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

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

Prof. Rock Jeng-Shing Chern
Ryerson University, Canada

A NON-OPTIMISTIC PROSPECT OF SUBORBITAL SPACE TOURISM DEVELOPMENT FROM LAUNCH VEHICLE AND SPACEPORT ASPECTS

Abstract

The major purposes of this paper are to investigate and discuss the non-optimistic prospect of suborbital space tourism (SST) development based on the current status of suborbital reusable launch vehicle (SRLV) and spaceport issues. On 18 April 2003, the SpaceShipOne (SS1) was rolled out and unveiled. It then won the Ansari X Prize on 4 October 2004, only 1 year 5 months and 16 days in between. From the point of view of award attempting, it was a very successful project. However, the SS1 was an experimental SRLV and many factors for commercial operations were not considered and implemented. The success misled people to a too optimistic expectation in SST development. SS1's successor for commercial applications was the SpaceShipTwo (SS2). The first SS2 named VSS Enterprise was unveiled on 11 December 2009, 5 years after the retirement of SS1. After another 5 years, it was destroyed when performing preliminary powered test flight on 31 October 2014. Then the Virgin Galactic Spacelines started to build the second SS2 which was rolled out and named VSS Unity on 19 February 2016. By summarizing, none of the Virgin Galactic Spacelines' original plans were successful. Those plans included to operate commercial SST in 2008, to establish a spacelines fleet with 3 White Knight Twos (WK2s) and 5 SS2s, etc. Another company attempted in SST development is the XCOR. However, there is no news recently about its further progress in the developments of its Lynx Models I, II and III. In Europe, the most recent activity was the successful drop test (performed in Singapore) of a quarter-scale prototype of Airbus Defense and Space's (previously EADS Astrium's) SpacePane in May 2014. No more news was announced since then. The only good news was probably the Blue Origin developed and manufactured the New Shepard system and conducted five successful test flights in consecutive within 1.5 years from 29 April 2015 to 5 October 2016. But the New Shepard system is a vertical-takeoff-vertical-landing (VTVL) SRLV which put new requirements on the spaceports. The development of SST was delayed again and again. A non-optimistic prospect of SST development was that it would not reach commercial operations successfully, at least within a foreseeable future.