

**Remarks by The Honorable Sean O'Keefe
NASA Administrator
North Stonington Education Foundation
Strengthen Public and Community Education
(SPACE) Event
North Stonington, Connecticut
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Thank you Larry (Lawrence St. Clair, President, North Stonington Education Foundation) for that terrific introduction.

It's great to be home!

And thanks for all the reminders of my very checkered high school career. (Speak about your student days at Wheeler High School).

Most of all I want to extend my appreciation to all of you for coming tonight and demonstrating your interest in the importance of quality public education.

In the upcoming fall season, we traditionally celebrate the blessings of the annual harvest. Because of the service and efforts of teachers, administrators and parents and other supportive citizens, I clearly see that this community takes seriously its responsibility to plant seeds of hope in the form of our current students.

I know you take great pride in watching these students grow straight and tall, confident the current crop of Wheeler Lions will soon become productive, active citizens.

As the Foundation's statement of purpose notes, "An excellent public school system impacts the economic and cultural development of the community-at-large."

To be certain, much has been done since I received my Wheeler diploma to build on the foundation of excellence that I experienced some three decades ago.

With tremendous foresight, the good citizens of North Stonington have provided Wheeler students with this beautiful gymnasium, the tunnel under Route 2, expanded science labs, state-of-the-art computing equipment, a new Greenhouse, Library and theater group, the Wheeler Theater Company, as well as a fully functioning TV Studio to house the Wheeler Broadcasting Company.

Now my question to all of you is this: "Where can I sign up to be a student again?"

Actually, I am quite happy with my current assignment, which is to lead the talented and dedicated scientists, engineers and astronauts of NASA who are helping our country pioneer the space frontier and in the process inspire and motivate the boys and girls who will comprise our next generation of explorers.

And with our new program to extend our exploration reach throughout the solar system, we believe NASA's capacity to inspire is greater than ever.

Last January, when President Bush came to NASA Headquarters to talk about his vision for the sustained human and robotic exploration of the solar system, he talked about a number of benefits all of our citizens would obtain from these exploration efforts.

The President spoke about the important scientific questions our future explorers will help answer and about the revolutionary technologies and capabilities NASA will develop as we make step by step progress toward our exploration goals.

Significantly, he added, "the fascination generated by further exploration will inspire our young people to study math, and science, and engineering and create a new generation of innovators and pioneers."

There is already good evidence we are helping to inspire this new generation through our exploration missions.

This year, we've had 14.6 billion hits on our web site. Yes, that's right...14.6 billion. This number of hits represents over 100 million visits from individual users seeking the latest exploration news from the International Space Station, from the surface of Mars and vicinity of Saturn.

We're confident that a high percentage of those who click on www.nasa.gov are in school today and dreaming about what it would be like to wander around the surface of Mars in a couple decades. I know from the evidence of my own three children this is definitely the case.

Indeed, our sights are now set on the red planet and every other place we can go in the solar system to help us explore answers to fundamental questions of importance to science and society.

So with this perspective, I'd now like to show you a brief video about our new space exploration vision and the steps NASA will take to implement it.

As we now have focused, compelling objectives, I know a lot of people around the country have a renewed interest in the American space program. Indeed, we are gratified that a recent Gallup Poll found that seven out of ten adult Americans support the objectives of the initiative.

Let me now turn to what our space exploration vision will mean for the nurturing of a new generation of skilled scientists and engineers here in Connecticut and around the country and for the development of new technologies that will help strengthen our country.

Along the way, we believe the exciting potential of our exploration activities will help reverse a decade long trend of declining interest by students in math, science and engineering fields, and help refresh NASA's talent pool and our national technology base overall.

From NASA's self-interested perspective, we are facing the graying of our workforce. One-fourth of our employees will be eligible for retirement in the next five years.

And we are quite concerned that while employment opportunities in science and engineering are expected to increase at a rate almost four times greater than for all other occupations throughout this decade, enrollment in science and engineering college courses has been in decline.

Unfortunately, a recent report by the National Science Board says the nation is losing "a long-distance race" more important than the Olympic Marathon to maintain its edge in human scientific resources.

The Board pointed out that the U.S. ranks 17th among nations surveyed in the share of 18 to 24 year-olds who earn natural science and engineering degrees, trailing Taiwan, South Korea, Italy and Ireland. Now I'm very proud of my Irish heritage, but it disturbs me that we trail Ireland in this important category.

What's happening is that our best and brightest are being drawn into other professions. A regeneration of our nation's commitment to exploration and discovery may help reverse this trend.

Accordingly, as we move forward on our long-term exploration plans we are putting a lot of effort in reaching out to that next generation of explorers.

I know there are educators in the audience who will tell you that you have to start young. And if the subject is either space or dinosaurs, you have a fighting chance to get their attention!

So, just as you take justifiable pride in your engagement with the North Stonington School System, we are trying to do our part to use the excitement generated by our new space exploration vision to help enhance educational excellence throughout the country.

Let me cite just a few of NASA's efforts in this regard.

First, we are providing educators with curriculum support materials that we hope will not only assist them to convey the math and science concepts they are teaching, but will also serve to spark students' interest and imagination as we demonstrate how these concepts are applied everywhere from the International Space Station to our great observatories that are helping to unlock the mysteries of the most distant galaxies.

We're doing our best to support the professional development of practicing teachers and pre-service teachers with special workshops and sessions.

