

**Remarks by the Honorable Sean O'Keefe
NASA Administrator
World Affairs Council of Central Illinois
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Thank you Ron (Vice Admiral Nils "Ron" Thunman USN-Ret.) for that gracious introduction and good morning ladies and gentlemen.

I am truly honored to be here in the heartland of America speaking before this distinguished gathering. And it is extra special to be introduced by such a good friend as Vice Admiral Thunman, a gentleman who helped engineer the buildup of America's submarine fleet in the 1980's.

To be certain this development was critical to our victory in the Cold War. Your Council is very fortunate indeed to be led by such an accomplished gentleman as Ron.

Today, I wish to speak to you an equally compelling area of American leadership, our leadership in the exploration of outer space.

Specifically, I wish to share with you how the very real steps we will take to advance our bold new vision for space exploration will tangibly improve the lives of millions here on Earth.

We're extremely confident our efforts to send astronaut pioneers and robotic explorers back to the Moon and onward to Mars and beyond will expand the technological envelope, advance American scientific, economic and security interests and certainly inspire and motivate the next generation of explorers to build on our nation's heritage of exploration and discovery.

We are just at the start of an epic period of exploration progress that will take place one journey, one mission, and one step at a time.

Most fittingly for those who live in this great state, the passion of the American people for exploration and discovery stems in large measure from our human desire to do so, the same desire to seek out new frontiers that 187 years ago led Abraham Lincoln's father to venture west with his family from Hardin County, Kentucky.

In this year that we commemorate the 200th anniversary of President Jefferson sending the Lewis and Clark Expedition out into the American wilderness, Abraham Lincoln's record as an explorer is also worth noting.

As a young man, Lincoln navigated the Mississippi River from New Salem to my hometown of New Orleans. Lincoln's voyage, not unlike some of our modern space exploration missions, faced an unforeseen problem. At one point his boat slid onto a dam and was set free only after heroic efforts. In

later years, while traveling on the Great Lakes, Lincoln's ship ran a foul of a sandbar.

Rather than treat these problems as insurmountable obstacles, Lincoln used his great mind to overcome them. He conceived a device for "Buoying Vessels over Shoals," an invention that earned him U.S. Patent number 6,469, the only patent held by someone who attained the presidency.

We look at the challenges of space exploration with the same spirit and determination. Yes, there are tough obstacles out there. Fortunately, there are plenty of bright and dedicated men and women in the NASA family who devote their best efforts to overcoming those obstacles.

Nearly a year ago, President Bush came to NASA Headquarters to talk about new goals for America in space. In an address broadcast throughout the land and to a large international audience, the President prefaced his policy

announcement by singling out the NASA workforce for praise. "This agency, and the dedicated professionals who serve it," he said, "has always reflected the finest values of our country -- daring, discipline, ingenuity, and unity in the pursuit of great goals."

The President then explained his vision for extending our human presence across the solar system in the years ahead.

Rather than recite chapter and verse the elements of the Vision, I'd now like to show you a video that explains its objectives and the activities that NASA will undertake to achieve them.

Make no mistake about we now have long-term goals that give our Agency a focus and direction we haven't had since the Apollo era.

I believe the President showed remarkable leadership by initiating a serious review of space policy, by driving that review to an ambitious agenda

for space leadership, and then by establishing a blue-ribbon commission known as the "Aldridge Commission" after its chairman, former Under Secretary of the Defense and Air Force Secretary Pete Aldridge, to provide sound advice on the Vision's implementation.

The President did something else that will be critical to our ability to sustain the vision through several administrations and Congresses.

He presented this exploration plan to Congress in the context of an affordable, credible NASA budget.

After absorbing some modest increases to get implementation activities underway, the proposed NASA budget will remain at less than seven-tenths of one percent of the Federal budget.

We have adopted a go as you can pay strategy for this initiative. We will be able to afford investments in the new technologies such as the Crew Exploration Vehicle we plan to demonstrate in four

years, by retiring the Space Shuttle by the end of this decade and by reallocating funding from other NASA accounts.

Looking at this another way, every American taxpayer annually contributes to space exploration the price for a family of four to attend a movie one time, less than 50 dollars a year. And that investment in the future pays off a lot more than that movie would. We're not talking about a budget buster.

I'm very pleased to report to you that 10 days ago the Congress approved the President's proposed fiscal year 2005 budget for NASA and gave our Agency additional flexibilities to move money around to pay for safety improvements to the Space Shuttle system. This is a tremendous vote of confidence in the Vision for Space Exploration. It is now up to us to make this happen. We certainly appreciate the leadership of Speaker Dennis Hastert on this funding measure and the support of Congressman Ray LaHood.

