
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB-HIS-456A
		b. PZR PORVs – BOTH IN AUTO
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB-HIS-456A
		c. PORV Block Valves – BOTH OPEN (NO)
		<ul style="list-style-type: none"> BB HIS-8000A (Closed)
		<ul style="list-style-type: none"> BB-HIS-8000A
		d. Normal PZR Spray Valves - CLOSED
		<ul style="list-style-type: none"> BB ZL-455A
		<ul style="list-style-type: none"> BB-ZL-456A
	RO	CHECK If RCPs Should Be Stopped:
		a. RCPs – ANY RUNNING
		b. ECCS Pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> CCP

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 17 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		OR
		<ul style="list-style-type: none"> SI Pump
		c. RCS pressure – LESS THAN 1425 PSIG
	RO	CHECK RCS Temperatures:
		<ul style="list-style-type: none"> Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F
	RO	CHECK If Any SG Is Faulted:
		a. CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER (NO)
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	RO	CHECK If SG Tubes Are Intact:
		<ul style="list-style-type: none"> Levels in all SGs:
		<ul style="list-style-type: none"> NO SG NARROW RANGE LEVEL RISING IN AN UNCONTROLLED MANNER
		<ul style="list-style-type: none"> SG Steamline N16 radiation - NORMAL
		<ul style="list-style-type: none"> N16 161 (SGA)
		<ul style="list-style-type: none"> N16 162 (SGB)
		<ul style="list-style-type: none"> N16 163 (SGC)
		<ul style="list-style-type: none"> N16 164 (SGD)
		<ul style="list-style-type: none"> Condenser Air Removal radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GEG 925
		<ul style="list-style-type: none"> SG Blowdown and Sample radiation – NORMAL BEFORE ISOLATION

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 18 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BML 256
		<ul style="list-style-type: none"> • SJL 026
		<ul style="list-style-type: none"> • SG ASD radiation - NORMAL
		<ul style="list-style-type: none"> • AB RIC 111 (SG A) (NO)
		<ul style="list-style-type: none"> • AB RIC 112 (SG B)
		<ul style="list-style-type: none"> • AB RIC 113 (SG C)
		<ul style="list-style-type: none"> • AB RIC 114 (SG D)
		<ul style="list-style-type: none"> • Turbine Driven Auxiliary Feedwater Pump Exhaust Radiation - NORMAL
		<ul style="list-style-type: none"> • FC RIC 385
	SRO	Go To E-3, Steam Generator Tube Rupture, Step 1
	RO	CHECK If RCPs Should Be Stopped:
		a. RCPs – ANY RUNNING
		b. ECCS pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> • CCP
		OR
		<ul style="list-style-type: none"> • SI Pump
		c. RCS pressure – LESS THAN 1425 PSIG
	CREW	IDENTIFY Ruptured SG(s):
		<ul style="list-style-type: none"> • Unexpected rise in any SG narrow range level ("A" SG)
		OR
		<ul style="list-style-type: none"> • High radiation from any SG sample
		OR
		<ul style="list-style-type: none"> • High radiation from any SG steamline

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 19 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
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		OR
		<ul style="list-style-type: none"> High radiation from any SG Blowdown line sample
CRITICAL TASK	BOP	ISOLATE Flow From Ruptured SG(s):
		a. ADJUST ruptured SG(s) ASD controller setpoint to 1160 PSIG:
		<ul style="list-style-type: none"> AB PIC-1A (SG A)
		b. CHECK ruptured SG(s) ADS - CLOSED
		<ul style="list-style-type: none"> AB PIC-1A (SG A)
	BOP	IF SG ASD is NOT closed, THEN PLACE SG ASD controller in MANUAL and CLOSE SGT ASD.
		c. Locally CLOSE TDAFP Steam Supply From Main Steam Loop Manual Isolation valve from ruptured SG(s):
		<ul style="list-style-type: none"> ABV0085 (SG B)
		<ul style="list-style-type: none"> ABV0087 (SG C)
		d. CHECK SG Blowdown and Sample Isolation valves from ruptured SG(s) – CLOSED
		<ul style="list-style-type: none"> Blowdown Containment Isolation Valve:
		<ul style="list-style-type: none"> BM HIS-1A (SG A)
		<ul style="list-style-type: none"> Upper Sample Inner Containment Isolation valve:
		<ul style="list-style-type: none"> BM HIS-19 (SG A)
		e. CLOSE Steamline Low Point Drain valve from ruptured SG(s):
		<ul style="list-style-type: none"> AB HIS-9 (SG A)

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 20 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		f. CHECK if C-9 interlocks - LIT
		g. CLOSE MSIV and MSIV Bypass valve from ruptured SG(s):
		<ul style="list-style-type: none"> CLOSE ruptured SG(s) MSIV (preferred order):
		<ul style="list-style-type: none"> FAST CLOSE using EOP Addendum 35, MSIV Fast Closure, at MSFIS cabinets SA075A and SA075B
		OR
		<ul style="list-style-type: none"> CLOSE all MSIV Bypass valves (preferred order):
		<ul style="list-style-type: none"> USE Main Steamline Isolation Bypass Valves Controller AB HIK-15
		OR
		<ul style="list-style-type: none"> Locally ISOLATE MSIV Bypass valve(s) as necessary
	CREW	CHECK Ruptured SG(s) Level:
		a. Narrow range level – GREATER THAN 7% [25%]
		Stop Feed flow to the ruptured SG <ul style="list-style-type: none"> Close MDAFP flow control valve AL-HK-7A Close TDAFP flow control valve AL-HK-8A
	BOP	CHECK Ruptured SG(s) Pressure – GREATER THAN 340 PSIG
	BOP	INITIATE RCS Cooldown:
		a. CHECK RCS pressure – LESS THAN 1970 PSIG

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 21 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> P-11 light - LIT
		b. BLOCK Steamline Pressure SI:
		<ul style="list-style-type: none"> SB HS-9
		<ul style="list-style-type: none"> SB-HS-10
CRITICAL TASK	CREW	c. DETERMINE required core exit temperature: (variable)
	BOP	d. DUMP steam to condenser from intact SG(s) at maximum rate:
		1. CHECK condenser - AVAILABLE
		<ul style="list-style-type: none"> C-9 interlocks – LIT
		<ul style="list-style-type: none"> MSIVs – ANY OPEN
		2. PLACE Steam Header Pressure Controller in MANUAL and ZERO OUTPUT:
		<ul style="list-style-type: none"> AB PK-507
		3. PLACE Steam Dump Select switch in STM PRESS position:
		<ul style="list-style-type: none"> AB US-500Z
		4. ADJUST Steam Header Pressure Controller in STM PRESS mode to achieve maximum cooldown rate:
		<ul style="list-style-type: none"> AB PK-507
		e. Core exit TCs – LESS THAN REQUIRED TEMPERATURE
		f. STOP RCS cooldown

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 22 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		g. MAINTAIN core exit TCs – LESS THAN REQUIRED TEMPERATURE
	BOP	CHECK Intact SG Levels:
		a. Narrow range levels – GREATER THAN 7% [25%]
		b. CONTROL feed flow to maintain narrow range levels between 27% and 50%
	RO	CHECK PZR PORVs And Block Valves:
		a. Power to Block Valves - AVAILABLE
		• BB HIS 8000A
		• BB HIS 8000B
		b. PZR PORVs - CLOSED
		• BB HIS 455A
		• BB HIS 456B
		c. Block Valves – AT LEAST ONE OPEN
		• BB HIS 8000A
		• BB HIS 8000B
	RO	RESET SI:
		• SB HS-42A
		• SB HS-43A
	RO	RESET Containment Isolation Phase A and Phase B

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 23 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Phase A (CISA):
		<ul style="list-style-type: none"> SB HS-53
		<ul style="list-style-type: none"> SB HS-56
		<ul style="list-style-type: none"> Phase B (CISB):
		<ul style="list-style-type: none"> SB HS-52
		<ul style="list-style-type: none"> SB HS-55
	RO	ESTABLISH Instrument Air To Containment:
		a. CHECK if ESW To Air Compressor valves - OPEN
		<ul style="list-style-type: none"> EF HIS-43
		<ul style="list-style-type: none"> EF HIS-44
		b. START Air Compressor(s):
		<ul style="list-style-type: none"> KA HIS-3C
		<ul style="list-style-type: none"> KA HIS-2C
		c. OPEN Instrument Air Supply Containment Isolation valve:
		<ul style="list-style-type: none"> KA HIS-29 (will not open)
		PERFORM the following:
		IF valve CANNOT be opened, THEN locally OPEN valve. (2000 Aux South piping pen room, P-30) (Will NOT open)
	RO	CHECK If RHR Pumps Should Be Stopped:
		a. RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST
		b. RCS pressure – GREATER THAN 325 PSIG

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 24 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		c. STOP RHR Pumps and PLACE in standby:
		• EJ HIS-1
		• EJ HIS-2
		d. MONITOR RCS pressure
	BOP	CHECK If RCS Cooldown Should Be Stopped:
		a. Core exit TCs – LESS THAN REQUIRED TEMPERATURE
		b. STOP RCS cooldown
		c. MAINTAIN core exit TCs – LESS THAN REQUIRED TEMPERATURE
	BOP	CHECK Ruptured SG(s) Pressure – STABLE OR RISING
	RO	CHECK RCS Subcooling – GREATER THAN 50°F
		DEPRESSURIZE RCS To minimize Break Flow And Refill PZR:
		a. Normal PZR spray – AVAILABLE (NO)
	RO	DEPRESSURIZE RCS Using PZR PORV To Minimize Break Flow And Refill PZR:
		a. PZR PORV – AT LEAST ONE AVAILABLE
		• BB HIS-455A
		OR

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 25 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> BB HIS-456A
		b. OPEN one PZR PORV until any of the following conditions satisfied:
		<ul style="list-style-type: none"> Both of the following:
		1. RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE
		2. PZR level – GREATER THAN 9% [29%]
		OR
		<ul style="list-style-type: none"> PZR level – GREATER THAN 74% [64%]
		OR
		<ul style="list-style-type: none"> RCS subcooling LESS THAN 30°F
		c. CLOSE PZR PORV:
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
	RO	CHECK RCS Pressure – RISING
	CREW	CHECK If ECCS Flow Should Be Terminated:
		a. RCS subcooling – GREATER THAN 30°F
		b. Secondary heat sink:
		<ul style="list-style-type: none"> Narrow range level in at least one intact SG – GREATER THAN 7% [25%]
		OR
		<ul style="list-style-type: none"> Total feed flow to SG(s) – GREATER THAN 300,000 LBM/HR
		c. RCS pressure – STABLE OR RISING

Op Test No.: 1 Scenario # 3 Event # 5, 6, 7 Page 26 of 31

Event Description: SGTR; Reactor Trip Required, ADV Fails Open, IA to CTMT Fails Closed

Time	Position	Applicant's Actions or Behavior
		d. PZR level – GREATER THAN 9% [29%]
	RO	STOP ECCS Pumps And Place In Standby:
		a. Both SI Pumps:
		• EM HIS-4
		• EM HIS-5
		b. All but one CCP:
		• BG HIS-1A
		OR
		• BG HIS-2A
Scenario may be terminated when ECCS pumps are stopped.		

ATTACHMENT A
Automatic Action Verification

	BOP	CHECK Charging Pumps:
	BOP	a. CCPs – BOTH RUNNING
		• BG HIS-1A
		• BG HIS-2A
	BOP	b. STOP NCP:
		• BG HIS-3
	BOP	CHECK SI And RHR Pumps
		• SI Pumps – BOTH RUNNING
		• EM HIS-4
		• EM HIS-5
		• RHR Pumps – BOTH RUNNING
		• EJ HIS-1
		• EJ HIS-2
	BOP	CHECK ECCS Flow:
	BOP	a. CCPs to Boron Inj Header – FLOW INDICATED
		• EM FI-917A
		• EM FI-917B
	BOP	b. RCS pressure – LESS THAN 1700 PSIG
	BOP	c. SI Pump Discharge – FLOW INDICATED
		• EM FI-918
		• EM FI-922
	BOP	d. RCS pressure – LESS THAN 325 PSIG
	BOP	e. RHR To Accumulator Injection Loop – FLOW INDICATED

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> EJ FI-618
		<ul style="list-style-type: none"> EJ FI-619
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EF HIS-55A
		<ul style="list-style-type: none"> EF HIS-56A
	BOP	CHECK CCW Alignment:
	BOP	a. CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> Red Train:
		<ul style="list-style-type: none"> EG HIS-21 or EG HIS-23
		<ul style="list-style-type: none"> Yellow Train
		<ul style="list-style-type: none"> EG HIS-22 or EG HIS-24
	BOP	b. CCW Service Loop Supply and Return valves for one operating CCW pump - OPEN
		<ul style="list-style-type: none"> EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> EG ZL-16 AND EG ZL-54
	BOP	CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13
	BOP	CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-2

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> • GN HIS-4
		<ul style="list-style-type: none"> • GN HIS-1
		<ul style="list-style-type: none"> • GN HIS-3
	BOP	CHECK If Containment Spray Should Be Actuated:
	BOP	a. CHECK the following:
		<ul style="list-style-type: none"> • Containment pressure – GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • Annunciator 59A CSAS - LIT
		OR
		<ul style="list-style-type: none"> • Annunciator 59B CISB - LIT
	BOP	b. Containment Spray Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EN HIS-3
		<ul style="list-style-type: none"> • EN HIS-9
	BOP	c. ESFAS status panels CSAS sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE lights – ALL LIT
	BOP	d. ESFAS status panels CISB sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE lights – ALL LIT
	BOP	CHECK If Main Steamlines Should Be Isolated:
	BOP	a. CHECK for any of the following:
		<ul style="list-style-type: none"> • Containment pressure – GREATER THAN 17 PSIG
		OR

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
	BOP	b. CHECK MSIVs and Bypass valves - CLOSED
	BOP	CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
	BOP	a. ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Isolation Phase A:
	BOP	a. ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK SG Blowdown Isolation:
	BOP	ESFAS status panels SGBSIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.		
	BOP	CHECK Both Trains of control Room Ventilation Isolation:
	BOP	a. ESFAS status panels CRVIS sections:

ATTACHMENT A
Automatic Action Verification

		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	CHECK Containment Purge Isolation:
	BOP	a. ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP	Notify CRS of the following:
		<ul style="list-style-type: none"> Manual actions taken
		<ul style="list-style-type: none"> Failed Equipment
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed

Facility: Callaway Task No.:

Task Title: Perform a shutdown margin calculation. JPM No.: 2005 NRC RO/SRO A1-1

K/A Reference: 2.1.32 (3.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM can be performed in any setting with the available references.**

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The reactor tripped 18 hours ago.
- The current time is 0800
- The unit had been at 100 % power for 22 days.
- Core Burnup is 275 EFPD. (12,400 MWD/MTU)
- Tavg is 557 °F.
- Boron Concentration at the time of the trip was 1075 PPM and has not changed.
- Control Bank D was at 210 steps.
- The operating crew is preparing to withdraw the shutdown bank rods.

