

**REMARKS FOR ADMINISTRATOR BOLDEN**  
**NATIONAL TRANSPORTATION SAFETY BOARD SPEAKERS SERIES**

**March 17, 2011**

Thank you, Robert, for your kind introduction and for inviting me to help kick off the NTSB Speakers Series. We at NASA particularly appreciate the NTSB's efforts, since safety is our watchword in everything we do. Every launch, even those of robotic payloads, requires the utmost attention to safety. And certainly, as a pilot myself, I know how important your work is.

You wanted to hear a little about my background. As many of you know, I was born in Columbia, South Carolina. My parents were career educators, so I was truly blessed in that regard. Through them, a passion for learning was made integral to my growing up, and they had high expectations that I would pursue my education.

Many of the values I have brought to my professional life, I got from my parents...being bold, being fearless, and not allowing what other people think or say deter me from doing what is right. They taught me not to just sit on the sideline of life, but to strive to turn my passion and dreams into reality.

I also learned the value of public service through my parents. That commitment led me to join the military. I attended the U.S. Naval Academy and enjoyed a 34-year career in the U.S. Marine Corps. I wanted to serve my country as my father and my uncles had

done in World War II when Blacks had to fight for the right to serve in our Armed Forces. I wanted to follow in the footsteps of so many African Americans who had already served this country with distinction, if not always with recognition.

For me, it was an uphill battle. Because of my race, no one in my South Carolina congressional delegation would provide an appointment or nomination to the Academy, as was required for admission. I wrote President Johnson asking for help, and that's when Congressman William Dawson of Illinois provided me the appointment I needed to be accepted. Rep. Dawson was himself a veteran of World War I, and only the third African American elected to Congress in the 20<sup>th</sup> century. He was the only serving Black member during his first term.

Things have changed. I have the honor today of being the first African American administrator of the National Aeronautics and Space Administration. Serving under the nation's first Black president. Believe me, when I grew up, either one of those things would have been unimaginable as I sat in Columbia's Carver Theater, the only movie house in my town for Black people.

Many of the things NASA is accomplishing today would have been nearly unimaginable when I was a kid. Tonight, for instance, we will put a satellite, *Messenger*, in orbit around Mercury – the first time this has ever been done. The new knowledge we'll uncover about our innermost planet is going to be incredible. And this happens even as the New Horizons mission heads to what used to be our outermost planet, Pluto. It

should reach the "dwarf planet" by 2015, and along the way it's giving students a chance to operate an instrument that measures cosmic dust.

You may be aware of the amazing things we're doing at all the places in between as well. Cassini continues to make incredible discoveries at Saturn. This fall we'll launch the Mars Science Laboratory, *Curiosity*, to the Red Planet on a quest for the conditions that might have made life possible. In August we send *Juno* to study the composition of Jupiter. This summer the *Dawn* mission begins an orbit around the asteroid Vesta. And those are just our planetary science missions!

Right now, President Obama has given us a charge to win the future by out-innovating, out-educating and out-building the world. At NASA we have opportunities to make great contributions toward those national goals.

The President has proposed a NASA budget of \$18.7 billion for the coming year. This budget requires us to live within our means so we can invest in and win that future. It maintains our strong commitment to human spaceflight with focus on a heavy lift launch capability and multi-purpose crew vehicle as well as investments in game changing technologies that can deliver more efficient and economical capabilities. It establishes critical priorities and invests in the excellent science, aeronautics research, and education programs that have brought so much success to our country. Completion of the International Space Station (ISS) and its extension of service provide us with a

platform to conduct basic research in the biological and physical sciences, including testing techniques and technologies that will ensure safe, extended human space travel.

Many of you here today will be happy to know that we are maintaining a strong commitment to green aviation technologies and the next generation of air traffic system, -- Next Gen -- that will be safer, more efficient, and easier on the environment. From noise reduction technologies to working with industry on prototype aircraft for the future, we retain a high profile commitment to the first "A" in NASA, aeronautics.

A primary goal of NASA's aviation safety research is to be proactive in risk management and thus make NextGen safer.

NASA has partnered closely with industry and other government agencies for decades to provide technologies that improve aviation safety. Recently, we worked closely with industry to develop a revolutionary new display system that will reduce the number of accidents caused by poor visibility conditions. The Synthetic Vision System offers pilots a clear view of the outside world, regardless of weather conditions or time of day.

NASA's aviation safety research portfolio also includes the development of tools that will automate the discovery of precursors to aviation safety incidents by data mining in massive data sets to, again, proactively manage risk.

With improved knowledge and understanding of in-flight icing hazards, NASA continues to contribute to improved design standards for manufacturers and training aids for pilots and crew. NASA has helped develop methods for evaluating and simulating the growth of ice on aircraft surfaces, its effects on the behavior of aircraft in flight, and the performance of ice protection and detection systems.

Looking toward the future, NASA is working with industry and government partners through the Joint Planning and Development Office to ensure that NextGen operations continue to maintain the impeccable safety record we enjoy today. NASA algorithms and operational concepts for both ground-based and airborne systems will help aircraft to fly in even busier airspace, without compromising safety.

And our work in safety doesn't just apply to space, or flying.

After discussion with the National Highway Traffic Safety Administration (NHTSA) last spring, NASA teams analyzed the Toyota electronic throttle control system to understand how it is supposed to work and then explore how it might cause unintended acceleration. The team's analysis and testing did not find evidence that malfunctions in the electronic throttle control caused those reported large unintended accelerations. That's just one of many ways that we are applying our expertise and our experience in unexpected and practical ways.

