

1.2 Launching and Landing

AggieAir uses a 20' bungee for takeoff. One end of the bungee is staked into the ground and the other end is attached to a hook underneath the UAV. Once the bungee is stretched about 40', the UAV is released and launched into the air. While accelerating and gaining altitude, the UAV follows a line beginning from the point at which it was released and extending to the known GPS location of where the bungee is staked into the ground. Once the UAV flies past the bungee location, the throttle turns on and the plane continues flying straight until it reaches a preset altitude and ground speed. At this point, the UAV moves on to the next command in the flight plan.

To land, the UAV first circles around a given waypoint until it reaches a specific altitude (usually about 65ft AGL). Once this altitude is reached and the UAV is pointed in the right direction, the UAV glides down toward another waypoint at ground level and about 150 - 200 yards away from the first waypoint. When the UAV reaches ground level, it has scrubbed off most of its speed and safely lands on its belly.

A 50x100 yard strip of clear land is needed for successful autonomous takeoff and landing with a larger 100x200 yard strip clear of anything over 50ft high. Manual RC operation can be used to takeoff and landing in smaller areas. Since it is easier on the UAV, it is preferred to have a grassy field for takeoff and landing. However the UAV could also use a dirt field or road.