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Author: Prof. Eva Yi-Wei Chang
University of Science & Technology, Taiwan, China

Prof. Rock Jeng-Shing Chern
Ryerson University, Canada

A STUDY ON POTENTIAL SPACEPORTS FOR SUBORBITAL SPACE TOURISM IN TAIWAN

Abstract

In 2004, the privately founded experimental spaceplane SpaceShipOne reached 112 km suborbital altitude on 4 October 2004, much higher than the von Karman line at 100 km and the internationally recognized space regime of 80 km altitude. On 13 December 2018 and 22 February 2019, the spaceplane SpaceShipTwo Unity completed two test flights to reach 82.7 km and 89.9 km altitude, respectively. Virgin Galactic's first chief astronaut instructor took the test flight on 22 February 2019 and acted as the test passenger to fly along with the vehicle's two pilots. On the other hand, the Blue Origin's New Shepard System has completed missions 9 and 10 test flight. Blue Origin planned to sell suborbital flight ticket in 2019, and Virgin Galactic Spaceline Company planned to start commercial suborbital travel operations in mid-2019. By dividing space tourism into two categories, orbital space tourism (OST) and suborbital space tourism (SST), SST might be right at the corner while OST is still far away from the general public. Besides USA, many other countries including Taiwan have the intention to operate commercial SST business. Taiwan is a densely populated country. There are 23 million residents and the area is only 35,883 square kilometers. However, many small area countries have the ambition to promote SST. Singapore is one of the typical and good examples. It plans to establish the Spaceport Singapore near the Changi International Airport. Most major airports in Taiwan have two authorities, the Ministry of Transportation and Communications and Ministry of National Defense, except the Taiwan Taoyuan International Airport which belongs to MOTC directly. In this study, advantages and disadvantages of 5 potential spaceports are analyzed and compared: Taoyuan, Songshan, Hengchun, Magong and Kinmen. The study is based on necessary extension for SST and dual purposes from the currently existed airport, particularly the safety issues. Another idea is to establish a dedicated Spaceport Taiwan. But in this study, it is considered that within one to two decades, the SST market demand in Taiwan would not be such large so that a dedicated spaceport is needed.