We're taking steps to begin work on the highest priority technologies we'll need to move humans beyond low Earth orbit in the future, even as we bring the entrepreneurs into the fold and give them a chance to succeed where NASA has blazed the trail. Safety will be our watchword, and we'll be with them every step of the way as they develop the capabilities to reach the ISS with cargo and crews and open up markets for other customers and activities in low Earth orbit beyond the Station. We'll be buying services, but NASA won't need to own the infrastructure and the systems. And the innovations that come about will help create good jobs and opportunities for generations to come.

At NASA, I ask all our employees to know "why" we exist – why they get up every day and come to work. Our “why” can be expressed in many, diverse missions, but we have tried to cover it in one vision statement, *"To reach for new heights and reveal the unknown so that what we do and learn can benefit all of humankind."*

It's the kind of thing I had in mind when I was starting out on my career. I wasn't thinking about a career involving space, even though the pioneers of Mercury, Gemini, and Apollo were making history then. I wanted to make a contribution to the nation; I wanted to make the world a better place. So I flew combat missions for our nation and later served in many capacities in the Marine Corps and had the honor of commanding many brave men and women to help keep this country safe and strong.

I benefited greatly from mentors at all stages of my career. One of the most influential was probably the late, great Dr. Ron McNair, a member of the ill-fated STS-51L

Challenger crew. Ron convinced me that I should apply to the astronaut corps. As I said, it wasn't something I'd really considered. And at the time, I sort of dismissed the idea. But Ron was a persuasive person, and the idea grew on me.

I don't need to tell you that joining the astronauts corps led to amazing experiences. I flew four times into space, twice on Discovery, the orbiter that just completed its final mission last week. A few of the 148 million miles it traveled throughout its life were with me aboard, and I am very grateful to have had such opportunities.

Unfortunately, Ron perished on Challenger in the very next mission after my first flight into space aboard Columbia in January 1986. He and the rest of that crew were personal friends, and that kind of loss and sacrifice is something you never forget. It re-energized NASA's commitment to safety. It's one reason when President Obama asked me to become NASA Administrator, I decided to postpone my retirement and help bring our space program to the next level of innovation. To honor the commitments of people like Ron, and the many thousands of people who have worked tirelessly to make the space shuttle the amazing program it has been. We have to remember that flying humans into space will never be risk free, but we can do many things to make it as safe as possible.

These last few shuttle flights have been bittersweet. It's time to enter the next chapter of our human spaceflight adventure, but we will always honor the shuttle and its dedicated

workforce and all the benefits they have provided for our society; the flight opportunities it has given women and people of color; and the discoveries it has made possible.

I was fortunate to pilot the mission during which the Hubble Space Telescope was deployed and to command the mission that included our first Russian crewmate. Those are the kinds of firsts that occurred throughout the shuttle's history, and we should be grateful as a nation to the men and women who expanded our horizons technically, scientifically, and diplomatically through that wonderful vehicle.

We've known the shuttle was retiring for some years now, but I won't deny that it has been a challenging time for the agency. There's a vibrant future ahead for human spaceflight, but we have a lot of hard work to get there. I am confident that our commercial partners will be able to transport us to the ISS in the coming years. They've already demonstrated remarkable capabilities, including the first launch, orbit and safe return of a capsule by a private concern, but it's going to take time.

The ISS will be the centerpiece of our human spaceflight endeavors for the next decade, and with its extension to 2020 at least, we'll be able to bring it to its highest potential as an orbiting laboratory that will help us learn about human health issues, both in space and on the Earth, and as a technology test bed. It's our toehold to the rest of the universe. And the capabilities we develop there and the fundamental research we carry out will also benefit everyone back here on Earth.

I am confident that my beautiful granddaughters will be witnessing humans orbiting Mars and, yes, even one day setting foot on the Red Planet. But you have to realize, that right now, it would require several times the mass of the space station just to get us to Mars, let alone the hazards that humans would face out there beyond the protection of the Earth, from radiation to the psychological effects of long-term space travel, to the needs for closed-loop life support systems. It will be like landing a two story house, but in a very precise way.

We aren't there yet. But we will be. It's the kind of challenge NASA relishes and to which we have always risen throughout our history. Our sights are on Mars, but our plan is to develop technologies that will be applicable across a range of missions. We will build a foundation from which to reach an array of destinations of ever-increasing difficulty. And it will be an international effort, with many nations joining us in the global space exploration enterprise.

It's a new world all around. As I said, what I preside over at NASA would have been science fiction when I was growing up. The International Space Station, an orbiting outpost the size of a football field, has been circling overhead 250 miles above Earth, with human occupants constantly for more than ten years now. The international partnership that built and operates the space station would itself have been unthinkable even very recently.

That we have probes and observatories scattered throughout the solar system and peering beyond it to give us details on planets orbiting other suns is truly remarkable. That the Hubble Space Telescope and other upcoming observatories can see light that originated near the time of the universe's formation is beyond incredible. Not only have we rewritten our science textbooks in recent years, we also have established a new paradigm of what humans are capable of accomplishing.

It's quite an honor and a privilege for a kid from Columbia, South Carolina to have made this journey. I'm an eternal optimist. I think this country is headed for better days, and I think the best days of our space program are also yet to come.

I've had the privilege of viewing our planet from above, where its serenity and lack of political borders belies the truth of what sometimes happens on the ground. I hope more people will have that chance in the future. It could only increase understanding and bring about a realization of how much we are all in this together.

I'll close with the challenge of a 12-year-old boy from a place called Kwa Zulu Natal, South Africa.

Thank you, and now I'll be glad to respond to questions.