Task Standard: Critical steps completed within specified boundaries.

Required Materials:

- Calculator
- Straight Edge
- WINPCNDR

General References: OSP-SF-0001, SHUTDOWN MARGIN CALCULATION, Rev. 028

Handouts:

- OSP-SF-00001
- Curve Book

Initiating Cue: The Shift Supervisor has assigned you to perform a Shutdown Margin Calculation in accordance with OSP-SF-0001, prior to withdrawing the shutdown bank rods.

Time Critical Task: No

Validation Time: 65 Minutes

SIMULATOR SETUP

(Denote Critical Steps with a √)

Performance Step: 1 Locate/review procedure.

Standard: Determines METHOD 2 applies and proceeds to Section 7.5.

Comment:

Evaluator Cue: **Provide a copy of OSP-SF-0001.**

Performance Step: 2 Complete ATTACHMENT 2:

- Signs onto ATTACHMENT 2.

Standard: Records Name, Initials, Date, and Time.

Comment:

Performance Step: 3 • Log critical conditions prior to the shutdown.

Standard: Transposes information from Initial Conditions.

Comment:

Performance Step: 4 • Record the total power defect for the associated power level and burnup from Curve Book Table 1-8, Section II.

Standard: Records 1745 pcm in 7.5.1.5. (1725 – 1765 acceptable)

Comment:

Performance Step: 5

- Record the redistribution allowance and voids reactivity from Curve Book Table 1-8, Section II.

Standard:

Records 279 pcm in 7.5.1.5.1 (277-279 is acceptable)

Comment:**Performance Step: 6**

- Add the redistribution allowance and voids reactivity (Step 7.5.1.5.1) to the total power defect (Step 7.5.1.5) to obtain the corrected total power defect.

Standard:

Records 2024 pcm (1745 + 279) in 7.5.1.5.2.

2002 to 2044 is acceptable

Comment:**Performance Step: 7**

- Record the available rod worth from Curve Book Table 1-8, Section II.

Standard:

Records 4691 pcm in 7.5.1.6.

Comment:**Performance Step: 8**

- Record the worst stuck rod's reactivity worth from Curve Book Table 1-8, Section II.

Standard:

Records 1115 pcm in 7.5.1.7

Comment:

Performance Step: 9

- If any rods are considered (a) untrippable and not fully inserted, or (b) trippable but misaligned below its bank; multiply the number of such rods by the reactivity of the most reactive rod (step 7.5.1.7) and record the total reactivity.

Standard:

Records ZERO in 7.5.1.8

Comment:**Evaluator Cue:****All rods are operable and aligned with their respective banks.**√ **Performance Step: 10**

- Total the reactivities from steps 7.5.1.5.2, 7.5.1.6, and 7.5.1.8 to obtain the shutdown reactivity.

Standard:

Performs algebraic addition and records -2667 pcm in 7.5.1.9.

Comment:**Procedure NOTE prior to Xenon determination:**

T/S BSR 3.1.1.1 requires the consideration of Samarium concentration when determining SDM. In the interest of providing a conservative SDM calculation, the Samarium concentration and associated reactivity worth is considered to be zero

Performance Step: 11**SHUTDOWN REACTIVITY CORRECTIONS: XENON**

- Record the Xenon reactivity, prior to the shutdown, from XEPRED on the PC; or from computer point REU1504.

Standard:

Attempts to locate computer point

Evaluator Cue:**Computer Point REU1504 indicates 2902.2 pcm Xenon.****Comment:**

Performance Step: 12

- Determine the time interval since shutdown (step 7.5.1.1).
- Record the Xenon reactivity worth for the elapsed time interval after shutdown as derived from XEPRED on the PC; or computer point REU1504.

Standard:

- Records 18 hours from Initial Conditions.
- Attempts to locate computer point.

Evaluator Cue:**Computer Point REU1504 indicates 3967.5 pcm Xenon.****Comment:**√ **Performance Step: 13**

- Subtract xenon reactivity in step 7.6.1.1 from step 7.6.1.3 to obtain the net xenon reactivity.

Standard:

Performs algebraic addition and records -1064.7 pcm in 7.6.1.4.

Comment:**Performance Step: 14****SHUTDOWN REACTIVITY CORRECTIONS: RODS**

- Record the controlling control rod bank and its height prior to the shutdown from the step counters or from the URO Logbook entry at the beginning of the shift the last time the unit was at steady state power or from the plant computer. See Attachment 7.
- From WINPCNDR (Integral Rod Worths for HFP and HZP, respectively), record the remaining amount of negative reactivity that could be withdrawn from the core, based on the recorded bank height, power level, and burnup which existed prior to the shutdown. **(SOS 95-1204)**

Standard:

- Records Bank D @ 210 steps from Initial Conditions.
- Attempts to locate value on WINPCNDR

Evaluator Cue:**Comment:**

Performance Step: 15

- From Curve Book Figure 13-1, record the Rod Insertion Limit (RIL) for the power level which existed prior to the shutdown.

Standard:

Records 'D' at 161 inches in 7.6.2.3

Comment:**Performance Step: 16**

- From WINPCNDR, record the reactivity associated with the RIL in 7.6.2.3, based on the power level and burnup which existed prior to the shutdown.

Standard:

Records 203.4 pcm in 7.6.2.4.

Evaluator Cue:**Comment:**√ **Performance Step: 17**

- Calculate control rod correction by subtracting the critical rod worth (7.6.2.2) from the RIL worth (7.6.2.4) and multiplying by 0.90. This allows for a 10% rod worth uncertainty.

Standard:Records $.90(7.6.2.4 - 7.6.2.2) = 162.3$ pcm.**Comment:****Performance Step: 18****SHUTDOWN REACTIVITY CORRECTIONS: TEMPERATURE**

- Enter the minimum temperature anticipated during the shutdown.
- Using WINPCNDR, record the isothermal temperature defect for critical boron concentration from step 7.5.1.4 and the minimum anticipated temperature from step 7.6.3.1.

Standard:

Using WINPCNDR, records 0.1 pcm.

Evaluator Cue:

Comment:

Procedure NOTE prior to boron correction steps.

Boron integral worth values from WINPCNDR are positive values as supplied by Westinghouse. The intent for this section is to determine the integral boron worth for a change in boron concentration.

Performance Step: 19

SHUTDOWN REACTIVITY CORRECTIONS: BORON

- Using WINPCNDR record the integral boron worth for the critical boron concentration obtained in Step 7.5.1.4, and the minimum temperature from 7.6.3.1.
- Record the actual boron concentration from the most recent sample.
- Enter the B-10 depletion correction. If step 7.6.4.2 \leq step 7.5.1.4, this is 0. Otherwise, it is (step 7.6.4.2 - step 7.5.1.4) \times (-0.025) (**SOS 95-1985**).
- Record the integral boron worth for the corrected measured boron concentration and minimum temperature from 7.6.3.1 using WINPCNDR.
- Subtract the integral boron worth for the corrected measured boron concentration (step 7.6.4.5) from the integral boron worth for the critical boron concentration (steps 7.6.4.1).

Standard:

The net result of performing these steps will be ZERO. Using WINPCNDR, determines Integral Boron Worth is 1050.5 pcm.

Enters 0 for Boron depletion

Enters 1050.5 pcm for corrected measured boron concentration

Determines correction is 0

Comment:

If the candidate fails to read or understand the note prior to the steps then he/she may perform these steps/calculations. The net result will be ZERO since boron concentration did not change.

- √ **Performance Step: 20** Add the change in boron worth (Step 7.6.4.6) and the poison competition correction factor (Step 7.6.4.7) to determine the corrected change in boron worth.
- Standard:** Records +300 pcm by carrying down the pre-inserted value in 7.6.4.7 to 7.6.4.8.
- Comment:**
- √ **Performance Step: 21** TOTAL SHUTDOWN REACTIVITY (SHUTDOWN MARGIN DETERMINATION):
- Total the reactivities from steps 7.5.1.9, 7.6.1.4, 7.6.2.5, 7.6.3.2, and 7.6.4.8.
- Standard:** Performs algebraic addition of steps 7.5.1.9, 7.6.1.4, 7.6.2.5, 7.6.3.2, and 7.6.4.8 and records -3612.1 pcm 7.6.5.1.
- Comment:**
- Performance Step: 22** COLR COMPARISON:
- Record the reactivity required to meet shutdown limits for the current mode.
- Modes 1 – 4, use COLR section 2.1.1
- Standard:** Consults COLR and records 1.3% DK/K (-1300 pcm)
- Comment:**

Performance Step: 23 Record the Total Shutdown Reactivity from step 7.6.5.1.

Standard: Records -3612.1 pcm (Accept -3450 to -3750 pcm)

Comment:

√ **Performance Step: 24** Determine if the Total Shutdown Reactivity recorded in step 7.7.2 is more negative than the limits provided in COLR recorded in step 7.7.1. (Circle Yes or No)

Standard: Circles YES.

Comment:

Terminating Cue: After the COLR comparison is complete: This JPM is complete.

Job Performance Measure No.: 2005 NRC RO A1-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The reactor tripped 18 hours ago.
- The current time is 0800
- The unit had been at 100 % power for 22 days.
- Core Burnup is 275 EFPD. (12,400 MWD/MTU)
- Tavg is 557 °F.
- Boron Concentration at the time of the trip was 1075 PPM and has not changed.
- Control Bank D was at 210 steps.
- The operating crew is preparing to withdraw the shutdown bank rods.

INITIATING CUE:

The Shift Supervisor has assigned you to perform a Shutdown Margin Calculation in accordance with OSP-SF-0001, prior to withdrawing the shutdown bank rods.

Facility: Callaway Task No.:

Task Title: Determine the volume and RMCS controls settings for raising RWST level. JPM No.: 2005 NRC RO/SRO A1-2

K/A Reference: 2.1.25 (2.8)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: This JPM can be performed in any setting with the required references available.

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The unit is coming out of a refueling outage.
- A significant leak occurred during the refuel pool draindown process.
- RWST level is 92%.
- RWST Boron Concentration is 2400 PPM.
- BAST concentration is 7000 ppm

Task Standard: Volume addition and controls settings within the specified range.

Required Materials:

- Straight Edge
- Calculator

General References: OTN-BG-00002, REACTOR MAKEUP CONTROL AND BORON THERMAL REGENERATION SYSTEM, Rev. 020

Handouts:

- OTN-BG-0002
- RWST Level/Volume Curve

Initiating Cue: You have been directed to determine the volume addition required to establish the RWST level to 98% and the Reactor Makeup Control System settings to maintain RWST boron concentration at it's current value with a makeup flow rate of 90 GPM

Time Critical Task: No

Validation Time: 10 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a √)

Evaluator Note: **There is no required sequence of steps. The candidate may first refer to OTN-BG-0002.**

√ **Performance Step: 1** Determine the volume to be added.

Standard: Refers to RWST Level/Volume Curve and determines $\geq 23,500$ gallons but $\leq 25,500$ must be added.

Comment:

Evaluator Cue: **Provide a copy of the RWST Level/Volume Curve if the book is not available where the JPM is performed or the existing document cannot be marked.**

Performance Step: 2 Locate/review the applicable procedure.

Standard: Locates OTN-BG-0002 and determines that Section 5.5 – MANUAL MODE OF RMCS OPERATION applies.

Comment:

Evaluator Cue: **Provide OTN-BG-0002, Section 5.5.**

**Procedure NOTES
preceding the step:**

- If the makeup water is to be blended for use somewhere other than the Chemical and Volume Control System, ensure that the VCT level is sufficient for expected plant operating conditions.
- If makeup is required to the Spent Fuel Pool refer to OTN-EC-00001

- √ **Performance Step: 3** Determine the desired boric acid and makeup water flow rates, for blended flow using Figure 7-2.

Standard:

Refers to Figure 7-2 and determines:

- Boric Acid flow = 30.86 GPM.
- Makeup Water flow = 59.14 GPM

Evaluator Cue:

Assume that adequate supply capacity is available to perform the evolution.

- √ **Performance Step: 4** Determines RMCS settings based upon required blended flow rates

Standard:

Refers to Figure 7-2 and determines:

- Boric Acid flow BG-FK-111 potentiometer setting 7.71.
- Blended flow BG-FK-110 potentiometer setting 5.63

Evaluator Cue:

Assume that adequate supply capacity is available to perform the evolution.

Terminating Cue:

After the controls settings are determined: This JPM is complete.

Job Performance Measure No.: 2005 NRC RO/SRO A1-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit is coming out of a refueling outage.
- A significant leak occurred during the refuel pool draindown process.
- RWST level is 92%.
- RWST Boron Concentration is 2400 PPM.
- BAST concentration is 7000 ppm

INITIATING CUE:

You have been directed to determine the volume addition required to establish the RWST level to 98% and the Reactor Makeup Control System settings to maintain RWST boron concentration at its current value with a makeup flow rate of 90 GPM.

Facility: Callaway Plant

Task No.:

Task Title: Determine isolation points for a
tagging requestJPM No.: 2005 NRC RO A2

K/A Reference: 2.2.13 (3.6)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Containment Spray Pump "A" flow element EN FE-5 is leaking on the high side tap.
A job has been initiated to drain the associated piping and repair the flow element

Task Standard: Tagging boundaries are identified to provide minimum isolation of EN FE-5

Required Materials: ODP-ZZ-00310, Workmen's Protection Assurance
M-22BN01, M-22EN01, E-23EN01

General References: ODP-ZZ-0310, Workmen's Protection Assurance
M-22BN01, M-22EN01, E-23EN01

Initiating Cue: You have been directed to identify the tagging boundaries to allow work to be performed on flow element EN FE-5.

