

Final Submittal

(Blue Paper)

CRYSTAL RIVER OCTOBER 2005 EXAM

05000302/2005301

**SEPTEMBER 12 - 16, 2005
SEPTEMBER 19, 2005 (WRITTEN)**

As Given Simulator Scenario Operator Actions ES-D-2

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the crew takes the watch the summing amp for NI-7 slowly fails high [MALF]. Since this is the selected power signal to ICS there will be a plant transient. The RO, at a minimum, must take the Diamond and Reactor Demand stations to hand. TS 3.3.1, Condition A, should be entered. The CRS should direct the BOP to place "C" RPS channel in "Bypass" per OP-507, Operation of the ES, RPS and ATWAS Systems. OP-501, Reactor Non-Nuclear Instrumentation, will be utilized to transfer control to a good power signal. OP-504, Integrated Control System, will be used to return ICS stations to automatic.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (J-7-1) "RPS Channel "C" Trip" ○ (J-7-4) "RPS Channel "C" Trouble" ○ (K-3-2) "SASS Mismatch" ○ (K-5-3) "FW Limited by Reactor" ○ (K-6-2) "Unit Master in Track" ○ Reviews AR-503 • Diagnoses NI-7 output failure "high" on NI-7-NI • Selects Diamond and Reactor Demand stations to Hand <ul style="list-style-type: none"> ○ May take both FW Loop Demands to Hand also • Ensures plant is stable • Notifies SRO of NI-7 failure
	SRO	<ul style="list-style-type: none"> • Assists the RO/BOP in diagnosing the failed NI • Enters TS 3.3.1, Condition A, for one channel of RPS inoperable • Contacts work controls to initiate repair efforts
	BOP	<ul style="list-style-type: none"> • Assists RO in diagnosing the failed NI • Assists RO in verifying the plant is stable • Reviews alarms

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the crew takes the watch the summing amp for NI-7 slowly fails high [MALF]. Since this is the selected power signal to ICS there will be a plant transient. The RO, at a minimum, must take the Diamond and Reactor Demand stations to hand. TS 3.3.1, Condition A, should be entered. The CRS should direct the BOP to place "C" RPS channel in "Bypass" per OP-507, Operation of the ES, RPS and ATWAS Systems. OP-501, Reactor Non-Nuclear Instrumentation, will be utilized to transfer control to a good power signal. OP-504, Integrated Control System, will be used to return ICS stations to automatic.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Directs the BOP to bypass the "C" RPS Channel per OP-507 <ul style="list-style-type: none"> ○ No other RPS channel bypassed ○ No other EFIC channels bypassed ○ Reposition the manual bypass key switch on the RTM and verify the following: <ul style="list-style-type: none"> ▪ Manual bypass light illuminates brightly ▪ Annunciator alarm "RPS Channel C Bypassed" ▪ Event point 0993 received
	BOP	<ul style="list-style-type: none"> • Executes actions per SRO and OP-507 to bypass RPS Channel <ul style="list-style-type: none"> ○ Verifies no other RPS channel bypassed ○ Verifies no other EFIC channels bypassed ○ Repositions the manual bypass key switch on the RTM and verifies the following: <ul style="list-style-type: none"> ▪ Manual bypass light illuminates brightly ▪ Annunciator alarm "RPS Channel C Bypassed" ▪ Event point 0993 received

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the crew takes the watch the summing amp for NI-7 slowly fails high [MALF]. Since this is the selected power signal to ICS there will be a plant transient. The RO, at a minimum, must take the Diamond and Reactor Demand stations to hand. TS 3.3.1, Condition A, should be entered. The CRS should direct the BOP to place "C" RPS channel in "Bypass" per OP-507, Operation of the ES, RPS and ATWAS Systems. OP-501, Reactor Non-Nuclear Instrumentation, will be utilized to transfer control to a good power signal. OP-504, Integrated Control System, will be used to return ICS stations to automatic.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Directs the BOP to transfer NI power signal to unaffected channel per OP-501 • Step 4.5.3 <ul style="list-style-type: none"> ○ Establish manual control of affected stations (RO already performed) ○ Refer to Enclosures 2 & 3 ○ Check computer or indicator ○ Select alternate signal source • May also perform parts of Step 4.7.2 <ul style="list-style-type: none"> ○ Generate a work request ○ Notify Reactor Engineer to consider impact on plant heat balance • May review SRO checklist for unplanned equipment status change
	BOP	<ul style="list-style-type: none"> • Executes actions per SRO and OP-501 to select alternate signal source • Step 4.5.3 <ul style="list-style-type: none"> ○ Establish manual control of affected stations (RO already performed) ○ Refers to Enclosures 2 & 3 to determine alternate signal source ○ Checks computer or indicator for NI-5/6 ○ Selects NI-5/6 for control in SASS cabinet • May also perform parts of Step 4.7.2 <ul style="list-style-type: none"> ○ Generates a work request ○ Notifies Reactor Engineer to consider impact on plant heat balance

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the crew takes the watch the summing amp for NI-7 slowly fails high [MALF]. Since this is the selected power signal to ICS there will be a plant transient. The RO, at a minimum, must take the Diamond and Reactor Demand stations to hand. TS 3.3.1, Condition A, should be entered. The CRS should direct the BOP to place "C" RPS channel in "Bypass" per OP-507, Operation of the ES, RPS and ATWAS Systems. OP-501, Reactor Non-Nuclear Instrumentation, will be utilized to transfer control to a good power signal. OP-504, Integrated Control System, will be used to return ICS stations to automatic.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> Directs RO and BOP to return ICS stations to auto using OP-504, Integrated Control System
	BOP	<ul style="list-style-type: none"> Reads applicable steps from Section 4.4 to RO
	RO	<ul style="list-style-type: none"> Returns ICS stations to automatic Dependent on the number of ICS stations in Hand portions of the following actions may not apply <ul style="list-style-type: none"> Adjust ICS stations to null out errors Header pressure control (should be N/A) Reactor/Tave control <ul style="list-style-type: none"> Checks Reactor Demand station and verifies no Tave error Checks neutron error and verifies indicator at 0 FW flow control <ul style="list-style-type: none"> MFWPs (N/A) SUCVs and LLCVs (N/A) Checks FW Loop Masters error (if taken to Hand previously) and nulls out errors Checks delta Tc control (if in Hand) and nulls out errors Checks SG/RX Demand (if in Hand) Returns ICS stations to Automatic and monitors plant response

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) After all ICS stations have been returned to automatic a 55 gpm RCS leak [MALF] occurs in the reactor building. AP-520, Loss of RCS Coolant or Pressure, will be entered and a leak rate analysis performed. TS 3.4.12, Condition A, will apply. An Unusual Event will be entered based on unidentified leakage ≥ 10 gpm. TS and E-Plan not required to be entered at this time due to the transient in progress.

Time	Position	Applicant's Actions or Behavior
	CREW	<ul style="list-style-type: none"> • Recognize indications for an RCS leak in the RB <ul style="list-style-type: none"> ○ PZR level decreasing ○ MUV-31 demand increasing ○ Makeup flow increasing ○ RB sump level indication (WD-222-LI and/or BS-93-PIR trends) ○ RM-A6 trending up ○ RB Sump Pump Trouble alarms ○ RB Fan Condensate High alarms
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions per AP-520 <ul style="list-style-type: none"> ○ Notify personnel ○ Verify tube leakage has not increased ○ Control PZR level ○ Isolate letdown if required ○ Maintain MUT level ○ Start leak rate determination ○ Isolate possible leak paths ○ Isolate RB sump ○ Ensure emergency RB cooling is in service ○ Commence a plant shutdown • Recognize TS entry required • Recognize Emergency Plan entry required (Unusual Event)

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) After all ICS stations have been returned to automatic a 55 gpm RCS leak [MALF] occurs in the reactor building. AP-520, Loss of RCS Coolant or Pressure, will be entered and a leak rate analysis performed. TS 3.4.12, Condition A, will apply. An Unusual Event will be entered based on unidentified leakage ≥ 10 gpm. TS and E-Plan not required to be entered at this time due to the transient in progress.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Verify tube leakage has not increased <ul style="list-style-type: none"> ○ RO may refer to ALPHA pages on SPDS • Control PZR level <ul style="list-style-type: none"> ○ Ensures MUV-31 is responding to the level decrease • Start leak rate determination • Commence a plant shutdown

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) After all ICS stations have been returned to automatic a 55 gpm RCS leak [MALF] occurs in the reactor building. AP-520, Loss of RCS Coolant or Pressure, will be entered and a leak rate analysis performed. TS 3.4.12, Condition A, will apply. An Unusual Event will be entered based on unidentified leakage ≥ 10 gpm. TS and E-Plan not required to be entered at this time due to the transient in progress.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Notifies plant personnel • Evacuates the RB if occupied • Verify tube leakage has not increased <ul style="list-style-type: none"> ○ Will observe RM-A12, RM-G26-RI and RM-G27-RI ○ Determines that NO tube leakage exists • Control PZR level <ul style="list-style-type: none"> ○ May isolate letdown (not required for this size leak but has no adverse affect) • Maintain MUT level <ul style="list-style-type: none"> ○ Cycles MUV-73 as required to maintain MUT level • Start leak rate determination <ul style="list-style-type: none"> ○ Uses makeup flow, seal injection flow, letdown flow, seal return flow and PZR level change to determine leak rate • Determine leak location <ul style="list-style-type: none"> ○ Leak is in the RB (RM-A6 increasing, RB sump level increasing) • Isolate possible leak paths <ul style="list-style-type: none"> ○ Close high point vents ○ Close DHV-3 ○ Close PZR spray valves ○ Close PORV and PORV block valve ○ Close sample isolation valves ○ Isolate letdown cooler, if directed • Isolate RB sump <ul style="list-style-type: none"> ○ Place WDP-2A and 2B in Pull to Lock ○ Close WDV-3 and WDV-4 • Ensure emergency RB cooling is in service <ul style="list-style-type: none"> ○ Starts emergency SW pump ○ Starts emergency RW pump ○ Selects both RB fans to slow speed ○ Closes CI valves to RB cooling units ○ Opens SW valves to RB cooling units • Maintain RCS inventory

