

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

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RECOMMENDED PRACTICES FOR COMMERCIAL HUMAN SPACE FLIGHT

**Abstract**

In 2013, the U.S. Federal Aviation Administration (FAA) released “Established Practices for Human Space Flight Occupant Safety,” a draft guidance document for the rapidly developing commercial human space flight industry. The document is intended to facilitate discussions with stakeholders, with the hope of reaching a consensus between government, industry, and academia on best practices related to occupant safety. The document provides a framework and can serve as a benchmark for industry to use in developing industry consensus standards. It can also serve as a starting point, should there be a need for the government to issue regulations in the future.

One of the main challenges in preparing the established practices was to accommodate the diverse system designs and potential future plans of U.S. industry. Some U.S. companies are focused on carrying people and experiments on short-duration suborbital missions that launch and land at the same location. Other companies are planning launches to low Earth orbit, with visits to government or commercial space stations. Some of the systems will land like an airplane, while others will use a vertical landing, either on land, or in the ocean. Companies participating in NASA’s Commercial Crew Program would like to be able to develop a single vehicle that can meet NASA requirements for carrying astronauts, while still accommodating the needs of commercial customers and having the capability to be operated at reasonable prices.

The FAA practices are based on the data gathered and lessons learned from more than 100 years of aviation and over 50 years of human space flight. Commercial aviation has provided significant insights on the need for regulatory balance, both in terms of business viability, and with respect to passenger safety. Government space programs have helped identify crucial design features and operational capabilities which have been shown to be very important during previous human space flights. In preparing the practices, the FAA did not want to stifle technology innovation, or to see occupants exposed to avoidable risks.

This paper will provide an overview of the FAA’s commercial human space flight established practices, including a discussion of how they were prepared, and how they could be used to enhance occupant safety while accommodating a wide range of design approaches and technical challenges.