We also provide opportunities for students and faculty to participate in NASA research. A variety of ongoing programs connect college- and graduate-level students to NASA research activities. In so doing, they provide the real-world, hands-on experience that will truly

engage these upper-level students in the excitement of NASA research.

For example, of the \$111 million in research and development funding NASA sponsored in Connecticut this past fiscal year, \$4 million went to research projects conducted at such great institutions as Yale and the University of Connecticut.

Finally, we seek to inspire that next generation of explorers through our new class of astronauts who will help carry out our space exploration vision in the year ahead.

Our 11 new astronauts who were introduced to the country this spring are truly a remarkable group of individuals. They include a Peace Corps veteran, a former migrant worker who grew up to be an aerospace engineer, and three professional educators, who will join with Barbara Morgan in forming our first group of Educator Astronauts.

These Educator Astronauts will perform regular astronaut duties on future space missions, and also take their classrooms into space to directly engage millions of school children in lessons about the wonders of science.

Now even as we pay attention to assembling the talent pool that will help us get to the Moon and beyond, we are also moving out on the nuts and bolts work of extending our space exploration reach.

We are doing so with missions such as the Genesis spacecraft's return of solar wind particles, which were spectacularly recovered in an unprecedented helicopter operation over the skies of Utah two days ago, and by developing the enabling capabilities that will allow us to conduct a successful long-term space exploration program.

We know that we must overcome a number of hurdles before we mount human missions well beyond low earth orbit. We must develop a means to ensure the health of our crews on long duration missions either to the surface of the Moon or to Mars and beyond. And we must develop new propulsion and power generation capabilities that will enable us to get to our exploration targets more quickly and to conduct more sophisticated exploration and discovery activities at these locations.

Some lessons from our country's history may be instructive in this regard. For example, in David McCullough's remarkable biography of our nation's second President, John Adams, McCullough notes how Adams lamented that the USS Constellation, the pride of the new American fleet, lay at anchor nearby Cambridge in Boston Harbor for days and days at a time because the weather wouldn't permit it to sail.

And this grand ship symbolized U.S. resolve to engage in global commerce, the vessel that would demonstrate we were a nation to be reckoned with.

In space exploration, we are in the equivalency of that time. Weather and other 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."

We are quite confident that the pursuit of our 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, the potential spinoff benefits from this broad based exploration program could be considerable.

Since that time safer aircraft, improved cataract detection, and heart pumps are all examples of NASA technologies used to advance our exploration goals being applied to productive use in society.

The future technologies we will all use as humans here on this globe include robotics, autonomous and fault tolerant systems, human-machine interfaces, life support systems and novel applications of nanotechnology and microdevices.

We are optimistic that this program boosts the opportunities we will have to become a smarter, safer, healthier and more intelligent world. And if we do it

right, on a scale never seen before in the history of the planet, at a pace hardly thought possible.

Indeed, if you think of the developments of the last century, all of them were predicted to be way outside the realm of what could be predicted reasonably. We can do this. And great nations indeed do great things.

But in sharp contrast to the Apollo era, when coming in second to the Soviet Union would potentially be catastrophic to American influence throughout the world, 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 North Stonington classrooms today. They will have the means and the motivation to make this vision come to pass. The President observed, and I think most aptly, "Exploration is not an option we choose. It is a desire written in the human heart."

Just think about the compelling scientific discoveries that our bold space exploration efforts will bring about in the coming decades.

Indeed, when the history of the 21st century is written, we can well imagine that the next generation of explorers will have sought life's abodes in other corners of the universe.

Our children and grandchildren will be able to look up to the stars that once guided the sailing vessels of yore and be rigorously mapping continents on dozens of those planets that surround the stars and in so doing gather

knowledge that may help improve our own human condition here on this planet.

Our next generation of explorers will also build on the fantastic work of our Mars Exploration Rovers Spirit and Opportunity and expand the search for evidence of life that may possibly exist within our solar system, perhaps in bacterial form on Mars or within the atmosphere of Jupiter's mysterious Moon Europa.

If we help nurture a new generation of explorers who have a passion for scientific research at Wheeler High and elsewhere, I have no doubt that many of them will become engaged in productive efforts to protect the quality of our land, water and air resources and the great diversity of life we find here on Earth.

I also can imagine that many will assist with space missions to help reveal the complex interactions among Earth's major systems. We are at the cusp of being able to vastly improve the prediction of weather, long-term climate, earthquakes and volcanic eruptions and for obtaining a greater understanding of the Sun's influence on our living world. With hard work and dedication our next generation of explorers and discoverers will help achieve the breakthroughs that lie ahead.

This next generation of explorers will also help bring about the new commerce that our expanded technological reach into space will enable. The day is near that low-Earth orbit will become a rapid growth economic zone, with commercial industries taking advantage of low

gravity, abundant solar energy, and a vista for research that encompasses the entire planet.

This is the world that our students will grow up in. This is the world that they will help to create.

And throughout this world, future generations of North Stonington students will learn, just as we learned, about the fundamentals of physics, mathematics, and technology. Their learning experience will be somewhat different than ours as the students of tomorrow will be able to actively interact with space explorers trekking throughout the solar system via telepresence technology.

As you can tell, I am very optimistic about the future. And by demonstrating your interest in this wonderful communities' education system, you too are showing the kind of optimism that has provided the foundation for our nation's greatness.

I thank you again for your wonderful hospitality. As I said, it's great to be home. Thank you.