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) After all ICS stations have been returned to automatic a 55 gpm RCS leak [MALF] occurs in the reactor building. AP-520, Loss of RCS Coolant or Pressure, will be entered and a leak rate analysis performed. TS 3.4.12, Condition A, will apply. An Unusual Event will be entered based on unidentified leakage ≥ 10 gpm. TS and E-Plan not required to be entered at this time due to the transient in progress.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions per AP-510, Rapid Power Reduction <ul style="list-style-type: none"> ○ Adjust ICS Load Rate <ul style="list-style-type: none"> • 1% to 5% rate expected ○ Set Unit Load Demand ○ Notify plant personnel ○ Notify dispatcher ○ Maintain MUT level ○ Maintain Imbalance
	RO	<ul style="list-style-type: none"> • Initiates power decrease per SRO instructions <ul style="list-style-type: none"> ○ Adjusts load rate per SRO ○ Sets Unit Load Demand to 10 ○ Maintain imbalance within limits <ul style="list-style-type: none"> • Do not expect any APSR movement
	BOP	<ul style="list-style-type: none"> • Execute actions per SRO instructions <ul style="list-style-type: none"> ○ Notifies personnel ○ Maintains MUT level <ul style="list-style-type: none"> • Opens or cycles MUV-73 ○ Notifies chemistry of power change

Op-Test No.: 1 Scenario No.: 1 Event No.: 3/4 Rev.: FINAL

Event Description: (Examiner Cue) When the power reduction is started "A" loop FW demand will fail 'as is' [MALF]. Within a few percent power the RO will recognize this malfunction and transfer appropriate stations to Hand. The power decrease will continue in manual.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Recognize FW flow mismatch <ul style="list-style-type: none"> ○ "A" FW flow higher than "B" ○ "A" OTSG level higher than "B" ○ ΔT_c mismatch ("B" hotter than "A") • If failure not recognized at this time the following alarms will soon alert the crew: <ul style="list-style-type: none"> ○ (K-5-1) "RCS ΔT_c High" ○ (K-3-2) "SASS Mismatch" ○ (K-7-3) "Steam Gen A BTU Condition" ○ (K-4-3) "Reactor Limited by Feedwater" ○ Reviews AR-503 • Diagnoses alarms <ul style="list-style-type: none"> ○ Recognizes FW flow mismatch • Requests permission to place the FW Loop Demands to Manual <ul style="list-style-type: none"> ○ May also request permission to place the Diamond and Reactor Demand stations to Manual • Continues power decrease per NGGC-1306, Reactivity Management Program, if Diamond taken to Manual
	SRO	<ul style="list-style-type: none"> • Assist RO in diagnosing alarms <ul style="list-style-type: none"> ○ Directs RO to place ICS stations in Manual ○ Directs RO to recover ΔT_c • Directs RO to continue power decrease <ul style="list-style-type: none"> ○ Approves control rod manipulations, if required
	BOP	<ul style="list-style-type: none"> • Assist in diagnosing alarms • Perform actions as directed by the SRO

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Rev.: FINAL

Event Description: (Examiner Cue) After about a 5% power decrease in manual a control rod will drop into the core [MALF]. AP-545, Plant Runback, will be entered. Due to this transient the RCS leak rate will increase to about 200 gpm. This increased leak rate will be somewhat masked by the Tave decrease associated with the dropped rod. Once the increased leak rate is diagnosed a manual reactor trip will be directed by the SRO. The plant now meets the criteria to enter an "Alert" condition.

Time	Position	Applicant's Actions or Behavior
	CREW	<ul style="list-style-type: none"> • Recognize dropped rod alarms & indications <ul style="list-style-type: none"> ○ (K-4-2) "Asymmetric Rod Runback" ○ (J-2-4) "CRD Asymmetric Fault" ○ (J-2-3) "CRD Out Inhibit" • PI Panel indication <ul style="list-style-type: none"> ○ Group 2 Asymmetric fault lights on ○ API for rod 2-1 indicates 0%
	SRO	<ul style="list-style-type: none"> • Directs RO/BOP actions per AP-545, Plant Runback <ul style="list-style-type: none"> ○ Ensure plant runback is in progress ○ Notify plant personnel ○ Notify system dispatcher ○ Ensure RCS pressure is stable ○ Ensure maximum power of 60% ○ Ensure vital plant parameters are approaching stability • TS 3.1.4 & 3.1.5 are now applicable (not required to enter at this time due to the transient in progress) <p>NOTE: Dependent on the timeliness of the increased leak rate being diagnosed some of the actions above may not be performed.</p>

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Rev.: FINAL

Event Description: (Examiner Cue) After about a 5% power decrease in manual a control rod will drop into the core [MALF]. AP-545, Plant Runback, will be entered. Due to this transient the RCS leak rate will increase to about 200 gpm. This increased leak rate will be somewhat masked by the Tave decrease associated with the dropped rod. Once the increased leak rate is diagnosed a manual reactor trip will be directed by the SRO. The plant now meets the criteria to enter an "Alert" condition.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Execute AP actions in accordance with SRO directions <ul style="list-style-type: none"> ○ Ensure plant runback is in progress <ul style="list-style-type: none"> ▪ Verifies ULD demand decreasing ▪ FW Loop Demands and rods may be in manual at this time ○ Ensure RCS pressure is stable ○ Ensure maximum power of 60% ○ Ensure vital plant parameters are approaching stability <ul style="list-style-type: none"> ▪ Checks PZR level ▪ Checks Tave – Will be low due to the dropped rod ▪ Checks MS Header pressure
	BOP	<ul style="list-style-type: none"> • Execute AP actions in accordance with SRO directions <ul style="list-style-type: none"> ○ Notify plant personnel ○ Notify system dispatcher ○ Ensure vital plant parameters are approaching stability <ul style="list-style-type: none"> ▪ Assists RO with stabilizing the plant
	CREW	<ul style="list-style-type: none"> • Recognize indications for an increased RCS leak rate <ul style="list-style-type: none"> ○ (J-4-2) "RCS Pressure Low" ○ (I-8-1) "PZR Level Low" ○ PZR level indication on SPDS and recorders
	SRO	<ul style="list-style-type: none"> • Recognize the criteria to enter an "Alert" condition is now met • Direct a manual reactor trip prior to reaching an RPS trip setpoint (RCS Low Pressure or RB High Pressure trip)

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 Rev.: FINAL

Event Description: (Examiner Cue) After about a 5% power decrease in manual a control rod will drop into the core [MALF]. AP-545, Plant Runback, will be entered. Due to this transient the RCS leak rate will increase to about 200 gpm. This increased leak rate will be somewhat masked by the Tave decrease associated with the dropped rod. Once the increased leak rate is diagnosed a manual reactor trip will be directed by the SRO. The plant now meets the criteria to enter an "Alert" condition.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Manually trip the reactor with SRO direction/concurrence

Op-Test No.: 1 Scenario No.: 1 Event No.: 6/7/8 Rev.: FINAL

Event Description: (Automatic Parameter Cue) Following the reactor trip MSV-9 (TBV on "A" OTSG) will fail as is, open [MT]. When the overcooling is diagnosed the "A" OTSG will be isolated. MSLI will not work [MALF]. The MSIVs must be closed manually [CT]. Entry into EOP-5, Excessive Heat Transfer, will be required. EFIC will be actuated by HPI and/or low OTSG level. The EFIC control and block valves from EFP-2 to the "A" OTSG will fail [MALF]. EFP-2 must be manually secured [CT].

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Direct RO actions per EOP-2 <ul style="list-style-type: none"> ○ Depress the Rx trip pushbutton ○ Verify CRD groups 1 through 7 are fully inserted ○ Verify NIs indicate Rx is shutdown ○ Depress Main Turbine trip pushbutton ○ Verify TVs and GVs are closed
	RO	<ul style="list-style-type: none"> • Perform first pass of EOP-2 Immediate Actions from memory • Perform second pass of EOP-2 Immediate Actions with SRO direction
	BOP	<ul style="list-style-type: none"> • Depress Global Silence pushbutton • Review alarms and assess plant parameters
	CREW	<ul style="list-style-type: none"> • Perform symptom scan <ul style="list-style-type: none"> ○ Station Blackout ○ Inadequate SCM ○ Inadequate Heat Transfer ○ Excessive Heat Transfer ○ SG Tube Rupture • Determine that an Excessive Heat Transfer event is in progress. <ul style="list-style-type: none"> ○ Tave lower than normal post-trip value ○ "A" OTSG pressure lower than "B" OTSG • Enter EOP-5, Excessive Heat Transfer

Op-Test No.: 1 Scenario No.: 1 Event No.: 6/7/8 Rev.: FINAL

Event Description: (Automatic Parameter Cue) Following the reactor trip MSV-9 (TBV on "A" OTSG) will fail as is, open [MT]. When the overcooling is diagnosed the "A" OTSG will be isolated. MSLI will not work [MALF]. The MSIVs must be closed manually [CT]. Entry into EOP-5, Excessive Heat Transfer, will be required. EFIC will be actuated by HPI and/or low OTSG level. The EFIC control and block valves from EFP-2 to the "A" OTSG will fail [MALF]. EFP-2 must be manually secured [CT].

