

REMARKS FOR ADMINISTRATOR BOLDEN
THOMAS JEFFERSON HIGH SCHOOL FOR
SCIENCE AND TECHNOLOGY

June 16, 2012

Greetings and congratulations to the graduating class of 2012 of the Thomas Jefferson High School for Science and Technology, and thank you to the many public and private community partners who have embraced this school and these students. I owe a special thank-you to the official inviter for the Class of 2012, Jared Golant, whose persistence and bribe of cup cakes to my granddaughters won over my consent to be the speaker for tonight.

Before I go any further, let me also take this opportunity to thank and congratulate all the parents, guardians, family members, and friends who are here to celebrate this great day with all of you. You all deserve a round of applause and appreciation for supporting these graduates and encouraging them, especially when the going got tough.

It's my honor to speak here at an institution that exemplifies new ways of educating its students and new ways of incorporating learning on many levels to achieve success beyond the classroom. Students like you -- educated in science, technology, engineering and mathematics -- the STEM disciplines, as we like to call them, are the keys to America's technological leadership and economic growth in the 21st century.

Here at Thomas Jefferson, you've personalized your learning and made it meaningful to you. This is a valuable skill, because only some of what you learned is available in a textbook. No textbook can give you the skills you learn by doing and by living a creative life.

As you probably know, there is a gap between our growing need for scientists, engineers, and other technically skilled workers, and our available supply. This crisis in education has the potential to affect U.S. global competitiveness and the national economy.

The good news is, everywhere I go, I meet young people like you who are eager to enter the STEM fields. But desire is not enough! We have to make sure those students get the kind of support you have received in the classroom and the community, and receive the kinds of field study opportunities you have experienced. Our economy, our competitiveness – these are going to hinge on continuing to fill the pipeline with talented future leaders.

We do need you! You may have read about some of the things NASA is doing – like helping industry start regular commercial service to low Earth orbit, including the International Space Station; or landing a rover named *Curiosity*, which is the size of a small car, on Mars this August using precision landing technology.

In fact, we just picked a landing site closer to the rover's ultimate destination for science operations, but also closer to the foot of a mountain slope that poses a landing hazard, but which could shave off travel time by months to our ultimate goal. We're just like that. If we think we can do it, why not try?

Just this week, we launched the *NuSTAR* X-ray satellite, which will use high-energy X-rays to study the most powerful structures in the universe and help us better understand black holes.

Spacecraft are speeding to Jupiter and Pluto.

It's hurricane season, and our Earth science missions will be busy sharing data to observe storms and help planners make critical decisions. Our Green Flight Challenge recently awarded a prize for a prototype electric plane, and we continue to work on the planes and air traffic systems of tomorrow.

All of this is to say that science and technology are fields where you can really make a difference. I probably don't have to explain to this audience how going to space transforms life on Earth.

Technologies we develop to explore have huge ramifications on Earth, from improved medical imaging devices to better protection materials for first responders to water processing systems that can help people in areas without clean water.

But this is a commencement, and I want to focus on what this work, the work that you all will be pursuing for our nation in the future, does for us as people. It raises our spirits. It helps us see the higher potential of which we are capable and it unites the globe in a common enterprise.

The International Space Station has been home 24/7 for more than 11 years now to astronauts of many nationalities.

It is an engineering marvel with a football field's worth of solar arrays, hundreds of experiments in virtually every discipline and the best view of our planet anywhere. But I believe its perhaps its greatest achievement is that it is a project resulting from unprecedented cooperation among disparate nations, some of which used to be competitors and bitter enemies. I firmly believe that the International Space Station will be the model for global cooperation going forward. We're going to expand our reach into the solar system together. It's pretty amazing the different areas of expertise that our partner nations bring to the table, and the people, across the board, are incredible. Members of the Thomas Jefferson Class of 2012, you're going to meet and work with a lot of them in your future.

I was privileged to command the first space shuttle mission on which a Russian crew member flew and, you know what, I have to admit, I had my reservations at first.

