Summary of Report on Key Industry Metrics and Voluntary Safety Standards to Satisfy Section 111 of U.S. CSLCA

May 30, 2019
Background

• In 2004* Congress granted the Department of Transportation (DOT) authority to issue regulations governing the design or operation of a launch vehicle to protect the health and safety of crew and space flight participants.

• However, Congress created a “learning period” that prohibited FAA from promulgating regulations absent death, serious injury, or close call.

• The learning period is set to expire on October 1, 2023.

Congressional Tasking

Section 111 of the CSLCA* required DOT to submit:

• A report specifying key industry metrics that might indicate readiness of the commercial space sector and DOT to transition to a safety framework that may include regulations that considers space flight participant, government astronaut, and crew safety.

• A report on the progress of the commercial space transportation industry in developing voluntary industry consensus standards that promote best practices to improve industry safety.

Report

- “FAA Evaluation of Commercial Human Space Flight Safety Frameworks and Key Industry Indicators”

- Submitted to Congress on October 20, 2017.
Core premises underlying the report:

• Human space flight industry must continually improve its safety performance.

• As industry grows and matures, the depth and breadth of a safety framework should evolve.

• The public’s expectation of safety will increase as the purpose of flying to space evolves from adventure, to occupation, to transportation.

• Until space travel becomes transportation, industry may lead the development and implementation of a safety framework, with limited government involvement.

• Once space travel becomes transportation, the Federal Government will likely need to have a regulatory role.
Key Industry Metrics (cont.)

Readiness to transition to a safety framework that may include regulations is captured by three sets of indicators:

1. Industry readiness,
2. Industry’s progress in developing a safety framework, and
3. FAA readiness.
Industry Readiness

• Purpose of people flying in space
  • Adventure → Occupation → Transportation

• Size and complexity of industry
  • # of suppliers of suborbital & orbital flight, multiple suppliers of same vehicle type, extent of supplier network, international launches

• Safety of the industry
  • Unsafe ops, difficulty attracting customers, availability of insurance
Key Industry Metrics (cont.)

Industry’s progress in developing safety framework
- Voluntary safety reporting
  - Internal reporting and data sharing
- Voluntary consensus standards
- Compliance

FAA readiness
- Authority to transition to safety framework
  - Authority needed depends on leadership (industry v. FAA)
- Expertise in human space flight safety
Metrics Summary

• A safety framework can evolve from company-driven to industry-driven, with various levels of potential government involvement, as industry grows and matures.

• Industry’s proactive participation in a safety framework can influence the timing and extent of government regulatory involvement, and successful implementation of an industry-led framework could minimize the need for government involvement.
Consensus Standards

• Efforts to develop industry-wide standards have been concentrated in three entities:

1. The Commercial Space Transportation Advisory Committee (COMSTAC).
   • Formed Standards Working Group in 2014 to develop and prioritize list of standards.

2. The Commercial Spaceflight Federation (CSF).
   • Formed Technical Standards Committee in November 2012, which has approved standards on propellant handling (2013) and hazardous test notification (2015).

3. ASTM International.
   • Formed Commercial Spaceflight technical committee in 2016.
Consensus Standards (cont.)

• Conclusion of the report:

The current state of standard development is appropriate for the evolving state of the industry.