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DINNER

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Thank-you for the very kind introduction.

It's been a roller coaster ride in the space world recently. NASA has taken some lumps, but they're all worth it when you count all the successes we've been having.

- Another safe and productive shuttle mission ended this week with the return of STS-132 and the final flight of the storied Atlantis. A mission that left the International Space Station, for all intents and purposes, at construction complete..
- The station two weeks ago took home the prestigious Collier Trophy recognizing the best accomplishment in aeronautics and space flight for 2009.
- In Science, the Solar Dynamics Observatory is returning a torrent of unprecedented data about the sun. (If you like to talk on a cell phone, you'll be thanking us next time there's a solar flare...)

- Also in science, this week we announced some amazing new results about black holes and learned more about how the climate of Mars has changed.

Let me tell you more about NASA's plans and how they fit into the bigger picture of research and innovation that President Obama is setting up for a sustainable future for the nation and, in the grander scheme, the betterment of the whole planet. My deputy, Lori Garver, will provide more details in a luncheon talk tomorrow.

I was on the Hill again this week. This time before the House Science and Technology Committee. A couple of weeks ago I testified before the Senate Appropriations Sub-Committee. As you probably also know, some very high profile people are not seeing eye to eye with us on the President's new direction. But I believe that the President's FY 2011 budget request is good for NASA because it sets the agency on a sustainable path that is tightly linked to our nation's interests. I also believe that what the President has put forward is the most authentically visionary policy for real human space exploration that we have had since President Kennedy challenged NASA to send humans to the Moon and return them safely back to Earth in the 1960's.

While previous administrations have announced space policies well into their terms, President Obama is doing this early and has promised his 100% commitment to it.

After decades of neglect, we will increase investment – right away – in groundbreaking technologies that are designed to enable astronauts to reach space sooner and more often, to travel farther and faster, and to live and work safely in space for longer periods of time.

Per the President's direction, we are also going to build on the good work already completed on the Orion crew capsule and focus our efforts to provide a simpler and more efficient design that provides crew emergency escape from the ISS and serves as the technical foundation for the advanced spacecraft to be used in future deep space missions. This approach will preserve a number of critical high-tech industry jobs in key disciplines needed for our future deep space exploration program.

Right now we also have requests for information (RFIs) out on the streets asking industry and academia input on areas where our future direction will unfold, including Heavy Lift, Exploration Technology Demonstration and Development, Flagship Technology Demonstrations, Robotic Precursors and commercial crew capabilities. We're serious about

getting the best input from the people who know the most. Of course, any further steps are contingent on congressional approval.

But we are convinced that this new direction is sustainable. It provides actual money for real activities in a logical sequence. No unfunded mandates or programs that are expected to launch, orbit or be maintained with only paper backing.

A lot of misconceptions are out there, but the young people with whom I speak like and are energized by this plan. I spoke at MIT just a couple of weeks ago and the students are very, very excited about this new direction. They see the possibilities for their own careers; to create something new; to make new discoveries and have an impact on the life of this nation that lasts for generations. I wish you could have seen those students at MIT. They are very excited, and so am I.

This is really a generational shift. Recognize that we are entering a transitional phase in the space program the likes of which has not been seen in decades.

- The shuttle, which has been flying for nearly 30 years and part of NASA for 40, will fly out the last two flights of its manifest.

- The International Space Station, also part of us for the past 25 years and under construction for the past 10, is now, as I mentioned, basically at construction complete.

These are milestones of which to be proud - to cherish as a nation.

There has never been an engineering marvel the likes of the International Space Station (ISS). If you're my age or even a generation younger, it would have been hard when we were children to imagine that a full time crew of astronauts would be orbiting the Earth in a spacecraft the size of a football field. But there you have it.

The fact that today we are seriously, finally, contemplating what steps we need to take to get to Mars, is amazing. Theoretically, we've discussed it for decades. Now we're talking the real thing.

The realities are tough, which is why the President has had to make some tough, yet visionary decisions. Right now it would take 12 times the mass of the ISS for a successful mission to Mars. We think we can get that down to two masses. A huge part of that has to do with propellant required. We also can't forget the human health issues, but ISS will play a big role in breakthroughs there as it continues to serve as an international laboratory for space biomedical research along with research in other sciences. What is incredibly exciting is that now we are entering a phase where we will be

able to direct real resources and the best minds in the world at these problems, to come up with solutions.

We've been criticized the past few months for not having destinations, for not having a timeline. In reality, we have always been, and still are, mission driven. We plan to fly a crewed circumlunar mission by the early 2020's; an asteroid rendezvous with a human and robotic crew by 2025; and a crewed trip to orbit Mars by early 2030's followed by an actual landing of humans and their robotic companions.

The President has given us a road map that will allow us to increase our capabilities in a progressive fashion as we approach an ever-increasing number of targets with an increasing difficulty in these missions.

