MARS MATTERS:

REFLECTIONS ON THE SIX-YEAR ANNIVERSARY OF PRESIDENT OBAMA'S LANDMARK SPEECH AT THE KENNEDY SPACE CENTER

Remarks by
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Thank you all very much. It is great to be among so many friends and advocates of space exploration.

As I thought about what to speak with you about today, the one thing to which my mind seemed to keep returning, is just how far we've come – particularly in the last six years since President Barack Obama traveled to the Kennedy Space Center and challenged NASA to send American astronauts to Mars in the 2030s. Today marks nearly six years to the day since this happened – more on this in a moment.

When I say how far *"we've"* come, by *"we"* I'm not just talking about NASA. I'm talking about all of us, whether *"we"* happen to be citizen scientists, inventors, entrepreneurs, executives, astronauts, astrophysicists, academics, journalists, or students.

Of everything that's ever been written or said about space – and there's been a lot! – perhaps none is more poignant than that simple expression that those of us in the space community return to time and again … *"space is hard."*

When Robert Goddard first started publishing his research and telling people about his belief that we'd some day be able to send a rocket all the way to the moon, the idea seemed so, well "out of this world" that people laughed at him. The press nicknamed him "moon man." Others called him "moony" and "moon mad."

But Goddard was undeterred and his story is now history.

As we come to today, and as we work to move space exploration forward, I think it's important to take a moment to reflect upon where we've been.

With this in mind, I want to share with you something that Goddard wrote. Quote: *"On the afternoon of October 19, 1899, I climbed a tall cherry tree at the back of [my uncle's] barn … It was one of those quiet, colorful afternoons of sheer beauty which we have in October in New England and, as I looked toward the fields to the east, I imagined how wonderful it would be to make some device* ***which had even the possibility of ascending to Mars*** *… I was a different boy when I descended the ladder. Life now had a purpose for me."* End quote.

If you think about it, as long as little boys and girls have been climbing trees, they've dreamed about things yet unseen and undiscovered - and for as long as human beings have known about Mars, we've dreamed about going there.

Today, we're closer than ever before in the history of human civilization. That's bears repeating: <u>we're closer to sending human beings to Mars today, than anyone, anywhere, at any time, has ever been.</u>

With this in mind, let's take a break from our regularly scheduled programming and do some audience participation. We're going to play a little game – some of you have played before. It's called "Mars Matters." Even though we here recognize why Mars matters, it's important every now and again to remind ourselves, so that we'll be more effective in reminding our friends and neighbors.

So I want you to repeat after me when I point to you … "Mars matters."

Because its formulation and evolution are comparable to Earth's … Mars matters.

Because we know that at one time it had conditions suitable for life … Mars matters.

Because what we learn about the Red Planet may tell us more about our own home planet's history and future … Mars matters.

Because the technologies we're developing to go to Mars are already saving lives here on Earth, and because they're improving our quality of life as well … Mars matters.

Because the Journey to Mars is already creating and supporting jobs and economic growth here at home … Mars matters.

Because it might just help unravel the age-old mystery about whether life exists beyond Earth … Mars matters.

Great job! A moment ago, I mentioned that it has been six years nearly to the day since President Barack Obama traveled to the Kennedy Space Center to deliver, what I consider, one of the landmark speeches in the history of space science.

Dr. Martin Luther King once said that *"we are not makers of history"* but rather "*we are made by history."*

So let's take a moment to remember just where history had brought us on April 15, 2010 when the President came to the Kennedy Space Center and Cape Canaveral, Florida.

You may recall that at the time, our nation's space program was in somewhat of a holding pattern. Yes, Presidents since Dwight Eisenhower had dreamed of sending American astronauts to Mars. Yes, those of us who had been a part of the space program had long assumed that Mars was going to be our next stop someday … and yes, many of you shared this dream.

Yet in April 2010, sending human beings to Mars was nothing more than a vague, horizon goal. There was no realistic or sustainable plan in place for getting there. There was no timetable. There was nothing close to a consensus on Mars as a destination.

At the same time, we were still recovering from the devastating and tragic loss of Space Shuttle Columbia in 2003.

The Columbia Accident Investigation Board had recommended that the Space Shuttle Program be phased out. Many of us agreed with their recommendation, including the fellow who's speaking to you. This was not a decision at which I arrived lightly. I traveled to space four times on the Shuttle. I loved the Shuttle. It had a remarkable, three decades long run like no other. However, every technology evolves over time, and it was time to focus on destinations farther out into space.

President George W. Bush agreed and you will recall that he directed the phase out of the Space Shuttle Program.

Fast forward to 2009.

Upon taking office, President Obama asked an independent committee chaired by former Lockheed CEO Norm Augustine to review the nation's plans for human spaceflight. The committee included astronauts, scientists, executives, educators, engineers and a retired Air Force General – people as distinguished as the late Sally Ride. Their findings, quite frankly, were sobering. I quote: "*The U.S. human spaceflight program appears to be on an unsustainable trajectory."*

It gives me no joy to recall these words, but it's an important benchmark of how far all of us have come since that time.

A few months after the report's release, President Obama traveled to KSC and set us on the visionary course on which we are headed today.

The centerpiece of his remarks was a challenge to NASA: send American astronauts to Mars in the 2030s and do so in a way that strengthens our economy, our environment, and our understanding of the universe, our place in it, and the most important planet of them all: Earth.

"We will not only extend humanity's reach in space," he pledged. *"we will strengthen America's leadership here on Earth."*

The President called for replacing an unsustainable trajectory with a clear, financially stable and ambitious way forward. He asked NASA to ramp up robotic exploration of the solar system and to complete the James Webb Space Telescope. He proposed extending the life of the International Space Station, and he instructed NASA to launch more Earth Science missions.

