SUBCOMMITTEE ON SPACE AND AERONAUTICS
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

Office of Commercial Space Transportation's Fiscal Year 2012 Budget Request

Thursday, May 5, 2011
10:00 a.m. – 12:00 p.m.
2318 Rayburn House Office Building

Purpose

The purpose of the May 5 hearing held by the Subcommittee on Space and Aeronautics is to review the Fiscal Year 2012 budget request submitted by the FAA Office of Commercial Space Transportation (in FAA shorthand the office is referred to as 'AST') and to examine new initiatives in the request to expand the office's roles and responsibilities. AST's FY2012 budget request seeks $26.625 million, a 74% increase over the FY2010 enacted level ($15.237 million) and a near-doubling of its workforce, asserting that NASA-sponsored commercial cargo flights to the International Space Station, plus the expected start-up of commercial human sub-orbital flights, places new regulatory demands on their operations.

Witnesses

Dr. George C. Nield, Associate Administrator for Commercial Space Transportation, Federal Aviation Administration

Dr. Gerald Dillingham, Director, Physical Infrastructure, U.S. Government Accountability Office

Dr. Henry R. Hertzfeld, Research Professor of Space Policy and International Affairs, Elliott School of International Affairs, George Washington University

Background

The Office of Commercial Space Transportation (AST) licenses and regulates U.S. commercial space launches and reentries, as well as the operation of non-federal launch and reentry sites. It's mission statement is: "To ensure the protection of the public, property, and the national security and foreign policy interests of the United States during commercial launch and reentry activities, and to encourage, facilitate, and promote U.S. commercial space

transportation." AST issued its first launch license in 1989 and since then has licensed 204 launches with no fatalities, serious injuries, or significant damage to the uninvolved public.

In 1984 President Reagan signed an executive order designating the Department of Transportation as the lead federal agency for encouraging and facilitating commercial launch activities within the private sector. Eight months later Congress passed the Commercial Space Launch Act (P.L. 98- 575) which gave legislative authority to DOT's role as the principal oversight agency for the regulation and licensing of commercial space transportation systems. Subsequently, DOT shifted the office to the FAA.

Congress last acted on legislation dealing with commercial space transportation in the 108th Congress. Two bills were enacted: (1) "The Commercial Space Launch Amendments Act", H.R. 5382 (PL 108-492) was introduced by Rep. Dana Rohrabacher and expanded AST's authority to regulate commercial human space flight; (2) H.R. 2608 (PL 108-360) reauthorized the Office of Commercial Space Transportation through FY 2009. No subsequent bill addressing AST has since been enacted.

Licensing Activities

There are three types of launches – national security, civil, and commercial. The Office of Commercial Space Transportation regulates commercial launches; launches of NASA and DOD payloads do not require licenses. In 2010, AST licensed four commercial orbital launches compared to five licensed launches in 2009. For 2011 AST forecasts four commercial launches will be licensed. No suborbital flights were conducted under FAA experimental permits in 2010.

In 2010 one reentry was conducted under an FAA reentry license. The SpaceX Dragon Capsule successfully reentered the atmosphere and landed in the Pacific Ocean following its first NASA Commercial Orbital Transportation System (COTS) demonstration flight. It was the first reentry license ever granted by FAA. SpaceX anticipates flying its second COTS demonstration flight later this year and Orbital also plans to fly its first COTS demonstration before the end of 2011.

In addition to licensing launches, AST also licenses the operation of commercial launch sites (or "spaceports"). Currently, there are eight -

- Spaceport Florida, Cape Canaveral Air Force Station, FL
- Mid-Atlantic Regional Spaceport, Wallops Island, VA
- California Spaceport, Vandenberg Air Force Base, CA
- Kodiak Launch Complex, Kodiak Island, AK
- Mojave Air & Space Port, CA

- Cecil Field Spaceport, Jacksonville, FL
- Oklahoma Spaceport, Burns Flat, OK
- Spaceport America, Las Cruces, NM

FY2012 Budget Request

FAA Office of Commercial Space Transportation (AST)

FY2010 Enacted	FY2011 Req	FY2012 Req	FY12 vs. FY10 Enacted $$$	FY12 vs. FY10 Enacted %
$15,237,000	$15,747,000	$26,625,000	$11,388,000	75%

AST's FY12 budget request seeks $26.625 million, a 75% increase over FY10 enacted, and compared to the FY11 request it represents a 69% increase ($10.878 million). Three new proposals are responsible for the spending growth –

(1) proposed establishment of the "FAA Commercial Spaceflight Technical Center" to be located at the Kennedy Space Center in Florida ($5 million in FY12 to hire 50 additional employees);
(2) creation of a "Space Incentives Program" ($5 million in FY12) ; and
(3) hiring an additional 7 employees ($1.25 million) for development and implementation of safety requirements and human factors to support development of commercial crew transportation systems and missions.

The budget request includes the following justification: "A key challenge that we are facing today involves the beginning of a new era in commercial human spaceflight: suborbital human spaceflight (space tourism) and orbital crew transportation to the International Space Station. The publication of the new National Space Policy signals an even greater role for the commercial space industry in America's overall space strategy and space traffic management and AST's activities support the growth in the commercial space industry…In addition, the 2012 Budget request supports the *Presidential Task Force on Space Industry Workforce and Economic Development's* recommendation that FAA establish a Commercial Spaceflight Technical Center. The Technical Center will provide safety and technical support for future commercial space launch activities and support the continued development of standards and regulations for commercial spaceflight. Due to a projected increase in commercial space transportation launches, AST funding will be used to conduct appropriate research and develop necessary regulations related to commercial human spaceflight to ensure public safety."

