STATEMENT OF DR. GEORGE C. NIELD, ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE, SUBCOMMITTEE ON SPACE AND AERONAUTICS, ON THE OFFICE OF COMMERCIAL SPACE TRANSPORTATION'S FISCAL YEAR 2012 BUDGET REQUEST, MAY 5, 2011.

Chairman Palazzo, Congressman Costello, and Members of the Subcommittee:

Thank you for inviting me to participate in this hearing on the activities of the Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST). This is my first opportunity to speak to many of you, so I am particularly pleased to be here. I know the Subcommittee is specifically interested in the Administration's FY 2012 budget request for AST. I look forward to answering any questions you may have about our request. I would also like to take this opportunity to update the Subcommittee on some of our recent activities, to highlight some of the changes to our industry during the past year, and to offer a view of the future – what's on the horizon as we transition to a new role for the nation's commercial space transportation industry.

The Office of Commercial Space Transportation

The Office of Commercial Space Transportation (AST) was established by Executive Order in 1984 and was located in the Office of the Secretary of Transportation. In November of 1995, the office was transferred to the FAA, where today it is one of the agency's four lines of business, along with the Office of Aviation Safety, the Office of Airports, and the Air Traffic Organization.

Space transportation activities in the United States fall into three main sectors: the civil sector, where the National Aeronautics and Space Administration (NASA) has the

primary lead; the national security sector, involving the Department of Defense and the intelligence community; and the commercial sector, which is regulated by the FAA. In accordance with federal statute, it is the mission of AST to ensure 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 commercial space transportation. While we take all of our statutory charges seriously, our top priority is safety. To carry out our safety responsibilities, we develop and issue regulations; grant licenses, permits, and safety approvals; and conduct safety inspections during every licensed or permitted launch. To date, we have an unblemished safety record: 204 licensed launches, without any loss of life, serious injuries, or significant property damage to the general public.

We are also responsible for licensing the operation of launch and reentry sites or "spaceports," as they are popularly known. Since 1996 we have licensed the operation of the California Spaceport at Vandenberg Air Force Base; Spaceport Florida at Cape Canaveral Air Force Station; the Mid-Atlantic Regional Spaceport at Wallops Flight Facility in Virginia; Mojave Air and Space Port in California; Kodiak Launch Complex on Kodiak Island, Alaska; the Oklahoma Spaceport in Burns Flat, Oklahoma; Spaceport America near Las Cruces, New Mexico; and Cecil Field in Jacksonville, Florida.

Development of these sites is necessary for the growth and success of the industry. In FY 2010, the FAA awarded four grants for spaceport development. These investments will facilitate safety and growth of future spaceport development and should ultimately inspire additional private investment in commercial space transportation.

Commercial space transportation research efforts were enhanced last year by the establishment of the Center of Excellence for Commercial Space Transportation, led by New Mexico State University, Las Cruces. The other institutions that comprise the center include Stanford University; the Florida Institute of Technology in Melbourne; the New Mexico Institute of Mining and Technology in Socorro; the University of Colorado at Boulder; the University of Texas Medical Branch, Galveston; and the Florida Center for Advanced Aero-Propulsion — a research consortium made up of the University of Florida, Florida State University, and the University of Central Florida. The Center of Excellence is a partnership between academia, industry, and government, and will carry out research necessary to maintain U.S. leadership in commercial space transportation safety and technology.

Additionally, the FAA maintains important relationships with our interagency partners. We continue our partnership with the Air Force through our Common Standards Working Group where we coordinate on safety issues for expendable launch vehicles. We also work with the White House Office of Science and Technology Policy, NASA, and the Departments of Commerce, State, and Defense in the development of interagency policy for the industry, including the new National Space Policy released in 2010. We consult with the Department of State regularly to promote our commercial space transportation guidance abroad.

The Administration's 2010 National Space Policy establishes specific goals to strengthen stability in space by, among other things, promoting safe and responsible operations in space. This will require steps such as collecting and monitoring detailed knowledge of

the orbital environment, and the sharing of that information with a variety of space actors. It will also be important to continue taking steps to minimize the creation of orbital debris and otherwise help preserve the space environment for responsible, peaceful, and safe activities by all users. Over time, the FAA will play a central role in developing and enhancing our nation's capacity to conduct such efforts, along with the Departments of Defense, State, and Commerce; the Office of the Director of National Intelligence; NASA; and the Federal Communications Commission. This collaboration will provide global benefits.

