

MTM4/MSE System Failure and Response Matrix.

Method of determining rank: Severity of node response (repair required) is summed with data response. 2 points are added to subsea for difficulty of repair. Arbrtrary adjustment based on data importance with BIN B most important and secondary surface node least.

Rev. 1.0 18NOV05 mrc			0 = Normal operatios continues			1 = Data logging continues		2 = Data logging failure likely		3 = Data logging fails	
Rank	Failure mode	Diagnostic symptom	Primary Controller response	Primary Data logging response	Secondary controller response	Secondary Data logging response	BIN A System Response	Data logging response	BIN B System Response	Data logging response	Repair Response
17	Surface power Primary 48-12 Volt converter failure	No primary dialup, secondary dialup after 24 hours.	Surface primary power fails, controller held up for SIAM to execute "safe mode"?	SIAM Data logging stop on primary, instruments exhaust batteries/memory in several days?	Secondary communications routine runs after reboot, dials portal and establishes a terminal connection. Use GPS on secondary.	Data logging continues, no real-time data to shore	BIN A power fails, controller held up for SIAM to execute "safe mode"	BIN A SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of power can.
15	BIN A floods	No comms BIN A, no coms BIN B. GF on 400V. 400V current fluctuations.	No change	No change	No change	No change	BIN A controller fails	SIAM Data logging stops, instruments exhaust batteries/memory in several days	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of BIN A.
11	Primary node Medusa failure	No comms 20meter MMC, BIN A, and BIN B. 400V is normal.	No change	No change	No change	Data logging continues, no real-time data to shore	BIN A Communications fail to surface node.	BIN A controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about response of power system?	BIN B Communications fail.	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response?	Unscheduled repair - replacement of primary controller can.
10	Riser, snubber or termination multiple fiber failure	No comms BIN A, no coms BIN B. 400V normal.	No change	No change	No change	No change	BIN A Communications fail to surface	BIN A controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about response of power system?	BIN B Communications fail.	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response?	Unscheduled repair - replacement of riser cable.
10	Riser, snubber or termination copper failure or flood	No comms BIN A, no coms BIN B. GF on 400V. 400V current fluctuations.	No change	No change	No change	No change	BIN A power fails, controller held up for SIAM to execute "safe mode"	BIN A SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of riser cable.
10	Benthic cable A or termination copper failure or flood	No comms BIN A, no coms BIN B. GF on 400V. 400V current fluctuations.	No change	No change	No change	No change	BIN A power fails, controller held up for SIAM to execute "safe mode"	BIN A SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of cable A.
9	BIN A Medusa failure	No comms BIN A, no coms BIN B.	No change	No change	No change	No change	BIN A Communications fail to surface	BIN A controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about response of power system?	BIN B communications fail to surface, if BIN B can reroute comms may be restored.	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response?	Unscheduled repair - replacement of BIN A.
9	Benthic cable A or termination double fiber, connector pass or transceiver failure	No comms BIN A, no coms BIN B. 400V normal.	No change	No change	No change	No change	Communcations to BIN A fail. If BIN B can reroute, comms might be restored.	BIN controllers watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about power system?	Communications fail to surface. If BIN B can reroute, comms might be restored.	BIN controllers watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about power system?	Unscheduled repair - replacement of cable A.
9	Primary SideARM 5V or SA hardware failure	No primary dialup, secondary dialup after 24 hours. No console	Surface primary controller fails. No telemetry from power system.	SIAM Data logging stops, instruments exhaust batteries/memory in several days?	Secondary communications routine runs after reboot, dials portal and establishes a terminal connection. Use GPS on secondary.	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	Unscheduled repair - replacement of primary controller can.
8	BIN B SideARM 5V or SA hardware failure	No comms BIN B.	No change	No change	No change	No change	No change	No change	BIN B controller fails	SIAM Data logging stops, instruments exhaust batteries/memory in several days	Unscheduled repair - replacement of BIN B.
8	BIN B floods	No coms BIN B. GF on BIN B 400V. 400V current fluctuations.	No change	No change	No change	No change	No change	No change	BIN B controller fails	SIAM Data logging stops, instruments exhaust batteries/memory in several days	Unscheduled repair - replacement of BIN B.
8	BIN A SideARM 5V or SA hardware failure	No comms BIN A.	No change	No change	No change	No change	BIN A controller fails	SIAM Data logging stops, instruments exhaust batteries/memory in several days	No change	No change	Unscheduled repair - replacement of BIN A.
8	Surface power 12-400 Volt converter failure	Loss of data from subsea. No 400V current. No optical power from subsea.	No change	No change	No change	No change	BIN A power fails, controller held up for SIAM to execute "safe mode"	BIN A SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of power can.
