**Briefing to:**

**Alabama Spaceport Authority**

**December 19, 2017**

Glenn Rizner

**Chief of Staff**

**Office of Commercial Space Transportation**

**Federal Aviation Administration**

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**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

[ast.faa.gov](http://ast.faa.gov)
Background

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 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)

AST Organizational Chart

Associate Administrator
AST-1 Dr. George C. Nield

Deputy Associate Administrator
AST-2 Kevin Coleman
Director of Space Integration
Vacant

Chief of Staff
Glenn Rorer

Resource Mgmt
- International Outreach
- Strategic Planning
- COOP
- Training
- Administrative Support

Office of Strategic Planning
AST-3
Dorothy Reimold

Office of the Chief Engineer
AST-4
Mike Kelly
Paul Wilde

Office of Special Projects
Kevin Coleman (acting)

Space Traffic Management
- Space Support Vehicle

AST-100
Space Transportation Development Division
Daniel Murray
Howard Searight

Environmental Reviews
- Air & Space Integration
- Innovative Grants

AST-200
Licensing and Evaluation Division
Ken Wong

- Licensing
- Experimental Permits
- Safety Approvals
- Waivers

AST-300
Regulations & Analysis Division
Stewart Jackson
Randy Repcheck

- Rulemaking
- Safety Analysis & Tools
- Advocacy & Outreach
- Guides

AST-400
Safety Inspection Division
Mark Wright

- Safety Inspections
- Mishap Response
- Enforcement
- Federal/Range

AST-500
Operations Integration Division
Pam Underwood
Michelle Murray

- Project Integration
- Government Partnerships
- Pre-Application Consultation
- Partnerships for Safety
Commercial Space Laws

The U.S. Congress has only incrementally expanded DOT/FAA authority over commercial space transportation:

- 1984 included launch authority
- 1998 added reentry authority
- 2004 added firm authority over commercial human space flight (CSLAA)
- 2015 pro-growth environment for developing commercial space industry (CSLCA)

What types of activities is FAA/AST involved in?

- Commercial Launch/Reentry Licenses
- Commercial Launch Site Licenses
- Experimental Permits
- Safety Approvals
- Inspections of Launch Operations and Sites

Launch Sites
Expendable Launch Vehicles (ELV)
Air Launch (ELV/RLV)
Reusable Launch Vehicles (RLV)
## FAA Authority

### Statutory Authority - United States Code (USC):
- Aviation regulations: U.S. Code: Title 49 – Transportation
- Space regulations: U.S. Code: Title 51 – National & Commercial Space Programs

### Code of Federal Regulations (CFR):

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### Spaceports:

**Launch Site Operator License (LSOL) – Part 420**

**Reentry Site Operator License – Part 433**

For a launch site operator license, an applicant must comply with CFR part 420 to obtain this type of license.

For a reentry site operator license, an applicant must comply with CFR part 433 to obtain this type of license.

These types of licenses authorize the licensee to operate a launch or reentry site:
- A launch or reentry site operator may offer its site to multiple operators
- Remains in effect for five years from the date the license is issued
- License issuance does not confer exclusive use of airspace
- Any vehicle operator wishing to launch or reenter at a licensed site must also obtain a separate authorization
**Existing and Proposed Global Spaceports**

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**Key**
- Existing Orbital Spaceport
- Proposed Orbital Spaceport
- Proposed Suborbital Spaceport
- Existing Suborbital Spaceport

Safe Integration... The Ultimate Goal

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Current Trend: Reusable Launch Vehicles

SpaceX is not the only company pursuing reusability. Almost every commercial launch company is as well: ULA, Blue Origin, and lots of little companies.

Rocket Reusability

SpaceX and Blue Origin, although they have different goals, are both attempting to reuse the first stage of their suborbital (Blue Origin) and orbital (SpaceX) vehicles. For SpaceX - reusing the rocket first stage will hopefully dramatically decrease the cost of launches. The first stage of a Falcon 9 is about 70% of its $54m price tag. In the future, SpaceX intends to return the second stage back to a landing site.
Future Trend: Non-Traditional Reusability

- Balloon-based space tourism
- Balloon-based launch platform
- Space guns

New Heavy-Lift Systems - F9H & SLS
Current Trend: Government as a Customer Commercial Procurement of Launch Services

To reduce costs, the Government is commercially procuring more launches:
- NASA Space Station Resupply and Crew
- DARPA XS-1 Spaceplane
- National Reconnaissance Office
- Other Government Satellites

SpaceX Launches US Spy Satellite on Secret Mission, Nails Rocket Landing

By Irene Klotz, Space.com Contributor | May 1, 2017 07:00am ET

Current Trend: Government as a Customer

- DARPA has awarded Phases 2 and 3 of their Spaceplane program to The Boeing Company
- Phases 2 and 3 are focused on fabrication and flight
- Phase 3 objectives include 12 to 15 flight tests, currently scheduled for 2020.
Current Trend: Suborbital Human Spaceflight

Future Trend: Global Point-to-Point Travel
Future Trend: In Space Commercial Operations

Satellite Servicing
Commercial Space Stations
Lunar Settlements
Lunar and Mars Missions
Lunar and Asteroid Mining

Pre-Application Consultation

Required per 14 CFR part 413.5

Our goal is to:

- Educate potential license, permit, or safety approval applicants about FAA regulations and processes
- Enable development of a high fidelity, complete application.
- Provide opportunity for applicants to gain a clear understanding the Part 400 regulations and associated review processes apply to proposed operations
- Provide FAA opportunity to gain an understanding of potential applicant’s proposed operation(s) prior to application submittal
- Execute a process that enables FAA and applicant to work together efficiently to identify and proactively resolve technical, legal or policy challenges associated with the proposed activities.
National Space Council

October 5, 2017
First meeting of the National Space Council chaired by Vice President Pence
New Space Policy Directive

New Space Policy Directive Calls for Human Expansion Across Solar System

President Donald Trump is sending astronauts back to the Moon. The president Monday (12/11) signed at the White House Space Policy Directive 1, a change in national space policy that provides for a U.S.-led, integrated program with private sector partners for a human return to the Moon, followed by missions to Mars and beyond.

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