

Commencement Address by
NASA Administrator Charles F. Bolden, Jr.
California Institute of Technology

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Many thanks to Kent Kresa, Chair of the Cal Tech Board of Trustees, for your very kind introduction. It's quite an honor for me to be invited to join you and the Cal Tech family here today for this great occasion for the Cal Tech Class of 2010. Kent, I'm particularly glad to be with you today, and to thank you for your many years of service to the aerospace and defense industries, through your work at DARPA, the Lincoln Laboratory, and of course Northrop Grumman. Successful aerospace projects too numerous to mention have been shaped by your management skills and wise counsel, and I just wanted you to know your service continues to be of great value to America.

- Congratulate the Great Class of 2010 of Cal Tech –
- Congratulate and thanks to parents, family, and friends of the Class of 2010 –
- They will continue to need your support and encouragement as they

now venture off to join the American work force, attend graduate school, or serve in the Armed Forces or other service organizations

Members of the Cal Tech Class of 2010 - what an extraordinary time this is in your lives and the life of this great university. Thank you again for inviting me to share this special day with you.

My baby girl, Kelly, now an accomplished plastic surgeon – veteran of a summer internship at JPL as a high school senior - and one of my chief mentors and counselors gave me wise advice for my address to you today – “...short, not too serious, tell them times will be tough, but it’s worth it!” (Now that I’ve delivered her message, I could sit, but I won’t.)

What an enjoyable time I had last evening at the senior banquet at the Athenaeum. I’d have never thought I’d find myself sharing Texas tales with an entire family of Julian Panetta from College Station, TX at a Cal Tech event, but I was honored to join the Panettas in celebration of the pending graduation their son and brother. The statistical recap of the Class of 2010 by Dean of Students, John Hall, was not only interesting but also hilarious in its presentation. I would have never thought a man of such serious demeanor could have been so funny! I will add, however, one country to the list of those he related – Costa Rica – the home of the roommate of another dinner partner, Roberto Paolini. Costa Rica is the

home of one of my idols and role models, Dr. Franklin Chang-Diaz – born and raised in San Jose with a dream and determination to become an astronaut since the age of seven. Franklin ended up coming to the U.S., becoming an astronaut in our Class of 1980, and flying six missions aboard the Shuttle prior to leaving the Astronaut Corps to begin his own company. The recollections of your past four years with your soul mate and President, Jean-Lou Chameau, as well as those of Associate Professor Niles Pierce, were heartwarming as well as humorous.

On an occasion such as this, there is always the temptation to view the future in terms of the past, of things we know and with which we are familiar. Consider then the world of your predecessors who gathered here a century ago to claim their degrees. They looked ahead to a world shaped, or so they thought, by scientific wonders. By the end of the first decade of the twentieth century, there were 76 million Americans. The U.S. Treasury held a staggering – for the time – 46 billion dollars. There were 8,000 cars driving on only 10 miles of paved roads. The average worker made \$12.98 a week, for a 59-hour work week. The industrial age was in full swing, with the Wright Brothers designing new powered airplanes to follow their recent success at Kitty Hawk. The first cross-country auto road trip had taken place, and it took 52 days to complete.

The idea that there might be life on other planets was restricted to the pages of science fiction, as were jet engines, rocket ships, satellites, and splitting the atom. Few of your alums who gathered here on that long ago graduation day could have anticipated the human genome, imaging technologies, or supersonic flight – let alone humans living and working on an orbiting International Space Station for ten years now. The Cal Tech graduates then, as now, represented a very small percentage of the population of the State of California – let alone that of the American populace. This fact made it even more important that those lucky enough to receive a Cal Tech degree put that education to use in service to the nation. In the century just passed, they have done just that, building a nation whose innovative technologies and economic strength became the envy of the entire world. As you ponder your place in the future, I suggest you think about the things about which you are passionate – that excite you from the pit of your stomach. I hope you will give some consideration to a period of public service. While the quest for titles and great wealth are always noble goals, I have found there to be no more fulfilling achievement than to follow a passion and in so doing make life better for someone else. My mom and dad were teachers in segregated South Carolina – yet each day they devoted every ounce of their being to equipping young boys and

girls to succeed in the world we would enter and to believe that we could do anything we wanted as long as we were willing to work hard, and never shy away from a challenge for fear of failure. They taught us the critical importance of honesty and faith.

