

**REMARKS FOR ADMINISTRATOR BOLDEN
INTERNATIONAL ASTRONAUTICAL CONGRESS
SPACE GENERATION CONGRESS
Oct. 1, 2011**

Thank you for inviting me to speak tonight and congratulations on the 10th annual Space Generation Congress. I trust that your Congress was productive and gave you momentum to take back to your home organizations until the next time you meet.

It's always one of my greatest pleasures to talk to young people who are interested in space. You are our future. We tend to think of the future in terms of technologies, but it's your young minds and your passion for exploration that are going to create that future.

I understand that the Space Generation Advisory Council now has thousands of members representing 100 countries. I am impressed.

Those of you who were selected to come to this Congress are here because you can make a contribution. I am hoping to get ideas from you and look forward to seeing your reports.

Students who are just starting their college careers and people who have just taken their first or second job in aerospace are excited about the future, as many in this audience I think will attest. They are fired up about what lies ahead for the space program and the chance to create capabilities that we don't have today. They want to be a part of something larger and they want to contribute to national and international goals.

I have spoken in the past year at several of the United States' and the world's top universities, as well as schools for younger students. That same passion you display has been evident in young people everywhere I've been.

We're often asked to justify the space program in light of so many other pressing world problems here on the ground, from poverty to disease and war. But the fact is that space exploration has made huge contributions to all of the problems we face as a people on this planet.

I could cite many examples of how exploration technology has benefited people on Earth, but I think a lot of you are aware of them. From the Earth observation satellites that are helping us get better at predicting and coping with natural disasters, to technologies that help us protect our firemen and emergency workers and achieve medical breakthroughs that are helping us understand pathogens and develop treatments for disease. It's a long and growing list.

What we do has a huge ripple effect. Our space missions may be spectacular, but the end result is much more than just the amazing discoveries. It's the inspiration a kid at home feels when he sees those pictures from Mars and maybe decides he or she wants to pursue a career where they work on projects like that. We're going to keep that inspiration high.

Just in the past couple of months we've launched missions to Jupiter and the Moon, and in November we're heading back to Mars with the Mars Science Laboratory (MSL), *Curiosity*, a very large rover that will serve as a precursor to a human mission there in the future.

This year we retired the space shuttle fleet, our flagship program of 30 years. And while I shed some tears about that as a 4-time flyer on that wonderful machine, I also look forward with keen anticipation to the next great chapter of exploration that we're opening right now.

The shuttle accomplished many things for us and got us to the point where we can start working on those farther destinations.

My goal is to keep America's space program strong and to provide the leadership for exploration that the U.S. has given the world for decades. We're very proud of our space program. It has an incredible history, and it is also our future, helping us to strive as a nation to achieve our highest potential, create good jobs, and enlarge our understanding of our planet and our universe.

Just this month we've announced our path forward on the Space Launch System (SLS) that will carry astronauts beyond low Earth orbit to an asteroid or Mars. It will be the biggest rocket we've built since the Saturn V's that took astronauts to the moon.

Some of you might be on those missions or might be scientists or engineers helping us to make them safer or help interpret their discoveries. Earlier this week I was in Houston, where I saw a prototype of the Orion multipurpose crew vehicle that will launch on that heavy lift rocket and carry those crews and their cargo.

All this week, our Stennis Space Center in Mississippi has been test firing new kinds of rocket engines – both preliminary tests that might be applicable to the heavy lift, and tests for our commercial partners who will be helping us take cargo and crews to the International Space Station (ISS) so we can focus on the missions and technologies that are going to take us farther into the solar system. So it's a very exciting time to be in this field.

Your working groups have been focusing on some of the same areas that we are at NASA: the role of industry in space; the problems we encounter, such as space debris – perhaps very appropriate a week after we dealt with the re-entry of the UARS satellite; how space can be used to help developing countries; the many political, economic and technical challenges we face to undertaking these massive enterprises; the role of robots in our work.

Those questions will continue to face this generation of space leaders, even as some responses are already taking tangible shape today. I hope, for instance, that some of you may be following the tweets of the space station's first robotic crew member, Robonaut (R2), who traveled to the station earlier this year and is now operational. The technology behind the ISS water processing system has demonstrated its use in places with limited access to clean water.

