

**Remarks by the Honorable Sean O’Keefe
NASA Administrator
Louisiana Tech University
Commencement Address
Thomas Assembly Center
Ruston, Louisiana
"Pioneering the Future"
May 22, 2004**

Good afternoon. President Reneau (Daniel Reneau) thank you so much for your warm welcome.

I appreciate very much your kind invitation to speak to Louisiana Tech's very accomplished class of 2004. I want to thank my good friend Bobby Rawle, an alumni of this fine institution for suggesting me.

I'm also thrilled to be back in my home state today. And while my roots are from New Orleans, I know that north and south Louisiana are only divided by a common language.

Let us acknowledge at the outset the most important people here today. Would the soon-to-be-

graduates please rise and join me in recognizing the people who have really made all this possible – your family members. Please join me in a round of applause for them.

I know the primary job of a commencement speaker is to be brief and be gone. It's a dangerous duty to deliver a commencement speech because I know that all that stands between you and the fulfillment of your achievement is me. It's like being the principal at an Irish wake. You need to be there but everybody hopes you won't say anything!

Certainly the most that any commencement speaker ever hopes to convey is one or two nuggets you can take away and say, "Well, it was memorable for those points." I'll try not to disappoint on this score.

And so the two points I hope to convey today are about the values of public service and the

possibilities we can imagine if we yield to the human desire to explore.

As you might expect, at NASA we believe President Bush's vision to extend civilization's horizons to the surfaces of planets beyond our own will be a significant part of that future.

Most fittingly for those of you who live in this beautiful state, the passion of the American people for exploration and discovery stems in large measure from a series of events set in motion two hundred and one years ago.

Of course that was when President Jefferson purchased the Louisiana Territory from the Emperor Napoleon Bonaparte.

In historic terms this deal was unsurpassed in its sheer brilliance until the Pittsburgh Steelers gambled on using the first pick in the NFL draft on a young Louisiana Tech quarterback named Terry Bradshaw.

Now those who attended your symposium on the bicentennial of the Louisiana Purchase will recall that exactly 200 years and eight days ago, on May 14, 1804, the Lewis and Clark Expedition set off on their epic voyage from Camp Dubois on the east bank of the Mississippi near St. Louis.

The stories that Meriwether Lewis and William Clark and their Corps of Discovery brought back from their two year journey—of endless buffalo herds, of huge mountain ranges and swiftly flowing rivers, and of a flourishing civilization of Native American tribes--opened the minds of our young Nation's citizens to an age of new possibilities.

Today America's exploration reach extends from the deepest depths of Earth's oceans to ancient seabeds on the surface of Mars.

Fittingly, just as the Louisiana Purchase provided the impetus for that first great American

voyage of exploration, graduates of Louisiana Tech, building on their outstanding education, are helping to lead our way into the far reaches of the space frontier.

Indeed, I trust that some of you will follow in the footsteps of Deborah Wells, a distinguished 1988 Louisiana Tech graduate.

While working for the Bionetics Corporation, Deborah has conducted important experiments on the physical well-being of NASA astronauts before and after over 60 of our Space Shuttle and International Space Station missions.

Her research will help us pave the way for human explorers to extend the reach of civilization to the Moon, Mars and beyond.

So you see if you combine an excellent Louisiana Tech education with a commitment to help

pioneer the space frontier, you can go very far indeed.

There are, of course, many other venues that will enable you to help create a positive future in the century that is just beginning.

One of those is through service to others, which has always been a theme of this outstanding institution.

President Reneau has proudly told me about your strong commitment to public service.

I understand today several architecture students are proudly displaying the results of their community spirited labors today to build a Science Outdoor Classroom at Ruston Elementary School, a Play Area and Healing Garden for a local shelter, as well as a Park Pavilion in Ruston and amphitheatre in Dubach. Congratulations to all who contributed their creative labors to these projects.

The spirit of public service at Louisiana Tech also extends to the wonderful organization within your College of Education, the Professional Development and Research Institute on Blindness.

