FAA Commercial Space Transportation Regulations:

A Model for International Consideration

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Panel 5: Government Cooperation with Aerospace Stakeholders

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Department of Transportation, Federal Aviation Administration- Statutory Authority

51 U. S. C. Chapter 509 (formerly the Commercial Space Launch Act of 1984, as amended)

- Authorizes the FAA* to license commercial launch and reentry activities and the operation of launch and reentry sites as carried out by U.S. citizens or within the United States.

- Directs the FAA to:
  - Exercise this responsibility consistent with public health and safety, safety of property, and the national security and foreign policy interests of the United States, and
  - Encourage, facilitate, and promote commercial space launches and reentries by the private sector.

* The Secretary of Transportation’s licensing authority has been delegated to the Administrator of the FAA and further assigned to the Associate Administrator for Commercial Space Transportation (AST).
FAA Licensed or Permit Launches History

  - Includes 132 to Geosynchronous orbit, 85 Non-Geosynchronous orbits, 23 Suborbital
- 40 Permit launches 2006–2015 (all suborbital)
U.S. Spaceports
Commercial/Government/Private Active and Proposed Launch Sites

- Pacific Spaceport Complex Alaska
- Blue Origin Launch Site
- Vandenberg AFB
- California Spaceport
- Mojave Air and Space Port
- Edwards AFB
- Spaceport America
- Oklahoma Spaceport
- Midland Spaceport
- McGregor
- Spaceport Florida - Kennedy Space Center
- Spaceport Florida - Cape Canaveral Air Force Station
- Wallops Flight Facility
- Cecil Field Spaceport
- Mid-Atlantic Regional Spaceport
- Sea Launch Platform
- Equatorial Pacific Ocean
- Reagan Test Site
  - Kwajalein Atoll, Marshall Islands

Key
- FAA-Licensed Non-Federal Launch Site
- U.S. Federal Launch Site
- Owned by University of Alaska Geophysical Institute
- Sole Site Operator

Other spaceports have been proposed for: Alabama, Colorado, Georgia, and Hawaii.

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Expanding Commercial Capabilities
ELVs, Suborbital RLVs, Orbital Systems, Reentry Systems

Virgin Galactic
Sierra Nevada Corp
Boeing
XCOR Aerospace
Masten Space Systems
Blue Origin
Orbital Sciences
Space X
Stratolaunch

Office of Commercial Space Transportation
Who Must Obtain A License

• An entity must obtain a license:
  • To *launch* a launch vehicle from the United States;
  • To *operate* a launch site within the United States;
  • To *reenter* a reentry vehicle in the United States; or
  • To *operate a reentry site* within the United States.

• A U.S. citizen or an entity organized under the laws of the United States or any State must obtain a license:
  • To launch a launch vehicle *outside* the United States;
  • To operate a launch site *outside* of the United States;
  • To reenter a reentry vehicle *outside* of the United States; or
  • To operate a reentry site *outside* of the United States.

• FAA does not license launches or reentries “the Government carries out for the Government”
  • NASA and the Department of Defense typically carry out their own launches.
FAA Approaches and Philosophies for Regulating Commercial Space Transportation

- Focus on public safety

- Performance-based requirements instead of prescriptive-based
  - Allows for technology innovation and rapid development to give industry the flexibility to meet safety objectives without specifying how safety must be achieved.

- License the launch operation instead of the certification of the vehicle or design

- License the spaceport operation instead of the spaceport design

- Regulations evolve as the industry grows and matures without stifling technology innovation

- One single agency to obtain a launch license

- Facilitation and promotion of U.S. industry
FAA Approaches and Philosophies for Regulating Commercial Space Transportation (continued)

• Rules that accommodate a wide variety of industry vehicle designs, capabilities, missions

• Informed Consent regime instead of protection of people onboard

• Safety responsibility on the launch or reentry operator and less on the spaceport

• Flexibility for industry to propose equivalent measures of safety

• Space transportation is different than aviation: faster, air to vacuum environments, more expensive per flight, low volume of flights, not routine, passenger training, customization instead of mass production

• Space transportation is under space law (different than aviation law)
Potential Regulatory Path

Current FAA Licensing

Future Licensing of Human Spaceflight

FAA Certification

Time

Public Safety

Occupant Safety

Mission Assurance

Certificates
- Production
- Airworthiness
- Air Carrier
- Pilot
- Instruction
- Mechanic
- Dispatch
- Parts

Moratorium Expires, Industry Standards Developed

Routine Commercial Space Travel
FAA/AST International Goals

• The FAA is promoting its commercial space transportation regulations for adoption by other countries

• The goals of AST’s outreach are to:
  1) Assist U.S. industry activity outside the United States;
  2) Provide U.S. international leadership;
  3) Establish international relationships; and
  4) Prepare for future interoperability between countries.
Contact

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AST international website
http://www.faa.gov/about/office_org/headquarters_offices/ast/programs/international_affairs/

Regulations for Commercial Space Transportation
http://www.faa.gov/about/office_org/headquarters_offices/ast/regulations/

“Recommended Practices for Human Space Flight Occupant Safety” (August 2014)