Virgin Galactic

Emerging Commercial Suborbital Capabilities Workshop
NASA Goddard Space Flight Center

07 September 2011
The Existence Proof
Making Commercial Vehicles: The Spaceship Company (TSC)

The roles of Scaled, TSC, and Virgin Galactic are complementary

- **Scaled Composites**: Design / Build / Test Prototype Vehicles
- **The Spaceship Company (TSC)**: Build Commercial Vehicles
- **Virgin Galactic**: Fly Vehicles in Service
Mission Profile

1. 50,000 ft / 15.5 km: Launch from Mothership to Mach 4.
2. 328,000 ft / 100 km: Kármán line; passengers become astronauts.
3. 361,000 ft / 110 km: Maximum altitude. Wings feather after rocket burn.
4. Re-entry initiated.
5. 70,000 ft / 21.5 km: Wings de-feather for the glide home.
Flight Testing Now

- 72 flights of WK2 mothership
- 12 captive carry flights of SS2
- 15 glide tests of SS2 (2 feathered)
- 7 ground firings of full scale rocket motor
WK2 Capabilities

- Carry (or drop) 30,000 lb payload from 50,000 feet
- Center pylon allows for large payloads
- Can accommodate large volumes of instrumentation on frequent flights
- Common cabins with SpaceShipTwo
- Capable of long distance ferrying flights and other missions
SS2 Overview

- Crew of 8 to 110km (361,000 feet)
- Max speed ~ Mach 3.5
- Large passenger cabin
  - Cylinder diameter ~7.5 feet, length 12 feet
  - 12 passenger windows, 5 pilot windows
- Carefree re-entry and glider return

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