Communicate	C	Functional Purpose	Fallows Manda	Fallows Effect	Fallows Course	Pr	evious	Situat	ion	Assistant Assistan	Improved Situation			
Communicate Commands from the RC Pilot to the RC Receiver	Component		Failure Mode	Failure Effect	Failure Cause	S	L	D	RPN	Assigned Action	S	L	D	RPN
RC   Commands from the RC   Crash   Settings incorrect   Settings inco	_		Hardware Failure*	Aircraft Loiters	Poorly connected circuit	8	2	7	112		8	2	3	48
Receiver   Commands from the RC   Receiver   Cost of Connection   Aircraft Loiters   Settings incorrect   8			Transmits incorrect data	Crash	Settings incorrect	9	2	6	108	FFCL**	9	1	4	36
Hardware Failure		RC Pilot to the RC				8	6	8	384	FFCL	8	4	3	96
Airspeed Sensor			Loss of Connection	Aircraft Loiters		8	4	9	288	FFCL	8	4	3	96
Airspeed Sensor					Transmitter battery dead	8	6	3	144	FFCL	8	4	2	64
Measure Va			Software Failure	Flight Less Smooth	Internal code	4	1	10	40		4	1	10	40
Measure Va		Measure Va			Plugged pitot tube	4	4	5	80		4	4	5	80
Hardware Failure	•		Inaccurate Readings	Flight Less Smooth		4	4	2	32		4	4	2	32
Hardware Failure   Flight Less Smooth   Poorly connected circuit   4   1   7   28	Sensor				Incorrect mounting	4	2	2	16		4	2	2	16
Measure global position			Hardware Failure			4	1	7	28		4	1	7	28
Inaccurate Readings					Internal code	9	3	10	270	Extensive testing**	9	3	3	81
Battery   Provide current to all systems in the air   Provide current to all states the Wrong Way   Pr	GPS		Inaccurate Readings	Crash	Interference	9	4	5	180		9	2	4	72
Provide current to all systems in the air   Loss of Power   Crash   Battery not charged correctly   9   5   3   135   FFCL   9   5   2				Manual Landing	Poorly connected circuit	6	1	7	42		6	1	7	42
Motors   Motors   Rotate Props   Coverheat   Fire and Crash   Does Not Transmit Torque   Glide to Landing   Props unsecured   7   8   3   150   Add warning to FFCL   10   2   5   1	_	Provide current to all		Crash		9	5	3	135	FFCL	9	5	2	90
Motors   Rotate Props   Does Not Transmit Torque   Gilde to Landing   Props unsecured   7   8   3   168   FFCL   7   5   2	Battery	systems in the air			Battery degradation	9	1	1	9	FFCL	9	1	1	9
Motors   Rotate Props   Does Not Transmit Torque   Rotates the Wrong Way   Mission Does Not Start   Wires connected backwards   6   3   2   36   FFCL   6   1   2			Overheat			10	3	5	150	Add warning to FFCL	10	2	5	100
Rotate Props   Rotate Props   Rotate Props   Rotates the Wrong Way   Mission Does Not Start   Wires connected backwards   6   3   2   36   FFCL   6   1   2	l l		Does Not Transmit Torque			7	8	3	168		7		2	70
Hardware Failure   Glide to Landing   Poorly connected circuit   7   1   7   49   7   1   7   7   1   7   7   7   1   7   7	Motors					6	3	2	36	FFCL	6	1	2	12
Wiring Transmit power and signals  Transmit power and signals  Does Not Transmit Electricity Crash Electrical short circuit 9 3 8 8 216 Shrink wrap all wires 9 1 8 8 1 18				Glide to Landing	Poorly connected circuit	7	1	7	49		7	1	7	49
Signals		•			· · ·	9	7	8	504	FFCL	9	3	3	81
Crash   Electrical open circuit   9   8   5   360   FFCL   9   8   1	Wiring			Crash	Electrical short circuit	9	3	8	216	Shrink wrap all wires	9	1	8	72
Contain components, provide lift, provide stability, & respond to control inputs   Flight Characteristics Change   Crash   Components move   9   5   5   5   5   5   5   5   5   5	- 1			Crash	Electrical open circuit	9	8	5	360	FFCL	9	8	1	72
Components move 9 5 5 5 225 Strap down components 9 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		provide lift, provide stability, & respond to	Flight Characteristics Change		· ·	9	2	1	18	Only fly in good weather	9	1	1	9
Stability, & respond to control inputs   Parts Break Off   Parts Break Off   Part poorly attached   Part poorly					Components move	9	5	5	225	Strap down components	9	3	3	81