Time Critical Task: NO

Validation Time: 15 Minutes

SIMULATOR SETUP

None Required

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtains required drawings

Standard: Locates print rack and identifies required drawings

Evaluator Note: **Isolation points may be identified in any order**

Comment:

√ **Performance Step: 2** EN HV-1, Containment Recirc Sump Supply valve will be closed

Standard: Locates and marks EN HV-1 closed

Comment:

√ **Performance Step: 3** EN HV-6, Containment Spray "A" discharge to Containment will be closed

Standard: Locates and marks EN HV-6 closed

Comment:

√ **Performance Step: 4** EN V-24, Recirculation valve to RWST, will be closed

Standard: Locates and marks EN V-24 closed

Comment:

PERFORMANCE INFORMATION

√ **Performance Step: 5** BN HV-4, RWST suction supply to Containment Spray Pump "A", will be closed

Standard: Locates and marks BN HV-4 closed

Comment:

√ **Performance Step: 6** EN V-90, Containment Spray line vent valve, will be open

Standard: Locates and marks EN V-90 open

Comment:

√ **Performance Step: 7** EITHER ONE of EN V-92 or EN V-67, Containment Spray line drain valves, will be open

Standard: Locates and marks either EN V-92 or EN V-67 open

Comment:

√ **Performance Step: 8** Pump breaker must be opened and electrically isolated

Standard: Identifies isolation of Containment Spray Pump "A" electrical circuit breaker

Comment:

Terminating Cue: When the applicant has determined the isolation boundaries for the work to be performed.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC RO A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Containment Spray Pump "A" flow element EN FE-5 is leaking on the high side tap.

A job has been initiated to drain the associated piping and repair the flow element

INITIATING CUE: You have been directed to identify the tagging boundaries to allow work to be performed.

Facility: Callaway Plant Task No.:

Task Title: Review a tagging request for approval JPM No.: 2005 NRC SRO A2

K/A Reference: 2.2.13 (3.6)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Containment Spray Pump "A" flow element EN FE-5 is leaking on the high side tap.
A job has been initiated to drain the associated piping and repair the flow element

Task Standard: Tagging boundaries are identified to provide minimum isolation of EN FE-5. WPA not approved due to 2 deficiencies

Required Materials: ODP-ZZ-00310, Workmen's Protection Assurance
M-22BN01, M-22EN01, E-23EN01

General References: ODP-ZZ-0310, Workmen's Protection Assurance
M-22BN01, M-22EN01, E-23EN01

Initiating Cue: You have been directed to review the WPA for approval to allow work to be performed on flow element EN FE-5.

Time Critical Task: NO

Validation Time: 15 minutes

SIMULATOR SETUP

None Required

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtains required drawings
Standard: Locates print rack and identifies required drawings

Evaluator Note: **Isolation points may be identified in any order**

Comment:

Performance Step: 2 Reviews WPA to determine appropriate isolation points for
Containment Spray Pump "A" flow element FE-5
Standard: Reviews tag listing

Comment:

√ **Performance Step: 3** Determines that BN HV-4, RWST suction supply to Containment
Spray Pump "A" must be closed and tagged
Standard: Identifies deficiency on tagging request. Local handwheel must
be tagged as part of valve isolation

Comment:

√ **Performance Step: 4** Determines that Containment Spray Pump "A" breaker must be
tagged
Standard: Identifies that the Containment Spray Pump "A" breaker is not
tagged and requires tagging

Comment:

PERFORMANCE INFORMATION

- √ **Performance Step: 5** Return the WPA without approval
Standard: Determines that WPA cannot be approved

Comment:

Terminating Cue: When the applicant has provided disposition of the WPA,
this JPM is complete

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC RO A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Containment Spray Pump "A" flow element EN FE-5 is leaking on the high side tap.

A job has been initiated to drain the associated piping and repair the flow element

INITIATING CUE: You have been directed to review the WPA for approval to allow work to be performed on flow element EN FE-5.

Facility: Callaway Plant Task No.: N/A

Task Title: Determine Maximum Allowable Stay Time JPM No.: 2005 NRC RO A3

K/A Reference: 2.3.2 (2.5)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: A job is being performed on RHR Pump "A" that requires isolating and draining system piping.

You have been directed to open RHR Pump "A" drain valve EJ V-148 and route a hose to the local floor drain

Task Standard: Correct RWP is selected and stay time identified as 30 minutes based upon exceeding maximum dose

Required Materials: RWPs, Survey Maps

General References: RWPs, Survey Maps

Initiating Cue: Identify the appropriate RWP for entry and determine maximum allowable stay time before a dosimeter limit is exceeded.

Time Critical Task: NO

Validation Time: 8 Minutes

SIMULATOR SETUP

None Required

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

√ **Performance Step: 1** Determine RWP required for task performed

Standard: Selects RWP 500501WPA

Comment:

√ **Performance Step: 2** Determines stay time based upon dosimeter setting

Standard: Determines dosimeter setting is 10 mr total dose and 100 mr/hr dose rate.

Standard: Selects survey map #1111, RHR Pump "A" room

Standard: Determines dose rate in the area of the work is 20 mr/hr

√ **Standard:** Determines maximum stay time at 20 mr/hr is 30 minutes to avoid exceeding 10 mr total dose.

Comment:

Terminating Cue: When the candidate indicates stay time for the work performed, this JPM is complete

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC RO A3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: A job is being performed on RHR Pump "A" that requires isolating and draining system piping.

You have been directed to open RHR Pump "A" drain valve EJ V-148 and route a hose to the local floor drain

INITIATING CUE: Identify the appropriate RWP for entry and determine maximum allowable stay time before a dosimeter limit is exceeded.

Facility: Callaway Task No.:

Task Title: Evaluate plant conditions, upgrade the emergency classification and make a PAR. JPM No.: 2005 NRC SRO A4

K/A Reference: 2.4.44 (4.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

- Initial Conditions:
- A large break LOCA is in progress.
 - Attempts to initiate Containment Spray have failed.
 - A Site Emergency was declared 20 minutes ago based on loss of the RCS subcooling and radiation monitor GT-RE-59 reading $3.1\text{E}+3$ R/hr.
 - One minute ago containment pressure lowered rapidly and now continues to lower at a slower rate.
 - Wind speed is 5 Miles/Hr.
 - Wind direction is from 218°
 - The outside temperature is 88°F .

Task Standard: Upgrades classification and makes a PAR.

Required Materials: SENTRY Computer

- General References:
- EIP-ZZ-00101, CLASSIFICATION OF EMERGENCIES, Rev. 032
 - EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS, Rev. 034
 - EIP-ZZ-00212, PROTECTIVE ACTION RECOMMENDATIONS, Rev. 021

Handouts: EIP-ZZ-00101, EIP-ZZ-00102, EIP-ZZ-00212

Initiating Cue: Reevaluate the Emergency Classification and perform required follow up actions required of the Emergency Coordinator.

Time Critical Task: Yes

Validation Time: 24 Minutes

SIMULATOR SETUP

N/A

JPM Setup:

Ensure SENTRY Screen is called up on computer with plant 'WIND SECTOR' data deleted, then minimize screen prior to JPM performance

(Denote Critical Steps with a √)

Performance Step: 1 Review changing conditions.

Standard:

- Enters EIP-ZZ-00101
- Reviews Group 2 (Fission Product Barrier) EAL's
- Declares General Emergency based on uncontrolled depressurization of containment.

Comment:

√ **Performance Step: 2** Enters EIP-ZZ-00102

Standard: Announces GE and reason to control room personnel.

Comment: The candidate may work through the next several steps using EIP-ZZ-00102, ATTACHMENT 5 (flowcharted procedure steps).
Mark the time of the GE announcement: _____.
ATTACHMENT 4, OFF SITE NOTIFICATION FORM, must be provided to the communicator within 15 minutes from this time.

Performance Step: 3 Manually initiate ERFIS.

Standard: Locates ERFIS button.

Comment:

Evaluator Cue: ERFIS was actuated when the Site Emergency was declared.

Performance Step: 4 Notify On-site personnel

- Standard:**
- Completes ATTACHMENT 1
 - Sounds plant emergency alarm.
 - Makes the scripted announcement and repeats.

Comment:

Evaluator Cue: For the purpose of examination security, direct the candidate to simulate the alarm actuation and announcement.

Performance Step: 5 Have SAS activate the callout.

Standard: Acknowledges cue.

Comment:

Evaluator Cue: SAS was activated when the Site Emergency was declared.

√ **Performance Step: 6** Complete the SENTRY screen or fill out ATTACHMENT 4.

- Standard:** Completes the SENTRY screen. Critical task data:
- GE
 - Release in progress
 - Wind speed and direction
 - PAR – Evacuate 2 miles all around and 5 miles in downwind sectors B, C, and D

Comment:

-
- √ **Performance Step: 7** Provide ATTACHMENT 4 to the communicator.
- Standard:** Provides ATTACHMENT 4 to the communicator within 15 minutes after the GE declaration.
- Comment:** **Mark the time that ATTACHMENT 4 is provided to the communicator: _____.**
- Terminating Cue:** **After ATTACHMENT 4 is provided to the communicator, this JPM is complete.**

Job Performance Measure No.: 2005 NRC SRO A4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A large break LOCA is in progress.
- Attempts to initiate Containment Spray have failed.
- A Site Emergency was declared 20 minutes ago based on loss of the RCS subcooling and radiation monitor GT-RE-59 reading $3.1\text{E}+3$ R/hr.
- One minute ago containment pressure lowered rapidly and now continues to lower at a slower rate.
- Wind speed is 5 Miles/Hr
- Wind direction is from 218°
- The outside temperature is 88°F .

INITIATING CUE:

Reevaluate the Emergency Classification and perform required follow up actions required of the Emergency Coordinator.

Facility: Callaway

Task No.:

Task Title: Borate RCS During Cooldown
Outside the Control RoomJPM No.: 2005 NRC JPM P1

K/A Reference: 068 EA 1.11 3.9 / 4.1

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **READ TO THE EXAMINEE**

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

Initial Conditions: The control room is damaged beyond use and systems are aligned as per OTO-ZZ-00001, Control Room Inaccessibility. The plant is shutdown with control from the Aux S/D Panel due to a fire. The plant is in Mode 3 at normal operating temperature and pressure. Pressurizer level is 25%, RCS boron concentration is 1000 ppm, and all shutdown and control rods are fully inserted. Core burnup is 295 EFPD. The "B" CCP is in service.

Task Standard: RCS boration from outside the control room has been completed

Required Materials: OTS-ZZ-00001, Cooldown From Outside the Control Room, Revision 13
Curve Book Table 1-8

General References: OTS-ZZ-00001, Cooldown From Outside the Control Room, Revision 13

Initiating Cue: You have been directed by the Shift Supervisor to perform Section 4.1 of OTS-ZZ-00001 to borate the RCS.

Time Critical Task: NO

Validation Time: 19 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a controlled copy of OTS-ZZ-00001, Cooldown From Outside the Control Room.

Standard: Operator should obtain procedure copy.

Comment:

Step 2.0

Performance Step: 2 Review the Precautions and Limitations of OTS-ZZ-00001.

Standard: Operator should review all precautions and limitations.

Comment:

Evaluator's Cue: All Precautions and Limitations are satisfied.

Performance Step: 3 Review the Initial Conditions of OTS-ZZ-00001.

Standard: Operator should review all Initial Conditions.

Comment:

Evaluator's Cue: All Initial Conditions are satisfied.

Ask if the Operator understands the Initial Conditions and Initiating Cues.

Step 4.1

Performance Step: 4 Borate the RCS to Xenon-Free Cold Shutdown as follows.

Standard: Operator should determine to borate the RCS to Cold Xenon-Free Shutdown.

Comment:

PERFORMANCE INFORMATION

- Step 4.1.1
- √ **Performance Step: 5** Determine the required boron concentration for cold shutdown using Curve Book Table 1-8.
- Standard:** Operator should determine required boron concentration is approximately 1150 ppm.
- Comment:**
- Step 4.1.1.1
- √ **Performance Step: 6** Determine the number of gallons of 4 WT % boric acid from the BAT required to achieve the boron concentration in Step 4.1.1 using Figure 7-3 of the Curve Book.
- Standard:** Operator should calculate 1567 ± 200 GAL.
- $$V_B = \frac{515676}{8.33} \ln \left(\frac{7000-1000}{7000-1150} \right)$$
- Comment:** **Nomograph indicates approximately 1350 -1400 gallons**
- Step 4.1.2.1
- √ **Performance Step: 7** Start a Boric Acid Transfer Pump "A" or "B" with local control switch or with the pushbutton on the associated breaker pump A(B) NG01AHF4 (NG02AAF4).
- Standard:** Operator should start "A" or "B" Boric Acid Pump.
- Comment:**
- Evaluator's Cue:** **The Boric Acid Transfer Pump is running.**
- Step 4.1.2.2
- √ **Performance Step: 8** Open the Immediate Boration valve BGHV8104.
- Standard:** Operator goes to "A" SI Pump Room and manually OPENS BG-HV-8104.
- Comment:**
- Evaluator's Cue:** **BGHV8104 is OPEN.**

PERFORMANCE INFORMATION

	Step 4.1.2.3
Performance Step: 9	Monitor boric acid flow on Local Indicator BGFI183B.
Standard:	Operator should monitor boric acid flow on BGFI183B.
Comment:	
Evaluator's Cue:	Local Indicator shows 100 GPM.
	Step 4.1.4
Performance Step: 10	Determine the boration time required by dividing the gallons of acid by the flow rate indicated.
Standard:	$\frac{1567 \text{ GAL}}{100 \text{ GPM}} = 16 \text{ MIN } (\pm 3 \text{ MIN})$
Comment:	
Evaluator's Cue:	The required time has elapsed.
	Step 4.1.5.1
Performance Step: 11	When the required time has elapsed, stop the Boric Acid Transfer Pump.
Standard:	Operator should secure "A" or "B" Boric Acid Pump with the local control switch or the pushbutton on the breaker A – NG01AHF4 B – NG02AAF4
Comment:	
Evaluator's Cue:	The Boric Acid Transfer Pump is STOPPED.
	Step 4.1.5.2
Performance Step: 12	CLOSE BGHV8104.
Standard:	Operator should CLOSE BGHV8104.
Comment:	
Evaluator's Cue:	BGHV8104 is CLOSED.

PERFORMANCE INFORMATION

Step 4.1.7

Performance Step: 13 Have the RCS sampled to ensure the required SDM has been obtained.

Standard: Operator should call for Chemistry to sample RCS for boron.

