

## NEWSPACE CONFERENCE

*Remarks for Deputy Administrator Dava Newman*

July 16, 2015

Thank you all very much ... It's great to see so many familiar faces. On a personal note, it's very gratifying to come to a conference like this and to see both so many colleagues and former students.

What an incredibly talented, visionary, group of people we have with us today. My only regret is that I can't spend more time with you at this conference. As an engineer who has spent much of my career on space technology and policy, you're "my people."

Facebook's Sheryl Sandberg once said that when you're able to combine both passion and contribution you end up with a "very clear path to happiness." In your case, it's also a path to Mars, Pluto, and the outer edges of the known universe.

There's a lot of passion, excitement and energy in "NewSpace" these days. I saw some of you in Boston last week at the International Space Station R&D Conference – and I think those who were with us would attest to the excitement that was in the air. It's the same energy we can feel here in Silicon Valley.

This has been a really big week for space exploration. By applause how many of you have seen the pictures from New Horizons yet? "Pluto-mania" is gripping the nation. If you take a step back it's really something remarkable to think about. A 3 billion mile trip. The longest duration mission ever to reach its primary science target. The most detailed, close-up images and measurements of Pluto and its moons that we've ever seen. Information traveling to us from billions of miles away in approximately four and a half hours.

One of my NASA colleagues described the trajectory of the New Horizons spacecraft as the equivalent of hitting a golf ball in New York and landing a hole-in-one in Los Angeles.

I want to read you something that one commentator wrote about the mission: *“This would have been the subject of science fiction when I was at school, but is now science fact ... I feel proud and honoured for such a momentous scientific mission to be completed within my lifetime.”* Dr. Stephen Hawking posted that on Facebook.

The United States is the first nation to reach Pluto, and as of Tuesday, we have now completed the initial survey of our solar system. I think we’d all agree that this is a remarkable accomplishment that no other nation can match.

## **COMMERICAL SPACE**

As you may know, we also had another, very, very significant milestone in recent days. Last week, we announced that **four astronauts – Sunita Williams who I was with in Boston – Robert Behnken, Eric Boe, and Douglas Hurley, will be the first American astronauts to train to fly to space on commercial crew vehicles. The Washington Post referred to their endeavors as “the new Right Stuff.”**

By moving forward with training these four astronauts, we’re on the cusp of a true “giant leap” forward toward returning human spaceflight launches to American soil.

So you really could not have picked a more opportune time to talk about NewSpace.

I want to take this opportunity today to send a very clear message that NASA is committed to commercial space. We’re committed

to commercial crew. We're committed to commercial cargo. We're committed to building a commercial market in low-earth orbit. We're committed to partnering with innovative, creative people and companies who are developing the technologies that drive exploration ... the technologies that will drive American astronauts to Mars in the 2030s.

On the crew side, President Obama and Administrator Bolden have been working very hard to return human spaceflight launches to American soil for as long as there has been an Obama administration. In fact, had Congress fulfilled President Obama's original budget request for commercial crew, we could have been preparing to send astronauts to space on commercial carriers this year. As it stands, we're currently working toward launching in 2017 – although this could be pushed back if Congress makes the proposed cuts that are currently on the table. And just some food for thought: since 2010, the President has received approximately a billion dollars less than he requested for commercial crew.

There are more than 350 American companies working across 36 states on NASA's commercial crew initiative – including, I'd imagine, several of the companies you're here to represent. So these efforts are significant from both an exploration perspective and an economic perspective.

As far as commercial cargo, as you know, we're already up and running. I want you to know that the recent setbacks that our commercial partners have experienced have not weakened our resolve in the least bit.

Someone once, supposedly asked Thomas Edison about the 50,000 experiments he conducted on his storage battery before achieving any results. To which we replied something to the effect of *“what are talking about?” “I’ve learned 50,000 things about what won’t work.”*

Ask any of us who've worked on developing new technologies. Sometimes in order break new ground you have to break things. We learn not only from our success, but also from our failures.

## **JOURNEY TO MARS**

With this in mind, I wanted to spend the balance of our time together telling you a little bit about a few of the things we have going on at NASA and where you can fit into them.

NASA is on a Journey to Mars. It's a Journey that NASA began not four weeks, four months, or even four years ago ... it's a Journey we've been on for nearly a half century.

