Mission Statement: To create a teleoperable all terrain vehicle capable of transmitting air quality, temperature, and LIDAR data to a remote operator to monitor environmental conditions after a wildland fire.		T - Test DR - Design Requirement	
ID	**Description**	**T/DR**	**Evaluation**
MO-1	**Driver can safely operate the vehicle out of harms way**		
MO-1-1	Teleoperable at a distance of 300ft	T	Conduct driving maneuvers from a distance > 300 feet
MO-1-2	Provide 360 degree camera view of the vehicle for driving	T	Conduct blind spot analysis of the lidar and cameras
MO-1-3	Video latency of <0.5s	T	Measure time for an event to be viewed on camera
MO-1-4	Real-time web interface for vehicle health information	DR	Subjective
MO-1-5	Control response <1s	T	Measure time between command and vehicle response
MO-1-6	Emergency stop systems	DR	Test all emergency stop buttons on the vehicle and software emergency stops
MO-2	**Dual Purpose Vehicle (Locally and Remotely Drivable)**		
MO-2-1	Carry 2 passengers and 200 lbs. of gear	DR	Test driving with multiple people and gear
MO-2-2	Manually drivable (without remote controller)	T	Test driving with manual override features
MO-2-3	Off Road Capable	DR	Evaluate off-road driving performance during field testing
MO-3	**Map the environment in real-time**		
MO-3-1	Statically scan the environment in 3 dimensions	T	Generate static point cloud images during field testing
MO-3-2	Provide 360 degree mapping capability	T	Conduct blind spot analysis of the lidar and cameras
MO-3-3	Ability to save maps for later analysis	DR	Save maps generated during field testing
MO-3-4	Generate 2d map in real-time	T	Field testing
MO-4	**Evaluate the hazards to humans in an area affected by forest fires**		
MO-4-1	Detect smoke concentrations	DR	Subject vehicle to smoke (at a safe distance) and evaluate expected response
MO-4-2	Detect levels of Natural Gas, LPG, CO, CO2, H2	DR	Same as above, testable for all gases but equiptment not availabe/ too expensive
MO-4-3	Compare concentrations to LEL (lower explosive limit)	T	Compare to measured quantities to safety thresholds during field testing
MO-4-4	Sense temperature and humidity	DR	Compare measurements to known weather measurements
MO-4-5	Redundant sensing packages	DR	Compare output of 3 units
MO-4-6	Stream data in realtime to remote operators	DR	Design Req
MO-4-7	Latency < 2s	T	Measure time between stimulation and UI response
MO-4-8	Enclosure designed to accurately sample the environment	DR	Evaluate subjectively during field testing
MO-5	**Provide an effective user interface**		
MO-5-1	Display all information relevant to driving the vehicle on a single page	DR	Design Req
MO-5-2	Display environmental data concisely	DR	Design Req
MO-5-3	"Drill down" style to obtain more in-depth information	DR	Design Req
MO-5-4	Latency < 2s on non-critical data	T	Measure time between stimulation and UI response