Comment:

Evaluator's Cue: When called, Hot Lab Chem Tech will sample RCS for boron.

Terminating Cue: When boration of the RCS has been performed, this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC JPM P1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The control room is damaged beyond use and systems are aligned as per OTO-ZZ-00001, Control Room Inaccessibility. The plant is shutdown with control from the Aux S/D Panel due to a fire. The plant is in Mode 3 at normal operating temperature and pressure. Pressurizer level is 25%, RCS boron concentration is 1000 ppm, and all shutdown and control rods are fully inserted. Core burnup is 295 EFPD. The "B" CCP is in service.

INITIATING CUE: You have been directed by the Shift Supervisor to perform Section 4.1 of OTS-ZZ-00001 to borate the RCS.

Facility: Callaway

Task No.:

Task Title: Locally Close Valves for CIS-BJPM No.: 2005 NRC JPM P2

K/A Reference: 103 A2.03 3.5 / 3.8

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **READ TO THE EXAMINEE**

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

Initial Conditions: Callaway Plant was at 100% power when a Loss of All AC Power occurred. The Control Room entered emergency procedure ECA-0.0, Loss of All AC Power. A containment spray signal has been received and required valve positions can not be performed from the Control Room.

Task Standard: Upon completion of this JPM, valves associated with Penetrations 74, 75, and 76 will be closed or verified closed.

Required Materials: None

General References: ECA-0.0, Loss of All AC Power, Revision 5

Initiating Cue: The Control Room supervisor has directed you to perform Local Operator Actions of Step 21B RNO (CISB Outer Containment Valves), of ECA-0.0. Reposition any required valves and inform him when done.

Time Critical Task: NO

Validation Time: 10 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a verified working copy of ECA-0.0, Loss of All AC Power.
Standard: Operator should obtain ECA-0.0 copy.

Comment:

Evaluator's Cue: Provide operator with copy of ECA-0.0.

Performance Step: 2 Go to the Aux Building North Piping Penetration Room #1323.
Standard: Operator should go to the North Piping Penetration Room #1323.

NOTE: Operator should go thru RP Access.

Comment:

Performance Step: 3 Verify CLOSED EG-HV-58, CCW to RCS outer CTMT ISO.
Standard: Operator should demonstrate knowledge of how to verify a motor-operated valve OPEN/CLOSED.

NOTE: Pen 74, valves in Steps 3 through 8 can be operated in any order.

Comment:

Evaluator Cue: EG-HV-58 is open

- √ **Performance Step: 4** CLOSE EG-HV-58, CCW to RCS Outer CTMT ISO.
Standard: Operator should CLOSE EG-HV-58.
- NOTE:** Operator should be able to describe how to CLOSE a limitorque valve.
- Standard:** Valves in Steps 3 through 8 can be operated in any order.
- Comment:**
- Evaluator's Cue:** EG-HV-58 is now CLOSED.
- Performance Step: 5** Verify CLOSED EG-HV-71, CCW to RCS Outer CTMT ISO.
Standard: Operator should verify position of EG-HV-71.
- NOTE:** Pen 74
- Standard:** Valves in Steps 3 through 8 can be operated in any order.
- Comment:**
- Evaluator's Cue:** EG-HV-71 is OPEN.

PERFORMANCE INFORMATION

√ **Performance Step: 6** Operator should CLOSE EG-HV-71, CCW to RCS Outer CTMT ISO.

Standard: Operator should CLOSE EG-HV-71.

NOTE: **Pen 74**

Standard: Valves in Steps 3 through 8 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-71 is now CLOSED.**

Performance Step: 7 Verify CLOSED EG-HV-126, CCW to RCS CTMT Bypass.

Standard: Operator should verify CLOSED EG-HV-126, CCW to RCS CTMT Bypass.

NOTE: **Pen 74**

Standard: Valves in Steps 3 through 8 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-126 is CLOSED.**

PERFORMANCE INFORMATION

Performance Step: 8 Verify CLOSED EG-HV-127, CCW to RCS CTMT Bypass.
Standard: Operator should verify CLOSED EG-HV-127, CCW to RCS CTMT Bypass.

NOTE: **Pen 74**

Standard: Valves in Steps 3 through 8 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-127 is CLOSED.**

Performance Step: 9 Verify CLOSED EG-HV-59, CCW from RCS Outer CTMT ISO.
Standard: Operator should verify position of EG-HV-59.

NOTE: **Pen 75**

Standard: Valves in Steps 9 through 11 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-59 is OPEN.**

√ **Performance Step: 10** CLOSE EG-HV-59, CCW from Outer CTMT ISO.
Standard: Operator should CLOSE EG-HV-59.

NOTE: **Pen 75**

Standard: Valves in Steps 9 through 11 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-59 is now CLOSED.**

PERFORMANCE INFORMATION

Performance Step: 11 Verify CLOSED EG-HV-131, CCW from RCS CTMT Bypass.
Standard: Operator should verify CLOSED EG-HV-131.

NOTE: **Pen 75**

Standard: Valves in Steps 9 through 11 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-131 is CLOSED.**

Performance Step: 12 Verify CLOSED EG-HV-61, CCW from RCS Outer CTMT ISO.
Standard: Operator should verify position of EG-HV-61.

NOTE: **Pen 76**

Standard: Valves in Steps 12 through 14 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-61 is OPEN.**

√ **Performance Step: 13** CLOSE EG-HV-61, CCW from RCS Outer CTMT ISO.
Standard: Operator should CLOSE EG-HV-61, CCW from RCS Outer CTMT ISO.

NOTE: **Pen 76**

Standard: Valves in Steps 12 through 14 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-61 is now CLOSED.**

PERFORMANCE INFORMATION

Performance Step: 14 Verify CLOSED EG-HV-133, CCW from RCS CTMT BYPASS.

Standard: Operator should verify CLOSED EG-HV-133.

NOTE: **Pen 76**

Standard: Valves in Steps 12 through 14 can be operated in any order.

Comment:

Evaluator's Cue: **EG-HV-133 is CLOSED.**

Performance Step: 15

Standard: Operator should inform Control Room Supervisor Local Operator
Action is completed to Isolated CIS-B Valves.

Comment:

Evaluator's Cue: **Control Room Supervisor acknowledges.**

Terminating Cue: **When all CIS-B valves are closed, the JPM is complete**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC JPM P2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant was at 100% power when a Loss of All AC Power occurred. The Control Room entered emergency procedure ECA-0.0, Loss of All AC Power. A containment spray signal has been received and required valve positions can not be performed from the Control Room.

INITIATING CUE: The Control Room supervisor has directed you to perform Local Operator Actions of Step 21B RNO (CISB Outer Containment Valves), of ECA-0.0. Reposition any required valves and inform him when done.

Facility: Callaway Task No.:

Task Title: Perform Fire Water System Makeup to CST JPM No.: 2005 NRC JPM P3

K/A Reference: 061 K4.01 3.9 / 4.2

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance:

Classroom Simulator Plant X

READ TO THE EXAMINEE

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

Initial Conditions: Callaway Plant has lost all AC power due to an earthquake. Plant operators are currently in emergency procedure ECA-0.0, Loss of All AC Power, stabilizing the plant.

Task Standard: Upon completion of this JPM, the operator will have commenced filling the CST from the Firewater System.

Required Materials: Key #131, Locked Valve and Breaker Key

General References: EOP Addendum 23, Local CST Emergency Fill

Initiating Cue: The Control Room Supervisor has directed you to fill the condensate storage tank using Addendum 23, Local CST Emergency Fill. Inform the Control Room Supervisor when you have started filling the CST.

Time Critical Task: NO

Validation Time: 10 minutes

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a copy of Addendum 23, Local CST Emergency Fill.
Standard: Operator should obtain procedure copy.

Comment:

Performance Step: 2 Review Addendum.
Standard: Operator may review Addendum.

Comment:

Performance Step: 3 Step 1.0
Obtain hydrant wrench, 1 50 ft. section of 2 ½" fire hose, 1
spanner wrench, 1 fire water to CST emergency fill connector.
Standard: Operator should Obtain hydrant wrench, 1 50 ft. section of 2 ½"
fire hose, 1 spanner wrench, 1 Fire Water to CST Emergency Fill
Connector.

Comment:

√ **Performance Step: 4** Step 2.A
Connect the CST Emergency Fill Connector to the Ecolo Chem
Connection on APV0043.
Standard: Operator should hook up CST Emergency Fill Connector to the
Ecolo Chem Connection on APV0043 located plant south side of
CST.

Comment:

Evaluator's Cue: CST Emergency Fill Connector is hooked up to APV0043

PERFORMANCE INFORMATION

- Step 2.B
- √ **Performance Step: 5** Connect 2 ½" fire hose to the CST Emergency Fill Connector at APV0043.
- Standard:** Operator should connect the 2 ½" fire hose to the CST Emergency Fill Connector.
- Comment:**
- Evaluator's Cue:** **2 ½" fire hose is hooked up to the CST Emergency Fill Connector.**
- Step 2.C
- √ **Performance Step: 6** Hook up the 2 ½" hose to the fire hydrant.
- Standard:** Operator should hook up the 2 ½" hose to the fire hydrant.
- Comment:**
- Evaluator's Cue:** **2 ½" hose is hooked up to the fire hydrant.**
- Step 3.B
- √ **Performance Step: 7** Open APV0043, CST Deoxygenated Water Outlet Valve.
- Standard:** Operator should break the lock (or unlock) and open APV0043, CST Deoxygenated Water Outlet Valve.
- Comment:**
- Evaluator's Cue:** **APV0043 is OPEN.**
- Step 3.C
- √ **Performance Step: 8** Open fire water hydrant using hydrant wrench.
- Standard:** Operator should open fire water hydrant.
- Comment:**
- Evaluator's Cue:** **Fire water hydrant is OPEN.**

PERFORMANCE INFORMATION

Step 4

Performance Step: 9

Ensure fire water is flowing to the CST.

Standard:

Operator should verify the fire water is flowing.

Comment:**Evaluator's Cue:****2 ½" fire hose fills and fire water starts to flow.**

Step 5

Performance Step: 10

Notify SS/CRS of CST Emergency Fill status.

Standard:

Operator should notify SS/OS of CST Fill from fire water.

Comment:**Evaluator's Cue:****SS/CRS acknowledges.****Terminating Cue:****When the control room has been informed, this JPM is complete.****STOP TIME:** _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC JPM P3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant has lost all AC power due to an earthquake. Plant operators are currently in emergency procedure ECA-0.0, Loss of All AC Power, stabilizing the plant.

INITIATING CUE: The Control Room Supervisor has directed you to fill the condensate storage tank using Addendum 23, Local CST Emergency Fill. Inform the Control Room Supervisor when you have started filling the CST.

Facility: **Callaway Plant**

Task No.:

Task Title: Raise Reactor Power To 10⁻⁸ AmpsJPM No.: 2005 NRC JPM S1

K/A Reference: 001 A2.11 (4.4/4.7)

001 AA1.05 (4.3/4.2)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____

Actual Performance: X Classroom _____ Simulator X Plant _____**READ TO THE EXAMINEE**

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

Initial Conditions: A reactor startup is in progress in accordance with OTG-ZZ-00002, Reactor Startup The following conditions exist:

- All shutdown bank rods are fully withdrawn.
- Control Bank "D" is at 92 steps.
- The estimated critical position is 101 steps on Control Bank "D".
- Most recent ICRR predicts 100 steps on Control Bank D

Task Standard: The reactor is tripped in response to inappropriate continuous control rod motion.

Required Materials: None

General References: OTG-ZZ-00002, Reactor Startup

Handouts: OTG-ZZ-00002, Reactor Startup

Initiating Cue: The Control Room Supervisor directs you to continue with the reactor startup and withdraw control rods to criticality in accordance with OTG-ZZ-00002, Reactor Startup, beginning at Step 4.1.18.

Time Critical Task: NO

Validation Time: 12 minutes

Callaway NRC JPM S1

NUREG 1021, Revision 9

Simulator Setup: reset to IC-187

Password = startup

Run Batch File startup.txt

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Candidate initiates control bank withdrawal, monitoring Source Range counts, Intermediate Range Amps, and P-6 bistables.

Standard: Candidate determines that P-6 is energized and refers to Attachment 3

Comment:

Performance Step: 2 Verify one decade of overlap between the source and intermediate range level instruments.

Standard: Observes Source Range and Intermediate Range instruments and determines that sufficient overlap exists

Comment:

PERFORMANCE INFORMATION

Performance Step: 3 Verify indication on both the source and intermediate startup rate instruments.

Standard: Candidate determines that SR and IR startup rate indication exists

Comment:

Performance Step: 4 Transfer the SE NR-45 recorder to the intermediate ranges.

Standard: Transfers NR-45 trend to IR channels

Comment:

√ **Performance Step: 5** Prior to exceeding 5E4 CPS on SR instruments, BLOCK the Source Range High Flux Trips

√ **Standard:** Block "A" Train by depressing the BLOCK pushbutton on SE HS-5.

Standard: Verify SR TRIP A BLOC illuminates on SB069.

√ **Standard:** Block "B" Train by depressing the BLOCK pushbutton on SE HS-10.

PERFORMANCE INFORMATION

Standard: Verify SR TRIP B BLOCK illuminates on SB069.

Standard: Verify that the high voltage has been removed from the source range detectors.

Comment:

Evaluator Cue: **If the candidate reports that Source Range High Flux Trips have been blocked, acknowledge and provide direction to continue the control rod withdrawal**

Performance Step: 6 Continue incremental rod withdrawal until the reactor is critical, as indicated by a stable positive startup rate with no rod motion, on the intermediate range instrumentation once the prompt jump has receded.

Standard: Candidate initiates control rod withdrawal in small increments

Comment:

Note: The following steps represent the alternate path of this JPM

Performance Step: 7 Determine that rods are withdrawing with NO demand signal.

Standard: Candidate determines from CONTROL BANK D GROUP 1 and GROUP 2 ROD POSITION indication that rods are withdrawing with **NO** demand signal.

Comment:

PERFORMANCE INFORMATION

- √ **Performance Step: 8** Trip the reactor in response to inappropriate continuous rod motion.

Candidate trips the reactor in response to inappropriate continuous rod motion.

Standard:

NOTE: Candidate may refer to OTO-SF-00001 and determine that a reactor trip is required based on Step 6 RNO.