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions per EOP-5 <ul style="list-style-type: none"> ○ Isolate affected OTSGs ○ Close EFIC control valves on affected OTSGs ○ Close MS supply valve to EFP-2 from affected OTSG ○ Ensure both ADVs are closed ○ Ensure both OTSG blowdown valves are closed ○ Restore PZR level if < 50 inches ○ Ensure proper MSLI and MFLI ○ Minimize RCS temperature changes ○ Notify plant personnel ○ Adjust MUV-31 setpoint to 100 inches ○ Ensure ES equipment is properly aligned ○ Maintain MUT level \geq 55 inches ○ Stop 1 MUP if not required ○ Control RCS pressure
	RO/BOP	<ul style="list-style-type: none"> • Execute EOP actions in accordance with SRO directions • Isolate affected OTSGs [CT] <ul style="list-style-type: none"> ○ MSLI isolation is faulted <ul style="list-style-type: none"> ▪ MSIVs must be closed manually ▪ MSV-412 can be closed from the TGF panel (normal) ▪ MSV-411 must be closed using the Test/Reset switch located on the PSA panel ▪ May elect to have the SPO close the MSIV locally • Close EFIC control valves on affected OTSG [CT] <ul style="list-style-type: none"> ○ EFV-56 (control valve) failed open <ul style="list-style-type: none"> ▪ EFV-11 (block valve) must be closed ▪ EFV-11 torques out mid-stroke ▪ Discuss with SRO and decision must be made to

Op-Test No.: 1 Scenario No.: 1 Event No.: 6/7/8 Rev.: FINAL

Event Description: (Automatic Parameter Cue) Following the reactor trip MSV-9 (TBV on "A" OTSG) will fail as is, open [MT]. When the overcooling is diagnosed the "A" OTSG will be isolated. MSLI will not work [MALF]. The MSIVs must be closed manually [CT]. Entry into EOP-5, Excessive Heat Transfer, will be required. EFIC will be actuated by HPI and/or low OTSG level. The EFIC control and block valves from EFP-2 to the "A" OTSG will fail [MALF]. EFP-2 must be manually secured [CT].

Time	Position	Applicant's Actions or Behavior
		<p style="text-align: center;">secure EFP-2</p> <ul style="list-style-type: none"> • Close MS supply valve to EFP-2 for affected OTSG <ul style="list-style-type: none"> ○ MSV-55 is closed • Ensure both ADVs are closed <ul style="list-style-type: none"> ○ Verifies no steam indication on monitor ○ May take ADV control stations to Hand • Ensure OTSG blowdown valves are closed <ul style="list-style-type: none"> ○ MSV-130 & MSV-148 • Restore PZR level <ul style="list-style-type: none"> ○ HPI is refilling the RCS as fast as possible – no additional operator actions required • Ensure proper MSLI and MFLI for "A" OTSG <ul style="list-style-type: none"> ○ MSV-412 closed ○ MSV-411 closed ○ FW block valves, cross-tie and suction valves closed for the "A" OTSG ○ "A" MFWP tripped • Minimize RCS Temp changes using the "B" OTSG <ul style="list-style-type: none"> ○ Ensure FW flow exists ○ Use TBVs or ADVs to control OTSG pressure • Adjust MUV-31 setpoint to 100 inches • Ensure ES equipment is properly aligned <ul style="list-style-type: none"> ○ Verifies HPI actuation was correct ○ Bypasses HPI • Maintain MUT level <ul style="list-style-type: none"> ○ HPI has opened both suction valves • Verify 1 OTSG available • Control RCS pressure <ul style="list-style-type: none"> ○ Control HPI per Rule 2 • Verify $\geq 1\%$ SDM exists <ul style="list-style-type: none"> ○ OP-103C • GO TO EOP-2 beginning with Step 3.1

Op-Test No.: 1 Scenario No.: 1 Event No.: 6/7/8 Rev.: FINAL

Event Description: (Automatic Parameter Cue) Following the reactor trip MSV-9 (TBV on "A" OTSG) will fail as is, open [MT]. When the overcooling is diagnosed the "A" OTSG will be isolated. MSLI will not work [MALF]. The MSIVs must be closed manually [CT]. Entry into EOP-5, Excessive Heat Transfer, will be required. EFIC will be actuated by HPI and/or low OTSG level. The EFIC control and block valves from EFP-2 to the "A" OTSG will fail [MALF]. EFP-2 must be manually secured [CT].

Time	Position	Applicant's Actions or Behavior
<p><i>Scenario may be terminated when the plant is stable and a controlled plant cooldown is initiated.</i></p>		

RULE 1, LOSS OF SCM

- ___ IF < 1 min has elapsed since losing adequate SCM, THEN immediately stop all RCPs.

- ___ IF RCPs were NOT stopped within 1 min, THEN ensure all operating RCPs remain running until any of the following exist:
 - ___ SCM is restored
 - ___ LPI flow > 1400 gpm in each injection line.

- ___ Progress toward a maximum plant cooldown to achieve CFT and LPI flow as soon as possible.

-
- ___ Manually actuate ES.

 - ___ Depress "HPI MAN ACT" push buttons on Trains A and B.

 - ___ Depress "RB ISO MAN ACTUATION" push buttons on Trains A and B.

 - ___ IF LPI has NOT actuated, AND RCS PRESS \leq 300 psig, THEN depress "LPI MAN ACT" push buttons on Trains A and B.

-
- ___ Depress "ISCM" push buttons for EFIC channels A and B.

-
- ___ Ensure Tincore is selected on SPDS.

RULE 2, HPI CONTROL

- IF HPI has actuated,
THEN bypass or reset
ES actuation.

1 Obtain SRO concurrence to
bypass or reset ES.

2 Bypass or reset ES actuation:

Auto

Manual

- Open MUP recirc prior to
throttling HPI flow
< 200 gpm/pump.

- IF aligning recirc to MUT,
THEN open MUP recirc to
MUT valves:

MUV-53

MUV-257

- IF aligning recirc to RB sump,
THEN open HPI recirc to sump
valves:

MUV-543

MUV-544

MUV-545

MUV-546

- IF adequate SCM exists,
THEN throttle HPI to prevent
exceeding limits.

- NDT

- PTS

- Maintain RCS PRESS < 1000 psig
(if OTSG isolated for TRACC)

- IF adequate SCM exists based
on Tincore,
THEN throttle HPI as desired.

RULE 3, EFW/AFW CONTROL
Required OTSG levels

"LLL"	> 20 in	≥ 1 RCP running with adequate SCM
"NAT CIRC"	> 70%	No RCPs running with adequate SCM
"ISCM"	> 90%	Inadequate SCM

- IF adequate SCM does NOT exist, AND level in available OTSGs is NOT at or trending toward "ISCM" level, THEN establish manual required EFW flow.

- EFW manual required flow:

2 OTSGs	> 280 gpm in 1 line to each OTSG
1 OTSG	> 470 gpm in 1 line to 1 OTSG

- AFW required flow:

2 OTSGs	> 250 gpm to < 300 gpm/OTSG
1 OTSG	> 450 gpm to < 600 gpm

- IF adequate SCM exists, THEN throttle flow to prevent OTSG PRESS from lowering > 100 psig below desired PRESS.

- Do not allow OTSG level to lower.

- IF AFW is operating, THEN maintain AFW flow within limits.

2 OTSGs	< 300 gpm/OTSG
1 OTSG	< 600 gpm

RULE 4, PTS

- IF any of the following exist:
 - Tincore < 400°F,
AND cooldown rate
exceeds ITS limit
 - RCPs off,
AND HPI flow exists
 - Throttle HPI flow to minimize
adequate SCM.
 - Throttle LPI flow to minimize
adequate SCM.
 - PTS is applicable until an
Engineering evaluation has been
completed.
- THEN perform required PTS
actions.

SHIFT TURNOVER

A. Initial Conditions:

1. Time in core life – 300 EFPD
2. Shift: Day Swing Mid
3. Rx power and power history – 100% for 40 days
4. Boron concentration – 1107 ppmb
5. Xenon – Equilibrium @ -2.4% $\Delta K/K$
6. RCS Activity - See Status Board

B. Tech. Spec. Action requirement(s) in effect:

- TS 3.7.9, Condition A, entered 12 hours ago for RWP-2A.
- TS 3.4.10, Condition B, entered 3-24-2005 for the PORV Block Valve. No actions required.

C. Clearances in effect:

- RWP-2A for motor bearing replacement. Expected return to service in 24 hours.
- EFP-1 for shaft alignment due to high vibration. Expected return to service in 12 hours.
- MUP-1B for wet alignment. Expected return to service in 4 hours.

D. Significant problems/abnormalities:

- Citrus and Levy counties are under a severe thunderstorm watch for the next 2 hours.

E. Evolutions/maintenance for the on-coming shift:

- Maintenance to continue work on RWP-2A, MUP-1B and EFP-1.

F. CRS – Instruct the ROs to walk down the main control boards and provide you with the following data:

RCS Average Temperature	_____	Make-up Tank Level	_____
RCS Pressure	_____	Turbine Load	_____
Pressurizer Level	_____	Turbine Reference	_____

G. Required Emergency Plan Implementation

- Full Implementation, including all required notifications.
 Initial/upgrade classifications - internal notifications.
 None

Op-Test No.: 1 Scenario No.: 2 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Soon after turnover is complete RC-3A-PT3 (ES Channel 1 pressure transmitter) will fail low [MALF]. Since this trips only one ES channel an actuation will not occur. HPI and LPI bistables will trip in ES Cabinet 1 and the block loading alarms will be received. TS 3.3.5, Condition A, and TS 3.3.17, Condition A, should be entered. The CRS will direct the BOP to place ES Channel 1 in the trip condition per OP-507, Operation of the ES, RPS and ATWAS Systems.

