

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

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LAUNCHERONE: VIRGIN GALACTIC'S DEDICATED LAUNCH VEHICLE FOR SMALL
SATELLITES**Abstract**

Virgin Galactic, the world's first commercial spaceline, is developing a space transportation service to provide affordable, dedicated rides to orbit for small satellites. A small satellite operator is typically forced to ride as a secondary payload, constrained to the primary payload's launch schedule and orbit, or pay a significant amount more for a dedicated launch. However, LauncherOne, Virgin Galactic's small satellite launch vehicle, will soon begin providing frequent, affordable, and dedicated transportation to orbit for small payloads.

LauncherOne is a two stage, liquid propulsion (LOX/RP) rocket launched from a Boeing 747-400. By utilizing air-launch, the system is designed to conduct operations from a variety of locations, removing the complexity associated with travel to distant launch sites. LauncherOne will allow customers to select from various launch azimuths and will increase available orbital launch windows. The Boeing aircraft that will carry LauncherOne has already been obtained by Virgin Galactic, and is preparing to undergo structural modifications.

Currently, LauncherOne's 180,000 sq ft manufacturing and design facility in Long Beach, CA, USA is being outfitted with the remaining outstanding equipment needed for the manufacture of the rocket, and already staffs over a 150 employees. LauncherOne's propulsion system is well into development and undergoing testing, and the team recently conducted a 90-second hotfire of the first stage NewtonThree engine at Virgin Galactic's test stand in Mojave, CA, USA. This presentation will further summarize the technical progress made on Virgin Galactic's system in the past year, and discuss the road map ahead.