Comment:

Terminating Cue: When the Candidate trips the reactor, the evaluation for this JPM is complete.
--

STOP TIME: _____

VERIFICATION OF COMPLETION

JPM No.: 2005 JPM S1

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:Question: _____

_____Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's Signature: _____

Date: _____

INITIAL CONDITIONS:

A reactor startup is in progress in accordance with OTG-ZZ-00002, Reactor Startup. The following conditions exist:

- All shutdown bank rods are fully withdrawn.
- Control Bank "D" is at 92 steps.
- The estimated critical position is 101 steps on Control Bank "D".
- Most recent ICRR predicts 100 steps on Control Bank D

INITIATING CUE:

The Control Room Supervisor directs you to continue with the reactor startup and withdraw control rods to criticality in accordance with OTG-ZZ-00002, Reactor Startup, beginning at Step 4.1.18.

Facility: **Callaway** Task No.: 0111-011-01-013

Task Title: Isolate SI Accumulators During a LOCA JPM No.: 2005 NRC JPM S2

K/A Reference: 009 EA1.13 (4.4/4.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: A LOCA has occurred. The crew is performing ES-1.2, Post LOCA Cooldown and Depressurization.

Task Standard: SI Accumulators A, B, and C are isolated. SI Accumulator D is vented.

Required Materials: None

General References: ES-1.2, Post LOCA Cooldown and Depressurization

Handouts: ES-1.2, Post LOCA Cooldown and Depressurization

Initiating Cue: The Control Room Supervisor directs you to isolate the SI accumulators in accordance with ES-1.2, Post LOCA Cooldown and Depressurization, Step 23.

Time Critical Task: NO

Validation Time: 7 Minutes

Simulator Setup: Initialize IC-184

Password spa321

Run bat.siacc.txt

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 RCS subcooling based on core exit TCs - GREATER THAN 30°F
(Step 23.a)

Standard: Candidate verifies RCS subcooling based on core exit TCs is greater than 30°F

Comment:

Performance Step: 2 PRZR level - GREATER THAN 9% [29% ADVERSE CNMT]
(Step 23.b)

Standard: Candidate locates and verifies PRZR level indication is greater than 9%.

Comment:

Performance Step: 3 Restore power to EP-HV-8808A, B, C, D
(Step 23.c)

Standard: Candidate directs Local Operator to restore power to EP-HV-8808A - D

Standard: Candidate contacts Local Operator to restore power

Comment: **Booth Instructor: Inform candidate that power is restored to all 4 accumulator outlet valves**

PERFORMANCE INFORMATION

- √ **Performance Step: 4** Close EP-HV-8808A, B, C, D
(Step 23.d)
- Standard:** Candidate locates EP-HV-8808A, B, and D control switches and places in CLOSE.
- Standard:** Candidate verifies green close light on and red open light off for each valve.
- Comment:**
-
- √ **Performance Step: 5** Close EP-HV-8808A, B, C, and D
(Step 23.d)
- Standard:** Candidate locates EP-HV-8808C control switch and places in Close.
- Standard:** Candidate verifies red open light remains on indicating valve **NOT** closed.
- NOTE:** **Valve is overridden in the Open position.**
- Comment:**

NOTE: The following step represents the alternate path portion of the JPM.

- √ **Performance Step: 6** If any accumulator cannot be isolated, then open associated accumulator vent valve
(Step 23.d RNO)
- Standard:** Locates control switch for EITHER EP HIS-8950D OR EP-HIS-8950E, and places switch in OPEN
- Standard:** Observes Green Light OFF, Red Light ON, and accumulator C pressure lowering
- Comment:**

Terminating Cue: When the Candidate verifies that accumulator C pressure is lowering, the evaluation for this JPM is complete.

STOP TIME: _____

JPM No.: 2005 JPM S2

Examinee's Name:

Examiner's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:Question: _____

_____Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's Signature: _____

Date: _____

INITIAL CONDITIONS: A LOCA has occurred. The crew is performing ES-1.2, Post LOCA Cooldown and Depressurization.

INITIATING CUE: The Control Room Supervisor directs you to isolate the SI accumulators in accordance with ES-1.2, Post LOCA Cooldown and Depressurization, Step 23.

Facility: Callaway Plant

Task No.:

Task Title: Respond to a Stuck Open
Pressurizer Spray ValveJPM No.: 2005 NRC JPM S3

K/A Reference: 010 A2.02 (3.9/3.9)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: A Reactor Trip has occurred. The crew has transitioned to ES-0.1, Reactor Trip Response

Task Standard: RCPs A and D are tripped

Required Materials: ES-0.1

General References: ES-0.1

Handouts: None

Initiating Cue: The Control Room Supervisor directs you to perform actions to stabilize the plant in accordance with ES-0.1

Time Critical Task: NO

Validation Time: 8 minutes

SIMULATOR SETUP

Reset to IC-188

Password = spray

PERFORMANCE INFORMATION

(Denote Critical Steps with an asterisk)

START TIME: _____

Performance Step: 1 Check RCS temperature – ANY RCP Running – Tave stable at or trending to 557°F.

Standard: Candidate verifies RCPs are running and Tave is at approximately 557°F.

Comment:

Performance Step: 2 Check Generator Output Breakers open.

Standard: Candidate verifies ML ZA-3A (V55) and ML ZA-4A (V53) indicate OPEN.

Comment:

Performance Step: 3 Check all AC busses energized by Off-Site power

Standard: Determines that PA01 and PA02, NB01 and NB02 are energized by off-site power

Comment:

Performance Step: 4 Check Pressurizer Pressure Control – Pressure greater than 1849 psig

Standard: Candidate evaluates pressurizer pressure and determines it is greater than 1849 psig.

Comment:

PERFORMANCE INFORMATION

Performance Step: 5 Check Pressurizer Pressure stable at or trending to 2235 psig.
Standard: Candidate determines that Pressurizer Pressure is below 2235 psig and lowering.

Comment:

Note: The following steps represent the alternate path of this JPM

Performance Step: 6 Check PORVs closed
Standard: Candidate verifies BB-HIS-455A and 456A indicate CLOSED.

Comment:

Performance Step: 7 Check Spray Valves closed
Standard: Candidate determines that Spray Valve BB-PCV-455B is OPEN

Comment:

* **Performance Step: 8** Close Spray Valve
Standard: Candidate places BB-PCV-455B controller in MANUAL and attempts to reduce output to ZERO. Determines valve remains OPEN

Comment:

* **Performance Step: 9** Stop RCPs A and D
Standard: Candidate places RCP A and D control switches in STOP

Comment:

PERFORMANCE INFORMATION

Performance Step: 10 Verify PRZR Heaters – ON

Standard: Candidate verifies PRZR Heaters – ON.

Comment:

Terminating Cue: When A and D RCPs are tripped or upon completion of ES-0.1 Step 3, this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: Callaway NRC JPM S3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: A reactor Trip has occurred. The crew has transitioned to ES-0.1, Reactor Trip Response

INITIATING CUE: The Control Room Supervisor directs you to perform actions to stabilize the plant in accordance with ES-0.1

Facility: Callaway

Task No.:

Task Title: Start "A" Reactor Coolant PumpJPM No.: 2005 NRC JPM S4

K/A Reference: 002 K6.02 3.6 / 3.8

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Callaway Plant is in mode 3 at 557°F and 2235 psig. "A" Reactor Coolant Pump had been secured for breaker work on PA0107. CCW is in operation and is supplying cooling water to the Thermal Barrier Cooling coils per OTN-EG-00001. There are no personnel in CTMT at this time.

Task Standard: Upon completion of this JPM, the operator will have tripped "A" RCP due to high seal leakoff flow.

Required Materials: None

General References: OTN-BB-00003, Reactor Coolant Pumps, Revision 15

Initiating Cue: Tags have been cleared on PA0107 and signed off. The Control Room Supervisor has directed you to start "A" RCP per OTN-BB-00003, Section 4.1. WPA was restored to the OTN-BB-00003 required positions. Inform the Control Room Supervisor when the "A" Reactor Coolant Pump has been started and the lift oil pump is secured.

Time Critical Task: NO

Validation Time: 16 minutes

SIMULATOR SETUP

NOTES:

Use IC-7. Secure "A" RCP, close "A" seal inj and leakoff with BB HIS-8351A and BB HIS-81141A.

Set Event 1 'x21i115r.eq.true'

1 is cv06a severity 8, 12 second ramp, 10 second delay

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a verified working copy of OTN-BB-00003, Reactor Coolant Pumps.

Standard: Operator should obtain procedure copy.

Comment:

Section 2

Performance Step: 2 Review the Precautions and Limitations of OTN-BB-00003.

Standard: Operator should review the Precautions and Limitations.

Comment:

Evaluator's Cue: All Precautions and Limitations are satisfied.

Section 3

Performance Step: 3 Review the Initial Conditions of OTN-BB-00003.

Standard: Operator should read the Initial Conditions.

Comment:

Evaluator's Cue: All Initial Conditions are satisfied.

NOTE Prior To Step 4.1.1

Performance Step: 4 If the position of the CCW Outlet Throttle Valves are known to have changed, perform Section 5.2.

Standard: Operator may ask if the WPA altered CCW Outlet Throttle Valve Positions.

Comment:

Evaluator's Cue: The CCW Outlet Throttle Valves position did not change.

PERFORMANCE INFORMATION

	Step 4.1.1.1
Performance Step: 5	Initiate Seal Water Injection Flow to "A" RCP. OPEN the RCP Seal Injection Isolation Valve BB HV-8351A with BB-HIS-8351A.
Standard:	Operator should initiate seal water injection flow with BB HIS-8351A, RCP "A" Seal WTR INJ VLV, OPEN on RL021.
Comment:	
Evaluator's Cue:	BB HIS-8351A RED light goes ON and GREEN light goes OFF.
	Step 4.1.1.2
Performance Step: 6	OPEN "A" RCP #1 Seal Leakoff Isolation Valve with Handswitch BB HIS-8141A.
Standard:	Operator should OPEN, RCP "A" Seal WTR Return VLV with BB HIS-8141A, on RL001.
Comment:	
Evaluator's Cue:	BB HIS-8141A RED light goes ON and GREEN light goes OFF.
	Step 4.1.3
Performance Step: 7	Verify current OSP-BG-00005 or adjust the Seal Water Injection Throttle Valve (BG-V-198) to establish 8 GPM flow to all RCP's.
Standard:	Operator should determine seal flow on BB FR-157, RCP "A" Seal Leakoff and Injection Flow, on RL021 or verify OSP-BG-00005 is current.
Comment:	
Evaluator's Cue:	OSP-BG-00005 is current all RCP's show a flow of 8 gpm on the Blue Pen for BG FR-157, 156, 155, and 154.

PERFORMANCE INFORMATION

	Step 4.1.3.1
Performance Step: 8	Verify "A" RCP Seal Differential Pressure is > 200 psid.
Standard:	Operator should read BB PI-153A, RCP "A" Seal DP, on RL021.
Comment:	
Evaluator's Cue:	"A" RCP DP indicates > 400 psid.
	Step 4.1.3.2
Performance Step: 9	Annunciator 73A RCP #2 Seal Flow HI Alarm is CLEARED.
Standard:	Operator should determine status of annunciator 73A, RCP #2 Seal Flow HI Alarm is CLEARED.
Comment:	
Evaluator's Cue:	Annunciator 73A is NOT on.
	Step 4.1.3.3
Performance Step: 10	Verify Annunciator 42C VCT pressure HI/LO is CLEARED.
Standard:	Operator should determine status of Annunciator 42C, VCT Press HI/LO, on RL018 is CLEARED.
Comment:	
Evaluator's Cue:	Annunciator 42C is NOT on.
	Step 4.1.3.4
Performance Step: 11	Verify Annunciator 74D RCP Oil RSVR LEV HI/LO CLEARED.
Standard:	Operator should determine status of Annunciator 74D, RCP Oil RSVR LEV HI/LO, on RL022 is CLEARED.
Comment:	
Evaluator's Cue:	Annunciator 74D is NOT on.

PERFORMANCE INFORMATION

	Step 4.1.3.5
Performance Step: 12	Verify Annunciator 71A, RCP #1 Seal dP LO CLEARED.
Standard:	Operator should determine status of Annunciator 71A, RCP #1 Seal DP LO, on RL022 is cleared.
Comment:	
Evaluator's Cue:	Annunciator 71A RCP #1 seal dP LO is NOT on.
	Step 4.1.3.6
Performance Step: 13	Verify Annunciators 70 – 73E RCP A – D Standpipe LEV LO CLEARED.
Standard:	Operator should determine status of Annunciator 70E, RCP "A" Standpipe, LEV LO, on RL022 is CLEARED.
Comment:	
Evaluator's Cue:	Annunciator 70E is NOT on.
	Step 4.1.3.7
Performance Step: 14	Verify Annunciators 70 – 73C RCP A – D THERM BAR CCW Flow CLEARED.
Standard:	Operator should determine status of Annunciator 70C, RCP "A" THERM BAR CCW Flow, on RI022 is CLEARED.
Comment:	
Evaluator's Cue:	Annunciator 70C is NOT on.
	Step 4.1.3.8
Performance Step: 15	Verify #1 Seal Backpressure \geq 15 psig. (VCT pressure).
Standard:	Operator should obtain VCT pressure from BG PI-115 on RL002.
Comment:	
Evaluator's Cue:	VCT pressure indicates 32 psig on BG PI-115.

PERFORMANCE INFORMATION

	Step 4.1.3.9
Performance Step: 16	Verify "A" RCP Seal Leakoff is within the NORMAL operating range of Figure 1 on Page 4 of Attachment 1.
Standard:	Operator should verify "A" RCP Seal Leakoff Flow is within the NORMAL operating range of Figure 1 on page 4 of Attachment 1.
Comment:	
Evaluator's Cue:	"A" RCP Seal Leakoff Return is within the NORMAL operating range.
	Step 4.1.3.9
Performance Step: 17	Obtain "A" RCP Seal Leakoff Indication from BG FR-157.
Standard:	Operator should obtain "A" RCP Seal Leakoff Indication from BG FR-157.
Comment:	
Evaluator's Cue:	BG FR-157 indicates Seal Leakoff is at 3 gpm on the Green Pen, the Red Pen is FULL SCALE.
	Step 4.1.4.1
Performance Step: 18	Dispatch someone to inspect "A" RCP and warn personnel in the vicinity.
Standard:	Operator not required to call due to no personnel in CTMT.
Comment:	
	Step 4.1.4.2
√ Performance Step: 19	Start "A" RCP's Oil Lift Pump with switch BB HIS-41.
Standard:	Operator should select RUN ON BB HIS-41, RCP "A" Lift Pump.
Comment:	
Evaluator's Cue:	BB HIS-41 RED light is ON, after 20 seconds, the WHITE light on "A" Oil Lift Pump goes ON.

