

IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Commercial Spaceflight Safety and Emerging Issues (1)

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COMMERCIAL SPACE FLIGHT SAFETY AND EMERGING ISSUES

Abstract

In 2021, five flights were initiated by United States' private space companies launching a total of 22 commercial spaceflight participants into the edge of space. One of these flights required pilots for the space vehicle flight conducted by Virgin Galactic. The company has valued piloted spacecraft for space travel even though levels of automated technology have been highly developed and introduced into some of the commercial spacecraft. It can be anticipated a challenge to recruit talent and train them quickly as the popularity of space travel is skyrocketing. However, while studies on spaceflights have progressed, they have typically focused on a few technical components of space transportation while bypassing the importance of a pilot who plays a crucial role in the unique and highly advanced space vehicles, assuring safe and successful spaceflight operations. Therefore, the selection of space pilot candidates and thorough flight training for those pilots are essential factors that operators must consider conducting safe operations and not having any tragedies as SpaceShipTwo's crash in 2014. Only a few rules have been established to govern the formation of a commercial pilot in space since the first successful suborbital flight for the Ansari XPRIZE in 2004. By analyzing the current regulatory requirements and literature, this paper will first evaluate what expertise is required for spaceflight pilot candidates. Secondly, it will address training methods to build space pilot skill sets. Lastly, it will raise relevant key considerations for physiological effects on space pilots. Test pilots and single-engine fighter pilots are typically considered to be the best candidates for space tourism pilot positions. If anything goes wrong with the spaceship, being ready to manage such unforeseen events might be the difference between life and death. To become a space pilot, candidate pilots must complete training in zero-g parabolic and suborbital spacecraft flights without passengers as well as a space simulator. The duration of exposure to the space environment adversely affects pilots' health, directly impacting their performance and proficiency. The findings of this research advise spaceflight operators on the essentials to enhance space pilot preparation before they begin safe spaceflight services.