

STATEMENT OF DR. GEORGE C. NIELD, ASSOCIATE ADMINISTRATOR FOR THE OFFICE OF COMMERCIAL SPACE TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION, BEFORE THE U.S. SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION, SUBCOMMITTEE ON SCIENCE AND SPACE REGARDING THE FEDERAL REGULATORY APPROACH TO COMMERCIAL SPACE TRANSPORTATION, MARCH 18, 2010.

Chairman Nelson, Ranking Member Vitter, and Members of the Subcommittee:

Thank you for inviting me to participate in this hearing on commercial space transportation capabilities. I would like to start by briefly reviewing the role that the Federal Aviation Administration (FAA) has played in regulating unmanned commercial launches for the past twenty-five years. I will also address our involvement in plans for private citizens to fly on commercially-operated suborbital space flights. Finally, I will speak to the issue of commercial capabilities to deliver National Aeronautics and Space Administration (NASA) crews to the International Space Station in Low Earth Orbit and returning them safely to Earth.

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

In accordance with federal statute, our mission is 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. Our top priority is safety. Some of the ways we carry out our safety responsibilities include developing and issuing regulations; granting licenses, permits, and safety approvals; and conducting safety inspections during every licensed or permitted launch. Our safety record to date has been excellent: since 1989, we have licensed the launch of 201 commercial vehicles 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 sites or “spaceports.” 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 just this January, Cecil Field in Jacksonville, Florida.

In 2004, Congress expanded our regulatory role when it approved the Commercial Space Launch Amendments Act of 2004. The Act provided direction to the FAA on how to regulate launches carrying people. Noting that “space transportation is inherently risky,” Congress referred to those joining the crew onboard a spacecraft as “space flight participants” rather than “passengers.” Participants will fly under a policy of informed consent, which means that they must be briefed verbally and in writing about the risks involved. They will then be required to sign a document indicating that the risks have

been communicated and understood. Then and only then will they be allowed to board the craft and proceed with the launch. The crew is considered to be part of the vehicle's flight safety system, so that launch operators will need to protect the safety of the crew in order to protect the public. In our implementing regulations, we identify performance requirements for environmental control and life support systems, smoke detection and fire suppression, and human factors, as well as the need for a verification program.

One of the key challenges we are facing right now involves the beginning of a new segment of the industry: suborbital space tourism. We are currently working with about a half dozen companies that are in the process of designing, developing, and testing vehicles that will be capable of carrying people up to the edge of space. We know that not all of these companies will be successful. Some will experience technical difficulties, while others will struggle with the necessary financing. But there are enough very capable and well-funded groups currently working on this effort that I am confident that in the next few years we will see multiple companies conducting several suborbital launches per week. That will mean hundreds of launches per year, with thousands of people having an opportunity to experience spaceflight firsthand.

With that background, let me speak to FAA'S approach to regulating the commercial launch and reentry of commercial vehicles carrying humans to orbit.

In its final report, which was issued on October 22, 2009, the Augustine Committee noted that "Commercial services to deliver crew to low-Earth orbit are within reach," and that

“while this presents some risk, it could provide an earlier capability at lower initial and life-cycle costs than government could achieve.”

As compared to suborbital missions, orbital flights include a number of additional challenges. To begin with, the mission durations of orbital flights will be significantly greater than those for suborbital flights. While a suborbital flight will most likely be measured in minutes, orbital operations are typically measured in days. As a result, the period of continuous, reliable system performance that will be needed is much greater. In some cases, such as for environmental control and life support, or thermal protection systems, additional systems, or more complex systems, may be required for orbital flights.

Moreover, and of extraordinary importance, is the fact that the energy involved in going to and returning from orbit is much greater than for suborbital flights, and in general, that means that the hazards will also be increased. Finally, most orbital missions will need to have a launch abort system to allow those on board to safely separate from a malfunctioning booster.

Questions have been raised about how the U.S. Government should address licensing and safety issues associated with commercial crew missions to the International Space Station. Certainly the process will not be easy. These are challenging matters not easily reducible to checklists or go/no-go criteria. But I believe that there is enough good will,

skill, and ability among the involved parties to produce appropriate government oversight and regulatory frameworks.

To begin with, the FAA has a solid working relationship with NASA. For example, it has already been decided that all of the launches for the Commercial Orbital Transportation Services (COTS) program and the Cargo Resupply Services (CRS) program will be licensed by the FAA, and the licensing requirement is included in the respective Space Act Agreements and contracts. So as the launch operators demonstrate the ability of commercial vehicles to deliver cargo to the International Space Station, NASA and the FAA will have the opportunity to demonstrate that we can seamlessly provide the needed government oversight for cargo missions, well before any commercial crew missions are scheduled.

Second, both Agencies approach this next regulatory effort with a pair of complementary advantages. For one thing, NASA has built an unequalled body of experience carrying humans safely to and from orbit. No one has done this work better than NASA, across nearly fifty years of human spaceflight. At the same time, the FAA's Office of Commercial Space Transportation has more than twenty-five years of experience in regulating commercial space launches. Some of the aspects of FAA licensing include existing processes for determining insurance requirements and executing cross-waivers, government indemnification subject to appropriations for third-party excess claims, and the ability of the FAA to take enforcement actions (including license suspension or

revocation or levying fines) if those steps are necessary to ensure compliance with license terms and conditions.

The work before us is to harness both of these assets and come up with an approach properly suited to the safety and success of the challenging missions to come.

NASA brings vast know-how to the work ahead. In addition, several of the potential commercial vehicle providers bring decades of excellence in actually designing, building, and operating the hardware that has been used in our nation's space programs. At the same time, several new developers have indicated their interest in joining the competition, and are eager to prove themselves on the launch pad and beyond. And because of Congressional foresight a generation ago for expendable launch vehicles, and more than five years ago for commercial human space flight, we have a sound regulatory foundation already in place to support our needs.

In short, this is an historic opportunity to put to work, side-by-side, decades of space operations and regulatory experience to write the next volume of American excellence in spaceflight. The FAA is excited to be a part of the story.

Chairman Nelson, Ranking Member Vitter, Members of the Subcommittee, this concludes my prepared remarks. At the appropriate time, I would be pleased to answer any questions you might have.