PERFORMANCE INFORMATION

	Step 4.1.4.3
Performance Step: 20	Allow the Oil Lift Pump to RUN for at least 2 minutes.
Standard:	Operator should wait two (2) minutes from start time before performing next step.
Comment:	
Evaluator's Cue:	Two (2) minutes has elapsed.
	Step 4.1.4.6
Performance Step: 21	Make plant announcement: ATTENTION IN THE PLANT STARTING THE "A" RCP. STAND CLEAR OF THE PUMP AND PA01 SWITCHGEAR.
Standard:	Operator should make plant announcement about starting "A" RCP. Should wait 10 – 15 seconds between announcement and starting pump.
Comment:	
	Step 4.1.4.7
√ Performance Step: 22	Start "A" RCP by using Switch BB HIS-37.
Standard:	Operator should select RUN on BB HIS-37, RCP "A".
Comment:	
Evaluator's Cue:	"A" RCP BB HS-37 RED light is ON and GREEN light is OFF.
	Step 4.1.4.5.1
Performance Step: 23	Monitor RCP starting current and running current.
Standard:	Operator should monitor BB-II-1, RCP "A" Amps, and observe starting current decay away on RL021 to less than 351 amps.
Comment:	

PERFORMANCE INFORMATION

The following steps represent the alternate path of this JPM

Performance Step: 24 Acknowledge annunciators.

Standard: Operator should determine that control room annunciators 70B and 72A are received. 72A, RCP #1 SEAL FLO HI, is an unexpected alarm.

Comment:

Evaluator's Cue:

Performance Step: 25 Determine RCP "A" #1 seal flow

Standard: Operator should observe recorder BG FR-157 and verify seal flow is > 5 GPM

Comment:

Evaluator's Note: Candidate MAY refer to the OTAs or OTO-BB-00002 to determine action required on high seal flow.

√ **Performance Step: 26** Trip "A" RCP

Standard: Places RCP "A" control switch in STOP

Comment:

Terminating Cue: When RCP "A" is stopped, this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2005 NRC JPM S4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant is in mode 3 at 557°F and 2235 psig. "A" Reactor Coolant Pump had been secured for breaker work on PA0107. CCW is in operation and is supplying cooling water to the Thermal Barrier Cooling coils per OTN-EG-00001. There are no personnel in CTMT at this time.

INITIATING CUE: Tags have been cleared on PA0107 and signed off. The Control Room Supervisor has directed you to start "A" RCP per OTN-BB-00003, Section 4.1. WPA was restored to the OTN-BB-00003 required positions. Inform the Control Room Supervisor when the "A" Reactor Coolant Pump has been started and the lift oil pump is secured.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: URO-SAB04C61J(A) KSA NO: 041A4.08
REVISION: 20050413 KSA RATING: 3.0/3.1
JOB TITLE: URO/SRO
DUTY: MAIN STEAM
TASK TITLE: PLACE STEAM DUMPS IN STEAM PRESSURE MODE
COMPLETION TIME: 9 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTN-AB-00001, MAIN STEAM SYSTEM, REVISION 13

TOOLS/EQUIPMENT: NONE

PREPARED BY: _____ DATE: _____

REVIEWED BY: _____ DATE: _____
STS/SS

APPROVED BY: _____ DATE: _____
DEPARTMENT HEAD

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS SHUTTING DOWN FOR A FALL OUTAGE. REACTOR POWER IS APPROXIMATELY 20%. THE CREW IS PERFORMING OTG-ZZ-00005.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO VERIFY THE STEAM DUMP CONTROLLER, AB PK-507, IS SET FOR 1092 PSIG, THEN TRANSFER THE STEAM DUMP SELECTOR SWITCH TO THE STEAM PRESSURE MODE PER OTN-AB-00001, MAIN STEAM SYSTEM, SECTION 4.5 AND INFORM THE CRS WHEN DONE.

Notes: USE IC177. (PASSWORD = week1)
USE EVENT TRIGGER MODE AND SET X05I162S.EQ.TRUE. SET
MALFUNCTION MSS13b TO AB PT-507 READING 1500 PSIG, 30 SECOND
RAMP, 0 SECOND TIME DELAY, SET TO EVENT TRIGGER.

ENSURE AB PK-0507 IS SET AT SOMETHING OTHER THAN 7.28.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR HAS PLACED THE STEAM DUMPS IN THE STEAM PRESSURE MODE AND THEN CLOSED THE FAILED STEAM DUMPS PRIOR TO CAUSING THE STEAM DUMPS TO CLOSE DUE TO PERMISSIVE P-12 (LO LO TAVE - 550°F).

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTN-AB-00001, MAIN STEAM SYSTEM		OPERATOR SHOULD OBTAIN A PROCEDURE COPY	S U Comments:
2. REVIEW THE PRECAUTIONS AND LIMITATIONS OF OTN-AB-00001 SECTION 2.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD READ THE PRECAUTIONS AND LIMITATIONS	S U Comments:
3. REVIEW THE INITIAL CONDITIONS OF OTN-AB-00001 SECTION 3.0	ALL INITIAL CONDITIONS ARE SATISFIED ASK IF THE OPERATOR UNDERSTANDS THE INITIAL CONDITIONS AND INITIATING CUES	OPERATOR SHOULD READ THE INITIAL CONDITIONS	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4. THE OPERATOR MAY VERIFY AB PK- 0507 IS SET FOR 1092 PSIG		OOA-RL-00004 STATES THAT 1092 PSIG = 7.28.	S U Comments:
5. ENSURE STEAM HEADER PRESSURE CONTROLLER AB PK-507 MATCHES STEAM DUMP DEMAND AB UI-500 NOTE: CAUTION PRIOR TO STEP 4.5.1		OPERATOR SHOULD ENSURE AB PK-507 STEAM HEADER PRESSURE CONTROLLER MATCHES AB UI-500	S U Comments:
6. PLACE THE STEAM DUMP SELECTOR SWITCH AB US-0500Z TO RESET STEP 4.5.1		OPERATOR SHOULD PLACE STEAM DUMP SELECTOR SWITCH AB US-0500Z TO RESET	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7* PLACE THE STEAM DUMP SELECTOR SWITCH AB US-0500Z TO THE STEAM PRESSURE MODE STEP 4.5.1		OPERATOR SHOULD PLACE THE STEAM DUMP SELECTOR SWITCH AB US-0500Z TO THE STEAM PRESSURE MODE	S U Comments:
8.		NOTE: WHEN OPERATOR NOTICES THE STEAM DUMP FAILURE, HE MAY THEN OMIT STEPS 9 AND 10 AND CONTINUE WITH STEP 11	S U Comments:
9. VERIFY C-7, LOSS OF LOAD INTERLOCK LIGHT IS OFF STEP 4.5.1.1		OPERATOR SHOULD VERIFY C-7, LOSS OF LOAD INTERLOCK LIGHT IS OFF ON SC066W PANEL	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10. OPERATOR MAY INQUIRE IF COOLDOWN IS REQUIRED STEP 4.5.2	RESPOND BY INFORMING THE OPERATOR THAT A COOLDOWN IS NOT REQUIRED AT THIS TIME	OPERATOR MAY ASK IF A PLANT COOLDOWN IS REQUIRED	S U Comments:

NOTE:

THE FOLLOWING STEPS REPRESENT THE ALTERNATE PATH OF THIS JPM

11.		NOTE: WHEN STEAM DUMP FAILURE IS IDENTIFIED, THE FOLLOWING ACTIONS SHOULD BE TAKEN	S U Comments:
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* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. PLACE STEAM DUMP INTERLOCK SELECT SWITCHES AB HS-63, 64 IN THE OFF/RESET POSITION		OPERATOR SHOULD PLACE BOTH STEAM DUMP SELECTOR SWITCHES AB HS-63, 64 IN THE OFF POSITION	S U Comments:
13*		OPERATOR SHOULD CLOSE STEAM DUMPS BY ANY MEANS PRIOR TO STEAM DUMPS AUTOMATICALLY CLOSING AT 550°F DUE TO P-12, LO LO TAVE.	S U Comments:
14.	<u>RECORD STOP TIME ON PAGE 1</u>		

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS SHUTTING DOWN FOR A FALL OUTAGE. REACTOR POWER IS APPROXIMATELY 20%. THE CREW IS PERFORMING OTG-ZZ-00005.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO VERIFY THE STEAM DUMP CONTROLLER, AB PK-507, IS SET FOR 1092 PSIG, THEN TRANSFER THE STEAM DUMP SELECTOR SWITCH TO THE STEAM PRESSURE MODE PER OTN-AB-00001, MAIN STEAM SYSTEM, SECTION 4.5 AND INFORM THE CRS WHEN DONE.

Facility: Callaway Task No.:

Task Title: Placing Containment H2 Analyzer In Service JPM No.: 2005 NRC JPM S6

K/A Reference: 028 A4.03 3.1 / 3.3

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Callaway Plant has experienced a Large Loss of Coolant Accident. A Safety Injection has occurred.

Task Standard: Upon completion of this JPM, the operator will have placed "A" hydrogen analyzer in-service.

Required Materials: None

General References: OTN-GS-00001, Containment Hydrogen Control System, Revision 10

Initiating Cue: The Control Room Supervisor has directed you to place the "A" Containment Hydrogen Analyzer, SGS02A, in service per OTN-GS-00001, Section 4.2. The pre-service startup and standby alignment of hydrogen analyzers has already been completed, (Section 4.1). Inform the Control room Supervisor when SGS02A is in service.

Time Critical Task: NO

Validation Time: 10 minutes

Simulator Setup

Reset to IC-184

CTMT H2 Indication

Set Malf Meter

- GSAI19
- Ramp Start=0
- Ramp Time=300 Sec
- Delay Time=60 Sec
- Value=1.5
- Event Trigger=1
- Set Event Triggers
- 1=X20I36A

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a verified working copy of OTN-GS-0001.

Standard: Operator should obtain procedure copy.

Comment:

Section 2

Performance Step: 2 Review Precautions and Limitations.

Standard: Operator should review Precautions and Limitations.

Comment:

Evaluator's Cue: All Precautions and Limitations are satisfied.

Step 4.2.1

Performance Step: 3 Ensure Section 4.1, Pre-service Startup and Standby Alignment of hydrogen analyzers is complete.

Standard: Operator may verify Section 4.1 has been completed.

NOTE: **Given in Initial Conditions.**

Comment:

Evaluator's Cue: **Section 4.1 has been completed.**

PERFORMANCE INFORMATION

	Step 4.2.2
Performance Step: 4	Ensure the H2 mixing fans and CTMT coolers re in service.
Standard:	Operator should verify H2 mixing fans and CTMT coolers are in service.
Comment:	
Evaluator's Cue:	All H2 mixing fans and CTMT coolers are in service.
	Step 4.2.3
Performance Step: 5	Restore electrical power to Hydrogen Analyzer "A" CTMT ISO Valves place GS HIS-40 in Non-Iso.
Standard:	Operator should place GS HIS-40, Hydrogen Analyzer "A" CTMT ISO Valve, in Non-Iso located on RL011.
NOTE:	Steps 5 and 6 may be performed in any order.
Comment:	
Evaluator's Cue:	GS HIS-40 is in the Non-Iso position.
	Step 4.2.3
Performance Step: 6	Restore electrical power to Hydrogen Analyzer "A" CTMT ISO Valves, place GS HIS-42 in the Non-Iso position.
Standard:	Operator should place GS HIS-42, Hydrogen Analyzer "A" CTMT ISO Valve in Non-Iso.
NOTE:	Steps 5 and 6 may be performed in any order.
Comment:	
Evaluator's Cue:	GS HIS-42 is in the Non-Iso position.

PERFORMANCE INFORMATION

Step 4.2.4	
√ Performance Step: 7	Open "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-13 with pushbutton GS HIS-13.
Standard:	Operator should OPEN "A" Hydrogen Analyzer CTMT Isolation Valve GS-HV-13 with pushbutton GS HIS-13.
NOTE:	Steps 7 through 11 may be performed in any order.
Comment:	
Evaluator's Cue:	GS HIS-13 shows RED light goes ON and GREEN light goes OFF.
Step 4.2.4	
√ Performance Step: 8	Open "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-14 with pushbutton GS HIS-14.
Standard:	Operator should OPEN "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-14 with pushbutton GS HIS-14.
NOTE:	Steps 7 through 11 may be performed in any order.
Comment:	
Evaluator's Cue:	GS HIS-14 shows RED light goes ON and GREEN light goes OFF.
Step 4.2.4	
√ Performance Step: 9	Open "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-12 with pushbutton GS HIS-12.
Standard:	Operator should OPEN "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-12 with pushbutton GS HIS-12.
NOTE:	Steps 7 through 11 may be performed in any order.
Comment:	
Evaluator's Cue:	GS HIS-12 shows RED light goes ON and GREEN light goes OFF.

PERFORMANCE INFORMATION

- Step 4.2.4
- √ **Performance Step: 10** Open "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-17 with pushbutton GS HIS-17.
- Standard:** Operator should OPEN "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-17 with pushbutton GS HIS-17.
- NOTE:** Steps 7 through 11 may be performed in any order.
- Comment:**
- Evaluator's Cue:** GS HIS-17 shows RED light goes ON and GREEN light goes OFF.
- Step 4.2.4
- √ **Performance Step: 11** Open "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-18 with pushbutton GS HIS-18.
- Standard:** Operator should OPEN "A" Hydrogen Analyzer CTMT Isolation Valve GS HV-18 with pushbutton GS HIS-18.
- NOTE:** Steps 7 through 11 may be performed in any order.
- Comment:**
- Evaluator's Cue:** GS HIS-18 shows RED light goes ON and GREEN light goes OFF.
- Step 4.2.6
- √ **Performance Step: 12** Place Hydrogen Analyzer "A" in the ANALYZ position by taking switch GS HIS-16A for SGS02A to "ANLYZ".
- Standard:** Operator should take switch GS HIS-16A to "ANLYZ" on RL020
- Comment:**

PERFORMANCE INFORMATION

	Step 4.2.6.1
Performance Step: 13	Monitor GS AI-19 for hydrogen concentration.
Standard:	Operator should monitor GS AI-19 for hydrogen concentration.
Comment:	
Evaluator's Cue:	Hydrogen concentration indicates approximately 0% on GS AI-19.
	Step 4.2.6.1 Note b
Performance Step: 14	Verify Hydrogen Analyzer SGS02A was in the Standby Lineup.
Standard:	Operator may verify "A" Hydrogen Analyzer was in the Standby Lineup.
Comment:	
Evaluator's Cue:	Note "A" Hydrogen analyzer was in the Standby Position.
	Step 4.2.6.1 Note b
Performance Step: 15	Wait for a 15 minute warmup period prior to taking data.
Standard:	Operator should wait a minimum of 15 minutes for "A" hydrogen analyzer use.
Comment:	
Evaluator's Cue:	Over 15 minutes has gone by.
	Step 4.2.6.1
Performance Step: 16	Monitor containment hydrogen concentration on GS AI-19.
Standard:	Operator should monitor GS AI-19 for hydrogen concentration.
Comment:	
Evaluator's Cue:	GS AI-19 shows hydrogen concentration to be at 1.5%.

