

FAA Regulations for Launch Sites and International Considerations

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Federal Aviation
Administration



Department of Transportation, Federal Aviation Administration- Statutory Authority

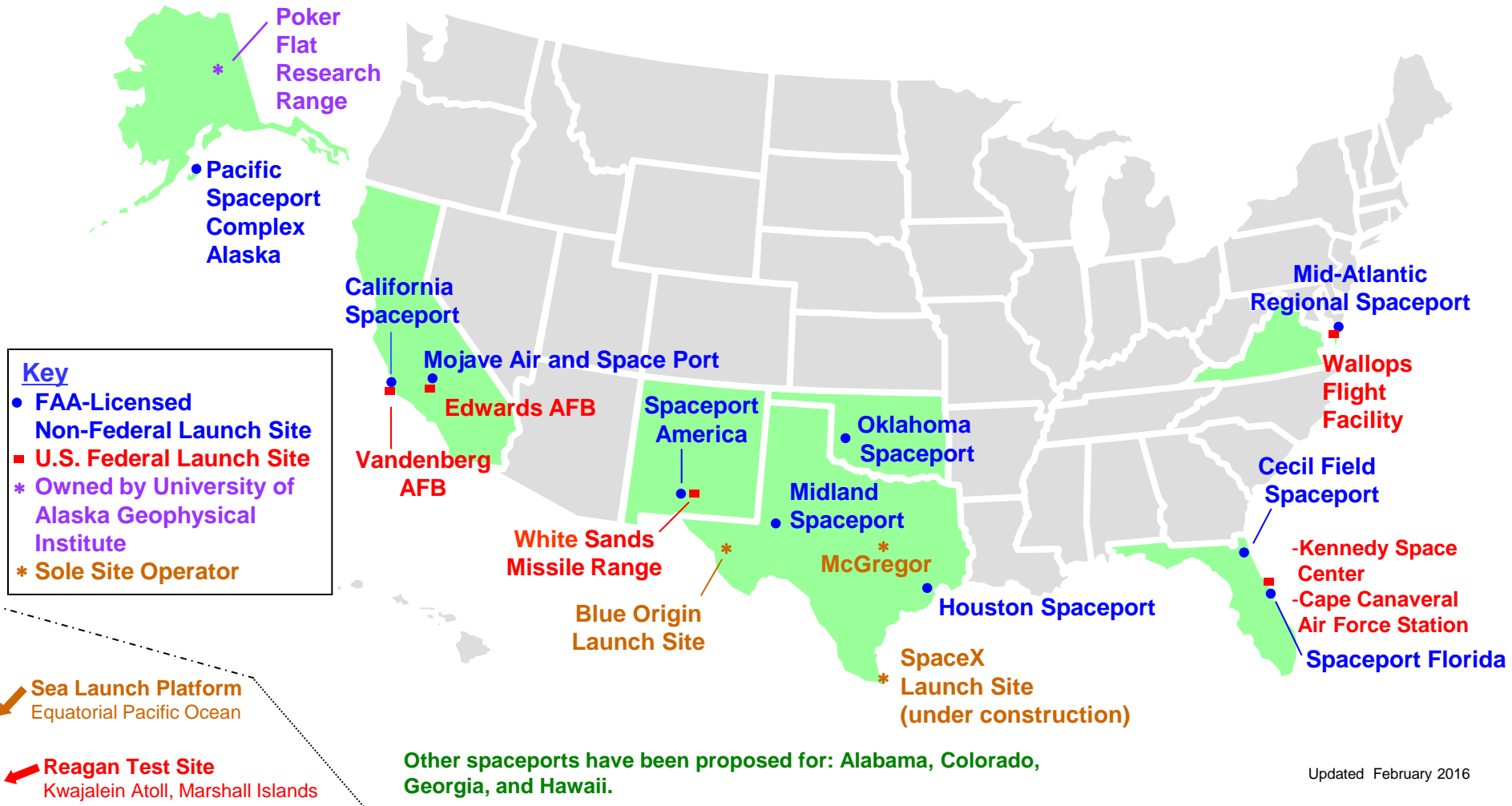
51 U. S. C. Chapter 509 (formerly the Commercial Space Launch Act of 1984, as amended)

- 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).

U.S. Spaceports

Commercial/Government/Private Active and Proposed Launch Sites



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.

Major Components of an FAA Launch Site Operator License

- Environmental Assessment
- Launch Site Location Review – risk analysis (E_c), vehicle types, debris dispersion
- Explosive Siting – plan, allowable distances between each explosive hazard facilities and public areas
- Operational Responsibilities – control of public access, accident investigation plan, scheduling, and notifications
- Agreements – to issue Notice to Mariners (NOMAR), Notice to Airmen (NOTAM), other air traffic coordination
- FAA issues 5-year license with annual inspection
 - Only for site operation, not vehicle operation
- Ensure ground and flight operations at the launch site do not harm the public



Mojave Air & Space Port



Pacific Spaceport Complex Alaska

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

U.S. Vehicles at International Launch Sites

- The FAA will license or permit any launches or reentries by U.S. operated commercial vehicles outside the United States
 - Option to the host country to add requirements
 - FAA encourages other countries to discuss requirements in advance with U.S. industry
- FAA regulations put most of the safety responsibility on the launch vehicle operator, not the launch site (spaceport) operator
- The FAA would only license a launch site outside the United States if the launch site is operated by a U.S. citizen
- Any export and technology transfer issues (such as ITAR, MTCR) are led by the Department of State or Department of Commerce
- FAA regulations already require the launch or reentry operator to sign an agreement with the local air traffic control authority (in the host country)
- Preliminary considerations for a U.S. vehicle launch or reentry at a non-U.S. launch site:
 - Environmental – the FAA determines if a launch or reentry would have a significant effect
- If there is no significant effect, the FAA would have to decide what action is needed in accordance with Executive Order 12114.
 - If the host country has done its own review, FAA could choose to document that review
 - Launch oversight begins at ignition or wheels moving (different from a U.S. launch)
- FAA expects to have less involvement and insight into pre-launch ground activities
 - Other agreements may be needed with the U.S. such as oversight roles and joint accident investigation

Standards Development, Recommended Practices

- There are very few international commercial space standards
- The FAA has a statutory mandate to encourage, facilitate, and promote the continuous improvement of the safety of launch vehicles designed to carry humans.
- The FAA does not have authority to protect people onboard space vehicles
- In 2014, the FAA released “Recommended Practices for Human Space Flight Occupant Safety”
 - Framework for future industry consensus standards
 - There are 90 recommendations, a few relate to ground safety:
 - *Emergency Communication with Rescue Personnel*
 - *Emergency Vehicle Egress*
 - *Fatigue Management* (including ground safety personnel)
 - *Alternate Landing Sites*
 - *Safety-Critical Training*

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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)
http://www.faa.gov/about/office_org/headquarters_offices/ast/media/Recommended_Practices_for_HSF_Occupant_Safety-Version_1-TC14-0037.pdf