Despite the worldwide economic challenges we face, new space agencies are being formed at nations around the world.

You will be essential in helping us frame the solutions that will emerge around the issues discussed in the working groups and will be the implementers of those solutions. That work will have global significance, because what we do builds bridges across borders and helps make lives better in tangible, concrete ways. And in many intangible ways, it lifts our spirits and helps us reach for our higher potential. There's no more valuable work than that.

In April of last year, President Obama laid out a goal for the U.S. to send a manned mission to an asteroid by 2025 and one to orbit Mars by the mid 2030s.

When you think about it, this is not a long timeline for the people we're talking about actually doing these missions.

Today's college sophomores will be about 35 by the time we reach an asteroid in 2025 as the President has proposed. This is pretty early in their careers. They will be in their mid-40s by the time a manned mission to Mars takes place. I want them – you -- to have the chance to excel and create the world of tomorrow – fully realizing stunning possibilities as the Mercury, Gemini, and Apollo generations did.

The way we're going to get there is through incremental development -- prioritizing our needs and building our capabilities to an ever-increasing array of destinations with ever increasing levels of difficulty.

President Obama's vision makes us think where we want to be in a generation, not just five years, and start the work now to get there. The things we need are not really a mystery.

In study after study dating back to the Apollo days, the field has been telling us that we need to have things like in-space propulsion systems – ways to refuel in space – and inflatable habitats. So we have a good idea of what we'll need to move beyond that vehicle-driven approach -- to think in broader terms about the capabilities we need to do a wider range of things and serve more people.

We're constantly working on ways for young people to get involved with NASA and pursue careers in aerospace, because we are, and always have been, about the future – about capitalizing on energy, enthusiasm, and innovation.

We've awarded both technology and aeronautics fellowships recently to students who have already demonstrated innovation in their fields. All of our missions have strong educational components for students at all levels.

Right now, in fact, students are operating a cosmic dust counter on New Horizons as it journeys to Pluto. Our intern corps grows more diverse every year. We're working with COPUOUS, the U.N. Committee on the Peaceful Uses of Outer Space and their youth outreach activities.

Our challenge is to ignite a passion for science, technology, engineering, and mathematics, or STEM, among tomorrow's leaders. Studying one of the STEM fields leads to good-paying jobs, and I always tell students that if they pursue any one of the paths into STEM, there will be a place for them at NASA or any number of the many agencies and companies around the nation and the world that need scientists, engineers, and technology developers.

NASA has a lot of exciting content to engage these young people with STEM.

In the upcoming decades we truly hope to witness the first boots on Mars, fulfilling the dreams of generations who have come before. We may be able detect the earliest forms of matter, galaxies, and stars in the universe with the James Webb Space Telescope.

Based on our work today, future airplanes will be more efficient, less polluting, and quieter. They will use much lighter materials and structures and potentially use hybrid-electric propulsion systems.

Our common space exploration goals with our international partners are now beginning to take the form of a Global Exploration Roadmap.

It will reflect a steady progression of missions to increasingly ambitious human exploration destinations. A graphic representation of that work was just posted on our [nasa.gov](https://www.nasa.gov) website last week.

I'm one of the still-too-small group of people who have witnessed our home planet from above, without visible borders. I had the privilege of working with international crews, all focused on the same big goals and sharing our triumphs and successes as a team. I hope many of you have the chance to experience that in the years to come. I want that world for my grandchildren.

But don't wait for NASA or your space agency to create the opportunity. The future is ripe for innovators. Virtually any path in STEM is going to lead you to the career you want if you work hard at it.

There are many other destinations we want to visit, both with humans and robots. More and more people are going to be going into space on commercial rockets, or able to send experiments to the space station or suborbital space. And basic research is on a huge upswing in aeronautics.

On Monday, I will talk to my counterparts, the heads of other countries' space agencies. I will tell them about the energy and enthusiasm I see here tonight and from young people around the world.

In the U.S., it wasn't that long ago that we had to justify why we were pursuing human space flight at all as a Nation. We are no longer discussing whether or not we should be pursuing exploration; that is no longer in question. We will venture farther into our solar system with humans and robotic explorers.

We're going to create good jobs and economic opportunities for the nation as a result, even as we re-write the textbooks. You are now part of this dialogue, and I look forward to hearing your voice.

Thank you.