The Cold War was not that long over, after all. But after training with Sergei Krikalev and meeting his family; sharing meals; going through the things you have to do to form a crew that can live and work in space...well, he and his family are now a lifelong friends to my family and me. He now has a senior leadership position in the Russian space program as the Director of the Gagarin Cosmonaut Training Center outside Moscow.

Possibly more than any other fields, science and technology offer a chance for you to exchange ideas and work on projects with colleagues from around the world.

America has been blessed with skilled workers who have made us the world leader in exploration. It's not just our skills that make us the leader – it's our passion, our inquisitiveness, our desire to reach the next horizon and then scout to the one beyond that, our diversity and inclusiveness, and our ability to make something greater of the whole than the sum of our parts.

Just at NASA, our needs for workers across aerospace in the coming decades will be great. As I mentioned, we have entered a new era in commercial spaceflight. The flight by our commercial partner SpaceX to the International Space Station in May was truly a historic milestone. Previously only governments had achieved the feats that it successfully accomplished.

More U.S. companies are getting in the game to develop their own space transportation systems, and all of them will need STEM-educated workers. NASA is developing the most capable -- the biggest -- rocket ever, to launch astronauts to asteroids and Mars, and the crew vehicle, called Orion, in which they'll travel.

It could take up to eight months to reach Mars. Then, because of flight trajectories, astronauts will have to leave within 30 days or remain on Mars for more than a year. On the way to Mars, the crew will have to cope with different kinds of stress in a high-risk, confined environment with limited communication with Earth.

We will have to develop ways to speed the communication over that long distance.

The long voyage through deep space is filled with many dangers, including protons from solar flares, gamma rays from distant newborn black holes, and galactic cosmic rays from outside our solar system.

I'm telling you all this to give you just a small sampling of the real-life challenges going on today in aerospace that people with skills such as you have learned here at Thomas Jefferson will be addressing in the future.

Class of 2012, you have a head start because of what you have learned here. Does anyone want to be an astronaut? We're going to need you.

Want to be a team member of a science mission studying a place we've never been to before, or participate in the design a spacecraft yourself? You have begun the right preparation for those careers through your curriculum of study here at Thomas Jefferson.

Here at Thomas Jefferson, you've experienced a lot more than reading chapters in textbooks. Aside from the amazing technological opportunities that lie before you, you are entering a far different world than the one that existed when I was growing up in the segregated South of the 1950s and 60s.

There have been many hard-won gains for African Americans, Hispanics, and others who were disenfranchised. Women are a growing population in the STEM fields. At NASA and at many other places, the primary criterion today is excellence in performance. Race, gender, sexual orientation, political beliefs, or where you come from in the world don't matter.

At NASA, we want people to help us put boots on Mars. The question you must answer is will you be some of you those people? Like your principal and your teachers, I truly believe you are.

I ask that you think boldly about the next leg of your educational journey -- whether it takes you to college, to the workplace, to private industry, or to the military or other public service.

I couldn't possibly have imagined where my path would lead me when I stepped outside the doors of my high school for the final time as a student. But my journey started fairly simply, perhaps as many of yours did. I had parents who were both educators and were committed to my education and seeing that I followed through. I had examples of public service in my family members who had served with distinction in the military and I wanted to follow in their footsteps.

My wife and I have always given our children this advice: dream big dreams; do what you want to do; don't listen to anyone who tells you can't do something or you don't belong; do your job and do it very well; and don't let the opportunity to make a difference in your world pass you by.

Thomas Jefferson Class of 2012, I can't tell you with certainty how the social landscape of America or the geopolitical landscape of the world will look in ten years, but I expect that many of you will help lead us to a better world. Not just more prosperous...but filled with more fairness, opportunity, freedom, creativity, and love. It's been said, "The best way to predict the future is to invent it." That is our mission and **this is your moment.**

Congratulations! Good luck and Godspeed!