MVD Power-Related Fault Conditions and Consequences					15 July 1998 S. Hahn, LANL
Location of fault	**Possible Fault**	**Effects on System**	**Consequence**	**Detection/Monitor**	**Response/Action Taken**
Silicon Detectors	Bias supply line shorts to return line.	Loss of data from the affected 256 channels	HVPS output drops low as the current limit (set at 100uA) is tripped. No safety implication.	HVPS output voltage and current are constantly monitored by the PHENIX system.	Swap out the failed detector when access permitted.
Multi-Chip Module and the Kapton cable	One of the low voltage lines (7 total) shorts to return line.	Loss of data on affected group of 6 MCMs (out of 136 total MCMs.)	If the short occurs inside the ASICs (20 each), the bond wire between the MCM and the output cable will fail open. If the short occurs at the circuit trace or connector, the poly-fuse at motherboard will activate. No safety implication.	All supply voltages for each group of 6 MCMs are constantly readout through MUXes and ADCs on motherboards to EPICS to provide alarms.	Swap out failed MCM when access permitted.
Power-Communication (or Daughter Board) and the connector	One of the low voltage lines (7 total) shorts to return line.	Loss of data on affected group of 6 MCMs	If the short occurs inside the logic devices, the bond wire will fail open. If the short occurs at the circuit trace or connector, the poly-fuse at motherboard will activate. No safety implication.	All supply voltages for each board are constantly readout through MUXes and ADCs on motherboards to EPICS to provide alarms.	Swap out failed Power-Comm board when access permitted.
Mother Board	One of the low voltage lines (38 total) at the output side of the regulator shorts to return line.	Loss of data on affected group of 6 MCMs	If the short occurs inside the logic devices, the bond wire will melt open. If the short occurs at the circuit trace or connector, the poly-fuse at motherboard will activate. No safety implication.	All output voltages from the Low-Dropout supplies are constantly monitored and alarmed as in the MCMs and Power-Comm boards.	The affected motherboard, when access permitted, is swapped out.
	Cable or connector insulation fails at the input side of the regulator, and shorts to return.	Loss of data from the 42 MCMs connected to the motherboard	Either the current-limit is tripped inside the LVPS (PHENIX-provided) lowering the output voltage, or the Slo-Blo fuse on the distribution board activates.	All PHENIX-supplied LVPS output voltages from the Low-Dropout supplies are constantly monitored.	Turn off the power supply connected to the board. Swap out the failed cable/conn when access permitted

Modules in MVD Rack	A low voltage supply cable conductor to the interface modules shorts to return line.	Loss of respective functions of the interface modules	The current-limit feature inside the PHENIX-standard supply lowers the output voltage on the line.	All PHENIX-supplied LVPS output voltages and currents are constantly monitored.	Turn off the supply connected to the board. Swap out of the affected cable when access permitted.
	A component or trace failure resulting in the supply line to the return line.	Loss of respective functions of the interface modules	Slo-blo fuse on the interface module activates.	All PHENIX-supplied LVPS output voltages and currents are constantly monitored.	Swap out of the affected module when access permitted.
MVD specific-crate	Power bus back-plane develops short.	Loss of all respective functions plugged into the crate	The current-limit feature inside the PHENIX-standard supply lowers the output voltage on the line.	All PHENIX-supplied LVPS output voltages and currents are constantly monitored	Turn-off the supply connected to the crate. Swap out or repair affected crate when access permitted.
MVD Rack as supplied by PHENIX	High temperature inside the rack? Smoke detected inside the rack? Smoke detected outside the rack? Power surge detected on primaries?	(standard rack-protection system activated)	(standard rack-protection system activated)	Via standard PHENIX monitoring system	(PHENIX standard action plan)