Today and Moving Forward

As the FAA continues the work of overseeing and enabling the safe development of the commercial space transportation industry, the space community as a whole finds itself at a crossroads. Last month, we celebrated the 50th anniversary of human space flight. Next month, NASA will conduct its final Space Shuttle launch. While this is a bittersweet event for all space enthusiasts, it is also an exciting time and an opportunity to begin the next chapter in space access, transportation, and development. After the completion of *Atlantis*' final mission, NASA is planning to rely on private industry to launch cargo, and eventually crew members, to and from the International Space Station (ISS), thereby enabling NASA to focus its attention on exploring the solar system. FAA is engaging with NASA to further refine the licensing and regulatory process for these upcoming commercial crew launches to the ISS.

Throughout the past 50 years, NASA has become the world leader in human spaceflight, amassing vast experience and a wonderful track record in space travel. There is no equal.

Similarly, during the past 50 years, the FAA has achieved a stunning record of safety in commercial aviation. We are now leveraging that half-century of experience and safety acumen in our regulation and oversight of the commercial space transportation industry.

Working in tandem, the FAA and NASA can bring best practices and our best experiences to bear on the future development of a safe and robust commercial human spaceflight industry for our nation – a priority of the Administration. Working with NASA and other experts, we can ensure the United States maintains its leadership role as human space flight becomes a reality for the commercial industry and private sector development increases to meet demand.

One of the concerns we have heard expressed, and which Members of this Subcommittee may share, pertains to the demand for commercial launches to low Earth orbit: Is there a market? What does that market look like now and in the future? Is it sustainable?

To answer these questions, Congress directed NASA, in coordination with the FAA, to conduct an assessment of the potential non-Governmental market for commercially-developed crew and cargo transportation systems and capabilities (apart from the more established market for launched commercial spacecraft). Assessments by NASA and the FAA reveal a diversity of opinion among the space community regarding the size of the non-Governmental market for commercial crew and cargo launches, as well as the price of a ticket to space. The NASA report concluded that "catalyzed by a successful Commercial Crew Program, a stable commercial non-Government market is likely to emerge." NASA investments to date have paid huge dividends for industry, providing new capabilities and enabling the development of new, lower-cost launch systems.

Multiple American companies – including small, entrepreneurial enterprises and large, established aerospace corporations – have announced that they are ready, willing, and able to meet NASA's future needs, as well as those of non-Governmental customers.

The future of commercial cargo and crew transportation to low Earth orbit is a coming reality, but the largest near-term expansion in activity will be in suborbital spaceflight. In calendar year 2010, there were four licensed orbital launches: two Falcon 9 test fights and two satellite deployment missions—a Delta II and a Delta IV. That same year, we saw the first FAA-licensed reentry, of SpaceX's Dragon capsule. In FY 2012, we expect several dozen licensed or permitted launches. Although most of those missions will involve suborbital launches, it still will be quite a change. The dramatic increase in launch numbers will provide the FAA and the space community with important data and facilitate significant improvements throughout the industry.

The President's FY 2012 Budget

The Administration's FY 2012 budget request for AST totals approximately $26.6 million and provides for 103 full-time employees (FTEs), at a cost of approximately $15.8 million. The office's request for non-pay activities totals approximately $10.8 million. Key outputs of the request include a projected 6 license and permit applications, 40 launch or reentry operations inspections, 8 launch site inspections, 5 environmental assessments, plus new rulemaking products, the Commercial Space Flight Technical Center, the Center of Excellence for Commercial Space Transportation, and incentives for low cost access to space. The budget requests $1.2 million and 14 positions to

develop and implement additional safety processes and requirements specifically for commercial human spaceflight and the FAA's efforts to improve spaceflight safety.

Commercial Space Flight Technical Center

The budget request for AST includes $5 million and 50 positions for a Commercial Spaceflight Technical Center. In anticipation of the commercial cargo launches to the ISS that are scheduled to begin this year and with plans for eventual commercial crew missions, it will be vitally important to enhance and ensure the highest levels of safety for commercial spaceflight operations. The staffing and activities planned for the Commercial Spaceflight Technical Center will provide the detailed engineering and operational expertise that will be required to oversee the emerging commercial spaceflight industry.