PERFORMANCE INFORMATION

Terminating Cue: **When the candidate has determined that H2 concentration is 0, this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2005 NRC JPM S6

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant has experienced a Large Loss of Coolant Accident. A Safety Injection has occurred.

INITIATING CUE: The Control Room Supervisor has directed you to place the "A" Containment Hydrogen Analyzer, SGS02A, in service per OTN-GS-00001, Section 4.2. The pre-service startup and standby alignment of hydrogen analyzers has already been completed, (Section 4.1). Inform the Control room Supervisor when SGS02A is in service.

Facility: Callaway Task No.:

Task Title: Paralleling Diesel Generator "A" To XNB01 JPM No.: 2005 NRC JPM S7

K/A Reference: 064 A4.01 4.0 / 4.3

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant is operating in Mode 1. The "A" Emergency Diesel Generator has been started per OTN-NE-0001A, Section 4.3. NB01 is energized from its normal off-site power source. XNB01 LTC is in manual and Tap 13 is set for modes 1 through 4.

Task Standard: NE01 is connected to NB01 and is carrying at least 2 Mwe load.

Required Materials: None

General References: OTN-NE-0001A, Standby Diesel Generation System Train "A", Rev. 13

Initiating Cue: You have been directed to parallel the "A" Diesel Generator to NB01 and load to at least 2 MW per OTN-NE-0001A, Section 4.4. Inform the Control Room Supervisor when NE01 is running loaded > 2 Mwe.

Time Critical Task: NO

Validation Time: 15 minutes

SIMULATOR SETUP

NOTES:

May be run with JPM S4

Ensure "A" Emergency Diesel Generator is running unloaded if performing on the simulator. Use remote NBHS0037 place in manual. Monitor NEPSLTC (1).

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a verified working copy of OTN-NE-0001A, Standby Diesel Generation System Train "A".

Standard: Operator should obtain procedure copy.

Comment:

Section 2

Performance Step: 2 Review the Precautions and Limitations of OTN-NE-0001A.

Standard: Operator should read the Precautions and Limitations.

Comment:

Evaluator's Cue: All Precautions and Limitations are satisfied.

Section 3

Performance Step: 3 Review the Initial Conditions of OTN-NE-0001A.

Standard: Operator should read the Initial Conditions.

Comment:

Evaluator's Cue: All Initial Conditions are satisfied.

PERFORMANCE INFORMATION

Step 4.4.1

Performance Step: 4 Ensure that the Local Master Transfer Switch KJHS0009 is in the AUTO position.

Standard: Operator should verify absence of MCB ANN 20E and/or request Local Observation of Master Transfer Switch.

Comment:

Evaluator's Cue: **The Local Master Transfer Switch KJHS0009 is in the AUTO position.**

Step 4.4.2

Performance Step: 5 Ensure NE01 has been started in accordance with Section 4.3 or 5.3 of this procedure.

Standard: Operator may verify NE01 has been started in accordance with Section 4.3

NOTE: **Given in Initial Conditions.**

Comment:

Evaluator's Cue: **NE01 has been started in accordance with Section 4.3**

Step 4.4.3

Performance Step: 6 If the White Parallel Operation Light is not lit, momentarily place NE HS-5, NE01 Unit Parallel SW to the parallel position.

Standard: Operator should determine WHITE parallel light is lit.

Comment:

Evaluator's Cue: **Local operator reports WHITE Parallel Operation Light is lit on NE107.**

PERFORMANCE INFORMATION

Step 4.4.4.1

Performance Step: 7

Verify the White Parallel Operation Light is lit on NE107.

Standard:

Operator should contact EO to verify the White Parallel Light is lit on NE107.

Comment:**Evaluator's Cue:****The White Parallel Light is lit on NE107.**

Step 4.4.4.2

Performance Step: 8

Verify Main Control board Annunciator 22B, Voltage Control Freeze is lit.

Standard:

Operator should verify Annunciator 22B, Voltage Control Freeze is lit.

Comment:**Evaluator's Cue:****Annunciator 22B, Voltage Control Freeze is lit.**

Step 4.4.4.3

Performance Step: 9

Verify EITHER Computer Point NBQ0003 indicates Capacitor Bank NB03 is in FREEZE OR Disconnect NB0301 is OPEN.

Standard:

Operator should verify NBQ0003 is in FREEZE or DISCONNECTED.

Comment:**Evaluator's Cue:****Computer Point NBQ0003 indicates Capacitor Bank NB03 is in FREEZE mode.**

PERFORMANCE INFORMATION

	Step 4.4.4.4
Performance Step: 10	Verify EITHER Computer Point NBX0001 indicates transformer XNB01 LTC is in MANUAL and set at the appropriate Tap Changer setting.
Standard:	Operator should verify XNB01 LTC is in MANUAL and Tap Setting 13 is selected OR Computer Point NBX0001 indicates FREEZE
NOTE:	Given in Initial Conditions
Comment:	
Evaluator's Cue:	Annunciator 19D, XNB01 XFMR/VOLT CTRL TRBL is LIT AND Computer Point NBX0001 indicates FREEZE.
	Step 4.4.5
√ Performance Step: 11	Place the Sync Transfer Switch NE HS-27 in the ON position.
Standard:	Operator selects ON with Sync Transfer Switch NE HS-27.
Comment:	
Evaluator's Cue:	NE HS-27 is in the ON position.
	Step 4.4.6
√ Performance Step: 12	Place the Synchroscope Selector Switch NB HS-10 in the D/G Feeder Breaker Position.
Standard:	Operator should place the Synchroscope Selector Switch NB HS-10 in the D/G Feeder Breaker Position.
Comment:	
Evaluator's Cue:	NB HS-10 is selected to DG Feeder BKR Position. The Sync Scope is rotating in fast direction; Sync Lights NB ZL-9 are flashing.

PERFORMANCE INFORMATION

Step 4.4.7

Performance Step: 13 Adjust the diesel generator speed using Governor Control, KJ HS-7A until the Synchroscope NB EI-3 is rotating slowly in the fact direction.

Standard: Operator turns KJ HS-7A, DG NE01 GOV, to RAISE if speed is SLOW and to LOWER if speed FAST as indicated by 4.16 KV Bus NB01 Sync Scope, NB EI-13 on RL015 to satisfy Synch check Relay.

Comment:

Evaluator's Cue: **Synchroscope NB EI-3 is rotating slowly in the FAST direction.**

Step 4.4.8

Performance Step: 14 Adjust NE01 voltage to be within +50, -0 volts of the NB01 Bus Voltage using the Auto Voltage Regulator NE HS-13A.

Standard: Operator should adjust NE01 voltage to be within +50, -0 volts of the NB01 Bus Voltage using the Auto Voltage Regulator NE HS-13A.

Comment:

Step 4.4.8.1

Performance Step: 15 Determine NE01 voltage by placing the Synchroscope Selector Switch NB HS-10 in the D/G Feeder Breaker position and reading NB EI-28.

Standard: Operator should place NB HS-10 in the D/G Feeder Breaker Position and read NB EI-28 to determine NE01 voltage.

Comment:

Evaluator's Cue: **NE EI-28 voltage is 4190 volts when NB HS-10 is in the D/G Feeder Breaker Position.**

PERFORMANCE INFORMATION

	Step 4.4.8.2
Performance Step: 16	Determine NB01 voltage by placing the Synchroscope Selector Switch NB HS-10 in the Main FDR BKR Position and reading the voltage from NB EI-28.
Standard:	Operator should determine NB01 voltage by placing NB HS-10 in the Main FDR BKR Position and reading voltage from NB EI-28.
Comment:	
Evaluator's Cue:	NB EI-28 voltage is 4160 when NB HS-10 is in the Main FDR BKR Position.
	Step 4.4.9
√ Performance Step: 17	When NE01 voltage has been verified to be within +50, -0 volts of NB01 voltage, ensure the Synchroscope Selector Switch NB HS-10 is placed in the D/G Feeder Breaker Position.
Standard:	Operator should place NB HS-10 in the D/G Feeder Breaker Position.
Comment:	
	Step 4.4.9
Performance Step: 18	Verify proper operation of Sync Light NB ZL-9.
Standard:	Operator should verify proper operation of NB ZL-9.
Comment:	
Evaluator's Cue:	Dimmest at 12 o'clock and brightest at 6 o'clock on Synch Scope NB EI-3

PERFORMANCE INFORMATION

	Step 4.4.10
Performance Step: 19	Verify that the Diesel Generator to Bus Synchronizing Light NE ZL-27A illuminates when the Synchroscope is between the 11 o'clock and the 12 o'clock position.
Standard:	Operator should verify that the Diesel Generator to Bus Synchronizing Light NE ZL-27A illuminates when the Synchroscope is between the 11 o'clock and the 12 o'clock position.
Comment:	
Evaluator's Cue:	NE ZL-27A is coming on at five (5) degrees before the 12 o'clock position and off at five (5) degrees after 12 o'clock.
	Step 4.4.11
Performance Step: 20	Allow Synchroscope NB EI-3 to complete one revolution to verify proper speed for synchronization.
Standard:	Operator should observe the Sync Scope for one complete revolutions and adjust the speed as necessary.
Comment:	
Evaluator's Cue:	Synchroscope is rotating in the FAST direction at about the speed of the second hand of a clock.
	Step 4.4.12
√ Performance Step: 21	When the Synchroscope reaches the 11 o'clock position turn NE HIS-25 to CLOSE and hold until Breaker NB0111 indicates CLOSED, then release the control switch.
Standard:	When Sync Scope reaches the 11 o'clock position and Synch Check Permissive Light ON, CLOSE NB01 EMERG SPLY BKR NB0111 with Switch NE HIS-25 and hold until the RED light is ON and the GREEN light is OFF, then the operator should release the switch.
Comment:	
Evaluator's Cue:	NE HIS-25 RED light is ON and the GREEN light is OFF.

PERFORMANCE INFORMATION

Step 4.4.13	
√ Performance Step: 22	Immediately upon closure of the D/G Breaker Pickup Load to at least 0.2 MW by operating the D/G Governor Control JK HS-7A in the RAISE direction if necessary.
Standard:	Operator should RAISE DG Load to prevent NB0111 Reverse Power Trip using KJ HS-7A.
Comment:	
Evaluator's Cue:	D/G Load is 0.2 MW.
Step 4.4.14	
Performance Step: 23	Return the Synchroscope Selector Switch NB HS-10 to the "OFF" position.
Standard:	Operator should return the Synchroscope Selector Switch NB HS-10 to the "OFF" position.
Comment:	
Evaluator's Cue:	NB HS-10 is in "OFF".
Step 4.4.15	
Performance Step: 24	Place Sync Transfer Switch NE HS-27 in the OFF position.
Standard:	Operator should place Sync Transfer Switch NE HS-27 in the OFF position.
Comment:	
Evaluator's Cue:	NE HS-27 is in OFF.
Step 4.4.16	
Performance Step: 25	Adjust Diesel Generator Voltage with the Auto Voltage Regulator NE HS-13A to maintain a power factor of 0.9 LAG.
Standard:	Operator should adjust D/G VAR Loading using NE HS-13A, Auto Voltage Regulator.
Comment:	
Evaluator's Cue:	Power factor is 0.9 LAG.

PERFORMANCE INFORMATION

Step 4.4.17

Performance Step: 26 Increase Diesel Generator Load as directed by the SS/OS.**Standard:** The operator should increase Diesel Generator Load as directed by the Control Room Supervisor.**NOTE:** Initial Conditions directed NE01 BE Loaded to > 2MW.**Comment:****Evaluator's Cue:** The Control Room Supervisor directs you to increase D/G Load to > two (2) MW.

Step 4.4.17

√ Performance Step: 27 Increase Diesel Generator Load, by placing NE HS-7A in the RAISE position, to > two (2) MW.**Standard:** Operator should go to RAISE on NE HS-7A on RL015 to RAISE D/G Load to > two (2) MW.**Comment:****Evaluator's Cue:** D/G Load is > two (2) MW.**Performance Step: 28** Inform the Control Room Supervisor that NE01 is loaded > 2 MWe.**Standard:** Operator should inform the Control Room Supervisor that NE01 is loaded > 2 Mwe.**Comment:****Evaluator's Cue:** The Control Room Supervisor acknowledges.**Terminating Cue:** When DG load is >2 MW, this JPM is complete.**STOP TIME:** _____

Job Performance Measure No.: 2005 NRC JPM S7

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: The plant is operating in Mode 1. The "A" Emergency Diesel Generator has been started per OTN-NE-0001A, Section 4.3. NB01 is energized from its normal off-site power source. XNB01 LTC is in manual and Tap 13 is set for modes 1 through 4.

INITIATING CUE: You have been directed to parallel the "A" Diesel Generator to NB01 and load to at least 2 MW per OTN-NE-0001A, Section 4.4. Inform the Control Room Supervisor when NE01 is running loaded > 2 Mwe.

Facility: Callaway Task No.:

Task Title: Reinitiate CTMT Purge Following CPIS JPM No.: 2005 NRC JPM S8

K/A Reference: 013 A2.06 3.7 / 4.0

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Callaway Plant is in Mode 2. A containment mini purge was in progress to prepare for a containment entry. One hour ago, a CPIS/CRVIS occurred due to a spike on GTRE0022. Repairs have been made to GTRE0022 and it is now operable. Outside air temperature is expected to remain > 50°F.

