

SPACE OPERATIONS SYMPOSIUM (B6)  
Training Relevant for Operations, in particular Human Spaceflight (3)

Author: Mr. Maurice Kennedy  
United Space Alliance, United States, maurice.g.kennedy@usa-spaceops.com

COMMERCIAL HUMAN SPACE OPERATIONS TRAINING STANDARDS

**Abstract**

This paper documents an approach to defining and implementing training standards for the emerging U.S. commercial human space operations industry. It is based upon original work done by a special Task Force on Training I lead in 2008. The task force was “chartered” under the U.S. FAA Commercial Space Transportation Advisory Committee (COMSTAC).

The paper addresses four primary topics: 1. Guidelines and assumptions associated with the development and implementation of training standards. 2. A comprehensive list of commercial human space operations jobs that may require training standards. 3. An approach for defining training standards. 4. An approach for implementing required training standards.

After listing the guidelines and assumptions and the commercial human space operations jobs that may require training standards, the paper sets the stage for the development and implementation of training standards by comparing the current environment to the early days of aviation.

In many ways, the current human space operations environment is similar to the early days of aviation. Back then, there were numerous upstart “companies” developing a variety of aircraft and there were no U.S. Government policies or regulations associated with aircraft certification or safe operations. This environment along with government support (civil and military) accelerated the development of the new commercial aviation industry. However, the development and early operations timeframe contained numerous failures. Between 1908 and 1912, 164 aviators were killed worldwide in aviation accidents or incidents.

Today, there are U.S. Government (federal and state/local) policies and regulations in place to protect surrounding airspace and to protect the public. However, there are no policies or regulations in place to protect the involved personnel (crew, participants/passengers, and ground support personnel). Certainly, training standards would improve the safety of the involved personnel, as well as the public. This is the motivation for defining and implementing training standards.

Based upon the task force evaluation of the environment and a desire to not stifle development of commercial human space flight operations, I chose an approach that would provide flexible training standards, where the U.S. Government (FAA AST) would define what requires training standards and the commercial companies would define and implement how training is conducted. This approach led to 11 specific recommendations which are summarized in this paper.

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