Specifically, the Commercial Spaceflight Technical Center will perform several functions: spaceflight safety, including safety inspections, and accident prevention and investigation activities; spaceflight engineering and standards, to be developed in cooperation with both NASA and the industry, for spacecraft, spaceports, flight crew and participants, and aerospace technicians; range operations, including planning for future upgrades; and facilitating interagency coordination and information sharing with regard to space situational awareness, orbital debris, and collision avoidance advisories.

On August 15, 2010, the Presidential Task Force on Space Industry Workforce and Economic Development recommended that FAA establish the new Center at the Kennedy Space Center in Florida. By co-locating the new Center at the Kennedy Space Center, we

hope to benefit from the contributions of a significant number of highly skilled aerospace workers who will be seeking employment during the next 12 months. Additionally, this co-location will allow the FAA and NASA to further strengthen our partnership by developing a knowledgeable and experienced staff to regulate future commercial space operations, and to develop the technical standards that will be needed for this emerging and critically important industry.

Although the relationship between the Commercial Spaceflight Technical Center and NASA will be vital, the Center will not duplicate NASA functions. NASA has a separate mission and is focused on activities such as the safety of its personnel during transport to and from the ISS, operation of the ISS, development of a new Heavy-Lift launch vehicle, robotic and human exploration of the solar system, Earth and space science, and aeronautics. The FAA is a regulatory agency and has the statutory responsibility to oversee commercial space launches and reentries, and to ensure public safety during these operations. Establishment of the Commercial Spaceflight Technical Center will enable the FAA to strengthen its partnership with NASA, drawing on NASA's expertise and experience in space operations and human space flight to augment the FAA's experience in licensing and regulating commercial launches to develop a highly skilled cadre of commercial space hardware and operations experts.

Low-Cost Access to Space Incentive

The FY 2012 budget request also includes $5 million to incentivize advancements in the commercial space transportation industry. The Low Cost Access to Space Incentive program will provide a $5 million award to the first non-governmental team to develop

and demonstrate the capability to launch a 1-kilogram cubesat to orbit using a partially reusable launch system. The Administration believes that prizes and challenges have many potential benefits, including increasing the number of organizations that are addressing a particular problem of national significance, stimulating private sector investment that is many times greater than the cash value of the prize, and allowing the Federal Government to pay only for results.

The high cost of access to space has long been a major obstacle for civil, military, and commercial space programs. The dream of low cost, fully-reusable space launch systems has recently been demonstrated by the X-Prize competitions, but only to suborbital space. This competition will achieve significant reductions in the cost of getting satellites to orbit.

The Space Incentive Program follows a long tradition of prize competitions, including the AnsariX Prize won by Scaled Composites SpaceShipOne in 2004 and the Orteig Prize won by Charles Lindbergh in 1927. These awards can lead to significant accomplishments in transportation, and the use of prizes has been very successful in enabling government and industry to come up with innovative solutions to challenging problems. This incentive is expected to increase the number of developers and operators focusing on the specific problem of reusable, low-cost, orbital space launch systems, and we believe it is of sufficient size to attract the investment and commitment of companies who are capable of winning the prize.

Preparing for the Future

The FAA stands ready to meet the changes and challenges we know are coming. The industry has made significant strides toward a future that will make increasing demands on the FAA's role as a regulator. As activities expand in the marketplace, our role will amplify as well. To this end, we are constantly looking ahead.

In the coming months and years, it may be necessary to revisit some of the statutes and regulations that govern the commercial space launch activities of the FAA. Specifically, the FAA's legislative authority may require expansion to ensure public safety in space and on Earth, as the commercial space flight sector evolves. Potentially, there may be a need for greater regulatory authority in the areas of transportation on orbit as well as launch and reentry. In addition, the FAA's licensing authority may also require revision regarding operations associated with commercial hybrid launch systems and commercial cargo vehicles intentionally returning to Earth, regardless of whether they return substantially intact. We welcome the opportunity to work with Congress on these priorities.

In this time of challenge and opportunity, the FAA is mindful of our many responsibilities, and we look forward to working with this Subcommittee as we tackle the challenges of shifting cargo and crew launches to the commercial sector and opening space to tourism and point-to-point transportation. The commercial space industry is ready to expand – and with your support, we are ready for lift-off.

Chairman Palazzo, Congressman Costello, and Members of the Subcommittee, this concludes my prepared remarks. I would be pleased to answer any questions you may have.