Of course public opinion is a big driver of governmental action in the United States. I have no doubt that when our legislators examined the NASA program in detail they were well aware of a public opinion survey conducted by the Gallup organization last summer that found nearly seven out of ten Americans support the goals of the Vision for U.S. Space Exploration. In that survey, self-identified Democrats expressed support at almost the same rate as self-identified Republicans. In short we have strong support in both the blue states and the red states for this red, white and blue program of exploration and discovery.

One measure of strong public interest in the Vision is the number of hits or page visits we've had on our web site www.nasa.gov this year. We recently recorded the 16th billionth hit on the web site for the year, representing about 150 million visitors,

well over five times the number of visitors we had all of last year.

Furthermore, in my travels this year, both in the U.S. and abroad, I've noticed that young people--the members of the next generation of explorers--are tremendously excited about our plans to explore the Earth, Moon, Mars and beyond.

To these future scientists, engineers and astronauts, the idea that a combination of human pioneers and robotic explorers will soon establish beachheads on other worlds is a given.

In the years ahead they will provide the rocket fuel of energy and enthusiasm that will enable us on a sustainable basis to expand our exploration reach to heights unimagined and into frontiers unknown.

I am also very pleased to report that we're already making tremendous progress in advancing

the exploration objectives the President described in January.

Consider, for example, the International Space Station, the remarkable research facility orbiting 250 miles over our heads. Earlier this month on Election Day, U.S. astronaut Leroy Chiao and his fellow Expedition 10 crewmember Russian cosmonaut Salizhan Sharipov marked the fourth year of continuous human occupancy onboard the Station.

Leroy and Salizhan are conducting important research on how human beings adapt to the long-term challenges of spaceflight--such as bone and muscle loss during lengthy stays in zero gravity. This research on human factors will provide our planners the knowledge we need to take our next impressive steps in space.

Now who would have thought during the darkest days of the Cold War that American and Russian crewmembers would ever be working cooperatively in space in this fashion? Nor can we predict today what levels of cooperation the bold effort to return to the Moon and land human pioneers on Mars will help spur back here on Earth.

We do know, however, that there is tremendous international interest in the Vision. Two weeks ago, in Washington, we hosted an international workshop on cooperation in space exploration that was attended by representatives of nearly 30 countries.

Participants in the workshop shared space exploration plans with the intent that we identify common objectives, partnership opportunities and potential shared assets.

In two days I will be hosting the head of the Chinese National Space Agency, Administrator Laiyan Sun, in a visit that we have worked very

closely with the State Department to arrange. While we do not have a specific agenda for this meeting, we look forward to the opportunity to exchange views and get more familiar with what our respective space agencies are doing. At the very least, this is a positive step forward in the relationship between our two countries.

I might add that on December 19th, I will have the opportunity to take the head of the Russian Space Agency, Anatoly Perminov, to the Kennedy Space Center in Florida.

We're also making good progress on NASA's efforts to return the Space Shuttle safely to flight. We are now working toward a May-June launch window for the STS-114 Space Shuttle Discovery mission commanded by Eileen Collins.

Our dedicated team has expended a great deal of effort to address all of the safety recommendations of

the Columbia Accident Investigation Board, and to raise the safety bar even higher.

While we look forward to Return-to-Flight, an essential element in our ability to complete construction of the International Space Station, I can assure you that we will not launch until we determine that we are fit to fly.

Of course, spaceflight is a very dangerous business, and we can never be risk free. And I think part of my job is to communicate with the American public on how we address risk.

Two months ago, to help inspire greater discussion about this important subject, we invited some of our planet's boldest and bravest explorers of the deepest oceans, highest mountains and outer space to participate in a Symposium on "Risk and Exploration" at the Naval Postgraduate School in Monterey, California.

It was incredible to hear these heroes' inspiring stories about why they put their lives on the line, not to seek thrills for thrills sake, but rather to gain knowledge, wisdom and experience that will benefit all of humanity.

We purposely coupled these risk-takers with a number of our NASA scientists and engineers, who must manage risk for a living.

From the discussions that ensued, I think we gained a greater appreciation of our responsibility in government to take on bold and risky ventures, but to always do so in a diligent manner than minimizes and mitigates risk to the maximum extent possible. That is the price of admission for what we do. And that certainly is how we are approaching our Return to Flight activities and work to complete assembly of the Space Station.

Our next step after Space Station assembly is to return human explorers to the Moon as soon as 11

years from now in preparation for the exploration of Mars and beyond.

