Commercial Spaceflight and Planetary Protection

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May 23, 2017
Intro to Commercial Space Transportation

The U.S. space program today has 3 sectors:
- Civil (NASA)
- Military (DOD)
- Commercial (FAA-licensed)

The commercial sector had its official start in 1984 with Executive Order 12465
DOT designated as lead Federal agency for enabling private-sector launch capability

Congress passed the Commercial Space Launch Act soon afterwards in 1984
- Regulatory oversight for the commercial sector was given to the Office of Commercial Space Transportation
- Originally within DOT and the Office of the Secretary

AST is now one of five lines of business (LOB) within the FAA:
- Office of Aviation Safety (AVS)
- Office of Airports (ARP)
- Air Traffic Organization (ATO)
- Office of Commercial Space Transportation (AST)
- Office of Security and Hazardous Materials Safety (ASH)
Mission:
• To ensure protection of the public, property, and the national security and foreign policy interests of the United States during commercial launch or reentry activities, and;
• To encourage, facilitate, and promote U.S. commercial space transportation.

Over 300 licensed and permitted commercial launches and reentries since 1989 without any public casualties or major property damage
An entity must obtain a license:
- To launch a launch vehicle from the United States;
- To operate a launch or reentry site within the United States;
- To reenter a reentry vehicle in 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 or reentry site outside of the United States;
- To reenter a reentry vehicle outside of the United States; or

An entity may obtain an experimental permit:
- To launch a reusable suborbital vehicle from the United States for research and development, or prior to obtaining a launch license, to show compliance with requirements for a license or crew training.

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.
What is a Payload Review?

“the FAA reviews a payload proposed for launch to determine whether its launch would jeopardize
• public health and safety,
• safety of property,
• U.S. national security or
• foreign policy interests, or
• international obligations of the United States.”

14 CFR 415.51
When is a Payload Review required?

Required for every licensed or permitted launch.

However...

A U.S. citizen or company can request a payload review independent of a license or permit application.
What is the Payload Review process?

- Collect basic information on the payload

- Perform interagency review
  - DOD, State, NASA specified in regulation
  - May involve others

- Issuance of determination
  - If “unfavorable” applicant will be told why and may request reconsideration.
“Unconventional” Payloads

- Payload reviews have traditionally involved conventional commercial satellites operating in LEO or GEO:
  - Uncrewed
  - Same orbit for lifetime of payload
  - No significant regulatory challenges/OST impacts

- Increasing number of review requests for “unconventional” payloads:
  - Beyond Earth orbit
  - Human activities
  - Changing orbits and/or ultra long-duration lifetimes
In Space Commercial Space Operations

Satellite Servicing

Commercial Space Stations

Space Settlements
Lunar and Mars Missions

Lunar and Asteroid Mining
Six projects pending with AST:
- Destinations include Moon, Mars
- Intended operations will push the bounds of existing regulatory authority.

Not technically in regulatory pipeline but in discussions/expected soon
- Long-term commercial human activities in orbit and on Moon.
- Resource extraction on asteroids and Moon.
Case Study: Moon Express

Commercial lunar lander and “hopper” deployed to surface of the Moon. Two week mission duration. Uncrewed.

Was granted a favorable “one time only” payload determination in 2016. First company to receive such a determination for an operation on the Moon.

Required intense negotiations/consultations with interagency partners.
Regulatory Situation is Evolving

2015 Commercial Space Launch and Competitiveness Act

- Section 108 Report on Space Authority recommended that “Mission Authorization” authority be granted to the Secretary of Transportation

Changes on the way? Recent headlines:

- Cruz to hold hearing on updating the Outer Space Treaty
- House committee weighs lighter touch to commercial space regulations
Conclusion

“Our industry is strong, it is growing, it is inspiring, and it is making a significant difference for our nation…”

…If I were to characterize our progress in a phrase or two, I’d say things are looking good, and looking up.”

- Dr. George Nield
Associate Administrator
FAA Office of Commercial Space Transportation