

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

Author: Mr. Christian Lockowandt
Swedish Space Corporation (SSC), Sweden

Mr. Gunnar Florin
Swedish Space Corporation, Sweden

Mr. Mattias Abrahamsson
Swedish Space Corporation, Sweden

Mr. Mats Tyni
Swedish Space Corporation (SSC), Sweden

SUB-ORBITAL ROCKETS THE FAST AND EASY WAY TO REACH SPACE

Abstract

The sub-orbital – or sounding – rocket started the space era in the end of the 1940s. It has since then been a reliable and cost efficient work horse for different types of near earth space and atmosphere missions. Nevertheless the sub-orbital rockets are continuously subject to improvements and developments, recently many new operators are trying to provide suborbital flight opportunities, having identified a growing demand in this field.

The sub-orbital rocket has many positive qualities, such as; low cost, few safety constraints, late access and fast recovery (1 h), flight opportunity on demand, high flexibility, long flight heritage combined with new technologies, being the only platform available for reaching 50 – 300 km altitudes. The sub-orbital rockets are used for many different applications, such as; ionospheric physics, astronomy, meteorology and atmospheric physics, climate studies, research in microgravity, technical tests, drop- and re-entry tests.

The SSC launch facility Esrange Space Center in northern part of Sweden offers the ideal place for performing launches of sub-orbital rockets of all categories. It includes a large ground impact area of 5600 km² in which the rockets and payloads can be recovered directly after flight on land with helicopters. Esrange Space Center is a unique asset being the only place in Europe where one can launch and perform land recovery of the payload and the suborbital rocket.

SSC offers since a long time complete sounding rocket missions with different levels of capacities for different applications and use. This service is provided as a “flight ticket” for the user, offered at different service levels from small “rack” mounted experiment units up to complete payloads. Focus is on providing a service capacity that fulfils the users’ needs in a cost efficient way, utilising newly developed technology as well as existing rocket technology. This concept is further elaborated in the presentation and paper.