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (J-2-1) "RCS Pressure Low-Low" ○ (C-1-1) "RC 1 High Pressure Bistable Trip" ○ (C-1-2) "RC 4 Low Pressure Bistable Trip" ○ Multiple block loading alarms ○ Reviews AR-502 • Verifies the plant is stable • Notifies SRO of failure
	SRO	<ul style="list-style-type: none"> • Assists the RO/BOP in diagnosing the failed pressure transmitter • Enters TS 3.3.5, Condition A, for one ES Channel inoperable • Contacts work controls to initiate repair efforts
	BOP	<ul style="list-style-type: none"> • Assists RO in diagnosing the failed pressure transmitter • Assists RO in verifying the plant is stable • Reviews alarms • Verifies HPI and LPI bistables are tripped in ES Actuation Channel Cabinet 1 • Reviews AR-301 and AR-303
	SRO	<ul style="list-style-type: none"> • Directs the BOP to place ES Channel 1 to the tripped condition per OP-507 <ul style="list-style-type: none"> ○ Verify the operable channels are not bypassed ○ Place channel in tripped condition ○ Select "Test Operate" position of the "Pressure Test Module" ○ Verify annunciator alarms ○ Verify proper ES status panel lights are on for Trains A & B

Op-Test No.: 1 Scenario No.: 2 Event No.: 1 Rev.: FINAL

Event Description: (Examiner Cue) Soon after turnover is complete RC-3A-PT3 (ES Channel 1 pressure transmitter) will fail low [MALF]. Since this trips only one ES channel an actuation will not occur. HPI and LPI bistables will trip in ES Cabinet 1 and the block loading alarms will be received. TS 3.3.5, Condition A, and TS 3.3.17, Condition A, should be entered. The CRS will direct the BOP to place ES Channel 1 in the trip condition per OP-507, Operation of the ES, RPS and ATWAS Systems.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Executes actions per SRO and OP-507, Section 4.1, to place ES Channel 1 in the tripped condition <ul style="list-style-type: none"> ○ Verifies the other two ES channels are not tripped ○ Selects the Pressure Test Module on Channel 1 to the Test Operate position ○ Verifies multiple annunciator alarms ○ Verifies proper ES status panel lights are ON

Op-Test No.: 1 Scenario No.: 2 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) After the ES channel has been tripped a small condenser vacuum leak occurs. ARP-1B fails to auto-start [MALF]. OP-607, Condenser Vacuum System is entered and ARP-1B is manually started. Vacuum will recover when the ARP is started. required.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Recognizes degrading condenser vacuum <ul style="list-style-type: none"> ○ RECL-118 point on overhead CRT ○ CD-007-PIR on MCB indication ○ (O-3-2) "Turb Vacuum Pretrip" will annunciate if vacuum degrades to 25" HgV ○ Reviews AR-603 • Notifies SRO of vacuum problem • Starts ARP-1B
	SRO	<ul style="list-style-type: none"> • Assists the BOP in diagnosing problem • Directs BOP actions per OP-607
	BOP	<ul style="list-style-type: none"> • Directs SPO to monitor vacuum at MFWP and Turbine pedestals • Monitors point T-215 • Starts ARP-1B if not already started

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Rev.: FINAL

Event Description: (Examiner Cue) When ARP-1B is started and vacuum starts to recover RM-A5G will fail high [MALF]. Entry conditions for AP-250, Radiation Monitor Actuation, are met. Only the meter has failed high. No automatic actions occur. The Control Complex may be manually isolated or the CRS may determine that the meter has failed and not isolate the CC.

Time	Position	Applicant's Actions or Behavior
	CREW	<ul style="list-style-type: none"> • Recognize RM-A5G failure high alarms & indications <ul style="list-style-type: none"> ○ (H-2-1) "Atmospheric Radiation High" ○ (H-2-2) "Atmospheric Monitor Warning" • Radiation Monitor Panel indication
	BOP	<ul style="list-style-type: none"> • Observe RM-A5G radiation monitor • Report to SRO that the monitor appears to be failed high

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Rev.: FINAL

Event Description: (Examiner Cue) When ARP-1B is started and vacuum starts to recover RM-A5G will fail high [MALF]. Entry conditions for AP-250, Radiation Monitor Actuation, are met. Only the meter has failed high. No automatic actions occur. The Control Complex may be manually isolated or the CRS may determine that the meter has failed and not isolate the CC.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • <i>CRS may use his discretion and determine that only the meter has failed and not isolate the Control Complex (this is an acceptable course of action)</i> • Directs BOP actions per AP-250, Radiation Monitor Actuation <ul style="list-style-type: none"> ○ Ensure Auto actions of affected radiation monitors <ul style="list-style-type: none"> ▪ The following dampers closed: <ul style="list-style-type: none"> • AHD-12 • AHD-12D • AHD-2C • AHD-2E • AHD-1C • AHD-1E ▪ The following damper open: <ul style="list-style-type: none"> • AHD-3 ▪ The following fans stopped: <ul style="list-style-type: none"> • AHF-19A • AHF-19B • AHD-17A • AHF-17B ○ Notify personnel of entry into AP-250 ○ Ensure proper radiation monitor operation ○ Notify HP and Chemistry ○ If alarm is not valid then perform corrective actions <ul style="list-style-type: none"> ▪ Depress "Horn Silence" ▪ Initiate repair efforts

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Rev.: FINAL

Event Description: (Examiner Cue) When ARP-1B is started and vacuum starts to recover RM-A5G will fail high [MALF]. Entry conditions for AP-250, Radiation Monitor Actuation, are met. Only the meter has failed high. No automatic actions occur. The Control Complex may be manually isolated or the CRS may determine that the meter has failed and not isolate the CC.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Execute AP actions in accordance with SRO directions • Ensure Auto actions of affected radiation monitors <ul style="list-style-type: none"> ▪ The following dampers closed: <ul style="list-style-type: none"> • AHD-12 • AHD-12D • AHD-2C • AHD-2E • AHD-1C • AHD-1E ▪ The following damper open: <ul style="list-style-type: none"> • AHD-3 ▪ <i>Use of the "Control Complex HVAC Isolate/Reset" switches will be used to reposition the dampers</i> ▪ The following fans stopped: <ul style="list-style-type: none"> • AHF-19A • AHF-19B • AHD-17A • AHF-17B ▪ <i>All fans must be manually secured</i> • Notify personnel of entry into AP-250 • Ensure proper radiation monitor operation <ul style="list-style-type: none"> ○ Ensure monitor energized ○ Ensure switch in OPERATE position ○ Ensure high alarm setpoint is set correctly ○ Ensure Range switch is set to "1M" ○ Observe trends on other monitors • Notify HP and Chemistry • If alarm is not valid then perform corrective actions <ul style="list-style-type: none"> ▪ Depress "Horn Silence" ▪ Initiate repair efforts • Notify SRO of failures

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Rev.: FINAL

Event Description: (Examiner Cue) When ARP-1B is started and vacuum starts to recover RM-A5G will fail high [MALF]. Entry conditions for AP-250, Radiation Monitor Actuation, are met. Only the meter has failed high. No automatic actions occur. The Control Complex may be manually isolated or the CRS may determine that the meter has failed and not isolate the CC.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Recognize that RM-A5G is failed high but no radiation concerns • <i>IF</i> CC was isolated then: <ul style="list-style-type: none"> ○ Recognize that with all CC ventilation stopped that the CC may reach its design limit of 95° F within 30 minutes ○ Recognize that even without direct procedural guidance to establish CC ventilation that it needs to be accomplished ○ Direct the BOP to establish CC Emergency Recirculation <ul style="list-style-type: none"> ▪ Utilize AP-250, Enclosure 5, or ▪ OP-409, Section 4.10, or ▪ Skill of the operator ○ May direct the BOP to start AHF-18A and AHF-19A
	BOP	<ul style="list-style-type: none"> • Perform actions as directed by the SRO

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Rev.: FINAL

Event Description: (Examiner Cue) After the actions for RM-A5G failure are complete the selected PZR level transmitter will fail low [MALF]. Manual control of MUV-31 will be required and a good instrument will be selected using OP-501.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (K-3-2) "SASS Mismatch" ○ (I-8-1) "Pressurizer Level Low" will reflash ○ Reviews AR-501 and AR-503 • Monitors plant conditions <ul style="list-style-type: none"> ○ MUV-31 opens fully ○ PZR SCR heater demand stations lock up (red and white lights on) • Selects MUV-31 control station to manual and lowers demand • May direct BOP to monitor alternate PZR level indication (RIP or computer)
	SRO	<ul style="list-style-type: none"> • Assists the RO in diagnosing failure • Approves selection of MUV-31 control station to hand • Enters TS 3.3.17, Condition A, for one PZR level channel inoperable • Contacts work controls to initiate repair efforts
	BOP	<ul style="list-style-type: none"> • Assists RO in diagnosing the failure • Assists RO in verifying the plant is stable • Reviews alarms

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Rev.: FINAL

Event Description: (Examiner Cue) After the actions for RM-A5G failure are complete the selected PZR level transmitter will fail low [MALF]. Manual control of MUV-31 will be required and a good instrument will be selected using OP-501.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Directs RO to transfer PZR level signal to unaffected channel per OP-501 • Step 4.7.2 <ul style="list-style-type: none"> ○ Determine proper operating channel ○ Select control switch to proper operating channel ○ Generate a work request ○ Notify Reactor Engineer to consider impact on plant heat balance • May review SRO checklist for unplanned equipment status change
	RO	<ul style="list-style-type: none"> • Executes actions per SRO and OP-501 to select alternate signal source • Step 4.7.2 <ul style="list-style-type: none"> ○ Determines proper operating channel ○ Selects control switch to proper operating channel <ul style="list-style-type: none"> ▪ Selects RC-1MS to LT3-Y ○ Generates a work request (BOP) ○ Notifies Reactor Engineer to consider impact on plant heat balance (BOP) • Returns MUV-31 to automatic • Returns PZR heater demand station to automatic control
	BOP	<ul style="list-style-type: none"> • BOP will assist with OP-501