8	Primary node SideARM kernal. OS or SIAM application software failure	No primary dialup, secondary dialup after 24 hours. Maybe console.	Surface primary controller fails. No telemetry from power system.	SIAM Data logging stops, instruments exhaust batteries/memory in several days?	Secondary communications routine runs after reboot, dials portal and establishes a terminal connection. Use GPS on secondary.	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	Console in from secondary node and repair?
7	BIN A SideARM kernal. OS or SIAM application software failure	No comms BIN A.	No change	No change	No change	No change	BIN A controller fails, can be cold booted from surface	If cold boot restores then OK otherwise SIAM Data logging stops, instruments exhaust batteries/memory in several days	BIN A Medusa must come up in last state on power cycle, then system OK	No change	Unscheduled repair - replacement of BIN A.
7	BIN B Medusa failure	No comms BIN B.	No change	No change	No change	No change	No change	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about power system?	BIN B Communications fail.	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about power system?	Unscheduled repair - replacement of BIN B.
7	Benthic cable B or termination double fiber, connector pass or transceiver failure	No coms BIN B. 400V normal.	No change	No change	No change	No change	No change	No change	BIN B Communications fail to surface. If BIN B can reroute, comms might be restored.	BIN B controller watchdog reboots every 24 hours. Data still logged? Safe mode system response? What about power system?	Unscheduled repair - replacement of cable B.
6	BIN B SideARM kernal. OS or application software failure	No comms BIN B.	No change	No change	No change	No change	No change	No change	BIN B controller fails, can be cold booted from BIN A	If cold boot restores then OK otherwise SIAM Data logging stops, instruments exhaust batteries/memory in several days	Unscheduled repair - replacement of BIN B.
6	Benthic cable B or termination copper failure or flood	No coms BIN B. GF on BIN B 400V. 400V current fluctuations.	No change	No change	No change	No change	No change	No change	BIN B power fails, controller held up for SIAM to execute "safe mode"	BIN B SIAM Data logging goes to "safe mode", instruments exhaust batteries/memory in several months	Unscheduled repair - replacement of cable B.
6	Surface power 48-12 Volt converter B failure	TBD if power supplies split or OR'd.	No change	No change	Secondary controller fails	SIAM Data logging stops, instruments exhaust batteries/memory in several days?	No change	No change	No change	No change	Unscheduled repair - replacement of power can.
4	Globalstar primary modem, RFIO or connecting cable failure	No primary dialup, secondary dialup after 24 hours.	No change	Data logging continues, no real-time data to shore	Secondary communications routine runs after reboot, dials portal and establishes a terminal connection. Use GPS on secondary.	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	No change	Data logging continues, no real-time data to shore	Unscheduled repair - replacement of primary controller can.
1	Secondary node Medusa failure	No comms secondary node.	No change	No change	No change	Data logging continues, no real-time data to shore	No change	No change	No change	No change	Unscheduled repair - replacement of secondary controller can.
0	Primary node P2 failure	Loss of power data	No change?	No change?	No change?	No change?	No change?	No change?	No change?	No change?	Unscheduled repair - replacement of power can.
0	BIN A Power supply 400-12 Volt converter failure		No change	No change	No change	No change	Power system switches to redundant Vicor (may cause power glitch and reset).	No change	Power system switches to redundant Vicor (may cause power glitch and reset).	No change	BIN replacement at next scheduled maintenance trip.
0	BIN A node P2 failure	Loss of power data	No change	No change	No change	No change	No change?	No change?	No change?	No change?	BIN replacement at next scheduled maintenance trip.
0	BIN B Power supply 400-12 Volt converter failure		No change	No change	No change	No change	Power system switches to redundant Vicor (may cause power glitch and reset).	No change	Power system switches to redundant Vicor (may cause power glitch and reset).	No change	BIN replacement at next scheduled maintenance trip.
0	BIN B node P2 failure	Loss of power data	No change	No change	No change	No change	No change?	No change?	No change?	No change?	BIN replacement at next scheduled maintenance trip.
0	Riser, snubber or termination single fiber failure	Loss of optical power on primary link. Medusa switch to secondary link.	No change	No change	No change	No change	BIN A Medusa switches to standby channel	No change	No change	No change	no change
0	Benthic cable A or termination single fiber, connector pass or transceiver failure	Loss of optical power on primary link. Medusa switch to secondary link.	No change	No change	No change	No change	BIN A Medusa switches to standby channel	No change	No change	No change	no change
0	Benthic cable B or termination single fiber, connector pass or transceiver failure	Loss of optical power on primary link. Medusa switch to secondary link.	No change	No change	No change	No change	No change	No change	BIN B Medusa switches to standby channel	No change	no change