

**LOCAL MANUAL OPERATOR ACTION STEPS
REVIEWED FOR ACHIEVING HOT STANDBY**

AOP-036

(Safe Shutdown Following a Fire, Rev. 21)

Section 3.0 Actions:	
Step 12.c RNO	<p>MONITOR AFW pump suction pressure indicators as an alternative to CST level indication: (Refer to Attachment 4, AFW Suction Pressure vs. CST level)</p> <ul style="list-style-type: none"> • PI-2271 (at TDAFW Pump)
Step 13.b(3)	<p>Locally PERFORM the following (248' RAB):</p> <p>(a) SHUT 1CS-228, Normal Charging FCV Inlet Isolation Valve.</p> <p>(b) THROTTLE 1CS-227, Normal Charging FCV Bypass, as necessary to control charging flow.</p>
Step 13.c RNO	<p>ESTABLISH flow through the Hi Head SI Line, as follows:</p> <p>(1).....(MCR action)</p> <p>(2).....(MCR action)</p> <p>(3) OPEN ONE of the following breakers:</p> <ul style="list-style-type: none"> • 1B31-SB 4C, 1SI-3 BIT Outlet • 1A31-SA 4C, 1SI-4 BIT Outlet <p>(4) WHEN directed by MCR, THEN locally THROTTLE the de-energized valve to maintain PRZ level:</p> <ul style="list-style-type: none"> • 1SI-3, BIT Outlet Isolation • 1SI-4, BIT Outlet Isolation
Step 14.b	<p>UNLOCK and SHUT the affected manual block valve(s): (Steam Tunnel Platform El. 280)</p> <ul style="list-style-type: none"> • 1MS-59, SG A PORV Manual Block • 1MS-61, SG B PORV Manual Block • 1MS-63, SG C PORV Manual Block

Attachment 1, SSD Emergency Manual Operations: <u>Fire Area: 1-A-BATB</u>	
Step 1	<p>IF RHR suction valves spuriously open resulting in RWST drain down, THEN PERFORM the following recommended actions, as required:</p>

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Step 1.a	<p>ISOLATE the Containment Recirc Sumps from the RWST, as follows:</p> <p>(1) SHUT the following valves:</p> <ul style="list-style-type: none"> • 1SI-322, RWST To RHR Pump A-SA (RAB 286) • 1SI-323, RWST To RHR Pump B-SB (RAB 286) <p>(2) DE-ENERGIZE the following valves:</p> <ul style="list-style-type: none"> • 1SI-322 at breaker 1A31-SA-6E (RAB 286) • 1SI-323 at breaker 1B31-SB-6E (RAB 286)
Step 1.b	<p>REFILL the RWST with A RHR Pump, as follows:</p> <p>(1) SHUT 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol Vlv.</p> <p>(2) OPEN the following valves to align RHR HX outlet flow to the RWST:</p> <ul style="list-style-type: none"> • 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv • 1SI-331, Low Head SI Recirc to RWST Isol Vlv <p>(3) USE the RHR Pump as needed.</p>
Step 1.d	<p>WHEN RHR Pumps are no longer required to fill the RWST, THEN:</p> <p>(1) SHUT the following valves to isolate RHR HX outlet flow from the RWST:</p> <ul style="list-style-type: none"> • 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv • 1SI-331, Low Head SI Recirc to RWST Isol Vlv <p>(2) OPEN 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol Vlv.</p>
Step 2	<p>PERFORM the following to prevent spurious valve opening:</p>
Step 2.a	<p>VERIFY the following valves are SHUT:</p> <ul style="list-style-type: none"> • 1SI-301, CV Sump 1B To RHR Pmp 1B-SB CIV (RAB 286) • 1SI-311, CV Sump 1B To RHR Pmp 1B-SB Downstrm Iso Vlv (RAB 286)
Step 2.b	<p>DE-ENERGIZE the following valves:</p> <ul style="list-style-type: none"> • 1SI-301 at breaker 1B21-SB-11B (RAB 286) • 1SI-311 at breaker 1B21-SB-7A (RAB 286)

Attachment 1, SSD Emergency Manual Operations: Fire Area: 1-A-EPA	
Step 7	<p>IF RHR suction valves spuriously open resulting in RWST drain down, THEN PERFORM the following recommended actions, as required:</p>