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Rev.: FINAL

Event Description: (Examiner Cue) When PZR level control is established FWV-39, "B" OTSG SUCV, will fail open [MALF]. The RO will first attempt to reduce demand on the H/A station but that will not work. Attempts to close the SU Block valve will also fail.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (O-3-4) "Turbine Throttle Pressure High/Low" ○ (K-8-4) "Steam Gen B Low Level Limited" <i>CLEAR</i>S ○ (K-3-2) "SASS Mismatch" ○ (K-6-1) "RCS ΔTc High" • Additional indications <ul style="list-style-type: none"> ○ FWV-32 (LLBV) opens ○ Valve position indication (not valve demand) increases ○ SU flow increases on SP-7B-F1 ○ OTSG level increase • Diagnoses alarms <ul style="list-style-type: none"> ○ Recognizes FWV-39 is full open • Attempts to lower FWV-39 demand <ul style="list-style-type: none"> ○ No valve or FW flow response • Requests permission to close the SU Block Valve • FWV-33 (SUBV) will not close completely • Notifies CRS of plant conditions
	SRO	<ul style="list-style-type: none"> • Assist RO in diagnosing alarms • Directs/concurs with RO to close SUBV
	BOP	<ul style="list-style-type: none"> • Assist in diagnosing alarms and plant conditions

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Rev.: FINAL

Event Description: (Examiner Cue) When PZR level control is established FWV-39, "B" OTSG SUCV, will fail open [MALF]. The RO will first attempt to reduce demand on the H/A station but that will not work. Attempts to close the SU Block valve will also fail.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • <i>MULTIPLE OPTIONS EXIST FROM THIS POINT – ALL ARE ACCEPTABLE</i> • Option 1 <ul style="list-style-type: none"> ○ Direct RO to select closed FWV-28 and trip the "B" MFWP ○ Direct BOP to actuate EFIC and ensure flow to "B" OTSG when required (Rule 3 is applicable) • Option 2 <ul style="list-style-type: none"> ○ Direct RO to trip both MFWPs ○ Direct BOP to ensure EFIC actuates and ensure flow to OTSGs when required (Rule 3 is applicable) • Option 3 <ul style="list-style-type: none"> ○ Direct RO to trip the reactor ○ Direct BOP to trip both MFWPs and ensure EFIC actuates (Rule 3 is applicable)
	RO	<ul style="list-style-type: none"> • Performs actions as directed by CRS
	BOP	<ul style="list-style-type: none"> • Performs actions as directed by CRS

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 & 7 Rev.: FINAL

Event Description: (Examiner Cue) When the plant is stabilized, or following the reactor trip, a 30 gpm OTSG tube leak develops [MALF]. This will meet the criteria to enter an Unusual Event. Once diagnosed EOP-6, OTSG Tube Rupture, will be entered. The manual Rx trip pushbutton will fail [MALF] requiring breakers 3305 and 3312 to be opened. [CT] Following the Rx trip the tube leak will increase to 125 gpm.

Time	Position	Applicant's Actions or Behavior
	SRO	<p><i>IF the reactor was previously tripped it may take until Step 3.28 of EOP-2 to determine if a tube leak has occurred. Once the determination is made the SRO will enter EOP-6.</i></p> <ul style="list-style-type: none"> • Direct RO/BOP actions per EOP-6, OTSG Tube Rupture <ul style="list-style-type: none"> ○ Restore PZR level if < 50 inches ○ Notify personnel ○ Determine affected OTSG ○ Close MSV-55 ○ Trip the reactor <ul style="list-style-type: none"> • Manual Rx trip pushbutton will fail • Breakers 3305 and 3312 must be opened ○ Verify control rod groups inserted ○ Verify NIs indicate Rx is shutdown ○ Verify MSSVs are closed ○ Maintain MUT level \geq 55 inches ○ Verify proper CC cooling ○ Concurrently perform EOP-14, Enclosure 10 ○ Select PZR heaters to off ○ Maintain minimum adequate SCM (target is 15° F) <ul style="list-style-type: none"> • Start RCS depressurization • Control HPI (Rule 2, HPI Control) ○ Start RCS boration ○ Start RCS cooldown within normal limits using both OTSGs
	RO/BOP	<ul style="list-style-type: none"> • Execute EOP actions in accordance with SRO directions <ul style="list-style-type: none"> ○ Restore PZR level if < 50 inches <ul style="list-style-type: none"> • Close MUV-49 • Open MUV-24 • Open MUV-73 • Start MUP-1C and required cooling water pumps ○ Notify personnel

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 & 7 Rev.: FINAL

Event Description: (Examiner Cue) When the plant is stabilized, or following the reactor trip, a 30 gpm OTSG tube leak develops [MALF]. This will meet the criteria to enter an Unusual Event. Once diagnosed EOP-6, OTSG Tube Rupture, will be entered. The manual Rx trip pushbutton will fail [MALF] requiring breakers 3305 and 3312 to be opened. [CT] Following the Rx trip the tube leak will increase to 125 gpm.

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> ○ Determine affected OTSG <ul style="list-style-type: none"> ● "B" is affected OTSG ○ Close MSV-56 ○ Trip the reactor <ul style="list-style-type: none"> ● Adjust MS Hdr Pressure setpoint to 46 ● Manual Rx trip pushbutton will fail ● Breakers 3305 and 3312 must be opened [CT] ○ Verify control rod groups inserted ○ Verify NIs indicate Rx is shutdown <ul style="list-style-type: none"> ● Monitor PR and IR NIs ○ Verify MSSVs are closed <ul style="list-style-type: none"> ● Checks steam safety valve monitor ○ Maintain MUT level \geq 55 inches <ul style="list-style-type: none"> ● Ensures MUV-73 and 58 open ○ Verify proper CC cooling <ul style="list-style-type: none"> ● Dependent on previous failures (RM-A5G) the CC may already be in the emergency recirc mode ○ Concurrently perform EOP-14, Enclosure 10 ○ Select PZR heaters to off ○ Maintain minimum adequate SCM (target is 15° F) <ul style="list-style-type: none"> ● Start RCS depressurization <ul style="list-style-type: none"> ● Opens RCV-14, PZR spray valve ● Control HPI (Rule 2, HPI Control) ○ Start RCS boration <ul style="list-style-type: none"> ● Ensure at least 1 post-filter in service ● Open CAV-60 ● Start CAP-1A or 1B ○ Start RCS cooldown within normal limits using both OTSGs <ul style="list-style-type: none"> ● See Table 2 ● Adjust TBS to start cooldown ● Rule 3 is in effect

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Rev.: FINAL

Event Description: (Examiner Cue) A bearing will fail on MUP-1A [MALF]. MUP-1C and its cooling water pumps must be started [CT].

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions for loss of running MUP <ul style="list-style-type: none"> ○ Close MUV-49 ○ Ensure MUV-58 open ○ Start required cooling water pumps for affected MUP ○ Start ES selected MUP ○ Maintain PZR level
	RO/BOP	<ul style="list-style-type: none"> • Execute EOP actions in accordance with SRO directions <ul style="list-style-type: none"> ○ Close MUV-49 ○ Ensure MUV-58 open ○ Start required cooling water pumps for affected MUP <ul style="list-style-type: none"> • Starts RWP-3B • Starts DCP-1B ○ Start ES selected MUP [CT] <ul style="list-style-type: none"> • Starts MUP-1C ○ Maintain PZR level
<p><i>Scenario may be terminated when makeup flow is restored and a plant cooldown/depressurization started.</i></p>		

RULE 1, LOSS OF SCM

- ___ IF < 1 min has elapsed since losing adequate SCM, THEN immediately stop all RCPs.

- ___ IF RCPs were NOT stopped within 1 min, THEN ensure all operating RCPs remain running until any of the following exist:
 - ___ SCM is restored
 - ___ LPI flow > 1400 gpm in each injection line.

- ___ Progress toward a maximum plant cooldown to achieve CFT and LPI flow as soon as possible.

-
- ___ Manually actuate ES.

 - ___ Depress "HPI MAN ACT" push buttons on Trains A and B.

 - ___ Depress "RB ISO MAN ACTUATION" push buttons on Trains A and B.

 - ___ IF LPI has NOT actuated, AND RCS PRESS \leq 300 psig, THEN depress "LPI MAN ACT" push buttons on Trains A and B.

-
- ___ Depress "ISCM" push buttons for EFIC channels A and B.

-
- ___ Ensure Tincore is selected on SPDS.

RULE 2, HPI CONTROL

- IF HPI has actuated,
THEN bypass or reset
ES actuation.
- 1 Obtain SRO concurrence to
bypass or reset ES.
- 2 Bypass or reset ES actuation:
 - Auto
 - Manual

- Open MUP recirc prior to
throttling HPI flow
< 200 gpm/pump.
- IF aligning recirc to MUT,
THEN open MUP recirc to
MUT valves:
 - MUV-53
 - MUV-257
- IF aligning recirc to RB sump,
THEN open HPI recirc to sump
valves:
 - MUV-543
 - MUV-544
 - MUV-545
 - MUV-546

- IF adequate SCM exists,
THEN throttle HPI to prevent
exceeding limits.
- NDT
- PTS
- Maintain RCS PRESS < 1000 psig
(if OTSG isolated for TRACC)

- IF adequate SCM exists based
on Tincore,
THEN throttle HPI as desired.