Later this afternoon, I'll be meeting with some colleagues at NASA's Ames Research Center. Between 1988 and 1992 I spent every summer at Ames doing PHD research for a future Mars mission. It focused on Extravehicular Activity and new technologies for spacewalks.

We are closer to Mars today than ever before. In 2010, President Obama challenged us to send American astronauts to the Red Planet by the 2030s, and I'm happy to report that there's a new consensus emerging around NASA's plan and timetable for getting there.

In many ways, this Journey begins in low-earth orbit at the International Space Station – our stepping stone to the rest of the solar system. It's a platform for science and research like no other, and those of you who I saw in Boston at the ISS R&D Conference last week, can attest to the exciting things going on in this space – pun intended – right now.

We heard from folks living and working in space right now – via uplink – and others who have flown there, what it's really like to

be in orbit for weeks and months at a time. How inspiring it is to explore on behalf of humanity ... to see the world in its entirety from a window ... and to raise the bar of human potential as part of their workday.

We heard from the innovators --like you all! – who are making our future in space possible, who are building the rockets and developing the technologies so humans can not only live well in low Earth orbit, we can reach new destinations far from the cradle of Earth, and make a successful go of it there as well.

From cargo, to crew, to innovations like Made in Space's 3D printer – which was developed in partnership with NASA – there is a tremendous need for public-private partnership, innovation, and entrepreneurship.

### [3D PRINTER ANECDOTE]

The same can be said for the rocket and spacecraft that will send our astronauts to Mars – the Space Launch System (SLS) and the Orion spacecraft. Companies like Paragon Space Technologies of Arizona, Collier Research Corporation of Virginia, and Advanced Power Electronic Corporation of Florida are partnering with NASA on everything from life support systems, software, and advanced power converters. Meanwhile, Lockheed Martin is working as the primary contractor on our Orion vehicle.

This past December, Orion had a highly successful test flight that took it farther into space than any spacecraft built for human passengers has flown in more than four decades. And it brought home critical data that we'll be able to use as we plan future crewed missions to deep space. Meanwhile, the SLS continues to hit important benchmarks.

## **NASA NEEDS YOU**

As move along on our Journey to Mars, I'm here to tell you that NASA needs you. We need your work to advance technologies that drive exploration.

There a great story about Mozart, which is likely apocryphal. One day he's at a party and he challenges Haydn to a contest. He says "I just composed this new piece of music and I'll bet you a case of champagne you can't play it." Well Haydn says "you're on" and Mozart hands over some sheet music and – wow – is it ever difficult to play. If you can imagine this set up, one of Haydn's hands is all the way at one end of the piano. The other hand is all the way at the other. And now, all of the sudden, there's a note right at the middle and everything is supposed to be played all at once. So Haydn tells Mozart this is impossible. What does Mozart do? He sits at the piano and starts playing. One hand is all the way to one end. The other hand is all the way to the other end. And when he gets to the note in the middle? He leans in and plays it with his nose.

If you're willing to play a little music with your nose, than we at NASA want to work with you.

We need you to develop the technologies astronauts will use to one day live and work on Mars and safely return home ... from robotics ... to microgravity research ... to habitats.

Eleanor Roosevelt said that "*the future belongs to those who believe in the beauty of their dreams.*"

If you're willing to believe in the beauty of your dreams, then we at NASA are anxious to share technical expertise, assessments, lessons learned, technologies, data, and other resources – it's all part of our Commercial Space Development Initiative.

Some of you may already have downloaded some of the more than 1,000 open source software codes we've put into the public domain, for free. This led Gizmodo to declare that "*The Space Age is Open Source.*"

These are just a few of many examples. The bottom line is that the further we advance and learn and discover, the more our technologies will need to evolve, be upgraded and grow. Ultimately, they will allow us to establish a sustainable human presence on Mars.

## **CONCLUSION**

The comedian Steven Wright once joked that he received a postcard with a picture of planet Earth. On the back of it was written "*wish you were here.*"

We're headed toward a future where the idea of human beings living and working on Mars won't be fodder for a standup routine or the stuff of science fiction. A child born today, might grow up taking for granted that we're headed to Mars ...and beyond ...

To build this future, we need innovative thinking. We need imagination. We need the new ideas that make NewSpace so promising. We need folks who are willing to believe, as Eleanor put it "in the beauty of their dreams."

In other words, we need all of you. Thank you all very much.