What a tremendous example President Reneau, Dean Jo Ann Dauzat, Institute Director Ron Gardner and Center for the Blind founder Joanne Wilson have set by championing new opportunities for blind people.

The Institute's efforts to expand the development of blindness professionals and to find ways for blind people to overcome social and employment obstacles is truly inspiring.

I am thrilled by what you are doing because NASA is also working in partnership with the National Federation of the Blind to change forever how the blind community has access to science through summer science camps for blind junior high

and high-school aged students and other support activities.

One of our most exciting projects in this regard is a beautiful book entitled, "Touch the Universe," a Braille book of astronomy that uses stunning imagery obtained by the Hubble Space Telescope to open up the far reaches of the universe to blind students through its imaginative use of tactile illustrations of stars, planets and other heavenly bodies.

Louisiana Tech students are also to be applauded for the successful efforts of Dr. Gary Stokley's Research Methods Class to correct a faulty census count for the nearby town of Dubach, and of Dr. Jim Dyers's Forestry class to creatively use the constellation of Global Positioning System satellites to accurately map Ruston's drainage system.

Accomplishments like this you all can be very proud of and I salute every Louisiana Tech student

who has taken part in equally impressive community service activities.

I hope that as graduates you will build on this great spirit of philanthropy.

This is an extraordinary time in our country's history. And while stories of deadly violence dominate the news these days, these can not overshadow the fact that Americans have demonstrated, through countless acts of kindness, that our country's greatest strength lies in the hearts and souls of our citizens. As new college graduates, you now have the opportunity to share your time and talents with those who need it most.

Indeed, the President has asked all Americans to dedicate a part of our careers in service to others.

President Bush created the USA Freedom Corps to help Americans answer his "call to service" by

providing meaningful opportunities to serve both at home and abroad.

Along your career development path, I encourage you to give the Freedom Corps serious consideration. Service like this will provide you the opportunity to help countless others and by doing so enrich your own lives.

Let me now turn to the world and world's beyond you will help shape in the years ahead. In the first half of the 21st century, as you pursue your careers, the graduates of Louisiana Tech will have the opportunity to make America a better place.

Your generation will have the chance to participate in a renewed spirit of discovery in our country, and President Bush has given us a vision of this future.

I'm excited that as the second century of flight unfolds, those of you who will pursue science and

technology careers will help carry the torch of exploration to heights unimagined and into frontiers unknown.

We have indeed accomplished a great deal in NASA's 45 years, but in the greater continuum of human history, we are just now at the beginning of this age of space exploration.

I'm reminded of a remarkable piece that David McCullough wrote-- a historical biography of John Adams, the second President, in which Adams lamented that the USS Constellation, the pride of the new American fleet, and the symbol of U.S. resolve to engage in global commerce, the vessel that would demonstrate we were a nation to be reckoned with lay at anchor in Boston Harbor for days and days at a time because the weather wouldn't permit it to sail.

In space exploration, we are in the equivalency of that time. A force of nature, which has always

either enabled or deterred new advancement, limits us. And that is the weather. We are in the same mode right now with space exploration, an age of sail. Conditions must be perfectly right for us to proceed. For example, power generation, propulsion and human factors challenges must be overcome for us to be able to explore space more extensively. In this quest, we aspire to the "Age of Steam."

Your generation is privileged to be alive when for the first time in human history we have the ability to enter the "Age of Steam" in space exploration, and I hope more than a few of you will join us.

As the men and women of NASA implement our bold new space exploration vision, we will work with our international partners to extend the reach of human civilization and the spirit of freedom ever outward, using a meticulous stepping stone approach.

Those of you in this class of 2004 are probably familiar with our stepping stones if you are among the 125 million visitors to the NASA website over the course of the last four months, accounting as many of you probably did for the 10 billion hits that we have had to our website in that span of time.

So many will already recognize these points. And to help refresh your memory, the stepping-stones are as follows: First, we will return the Space Shuttles safely to flight and in so doing honor the legacy of our remarkable Columbia astronauts, who were lost so tragically a year ago. Going forward, we recognize that we must show great diligence to reduce the risk of exploration to the lowest level humanly possible.