To accomplish these and other objectives we have strived to transform our entire NASA organization in order to be "wired for success." The transformation activities we set in motion this summer include the restructuring of NASA's six Strategic Enterprises into four Mission Directorates for Aeronautics Research, Science, Exploration Systems and Space Operations. This new organizational structure will help us better align our personnel and resources with Vision enabling activities.

Our new Exploration Systems Mission Directorate, led by retired Admiral Craig Steidle, has developed a very thoughtful strategy to employ experience, technology readiness and flexibility to enable each successive exploration step.

This group is already hard at work on another goal of the Vision, to develop and test under Project Constellation, a new spacecraft, the Crew Exploration Vehicle, with a demonstration scheduled in 2008, and the first crewed mission no later than 2014.

Two months ago, NASA awarded study contracts for the Crew Exploration Vehicle and for lunar exploration concepts and approaches to 11 groups, drawn from 60 proposals, representing a broad cross section of traditional and nontraditional aerospace firms, of small businesses, academic institutions and commercial enterprises.

Also, from a Broad Agency Announcement, we've received 3,700 responses from industry and academia here in the U.S. and abroad for innovative ideas about human and robotic exploration technology. So we are moving forward with great speed.

A year from now, we will have awarded contracts to at least two major contractors to develop and demonstrate a Crew Exploration Vehicle by the 2008 milestone.

Our other Mission Directorates are similarly moving forward on the objectives of the Vision.

Two weeks ago, our Aeronautics Mission Directorate successfully flew our X-43A experimental vehicle on a flight taking it to 10 times the sound barrier. Using novel scramjet engine technology, the X-43A may ultimately produce access to space in ways that we've never thought we could achieve. This technology, once fully developed, may also enable passengers to travel from coast to coast in less than a half hour. Unfortunately we can't guarantee similar reductions in time for your trip to and from the airport.

Our Science Mission Directorate, has been quite busy this year with the Spirit and Opportunity

missions to Mars and the Cassini-Huygens mission around Saturn. They are also hard at work planning robotic missions to the planets that will blaze the trail for the human pioneers who will come later.

Indeed, throughout the agency and with other nations and organizations work is well under way to advance and mature a range of novel concepts and high-leverage technologies that will enable safe, affordable, effective and sustainable human and robotic exploration for the benefit of all humankind.

This is the spirit in which we hope to engage all sorts of partners in cutting-edge activities that will help build revolutionary technologies and capabilities for the future.

In turn we are quite confident that our exploration activities 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 prove considerable.

Since that time, cataract detection, heart pumps, microchips and safer aircraft 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 implement the Vision will accelerate advances in robotics, autonomous and fault tolerant systems, human-machine interface, materials, life support systems and novel applications of nanotechnology as well as microdevices.

If history is any guide, these and other technologies we develop will have a tremendous impact on society in numerous unanticipated ways.

Finally, I'd like to turn to what the pursuit of the Vision will mean for the nurturing of a new

generation of skilled scientists and engineers here in Illinois and around the country who will help produce these new technologies.

We believe the exciting potential of our space exploration initiative 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 workforce will be eligible for retirement in the next five years.

And 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.

But this has broader national implications as well, implications that should particularly interest this audience.

A report by the National Science Board says the nation is losing "a long-distance race" 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 disturbed me that we are trailing them in this important category.

A regeneration of our nation's commitment to exploration and discovery will help reverse this trend.

So as we move forward with initial activities to implement the Vision, we're also putting a lot of effort in reaching out to our next generation of explorers.

And educators will tell you that you have to start young.

We're quite excited, for example, about a new NASA-sponsored program called Explorer Schools. At 100 specially selected schools around the country, we are using our ambitious mission activities to help educators bring excitement and wonder to their science and math classroom lessons. Among our trailblazing Explorer Schools are the Harriet Tubman School in Dolton and Joyce Kilmer Elementary School in Chicago.

I should also mention that thanks to new legislation the President recently signed, NASA is beginning a new Scholarship for Service Program, which will provide financial assistance to promising undergraduate and graduate students and an opportunity to work for NASA. In this way, we intend to truly build up the bench strength of our agency.

So send us your best and brightest students from the University of Illinois here in Springfield, from Bradley, Depaul, Northwestern and Southern Illinois, and your other great centers of learning. We will give them challenges that will help them stretch their abilities and realize their dreams.

In summary, I'm convinced in the ways we are attacking the challenges presented by the Vision we are setting the stage for a space program that will boost the opportunities we will all 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.

The President has described a promising vision for our future in space. As he's said, the cause of exploration is not an option we choose; it is a desire written in the human heart.

Once again I thank you for your hospitality and for your interest in what NASA is doing on behalf of the American public. Thank you very much.