

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch Services, Missions, Operations, and Facilities (2)

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## LAUNCHERONE CONCEPT OF OPERATIONS, TEST AND LAUNCH FACILITIES

**Abstract**

Virgin Orbit LauncherOne is a space transportation system, presently in its final development stage, that will provide affordable, responsive and dedicated launch services for small satellites, typically 300-500 Kg, over a wide range of orbital inclinations (0-120 deg). The launch vehicle is designed and manufactured in a dedicated facility at Long Beach, California, while engines and stages tests take places at Virgin Orbit facilities at the Mojave Air and Space Port, CA, that will be also home of the first operational launches, starting later this year. LauncherOne, a two-stage liquid propulsion (LOx/RP-1) vehicle, will be launched from a dedicated Boeing 747-400 ("Cosmic Girl"), allowing for unparalleled operational flexibility with no need of a fixed, dedicated ground launch infrastructure. The launch system is thus a fully transportable deployable from any spaceport worldwide. The operational Virgin Orbit test facilities in Mojave fulfil LauncherOne engines development qualification through full duration flight acceptance, as well as flight-items stage tests up to full mission duration hot firing. Significant evolutions are already planned in order to prepare the Mojave test site for future developments and high launch rate. The present paper will highlight the LauncherOne system Concept of Operations (CONOPS) and the related facilities as well as the recent development and test activities performed in Mojave, together with an overview of the future perspectives.