

SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Commercial Space Flight Safety and Emerging Issues (1)

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SUBORBITAL SPACE TOURISM INCUBATED RESEARCH AND COMMERCIAL OPPORTUNITIES

Abstract

Suborbital space tourism (SST) is a kind of commercial merchandise by itself. On the other hand, it can induce many commercial opportunities such as pre-travel education, pre-travel training (indoors and outdoors), pre-travel screening (motion sickness, disorientation and other physiological problems), research in the health and safety of tourists, research in life sciences, short duration weightlessness for research and scientific purposes, insurance, legalization, etc. Commercial suborbital space flights will reach altitudes above the internationally recognized space regime of 100 km, with four to five minutes of weightlessness bracketed by high-g acceleration launch and high-g deceleration landing phases. Basics characteristics of suborbital flight are between those of parabolic and orbital flights, opening up new scientific possibilities and easing the burden for obtaining access to zero-g. However, the high-g and zero-g flights are still very different from the current commercial aviation. Therefore, the physiological education, training and screening for passengers are essential. The proposed frequency of several flights per day, and the expected large number of passengers, provide interesting opportunities for researches in the life sciences. There are several areas where these flights might be used for research in the life sciences: operational research, preparation for long-term space flight, passenger health and safety, and basic research in physiological mechanisms. The Virgin Galactic Spaceline Company plans to purchase three White Knight Twos and five SpaceShipTwos to establish a fleet, and starts commercial suborbital travel operations in late 2014 or early 2015. On 10 January 2014 the SpaceShipTwo has completed its third rocket-powered flight test. The successful flight keeps Virgin Galactic on course to start commercial SST service. The purposes of this paper are: 1) to study the flight safety related education, training and screening including indoor and outdoor disciplines, 2) to investigate potential commercial opportunities induced by SST, 3) to introduce existing industries related to SST, 4) to study the safety and insurance issues of SST, and 5) to elaborate future prospects of these industries and opportunities.