RULE 3, EFW/AFW CONTROL
Required OTSG levels

"LLL"	> 20 in	≥ 1 RCP running with adequate SCM
"NAT CIRC"	> 70%	No RCPs running with adequate SCM
"ISCM"	> 90%	Inadequate SCM

- IF adequate SCM does NOT exist, AND level in available OTSGs is NOT at or trending toward "ISCM" level, THEN establish manual required EFW flow.

- EFW manual required flow:

2 OTSGs	> 280 gpm in 1 line to each OTSG
1 OTSG	> 470 gpm in 1 line to 1 OTSG

- AFW required flow:

2 OTSGs	> 250 gpm to < 300 gpm/OTSG
1 OTSG	> 450 gpm to < 600 gpm

- IF adequate SCM exists, THEN throttle flow to prevent OTSG PRESS from lowering > 100 psig below desired PRESS.

- Do not allow OTSG level to lower.

- IF AFW is operating, THEN maintain AFW flow within limits.

2 OTSGs	< 300 gpm/OTSG
1 OTSG	< 600 gpm

RULE 4, PTS

- IF any of the following exist:
 - Tincore < 400°F,
AND cooldown rate
exceeds ITS limit
 - RCPs off,
AND HPI flow exists
 - Throttle HPI flow to minimize
adequate SCM.
 - Throttle LPI flow to minimize
adequate SCM.
 - PTS is applicable until an
Engineering evaluation has been
completed.
- THEN perform required PTS
actions.

SHIFT TURNOVER

A. Initial Conditions:

1. Time in core life – 300 EFPD
2. Shift: Day Swing Mid
3. Rx power and power history – 2% for 1 hour – Plant startup following Rx trip four days ago
4. Boron concentration – 1509 ppmb
5. Xenon – 0% $\Delta K/K$
6. RCS Activity - See Status Board

B. Tech. Spec. Action requirement(s) in effect:

- TS 3.4.10, Condition B, entered 3-24-2005 for the PORV Block Valve. No actions required.

C. Clearances in effect:

- MUP-1B for wet alignment. Expected return to service in 4 hours.

D. Significant problems/abnormalities:

- Citrus and Levy counties are under a severe thunderstorm watch for the next 2 hours.

E. Evolutions/maintenance for the on-coming shift:

- Maintain current power level until relieved. The on-coming shift will continue the plant startup.
- Maintenance to continue work on MUP-1B.

F. CRS – Instruct the ROs to walk down the main control boards and provide you with the following data:

RCS Average Temperature	_____	Make-up Tank Level	_____
RCS Pressure	_____	Turbine Load	_____
Pressurizer Level	_____	Turbine Reference	_____

G. Required Emergency Plan Implementation

- Full Implementation, including all required notifications.
 Initial/upgrade classifications - internal notifications.
 None

Op-Test No.: 1 Scenario No.: 3 Event No.: 1 Rev.: FINAL

Event Description: After the crew reviews OP-204, Power Operations, the RO will increase power through the MFW Block valves.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Selects Unit Load Master and Load Rate for steady load increase through the MFW Block valves • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (K-7-5) "Verify FWV-30 on Auto" ○ (K-8-5) "Verify FWV-29 on Auto" ○ May review AR-503 • Verifies stable plant parameters • Verifies SU flow decreases to zero when MBVs are full open • Announce/acknowledge alarms clearing
	BOP	<ul style="list-style-type: none"> • Assists RO with OP-204 • Reviews alarms
	SRO	<ul style="list-style-type: none"> • General oversight only. RO and BOP should execute the power increase.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the power increase through the MBVs SP-26-LT ("B" EFIC Channel, "A" OTSG, Lo Range level) fails low [MALF]. This will cause a half-trip of EFIC. The channel should be bypassed per OP-450, Emergency Feedwater System, and TS 3.3.11 and 3.3.17 entered. TS require the "B" EFIC Channel be placed into a tripped or bypassed condition within one hour.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Announce/acknowledge alarm <ul style="list-style-type: none"> ○ (H-6-3) "Emerg FW Actuation" • Diagnoses SP-26-LT failure "low" <ul style="list-style-type: none"> ○ SP-26-LI1 indicating 0 ○ Bus 1 tripped on "A" EFW train ○ Bus 2 tripped on "B" EFW train • Reviews AR-403 • Notifies SRO of level transmitter failure
	SRO	<ul style="list-style-type: none"> • Assists the RO/BOP in diagnosing the failed level transmitter • Enters TS 3.3.11, Condition A, for one EFIC channel inoperable • Enters TS 3.3.17, Condition A, for one PAM function channel inoperable • May check TS 3.3.18 for applicability (not addressed) • Discusses with crew the implications of this failure if an EFIC actuation were to occur <ul style="list-style-type: none"> ○ "B" Train EFW will feed the "A" OTSG until the control valve is closed • Contacts work controls to initiate repair efforts
	RO	<ul style="list-style-type: none"> • Assists BOP in diagnosing the failed transmitter • Verifies the plant is stable • Reviews alarms

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 Rev.: FINAL

Event Description: (Examiner Cue) Shortly after the power increase through the MBVs SP-26-LT ("B" EFIC Channel, "A" OTSG, Lo Range level) fails low [**MALF**]. This will cause a half-trip of EFIC. The channel should be bypassed per OP-450, Emergency Feedwater System, and TS 3.3.11 and 3.3.17 entered. TS require the "B" EFIC Channel be placed into a tripped or bypassed condition within one hour.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Directs the BOP to bypass the "B" EFIC Channel per OP-450 <ul style="list-style-type: none"> ○ Determines which channel to bypass (Enclosure 14) ○ No RPS channels bypassed, or ○ Only corresponding RPS channel bypassed ○ Reposition the Maintenance Bypass key switch and verify the following: <ul style="list-style-type: none"> ▪ Maintenance Bypass light flashing ▪ Annunciator alarm "EFIC Bypass" received ▪ Event point 2020 received ○ Reset the EFIC channel half-trip
	BOP	<ul style="list-style-type: none"> • Executes actions per SRO and OP-450 to bypass EFIC Channel <ul style="list-style-type: none"> ○ This action is performed outside the control room. The BOP will go to the control booth and request the booth operator to bypass the EFIC channel. ○ Once the channel is bypassed the BOP will verify the correct alarms are received. ○ Depresses the "Test Results/Reset" pushbutton and verifies EFIC has reset

Op-Test No.: 1 Scenario No.: 3 Event No.: 3/4 Rev.: FINAL

Event Description: (Examiner Cue) After the EFIC Channel has been bypassed an OPT major alarm will be received [MALF]. The "A" ES 4160 bus will be transferred to the BEST. Two seconds after the transfer the OPT breaker will trip open. The SRO may direct the transfer from memory or may utilize OP-703, Plant Distribution System. Either way is acceptable. TS 3.8.1, Condition A, will be entered.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Announce/acknowledge alarm <ul style="list-style-type: none"> ○ (Q-8-3) "Offsite Pwr Source XFMR Major Alarm" • Reviews AR-702 • Notifies SRO of malfunction • Recommends reducing the load on the transformer per AR directions
	SRO	<ul style="list-style-type: none"> • Direct BOP actions from memory or per OP-703 <ul style="list-style-type: none"> ○ Select "Sync 3205" to ON position ○ Close breaker 3205 ○ Open breaker 3211 ○ Select "Sync 3205" to OFF position • Enters TS 3.8.1, Condition A, for one required Offsite circuit inoperable <ul style="list-style-type: none"> ○ Recognizes SP-321 is required to be completed within 1 hour ○ Directs BOP to perform Enclosure 1, Page 1
	RO	<ul style="list-style-type: none"> • Assists BOP in diagnosing the failure • Verifies the plant is stable
	BOP	<ul style="list-style-type: none"> • Selects Sync switch to ON for breaker 3205 • Closes breaker 3205 • Matches target on breaker 3211 • Selects Sync switch to off and removes • Perform SP-321, Enclosure 1, Page 1 <ul style="list-style-type: none"> ○ See next page

DATA SHEET I

OFF-SITE TO ON-SITE BREAKER/POWER VERIFICATION**1.0 Mode 1 thru 4 Alignment (This Section does not apply in Modes 5 or 6)**
(NOCS 062810)**NOTE**

Testing of the batteries in the Switchyard is performed by Substation Maintenance. Batteries are considered operable unless CR-3 is notified otherwise.

(v)

- 1.1 230 KV Bus Voltage A or B on Main Control Board is approximately 230 KV. _____
- 1.2 VERIFY that only one of the following ES "A" 4160V feeder breakers is closed and supplying power: _____
- * 3205 Backup ES Transformer to ES "A" 4160V Bus
3211 Offsite Power Source Transformer to ES "A" 4160V Bus _____
- 1.3 Verify that only one of the following ES "B" 4160V feeder breakers is closed and supplying power: _____
- * 3206 Backup ES Transformer to ES "B" 4160V Bus
3212 Offsite Power Source Transformer to 4160V ES "B" Bus _____
- 1.4 UTILIZING the Synch Scope, VERIFY power is available to ES 4160V Bus Supply Breakers: _____
- a. 3205 Backup ES transformer to ES "A" 4160V Bus _____
- b. 3206 Backup ES transformer to ES "B" 4160V Bus _____
- 1.5 UTILIZING the Synch Scope, VERIFY power is available to ES 4160V Bus Supply Breakers: _____
- a. 3211 Offsite Power Source Transformer to ES "A" 4160V Bus _____
- b. 3212 Offsite Power Source Transformer to ES "B" 4160V Bus _____
- 1.6 VERIFY at least one 6900V Reactor Aux. Bus is energized _____
- a. Verify that 'A' 6900V Bus Breaker 3103 is closed and supplying power
OR
- b. Verify that 'B' 6900V Bus Breaker 3104 is closed and supplying power _____
- * Preferred source.