Technology advances will enable each step.

The new plan is flexible. It represents missions enabled by capability, guided by discovery, with many destinations, milestones and achievements as we go.

My NASA Chief Technologist, Dr. Bobby Braun talks about balancing NASA's essential three competencies: research and technology development, flight hardware development, and mission operations. For years we've been unbalanced on the tech development side with insufficient investment there. Across the board we're going to change that.

We also think the commercial sector is ready to provide a key service. In facilitating their ability to provide access to the ISS and other low Earth orbit destinations, we'll open up a vast new segment of the economy, create good jobs -- long lasting jobs -- and start an engine for creating more jobs in the future. While industry is doing that, NASA is going to develop and demonstrate technologies that will give the next generation of explorers more capabilities than anyone who has been to space before.

We get criticized as though these ideas just hatched out of the blue, as though the President somehow disappeared to a bunker and emerged with these ideas that no one had ever conceived of before. The truth is, ever since the Apollo era, ten national studies across the board from the Post Apollo Space Program to Augustine have identified the kinds of capabilities we would need if we truly intend to get beyond low Earth orbit. And the NASA Space Act itself directs us to make the fullest commercial use of space.

What we are working on is a bright new future for human and robotic spaceflight, for the entire exploration enterprise - to finally capitalize on all of our experience and to take advantage of the juncture at which we have arrived and make our dreams for the future a reality.

NASA, really the greater space community without which we really can't function, is now part of the President's agenda. We are contributing to a broader national goal to raise our nation's fortunes in science and technology, research and development. This is essential to maintain our leadership in the world and I think it's exciting?

Just last month the President announced a crewed mission to an asteroid by 2025. That type of daring, the kind that requires a whole new way of doing business, a whole new level of innovation, just can't happen unless we focus on tomorrow and not yesterday.

All of you in this room should be very excited. Commercial space is going to open up. Whether you are a launch provider, or one of the myriad of related businesses, you are going to benefit.

And with low Earth orbit secured by industry, NASA can do the big things that industry can't do on its own. But even there, you'll all be working closely with us as you always have. Industry has been essential to every launch, from the first unmanned rockets to the last shuttle flight.

There's an RFI on the streets right now, about which I hope many of you know, to start the flow of ideas about commercial crew. We're not

going to do this in a vacuum. But we're not going to throw safety out the window either. This is NASA. The standards will be the highest. No one will fly unless we're convinced it's safe. Safety and oversight strategy and human rating requirements are currently being developed and we are including the commercial sector in this process.

We need more ways to get to low Earth orbit. I think most people can see that. At the same time, our space agency can't funnel such a major hunk of its resources into that one single capability that all prospecting for a future of innovation falls by the wayside, not only in exploration, but also in science and aeronautics. One of the key points to remember about NASA is that our missions require us to use a range of launch performance levels – there is no “one size fits all”.

We will capitalize on innovative and effective ways to work together with industry following your procedures and serving multiple customers as you develop them. NASA will continue to utilize our well-established methods for mission assurance given our one-of-a-kind precious payloads. In recent years, we have ventured into new acquisition approaches with the Commercial Orbital Transportation Services (COTS) project to demonstrate cargo delivery to the ISS. Demonstration missions under these Space Act Agreements are planned for 2010 and 2011. We followed COTS up with

the Commercial Resupply Services (CRS) contracts for actual delivery of cargo to the ISS beginning in 2011. In this approach, we rely on FAA-licensed launch services and our primary requirements are the Visiting Vehicle Requirements once the cargo vehicle approaches and ultimately berths to the Station.

In the coming years, there will be numerous other ways for commercial entities to get involved with space. Right now our FAST program, using commercial aircraft, is demonstrating how we can test payloads in microgravity right here on Earth before they face the unforgiving environment of space. There will be many more creative ways for companies to participate in our new commercial space activities. Not just launching rockets, but across the board.

So, as I commented earlier, this is a generational shift, and a big one. But in many ways this is not new, only new in that we finally have a President who has proposed a budget with sufficient funding to support his vision.

I want my grandchildren to see people orbiting Mars and yes, even landing there. We can't do it today, but we will be able to tomorrow. I have asked my NASA team to think big, so we have tremendous stretch goals, and we plan to make incremental progress toward these goals.

That asteroid mission the President has challenged us to develop and fly will teach us a lot about what we need to know to reach Mars. We'll learn about game changing in space propulsion to enable us to send humans millions of miles from Earth. We'll learn how to explore an alien world. And that doesn't even begin to account for the science dividends.

Science is huge in our new portfolio. Not only with science-focused missions, but with the precursor missions that have a dual purpose of exploration and scientific discovery. We're calling it an Exploration Enterprise and it's a broad enterprise. Commercial entities will play a key role and our international partners will be essential. But the spark of inspiration that we pass to the American people, that's really at the core.

Are you ready to inspire a generation of Americans? I am.