Since last July, I have had the privilege of leading the government agency whose charter is as expansive as it is essential to modern life. As we stand here today, more than 200 miles above us six astronauts are working night and day aboard the International Space Station. Astronauts from America and Russia - all part of a sixteen-nation global partnership are working on research that can extend human presence in our solar system, develop new methods of delivering medicines to patients suffering from cancer and other threatening diseases, and other technologies that can protect the lives of astronauts on other space missions but also protect firemen and first responders - new imaging technologies for the early detection of diseases like breast cancer and diabetes.

On April 15th – about two months ago – speaking at the Kennedy Space Center, President Barak Obama reminded us that some 49 years ago, President John F. Kennedy came before the Congress and challenged NASA and the American people to a bold and risky goal of sending humans to the moon and bringing them safely back to Earth. Five years later, the

first Saturn V prototype emerged from Florida's Vehicle Assembly Building to start testing the moon rocket that would achieve his goal. And eight years after his speech, Neil Armstrong, Mike Collins, and Buzz Aldrin flew the quarter million miles to the moon to achieve that goal in a triumph of the human spirit and of American ingenuity. For 21 hours Neil and Buzz conducted the first moonwalk. Following their successful return to Earth, five more crews walked on the moon and brought back rocks and soils that we continue to study and test today. But here's what President Obama asked us: Was that historic Apollo 11 mission the end of something, or the beginning? Are we the heirs of Neil and Buzz and inheritors of their spirit of exploration, innovation, and risk taking, or do we lack the courage, the wisdom, and the vision to continue their journey? The answer to these questions lie not with my generation but with yours. For your generation will be the one that will either turn away from great challenges, or will follow in the footsteps of your fore parents. You of the Cal Tech Class of 2010 will either settle for remaining affixed to Planet Earth and maybe continue to work in low Earth orbit or you will choose to venture into deep space to explore the rocky surface of an asteroid, to visit the mysterious moons of Mars, even land with your robotic co-explorers and probe the iron rich soil of the Red Planet itself. I believe one of you here today may be among the

first colonists to cross the millions of miles of space to begin a new chapter in American and human history.

I have kids and grandkids who I believe, like you, are anxious to take their hard-earned educations and use them to do something great, something extraordinary.

Your parents and I have faith in you, but you must have faith in yourselves. What you achieve today can open the doors to exploration and discovery for tomorrow, but your education must not end when you leave here today. Accept the challenge and responsibility of leadership in whatever you choose as your profession and live your lives with passion. As a Marine I was taught three Core Values – emblazoned into my character:

- Honor - Integrity
- Courage – Morale as well as physical
- Commitment – to family, organization, your church, mosque, or synagogue

Through the years, I have also learned the value of humility. This is captured so well in a version of the “Prayers of the People” from the *Book of Common Prayer* used in the services of my Episcopal Church:

“When we are too well pleased with ourselves; when our dreams have come true because we dreamed too little; when we arrive safely because we sailed too close to the shore.

- Challenge us to serve more!

When with the abundance of things we possess we have lost our thirst for the Waters of Life; having fallen in love with life, we have ceased to dream of eternity; and in our efforts to build a new Earth; we have allowed our vision of the new heaven to dim.

- Challenge us to give more!

And to dare more boldly - to venture on wider seas where storms will show your mastery; where losing sight of land, we shall find the stars. We ask you push back the horizons of our hopes, and to push us into the future with strength, courage, hope and love.

- Challenge us to love more!”

I'll leave you with the thoughts of a 12-year-old African boy, Nkosi Johnson (- 2001), Kwa Zulu Natal, SA.

“Do all you can

With what you have

In the time that you have

In the place that you are”

Live the words of Nkosi – FOLLOW YOUR PASSION!

Thank you for the honor of sharing this day with you. God Bless you all and may God always bless the United States of America.