IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Enabling safe commercial spaceflight: vehicles and spaceports (3)

Author: Dr. Ugur Guven
UN CSSTEAP, United Kingdom

SPACEPORT FEASIBILITY ANALYSIS FOR DUBAI: LOGISTICS, SAFETY AND SPACE TOURISM

Abstract

One of the most important criteria for advancement of space technologies is the involvement of the private sector in space related endeavors. With growth of companies such as SpaceX, Blue Origin, Virgin Galactic and with initiatives such as the Google LunarX Space Challenge, this is slowly becoming a reality. Especially 2021 was a huge year for sowing the seeds of space tourism and 2022 saw a huge growth in terms of new space companies and space projects. With flights from various companies that took celebrities, civilians and tourists into space, the concept of a civilian traveling to space has become more closer than ever. However, one of the most important criteria is the availability of spaceports across the world which can act as anchorage for development of space tourism. Even in 2022, we saw lot of new potential projects being discussed for new spaceports in several locations. Many contemporary trend analysts agree that the development of global space tourism can motivate more spending in space technologies causing an exponential acceleration of contemporary technologies. Hence, in order to achieve this, it is essential to create affordable spaceports in different locations that can be used for civilian and cargo transport into space. However, there are several challenges associated with this problem and as such there are many difficulties that need to be overcome. Naturally, astrodynamics plays an important role and geographic location can depend on variety of factors such as longitude, latitude, and elevation' while taking into account factors such as accessibility, transportability, gravitational forces, regional atmospheric conditions, Coriolis Forces and others. Furthermore, ecological analysis will also need to be made of the surrounding region, so that effects of a spaceport can be determined in the environment. In addition, the location should provide safety for the launch, and it must have ample input of power available. Hence, dozens of different parameters need to be taken into account and its essential to make sure everything fits in tandem for the feasibility of the spaceport. This paper will discuss the necessary parameters for the design of a spaceport in order of their importance. As a case study, a location near Dubai, which is already a popular tourism spot, will be taken as a case study for a spaceport feasibility along with other potential locations. Several parameters for the location are also discussed and calculations are provided for the location as example for other locations.