control inputs  Parts Break Off  Crash  Part poorly attached  9 2 7 126 FFCL  9 2 3  Unidentified flying object impact  9 1 3 27 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  28 Trains afety pilot  9 1 3  29 Trains afety pilot  9 1 3  20 Trains afety pilot  9 1 3  21 Trains afety pilot  9 1 3  21 Trains afety pilot  9 1 3  22 Trains afety pilot  9 1 3  23 Trains afety pilot  9 1 3  24 Trains afety pilot  9 1 3  25 Trains afety pilot  9 1 3  26 Trains afety pilot  9 1 3  27 Trains afety pilot  9 1 3  28 Trains afety pilot  9 1 3  28 Trains afety pilot  9 1 3  28 Trains afety pilot  18 Transmit data  18 Transmit d	Airframe		Parts Break Off	Crash	Flight envelope exceeded	9	2	3	54	Train safety pilot	9	2	2	36
Part poorly attached   9   2   7   126   FFCL   9   2   3	Body				Poor manufacturing	9	6	7	378	Extensive testing	9	6	2	108
WiFi Light Beam   Transmit data between WiFi router and the WiFi receiver   Hardware Failure   Manual Landing   Interference   6 8 7 336 FFCL   6 3 6 1					Part poorly attached	9	2	7	126	FFCL	9	2	3	54
WiFi Light Beam Loss of Connection Manual Landing Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 3 3 3  Hardware Failure Manual Landing Poorly connected circuit 6 1 7 42 6 1 7  Software Failure Manual Landing Internal code 6 1 10 60 6 1 10  Give high level commands & ensure commands & ensure commands & ensure safety of light receiver of the properties					Unidentified flying object impact	9	1	3	27	Train safety pilot	9	1	3	27
Beam between WiFi router and the WiFi receiver Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 3 3 3 Hardware Failure Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 3 3 3 Hardware Failure Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 3 3 3 Hardware Failure Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 3 3 3 Hardware Failure Antenna not pointed correctly 6 10 3 180 Assign antenna pointer 6 1 7 42		Transmit data	Land of Commention	Manual Landing	Interference	6	8	7	336	FFCL	6	3	6	108
Beam   and the WiFi receiver   Hardware Failure   Manual Landing   Poorly connected circuit   6   1   7   42   6   1   7   7   7   8   9   9   9   9   9   9   9   9   9	WiFi Light L		Loss of Connection	ivianuai Landing	Antenna not pointed correctly	6	10	3	180	Assign antenna pointer	6	3	3	54
Software Failure   Manual Landing   Internal code   6   1   10   60   6   1   10	Beam		Hardware Failure	Manual Landing	Poorly connected circuit	6	1	7	42		6	1	7	42
Human Operators Commands & ensure Commands & Crash Poor judgement 9 2 9 162 Extensive practice 9 1 9 1 9	ľ	and the WiFi receiver	Software Failure	Manual Landing	Internal code	6	1	10	60		6	1	10	60
Operators Commands & ensure safety of flight Sends Incorrect Commands & Poor judgement Sends Incorrect Commands & Incorrect & Incorr		commands & ensure safety of flight	Sick	Mission Does Not Start	Bacteria or viruses	5	4	3	60		5	4	3	60
Operators   Safety of flight   Sands Incorrect Commands   Crash   Poor judgement   9   2   9   162   Extensive practice   9   1   9			Can Not Attend	Mission Does Not Start	Other plans	5	1	1	5		5	1	1	5
	Operators		S d - 1 + S	Crash	Poor judgement	9	2	9	162	Extensive practice	9	1	9	81
Safety of hight   Serias incorrect commands   Crash   Poor understanding of system   9   2   5   90   Extensive practice   9   1   5				Crash	Poor understanding of system	9	2	5	90	Extensive practice	9	1	5	45
* "Hardware Failure" refers only to electrical hardware (e.g. USB port breaks)  S: Severity of failure effect  ** FFCL is the Field Flight Checklist to which we add items to test and do before flight  L: Likelihood of failure occurring														
		*** Extensive testing before use refers to extensive flight tests before the competition.  D: Detectability of cause before failure occurs												
We currently perform flight tests a couple times a week.  RPN: Risk Priority number (S**±*D)														