Second, we will complete the International Space Station and use this research laboratory that orbits 250 miles over our heads--and comes around every

90 minutes-- to test the long-term effects of space travel on human beings.

Third, we will send robotic probes and then human explorers on to the Moon to demonstrate technologies needed for Mars and beyond.

And finally, through an effort aptly named Project Constellation, recalling John Adams' lament of 200 years ago, we will develop those capabilities that will allow humans to explore the far reaches of the solar system.

This approach will allow us to learn from our experiences and to incorporate new technological developments along the way.

And as the ongoing missions of the Mars Exploration Rovers Spirit and Opportunity demonstrate when you go out to various places in the solar system and ask profound questions, you may very well receive profound answers.

The discovery by the Opportunity Rover of evidence that Mars once had large amounts of surface water is a profound finding indeed.

And what the two rovers have told us is that the climate and atmosphere of Mars was once profoundly different. Understanding why it changed may well provide us a whole new perspective on our place in this solar system, in the galaxy and indeed in the broader universe.

Now just think about the other compelling scientific discoveries that the continued exploration of space will bring about in the coming decades.

When the history of your time is written, we can well imagine that your generation of explorers will have sought life's abodes in our corner of the universe.

You will be able to look up to the stars that once guided the sailing vessels of yore and map continents

on dozens of their planets, and in so doing gather knowledge that may help improve our own human condition here on Earth.

The pursuit of the President's space exploration vision will spur technological developments that will lead to new products and services and tangibly improve the lives of people throughout the world.

Just as the Apollo program led to important advances in computing and electronics when I was growing up, the potential spinoff benefits from the Constellation exploration program will be just as considerable.

Since the Apollo era, MRI's, cataract detection, and heart pumps are all examples of NASA technologies used to advance our exploration goals being applied to productive use in society.

We believe the technology development necessary to execute and implement our new space

exploration vision will accelerate advances in robotics, autonomous and fault tolerant systems, human-machine interface, life support systems and novel applications of nanotechnology and microdevices.

Of course, those Louisiana Tech students who have taken advantage of the wonderful learning opportunities provided by your Institute for Micromanufacturing, Center for Applied Physics Studies and Center for Biomedical Engineering and Rehabilitation Science, are in a great position to be the movers and shakers of our nation's technological future.

Obviously we have a great interest in your cutting-edge work on nanotechnologies and we are thrilled that this school is working on a project for our Kennedy Space Center to investigate nanoparticle

technology for corrosion mitigation on our launch facilities.

Research such as this will enable our space program to boost the opportunities we will have to become a smarter, safer, healthier and more intelligent world on a scale never seen before in the history of the planet, at a pace hardly thought possible.

But in sharp contrast to the Apollo era, for which the price of being second was we lost, this is not a race. Instead it will be a journey, propelled by a renewed spirit of exploration and discovery.

The first explorers to set foot on Mars may well indeed be sitting in this audience today. You will have the means to make this vision come to pass, because as President Bush observed, "Exploration is not an option we choose. It is a desire written in the human heart."

As all of you look forward to the challenges and opportunities you have ahead, whether they are in space exploration, or in all the fields that Louisiana Tech has well prepared you to enter, I think it is worth recalling a thought offered by the distinguished American jurist Oliver Wendell Holmes. "Greatness is not in where we stand, but in what direction we are moving. We must sail sometimes with the wind, and sometimes against it -- but sail we must, and not drift, nor lie at anchor."

Pursue that instinct. Pursing your dreams. And together I believe we can achieve some remarkable accomplishments.

I congratulate all of you on your achievements up to this special point. I congratulate your faculty members who have guided you to this day, your family members who have put up with you, and I wish all of you the very best in your pursuit of a life

that matters, continuing to stand as you have for excellence and service to causes greater than your individual self-interest.

Thank you and Godspeed to the graduates of the class of 2004.