

# **Description of Take-off and Landing Procedure for the JPL Titan Aerobot Testbed**

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As a buoyant vehicle, the JPL blimp operates in close to a vertical take-off and landing mode. The net weight of the vehicle is only 2 kg (5 pounds) a value measured just prior to flight and ensured by adjusting the ballast mass carried in the vehicle. The vehicle has no wing and therefore stalling is not an issue and there is no minimum speed requirement.

For take-off, the engines are started with the blimp on the ground and held in place by three members of the ground crew. Once proper engine performance is verified, the blimp is lifted off the ground by one of the crew members and held overhead. The teleoperation pilot throttles up the engines, the crew members run a few steps and push off the blimp, at which point flight commences. See Figure 1 for a picture just after push off.

For landing, the pilot brings the blimp to the desired landing spot, throttles the engines to a very low thrust level and pitches the nose up to arrest the forward motion. The blimp then slowly settles towards the ground and is caught by the ground crew, at which point the engines are turned off by the pilot. The blimp is then hand-carried to the mooring mast and docked in place.



Fig. 1: JPL blimp at take-off.