Task Standard: Upon completion of this JPM, the operator will have reset CPIS and re-established containment mini purge.

Required Materials: Copy of Gaseous Radwaste Release Permit
Covers installed on the ESFAS Switches for GTRE0022 and GTRE0033

General References: OTN-GT-00001, Containment Purge System, Revision 19
CAR 199301739, 199400025, 199501723, 199700736

Initiating Cue: The Control Room Supervisor has directed you to re-initiate the containment mini purge per OTN-GT-00001, Section 4.7. The Control Room Supervisor has decided to not realign the control building HVAC at this time. The SS has authorized reinitiating CTMT mini purge. Inform the Control room Supervisor when the mini purge has been re-initiated.

Time Critical Task: NO

Validation Time: 18 minutes

SIMULATOR SETUP

NOTES: Manually initiate a CPIS and CRVIS (both trains).
May be run on same IC as S5

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain a verified working copy of OTN-GT-00001, Containment Purge System.

Standard: Operator should obtain procedure copy.

Comment:

Section 2

Performance Step: 2 Review Precautions and Limitations of OTN-GT-00001.

Standard: Operator should review Precautions and Limitations.

Comment:

Evaluator's Cue: All Precautions and Limitations are satisfied.

Section 3

Performance Step: 3 Review Initial Conditions of OTN-GT-00001.

Standard: Operator should review Initial Conditions.

Comment:

Evaluator's Cue: All Initial Conditions are satisfied.

Caution Prior To Step 4.7.1

Performance Step: 4 The purge may be reinitiated w/out terminating the release permit provided the time between stopping and restarting the release does not exceed two hours.

Standard: Operator should realize purge was only secured for one hour and SS has given permission to reinitiate purge.

Comment:

PERFORMANCE INFORMATION

	Step 4.7.1
Performance Step: 5	Have the Count Room Technician verify alarm/trip setpoints for GT-RE-21, GT-RE-22, and GT-RE-33 are correct per the release permit.
Standard:	Operator should contact the Count Room Technician to verify setpoint for GT-RE-21, 22 and 33 are correct per the release permit.
Comment:	
Evaluator's Cue:	The Count Room Technician has verified setpoints correct per the release permit.
	Step 4.7.1.1
Performance Step: 6	If monitor readings are \geq the high alarm setpoint, close the permit, resample, and generate a new permit.
Standard:	Operator should use the RM11 console to determine the color of channels 211, 212, 221, 222, 223, 331, 332, and 333 are NOT lit RED.
Comment:	
Evaluator's Cue:	RM 11 channels 211, 212, 221, 222, 223, 331, 332, and 333 are lit GREEN.
	Step 4.7.2
Performance Step: 7	Check SA036D and SA036E. If any bistable trip lights are lit, record on the URO Log and reset the bistable by depressing and then releasing the bistable trip light.
Standard:	Operator should go to the SA036D and SA036E panel in the back of the Control Room and verify NO bistable lights lit.
Comment:	
Evaluator's Cue:	NO bistable lights are lit on SA036D and SA036E.

PERFORMANCE INFORMATION

	Step 4.7.3
Performance Step: 8	If required, with SS/CRS permission, reset the following:
Standard:	
Comment:	
Evaluator's Note:	The SS has authorized resetting switches.
	Step 4.7.3
√ Performance Step: 9	Reset CPIS by depressing SA HS-15, CTMT purge Train B ISO on RL018.
NOTE:	Steps 9 through 12 may be performed in any order.
Standard:	Operator should depress the reset button on SA HS-15, CTMT Purge Train B ISO on RL018.
Comment:	
Evaluator's Note:	The reset button on SA HS-15 has been depressed.
	Step 4.7.3
Performance Step: 10	Reset CRVIS by depressing SA HS-13, Ctrl Bldg Vent Train B ISO.
NOTE:	Steps 9 through 12 may be performed in any order.
Standard:	Operator should depress the reset button on SA HS-13, Ctrl Bldg Vent Train B ISO on RL018.
Comment:	
Evaluator's Note:	The reset button on SA HS-13 has been depressed.

PERFORMANCE INFORMATION

√ **Performance Step: 11** Step 4.7.3
Reset CPIS by depressing SA HS-11, CTMT Purge Train A ISO on RL018.

NOTE: Steps 9 through 12 may be performed in any order.

Standard: Operator should depress the reset button on SA HS-11, CTMT Purge Train A ISO on RL018.

Comment:

Evaluator's Cue: The reset button on SA HS-11 has been depressed.

Performance Step: 12 Step 4.7.3
Reset CRVIS by depressing SA HS-9, Ctrl Bldg Vent Train A ISO on RL018.

NOTE: Steps 9 through 12 may be performed in any order.

Standard: Operator should depress the reset button on SA HS-9, Ctrl Bldg Vent Train A ISO on RL018.

Comment:

Evaluator's Cue: The reset button on SA HS-9 has been depressed.

Performance Step: 13 Step 4.7.3.1
Ensure CPIS and CRVIS lights OUT on ESFAS status panels; if required use SA HS-24 and/or SA HS-23, ESF panel mode SEL switches, to reset.

Standard: Operator should ensure CPIS and CRVIS lights OUT on ESFAS status panels.

Comment:

Evaluator's Cue: CPIS and CRVIS lights on ESFAS status panel are OUT.

PERFORMANCE INFORMATION

	Step 4.7.3.2
Performance Step: 14	Ensure MCB annunciators 59D (CPIS) and 63A (CRVIS) are clear.
Standard:	Operator should verify MCB annunciators 59D and 63A are clear.
Comment:	
Evaluator's Cue:	MCV annunciators 59D and 63A are clear.
	Step 4.7.4
Performance Step: 15	If required, realign the Control Building HVAC per OTN-GK-00001.
Standard:	The operator should continue with Step 4.7.5 and not align Control Building HVAC at this time. Given in Initial Conditions.
Comment:	
Evaluator's Cue:	The O.S. has determined to align mini-purge prior to realigning the Control Building HVAC.
	Step 4.7.5
Performance Step: 16	Place Mini-Purge in service per Section 4.3 of this procedure.
Standard:	Operator should go to Section 4.3.
Comment:	
	Section 4.3.1
Performance Step: 17	Ensure Section 4.2 of this procedure has been completed.
Standard:	Operator should verify Section 4.2 of this procedure has been completed.
Comment:	
Evaluator's Cue:	Section 4.2 of this procedure has been completed.

PERFORMANCE INFORMATION

Step 4.3.2

Performance Step: 18 Monitor or trend SD-RE-41, SD-RE-42, and GT-PDI-040.

Standard: Operator monitor or trend SD-RE-41, SD-RE-42, and GT-PD-040. Operator may use time trend “minivent”.

Comment:

Evaluator’s Cue: SD-RE-41, SD-RE-42, and GT-PD-040 are all stable.

Step 4.3.2.1

Performance Step: 19 Record containment pressure, using GTPDI0040 or GTD0040, on the Gaseous Radwaste Permit.

Standard: Operator should record containment pressure GTPDI0040 or GTD0040, on the Gaseous Radwaste Permit.

Comment:

Evaluator’s Cue: **Containment pressure has been recorded.**

Step 4.3.3

Performance Step: 20 Ensure that GTRE0022 and GTRE0033 are not in bypass, and ensure the “CTMT Purge In Prog – Do Not Bypass” cover over the ESFAS switches for GTRE0022 and GTRE0033.

Standard: Operator should verify GTRE0022 and GTRE0033 are not in bypass and covers have been placed over GTRE0022 and GTRE0033 ESFAS Switches.

Comment:

Evaluator’s Cue: **GTRE022 and GTRE0033 are not in bypass.**
Covers have been placed over GTRE0022 and GTRE0033 ESFAS Switches.

Step 4.3.5

Performance Step: 21 Initial/Date/Time GT RR-21B and GT RR-58 on SP010.

Standard: Initials have been made on GT RR-21B and GT RR-58.

Comment:

Evaluator’s Cue: **Initials have been made on GT RR-321B and GT RR-58**

PERFORMANCE INFORMATION

- Step 4.3.6
- √ **Performance Step: 22** Start CGT02 Containment Mini Purge Exhaust Fan using GT HIS-20.
- Standard:** Operator should select RUN on GT HIS-20, CTMT Mini Purge Exh Fan.
- Comment:**
- Evaluator's Cue:** **GT HIS-20 RED lights illuminate and GREEN lights extinguish.**
- Step 4.3.7
- √ **Performance Step: 23** Open GTHZ0011 using GT HIS-11.
- NOTE:** **Steps 23 – 26 may be accomplished in any order.**
- Standard:** Operator should depress and hold the OPEN pushbutton for GT HIS-11.
- Comment:**
- Evaluator's Cue:** **GT HIS-11 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.**
- Step 4.3.7
- √ **Performance Step: 24** Open GTHZ0012 using GT HIS-12.
- NOTE:** **Steps 23 – 26 may be accomplished in any order.**
- Standard:** Operator should depress and hold the OPEN pushbutton for GT HIS-12.
- Comment:**
- Evaluator's Cue:** **GT HIS-12 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.**

Step 4.3.7	
√ Performance Step: 25	Open GTHZ0028 using GT HIS-28.
NOTE:	Steps 23 – 26 may be accomplished in any order.
Standard:	Operator should depress and hold the OPEN pushbutton for GT HIS-28.
Comment:	
Evaluator's Cue:	GT HIS-28 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.
Step 4.3.7	
√ Performance Step: 26	Open GTHZ0029 using GT HIS-29.
NOTE:	Steps 23 – 26 may be accomplished in any order.
Standard:	Operator should depress and hold the OPEN pushbutton for GT HIS-29.
Comment:	
Evaluator's Cue:	GT HIS-29 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.
Step 4.3.8	
Performance Step: 27	Record the date and time the CTMT Purge Exhaust and Mini Purge Exhaust Dampers are opened on the Gaseous Radwaste Release Permit.
Standard:	Operator should record the date and time the CTMT Purge Exhaust and Mini Purge Exhaust Dampers are opened on the Gaseous Radwaste Release Permit.
Comment:	
Evaluator's Cue:	The Gaseous Radwaste Release Permit has been updated.

PERFORMANCE INFORMATION

	Step 4.3.9
Performance Step: 28	Inform Count Room Technician when purge initiated.
Standard:	Operator should notify the Count Room Technician of the time the purge was initiated.
Comment:	
Evaluator's Cue:	Count Room Technician acknowledges.
	Step 4.3.10
√ Performance Step: 29	When CTMT pressure is less than 10" WG, OPEN GTHZ0041 and GTHZ0042 using GT HIS-41.
Standard:	Operator should depress and hold the OPEN pushbutton on GT HIS-41 when CTMT pressure is less than 10" WG.
Comment:	
Evaluator's Cue:	CTMT pressure is less than 10" WG. GT HIS-41 RED light illuminates and five (5) seconds later, the GREEN light extinguishes.
	NOTE Prior to Step 4.3.11
Performance Step: 30	When there is NO planned CTMT entry (vent only), omit Steps 4.3.11, 4.3.12, and 4.3.12.1.
Standard:	Operator should perform Steps 4.3.11, 4.3.12, and 4.3.12.1.
Comment:	
Evaluator's Cue:	There is a planned CTMT entry.

PERFORMANCE INFORMATION

- Step 4.3.11
- √ **Performance Step: 31** When CTMT pressure is less than 4.25" WG, OPEN GTHZ0026 using GT HIS-26.

NOTE: Steps 31 and 32 may be performed in any order.

Standard: Operator should depress and hold the OPEN pushbutton for GT HIS-26 when CTMT pressure is less than 4.25" WG.

Comment:

Evaluator's Cue: CTMT pressure is now 2.5" WG.
GT HIS-26 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.

- Step 4.3.11
- √ **Performance Step: 32** When CTMT pressure is less than 4.25" WG, OPEN GTHZ0027 using GT HIS-27.

NOTE: Steps 31 and 32 may be performed in any order.

Standard: Operator should depress and hold the OPEN pushbutton for GT HIS-27 when CTMT pressure is less than 4.25" WG.

Comment:

Evaluator's Cue: CTMT pressure is now 2.5" WG.
GT HIS-27 RED light illuminates and three (3) seconds later, the GREEN light extinguishes.

- Step 4.3.12
- √ **Performance Step: 33** Start SGT02, CTMT Mini Purge Air Supply Unit with GT HIS-23.
- Standard:** Operator should select RUN on GT HIS-23.

Comment:

Evaluator's Cue: GT HIS-23 RED light illuminates and the GREEN light extinguishes.

PERFORMANCE INFORMATION

- Step 4.3.12.1
- √ **Performance Step: 34** OPEN GTHZ0005 using GT HIS-5.
- NOTE:** Steps 34 and 35 may be performed in any order.
- Standard:** Operator should depress and hold the OPEN pushbutton for GT HIS-5.
- Comment:**
- Evaluator's Cue:** GT HIS-5 RED light illuminates and two (2) seconds later, the GREEN light extinguishes.
- 4.3.12.1
- √ **Performance Step: 35** OPEN GTHZ0004 using GT HIS-4.
- NOTE:** Steps 34 and 35 may be performed in any order.
- Standard:** Operator should depress and hold the OPEN pushbutton for GT HIS-4.
- Comment:**
- Evaluator's Cue:** GT HIS-4 RED light illuminates and two (2) seconds later, the GREEN light extinguishes.
- Performance Step: 36** Inform the Control Room Supervisor that CTMT Mini Purge has been reinitiated.
- Standard:** Operator should inform the Control Room Supervisor that Mini Purge has been reinitiated.
- Comment:**
- Evaluator's Cue:** Control Room Supervisor acknowledges.
- Terminating Cue:** When Mini-Purge is reinitiated, this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2005 NRC JPM S8

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant is in Mode 2. A containment mini purge was in progress to prepare for a containment entry. One hour ago, a CPIS/CRVIS occurred due to a spike on GTRE0022. Repairs have been made to GTRE0022 and it is now operable. Outside air temperature is expected to remain > 50°F.

INITIATING CUE: The Control Room Supervisor has directed you to re-initiate the containment mini purge per OTN-GT-00001, Section 4.7. The Control Room Supervisor has decided to not realign the control building HVAC at this time. The SS has authorized reinitiating CTMT mini purge. Inform the Control room Supervisor when the mini purge has been re-initiated.