Section 1.0 Performed By _____ Date _____ Time _____

Op-Test No.: 1 Scenario No.: 3 Event No.: 5/6/7 Rev.: FINAL

Event Description: (Examiner Cue) After the ES bus has been transferred to the BEST MUV-258 will spuriously close [MALF]. Thirty seconds after the valve is reopened RCP-1A will experience 1st and 2nd stage seal failures [MALF]. OP-302, RCP Operation, will direct securing the RCP. When the RCP is secured the "A" OTSG MBV will not receive an automatic signal to close [MALF].

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (H-4-5) "RCP Seal Bleed Off High" • Recognizes MUV-258 has closed • Reports failure to SRO <ul style="list-style-type: none"> ○ Maximum of 5 minutes to reopen the valve • Requests permission to open the valve • Opens MUV-258 • Review AR-403
	SRO	<ul style="list-style-type: none"> • Assists BOP in diagnosing the failure • Directs BOP to open MUV-258
	RO/BOP	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (H-4-5) "RCP Seal Bleed Off High" ○ (I-4-4) "RCP Seal Upper Stage Temp High" • Reviews AR-403 and AR-501 • Notifies SRO of failure

Op-Test No.: 1 Scenario No.: 3 Event No.: 5/6/7 Rev.: FINAL

Event Description: (Examiner Cue) After the ES bus has been transferred to the BEST MUV-258 will spuriously close [MALF]. Thirty seconds after the valve is reopened RCP-1A will experience 1st and 2nd stage seal failures [MALF]. OP-302, RCP Operation, will direct securing the RCP. When the RCP is secured the "A" OTSG MBV will not receive an automatic signal to close [MALF].

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Assists the RO/BOP in diagnosing the failure • Directs the BOP to check the RCP Seal Data recorders • Enters OP-302, RCP Operation • Directs the BOP to: <ul style="list-style-type: none"> ○ Monitor RCP seal conditions ○ Verify proper service water, seal injection flows and temperatures ○ Ensure CBO valve for affected pump is open • Determines to immediately trip RCP-1A due to high seal stage temperature and differential pressure ≥ 2100 psig • Directs the RO/BOP to trip RCP-1A
	BOP	<ul style="list-style-type: none"> • Assist in diagnosing alarms • Determines that seal outlet temperatures are > 200 degrees and seal differential pressure is > 2100 psig • Perform additional actions as directed by the SRO

Op-Test No.: 1 Scenario No.: 3 Event No.: 5/6/7 Rev.: FINAL

Event Description: (Examiner Cue) After the ES bus has been transferred to the BEST MUV-258 will spuriously close [MALF]. Thirty seconds after the valve is reopened RCP-1A will experience 1st and 2nd stage seal failures [MALF]. OP-302, RCP Operation, will direct securing the RCP. When the RCP is secured the "A" OTSG MBV will not receive an automatic signal to close [MALF].

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> • Enters AP-545, Plant Runback <ul style="list-style-type: none"> ○ Directs the BOP to: <ul style="list-style-type: none"> • Notify personnel of entry into AP-545 • Ensure lift oil pump running • Ensure narrow range Tc is selected to RCP-1B • Ensure narrow range RCS pressure control is selected to "A" RCS loop • Ensure regulating rod index is within insertion limits ○ Directs the RO to: <ul style="list-style-type: none"> • Ensure MFW flows are re-ratioing • Ensure RCS pressure is stable • Ensure Rx power is less than maximum based on FWPs • Ensure delta Tc stabilizes • Ensure vital plant parameters are approaching stability • Maintain imbalance within limits • Verify rods are within 6.5% of their group average height • Directs RO to close MBV

Op-Test No.: 1 Scenario No.: 3 Event No.: 5/6/7 Rev.: FINAL

Event Description: (Examiner Cue) After the ES bus has been transferred to the BEST MUV-258 will spuriously close [MALF]. Thirty seconds after the valve is reopened RCP-1A will experience 1st and 2nd stage seal failures [MALF]. OP-302, RCP Operation, will direct securing the RCP. When the RCP is secured the "A" OTSG MBV will not receive an automatic signal to close [MALF].

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Recognize MBV not closing • Discuss with SRO and take MBV to manual and close • Notify SRO of failure • Perform actions as directed by the SRO <ul style="list-style-type: none"> ○ Ensure MFW flows are re-ratioing <ul style="list-style-type: none"> • "A" MFW lowering • "B" MFW rising ○ Ensure RCS pressure is stable ○ Ensure Rx power is less than maximum based on FWPs <ul style="list-style-type: none"> • Verifies power is less than 75% ○ Ensure delta Tc stabilizes ○ Ensure vital plant parameters are approaching stability <ul style="list-style-type: none"> • Verifies PZR level, Tave and MS Hdr Pressure are normal ○ Maintain imbalance within limits ○ Verify rods are within 6.5% of their group average height
	BOP	<ul style="list-style-type: none"> • Assist the RO with stabilizing the plant • Perform actions as directed by the SRO <ul style="list-style-type: none"> ○ Notify personnel of entry into AP-545 ○ Ensure lift oil pump running <ul style="list-style-type: none"> • Verifies RCP-3A is running ○ Ensure narrow range Tc is selected to RCP-1B <ul style="list-style-type: none"> • Selects TT3 on RC-5A-MS2 ○ Ensure narrow range RCS pressure control is selected to "A" RCS loop <ul style="list-style-type: none"> • Verifies RCS pressure control is selected to "A" loop in SASS cabinets ○ Ensure regulating rod index is within insertion limits <ul style="list-style-type: none"> • Refers to OP-103D

Op-Test No.: 1 Scenario No.: 3 Event No.: 8 (initial PZR leak only) Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak occurs [MALF]. AP-520, Loss of RCS Coolant or Pressure, will be entered. Once the leak rate is diagnosed TS 3.4.12, Unidentified Leakage, will be applicable. An Unusual Event may be entered if leak rate is determined to be > 10 gpm.

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (K-3-2) "SASS Mismatch"
	CREW	<ul style="list-style-type: none"> • Recognize indications of a PZR steam space leak <ul style="list-style-type: none"> ○ RCS pressure slowly degrading ○ Increased PZR heater demand ○ RB pressure slowly rises ○ RB sump level slowly rises ○ RM-A6 radiation level slowly rising
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions per AP-520 <ul style="list-style-type: none"> ○ Notify personnel ○ Verify tube leakage has not increased ○ Control PZR level ○ Isolate letdown if required ○ Maintain MUT level ○ Start leak rate determination ○ Isolate possible leak paths ○ Isolate RB sump ○ Ensure emergency RB cooling is in service ○ Commence a plant shutdown • Recognize TS entry required <ul style="list-style-type: none"> ○ TS 3.4.12, Condition A, Unidentified Leakage \geq 1 gpm • Recognize Emergency Plan entry may be required based on estimated leak rate
	RO/BOP	<ul style="list-style-type: none"> • Execute AP actions in accordance with SRO directions • This event only lasts about 2 minutes prior to a reactor trip. Additional actions outlined in the following pages.

Op-Test No.: 1 Scenario No.: 3 Event No.: 8 (initial PZR leak only) Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak occurs [MALF]. AP-520, Loss of RCS Coolant or Pressure, will be entered. Once the leak rate is diagnosed TS 3.4.12, Unidentified Leakage, will be applicable. An Unusual Event may be entered if leak rate is determined to be > 10 gpm.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none">• Direct the RO to trip the reactor at a specific RCS pressure

Op-Test No.: 1 Scenario No.: 3 Event No.: 8/9/10 Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak will occur [MT]. AP-520 may be entered but there will be little time to perform any actions. RPS will not actuate on low pressure and the RO must manually trip the reactor [Possible CT]. The steam leak will continue to increase and will lead to an ISCM event. RCPs must be tripped within 1 minute. MUV-25 normal source power failure occurs. Alternate power source must be selected [CT]. DHV-110 fails to control in automatic. Manual control must be initiated [CT].

Time	Position	Applicant's Actions or Behavior
	RO	<ul style="list-style-type: none"> • Recognizes increase in RCS pressure reduction • Announce/acknowledge alarms <ul style="list-style-type: none"> ○ (J-4-2) "RCS Press Low" ○ (H-5-7) "RC Pump Seal Flows High/Low" • Manually trips reactor when selected manual trip trigger value is reached
	RO	<ul style="list-style-type: none"> • Perform first pass of EOP-2 Immediate Actions from memory • Perform second pass of EOP-2 Immediate Actions with SRO direction
	SRO	<ul style="list-style-type: none"> • Direct RO actions per EOP-2 <ul style="list-style-type: none"> ○ Depress the Rx trip pushbutton ○ Verify CRD groups 1 through 7 are fully inserted ○ Verify NIs indicate Rx is shutdown ○ Depress Main Turbine trip pushbutton ○ Verify TVs and GVs are closed
	BOP	<ul style="list-style-type: none"> • Depress Global Silence pushbutton • Review alarms and assess plant parameters

Op-Test No.: 1 Scenario No.: 3 Event No.: 8/9/10 Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak will occur [MT]. AP-520 may be entered but there will be little time to perform any actions. RPS will not actuate on low pressure and the RO must manually trip the reactor [Possible CT]. The steam leak will continue to increase and will lead to an ISCM event. RCPs must be tripped within 1 minute. MUV-25 normal source power failure occurs. Alternate power source must be selected [CT]. DHV-110 fails to control in automatic. Manual control must be initiated [CT].

