



# Commercial Spaceflight and Planetary Protection

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**Federal Aviation  
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# 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)

# FAA Office of Commercial Space Transportation (AST)

## 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



# Who Needs a License or Permit?



## 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.

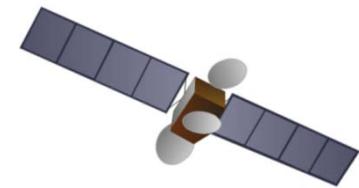
# What is the Payload Review process?

- 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**

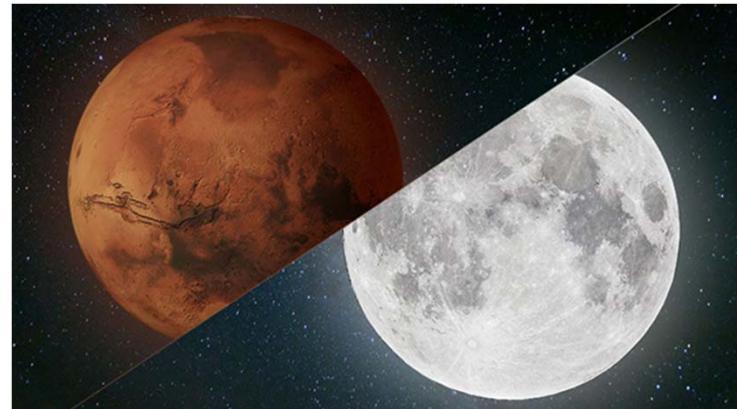
**Lunar and Asteroid Mining**



# Status of Unconventional Payload Reviews

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:

PEOPLE

POLICY & POLITICS

**Cruz to hold hearing on updating the Outer Space Treaty**

House committee weighs lighter touch to commercial space regulations

Draft Bill Would Give Commerce, Not FAA, "Mission Authorization" Function

# 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