Step 7.a	<p>ISOLATE the Containment Recirc Sumps from the RWST, as follows:</p> <p>(1) SHUT the following valves:</p> <ul style="list-style-type: none"> • 1SI-322, RWST To RHR Pump A-SA (RAB 286) • 1SI-323, RWST To RHR Pump B-SB (RAB 286) <p>(2) DE-ENERGIZE the following valves:</p> <ul style="list-style-type: none"> • 1SI-322 at breaker 1A31-SA-6E (RAB 286) • 1SI-323 at breaker 1B31-SB-6E (RAB 286)
Step 7.b	<p>REFILL the RWST with B RHR Pump, as follows:</p> <p>(1) SHUT 1SI-326, Low Head SI Train A to Hot Leg Cross-over Isol Vlv.</p> <p>(2) OPEN the following valves to align RHR HX outlet flow to the RWST:</p> <ul style="list-style-type: none"> • 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv • 1SI-331, Low Head SI Recirc to RWST Isol Vlv <p>(3) USE the RHR Pump as needed.</p>
Step 7.c	<p>IF charging is required in the interim, THEN USE the Boric Acid Tanks.</p>
Step 7.d	<p>WHEN RHR Pumps are no longer required to fill the RWST, THEN:</p> <p>(1) SHUT the following valves to isolate RHR HX outlet flow from the RWST:</p> <ul style="list-style-type: none"> • 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv • 1SI-331, Low Head SI Recirc to RWST Isol Vlv <p>(2) OPEN 1SI-326, Low Head SI Train A to Hot Leg Cross-over Isol Vlv.</p>
Step 8	<p>PERFORM the following to prevent spurious valve opening:</p>
Step 8.a	<p>VERIFY the following valves are SHUT:</p> <ul style="list-style-type: none"> • 1SI-300, CV Sump 1A To RHR Pmp 1A-SA CIV (RAB 286) • 1SI-310, CV Sump 1A To RHR Pmp 1A-SA Downstrm Iso Vlv (RAB 286)
Step 8.b	<p>DE-ENERGIZE the following valves:</p> <ul style="list-style-type: none"> • 1SI-300 at breaker 1A21-SA-7C (RAB 286) • 1SI-310 at breaker 1A21-SA-9B (RAB 286)

Attachment 1, SSD Emergency Manual Operations: <u>Fire Area: 1-A-BAL</u>	
Step 1	PERFORM the following to prevent spurious valve operations:
Step 1.a	VERIFY the following valves are OPEN <ul style="list-style-type: none"> • 1CS-214, Charging/SI Pumps Miniflow Isol (RAB 236 near Boric Acid Pumps) • 1CS-169, CSIP Suction Header Xconn (RAB 247 above CSIPs) • 1CS-218, CSIP Discharge Header Xconn (RAB 247 above CSIPs) • 1CC-252, CCW From RCP Thermal Barrier FCV (RAB 236 Scalloped Area)
Step 1.b	DE-ENERGIZE the following valves: <ul style="list-style-type: none"> • 1CS-214 at breaker 1A35-SA-4C (RAB 261) • 1CS-169 at breaker 1A35-SA-4B (RAB 261) • 1CS-218 at breaker 1B35-SB-14D (RAB 261) • 1CC-252 at breaker 1E12-6B (RAB 261)
Step 5	<p style="text-align: center;">CAUTION</p> <ul style="list-style-type: none"> • The following step will inhibit all automatic and manual safeguards functions since a fire in this area could cause spurious actuations as well as disable controls for resetting SI. • Removal of Output Relay Power Fuses from both trains of SSPS will generate a Reactor Trip signal. The Reactor should be shut down prior to performing the following step. <p>OBTAIN SSPS Key 96 AND DEFEAT both trains of SSPS by removing the listed fuses in the front of the listed SSPS Output Cabinets:</p> <ul style="list-style-type: none"> • Train A, Output Cabinet No. 1, Output Relay Power fuses • Train A, Output Cabinet No. 2, fuses 61 and 62 • Train B, Output Cabinet No. 1, Output Relay Power fuses • Train B, Output Cabinet No. 2, fuses 61 and 62
Step 20	IF the following valves cannot be shut due to fire damage to their control cables, <ul style="list-style-type: none"> • 1CS-165, VCT Outlet/Dilution FCV (1-LCV-115C) • 1CS-166, VCT Outlet (1-LCV-115E) THEN:
Step 20.a	STOP ALL CSIPs.
Step 20.b	SHUT EITHER of the following valves:

	<ul style="list-style-type: none"> • 1CS-170, A CSIP Suction X-conn. • 1CS-168, C CSIP Suction X-conn with A CSIP
Step 20.c	SHUT EITHER of the following valves: <ul style="list-style-type: none"> • 1CS-169, C CSIP Suction X-conn with B CSIP • 1CS-171, B CSIP Suction X-conn
Step 20.d	VERIFY SHUT 1CS-214, Charging/SI Pumps Miniflow Isol.
Step 21	IF BOTH of the following occur due to fire damage to their control cables: <ul style="list-style-type: none"> • 1SW-270, ESW Header A Return to Aux Reservoir, spuriously SHUTS • 1SW-276, ESW to NSW Discharge HDR, spuriously OPENS THEN ALIGN flow to the cooling tower, as follows:
Step 21.a	VERIFY OPEN 1SW-275, ESW Return Header A to NSW.
Step 21.b	WHEN time permits, THEN: <ol style="list-style-type: none"> (1) DE-ENERGIZE 1SW-270, ESW Header A Return to Aux Reservoir, at breaker 1A35-SA-9C (RAB 261). (2) OPEN 1SW-270 locally (RAB 261). (3) WHEN 1SW-270 is open, THEN SHUT 1SW-276, ESW to NSW Discharge Hdr.
Step 22	IF BOTH 1SW-270 AND 1SW-276 shut, THEN CROSS-CONNECT ESW Discharge Headers as follows:
Step 22.a	VERIFY OPEN 1SW-274, ESW Return Header B to NSW.
Step 22.b	VERIFY OPEN 1SW-275, ESW Return Header A to NSW.
Step 22.c	VERIFY OPEN 1SW-271, ESW Header B Return to Aux Reservoir.
Step 22.d	WHEN time permits, THEN: <ol style="list-style-type: none"> (1) DE-ENERGIZE 1SW-270, ESW Header A Return to Aux Reservoir, at breaker 1A35-SA-9C (RAB 261). (2) OPEN 1SW-270 locally (RAB 261): (3) WHEN 1SW-270 has been opened,

	THEN SHUT 1SW-274, ESW Return Header B to NSW.
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Attachment 2, SSD 1 Equipment Powered by SSD 2:	
Step 2	IF control power is lost to 1CS-231, Charging Flow controller, THEN PERFORM the following locally:
Step 2.a	SHUT 1CS-228, Normal Charging FCV Inlet Isolation Valve.
Step 2.b	MAINTAIN 25% to 60% PRZ level (charging flow) using 1CS-227, Normal Charging FCV Bypass.

Attachment 3, SSD 2 Equipment Powered by SSD 1:	
	This attachment was reviewed but contained no hot standby local manual operator actions.

**LOCAL MANUAL OPERATOR ACTION STEPS
REVIEWED FOR ACHIEVING COLD SHUTDOWN**

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(Safe Shutdown Following a Fire, Rev. 21)

Attachment 1, SSD Emergency Manual Operations: <u>Fire Area: 1-A-EPA</u>	
Step 4.b	WHEN manpower is available, THEN: (1) DE-ENERGIZE the following valves: <ul style="list-style-type: none">• 1SI-246, SI Accumulator A Discharge, at breaker 1A21-SA-5C• 1SI-248, SI Accumulator C Discharge, at breaker 1A21-SA-3D

Attachment 2, SSD 1 Equipment Powered by SSD 2:	
Step 6	IF 1RH-30, RHR Heat Xchg A Out Flow Cont, OR 1RH-20, RHR Hx Xchg A Byp Flow Cont, cannot be controlled due to loss of control power, THEN:
Step 6.a	ISOLATE 1RH-20 air supply, 1IA-128-I2, to cause it to fail closed.
Step 6.d	VERIFY RHR is cooling the RCS by trending temperature using ONE of the following methods: <ul style="list-style-type: none">•(MCR action)• Local temperature indication TI-5551A (RHR Heat Exchanger Outlet)