As he laid out what would become NASA's Journey to Mars, the President stood in front of a mock-up of the *Orion* crew capsule and spoke about the roles that both *Orion* and the Space Launch System, or SLS, would play in sending crew, cargo and propulsion systems into deep space.

Meanwhile he asked NASA to work with private industry in low-earth orbit as well as deep space.

When it came to transporting cargo and crew to the Space Station, he asked us to team with commercial carriers; working with them to return launches to American soil, while building a new commercial market in low-earth orbit.

When it came to deep space, he asked us to work with American entrepreneurs, innovators and inventors on developing the technologies that drive exploration and job creation.

These would come to be technologies like habitats, 3D printers, space veggies, medical devices, propulsion systems and so forth … technologies that astronauts will use to one day live and work on Mars and safely return home … technologies that have a lot of potential spinoff benefits here on Earth.

So here we are six years later, and I don't know about you, but if you had told me back then that today I'd be talking to you after having recently welcomed Scott Kelly home from his Year in Space aboard the International Space Station – and by the way, that the Station had been recommended for extension not once but twice by the President and Congress, let's just say I would have been quite the skeptic!

Let's be honest … who back then would have thought that I'd be able to stand before you today and talk about the 35,000 pounds that our commercial partners have delivered to the Station from American soil *even before* these most recent resupply missions by Orbital ATK and SpaceX?

While we're at it, I think most of us at the time would have doubted that so soon afterwards I'd be able to tell you today that we're close to returning American crew launches to American soil as well – and perhaps most surprisingly, it's due in large part to a bipartisan agreement in Washington! *This in a time when the two parties have difficulty agreeing on "soup or salad" – and yet they were able to agree that commercial space should be a priority!*

Meanwhile, I also think that any of us would have been flabbergasted back then to learn that a mere six years later, Americans would be working at more than 1,000 companies across nearly every state on NASA's commercial space initiatives.

We certainly would have been impressed that so soon after the President stood in front of that mock-up of *Orion* it would have flown farther into space than any vehicle designed for human crew has flown in a generation – and if you're keeping score at home, we actually hit this benchmark in 2014. I should add that both *Orion* and SLS are continuing to hit a number of important milestones and we're optimistic that they will carry astronauts to deep space as soon as five years from now.

One more question for you … who honestly would have believed in their heart of hearts, that only a few years after our community had been unable to even agree on Mars as a destination, I'd be able to look you in the eye and tell you (with a straight face no less!) that not only does NASA have a plan for sending American astronauts to Mars in the 2030s, but there's a consensus starting to emerge in the scientific and policy communities around it.

This plan, by the way, is clear, it's affordable, it's sustainable, it's attainable and you don't just have to take my word for it … we've put it online at NASA.gov/Mars for all to see!

I'll tell you this, one of the great indicators of progress that I see when it comes to the Journey to Mars is quite frankly that people don't smirk or laugh or look at you like you're from Mars yourself when you tell them that we're headed to the Red Planet.

Less often are folks asking, *"Why aren't you doing things my way?"* or *"Is Mars the right destination?"* Rather, they're asking, *"How can we be a part of this?" and "What are some areas where we can work together?"*

When you download the plan, you'll see that at every stage we envision working with partners across the public, private, academic and non-profit sectors.

It's true in our current 'Earth Reliant' phase, where we're working "off-the-earth, for-the-earth" on the International Space Station. It will be true in the 'Proving Ground' phase, when we work in cis-lunar space, the area around the moon. Furthermore, it will be true in the 'Earth Independent' stage, when our astronauts reach Mars.

So this is where we've been and where we are now. I want to leave you today with just a brief thought on where we can be headed – and I say "*can*" because the sort of future that is possible cannot create itself. We have to choose and I firmly hope and believe we will.

We can give our children and grandchildren a world where they are breathing cleaner air, drinking, fishing and playing in cleaner water … and living on a planet that is no longer burdened with the threats of climate change ... but we have to choose.

We can reach the day when our children and grandchildren view a human presence on Mars as a fact of life – perhaps even akin to the way that a continuous human presence aboard the Space Station has been for the past 15 years and counting … but we have to choose.

We can give our children and grandchildren a stronger economy, where more Americans (including more women and minorities) are working in well-paying STEM careers … a future where a robust private space industry is launching crew, cargo, and satellites of all sizes to space at a significantly lower price-point … but we have to choose.

We can give our children and grandchildren a healthier future … a future where space technology has revolutionized things like medicine, highway safety, aviation, food supplies, water purification and emergency preparedness, resiliency and disaster relief… but we have to choose.

We can unlock even more secrets about the universe and our place in it … but we have to choose.

Six years ago, on another April day, President Obama set us on a visionary course. It will be up to future leaders and future citizens to choose whether we see it through.

I therefore want to leave you today with this: some three days after the launch of Gemini 9A, Robert Kennedy gave his famous speech at the University of Cape Town in South Africa. Most people know it as the "Ripples of Hope Speech." At one point, he spoke about a Chinese curse: "*may you live in interesting times."* To this, Kennedy said: *"like it or not, we live in interesting times. They are times of danger and uncertainty; but they are also more open to the creative energy of men than any other time in history."*

I think that all of us would agree that once again we are living in "interesting times." Here's hoping that we will choose to empower the creative energy of women and men, so that together we can stay the course, complete the Journey and give our children and grandchildren a future filled with joy, potential and progress; progress that stretches all the way to Mars.

Thank you all very much.