Time	Position	Applicant's Actions or Behavior
	CREW	<ul style="list-style-type: none"> • Perform symptom scan <ul style="list-style-type: none"> ○ Station Blackout ○ Inadequate SCM ○ Inadequate Heat Transfer ○ Excessive Heat Transfer ○ SG Tube Rupture • Determine that an Inadequate SCM condition exists • Enter EOP-3, ISCM
	SRO	<ul style="list-style-type: none"> • Direct RO/BOP actions per EOP-3 <ul style="list-style-type: none"> ○ Perform Rule 1 <ul style="list-style-type: none"> ▪ Stop all RCPs within 1 minute ▪ Manually actuate ES ▪ Depress "ISCM" pushbuttons for EFIC channels ▪ Ensure Tincore is selected on SPDS ○ Notify personnel of entry into EOP-3 ○ Verify proper HPI discharge flowpath exists <ul style="list-style-type: none"> ▪ Select the "B" source for MUV-25 to ON ○ Ensure at least 1 HPI train is properly aligned ○ Ensure at least 1 letdown isolation valve is closed ○ Ensure DHV-3 is closed ○ Verify EFW is operating and flow is controlled <ul style="list-style-type: none"> ▪ <i>Due to the earlier EFIC transmitter failure EFV-56 must be taken to manual and closed</i> ○ Ensure ES systems are properly aligned <ul style="list-style-type: none"> ▪ DHP-1B failed to start ▪ DHV-110 not controlling flow in automatic ▪ Manually control flow at ≈ 3000 gpm • Recognizes entry into an Alert condition due to Loss of Adequate SCM

Op-Test No.: 1 Scenario No.: 3 Event No.: 8/9/10 Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak will occur [MT]. AP-520 may be entered but there will be little time to perform any actions. RPS will not actuate on low pressure and the RO must manually trip the reactor [**Possible CT**]. The steam leak will continue to increase and will lead to an ISCM event. RCPs must be tripped within 1 minute. MUV-25 normal source power failure occurs. Alternate power source must be selected [CT]. DHV-110 fails to control in automatic. Manual control must be initiated [CT].

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<ul style="list-style-type: none"> • Execute EOP actions in accordance with SRO directions <ul style="list-style-type: none"> ○ Perform Rule 1 (<i>secure RCPs</i>) <ul style="list-style-type: none"> ▪ Stop all RCPs within 1 minute ▪ Manually actuate ES ▪ Depress "ISCM" pushbuttons for EFIC channels ▪ Ensure Tincore is selected on SPDS ○ Notify personnel of entry into EOP-3 ○ Verify proper HPI discharge flowpath exists <ul style="list-style-type: none"> ▪ Recognize MUV-25 and MUV-586 did not open ▪ Select the "B" source for MUV-25 to ON [CT] ○ Ensure at least 1 HPI train is properly aligned <ul style="list-style-type: none"> ▪ Ensure open MUV-73 and MUV-58 ▪ Ensure MUP-1C and cooling pumps running ▪ Ensure closed MUV-53 and MUV-257 ▪ Ensure closed HPI recirc to sump valves ▪ Ensure closed makeup and SI valves ○ Ensure at least 1 letdown isolation valve is closed <ul style="list-style-type: none"> ▪ Ensure closed MUV-567 or MUV-49 ○ Ensure DHV-3 is closed ○ Verify EFW is operating and flow is controlled <ul style="list-style-type: none"> ▪ <i>Due to the earlier EFIC transmitter failure EFV-56 must be taken to manual and closed</i> ▪ Perform Rule 3 ○ Ensure ES systems are properly aligned <ul style="list-style-type: none"> ▪ DHP-1B failed to start ▪ DHV-110 not controlling flow in automatic ▪ Manually control flow at \approx 3000 gpm [CT] ▪ Bypass or reset ES actuation ▪ Control ES systems as required ○ If LPI flow is > 1400 gpm in any line, then go to EOP-8. <ul style="list-style-type: none"> ▪ Dependent on time required to reach this step it may or may not be applicable at this time.

Op-Test No.: 1 Scenario No.: 3 Event No.: 8/9/10 Rev.: FINAL

Event Description: (Examiner Cue) Once the plant is stable a PZR steam space leak will occur [MT]. AP-520 may be entered but there will be little time to perform any actions. RPS will not actuate on low pressure and the RO must manually trip the reactor [Possible CT]. The steam leak will continue to increase and will lead to an ISCM event. RCPs must be tripped within 1 minute. MUV-25 normal source power failure occurs. Alternate power source must be selected [CT]. DHV-110 fails to control in automatic. Manual control must be initiated [CT].

Time	Position	Applicant's Actions or Behavior
<p><i>Scenario may be terminated when LPI flow has been restored and transition to EOP-8 is announced.</i></p>		

RULE 1, LOSS OF SCM

- ___ IF < 1 min has elapsed since losing adequate SCM, THEN immediately stop all RCPs.

- ___ IF RCPs were NOT stopped within 1 min, THEN ensure all operating RCPs remain running until any of the following exist:
 - ___ SCM is restored
 - ___ LPI flow > 1400 gpm in each injection line.

- ___ Progress toward a maximum plant cooldown to achieve CFT and LPI flow as soon as possible.

- ___ Manually actuate ES.
- ___ Depress "HPI MAN ACT" push buttons on Trains A and B.
- ___ Depress "RB ISO MAN ACTUATION" push buttons on Trains A and B.
- ___ IF LPI has NOT actuated, AND RCS PRESS \leq 300 psig, THEN depress "LPI MAN ACT" push buttons on Trains A and B.

- ___ Depress "ISCM" push buttons for EFIC channels A and B.

- ___ Ensure Tincore is selected on SPDS.

RULE 2, HPI CONTROL

- IF HPI has actuated,
THEN bypass or reset
ES actuation.
 - 1 Obtain SRO concurrence to
bypass or reset ES.
 - 2 Bypass or reset ES actuation:
 - Auto
 - Manual
-
- Open MUP recirc prior to
throttling HPI flow
< 200 gpm/pump.
 - IF aligning recirc to MUT,
THEN open MUP recirc to
MUT valves:
 - MUV-53
 - MUV-257
 - IF aligning recirc to RB sump,
THEN open HPI recirc to sump
valves:
 - MUV-543
 - MUV-544
 - MUV-545
 - MUV-546
-
- IF adequate SCM exists,
THEN throttle HPI to prevent
exceeding limits.
 - NDT
 - PTS
 - Maintain RCS PRESS < 1000 psig
(if OTSG isolated for TRACC)
-
- IF adequate SCM exists based
on Tincore,
THEN throttle HPI as desired.

RULE 3, EFW/AFW CONTROL
Required OTSG levels

"LLL"	> 20 in	≥ 1 RCP running with adequate SCM
"NAT CIRC"	> 70%	No RCPs running with adequate SCM
"ISCM"	> 90%	Inadequate SCM

- IF adequate SCM does NOT exist, AND level in available OTSGs is NOT at or trending toward "ISCM" level, THEN establish manual required EFW flow.

- EFW manual required flow:

2 OTSGs	> 280 gpm in 1 line to each OTSG
1 OTSG	> 470 gpm in 1 line to 1 OTSG

- AFW required flow:

2 OTSGs	> 250 gpm to < 300 gpm/OTSG
1 OTSG	> 450 gpm to < 600 gpm

- IF adequate SCM exists, THEN throttle flow to prevent OTSG PRESS from lowering > 100 psig below desired PRESS.

- Do not allow OTSG level to lower.

- IF AFW is operating, THEN maintain AFW flow within limits.

2 OTSGs	< 300 gpm/OTSG
1 OTSG	< 600 gpm

RULE 4, PTS

- IF any of the following exist:
 - Tincore < 400°F,
AND cooldown rate
exceeds ITS limit
 - RCPs off,
AND HPI flow exists
 - Throttle HPI flow to minimize
adequate SCM.
 - Throttle LPI flow to minimize
adequate SCM.
 - PTS is applicable until an
Engineering evaluation has been
completed.
- THEN perform required PTS
actions.

SHIFT TURNOVER

A. Initial Conditions:

1. Time in core life – 300 EFPD
2. Shift: Day Swing Mid
3. Rx power and power history – 55% for 5 hours. Previously 100% for 40 days.
4. Boron concentration – 1117 ppmb
5. Xenon – See Saxon
6. RCS Activity - See Status Board

B. Tech. Spec. Action requirement(s) in effect:

- CP-500, FWP-7
- TS 3.4.10, Condition B, entered 3-24-2005 for the PORV Block Valve. No actions required.

C. Clearances in effect:

- FWP-7 for shaft alignment due to high vibration. Expected return to service in 12 hours.
- MUP-1B for wet alignment. Expected return to service in 4 hours.

D. Significant problems/abnormalities:

- Down power was due to FWP-2B governor erratic operation which is now repaired.
- Citrus and Levy counties are under a severe thunderstorm watch for the next 2 hours.

E. Evolutions/maintenance for the on-coming shift:

- Maintenance to continue work on MUP-1B and FWP-7.
- Increase power to 100%. Start at Step 4.1.37 of OP-204.

F. CRS – Instruct the ROs to walk down the main control boards and provide you with the following data:

RCS Average Temperature	_____	Make-up Tank Level	_____
RCS Pressure	_____	Turbine Load	_____
Pressurizer Level	_____	Turbine Reference	_____

G. Required Emergency Plan Implementation

- Full Implementation, including all required notifications.
 Initial/upgrade classifications - internal notifications.
 None