The FAA Commercial Spaceflight Technical Center. Many details about the Center are still being developed. AST's budget request notes that the Presidential Task Force recommended that FAA establish the Center at the Kennedy Space Center, and that its main purpose will be "to develop safety processes and requirements related to commercial human spaceflight (HSF), along with related research… Primary focus areas at the Technical Center will include spaceflight safety, spaceflight engineering and standards, and Space Traffic Management." In supplementary budget material provided to committee staff, AST also pointed out that establishing the Technical Center at Kennedy will "enable the nation to continue to benefit from the contributions of a significant number of highly-skilled aerospace workers who will be seeking employment during the next 12 months. It will allow the FAA and NASA to partner in developing an organization with a knowledgeable and experienced staff to regulate future commercial space operations."

Space Incentives Program. The request seeks $5 million to establish a program for incentivizing advancements in space transportation by non-governmental organizations. Modeled on previous successful prize programs (e.g., the Ansari X Prize), AST proposes to put up a $5 million award for industry to develop and demonstrate a low-cost launch system for CubeSats. These are very small low-cost satellites (10 x 10 x 10 cm) that are favored by universities and other research institutions, and are typically carried as secondary payloads on conventional satellite launches. Should the prize program produce a winning design, it would enable frequent dedicated low-cost missions carrying one or several CubeSats.

Commercial Space Launch Amendments Act of 2004

In 2004, SpaceShipOne successfully launched two suborbital flights from the Mojave, CA, airport within a two week time-span, winning the $10 million Ansari X-Prize. Space industry optimists believed then that suborbital flights carrying space tourists would quickly develop with several commercial companies entering the marketplace to offer routine suborbital flights. Later that year Congress passed H.R. 5382 (P.L. 108-492), the Commercial Space Launch Amendments Act of 2004, authorizing the Secretary of Transportation to license and regulate commercial human space flight.

However, even though the Act extended regulatory authority to DOT (specifically to the Office of Commercial Space Transportation), it prohibited federal regulation of commercial human space flight companies for eight years following enactment. This prohibition covers both suborbital and orbital commercial launch systems.

The premise of the eight-year prohibition was rooted in the concern that the industry did not yet exist, and thus DOT (and AST) had no relevant experience upon which to regulate industry practices. During this period, space launch companies would be able to experiment with various designs and processes as they endeavored to improve their vehicles' safety and

performance prior to offering licensed suborbital (or orbital) flights. The Act provided two exceptions to the regulatory prohibition; AST could restrict or prohibit design features or operating practices that (1) resulted in a serious or fatal injury to crew or space flight participants, or (2) contributed to an unplanned event during a commercial human space flight that posed a high risk of causing a serious or fatal injury to crew or space flight participants. The eight year ban expires December 23, 2012.

Thus the increase in AST's FY2012 budget request is predicated on the expiration of the ban and with it the need to develop the technical expertise, and to hire industry veterans. Their budget request states: "The FY2012 request reflects the addition of crew and passenger safety to our regulatory activities."

The regulatory prohibition may be modified by Congress. On March 31, 2011, during House consideration of H.R. 658, the FAA Air Transportation and Modernization and Safety Improvement Act of 2011, an amendment was adopted by the House that, among other provisions, extended the regulatory prohibition for another eight years following the date of the first licensed commercial human space flight launch. The Senate companion bill had no comparable provision.

To date only one company, Virgin Galactic, is known to be actively testing a prototype sub-orbital commercial human spaceflight vehicle. SpaceShipTwo, a larger version of the Ansari X-Prize winner, is undergoing unpowered atmospheric testing in California. According to the company, hundreds of interested purchasers have already placed down-payments with Virgin Galatic for the privilege of flying on their spacecraft once commercial flights get underway.

NASA's Commercial Cargo and Crew Programs

With the retirement of the Space Shuttle this summer, NASA plans to rely on two companies – Orbital Sciences Corporation (Orbital) and Space Exploration Technologies (SpaceX) – to provide cargo resupply services to the International Space Station until 2020. Under the current contracts each company is obligated to launch two supply flights a year, and with regard to SpaceX, it would also bring materials back from ISS using their Dragon capsule to reenter the atmosphere and land at a permitted site. For these resupply flights NASA is buying a service as though it were a traditional commercial customer, thus triggering coverage under AST's licensing regime. Once both companies are operating resupply flights on a routine basis, AST's regulatory workload will increase by four flights a year, plus two reentries.

NASA is also pursuing a longer term strategy to use a similar approach of buying launch services to ferry astronauts to and from the International Space Station, although agency plans are still uncertain about when these "commercial crew" flights will begin. Most of the agency's notional plans suggest 2016 as a likely date, though many technical hurdles still

remain, not the least of which is NASA publishing a set of human rating requirements to be met by any of the commercial launch bidders.

Non-NASA flights would also require a new set of regulations be established and enforced by AST to ensure that the risk to non-governmental crew and passengers are minimized. NASA has vast experience in this arena while AST has none. FAA (AST) and NASA are in discussions now about how the two agencies will exercise oversight and insight into the design and operation of any commercial orbital crew launch systems, as well as their reentry performance, landing sites, and recovery operations. The goal is to minimize any overlap between the agencies.

On Thursday, April 28, 2011, AST published a notice on its website that it will hold a public meeting late this month in Florida to seek input from the affected community. "FAA is planning to propose regulations to protect the health and safety of crew and space flight participants for orbital human spaceflight as soon as circumstances require after December 23, 2012" (the end of the eight year regulatory prohibition now in current law).