

# Flight Testing a Parachute Orientation System to Air Launch Rockets into Low Earth Orbit

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**Figure 1:** Rocket booster drop test from Scaled Composites Proteus jet with guide surface orientation parachute deployed.

## **Abstract:**

**This paper describes design heritage and successful flight testing of a prototype parachute system to assist air launching a rocket booster from a jet aircraft. This new air launch method called Trapeze-Lanyard Air Drop (t/LAD) launch, is a new and safer way to launch personnel and cargo into low Earth orbit. Three successful drop tests conducted in May and June of 2005 over the Mojave Desert demonstrated this concept, and the parachute sub-system to pitch up a rocket store into a near vertical attitude for air launch.**

## **Introduction:**

Transformational Space Corporation was awarded a \$3 million contract in 2004 by NASA to conduct preliminary concept studies for development of a space crew exploration vehicle. A fully funded \$3 million 6 month follow on study and demonstration contract was awarded by NASA. Additional funding allowed development of hardware to flight test a new rocket air launch capability to place people and cargo into low Earth orbit. This new air launch method, called Trapeze-Lanyard Air Drop (t/LAD) launch, greatly improves reliability, simplicity, safety and cost of launching rockets into low Earth orbit.